

Programmable Controller

MELSEC iQ-R series **MELSEC Q** series

C Controller/C Intelligent Function Module SECS/ GEM Communication Software Pre-installed Model User's Manual

-Q12DCCPU-V-BZ11
-Q12DCCPU-V-BZ13
-Q12DCCPU-V-BZ15
-RD55UP06-V-BZ11
-RD55UP06-V-BZ13
-RD55UP06-V-BZ15
-RD55UP12-V-BZ11
-RD55UP12-V-BZ13
-RD55UP12-V-BZ15

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully, and pay full attention to safety to handle the product correctly.

The precautions in this manual concern this product only. Regarding the safety precautions as a programmable controller system, refer to the user manual of the module to be used.

CONDITIONS OF USE FOR THE PRODUCT

- (1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
- i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
 - ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries. MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
- ("Prohibited Application")
- Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
 - Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
 - Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.
- Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTS are required. For details, please contact the Mitsubishi Electric representative in your region.
- (3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

INTRODUCTION

Thank you for purchasing SECS/GEM communication software.

This manual describes the necessary system configuration, specifications, wiring, and troubleshooting to use SECS/GEM communication software.

Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of SECS/GEM communication software to handle the product correctly.

Note that the menu names and operating procedures may differ depending on an operating system in use and its version.

When reading this manual, replace the names and procedures with the applicable ones as necessary.

Please make sure that the end users read this manual.

About this manual

This manual describes SECS/GEM communication software that has been installed on a C Controller module or C intelligent function module. Before using SECS/GEM communication software, carefully read the relevant manuals of the C Controller module or C intelligent function module to thoroughly understand the functions and performance of the module.

For details of the SEMI[®] standards, please check the SEMI standards.

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RELEVANT MANUALS

The following manuals are relevant to this product.

| Manual name [manual number] | Description |
|--|---|
| C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual [SH-082483ENG] (this manual) | Specifications, procedure before operation, wiring, functions, and troubleshooting of a C Controller module pre-installed model |
| SECS/GEM Communication Software Reference Manual (For GEM300 Standards) [SH-082616ENG] | GEM300 standards supported by SECS/GEM communication software |
| MELSEC iQ-R C Intelligent Function Module User's Manual (Startup) [SH-081566ENG] | Specifications, procedure before operation, wiring, and operation examples of a C intelligent function module |
| MELSEC iQ-R C Intelligent Function Module User's Manual (Application) [SH-081567ENG] | Functions, input/output signals, buffer memory, parameter setting, and troubleshooting of a C intelligent function module |
| MELSEC iQ-R Module Configuration Manual [SH-081262ENG] | The combination of the MELSEC iQ-R series modules, common information on the installation/wiring in the system, and specifications of the power supply module, base unit, SD memory card, and battery |
| MELSEC-Q C Controller Module User's Manual [SH-081130ENG] | System configuration, specifications, functions, handling, wiring, troubleshooting, and functions and programming of C Controller modules (Q24DHCCPU-V, Q24DHCCPU-VG, Q24DHCCPU-LS, Q26DHCCPU-LS, Q12DCCPU-V (Extended mode)) |
| Setting/Monitoring Tools for the C Controller Module Version 4 Operating Manual [SH-081131ENG] | System configuration and operation methods of the Setting/monitoring tools for the C Controller module (SW4PVC-CCPU) |
| C Controller Module User's Manual (Hardware Design, Function Explanation) [SH-080766ENG] | System configuration, specifications, functions, handling, wiring, and troubleshooting of Q12DCCPU-V (Basic mode) and Q06CCPU-V |
| C Controller Module User's Manual (Utility Operation, Programming) [SH-080767ENG] | Installation and uninstallation of the Setting/monitoring tools for the C Controller module (SW3PVC-CCPU), utility operations, and functions and programming |

GENERIC TERMS AND ABBREVIATIONS

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

| Term | Description |
|---|---|
| CM | Command Message (linktest, Connect, etc.) |
| DM | Data Message (Stream Function) |
| GEM advanced version | Q12DCCPU-V-BZ15, RD55UP06-V-BZ15, RD55UP12-V-BZ15 |
| GEM version | Q12DCCPU-V-BZ13, RD55UP06-V-BZ13, RD55UP12-V-BZ13 |
| MELSEC iQ-R series SECS/GEM communication software pre-installed model module | RD55UP06-V-BZ11, RD55UP06-V-BZ13, RD55UP06-V-BZ15, RD55UP12-V-BZ11, RD55UP12-V-BZ13, RD55UP12-V-BZ15 |
| MELSEC-Q series SECS/GEM communication software pre-installed model module | Q12DCCPU-V-BZ11, Q12DCCPU-V-BZ13, Q12DCCPU-V-BZ15 |
| SECS/GEM communication software | A generic product name for the following software pre-installed on SECS/GEM communication software pre-installed model modules: SW1PVC-Q12V-EBZ11, SW1PVC-Q12V-EBZ13, SW1PVC-Q12V-EBZ15, SW1PVC-RD55-EBZ11, SW1PVC-RD55-EBZ13, SW1PVC-RD55-EBZ15 |
| SECS/GEM communication software pre-installed model module | Q12DCCPU-V-BZ11, Q12DCCPU-V-BZ13, Q12DCCPU-V-BZ15, RD55UP06-V-BZ11, RD55UP06-V-BZ13, RD55UP06-V-BZ15, RD55UP12-V-BZ11, RD55UP12-V-BZ13, RD55UP12-V-BZ15 |
| Memory card | CF cards, SD memory cards |
| Setting tool | A SECS/GEM communication software setting tool pre-installed on a personal computer |
| Non-GEM version | Q12DCCPU-V-BZ11, RD55UP06-V-BZ11, RD55UP12-V-BZ11 |

SCOPE OF OPERATION DESCRIPTION

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

The table above in this manual indicates SECS/GEM communication software subject to the operation description.

○: Subject to operation description , —: Not subject to operation description

1 SPECIFICATIONS

This section shows the specifications of SECS/GEM communication software.

1.1 SEMI Standards Compliance

SECS/GEM communication software complies with the following SEMI standards.

○: Compliant △: Partially compliant ×: Not compliant

| Standard number | Compliant version | Standard name | SECS/GEM communication software compliance list | | |
|--------------------------|-----------------------------|---|---|--------------------|-----------------------------|
| | | | Q12DCCPU-V-/RD55UP06-V-/RD55UP12-V- | | |
| | | | BZ11 (Non-GEM version) | BZ13 (GEM version) | BZ15 (GEM advanced version) |
| E4 | E4-0699 | SEMI Equipment Communications Standard 1 Message Transfer (SECS-I) ^{*1} | △ ^{*2} | △ ^{*2} | △ ^{*2} |
| E5 | E5-1106E | SEMI Equipment Communications Standard 2 Message Content (SECS-II) | ○ | ○ | ○ |
| E37 | E37-0303 | High-Speed SECS Message Services (HSMS) Generic Services ^{*3} | | | |
| E37.1 | E37.1-0702 | High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS or HSMS-SSS) | | | |
| E37.2 | — | High-Speed SECS Message Services General Session (HSMS-GS) | × | × | × |
| E30 | E30-0307N | Generic Model for Communications and Control of Manufacturing Equipment (GEM) | × | △ ^{*4} | ○ |
| E82 ^{*5} | E82-1106 | Specifications for Interbay/Intrabay AMHS SEM (IBSEM) | | | |
| E88 ^{*5} | E88-0307 | Specifications for AMHS Storage SEM (Stocker SEM) | | | |
| Draft 6263 ^{*5} | — | PCB equipment communication interface (PCBECI) | | | |
| E39 | E39-1218 | Object Services Standard: Concepts, Behavior, and Services | × | × | △ ^{*6} |
| E39.1 | E39.1-1218 | SECS-II Protocol for Object Services Standard (OSS) | | | △ ^{*7} |
| E87 | E87-0619 | Specification for Carrier Management (CMS) | | | △ ^{*6} |
| E87.1 | E87.1-0619 | SPECIFICATION FOR SECS-II PROTOCOL FOR CARRIER MANAGEMENT (CMS) | | | |
| E94 | E94-0314 (Reapproved0819) | Specification for Control Job Management | | | × |
| E94.1 | E94.1-0312 (Reapproved0819) | SPECIFICATION FOR SECS-II PROTOCOL FOR CONTROL JOB MANAGEMENT (CJM) | | | |
| E40 | E40-1218 | Standard for Processing Management | | | |
| E40.1 | E40.1-1218 | SPECIFICATION FOR SECS-II PROTOCOL FOR PROCESSING MANAGEMENT | | | |
| E90 | E90-0312 (Reapproved1218) | Specification for Substrate Tracking | | | △ ^{*7} |
| E90.1 | E90.1-0312 | SPECIFICATION FOR SECS-II PROTOCOL SUBSTRATE TRACKING | | | |

*1 Standards of communication that uses RS-232C.

*2 Supported by Q12DCCPU-V edition only.

*3 Standards of communication that uses TCP/IP.

*4 Basic requirements of GEM are compliant.

*5 Subset of GEM E30.

*6 Supported only by SECS/GEM communication software with software version 1.38Q or later and also RD55UP12-V edition.

*7 Supported only by SECS/GEM communication software with software version 1.40S or later and also RD55UP12-V edition.



For the details of specifications and terms of SEMI standards when using SECS/GEM communication software, check the SEMI standards.

1.2 GEM Standards and GEM300 Standards Compliance

SECS/GEM communication software complies with GEM standards and GEM300 standards.

GEM standards compliance

SECS/GEM communication software complies with the following GEM standards.

○: Supported ×: Unsupported

| Required conditions of GEM standards | | | SECS/GEM communication software compliance list | | |
|--------------------------------------|------------------------------------|------------------|---|-----------------------|--------------------------------|
| | | | Q12DCCPU-V-/RD55UP06-V-/RD55UP12-V- | | |
| | | | BZ11 (Non-GEM version) | BZ13 (GEM version) | BZ15 (GEM advanced version) |
| FUNDAMENTAL GEM REQUIREMENTS | State Models | | × | ○ | ○ |
| | Host-Initiated S1F13/F14 Scenario | | | | |
| | Control (Operator-Initiated) | | | | |
| | Equipment Processing States | | | | |
| | Event Notification | | | | |
| | On-line Identification | | | | |
| | Error Messages | | | | |
| | | Documentation | | ○ | × |
| ADDITIONAL CAPABILITIES | Establish Communications | | × | ○ | ○ |
| | Dynamic Event Report Configuration | | | | |
| | Variable Data Collection | | | | |
| | Trace Data Collection | | | × | ○ |
| | Status Data Collection | | | ○ | ○ |
| | Alarm Management | | | | |
| | Remote Control | | | | |
| | Equipment Constants | | | × | ○ |
| | Process Recipe Management | Process Programs | | | |
| | | E42 Recipes | × | | |
| | | E139 Recipes | | | |
| | Material Movement | | ○ | ○ | |
| | Equipment Terminal Services | | | | |
| | Clock | | | | |
| | Limits Monitoring | | × | ○ | |
| | Spooling | | ○ | ○ | |
| | Control (Host-Initiated) | | | | |

GEM300 standards compliance

SECS/GEM communication software complies with the following GEM300 standards.

SEMI E39 Object Service Standard (OSS)

○: Compliant △: Partially compliant ×: Not compliant

| Required conditions of GEM300 standards | | SECS/GEM communication software compliance list | | |
|---|--|---|-----------------------|--------------------------------|
| | | RD55UP12-V- | | |
| | | BZ11 (Non-GEM version) | BZ13 (GEM version) | BZ15 (GEM advanced version) |
| Fundamental OSS Requirements | provide the ObjType and ObjID attributes | × | × | ○ |
| | provide the services GetAttr and SetAttr | | | ○ ^{*1} |
| Additional OSS Capabilities | Additional Object Services | | | △ |
| | Filters | | | × |
| | Owner Objects | | | |
| | Multiple Inheritance Hierarchy | | | |

*1 Supported only by SECS/GEM communication software with software version 1.40S or later.

SEMI E87 Carrier Management Standard (CMS)

○: Compliant △: Partially compliant ×: Not compliant

| Required conditions of GEM300 standards | | SECS/GEM communication software compliance list | | |
|---|---|---|-----------------------|--------------------------------|
| | | RD55UP12-V- | | |
| | | BZ11 (Non-GEM version) | BZ13 (GEM version) | BZ15 (GEM advanced version) |
| Fundamental CMS Requirements | Load Port Numbering | × | × | ○ |
| | Carrier Slot Numbering | | | ○ |
| | Load Port Transfer State Model | | | ○*1 |
| | Carrier Object Implementation | | | ○ |
| | Load Port Reservation State Model (internal buffer equipment) | | | ○*1*5 |
| | Load Port/Carrier Association State Model | | | ○*1 |
| | CarrierID Verification Support | | | ○*5 |
| | Slot Map Verification Support | | | ○*4*5 |
| | Services Implementation | | | △ |
| | Additional Events Implementation | | | ○*1*5 |
| | Variable Data Definitions | | | ○*2 |
| | Alarms Implementation | | | ○*1 |
| | Carrier Ready To Unload (CRTU) Prediction | | | × |
| | | | | |
| Additional CMS Capabilities | Load Port Reservation State Model (fixed buffer equipment) | | | ○*1 |
| | Reservation Visible Signal | | | ○*3 |

*1 A trigger is required to be controlled by the control CPU.

*2 Data is required to be updated by the control CPU.

*3 The reservation visible signal function is required to be implemented in the control CPU.

*4 The verification function is required to be implemented in the control CPU.

*5 Supported only by SECS/GEM communication software with software version 1.40S or later.

SEMI E90 Substrate Tracking Standard Compliance (STS)

○: Compliant △: Partially compliant ×: Not compliant

| Required conditions of GEM300 standards | | SECS/GEM communication software compliance list | | |
|---|---|---|-----------------------|--|
| | | RD55UP12-V- | | |
| | | BZ11 (Non-GEM version) | BZ13 (GEM version) | BZ15 (GEM advanced version) |
| Fundamental STS Requirements | Substrate Tracking | × | × | △*1*2 |
| | Substrate Object and State Model | | | • Substrate Object: ○*1*2 • State Model: × |
| | Substrate Location Object and State Model | | | • Substrate Location Object: : ○*1*2 • State Model: × |
| | Service Message Implementation (except host-initiated Register (Create) Substrate and Remove Substrate) | | | × |
| | Variable Data | | | ○*1*3 |
| | Events | | | ○*1*4 |
| Additional STS Capabilities | Host-Initiated Register (Create Substrate) | × | × | ○*1 |
| | Host-Initiated Remove Substrate | | | ○*1 |
| | Batch Location Object and State Model | | | • Batch Location Object: ○*1*2 • State Model: × |
| | UpdateSubstrateObject service | | | × |
| | Substrate Reading Status | | | ○*1*3 |
| | "SubstIDStatus" substrate object attribute | | | ○*1*3 |
| | ProceedWithSubstrate service | | | × |
| | CancelSubstrate service | | | × |
| | Additional Events | | | ○*1*4 |

*1 Supported only by SECS/GEM communication software with software version 1.40S or later.

*2 State Model is required to be managed by the control CPU.

*3 Data is required to be updated by the control CPU.

*4 A trigger is required to be controlled by the control CPU.

1.3 Communication Specifications

This section shows the specifications of SECS communication.

1

SECS-I(SEMI E4)

| Item | | Description |
|--------------------|--------------------|---------------------------|
| Device ID | Number of settings | 1 |
| | Value | 0 to 32767 |
| Communication port | | RS-232C, 1 port |
| Logical line | | Single line (full duplex) |
| Baud rate | | 9600 to 115200bps |
| Number of retries | | 0 to 31 retries |
| Master/Slave | | Master/Slave |
| Serial setting | Data length | B8, B7 |
| | Parity | None, even, odd |
| | Stop bit | S1, S2 |
| | Flow control | None, XON/XOFF, hardware |
| Timer setting | T1 | 0.1 to 10s |
| | T2 | 0.2 to 25s |
| | T3 | 1 to 120s |
| | T4 | 1 to 120s |

HSMS(SEMI E37)

| Item | | Description |
|------------------------|--------------------|---|
| Device ID | Number of settings | 1 |
| | Value | 0 to 32767 |
| Communication port | | Ethernet, 1 port |
| Logical line | | Single line |
| Interface | | 10BASE-T/100BASE-TX |
| Data transmission rate | | 10Mbps, 100Mbps |
| Connection mode | | Passive/Active |
| Timer setting | Link test timer | 1 to 65535s |
| | T3 | 1 to 120s |
| | T5 | 1 to 240s |
| | T6 | 1 to 240s |
| | T7 | 1 to 240s |
| | T8 | 1 to 120s |
| Line disconnection | | Disconnection/connection by trigger relay |

1.4 Message Specifications

This section shows the specifications of messages.

SECS-II(SEMI E5)

| Item | | Description |
|--|--------------|--|
| Stream/Function message definition range | Stream | 1 to 127 |
| | Function | 0 to 255 |
| Transactions with same Stream/Function | | Possible (however, must define different transaction name) |
| Variable length message transmission/reception | Transmission | For L,n, only transmit "n" lists. |
| | Reception | For L,n, up to "n" lists can be received and the number of lists received ("n") can be output to the control register. |
| Reconnection Delay After Line Disconnection | | 1 to 60s |
| Maximum number of transmission interleave (Number of multi-transaction queues for PLC transmission) | | 256 |
| Maximum number of queues waiting transmission (Number of transaction queues for PLC transmission) | | 256 |
| Maximum number of reception interleave (Number of multi-transaction queues for PLC receiving) | | 256 |
| Other SECS functions ^{*1} | | Scenario transmission/reception (execute more than one Stream/Function in a row) |

^{*1} Handled by the C Controller module.

1.5 GEM and GEM300-related Specifications

This section shows specifications related to GEM and GEM300.

GEM-related specifications

The following shows specifications related to GEM.

GEM-related performance specifications

| Item | Description |
|---|---|
| Maximum variable setting | 65535 |
| Number of Variables that can be linked to 1 list variable | 32767, up to 8 layers |
| Maximum number of limits that can be set for 1 variable | 16 |
| Limit monitoring cycle | 1000 to 4294967294ms |
| Variables subjected to limit monitoring | SV with data type other than ASCII/JIS8/BIN |
| Maximum number of report definitions | 512 |
| Number of variables that can be linked to 1 report | 256 |
| Maximum number of events that can be defined | 512 |
| Maximum number of reports than can be linked to 1 event | 64 |
| Traceable variable | SV with data type ASCII/JIS8/BIN supports up to 32 bytes. |
| Maximum numbers of variables that can be set for 1 Trace ID | 256 |
| Number of variables set for 1 Trace ID × Number of Groups | 4096 or below |
| Number of Trace IDs that can be traced simultaneously | 16 |
| Maximum number of processing units | 99 |
| Maximum SECS message length | 5M Bytes (5242880 Bytes) |
| Maximum ASCII data length | 1024 bytes |
| Number of dynamic messages that can be simultaneously created | 128 |
| Number of Cache area that can be set | 32 |
| Maximum communication establishment timeout | 240s |
| Maximum number of alarms that can be set | 4096 |

GEM300-related specifications

The following shows specifications related to GEM300.

GEM300-related performance specifications

| Item | Description |
|--|-------------|
| Applicable number of load ports | 6 |
| Maximum number of load port objects | 6 |
| Applicable number of slots of a carrier | 25 |
| Maximum number of carrier objects | 32 |
| Maximum number of carrier locations ^{*1} | 32 |
| Maximum number of carrier location objects ^{*1} | 1 |
| Applicable number of internal buffer partitions ^{*1} | 32 |
| Maximum number of internal buffer objects ^{*1} | 32 |
| Maximum number of substrate objects ^{*1} | 1024 |
| Maximum number of SubstHistory counts ^{*1} | 32 |
| Maximum number of equipment substrate locations ^{*1} | 32 |
| Maximum number of carrier substrate locations ^{*1} | 800 |
| Maximum number of batch locations ^{*1} | 32 |
| Maximum number of BatchSubstIDMap counts ^{*1} | 1024 |
| Maximum data size that can be sent to or received from a control CPU | 512 KB |

^{*1} Supported only by SECS/GEM communication software with software version 1.40S or later.

2 PROCEDURE BEFORE OPERATION

The following section shows the procedure until operation.

1. Mounting modules on a base unit

Install the programmable controller CPU and SECS/GEM communication software pre-installed model module on the base module.

For the installation on the base module, refer to the following:

| Module to be used | | Reference |
|-------------------------------|---------------|---|
| C intelligent function module | | MELSEC iQ-R Module Configuration Manual |
| C Controller module | Extended mode | MELSEC-Q C Controller Module User's Manual |
| | Basic mode | C Controller Module User's Manual (Hardware Design, Function Explanation) |

2. Wiring of equipment

Connect the SECS/GEM communication software pre-installed model module, personal computer, and other network equipment.

3. Installation of a setting tool

Install a setting tool on a personal computer.

For the installation method, refer to the following:

Page 34 Setting tool

4. Setting a firewall

When a Windows firewall is enabled and is set not to allow communication with the setting tool, communication may fail and a timeout may occur.

To allow communication, set a firewall by the following procedure:

Page 23 Procedure for setting a firewall

When using other security software with a firewall function, refer to the manual of the software used and allow the communication with the setting tool.

5. Setting parameters

Configure the parameters of the programmable controller CPU and the SECS/GEM communication software pre-installed model module.

For the setting method of the parameters, refer to the following:

| Module to be used | | Reference |
|-------------------------------|---------------|---|
| C intelligent function module | | MELSEC iQ-R C Intelligent Function Module User's Manual (Startup) |
| C Controller module | Extended mode | Setting/Monitoring Tools for the C Controller Module Version 4 Operating Manual |
| | Basic mode | C Controller Module User's Manual (Utility Operation, Programming) |

6. Network settings

Configure the network parameters.

For the configuration method, refer to the following:

Page 24 Network Setting

7. SECS/GEM communication settings

Use the setting tool to configure the transaction information, communication settings, and device assignment settings^{*1}, etc.

For the configuration procedure, refer to the following:

 Page 25 SECS/GEM Communication Settings

^{*1} SECS/GEM communication software (GEM version and GEM advanced version) has pre-registered variables defined by default. For the storage register, "CPU-1" and "D0 device" are set temporarily.

Review these variable definitions and apply them to the device assignment settings.




To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

8. Setting update

Update the setting file stored on the SECS/GEM communication software pre-installed model module.

For the update procedure, refer to the following:

 Page 141 Updating SECS/GEM Communication Software Pre-installed Model Module

Basic mode and extended mode

A MELSEC-Q series SECS/GEM communication software pre-installed model module has the following modes: basic mode and extended mode.

The module is in the extended mode at the factory default.

The module with a version 1.32J or later can operate in the basic mode by initializing it.

The advantage of each mode is described below:

| Mode | Advantage |
|---------------|---|
| Basic mode | The Setting/monitoring tools for the C Controller module (SW3PVC-CCPU) can be used. Use the basic mode in any of the following cases: <ul style="list-style-type: none">• Only the Setting/monitoring tools for the C Controller module (SW3PVC-CCPU) is used.• CIMOPERATOR manufactured by NIPPON DENNO Co.,Ltd. was used in the past. |
| Extended mode | The Setting/monitoring tools for the C Controller module Version 4 (SW4PVC-CCPU) can be used. SW4PVC-CCPU is an upgraded version of SW3PVC-CCPU. Advanced settings and diagnostics are available. |

There are the following restrictions to operate a MELSEC-Q series SECS/GEM communication software pre-installed model module in the basic mode.

- Settings will no longer be transferred to "/ROM." To use "Update Module," set "CF" as a transfer destination.
- Settings of the IP address setting function and license registration function are transferred to a destination selected in the "Update Module" screen. Ensure to set "CF" as a transfer destination in the "Update Module" screen in advance.

When initializing a SECS/GEM communication software pre-installed model module

Install SECS/GEM communication software and register a license by the following procedure:

1. Transfer corresponding backup files stored in an installation CD to the "/ROM" folder of a SECS/GEM communication software pre-installed model module or under the folder.

| Target module | Backup file |
|---|--|
| MELSEC-Q series (all versions) ^{*1} | Files stored in the "Backup/ROM" folder or under the folder |
| MELSEC iQ-R series (version 1.34L or earlier) | Files stored in the "Backup/ROM" folder or under the folder |
| MELSEC iQ-R series (RD55UP06-V with version 1.35M or later) | Files stored in the "Backup/RD55UP06-V/ROM" folder or under the folder |
| MELSEC iQ-R series (RD55UP12-V with version 1.35M or later) | Files stored in the "Backup/RD55UP12-V/ROM" folder or under the folder |

^{*1} When a module is in the basic mode, transferring a backup file is not required. Register a license in a CF card again.

2. Install SECS/GEM communication software.

For the method to install SECS/GEM communication software, refer to the following:

☞ Page 141 Updating SECS/GEM Communication Software Pre-installed Model Module

3. Register a license again.

For the license registration method, refer to the following:

☞ Page 37 License Registration

Procedure for setting a firewall

1. Select [System and Security] ⇒ [Allow an app through Windows Firewall] in the control panel of Windows.
2. Click the [Change settings] button, and click the [Allow another app] button.
3. Click the [Browse] button in the "Add an app" screen.
4. Select "CA-SECS.exe" in the folder where the setting tool is installed, and click the [Open] button.
5. Select "CA-SECS (product name)^{*1}" in the "Add an app" screen, and click the [Add] button.
6. Select "Domain," "Home/Work (Private)," and "Public" for "CA-SECS (product name)^{*1}" added in the list, and click the [OK] button.

^{*1} "CA-SECS (product name)" differs depending on a model type. For an actual product name, refer to the following:

☞ Page 36 Menus to be registered

2.1 Network Setting

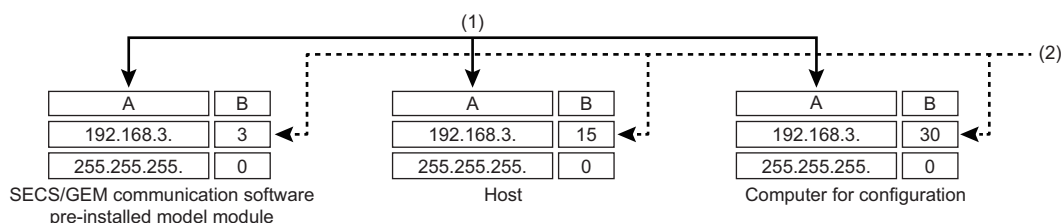
This section explains the network configuration.

| Devices | Setting method |
|--|---|
| SECS/GEM communication software pre-installed model module | Configure the parameters using GX Works3 or the Setting/monitoring tools for the C Controller module. |
| Host | Configure the PC network. |
| Computer for configuration | Configure the PC network. |

Network setting for connection

Operating procedure

1. Configure the network section of each device in the same manner.



A: Network section

B: Host section

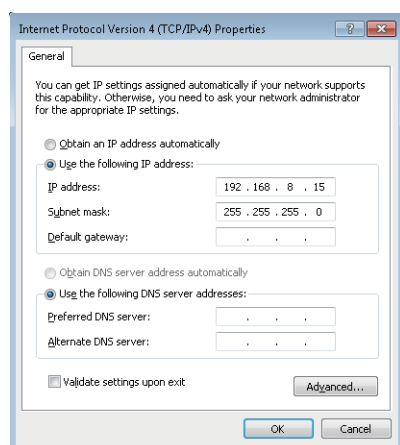
(1) Configure the same value.

(2) Configure different values.

2. Configure the network settings of the personal computer using the "Internet Protocol Version 4 (TCP/IPv4) Properties" screen.

(Example) Windows 7

- 1 Select [Network and Internet] ⇒ [Network and Sharing Center] ⇒ [Change adapter settings] in the control panel of Windows.
- 2 Select "Local Area Connection" and select [Properties] on the shortcut menu.
- 3 In the "Local Area Connection Properties" screen, select "Internet Protocol Version 4 (TCP/IPv4)", and then click the [Properties] button.
- 4 The "Internet Protocol Version 4 (TCP/IPv4) Properties" screen appears.



2.2 SECS/GEM Communication Settings

This section shows the procedure to use a setting tool to configure SECS/GEM communication.

1. Setting transaction information

Configure the transaction name, and then select the handshake method.


For the configuration procedure, refer to the following:

 Page 67 Transaction List

2. Setting message information

Configure items such as Stream Function, response monitoring setting, and triggers to report sending/reception.


For the configuration procedure, refer to the following:

 Page 73 Message information

3. Setting item information

Configure items such as the data type, data quantity, and control register to acquire or register data.

For the configuration procedure, refer to the following:

 Page 76 Item information

4. Communication setting

Select the SECS communication method.

When HSMS is selected, configure items such as the connection mode, IP address, and timer values.

When SECS-I is selected, configure items such as the RS-232C communication port setting and timer values.

For the configuration procedure, refer to the following:

 Page 83 Communication Setting

5. Device assignment

Register the device to be used for control of triggers, registers, etc.

For the configuration procedure, refer to the following:

 Page 88 Device Assignment

6. Other settings

Configure the settings to use the alarms, spools, and other functions arbitrarily.



Always save the project after configuring each type of data and before updating the SECS/GEM communication software pre-installed model module.

3 SYSTEM CONFIGURATION

This chapter explains the configuration of the system upon which SECS/GEM communication software runs.

Use the SECS/GEM communication software pre-installed model module together with the programmable controller CPU.

For the system configuration of the MELSEC iQ-R series and the programmable controller CPUs that can use the C intelligent function module, refer to the following:

📖 MELSEC iQ-R Module Configuration Manual

For the system configuration of the MELSEC-Q series and the programmable controller CPUs that can use the C Controller module, refer to the following:

📖 MELSEC-Q C Controller Module User's Manual

📖 C Controller Module User's Manual (Hardware Design, Function Explanation)

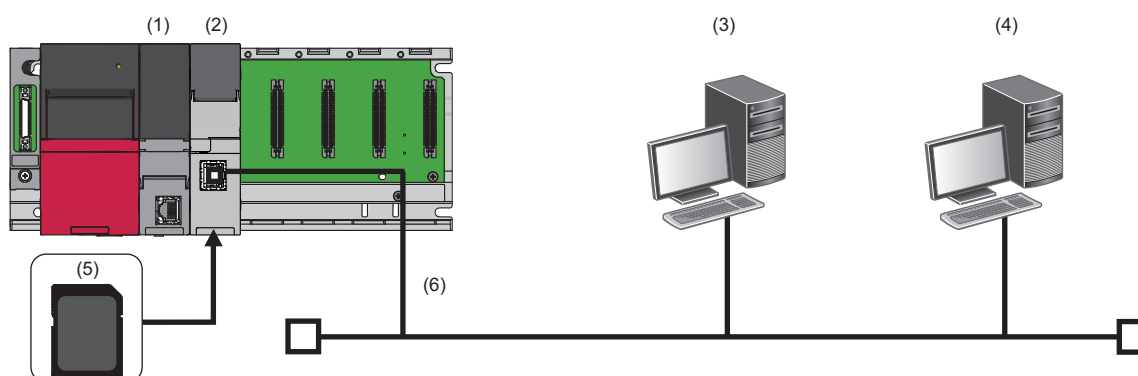
3.1 Overall System Configuration

This section shows the overall system configuration when the SECS/GEM communication software pre-installed model module is used.

MELSEC iQ-R series SECS/GEM communication software pre-installed model module

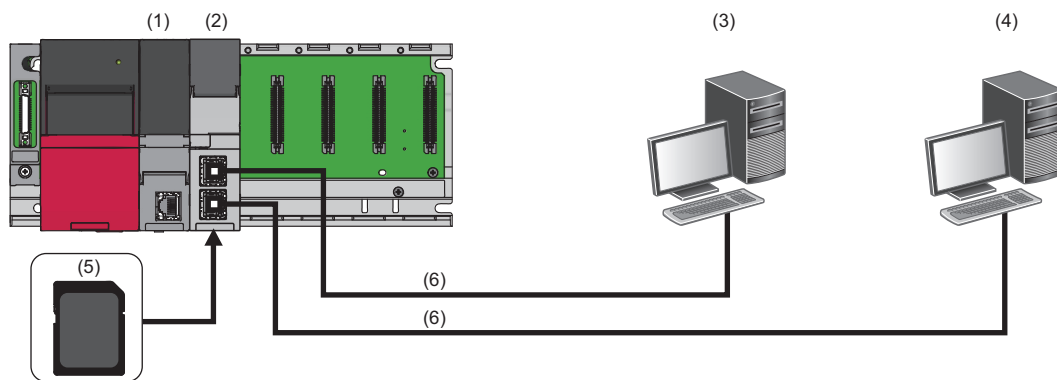
The following shows a system configuration example when the MELSEC iQ-R series SECS/GEM communication software pre-installed model module is used.

■System configuration example for RD55UP06-V



- (1) Programmable controller CPU
- (2) MELSEC iQ-R series SECS/GEM communication software pre-installed model module
- (3) Host
- (4) Computer for configuration
- (5) SD memory card
- (6) Ethernet cable

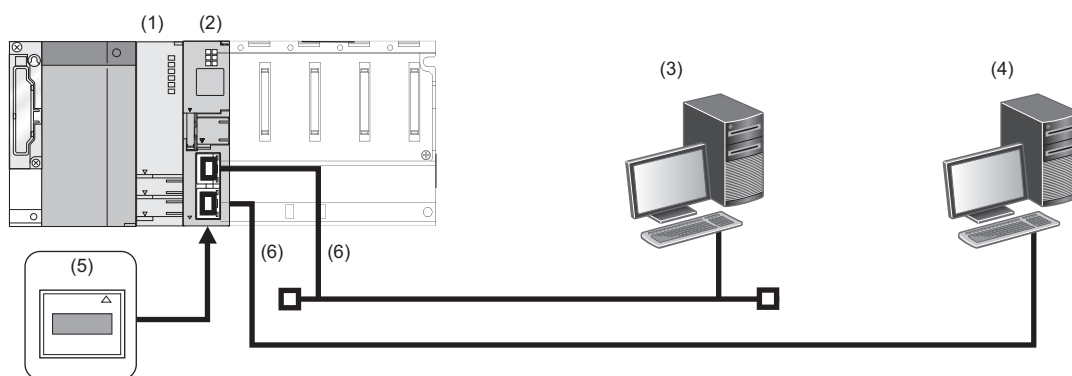
■System configuration example for RD55UP12-V



- (1) Programmable controller CPU
- (2) MELSEC iQ-R series SECS/GEM communication software pre-installed model module
- (3) Host
- (4) Computer for configuration
- (5) SD memory card
- (6) Ethernet cable

MELSEC-Q series SECS/GEM communication software pre-installed model module

The following shows a system configuration example when the MELSEC-Q series SECS/GEM communication software pre-installed model module is used.



- (1) Programmable controller CPU
- (2) MELSEC-Q series SECS/GEM communication software pre-installed model module
- (3) Host
- (4) Computer for configuration
- (5) CF card
- (6) Ethernet cable



A CF card must be inserted when using Q12DCCPU-V-BZ11, Q12DCCPU-V-BZ13, and Q12DCCPU-V-BZ15.

3.2 Software Configuration

This section shows the configuration of SECS/GEM communication software.

SECS/GEM communication software

Software to perform SECS/GEM communication.

It is preinstalled on the SECS/GEM communication software pre-installed model module before product shipping.

3

Precautions

Surrogate pair characters cannot be used in SECS/GEM communication software.

Setting tool

A tool to configure the interface of SECS/GEM communication.

License

A license file is necessary to use SECS/GEM communication software.

The license file is activated on the SECS/GEM communication software pre-installed model module before product shipping.

If the license file has been lost because of initialization of the SECS/GEM communication software pre-installed model module, activate the license again.

For the license registration method, refer to the following:

 Page 37 License Registration

Precautions

- One license file is assigned to one SECS/GEM communication software pre-installed model module.
- The product CD-ROM of SECS/GEM communication software is required to recover the license file. Store the product CD-ROM carefully so that it is not lost.

3.3 Connected Device Configuration

This section shows equipment that can be connected to the SECS/GEM communication software pre-installed model module.

SD memory card (need to purchase separately)

For SD memory cards that can be used with the MELSEC iQ-R series SECS/GEM communication software pre-installed model module, refer to the following:

📖 MELSEC iQ-R C Intelligent Function Module User's Manual (Startup)

CF card (sold separately)

For CF cards that can be used with the MELSEC-Q series SECS/GEM communication software pre-installed model module, refer to the following:

📖 MELSEC-Q C Controller Module User's Manual

📖 C Controller Module User's Manual (Hardware Design, Function Explanation)

Precautions

Always install a memory card when using SECS/GEM communication software.

Because the number of writes to a memory card is limited, determine the necessity of writing functions, such as link test logs and programmable-controller detailed log collection, before using a card.

Before removing a memory card, make sure that there is no file access. If the card is removed during data writing, internal files may become corrupted.

3.4 Operating Environment

This section shows the operating environment for a setting tool.

| Item | | Description |
|--|---|---|
| Personal computer | — | A personal computer on which Microsoft Windows operates |
| Free hard disk space | | Free space of 20 MB or more |
| OS (32-bit version and 64-bit version are supported.) (English language version) | | <ul style="list-style-type: none">• Windows 10 (Home, Pro, Enterprise)• Windows 7 (Service Pack 1 or later) (Starter, Home Premium, Professional, Ultimate, Enterprise)^{*1}• Windows XP (Service Pack 3 or later) (Home Edition, Professional)^{*1}• Windows 2000 (Service Pack 4 or later) (Professional)^{*1} |
| Web browser | | Microsoft Internet Explorer (6.0 or later) |

*1 Use SECS/GEM communication software with version 1.37P or earlier. The software with version 1.38Q or later is not supported.

Considerations for using operating systems

■User authority

- Can be installed or uninstalled only by a user with an administrator authority.
- Cannot be used on Windows 7 if the user is logged on with parental control enabled.

■Unavailable functions

When using any of the following functions, this product may not operate properly.

- Application start-up in Windows compatibility mode
- Fast user switching
- Remote desktop
- Windows hibernate or standby
- Windows XP Mode
- Windows Touch or Touch
- Tablet mode
- Virtual desktop

In the following case, the screen of this product may not work properly.

- The size of a text and/or other items on the screen are changed to values other than default values (such as 96 DPI, 100%, and 9 pt).

4 WIRING

This chapter explains the wiring of a SECS/GEM communication software pre-installed model module.

Ethernet cable

For Ethernet, a cable that complies with the IEEE802.3 100BASE-TX/10BASE-T standards can be used.

For the specifications of cables that can be used, refer to the following:

📖 MELSEC iQ-R C Intelligent Function Module User's Manual (Startup)

📖 MELSEC-Q C Controller Module User's Manual

📖 C Controller Module User's Manual (Hardware Design, Function Explanation)

RS-232 cable

For the specifications of RS-232 cables that can be used, refer to the following:

📖 MELSEC-Q C Controller Module User's Manual

📖 C Controller Module User's Manual (Hardware Design, Function Explanation)

5 INSTALLATION AND UNINSTALLATION

This chapter explains installation and uninstallation.

5.1 Installation

This section explains the method for installing a setting tool and SECS/GEM communication software.

Setting tool

Preparation for an installation

Check the followings before installing a setting tool.

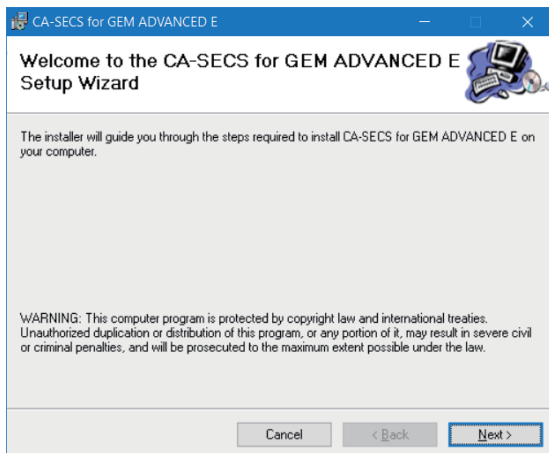
- Log in as an administrator user to install the setting tool.
- Do not run multiple installers at the same time. Doing so may cause the installation to be completed with an error. If the installation fails, uninstall the setting tool, and then install it again.
- If the confirmation screen for User Account Control appears while installing the setting tool, click "Allow" or the [Yes] button to proceed with the installation.

Installation of a setting tool

The following procedure shows an example for installing the setting tool of Q12DCCPU-V-BZ15 on Windows 7.

1. Insert the product CD-ROM into a personal computer.

The setup wizard starts.

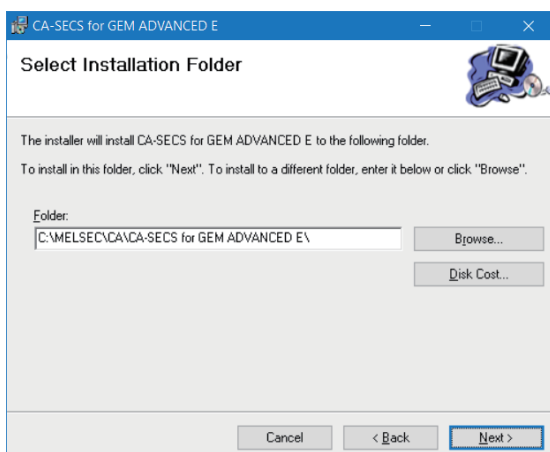


If the setup wizard does not start, double-click 'setup.exe' in the "CA-SECS for GEM ADVANCED E"*1 folder on the product CD-ROM.

*1 The folder name of the product CD-ROM differs for each product.

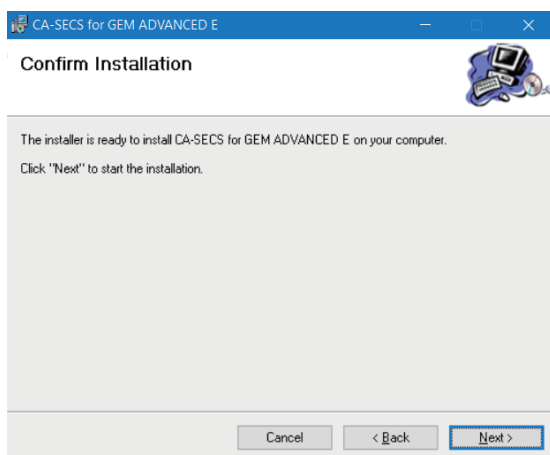
2. Click the [Next] button.

3. Check the installation folder setting, and then click the [Next] button.

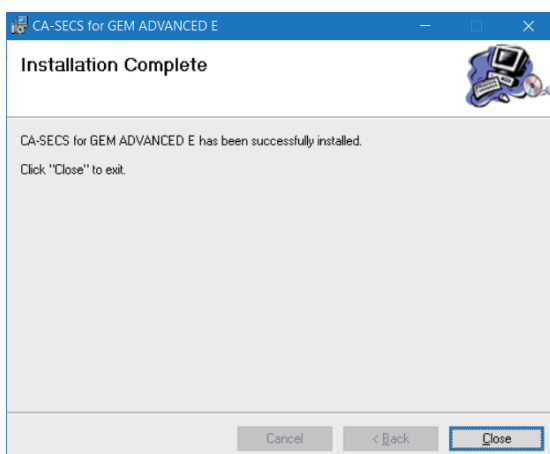


4. Click the [Next] button.

Installation of the setting tool starts.



If installation of the setting tool is completed normally, the following screen appears.



Environment after installation

The following explains the environment after installation of the setting tool.

■Menus to be registered


The menu of the installed setting tool is registered to the start menu of Windows®.

| Menu name | | | Description |
|-----------|------|---------------------------------|---|
| MELSEC | CA*1 | CA-SECS E | Starts the setting tool of Q12DCCPU-V-BZ11. |
| | | CA-SECS for GEM E | Starts the setting tool of Q12DCCPU-V-BZ13. |
| | | CA-SECS for GEM ADVANCED E | Starts the setting tool of Q12DCCPU-V-BZ15. |
| | | CA-SECS RD55 E | Starts the setting tool of RD55UP06-V-BZ11 and RD55UP12-V-BZ11. |
| | | CA-SECS for GEM RD55 E | Starts the setting tool of RD55UP06-V-BZ13 and RD55UP12-V-BZ13. |
| | | CA-SECS for GEM ADVANCED RD55 E | Starts the setting tool of RD55UP06-V-BZ15 and RD55UP12-V-BZ15. |

*1 Does not appear in Windows® 8 or later.

SECS/GEM communication software

For the method to install SECS/GEM communication software, refer to the following:

 Page 141 Updating SECS/GEM Communication Software Pre-installed Model Module

5.2 License Registration

The license of SECS/GEM communication software has been activated on the SECS/GEM communication software pre-installed model module in advance.

If the SECS/GEM communication software pre-installed model module has been initialized, the license is deleted.

In such a case, the license must be registered again using the license file stored on the product CD-ROM.

The following shows the procedure for registering the license again:

1. Copy the license file^{*1} from the product CD-ROM to a personal computer.
 2. Select [Help] ⇒ [License Registration].
 3. Select the license file copied from the product CD-ROM.
- The "C Controller Transfer" or "C Intelligent Function Module Transfer" screen appears.
4. Set each item.
 5. Click the [Update] button.
 6. Reset the programmable controller CPU.

*1 The license file is stored in the following folder on the product CD-ROM:

\\Backup\\LF****.DAT

The license file name is 'LF****.DAT' and '****' contains 16 alphanumeric characters.

5

Point

The license registration destination is the transfer destination (ROM or memory card) selected in the "Update Module" screen.

Precautions

- Do not specify the license file of the product CD-ROM directly.

Checking a license

Whether a genuine license is registered can be checked by either of the following methods:

| Module | Checking method |
|---|--|
| MELSEC iQ-R series SECS/GEM communication software pre-installed model module | Check it in the event history of the control CPU. |
| MELSEC-Q series SECS/GEM communication software pre-installed model module | Check it in the event history of Setting/monitoring tools for the C Controller module. |

Registering a license again

Before registering a license again, check the following settings:

- For a MELSEC iQ-R series SECS/GEM communication software pre-installed model module, have the settings that enable Ethernet communication been configured using GX Works3?
- For a MELSEC-Q series SECS/GEM communication software pre-installed model module, has CH1 of the Ethernet port been enabled using the Setting/monitoring tools for the C Controller module?

5.3 Repair Installation

Perform a repair installation if a setting tool does not operate normally.

A repair installation is a function for restoring an installed file if the file is deleted by mistake.

Preparation for a repair installation

Check the followings before performing a repair installation on a setting tool.

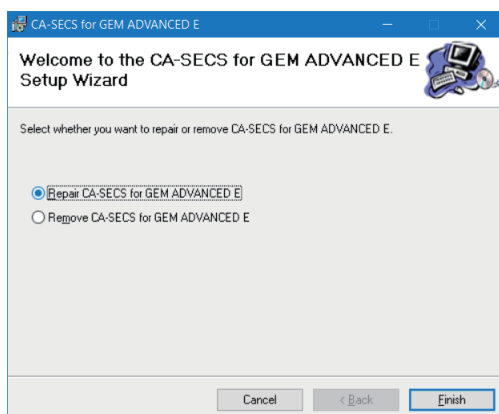
- Log in as an administrator user to perform a repair installation on the setting tool.
- Do not run multiple installers at the same time. Doing so may cause the repair installation to be completed with an error. If the repair installation fails, uninstall the setting tool, and then install it again.
- If the confirmation screen for User Account Control appears while performing a repair installation on the setting tool, click "Allow" or the [Yes] button to proceed with the installation.
- Run the installer with the same version as the installed SECS/GEM communication software to perform a repair installation.

Performing a repair installation on the setting tool

The following procedure shows an example for performing a repair installation of the setting tool of Q12DCCPU-V-BZ15 on Windows 10.

1. Insert the product CD-ROM into a personal computer.

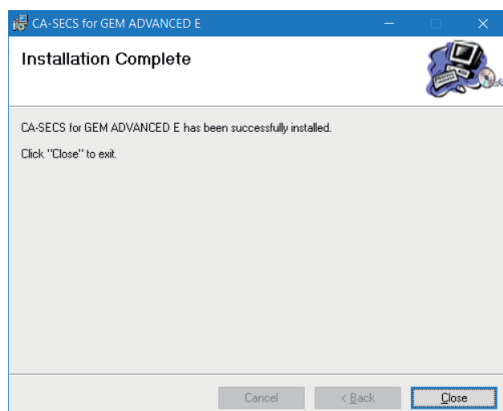
The setup wizard starts.



If the setup wizard does not start, double-click 'setup.exe' in the "CA-SECS for GEM ADVANCED E"^{*1} folder on the product CD-ROM.

^{*1} The folder name of the product CD-ROM differs for each product.

2. Select "Repair CA-SECS for GEM ADVANCED E" and click the [Finish] button.
The following screen appears if the repair installation is completed normally.



Environment after repair installation

For the environment after installing the setting tool and SECS/GEM communication software, refer to the following:

☞ Page 36 Environment after installation

5.4 Uninstallation

This section explains the method for uninstalling a setting tool and SECS/GEM communication software.

Setting tool

A setting tool can be uninstalled from a personal computer by any of the following methods:

- Uninstalling from the control panel of Windows
- Removing the setting tool from the product CD-ROM

Preparation for removing the setting tool from the product CD-ROM

Check the followings before removing the setting tool from the product CD-ROM.

- Log in as an administrator user to uninstall the setting tool.
- Do not run multiple installers at the same time. Doing so may cause the uninstallation to be completed with an error. If the uninstallation fails, uninstall the setting tool again.
- If the confirmation screen for User Account Control appears while uninstalling the setting tool, click "Allow" or the [Yes] button to proceed with the uninstallation.
- Run the installer with the same version as the installed SECS/GEM communication software to remove the setting tool.

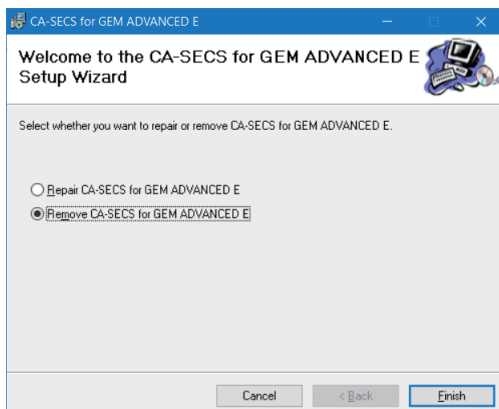
Removing the setting tool from the product CD-ROM

The following procedure shows an example for removing the setting tool of Q12DCCPU-V-BZ15 from Windows 10.

This procedure is equivalent to uninstalling the setting tool from the control panel of Windows.

1. Insert the product CD-ROM into a personal computer.

The setup wizard starts.

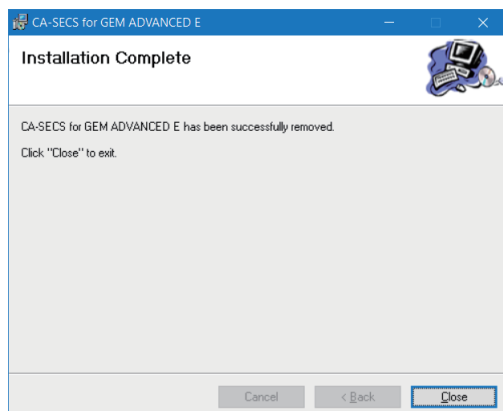


If the setup wizard does not start, double-click 'setup.exe' in the "CA-SECS for GEM ADVANCED"^{*1} folder on the product CD-ROM.

^{*1} The folder name of the product CD-ROM differs for each product.

2. Select "Remove CA-SECS for GEM ADVANCED E" and click the [Finish] button.

The following screen appears if the removal is completed normally.



Environment after uninstallation

During uninstallation, registered menus and files are deleted.

☞ Page 36 Environment after installation

SECS/GEM communication software

If the SECS/GEM communication software pre-installed model module is initialized, SECS/GEM communication software is deleted.

For the method to initialize the SECS/GEM communication software pre-installed model module, refer to the following:

📖 MELSEC iQ-R C Intelligent Function Module User's Manual (Application)

📖 MELSEC-Q C Controller Module User's Manual

📖 C Controller Module User's Manual (Hardware Design, Function Explanation)

6 FUNCTION LIST

This chapter explains functions of SECS/GEM communication software and its setting tools.

SECS communication

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|-------------------------------|---|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| SECS-I communication function | | Use a [SEMI E4 compliant] RS-232C port to correspond with the host. | ○ | ○ | ○ | — | — | — | — | — | — |
| HSMS communication function | | Use a [SEMI E37 compliant] Ethernet port to correspond with the host. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Device ID specify function | | Specify an arbitrary device ID. | | | | | | | | | |
| SECS-II | StreamFunction definition (SF definition) | Define SF arbitrarily within the scope of the SECS standards and user definitions. | | | | | | | | | |
| | same SF definition | Define the same SF. | | | | | | | | | |
| | Abort Frame Sending | Send an abort frame. | | | | | | | | | |
| | Abort Frame Reception | Receive an abort frame. | | | | | | | | | |
| | Variable length frame transmission | Send a message containing a variable length item. | | | | | | | | | |
| | Variable length frame reception | Receive a message containing a variable length item. | | | | | | | | | |
| Others | Scenario transmission/reception | Link and process arbitrary transactions. | | | | | | | | | |
| | Reconnect upon line disconnection | Contact the host again after line recovery. | | | | | | | | | |
| | Single transaction control | Do not process another transaction until the transaction is complete. | | | | | | | | | |
| | Multi-transaction control | Process multiple transactions simultaneously. | | | | | | | | | |
| | Sending waiting queue | Queue messages waiting to be sent. | | | | | | | | | |

Basic functions

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|------------------|---|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| Transaction | Transaction list display | Display defined transactions as a list. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Defining the transaction property | Define the names of transactions. | | | | | | | | | |
| | Cache settings | Define the cache of the device to be used by the transaction. | | | | | | | | | |
| | Message Information | Define the message information of transactions. | | | | | | | | | |
| | Defining the item property | Define the item properties of messages. | | | | | | | | | |
| | Fixed-length ASCII item correction function | During fixed-length ASCII item data sending, correct so that the data length is fixed length. | | | | | | | | | |
| Monitoring timer | PLC Response Monitoring Timer | Monitor and detect non-response of the programmable controller CPU by the PLC Response Monitoring Timer. | | | | | | | | | |
| | Secondary Monitoring Timer | Monitor and detect secondary sending-back non-requests by the Secondary Monitoring Timer. | | | | | | | | | |
| | Transaction response monitoring timer | Monitor and detect the transaction execution interval by the transaction response monitoring timer. | ○ | ○ | ○ | — | — | — | — | — | — |
| Data processing | | Table Convert Setting | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | Transmission data mapping processing settings | | | | | | | | | |

6

Programmable controller interface

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|-------------------------------|------------------------------------|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| Trigger handshake | Handshake (for each transaction) | Use a trigger handshake for handshakes (for each transaction). | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Handshake (for each message) | Use a trigger handshake for handshakes (for each message). | | | | | | | | | |
| | No handshakes | Do not use trigger handshakes. | | | | | | | | | |
| Data Type Conversion | SECS message (ASCII)→internal data | Convert from ASCII to an arbitrary data format when storing data received by a SECS message to the device. | | | | | | | | | |
| | Internal data→SECS message (ASCII) | Convert an arbitrary data format to ASCII when creating a SECS message from device values. | | | | | | | | | |
| Shared memory synchronization | | Adjust the checking interval of the multiple CPU auto refresh area. | ○ | ○ | ○ | — | — | — | — | — | — |

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|---------------------|---|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| Status notification | Control Ready status | Report that SECS/GEM communication software that started is in a controllable state. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Control error status | Check the operation state of SECS/GEM communication software. | | | | | | | | | |
| | Online status | Report that an online state was established with the host (S1F1→S1F2). | | | | | | | | | |
| | Line disconnecting status | Report that the line with the host was disconnected. | | | | | | | | | |
| | Establishing communication status | Report that communication was established with the host. | | | | | | | | | |
| | Queue full of messages waiting to be sent | Report that the count of the sending message queue from SECS/GEM communication software became full. | | | | | | | | | |
| | Spooling state | Report that messages subject to spooling are being spooled. | | | | | | | | | |
| | Spooled message sending | Report that SECS/GEM communication software is sending messages subject to spooling. | | | | | | | | | |
| | Memory card error | Report that some kind of error was detected in the memory card. | | | | | | | | | |
| | Battery error | Report that the built-in battery has been depleted. | ○ | ○ | ○ | — | — | — | — | — | — |
| | FTP server log output error | Report that the log output to the FTP server failed. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|---------------------------------------|-----------------------------------|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| SECS communication error notification | Abort Frame Reception | Report that an abort message was received from the host. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Abort Frame Sending | Report that an abort message was sent from SECS/GEM communication software. | | | | | | | | | |
| | Sending failure | Report that data sending to the host failed. | | | | | | | | | |
| | T1 timeout occurred | Report that a timeout occurred between characters during reception from the host. | ○ | ○ | ○ | — | — | — | — | — | — |
| | T2 timeout occurred | Report that a protocol timeout occurred with the host. | | | | | | | | | |
| | T3 timeout occurred | Report that a response timeout occurred with the host. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | T4 timeout occurred | Report that a timeout occurred between message blocks during reception from the host. | ○ | ○ | ○ | — | — | — | — | — | — |
| | T9 timeout occurred | Report that a T9 timer management timeout occurred. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Scenario Interruption | Report that the scenario execution was interrupted for some reason. | ○ | ○ | ○ | — | — | — | — | — | — |
| | Handshake failure | Report that a handshake link with the programmable controller CPU failed during data reception. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Communication error | Report the Stream Function number generated by a transmission error. Report the trigger relay generated by a transmission error. | | | | | | | | | |
| | System error (S9) message sending | Report that a system error (S9) message was sent. | | | | | | | | | |
| Control Request | Line Connection | Specify port open in the case of SECS-I communication. Specify Connect or Select in the case of HSMS. | | | | | | | | | |
| | Line Disconnection | Specify port close in the case of SECS-I communication. Specify Disconnect in the case of HSMS. | | | | | | | | | |
| | Offline | Specify a transfer to offline state. | | | | | | | | | |
| | Online Start | Start in an online state. | ○ | — | — | ○ | — | — | ○ | — | — |
| | Abort Frame Sending | Specify sending of an abort frame for the received primary message. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | S9F7 sending | Specify S9F7 sending. | | | | | | | | | |
| | Spool function ON/OFF switching | Switch the spooling function on and off by a relay. | ○ | — | — | ○ | — | — | ○ | — | — |
| | Spooled message sending | Specify sending of spool messages. | | | | | | | | | |
| | Spooled message discarding | Specify discarding of spool messages. | | | | | | | | | |
| | Scenario Interruption | Specify interruption of the scenario. | ○ | ○ | ○ | — | — | — | — | — | — |
| | Log output start/end | Specify the start/end of output of SECS communication logs, programmable controller logs, and user logs. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Logs

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|--|-----------------------------|---|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| Logging | SECS transmission log | Summary display, list structure display, detailed display Transmission data file saving (number of retention days specification, one-hour units) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Link Test Log | Link Test log output selection is possible. | | | | | | | | | |
| | Programmable controller log | Select all SECS/GEM Communication Software link I/Os or only trigger relays, and then output. | | | | | | | | | |
| | User Log | Output logs of character string data stored in a designated register. | | | | | | | | | |
| | Real time trace | Output SECS data and device I/O information to registers. | | | | | | | | | |
| Save Destination | Memory card | Output logs to a memory card. | | | | | | | | | |
| | FTP server | Output logs to the FTP server. | | | | | | | | | |
| Logging output to device (display log on display device) | | Display SECS transmission logs, programmable controller logs, and user logs on a display device via registers. | | | | | | | | | |
| Log trigger start/end | | Available (SECS communication log output, programmable controller log output, and user log output relay trigger specifications) | | | | | | | | | |
| Log data acquisition method | | FTP/RS-232C ^{*1} | | | | | | | | | |
| Log View | | Display acquired logs. | | | | | | | | | |

*1 Supported for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

Basic requirements of GEM

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|--|--|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| [State model] compliance | Communication state | Manage the communication state automatically. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| | Control state | Manage the control state automatically. | | | | | | | | | |
| | Processing state | Manage the processing state automatically. | | | | | | | | | |
| | Spooling state | Manage the spooling state automatically. | | | | | | | | | |
| [Device process state] compliant | | During transition of the processing state, report the event to the host automatically. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| [S1F13/F14 scenario started by host] compliant | | Deal with communication establishment from the host. | | | | | | | | | |
| [Event notification] compliant | | Report the equipment event to the host automatically/manually. | | | | | | | | | |
| [Online check] compliant | | Respond to an online check from the host automatically. | | | | | | | | | |
| [Error messages] compliant | | Send errors detected by the equipment to the host by an S9 message | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| [Control (started by operator)] compliant | Controlling the communication state from the equipment | Control the communication state from the equipment. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| | Controlling the control state from the equipment | Control the control state from the equipment. | | | | | | | | | |
| [Documentation] compliant | | Output documents required by GEM. | — | — | ○ | — | — | ○ | — | — | ○ |

Additional GEM performance

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|---|---|--|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| [Communication establishment] compliant | | Establish communication with a host that complies with GEM. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| [Dynamic event report setting change] compliant | | Enable the change of event reports settings dynamically from the host. | | | | | | | | | |
| [Variable data collection] compliant | | Notify the host by report of the equipment variables requested from the host. | | | | | | | | | |
| [Trace data collection] compliant | Sampling | Sample equipment variables periodically by an instruction from the host. | — | — | ○ | — | — | ○ | — | — | ○ |
| | Trace data sending | Send the sampling result to the host as trace data. | | | | | | | | | |
| [State data collection] compliant | | Report data related to state variables requested from the host to the host. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| [Alarm management] compliant | Report to host | Report equipment alarms to the host. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Change from host | Enable the change of alarm settings dynamically from the host. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| [Remote control] compliant | | Deal with commands received from the host | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| [Equipment constant] compliant | Configuration of equipment constants | Configure the equipment constants by a setting tool. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| | Change from host | Change the equipment constants from the host. | | | | | | | | | |
| | Report to host | Report equipment constants requested from the host to the host. | | | | | | | | | |
| [Process Recipe Management] compliant | Formatted process programs | Register formatted process program from the host to the device. | — | — | ○ | — | — | ○ | — | — | ○ |
| | Equipment process program directory information | Send directory information of the process programs of the equipment by a request from the host. | | | | | | | | | |
| | Equipment-side process program update | Notify the host of the update state of process programs at the equipment. | | | | | | | | | |
| | Deletion of equipment-side process programs | Delete equipment-side process programs at the request of the host. | | | | | | | | | |
| [Material transfer] compliant | | Send a [Port transfer event] to the host by an instruction from the programmable controller CPU. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |
| [Device terminal service] compliant | Terminal display data registration | Register terminal display data from the host to the device. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Terminal request sending | Send a text message to the host. | | | | | | | | | |
| [Clock] compliant | Synchronizing the time of the module with the host time | Set the time of the module to the time data reported from the host. | | | | | | | | | |
| | Registration of host time to device | Register the time data reported from the host to the device. | | | | | | | | | |
| | Time inquiry from the host | Return time data that complies with the time inquiry from the host. | | | | | | | | | |

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|---------------------------------------|---|---|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| [Limit monitoring] compliant | Monitoring of upper and lower limits of variables | Monitor the transfer of the upper and lower limits of variables. | — | — | ○ | — | — | ○ | — | — | ○ |
| | Event notification | Send an event to the host when a transition occurs. | | | | | | | | | |
| [Spooling] compliant | Spooling target specification | Specify messages subject to spooling. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Spooling | Spool messages subject to spooling to the memory card. | | | | | | | | | |
| | Automatic spooling | Spool messages subject to spooling to a memory card automatically during a communication disconnection. | | | | | | | | | |
| | Spooled data sending | Send spool data to the host by an instruction from the host. | | | | | | | | | |
| | Spool data deletion | Delete spool data by an instruction from the host. | | | | | | | | | |
| [Control (started by host)] compliant | | Deal with instructions of online/offline switching from the host. | — | ○ | ○ | — | ○ | ○ | — | ○ | ○ |

Others

○: Supported —: Unsupported

| Function | | Overview | Q12DCCPU-V- | | | RD55UP06-V- | | | RD55UP12-V- | | |
|--|-----------------------------------|---|-------------|------|------|-------------|------|------|-------------|------|------|
| | | | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 | BZ11 | BZ13 | BZ15 |
| Conversion | | Supplement the differences of project file structures due to product version upgrades. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Definition content network download function | | Transfer the setting content to the SECS/GEM communication software pre-installed model module. | | | | | | | | | |
| User definition archive function | | Archive the setting file, and then save it to the SECS/GEM communication software pre-installed model module. | | | | | | | | | |
| Automatic restart after update function | | Re-import an updated settings file by restarting the control software, but not stopping the equipment. | | | | | | | | | |
| Definition information documentation output | | Output the SECS message definitions and device assignment definitions as a .csv file. | ○ | — | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| IP address setting function | Configuration from a setting tool | Configure the IP address of the SECS/GEM communication software pre-installed model module from a setting tool. | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Configuring via registers | Configure the IP address of the SECS/GEM communication software pre-installed model module via registers. | | | | | | | | | |
| Device Find/Replace | Device search | Search for devices in use. | | | | | | | | | |
| | Replace Device | Replace devices in use. | | | | | | | | | |

7 BASIC FUNCTIONS

7.1 Management of Projects

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Projects of SECS/GEM communication software are managed by .xml files that define transactions and other environment setting files.


There are two methods to create a new project: opening and arranging an existing sample transaction for on-premise use or creating a new transaction.

This section explains the method for manipulating projects, such as creating new projects, opening projects, and saving projects.

Creating a new project

Create a project.

In the transaction list of the newly created project, there is blank data by the name "New Transaction".


 [File] ⇒ [New Create]

Opening a project


Read a saved project.

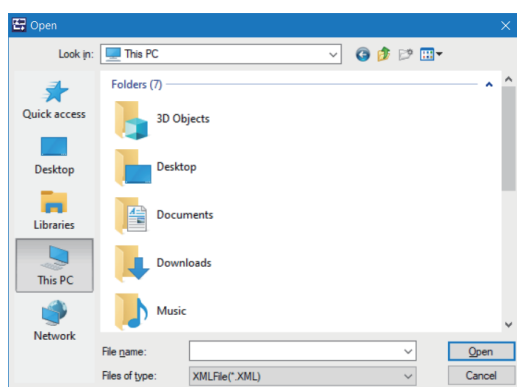
If the project can be converted, convert it before reading.

For the module types to be converted, refer to the following:

 Page 52 Conversion

Window

 [File] ⇒ [Open]



Displayed items


| Item | Description |
|---------------|---|
| File name | Select the transaction setting file to be opened. |
| [Open] button | Click this to open the selected file. |

Precautions

- A project created with a new version of setting tool cannot be opened in an old one.
- When opening a project which is created with the Japanese version setting tool in the English version setting tool, some characters may be garbled.

Save / Save as New

Save an edited project.

 [File] ⇒ [Overwrite Save] or [Save As]

Conversion


The following shows methods for converting the version and target module type of a project by using conversion functions. Both version and target module type are converted if both of them need to be converted.*1

For details, refer to the following:

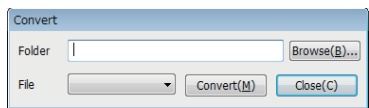
 Page 53 Version conversion, Page 54 Target module type conversion

- *1 The 'target module type conversion' function is not available in a setting tool with version 1.34L or earlier.
Before converting a module type, upgrade the setting tool of a conversion source and a conversion destination to a version 1.35M or later.

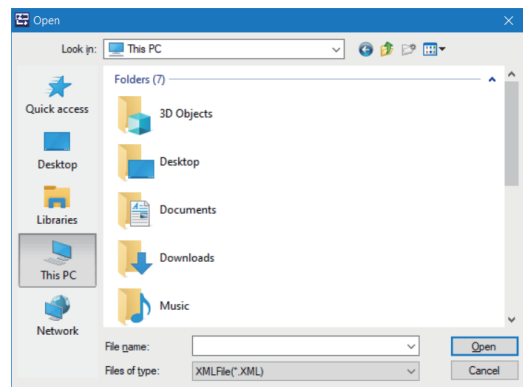
Window

 [File] ⇨ [Convert]

■1.34L or earlier



■1.35M or later



Displayed items

■1.34L or earlier

| Item | Description |
|------------------|---|
| Folder | Select the folder that is storing the setting file. |
| File | Select the transaction setting file for conversion. |
| [Convert] button | Convert the type of file in the selected folder. |

■1.35M or later

| Item | Description |
|---------------|---|
| File name | Select the transaction setting file for conversion. |
| [Open] button | Convert the type of file in the selected folder. |

Precautions

- To convert a project, it is required to use a newer version of the setting tool than the one in which the project was created.
- When opening a project which is created with the Japanese version setting tool in the English version setting tool, some characters may be garbled.
- If a conversion fails, a target project will not be converted and will be in the state where a project is newly created in the setting tool.

Version conversion



Upgrade the version of a specified project so that the project can be used in the setting tool which uses the conversion functions.

This function is available in all module types.

○: Conversion available, —: Conversion not available

| Conversion source project | Conversion destination project | | | |
|-------------------------------|--------------------------------|-------------|----------------------|-------------------------------|
| | Non-GEM version | GEM version | GEM advanced version | GEM advanced (GEM300) version |
| Non-GEM version | ○ | — | — | — |
| GEM version | — | ○ | — | — |
| GEM advanced version | — | — | ○ | — |
| GEM advanced (GEM300) version | — | — | — | ○ |

The following table shows the items to be converted. For items other than below, settings will be inherited from a previous version project.

| Item | Description |
|---------------------------------|---|
| Version information | The version information of each setting file will be updated. |
| Added functions | When new functions are added by upgrading the version, settings will also be added so that the functions can be used. For the setting values, values when creating a new project in the upgraded setting tool will be set. For functions added by the upgrade, refer to the following:  Page 324 Added and Changed Functions |
| Variable settings* ¹ | When a value within the range has been set for the number of units of data in a previous version project, the setting will be inherited from the project. The out-of-range value set for the number of units of data will be changed to the maximum value that can be set. Therefore, if a variable value exceeds the available number of characters, the value beyond the number of characters set for the number of units of data will be deleted. For details on the variable settings, refer to the following:  Page 228 Variable definition |

*¹ This item can be converted by the software version 1.33K or later.

Target module type conversion

Convert the module type of a specified project to the one that is applicable in the setting tool which uses the conversion functions.

The following table shows the availability of conversion for each module type.

○: Conversion available, —: Conversion not available

| Conversion source project | | Conversion destination project | | | | | | | | | |
|---------------------------|-------------------------------|--------------------------------|-------------|----------------------|-----------------|-------------|----------------------|-----------------|-------------|----------------------|-------------------------------|
| | | Q12DCCPU-V | | | RD55UP06-V | | | RD55UP12-V | | | |
| | | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | GEM advanced (GEM300) version |
| Q12DCCPU-V | Non-GEM version | — | — | — | — | — | — | ○ | — | — | — |
| | GEM version | — | — | — | — | — | — | — | ○ | — | — |
| | GEM advanced version | — | — | — | — | — | — | — | — | ○ | ○ |
| RD55UP06-V | Non-GEM version | — | — | — | — | — | — | ○ | — | — | — |
| | GEM version | — | — | — | — | — | — | — | ○ | — | — |
| | GEM advanced version | — | — | — | — | — | — | — | — | ○ | ○ |
| RD55UP12-V | Non-GEM version | — | — | — | — | — | — | — | — | — | — |
| | GEM version | — | — | — | — | — | — | — | — | — | — |
| | GEM advanced version | — | — | — | — | — | — | — | — | — | ○ |
| | GEM advanced (GEM300) version | — | — | — | — | — | — | — | — | — | — |

The following table shows the items to be converted. For items other than below, settings will be inherited from a previous version project.

| Item | Description |
|---|---|
| Settings of functions to be disabled after conversion | Settings of functions to be disabled by changing a module type are deleted. For functions to be disabled, refer to the following: 📖 Page 42 FUNCTION LIST |
| Settings of functions to be enabled after conversion | Settings of functions to be enabled by changing a module type are added. Setting values of the functions will be the same as that of when creating a new project in the setting tool. For functions to be enabled, refer to the following: 📖 Page 42 FUNCTION LIST |


Consideration for converting a project of another module type

■ Converting a Q12DCCPU-V project using the RD55UP12-V setting tool

- Device assignment settings will be initialized. Configure the settings again.
- In GEM version or GEM advanced version, when setting "msec-1," "sec-1," "min-1," or "hour-1" for the interval unit of a primary message of transaction, the unit will be changed to "msec," "sec," "min," or "hour."
- In GEM version or GEM advanced version, when the number of units of data for transaction items is 1025 bytes or more, it will be changed to 1024 bytes.

■ Converting a Q12DCCPU-V project using the RD55UP12-V (GEM advanced (GEM300) version) setting tool

- Device assignment settings will be initialized. Configure the settings again.
- In GEM version or GEM advanced version, when setting "msec-1," "sec-1," "min-1," or "hour-1" for the interval unit of a primary message of transaction, the unit will be changed to "msec," "sec," "min," or "hour."
- In GEM version or GEM advanced version, when the number of units of data for transaction items is 1025 bytes or more, it will be changed to 1024 bytes.
- When the data type of VID, SVID, ECID, RPTID, or CEID is U1, it is changed to U2.
- Variables, reports, and events for GEM advanced (GEM300) version are added. When an ID of variables, reports, and events to be added is already used, an unused ID is assigned and added at the end.
For variables for GEM advanced (GEM300) version, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

■ Converting an RD55UP06-V or RD55UP12-V project using the RD55UP12-V (GEM advanced (GEM300) version) setting tool

- When the data type of VID, SVID, ECID, RPTID, or CEID is U1, it is changed to U2.
- Variables, reports, and events for GEM advanced (GEM300) version are added. When an ID of variables, reports, and events to be added is already used, an unused ID is assigned and added at the end.
For variables for GEM advanced (GEM300) version, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Procedure for converting a project with version 1.34L or earlier

Use a setting tool with the version 1.35M or later for procedures shown below.

■Converting from a Q12DCCPU-V project to an RD55UP12-V or RD55UP12-V (GEM advanced (GEM300) version) project

1. Upgrade a project version to 1.35M or later.

Convert a project with the version 1.34L or earlier using the Q12DCCPU-V setting tool. After that, save the project.

2. Convert the project to a project of a module type to be used.

Convert the setting file in the step 1 using the RD55UP12-V setting tool.

■Converting from an RD55UP06-V project to an RD55UP12-V or RD55UP12-V (GEM advanced (GEM300) version) project

1. Upgrade a project version to 1.35M or later.

Convert a project with the version 1.34L or earlier using the RD55UP06-V setting tool. After that, save the project.

2. Convert the project to a project of a module type to be used.

Convert the setting file in the step 1 using the RD55UP12-V setting tool.

Sample transactions

A sample that collects generally used transactions is saved in the following folder during installation.

The sample can also be used for learning the usage of SECS/GEM communication software.

| Target module | Storage folder ^{*1} |
|---------------|--|
| Q12DCCPU-V | (SECS/GEM communication software installation folder)\SAMPLE\SAMPLE.XML |
| RD55UP06-V | (SECS/GEM communication software installation folder)\SAMPLE\RD55UP06-V\SAMPLE.XML |
| RD55UP12-V | (SECS/GEM communication software installation folder)\SAMPLE\RD55UP12-V\SAMPLE.XML |

^{*1} When using a setting tool with the version 1.34L or earlier, refer to the storage folder of Q12DCCPU-V.

7.2 Target Module Switching Function

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | — |
| MELSEC iQ-R series | ○ | ○ | ○ |

Select whether to start the MELSEC iQ-R series SECS/GEM communication software setting tool as the RD55UP06-V setting tool or the RD55UP12-V setting tool.

The setting can also be switched after starting up the setting tool.

A difference in specifications between target modules is as follows:

| Item | Specification for RD55UP06-V | Specification for RD55UP12-V |
|--|------------------------------|------------------------------|
| The number of available Ethernet ports | 1 port | 2 ports |

Precautions

For software versions which can use the target module switching function, refer to the following:

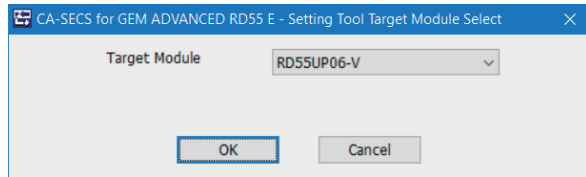
☞ Page 324 Added and Changed Functions

Selecting a target module when starting the setting tool

The following shows the screen for selecting whether to start the tool as the RD55UP06-V setting tool or the RD55UP12-V setting tool when starting the setting tool.

Window

This is displayed when starting the setting tool.



Displayed items

| Item | Description |
|-----------------|--|
| Target module | Select a module to be set in the setting tool. A module can be switched to either of the following modules: <ul style="list-style-type: none">• RD55UP06-V• RD55UP12-V• RD55UP12-V (GEM300)*1 |
| [OK] button | Click this to open the setting tool of a module selected for "Target module." |
| [Cancel] button | Click this to cancel the start of the setting tool. |

*1 To use GEM300 standard support functions, refer to the following:

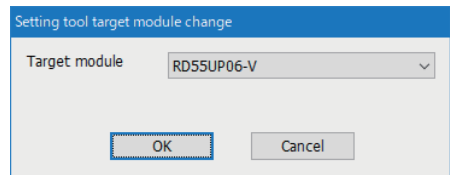
☞ SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Switching a target module after starting the setting tool

The following shows the screen for selecting RD55UP06-V or RD55UP12-V as the target module of a project to be set in the setting tool.


Window

 [File] ⇒ [Target Module Change]



Displayed items

| Item | Description |
|---------------|--|
| Target module | Select a module to be set in the setting tool. A module can be switched to either of the following modules: <ul style="list-style-type: none">• RD55UP06-V• RD55UP12-V• RD55UP12-V (GEM300)*1 |

*1 To use GEM300 standard support functions, refer to the following:
 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Precautions

When switching a module, the currently set information will be deleted and a project of the selected module will be newly created.

7.3 Programmable Controller CPU Link Function

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

A relay must be linked between the programmable controller CPU and SECS/GEM communication software when messages are transmitted.

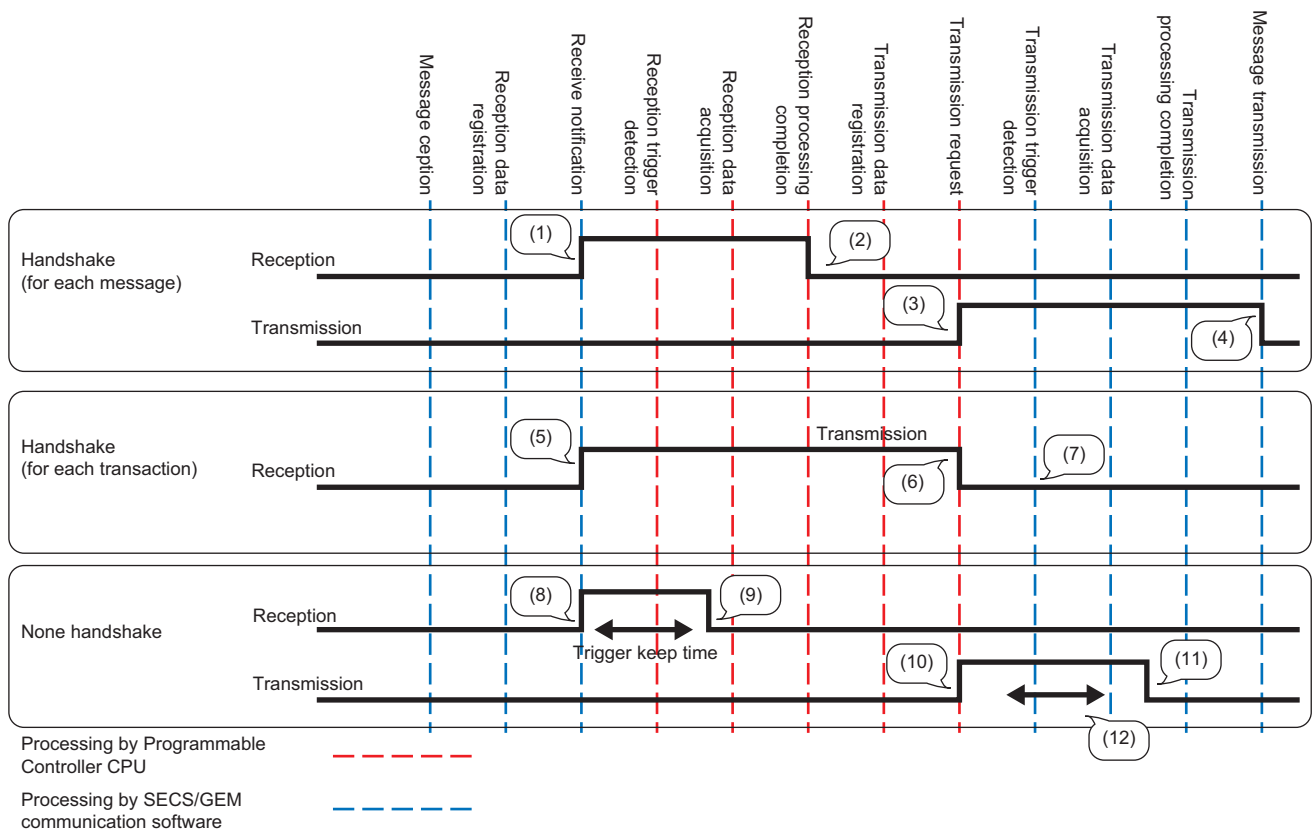
There are three methods to link the relay.

- Handshake (for each transaction)
- Handshake (for each message)
- None handshake

The following table shows the features of each method.

| Type | Handshake (for each transaction) | Handshake (for each message) | None handshake |
|---------------------------------------|--|---|---|
| Relay | <ul style="list-style-type: none"> • A same relay is used for both reception and transmission. • Number of relays used = Number of transactions | <ul style="list-style-type: none"> • Different relays are used for reception and transmission. • Number of relays used = Number of transactions × 2 | |
| Operation of relay | Primary message reception → secondary message sending: SECS/GEM communication software turns the relay ON during a reception notification, and then programmable controller turns the relay OFF during a sending request. Primary message sending → secondary message reception: The programmable controller turns the relay ON during a sending request, and then SECS/GEM communication software turns the relay OFF during a reception notification. | Reception: SECS/GEM communication software turns the relay ON, and then sends notification, and then the programmable controller turns the relay OFF. Transmission: The programmable controller CPU turns the relay ON to request the transmission and then SECS/GEM communication software turns the relay OFF. | Reception: SECS/GEM communication software turns the relay ON, and then turns it OFF after keeping the trigger for a predetermined time. Transmission: The programmable controller CPU turns the relay ON, and then turns it OFF after holding the trigger for a predetermined time. |
| Ladder programming | Processing is necessary to switch the trigger detection method ON or OFF depending on the distinction of the operations above. | A same trigger detection mechanism should be used. | A same trigger detection mechanism should be used, but the system should be programmed to turn the transmission request relay OFF after a fixed monitoring time and to prevent double detection after the receive notification detection. |
| Link with programmable controller CPU | Detectable for each transaction | Detectable for each message | |
| Feature | This mode cannot be used for S9 related messages (only primary messages) or messages subject to spooning (no secondary message during spooning) | Precise processing is available for each message. | This mode has less effect on existing ladders and is preferred for modifying existing equipment into an on-line system. |

The following diagram shows the timing to link relays in each method.

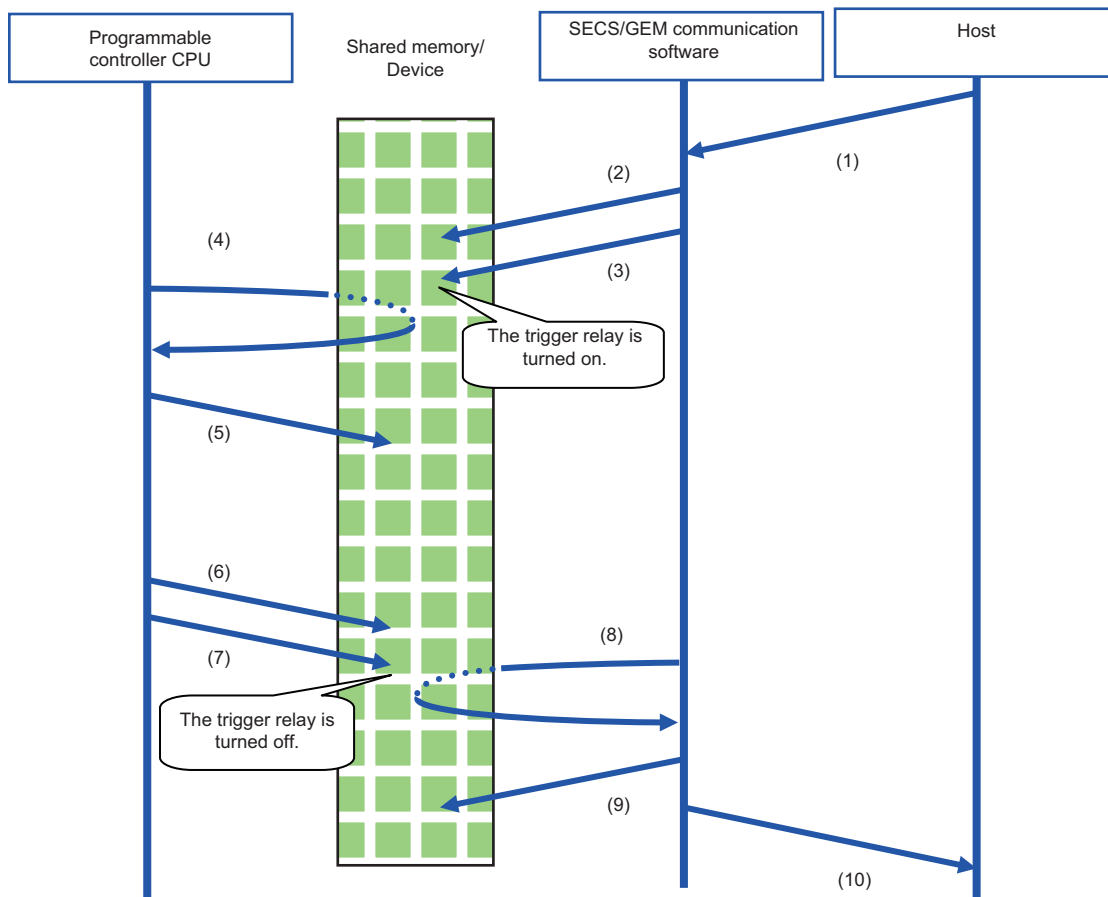


- (1) SECS/GEM communication software starts.
- (2) Programmable controller CPU turns OFF.
- (3) Programmable controller CPU starts.
- (4) SECS/GEM communication software turns off.
- (5) SECS/GEM communication software starts.
- (6) Programmable controller CPU turns OFF.
- (7) The sending request trigger is detected by the trigger relay switching OFF. *1
- (8) SECS/GEM communication software starts.
- (9) SECS/GEM communication software turns off.
- (10) Programmable controller CPU starts.
- (11) Programmable controller CPU turns OFF.
- (12) The trigger is detected when the relay remains ON for the predetermined hold time.

*1 The same sequence applies to the transaction from sending request to reception notification.

Handshake (for each transaction)

The following shows the operation flow to link trigger relays by handshakes for each transaction.
The diagram is an example of when receiving a message from the host.



- (1) A message is received from the host.
- (2) SECS/GEM communication software stores the received data in the shared memory/device.
- (3) SECS/GEM communication software turns the trigger relay ON (OFF→ON control) to inform the programmable controller CPU of the reception.
- (4) The programmable controller CPU detects the trigger relay.
- (5) After the programmable controller CPU acquires the received data in the shared memory/device, the received data is processed by a program of the programmable controller CPU. At this time, the programmable controller CPU does not turn the trigger relay OFF.
- (6) The programmable controller CPU configures the sending data to the shared memory/device.
- (7) The programmable controller CPU turns the trigger relay OFF (ON→OFF control) to request a transmission.
- (8) SECS/GEM communication software detects the trigger relay.
- (9) SECS/GEM communication software acquires the data of the item section of the sending transaction from the shared memory/device of the programmable controller CPU.
- (10) After editing the data into a SECS-II transaction message, SECS/GEM communication software transmits the message to the host.

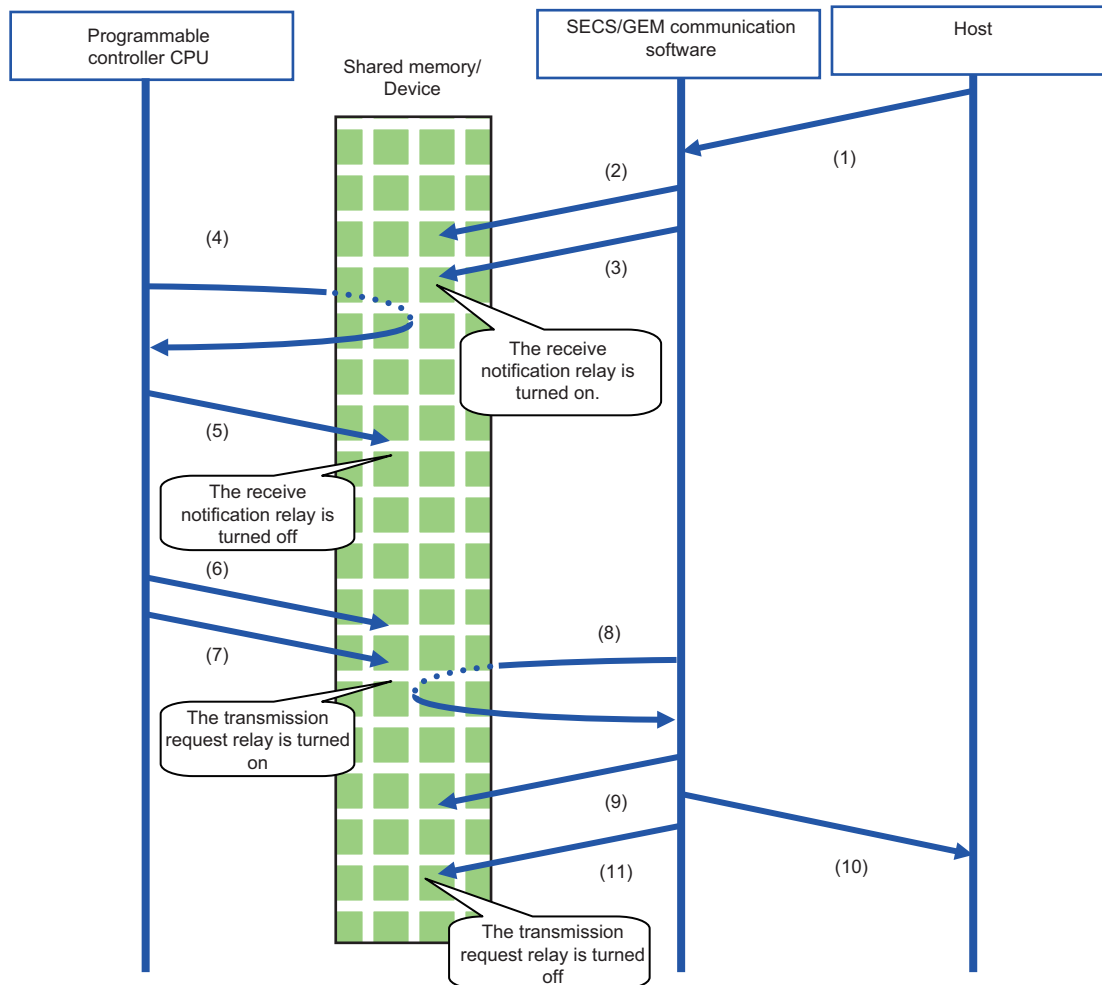
The procedure when data is sent from the programmable controller CPU is the same as above.

The programmable controller CPU stores the sending data in the shared memory/device, and then turns the trigger relay ON. During return receipt, SECS/GEM communication software stores the received data in the shared memory/device, and then switches the trigger relay OFF.

After this, the programmable controller CPU acquires the data.

Handshake (for each message)

This section shows the operation flow to link trigger relays by handshakes for each message.
The diagram is an example of when receiving a message from the host.



- (1) A message is received from the host.
- (2) SECS/GEM communication software stores the received data in the shared memory/device.
- (3) SECS/GEM communication software turns the receive notification trigger relay ON (OFF→ON control) to inform the programmable controller CPU of the reception.
- (4) The programmable controller CPU detects the receive notification trigger on state.
- (5) After the programmable controller CPU acquires the received data in the shared memory/device, it turns the reception notification trigger relay OFF, and then performs response confirmation. (ON to OFF control)
The reception data is processed by a program of the programmable controller CPU.
- (6) The programmable controller CPU configures the sending data to the shared memory/device.
- (7) The programmable controller CPU turns the transmission request trigger relay ON (OFF→ON control).
- (8) SECS/GEM communication software detects the sending request trigger.
- (9) SECS/GEM communication software acquires the data of the item section of the sending transaction from the shared memory/device of the programmable controller CPU.
- (10) After editing the data into a SECS-II transaction message, SECS/GEM communication software transmits the message to the host.
- (11) The sending request trigger relay is switched OFF. (ON to OFF control)

The procedure when data is sent from the programmable controller CPU is the same as above.

The programmable controller CPU stores the sending data in the shared memory/device, and then turns the sending request trigger relay ON.

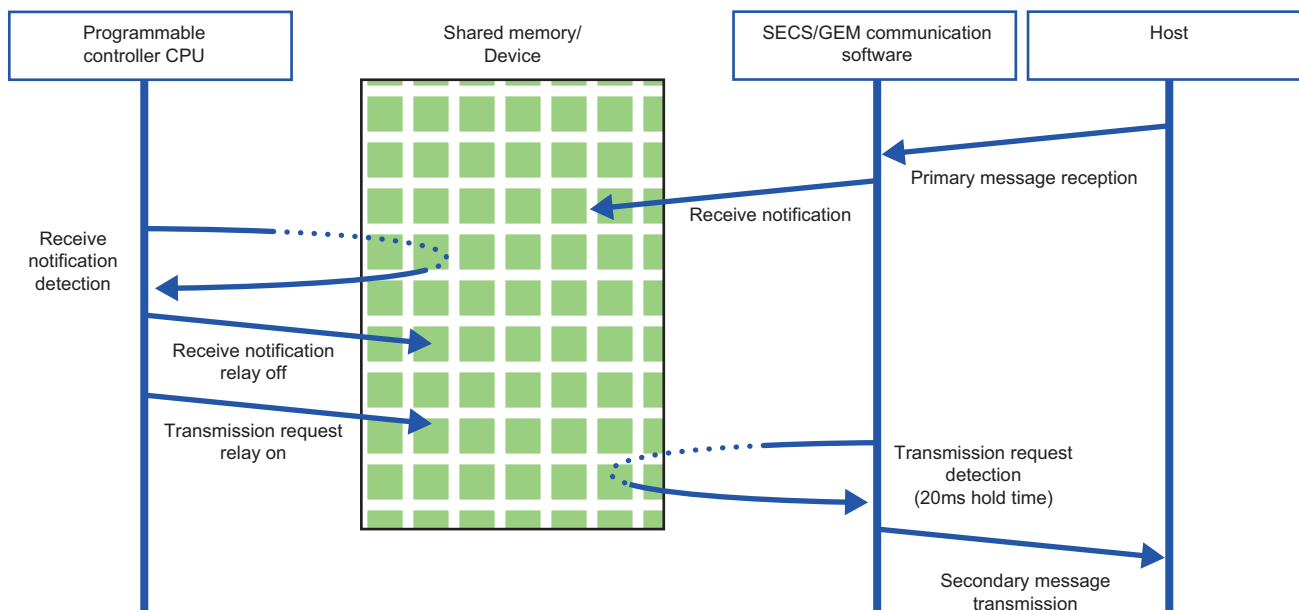
During return receipt, SECS/GEM communication software stores the received data in the shared memory/device, and then switches the reception notification trigger relay ON.

After this, the programmable controller CPU acquires the data.

Important points when configuring to Handshake (for each message)

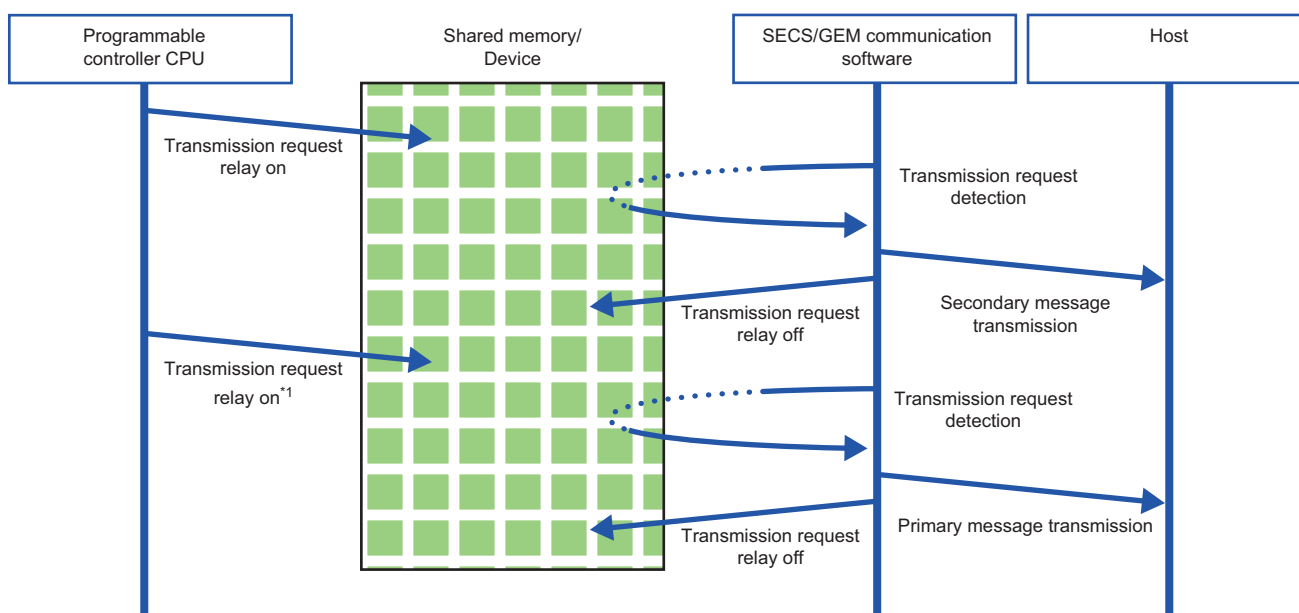
■ Reception delay

Configure a 20 ms trigger hold time in the settings of secondary message sending for transactions during primary message reception.



■ Primary message sending after secondary message sending

Make sure that the sending request trigger of the secondary message has been switched OFF by SECS/GEM communication software after the secondary message was sent and before the primary message of the next transaction is sent.



*1 Turns ON after checking that the sending request is OFF.

Handshaking operations for each message

The following shows the handshake operations when message sending was successful, unsuccessful, and canceled.

| No. | Event | Description | Operation |
|-----|--|---|---|
| 1 | Transmission completed Spooling succeeded | The message was transmitted. The spool message was spooled. | Sending request trigger relay: OFF |
| 2 | Sending failure Spooling failed | The message was not transmitted (including the message creation failure). The spool message was not spooled. | Sending request trigger relay: Not OFF Transmission failed relay: ON |
| 3 | Transmission cancelled | The transmission request was cancelled due to line disconnection or offline status. | Sending request trigger relay: OFF Transmission failed relay: ON |

When a message excluded from spooling is sent during spooling, operation depends on the communication state.

- When the communication state is Online, message sending fails.
- When the communication state is Offline or a line disconnection has occurred, sending is canceled.

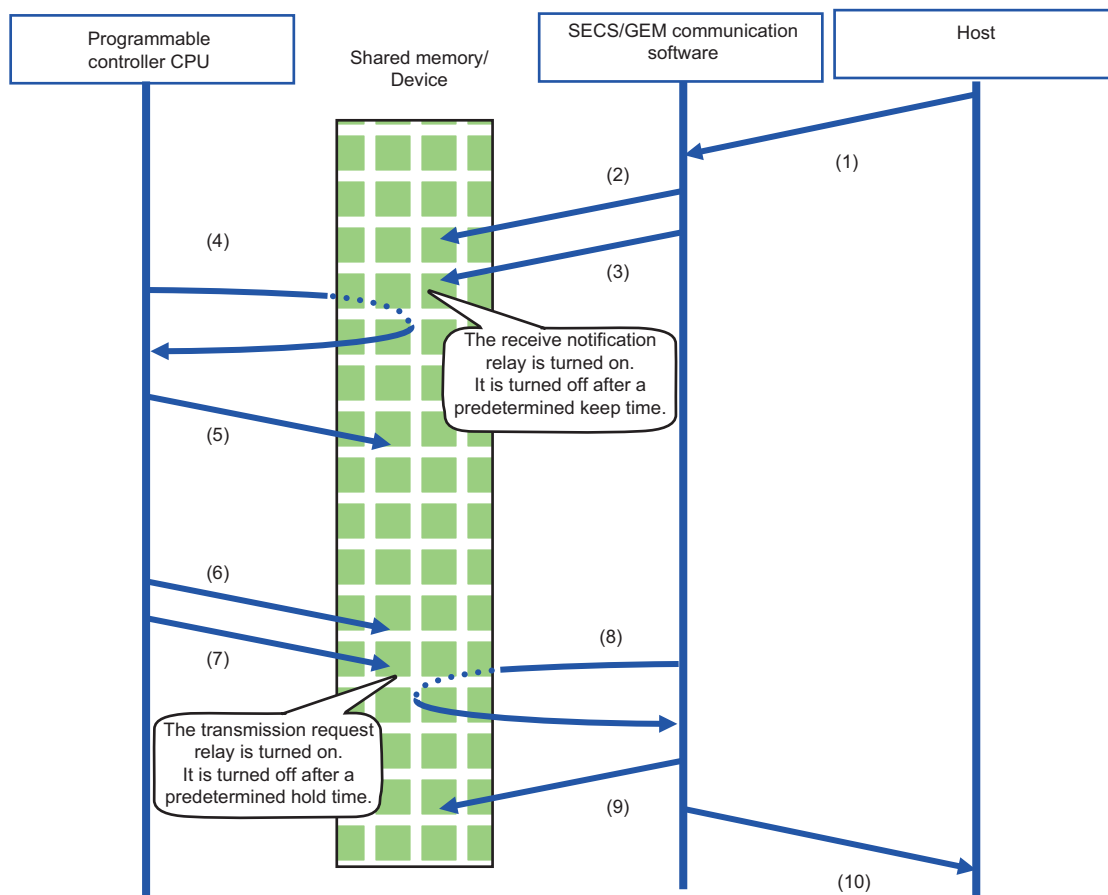
None handshake

The following shows the operation flow to send messages without using handshakes.

SECS/GEM communication software that receives a message from the host turns the trigger relay for reception notification ON and then OFF.

Similarly, the transmission request relay that is turned ON by the programmable controller CPU should be turned OFF by the programmable controller CPU itself.

The diagram is an example of when receiving a message from the host.



(1) A message is received from the host.

(2) SECS/GEM communication software stores the received data in the shared memory/device.

(3) SECS/GEM communication software turns the receive notification trigger relay ON (OFF→ON control) to inform the programmable controller CPU of the reception.

This receipt notification trigger relay will remain ON for a predetermined time and then be turned OFF by SECS/GEM communication software itself.

(4) The programmable controller CPU detects the receive notification trigger on state.

(5) After the programmable controller CPU acquires the received data in the shared memory/device, the received data is processed by a program of the programmable controller CPU.

(6) The programmable controller CPU configures the sending data to the shared memory/device.

(7) The programmable controller CPU turns the transmission request trigger relay ON (OFF→ON control).

Note that this sending request trigger relay is switched OFF by the programmable controller CPU after a prescribed hold time.

(8) SECS/GEM communication software detects the sending request trigger.

(9) SECS/GEM communication software acquires the data of the item section of the sending transaction from the shared memory/device of the programmable controller CPU.

(10) After editing the data into a SECS-II transaction message, SECS/GEM communication software transmits the message to the host.

The procedure when data is sent from the programmable controller CPU is the same as above.

Periodic message transmission to the host

Message transmission from the programmable controller CPU to the host at fixed intervals does not involve trigger handshake.

The following shows the flow:

1. The programmable controller CPU turns ON the sending request trigger relay of a message for which periodic sending is configured after sending data is stored in the shared memory/device of the programmable controller CPU.
2. SECS/GEM communication software sends periodic messages to the host while an ON status of the sending request trigger relay configured for periodic sending is detected.

If the transmission data is updated by the programmable controller CPU during periodic message transmission, subsequently the updated data will be transmitted.

3. The programmable controller CPU turns OFF the sending request trigger relay configured for periodic sending to end the cyclic message sending.

Precautions

When a secondary message was received, turn OFF the reception notification trigger relay.

Otherwise, it causes the reception queue to become full.

How to link with devices

When defining message information and item information, it is possible to use a device as a control register.

It is necessary to configure the device information in advance to link the SECS/GEM communication software pre-installed model module, programmable controller CPU, and I/O unit.

For the configuration procedure, refer to the following:

☞ Page 88 Device Assignment

7.4 Transaction List

This section explains the method for defining transactions, message information, and item information.

Transaction list display

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

The following shows the screen for displaying defined transactions in a list.

In the non-GEM version, the main screen is the "Transaction definition" screen.

For the GEM version and GEM advanced version, select the [Transaction] tab of the Main screen to switch to the "Transaction List" screen.

Window

[illegible]

Displayed items

| Display content | | Details |
|-------------------|------|--|
| Handshake | | <p>When the handshake is specified for each transaction, "T" is displayed.</p> <p>When the handshake is specified for each message, "M" is displayed.</p> <p>When the handshake is not specified, "N" is displayed.</p> |
| Primary message | SF | Displays the SF information of primary messages. |
| | Snd. | <p>Displays the sending request trigger relay of primary messages.</p> <p>When there is no setting, "×" is displayed.</p> <p>In the case of a reserve transaction, "-" is displayed.</p> |
| | Rcv. | <p>Displays the reception notification trigger relay of primary messages.</p> <p>When there is no setting, "×" is displayed.</p> <p>In the case of a reserve transaction, "-" is displayed.</p> |
| Secondary message | SF | Display the SF information of secondary messages. |
| | Snd. | <p>Display the sending request trigger relay of secondary messages.</p> <p>When there is no setting, "×" is displayed.</p> <p>When the handshake is specified for each transaction or a reserve transaction, "-" is displayed.</p> |
| | Rcv. | <p>Display the reception notification trigger relay of secondary messages.</p> <p>When there is no setting, "×" is displayed.</p> <p>When the handshake is specified for each transaction or a reserve transaction, "-" is displayed.</p> |
| Cyclic | | <p>When the interval is specified, the interval value is displayed in units of ms.</p> <p>When the interval storage register is specified, the assigned register is displayed.</p> <p>When there is no cyclic sending, "×" is displayed.</p> |

Operations of transaction list

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the Scenario Explorer screen to edit the content of the selected transaction. |
| Right-click ⇒ shortcut menu [Insert] | Insert a new transaction. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected transaction, and then copy the copied transaction to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected transaction. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected transaction. |

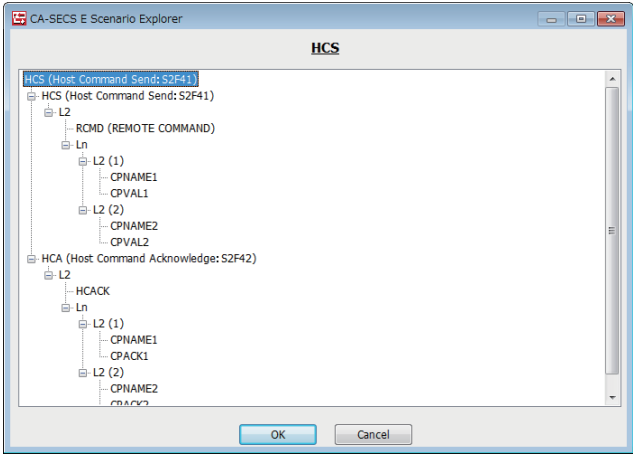
Display of transaction data

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for displaying the message (primary/secondary) information and item information that belong to transactions.

Window

Select a transaction from the transaction list, right-click ⇒ shortcut menu [Modify]



7

Operations of the "Scenario Explorer" screen

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Property] | Edit the content of the selected transaction, message, or item. |
| Right-click ⇒ shortcut menu [Insert Child] | Add the new item data to the level below the selected data. |
| Right-click ⇒ shortcut menu [Insert Sibling Before] | Add the new item data to the same level as the selected data. |
| Right-click ⇒ shortcut menu [Insert Sibling After] | |
| Right-click ⇒ shortcut menu [Copy] | Copy the selected message/item. |
| Right-click ⇒ shortcut menu [Paste] | Paste the copied data to the position of the selected data. |
| Right-click ⇒ shortcut menu [Paste Insert Child] | Paste the copied data to the level below the selected data. |
| Right-click ⇒ shortcut menu [Paste Insert Sibling Before] | Paste the copied data to the same level as the selected data. |
| Right-click ⇒ shortcut menu [Paste Insert Sibling After] | |
| Right-click ⇒ shortcut menu [Import] | Import the content of the selected message to a .csv file. Data is overwritten by the content to be imported, so take care if the item has already been defined. |
| Right-click ⇒ shortcut menu [Export] | Export the content of the selected message to a .csv file. |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected data. |

Point


The message import/export function is for editing data using Microsoft Excel or another external editor when the item data is voluminous or redundant.
By defining some data items and exporting them to a CSV format file, the content of the item definitions can be checked and edited using an external editor. Make sure to import the edited results.

Editing of transaction information definitions

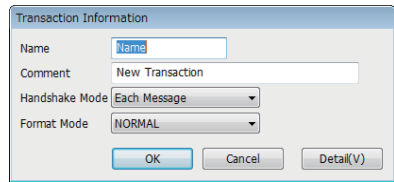
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for editing transaction information definitions.

Window

 Select a transaction in the "Scenario Explorer" screen, right-click ⇒ shortcut menu [Property]

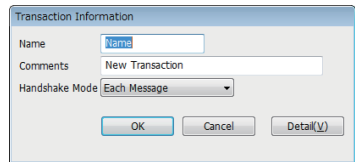
■Non-GEM version



The dialog box titled "Transaction Information" contains the following fields and controls:

- Name:** A text input field with the placeholder text "Name".
- Comment:** A text input field with the placeholder text "New Transaction".
- Handshake Mode:** A dropdown menu currently set to "Each Message".
- Format Mode:** A dropdown menu currently set to "NORMAL".
- Buttons:** "OK", "Cancel", and "Detail(V)" buttons at the bottom.




■GEM / GEM advanced version



The dialog box titled "Transaction Information" contains the following fields and controls:

- Name:** A text input field with the placeholder text "Name".
- Comments:** A text input field with the placeholder text "New Transaction".
- Handshake Mode:** A dropdown menu currently set to "Each Message".
- Buttons:** "OK", "Cancel", and "Detail(V)" buttons at the bottom.

Displayed items

| Item | Description |
|---------------------------|--|
| Name | Configure the transaction name. (.),", <, >, ', and & cannot be used. |
| Comments | Configure the comment. ", <, >, ', and & cannot be used. |
| Handshake Mode | Specify the trigger handshake method. For details on trigger handshakes, refer to the following:  Page 59 Programmable Controller CPU Link Function |
| Format Mode ^{*1} | Specify the format. For details on formats, refer to the following:  Page 72 Format specification |
| [Detail] button | Displays the cache setting screen. For details on cache settings, refer to the following:  Page 71 Cache settings |

^{*1} Appears in the non-GEM version only.


Point

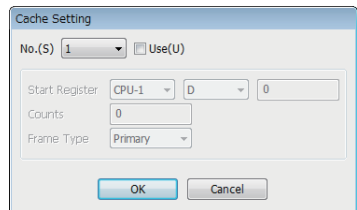
When defining a transaction with the same Stream-Function number but a different message configuration, it can be defined by distinguishing the transaction name.

Cache settings

The following explains the cache settings.
Configure cache when using a large volume of registers, which are defined by CA-SECS device assignment (I/O assignment), for item data.

Window

 [Transaction Information] screen ⇄ [Detail]



The 'Cache Setting' dialog box contains the following fields and controls:

- No.(S)**: A dropdown menu with the value '1' selected.
- Use(U)**: A checkbox that is currently checked.
- Start Register**: A dropdown menu with 'CPU-1' selected, followed by a dropdown with 'D' selected, and a text box containing '0'.
- Counts**: A text box containing '0'.
- Frame Type**: A dropdown menu with 'Primary' selected.
- Buttons**: 'OK' and 'Cancel' buttons at the bottom.

Displayed items

| Item | Description |
|----------------|--|
| No. | Select the setting number by Handshake (for each transaction). |
| Use | Select this checkbox to use cache settings. |
| Start Register | Configure the first register to be used. |
| Counts | Configure the quantity of registers to be used. |
| Frame Type | Select the frame to use the cache settings (primary message / secondary message / both). |

Point

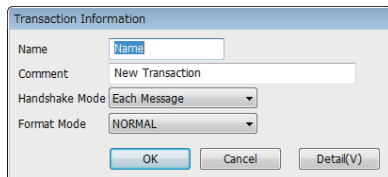
Up to 20 KB can be configured for one cache setting.
Up to 10240 registers can be configured at 20 KB. Up to 2048 shared memory units can be configured at 20 KB.
To obtain maximal performance, edit the related data in the continuous region so that the register range to be registered by the cache setting is reduced as low as possible.

Format specification

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |

The following shows the screen for sending a reserved transaction frame or special transaction frame configured for SECS/GEM communication software using an arbitrary frame.

Window



The image shows a 'Transaction Information' dialog box. It contains the following fields and controls:

- Name:** A text input field with the value 'Name'.
- Comment:** A text input field with the value 'New Transaction'.
- Handshake Mode:** A dropdown menu currently showing 'Each Message'.
- Format Mode:** A dropdown menu currently showing 'NORMAL'.
- Buttons:** 'OK', 'Cancel', and 'Detail(V)'.

For details on reserved transactions, refer to the following:

☞ Page 312 List of reserved transactions and format

For details on special transactions, refer to the following:

☞ Page 313 Special transactions

This section shows the settings that can be selected from the format mode.

| Setting | Description |
|---------|--|
| NORMAL | Run the action of the general transaction message. |
| ALARM | <ul style="list-style-type: none"> • Send this specification message in place of S5F1 of automatic sending. • By selecting ALARM, it is possible to specify ALCD/ALID/ALTX for the storage destination type of items. • Because sending is performed automatically by the alarm function, the sending request trigger relay and reception notification trigger relay cannot be configured. <p>For details on alarms, refer to the following:</p> <p>☞ Page 129 Alarm Definition (non-GEM version)</p> |
| OFFLINE | Specify for using an arbitrary message as an offline notification. This setting message can be sent by preference due to transition to offline. |



Use messages configured to "ALARM" and "OFFLINE" for primary messages of equipment origin. "ALARM" and "OFFLINE" can be specified only for a single message each for all transaction definitions.

Message information

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for editing the message information.

Window

Select a message in the "Scenario Explorer" screen, right-click ⇒ shortcut menu [Property]

Primary Message Information

Name

PrimaryMsn

Comment

Primary Message

Stream

1

Function

1

☒ Response Monitoring(W)

☒ Transmission Request Trigger(S)

Control Register

CPU-1

M

0

Trigger Hold Time[msec]

0

☒ Disable(T)

☐ Cyclic Transmission(C)

Interval Unit

msec

Interval(I)

1000

☐ Control Register(R)

CPU-1

D

0

☐ Response Message Monitoring Setting(M)

T9 Timer[sec]

60

Response Message

UDN (S9:F1)

☐ Receive Notification Trigger(R)

Control Register

CPU-1

M

0

Trigger Keep Time[msec]

10

☐ Auto Reply(A)

OK

Cancel

Secondary Message Information

Name

SecondaryMsn

Comments

Secondary Message

Stream

1

Function

2

☐ Transmission Request Trigger(S)

Control Register

CPU-1

M

0

Trigger Hold Time[msec]

20

☐ Disable(T)

☐ Receive Notification Trigger(R)

Control Register

CPU-1

M

0

Trigger Keep Time[msec]

10

OK

Cancel

Displayed items

| Item | | Description |
|------------------------------|---|---|
| Name | | Configure the message name. |
| Comments | | Configure the comment. |
| Stream | | Select a stream (SECS message section: 1 to 127). |
| Function | | Select a function (designated message within stream: 1 to 255). |
| Response Monitoring | | <p>Select this checkbox to monitor the secondary message response corresponding to the primary message sending.</p> <p>When a primary message is sent from SECS/GEM communication software, the wait bit (W bit) of the primary message is configured to ON, which indicates that there must be a secondary message to the other party.</p> |
| Transmission Request Trigger | — | Select this checkbox to send a message by a trigger notification from the programmable controller CPU. |
| | Control Register | Configure the sending request trigger relay. |
| | Trigger Hold Time | <p>A sending request trigger results when the sending request trigger relay was held for the configured time.</p> <p>If the "Disable" checkbox is selected, sending request trigger processing is carried out without hold monitoring.</p> |
| | Cyclic Transmission ^{*1} | — |
| | | Interval Unit |
| | | Interval |
| | | Control Register |
| | Response Message Monitoring Setting ^{*1} | — |
| | | T9 Timer |
| | | Response Message |
| Receive Notification Trigger | — | <p>Select this checkbox to report the receipt of a message to the programmable controller CPU.</p> <p>A trigger notification is sent to the programmable controller CPU at message reception.</p> |
| | Control Register | Configure the relay to be the reception notification trigger. |
| | Trigger Keep Time | <p>Fill this field when "None Handshake" was selected for "Handshake Mode" in the "Transaction Information" screen.</p> <p>After the reception notification trigger relay is held for the specified time, control switches OFF automatically.</p> |
| | Auto Reply ^{*1} | <p>Select this checkbox to return a response message without waiting for a response from the programmable controller CPU after message receipt.</p> <p>A reception notification handshake is required even for an automatic response.</p> |

^{*1} Displayed only by the "Primary message information" screen.

Interval unit and configuration range

The following table shows the configurable range of each interval unit.

| Interval unit | | Setting range | |
|--------------------|-------------|------------------|----------------|
| | | Fixed Value | Registers Used |
| msec ^{*1} | millisecond | 1000 to 86400000 | 1000 to 65535 |
| sec ^{*1} | Second | 1 to 86400 | 1 to 65535 |
| min ^{*1} | Minute | 1 to 1440 | 1 to 1440 |
| hour ^{*1} | Time | 1 to 24 | 1 to 24 |

*1 In addition to the units described above, MELSEC-Q series setting tools with GEM version and GEM advanced version can set "msec-1," "sec-1," "min-1," and "hour-1." These units do not perform the first cyclic sending.

Precautions

■T9 timer monitor setting of message information

When an error has occurred due to T9 timer monitoring, a T9 timer timeout notification is sent using the trigger relay from SECS/GEM communication software.

For details on SECS error notifications, refer to the following:

📖 Page 119 SECS error notification setting

When it is necessary to notify the host of a T9 timer occurrence by S9F13, a new transaction must be defined by the user.

For details on S9F13, refer to the following:

📖 Page 314 System error (S9Fx)

A primary receipt message is necessary for T9 monitoring. Always configure the reception notification trigger for this primary receipt message.

■When the reception notification trigger is ON

The following events occur.


| Item | Description |
|----------------------|--|
| S9 and F3 occurrence | S9 and F3 occur when there is no other definition configured that has the same stream as the message. S9 and F3 also occur when no reception notification trigger has been configured. |
| S9 and F5 occurrence | S9 and F5 occur when there is one receipt definition or more with the same stream as the corresponding message, and there is no definition that has the same transaction. S9 and F3 also occur when no reception notification trigger has been configured. |
| Abort Return | Abort return occurs when there is one reception definition or more that has the same stream and function as the corresponding message. In such a case, an error log indicating that the reception notification trigger was not configured is output to the SECS log for primary messages. While the operation ends normally without issuing any notifications for secondary messages, data is not stored in the register. |

Item information

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for editing the item information.

Window

 Select an item in the "Scenario Explorer" screen, right-click ⇒ shortcut menu [Property]

Item Information

Name

Item

Comments

Item

Data Type

LIST

☐ Variable Length(V)

Data Counts

1

☒ Control Register Setting(R)

Control Register

CPU-1

D

0

Data Type

No Convert

☒ No Setting(N)

Extension Setting

☐ Select List(L)

☒ Select Register(E)

CPU-1

D

0

☐ Select Key Item(K)

☒ Repeat Define List(D)

Repeat Item Number

0




Repeat Offset

0

OK

Cancel

Displayed items

| Item | Description |
|-----------------|--|
| Name | Configure the item name. |
| Comments | Configure the comment. |
| Data Type | Select the item format code. For details, refer to the following:  Page 79 Data types (item format codes) To specify an item structure under the item, specify "LIST". |
| Variable Length | Select this checkbox to configure the data count to a variable length. For details, refer to the following:  Page 80 Variable length |
| Data Counts | Configure the number of items of data to be sent/received. When ASCII or JIS-8 is configured for the data type, configure the character count for this item. When DCHAR was set for the data type, configure the character count in units of two bytes for this item. For details on the number of units of data that can be set, refer to the following:  Page 79 Data types (item format codes) |

| Item | | Description |
|--------------------|--------------------|---|
| Control Register | — | <p>Select when a control register will be used for transmission.</p> <ul style="list-style-type: none"> • During sending: Refers to the control register value, and then sends it as item data. • During receipt: Refers to the value of the received item data, and then writes it to the prescribed control register. |
| | Control Register | Configure the control register. |
| | Data Type | <p>The data format can be changed during reception and sending by configuring the "Data Type" of the control register.</p> <p>For details of data type conversion, refer to the following:</p> <p>☞ Page 305 Data Type Conversion</p> <p>By configuring the conversion table settings in advance, a processing to convert register values can be selected in accordance with item values.</p> <p>For details of conversion tables, refer to the following:</p> <p>☞ Page 156 Conversion Table Setting</p> <p>ALCD/ALID/ALTJ/AlarmItem1 to 4 can be configured for "Data Type" when "ALARM" has been selected for "Format Mode" in the "Transaction Information" screen. *1</p> <p>For details on the alarm function, refer to the following:</p> <p>☞ Page 129 Alarm Definition (non-GEM version)</p> |
| Fixed Value*2 | | <p>Select this checkbox to configure the content of sending data to a fixed value, and then configure the value.</p> <p>Up to 30000 alphanumeric characters can be entered for "Fixed Value."</p> |
| No Setting*3 | | <p>Select this checkbox if the list quantity is determined by the item data structure.</p> <p>In case of a variable, register the list quantity to the control register.</p> |
| Select List | — | <p>Select this checkbox to set as the parent list of the select list function.</p> <p>This item can be set when "LIST" is selected for "Data Type", and the "Variable Length" checkbox has been selected.</p> <p>In the items defined, only items specified by the programmable controller CPU can be sent.</p> <p>In case of reception, items can be saved to the specified register by specifying the key items.</p> |
| | Select Register | <p>Configure the select register of the select list function.</p> <ul style="list-style-type: none"> • During sending <p>From the programmable controller CPU, configure to 1 to enable and 0 to disable.</p> <p>When a relay device was specified, configure the relay to ON to enable this item and to OFF to disable this item.</p> <ul style="list-style-type: none"> • During reception <p>From SECS/GEM communication software, configure to 1 if the received data is valid or 0 if it is invalid in comparison with the Select Key Item.</p> <p>When a relay device was specified, configure the relay to ON or OFF when the reception data is valid or invalid.</p> |
| | Select Key Item | Select this checkbox to set this item as the key item of the select list function of the reception message. |
| Repeat Define List | — | <p>Select this checkbox to set as the parent list of the repeat define list function.</p> <p>The setting can be simplified in case of a configuration that repeats the same elements.</p> |
| | Repeat Item Number | Configure the maximum element quantity of the Repeat Define List function. |
| | Register Offset | Configure the offset of the register No. of the repeat define list function. |

*1 Supported by the non-GEM version only.

*2 Displayed when an option other than "LIST" has been selected for "Data Type".

*3 Displayed when "LIST" has been selected for "Data Type".

Precautions

- When the "Select Key Item" checkbox was selected, configure so that the value configured for "Fixed Value" does not overlap with other key items.
- In the case of two or more data sets, the continuous range of the data quantity amount from the specified control register is subject. Make sure not to overlap with any control register specified in other item information.
- When sending an ASCII character string, the specified control register is referenced from the start address. If there is a NULL character midway, a character string from the start point to the NULL character is sent. If the character string is shorter than the specified number of characters to be sent, a NULL character or a space character is inserted into the string depending on the type of terminator defined in the option settings.
- When an ASCII character string was received, the character string is registered to the control register, and then finally a NULL character is registered. The following figure shows when the data quantity setting is even or odd.

String [ABCDEF] when (data quantity is 6 (even)) has been received (Control register is configured at D1000)

| | | | |
|-------|-------|-------|-------|
| B A | D C | F E | |
| 4241 | 4443 | 4645 | 0000 |
| D1000 | D1001 | D1002 | D1003 |

NULL

String [ABCDE] when (data quantity is 5 (odd)) has been received (Control register is configured at D1000)

| | | |
|-------|-------|-------|
| B A | D C | E |
| 4241 | 4443 | 0045 |
| D1000 | D1001 | D1002 |

NULL


Data types (item format codes)

| Item | Description | Number of units of available data | | | |
|-------|------------------------------|-----------------------------------|-----------------------------------|--|-----------------------------------|
| | | MELSEC-Q series | | MELSEC iQ-R series | |
| | | Non-GEM version | GEM version, GEM advanced version | Non-GEM version (version 1.28E or later) ^{*1} | GEM version, GEM advanced version |
| LIST | List (length of elements) | No need to specify ^{*2} | No need to specify ^{*2} | No need to specify ^{*2} | No need to specify ^{*2} |
| BIN | Binary | 0 to 1024 | 0 to 32000 | 0 to 262144 | 0 to 1024 |
| BOOL | Truth value | 0 to 1024 | 0 to 32000 | 0 to 262144 | 0 to 1024 |
| ASCII | ASCII | 0 to 1024 | 0 to 32000 | 0 to 262144 | 0 to 1024 |
| JIS8 | JIS8 | 0 to 1024 | 0 to 16000 | 0 to 262144 | 0 to 512 |
| DCHAR | ASCII | 0 to 1024 | 0 to 16000 | 0 to 131072 | 0 to 512 |
| I1 | 1-byte integer (signed) | 0 to 1024 | 0 to 32000 | 0 to 262144 | 0 to 1024 |
| I2 | 2-byte integer (signed) | 0 to 1024 | 0 to 16000 | 0 to 131072 | 0 to 512 |
| I4 | 4-byte integer (signed) | 0 to 1024 | 0 to 8000 | 0 to 65536 | 0 to 256 |
| U1 | 1-byte integer (unsigned) | 0 to 1024 | 0 to 32000 | 0 to 262144 | 0 to 1024 |
| U2 | 2-byte integer (unsigned) | 0 to 1024 | 0 to 16000 | 0 to 131072 | 0 to 512 |
| U4 | 4-byte integer (unsigned) | 0 to 1024 | 0 to 8000 | 0 to 65536 | 0 to 256 |
| F4 | 4-byte floating-point number | 0 to 1024 | 0 to 8000 | 0 to 65536 | 0 to 256 |
| F8 | 8-byte floating-point number | 0 to 1024 | 0 to 4000 | 0 to 32768 | 0 to 128 |

*1 When using version 1.27D or earlier, the number of units of available data is the same as that of non-GEM version of MELSEC-Q series.

*2 When "LIST" is selected for "Data Type," the number of units of data is automatically determined based on the setting of the element in the list.

For details, refer to the following:

 Page 80 Variable length

Variable length

The following shows the details on the variable length setting for each selected data type.

■"LIST" is selected

The following table shows the operations when "LIST" is selected for "Data Type" and the checkbox of "Variable Length" is selected:

| Message type | Operation |
|-------------------|---|
| Sending message | Refers to the control register, and then determines the list quantity. Example: When the list structure was defined by 10 items by the message definition, and the value of the register referenced for the list quantity is "6" during sending, data of 6 items is sent. |
| Reception message | Registers the quantity of the received item data to the control register. Example: When the list structure was defined by 10 items by the message definition, and data of 7 items was received during reception, "7" is registered to the control register. |

■An item other than "LIST" is selected

When an item other than "LIST"*1 is selected for "Data Type" and the checkbox of "Variable Length" is selected, two methods are available to specify the number of units of data: compatibility mode and extended mode.

*1 Excluding ASCII and JIS8.

Specify the number of units of data in the extended mode when sending items with 65535 or more units of data.

The compatibility mode and extended mode are automatically switched according to the number of units of data in a received item at the time of receiving.

The following table shows the methods for specifying the number of units of data in the compatibility mode and extended mode.

| Item | Compatibility mode | Extended mode |
|---|--|---|
| Number of words in the start area of a control register | 1 word | 3 words |
| Contents stored in the start area of a control register | Number of units of data to send and receive (1 word) | Identifier (65535 (0xFFFF)) (1 word) Number of units of data to send and receive (2 words) |
| Number of units of data when sending an item*2 | 0 to 65534 (0x0000 to 0xFFFE) | 0 to 262144 (0x00000000 to 0x00040000) |
| Number of units of data when receiving an item*2 | 0 to 65534 (0x0000 to 0xFFFE) | 65535 to 262144 (0x0000FFFF to 0x00040000) |

*2 The upper limit of the number of units of data that can be sent and received differs depending on the data type.

For details, refer to the following:

☞ Page 79 Data types (item format codes)

■Compatibility mode (when the start value of the control register is 0 to 65534)

Ex.

Data type: U2 (2-byte integer (unsigned))

Control register: D0

Value of D0: 3 (0x0003)

Data to send and receive: 0x0123, 0x4567, 0x89AB (3 words)

| | | |
|----|--------|-----|
| D0 | 0x0003 | (1) |
| D1 | 0x0123 | (2) |
| D2 | 0x4567 | |
| D3 | 0x89AB | |
| ⋮ | ⋮ | |

(1) Number of units of data to send and receive

(2) Data to send and receive

■Extended mode (when the start value of the control register is 65535)

Ex.

Data type: U2 (2-byte integer (unsigned))

Control register: D0

Value of D0: 65535 (0xFFFF)

Data to send and receive: 0x0123, 0x4567, 0x89AB, ...0x89AB (131072 words)

| | | |
|---------|--------|-----|
| D0 | 0xFFFF | (1) |
| D1 | 0x0000 | (2) |
| D2 | 0x0002 | |
| D3 | 0x0123 | (3) |
| D4 | 0x4567 | |
| D5 | 0x89AB | |
| ⋮ | ⋮ | |
| D131074 | 0x89AB | |

(1) Identifier

(2) Number of units of data to send and receive

(3) Data to send and receive

Special data type conversion

When the data type is configured to "ASCII" in the sending message setting, [DATE-A], [DATE-Q], [TIME16], [TIME14], [TIME12], and/or conversion table (when defined) options will be available.

The [DATE-A] and [DATE-Q] are used when the item data is ASCII time data.

For reception data, ASCII time data is converted to numerical time data and registered to a specified register. For sending data, the register is referenced, and then the data is converted to ASCII time data and sent.

For details of data type conversion, refer to the following:

☞ Page 305 Data Type Conversion

[TIME16], [TIME14], and [TIME12] are used to configure and send the calendar data held by the SECS/GEM communication software pre-installed model module to the item data.

- [TIME16]: 16-byte format (YYYYMMDDhhmmsscc)
- [TIME14]: 14-byte format (YYYYMMDDhhmmss)
- [TIME12]: 12-byte format (YYMMDDhhmmss)

If conversion of these data types was specified by the reception frame, the time of the SECS/GEM communication software pre-installed model module is overwritten. It is not registered to a register.

Message structure of the SECS/GEM communication software pre-installed model module

Calculate the byte length of the actual item data, and then configure the maximum length of the message using up to 5 MB as reference.

The maximum number of items within one message is 3000.

| Item | Description |
|---------------------|--|
| Transmission buffer | Messages of up to 5 MB can be transmitted. The transmission buffer may be exceeded depending on the communication status. |
| Log Output | Messages of up to 5 MB can be logged. However, this is exceeded during logging of another message, and only the header is logged. |

If too much data is transmitted, SECS/GEM communication software operates in the following manner.

| Operation | Description |
|--|--|
| Many transactions that have large messages have been defined. | The CIM control READY relay does not switch ON. (SECS/GEM communication software does not start) |
| An excessive message was sent. | Sending fails. |
| A primary message that became an excessive message was received. | An abort message is returned, and there is no writing to the prescribed register. (S9F11) |
| A secondary message that became an excessive message was received. | Abort reception is reported, and there is no writing to the prescribed register. |

7.5 Communication Setting

This section shows the method for configuring the communication method.

SECS communication configuration

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for configuring the SECS communication method, various timer times, and other parameters.

Window

 [Setting] ⇒ [Communication Setting]

Communication Setting

Port Type

HSMS

Device ID

1

SECS-1

Serial Port

COM1

Master/Slave

Master

Baud Rate[bps]

9600

Number Of Retries

3

Serial Setting

Data Length

B8

Parity

None

Stop Bit

S1

Flow Control

None

Timer Setting

T1 [sec]

0.5

T2 [sec]

10.0

T3 [sec]

45

T4 [sec]

45

HSMS

Active/Passive

Active

IP Address(Local)

0 . 0 . 0 . 0

IP Address(Remote)

0 . 0 . 0 . 0

IP Port(Local)

0

IP Port(Remote)

0

Timer Setting

Link Test Timer[sec]

60

T3 [sec]

45

T5 [sec]

10

T6 [sec]

5

T7 [sec]

10

T8 [sec]

5

OK

Cancel

Displayed items

| Item | | Description | |
|-----------|---------------------|--|---|
| Port Type | | Select the communication method used for SECS communication (SECS1 ^{*1} /HSMS). | |
| Device ID | | Configure the device ID of SECS/GEM communication software. | |
| SECS-I | Serial Port | Select the COM port number used for SECS communication. (COM1 only.) | |
| | Master/Slave | Select the master or slave of serial communication. | |
| | Baud Rate | Select the communication speed of the RS-232C port. | |
| | Number Of Retries | Select the number of retries when data sending fails. | |
| | Serial Setting | Data Length | Select the length of one data item. |
| | | Parity | Select the parity check method. |
| | | Stop Bit | Select the stop bit. |
| | | Flow Control | Select the handshake method. |
| | Timer Setting | T1 | Select the timeout time between reception characters. |
| | | T2 | Select the protocol timeout time. |
| | | T3 | Select the response timeout time. |
| | | T4 | Select the inter-block timeout time. |
| HSMS | Active/Passive | Select an HSMS connection method from Passive (wait to receive a connection procedure) or Active (initiate a connection procedure with the destination). | |
| | IP Address (Local) | Configure the IP address of SECS/GEM communication software used for HSMS communication. | |
| | IP Address (Remote) | Configure the IP address of the connection destination used for HSMS communication. | |
| | IP Port (Local) | Configure the port number of SECS/GEM communication software used for HSMS communication. | |
| | IP Port (Remote) | Configure the port number of the connection destination used for HSMS communication. | |
| | Timer Setting | Link Test Timer | Configure the fixed interval at which the destination link test is performed. |
| | | T3 | Select the response timeout time. |
| | | T5 | Select the connection separation timeout time. |
| | | T6 | Select the control transaction timeout time. |
| | | T7 | Select the Not Selected timeout time. |
| T8 | | Select the timeout time between network characters. | |

*1 Can be selected for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

Precautions


- If it is necessary to send a multi-block permission frame to the host when sending multiple blocks with SECS-I communication, define the transaction separately, and then carry out sending processing.
- The "T5" setting of HSMS communication is synchronized with the Reconnection delay after Line Disconnection setting of the [Control] tab of the option settings.

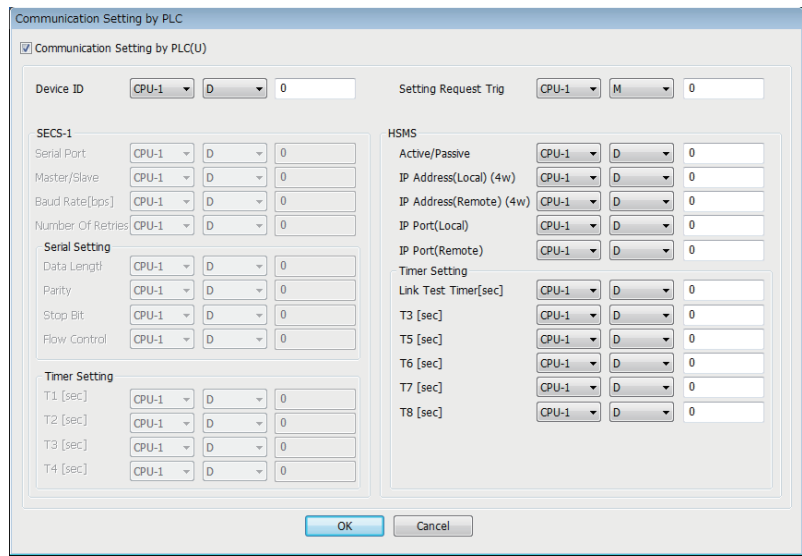
Communication setting by PLC

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



The following shows the screen for changing the communication setting by the value acquired from the register.
The parameters of the communication method selected by "Port type" of the "Communication settings" screen can be configured.

Window

 [Setting] ⇨ [Communication Setting By PLC]



Displayed items

| Item | Description |
|------------------------------|---|
| Communication Setting by PLC | Select this checkbox to change communication settings from a ladder program. |
| Device ID | Configure the reference-destination register of the device ID value to be changed. The Device ID parameter is necessary for both SECS-I and HSMS. |
| Setting Request Trig | Configure the trigger relay to apply setting information. The trigger is turned ON by a programmable controller CPU, and turned OFF by SECS/GEM communication software. |
| SECS-I | Configure the reference-destination register of the parameter value. For the value to be stored to the register, refer to the following:  Page 86 SECS-I configuration |
| HSMS | Configure the reference-destination register of the parameter value. For the value to be stored to the register, refer to the following:  Page 87 HSMS settings |

Operating procedure

1. Start SECS/GEM communication software.

During start-up, the current setting values of SECS/GEM communication software are applied to the register.

2. The register value is changed by a programmable controller CPU, and the setting trigger is turned ON.

The setting value of SECS/GEM communication software is changed by the register value, and the setting trigger is turned OFF by SECS/GEM communication software.

When an invalid value has been configured to the register, the register value returns to the value before the change.

3. Reset the programmable controller CPU.

Precautions

Configure register settings on the programmable controller CPU management side or the CA-SECS device assignment (I/O assignment) section.

SECS-I configuration

The following shows SECS-I parameter values stored to a register by a programmable controller CPU.

| Item | | Setting value |
|----------------------|-------------------|---|
| Device ID | | 0 to 32767 |
| Setting Request Trig | | Trigger relay to apply setting information. |
| SECS-I | Serial Port | "1" only. |
| | Master/Slave | • 0: Master • 1: Slave |
| | Baud rate [bps] | 9600, 14400, 19200, 38400, 57600, and 115200 only (Only 2 consecutive registers are used.) |
| | Number Of Retries | 0 to 31 |
| | Serial Setting | Data Length |
| | | • 7: B7 • 8: B8 |
| | | Parity |
| | | • 0: PN • 1: P0 • 2: PE |
| | | Stop Bit |
| | | • 1: S1 • 2: S2 |
| | | Flow Control |
| | | • 0: NON • 1: XON • 2: RTS |
| Timer Setting | T1 | 100 to 10000 (increments of 100) |
| | T2 | 200 to 25000 (increments of 200) |
| | T3 | 1 to 120 (increments of 1) |
| | T4 | 1 to 120 (increments of 1) |

HSMS settings

The following shows HSMS parameter values stored to a register by a programmable controller CPU.

| Item | | Setting value |
|----------------------|---------------------|---|
| Device ID | | 0 to 32767 |
| Setting Request Trig | | Trigger relay to apply setting information. |
| HSMS | Active/Passive | <ul style="list-style-type: none"> • 0: Active • 1: Passive |
| | IP Address (Local) | (0 to 255) (Four consecutive registers are used.) |
| | IP Address (Remote) | (0 to 255) (Four consecutive registers are used.) |
| | IP Port (Local) | 1 to 65535 |
| | IP Port (Remote) | 1 to 65535 |
| | Timer Setting | Link Test Timer 1 to 65535 |
| | | T3 1 to 120 (increments of 1) |
| | | T5 1 to 240 (increments of 1) |
| | | T6 1 to 240 (increments of 1) |
| | | T7 1 to 240 (increments of 1) |
| | | T8 1 to 120 (increments of 1) |

7.6 Device Assignment

This section shows the method for configuring the range of each device type used by SECS/GEM communication software. There are two types of device assignment: shared memory settings and CA-SECS device assignment (I/O assignment).

Precautions

The device assignment settings differ with the shared memory settings for the programmable controller CPU and SECS/GEM communication software pre-installed model module.

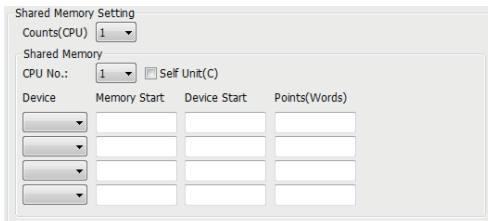
Shared memory setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | — | — | — |

When the auto refresh area in the CPU shared memory of a programmable controller CPU and MELSEC-Q series SECS/GEM communication software pre-installed model module is used by SECS/GEM communication software, configure the range of the auto refresh area for "Shared Memory."

Window

 [Setting] ⇒ [Device Assign Setting]



Displayed items

| Item | | Description |
|---------------|----------------|--|
| Counts(CPU) | | Select the number of programmable controller CPUs. |
| Shared Memory | CPU No. | Select a CPU number. |
| | Self Unit | Select this checkbox to allocate for the MELSEC-Q series SECS/GEM communication software pre-installed model module. Select this checkbox regardless of the number of programmable controller CPUs. |
| | Device | Select a device. |
| | Memory Start | Configure the start (offset value) of the auto refresh area of the CPU shared memory in a programmable controller CPU or MELSEC-Q series SECS/GEM communication software pre-installed model module. |
| | Device Start | Configure the start of device numbers. |
| | Points (Words) | Configure the number of device points to be used in word units. |

Setting example

In a two-module configuration of a programmable controller CPU and a MELSEC-Q series SECS/GEM communication software pre-installed model module, set 256 points and 1024 points for M device and D device respectively for the auto refresh area of the CPU shared memory in each module.

This setting example is explained by comparing with settings in GX Works2.

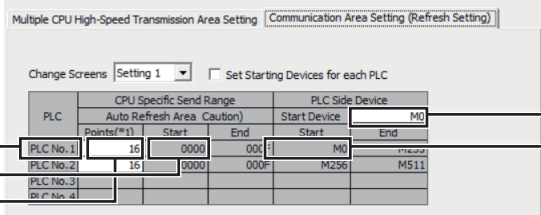
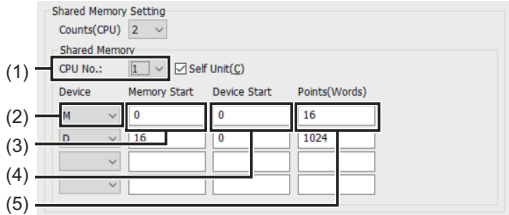
As the numbers below show, shared memory settings of SECS/GEM communication software must correspond with "Communication Area Setting (Refresh Setting)" in GX Works2.

In addition, when selecting "Setting 1" for "Change Screens" in "Communication Area Setting (Refresh Setting)" and setting values, these values must be configured in the first line of "Shared Memory" in shared memory settings.

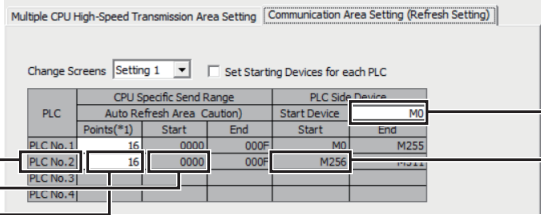
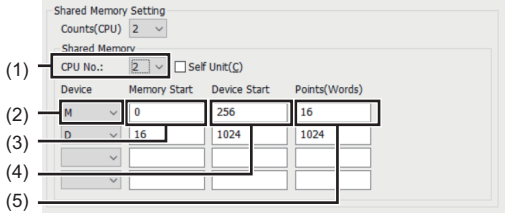
| Number | Action |
|--------|--|
| (1) | The PLC number in GX Works2 and the CPU number in SECS/GEM communication software must be the same. Example: When setting "PLC No.1" for a CPU module in GX Works2, set '1' for a CPU number in SECS/GEM communication software. |
| (2) | A device set in GX Works2 and a device set in SECS/GEM communication software must be the same. Example: When setting an M device for a CPU module in GX Works2, set 'M' for a device in SECS/GEM communication software. |
| (3) | The start device number of the auto refresh area in GX Works2 and the start memory number in SECS/GEM communication software must be the same. Example: When setting '0' for the start number of the auto refresh area in GX Works2, set '0' for "Memory Start" in SECS/GEM communication software. |
| (4) | The start device set in GX Works2 and the start device set in SECS/GEM communication software must be the same. Example: When setting 'M0' for the start device in GX Works2, set '0' for "Device Start" in SECS/GEM communication software. |
| (5) | The number of points set in GX Works2 and the number of points (words) set in SECS/GEM communication software must be the same. Example: When setting '16' for the number of points in GX Works2, set '16' for "Points(Words)" in SECS/GEM communication software. |

7

■PLC No.1 in the setting 1

| Communication area setting (refresh setting) | Shared memory setting |
|---|--|
|  |  |

■PLC No.2 in the setting 1

| Communication area setting (refresh setting) | Shared memory setting |
|---|--|
|  |  |

■PLC No.1 in the setting 2

| Communication area setting (refresh setting) | Shared memory setting |
|--|-----------------------|
| | |

■PLC No.2 in the setting 2

| Communication area setting (refresh setting) | Shared memory setting |
|--|-----------------------|
| | |

Using Shared Memory

The following shows the availability of using the shared memory by the type of transmission message.

| Refresh range | Device setting example | Transmission message | | Availability |
|------------------------------------|------------------------|----------------------|---|---------------|
| Within programmable controller CPU | M0 to M255 | Sending | Programmable controller CPU turns trigger ON. • SECS/GEM communication software detects trigger by automatic refresh • SECS/GEM communication software directly turns trigger device OFF to establish trigger handshake | Available |
| | | Receiving | SECS/GEM communication software directly turns trigger device ON • Programmable controller CPU detects trigger and turns device OFF. • SECS/GEM communication software detects trigger by automatic refresh to establish trigger handshake | Available |
| | D0 to D1023 | Sending | Programmable controller CPU writes data to register. | Available |
| | | Receiving | SECS/GEM communication software directly controls device and writes data to register *1 | Available |
| Within C Controller module | M256 to M511 | Sending | Programmable controller CPU turns trigger ON. • This action will not rewrite the refresh area of the C Controller module, so the shared memory is not available. Suitable for assignment of CA status notification setting. | Not available |
| | | Receiving | SECS/GEM communication software directly turns trigger device ON • Programmable controller CPU detects trigger and turns device OFF. • This action will not rewrite the refresh area of the C Controller module, so the shared memory is not available. | Not available |
| | D1024 to D2047 | Sending | Writing data to the register by the programmable controller CPU will not rewrite the refresh area of the C Controller module, so the shared memory is not available. | Not available |
| | | Receiving | SECS/GEM communication software writes data to refresh area • Programmable controller CPU can refer to the refresh area as a device. *1,*2 | Available |

*1 Higher speed performance can be obtained if items contained in the received message are written in the refresh area.

*2 If a device in which received data is stored is not updated when a reception notification trigger is detected, use a device in the CA-SECS device assignment (I/O assignment) area for which the cache settings are configured instead of the refresh area.

■When it is not possible to secure a region for transmission messages by shared memory

Set programmable controller CPU devices in "CA-SECS Device Assignment(I/O Assignment)" to use them.

In the CA-SECS device assignment (I/O assignment) area, SECS/GEM communication software controls devices directly.

Configure the cache settings to ensure performance.

For details on cache settings, refer to the following:

☞ Page 71 Cache settings

CA-SECS device assignment (I/O assignment)

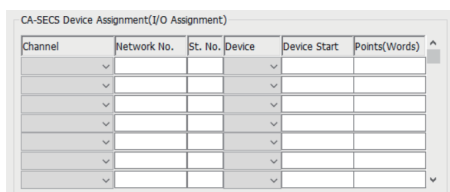
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Devices of a programmable controller CPU, a SECS/GEM communication software pre-installed model module, and an I/O module need to be configured in "CA-SECS Device Assignment(I/O assignment)" to use them in SECS/GEM communication software.

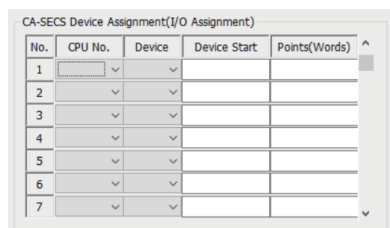
Window

 [Setting] ⇨ [Device Assign Setting]

■MELSEC-Q series




■MELSEC iQ-R series




Displayed items

■MELSEC-Q series

| Item | Description |
|----------------|--|
| Channel | Select "Q-bus". |
| Network No. | Do not enter data. |
| St. No | Configure the CPU number. Use the device function of the Setting/monitoring tools for the C Controller module to configure the station number to "255" (own station) to access the station device ("M" or "D"). |
| Device | Select a device. |
| Device Start | Configure the start of device numbers. |
| Points (Words) | Configure the number of device points to be used in word units. There are restrictions for setting the number of points (the number of words). For details on the restrictions, refer to the following:  Page 93 Restrictions for setting the number of points (the number of words) |

■MELSEC iQ-R series

| Item | Description |
|----------------|--|
| CPU No. | Configure the CPU number of the control CPU. |
| Device | Select a device. |
| Device Start | Configure the start of device numbers. |
| Points (Words) | Configure the number of device points to be used in word units. There are restrictions for setting the number of points (the number of words). For details on the restrictions, refer to the following:  Page 93 Restrictions for setting the number of points (the number of words) |

Restrictions for setting the number of points (the number of words)

SECS/GEM communication software has CA-SECS work areas.

A CA-SECS work area is an area for saving CA-SECS device assignment (I/O assignment) settings.

CA-SECS work areas are consumed by adding CA-SECS device assignment (I/O assignment) settings.

Settings that exceed the number of CA-SECS work areas will be invalid.

Set CA-SECS device assignment (I/O assignment) settings within the CA-SECS work area range.

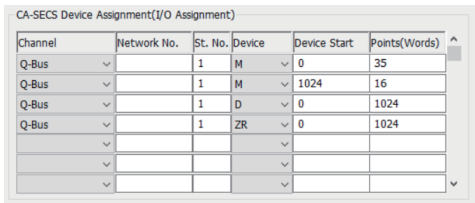
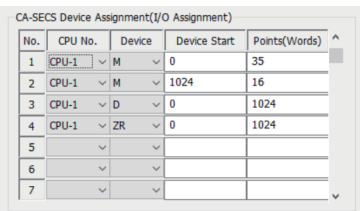
| Series | Number of CA-SECS work areas |
|--------------------|------------------------------|
| MELSEC-Q series | 16 |
| MELSEC iQ-R series | 14 |

The following shows the correspondence between the number of points (the number of words) for the CA-SECS device assignment (I/O assignment) and the number of consumed CA-SECS work areas.

- Bit device: One CA-SECS work area is consumed per 16 words.
- Word device: One CA-SECS work area is consumed regardless of the number of device points (the number of words).

The following table shows images of CA-SECS work areas to be used when setting CA-SECS device assignment (I/O assignment).

- Usage example 1 of CA-SECS work areas

| Setting | Image of CA-SECS work areas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------------|------------------------------|---------------------|--------------------------------|---------------------|-------------------------------|---------------------|----------------------------------|---------------------|---------------------------------|---------------------|----------------------------------|---------------------|--|---------------------|--|---------------------|--|----------------------|--|----------------------|--|----------------------|--|----------------------|--|----------------------|--|----------------------|--|----------------------|--|
| <p>■MELSEC-Q series</p>  | <table> <tr> <td>CA-SECS work area 1</td><td>M0 to 255 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 2</td><td>M256 to 511 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 3</td><td>M512 to 599 (Points: 3 words)</td></tr> <tr> <td>CA-SECS work area 4</td><td>M1024 to 1279 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 5</td><td>D0 to 1023 (Points: 1024 words)</td></tr> <tr> <td>CA-SECS work area 6</td><td>ZR0 to 1023 (Points: 1024 words)</td></tr> <tr> <td>CA-SECS work area 7</td><td></td></tr> <tr> <td>CA-SECS work area 8</td><td></td></tr> <tr> <td>CA-SECS work area 9</td><td></td></tr> <tr> <td>CA-SECS work area 10</td><td></td></tr> <tr> <td>CA-SECS work area 11</td><td></td></tr> <tr> <td>CA-SECS work area 12</td><td></td></tr> <tr> <td>CA-SECS work area 13</td><td></td></tr> <tr> <td>CA-SECS work area 14</td><td></td></tr> <tr> <td>CA-SECS work area 15</td><td></td></tr> <tr> <td>CA-SECS work area 16</td><td></td></tr> </table> <p>In this example, all of the set devices can be used.</p> | CA-SECS work area 1 | M0 to 255 (Points: 16 words) | CA-SECS work area 2 | M256 to 511 (Points: 16 words) | CA-SECS work area 3 | M512 to 599 (Points: 3 words) | CA-SECS work area 4 | M1024 to 1279 (Points: 16 words) | CA-SECS work area 5 | D0 to 1023 (Points: 1024 words) | CA-SECS work area 6 | ZR0 to 1023 (Points: 1024 words) | CA-SECS work area 7 | | CA-SECS work area 8 | | CA-SECS work area 9 | | CA-SECS work area 10 | | CA-SECS work area 11 | | CA-SECS work area 12 | | CA-SECS work area 13 | | CA-SECS work area 14 | | CA-SECS work area 15 | | CA-SECS work area 16 | |
| CA-SECS work area 1 | M0 to 255 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 2 | M256 to 511 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 3 | M512 to 599 (Points: 3 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 4 | M1024 to 1279 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 5 | D0 to 1023 (Points: 1024 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 6 | ZR0 to 1023 (Points: 1024 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>■MELSEC iQ-R series</p>  | <table> <tr> <td>CA-SECS work area 1</td><td>M0 to 255 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 2</td><td>M256 to 511 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 3</td><td>M512 to 599 (Points: 3 words)</td></tr> <tr> <td>CA-SECS work area 4</td><td>M1024 to 1279 (Points: 16 words)</td></tr> <tr> <td>CA-SECS work area 5</td><td>D0 to 1023 (Points: 1024 words)</td></tr> <tr> <td>CA-SECS work area 6</td><td>ZR0 to 1023 (Points: 1024 words)</td></tr> <tr> <td>CA-SECS work area 7</td><td></td></tr> <tr> <td>CA-SECS work area 8</td><td></td></tr> <tr> <td>CA-SECS work area 9</td><td></td></tr> <tr> <td>CA-SECS work area 10</td><td></td></tr> <tr> <td>CA-SECS work area 11</td><td></td></tr> <tr> <td>CA-SECS work area 12</td><td></td></tr> <tr> <td>CA-SECS work area 13</td><td></td></tr> <tr> <td>CA-SECS work area 14</td><td></td></tr> </table> <p>In this example, all of the set devices can be used.</p> | CA-SECS work area 1 | M0 to 255 (Points: 16 words) | CA-SECS work area 2 | M256 to 511 (Points: 16 words) | CA-SECS work area 3 | M512 to 599 (Points: 3 words) | CA-SECS work area 4 | M1024 to 1279 (Points: 16 words) | CA-SECS work area 5 | D0 to 1023 (Points: 1024 words) | CA-SECS work area 6 | ZR0 to 1023 (Points: 1024 words) | CA-SECS work area 7 | | CA-SECS work area 8 | | CA-SECS work area 9 | | CA-SECS work area 10 | | CA-SECS work area 11 | | CA-SECS work area 12 | | CA-SECS work area 13 | | CA-SECS work area 14 | | | | | |
| CA-SECS work area 1 | M0 to 255 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 2 | M256 to 511 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 3 | M512 to 599 (Points: 3 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 4 | M1024 to 1279 (Points: 16 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 5 | D0 to 1023 (Points: 1024 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 6 | ZR0 to 1023 (Points: 1024 words) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA-SECS work area 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Usage example 2 of CA-SECS work areas

Setting

■MELSEC-Q series

CA-SECS Device Assignment(I/O Assignment)

| Channel | Network No. | St. No. | Device | Device Start | Points(Words) |
|---------|-------------|---------|--------|--------------|---------------|
| Q-Bus | | 1 | M | 0 | 256 |
| Q-Bus | | 1 | D | 0 | 1024 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Image of CA-SECS work areas

CA-SECS work area 1

M0 to 255 (Points: 16 words)

CA-SECS work area 2

M256 to 511 (Points: 16 words)

CA-SECS work area 3

M512 to 767 (Points: 16 words)

CA-SECS work area 4

M768 to 1023 (Points: 16 words)

CA-SECS work area 5

M1024 to 1279 (Points: 16 words)

CA-SECS work area 6

M1280 to 1535 (Points: 16 words)

CA-SECS work area 7

M1536 to 1791 (Points: 16 words)

CA-SECS work area 8

M1792 to 2047 (Points: 16 words)

CA-SECS work area 9

M2048 to 2303 (Points: 16 words)

CA-SECS work area 10

M2304 to 2559 (Points: 16 words)

CA-SECS work area 11

M2560 to 2815 (Points: 16 words)

CA-SECS work area 12

M2816 to 3071 (Points: 16 words)

CA-SECS work area 13

M3072 to 3327 (Points: 16 words)

CA-SECS work area 14

M3328 to 3583 (Points: 16 words)

CA-SECS work area 15

M3584 to 3839 (Points: 16 words)

CA-SECS work area 16

M3840 to 4095 (Points: 16 words)

D0 to 1023 (Points: 1024 words)

In this example, word devices (D0 to 1024) cannot be used due to exceeding the number of CA-SECS work areas.

■MELSEC iQ-R series

CA-SECS Device Assignment(I/O Assignment)

| No. | CPU No. | Device | Device Start | Points(Words) |
|-----|---------|--------|--------------|---------------|
| 1 | CPU-1 | M | 0 | 256 |
| 2 | CPU-1 | D | 0 | 1024 |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |

CA-SECS work area 1

M0 to 255 (Points: 16 words)

CA-SECS work area 2

M256 to 511 (Points: 16 words)

CA-SECS work area 3

M512 to 767 (Points: 16 words)

CA-SECS work area 4

M768 to 1023 (Points: 16 words)

CA-SECS work area 5

M1024 to 1279 (Points: 16 words)

CA-SECS work area 6

M1280 to 1535 (Points: 16 words)

CA-SECS work area 7

M1536 to 1791 (Points: 16 words)

CA-SECS work area 8

M1792 to 2047 (Points: 16 words)

CA-SECS work area 9

M2048 to 2303 (Points: 16 words)

CA-SECS work area 10

M2304 to 2559 (Points: 16 words)

CA-SECS work area 11

M2560 to 2815 (Points: 16 words)

CA-SECS work area 12

M2816 to 3071 (Points: 16 words)

CA-SECS work area 13

M3072 to 3327 (Points: 16 words)

CA-SECS work area 14

M3328 to 3583 (Points: 16 words)

M3584 to 3839 (Points: 16 words)

M3840 to 4095 (Points: 16 words)

D0 to 1023 (Points: 1024 words)

In this example, M3584 to 4095 and word devices (D0 to 1024) cannot be used due to exceeding the number of CA-SECS work areas.

Available device ranges

Set devices for the CA-SECS device assignment (I/O assignment) within the following range:

| Module | SECS/GEM communication software | Device range |
|---|------------------------------------|--|
| MELSEC iQ-R series SECS/GEM communication software pre-installed model module | Non-GEM version ^{*1} | M, B, X, Y: 0 to 32767 D, W, R, ZR: 0 to 2147483647 |
| | GEM version ^{*2} | M, B, X, Y, R: 0 to 32767 |
| | GEM advanced version ^{*2} | D, W, ZR: 0 to 2147483647 |
| MELSEC-Q series SECS/GEM communication software pre-installed model module | Non-GEM version | M, D, B, X, Y, W, R: 0 to 32767 ZR: 0 to 2147483647 |
| | GEM version | |
| | GEM advanced version | |

^{*1} When using version 1.27D or earlier, the following devices can be used:

M, D, B, X, Y, W, R: 0 to 32767

ZR: 0 to 65535

^{*2} When using version 1.29F or earlier, the following devices can be used:

M, D, B, X, Y, W, R: 0 to 32767

ZR: 0 to 65535

Precautions

In the CA-SECS device assignment (I/O assignment) area, SECS/GEM communication software controls devices directly.

Configure the cache settings to ensure performance.

For details on cache settings, refer to the following:

 Page 71 Cache settings


7.7 Option Setting

This section shows the method for configuring the advanced operations of SECS/GEM communication software.

Control

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Window

 [Setting] ⇒ [Option Setting] ⇒ [Control] tab

■MELSEC-Q series

Option Setting

Control

Control Detail

Retry

CA Status

Control Request

SECS Error Notific

PLC Response Monitoring Timer[msec]

3000

Secondary Monitoring Timer[msec]

45000

Reconnection Delay After Line Disconnection[sec]

10

Maximum Number Of Retries After Line Disconnection

Infinity

Transaction Response Monitoring Timer [msec]

3000

ASCII Character Terminator

Space Character

Number Of Multi-Transaction Queues For PLC Transmission

1

Number Of Transaction Queues For PLC Transmission

32

Number Of Multi-Transaction Queues For PLC Receiving

16

☒ Switch Into Offline Status Upon Disconnection(D)

☒ Use S1F13 For The Communication Establishment Sequence(C)

☐ Not Communication Upon T3 Timeout(T)

☐ Not Communication Upon Abort Reception For Spool Message(S)

☒ Automatically Transmit S1F13 Upon Line Reconnection(O)

☒ Send An Abort Message Before Transmitting S9Fx(N)

OK

Cancel

■MELSEC iQ-R series

Option Setting

Control

Control Detail

CA Status

Control Request

SECS Error Notification Se

PLC Response Monitoring Timer[msec]

3000

Secondary Monitoring Timer[msec]

45000

Reconnection Delay After Line Disconnection[sec]

10

Maximum Number Of Retries After Line Disconnection

Infinity

ASCII Character Terminator

Space Character

Number Of Multi-Transaction Queues For PLC Transmission

1

Number Of Transaction Queues For PLC Transmission

32

Number Of Multi-Transaction Queues For PLC Receiving

16

☒ Switch Into Offline Status Upon Disconnection(D)

☒ Use S1F13 For The Communication Establishment Sequence(C)

☐ Not Communication Upon T3 Timeout(T)

☐ Not Communication Upon Abort Reception For Spool Message(S)

☒ Automatically Transmit S1F13 Upon Line Reconnection(O)





☒ Send An Abort Message Before Transmitting S9Fx(N)

OK

Cancel

Displayed items

| Item | Description |
|---|--|
| PLC Response Monitoring Timer | <p>Configure the monitoring time from when SECS/GEM communication software turns ON the programmable controller CPU reception notification relay to when the programmable controller CPU turns the relay OFF to confirm the handshake.</p> <p>If the relay is ON after the specified time passes, SECS/GEM communication software turns the relay OFF.</p> <p>For the operation of the PLC Response Monitoring Timer, refer to the following:  Page 99 PLC Response Monitoring Timer and Secondary Monitoring Timer</p> |
| Secondary Monitoring Timer | <p>Configure the monitoring time from when a primary message is received, and SECS/GEM communication software turns ON the reception notification trigger relay to when the programmable controller CPU turns the secondary message sending request trigger relay ON.</p> <p>If the secondary message sending request trigger relay was not switched ON after the specified time has past, the programmable controller CPU is notified if there are queued received messages. The setting must be larger than the PLC Response Monitoring Timer.</p> <p>For the operation of the Secondary Monitoring Timer, refer to the following:  Page 99 PLC Response Monitoring Timer and Secondary Monitoring Timer</p> |
| Reconnection Delay After Line Disconnection | <p>Configure the delay time until a reconnection is attempted when a disconnection was detected. Reconnection Delay After Line Disconnection is synchronized with the T5 timer setting.</p> |
| Maximum Number Of Retries After Line Disconnection | <p>Configure the number of reconnection attempts when a disconnection was detected. Setting the maximum number of retries to "∞" (infinity) results in an infinite number of retries.</p> |
| Transaction Response Monitoring Timer ^{*1} | <p>Configure the time from when a transaction is executed to when the next transaction is executed in the course of a scenario that sequentially executes a series of transactions.</p> <p>For details of scenario settings, refer to the following:  Page 126 Scenario Definition</p> |
| ASCII Character Terminator | <p>When the ASCII data type is selected for SECS sending data, and the actual number of characters is fewer than the predetermined number, specify the space filling method (NULL character or space character).</p> <p>When the sending data is configured as a fixed value, a number of characters that is fewer than the number of SECS data sets is still valid.</p> <p>Sending string data is referenced from the start control register. If there is a NULL character midway, a character string from the start point to the NULL character is sent.</p> |
| Number of Multi-Transaction Queues For PLC Transmission | <p>For operation and configuration of the number of multi-transaction queues, refer to the following:  Page 100 Configuration of number of multi-transaction queues</p> |
| Number of Transaction Queues For PLC Transaction | |
| Number of Multi-Transaction Queues For PLC Receiving | |
| Switch Into Offline Status Upon Disconnection ^{*2} | <p>Select this checkbox to switch the system into offline status upon detection of line disconnection. After the status has switched to offline, SECS/GEM communication software turns OFF the online status of CA status notification.</p> <p>When this checkbox is cleared, the online status continues even after detection of line disconnection.</p> |

| Item | | Description |
|---|--|---|
| Use S1F13 For The Communication Establishment Sequence | — | <p>Select this checkbox to consider a communication request transaction (S1F13/14) as the necessary condition for establishing communication between the equipment and host.</p> <p>The following operations are performed depending on the checkbox state.</p> <ul style="list-style-type: none"> • Selected: When the communication request transaction (S1F13/14) is executed, communication is established, and the communication established relay turns ON. Any other transactions are discarded before communication is established. • Cleared: The communication request transaction (S1F13/14) is considered as a normal transaction. For an HSMS connection, communication is established when the state is HSMS Selected, and the communication established relay turns ON. For a SECS-I connection, communication is established when SECS/GEM communication software opens the port immediately after start-up. <p>For details on the Communication established relay, refer to the following:  Page 111 CA status</p> |
| | Not Communication Upon T3 Timeout ^{*3} | <p>When a T3 timeout has occurred after a primary message was sent from SECS/GEM communication software, this is treated as a sending failure, and a communication-disconnected state results. Select this checkbox to turn OFF the Communication established relay.</p> <p>If this checkbox is not selected, the Communication established state is maintained even after a T3 timeout.</p> <p>For details on the Communication established relay, refer to the following:  Page 111 CA status</p> |
| | Not Communication Upon Abort Reception For Spool Message ^{*3} | <p>When an abort message is received from the host after a message subject to spooling was sent from SECS/GEM communication software, this is treated as a sending failure, and a communication-disconnected state results. Select this checkbox to turn OFF the Communication established relay.</p> <p>Furthermore, if the Communication established relay turns OFF, spooling occurs simultaneously. If this checkbox is cleared, communication remains established, and spooling is not performed even when an abort message is received from the host.</p> <p>For details on the Communication established relay, refer to the following:  Page 111 CA status</p> |
| Automatically Transmit S1F13 Upon Line Reconnection ^{*4} | | <p>Select this checkbox to cause SECS/GEM communication software to automatically send S1F13 when the communication line is reconnected after disconnecting.</p> <p>When this checkbox is cleared, automatic sending is not performed, so the programmable controller CPU needs to request sending.</p> |
| Send An Abort Message Before Transmitting S9Fx | | <p>When a primary message, such as an undefined device ID message, is received from the host, SECS/GEM communication software automatically sends an S9 related error message.</p> <p>Select this checkbox to interrupt the transaction associated with the received primary message and send an abort message (SnF0: "n" indicates the S code of the reception message).</p> <p>For content of S9 errors, refer to the following:  Page 314 System error (S9Fx)</p> |
| Send Complete Waiting Timer ^{*5} | | <p>Configure the time to monitor from when SECS/GEM communication software starts the sending process for a message until the completion of sending.</p> <p>If the transmission is not completed within the configured timer value (default: 20 seconds), "DMtransmissionFailure" is output to the SECS log.</p> <p>In such a case, configure a larger value for Send Complete Waiting Timer.</p> |

*1 Can be configured for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

*2 If the "Control State Model" checkbox has been selected under GEM Performance Definition Setting in the GEM version or GEM advanced version, operation is based on the control state model regardless of this setting.

*3 Can be configured only by a non-GEM version.

*4 If the "Communication State Model" checkbox has been selected under GEM Performance Definition Setting in the GEM version or GEM advanced version, this setting is always enabled, regardless of the status of the checkbox.

*5 Can be configured for only a GEM version and GEM advanced version.

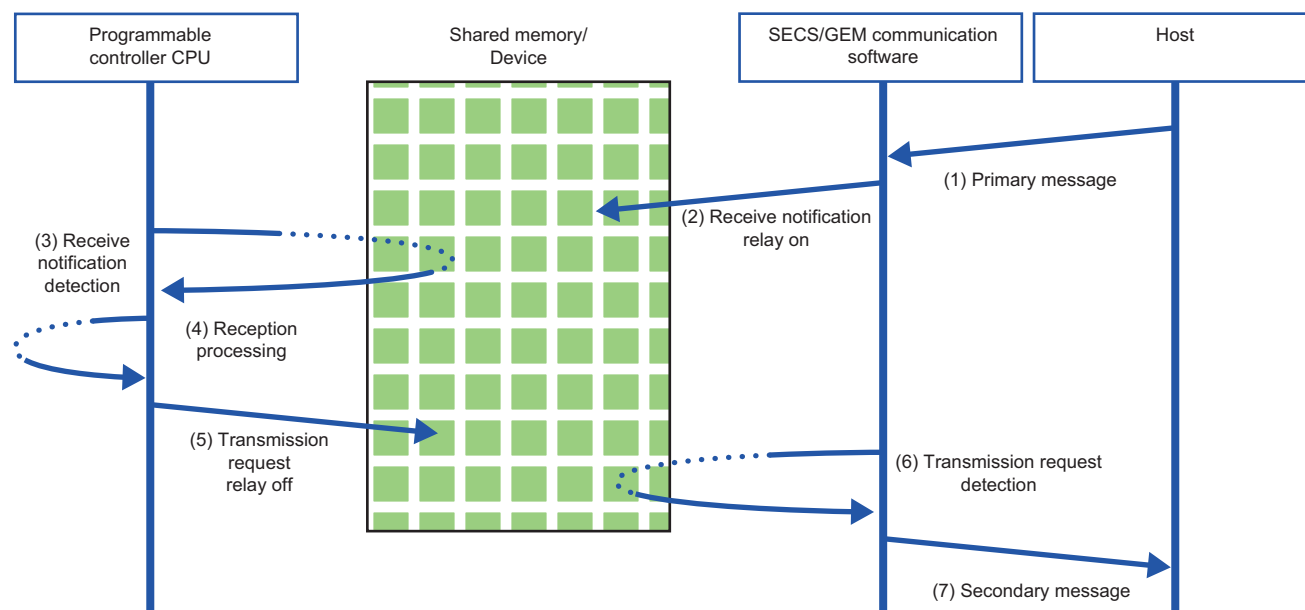
Precautions

- Before configuring the number of transaction cues, check the advisability and quantity of interleaving (simultaneous processing of multiple transactions) in the specifications of the host.
- When S1F13 is used in the communication establishment sequence, a communication established state cannot occur until a communication establishment request transaction (S1F13/14) is established. Therefore, the S1F13/14 transaction must be defined.
- When [Communication state model] is enabled in GEM performance definition / basic requirements of GEM, a GEM version of SECS/GEM communication software operates as though the checkbox was selected, regardless of the "Use S1F13 For The Communication Establishment Sequence" setting.
- An abort message is not returned if the primary message to be received has no return request (W-bit), even if "Send An Abort Message Before Transmitting S9Fx" is set. Note that S9F9 (transaction timeout) is a timeout for sending messages and is not covered by this setting.

PLC Response Monitoring Timer and Secondary Monitoring Timer

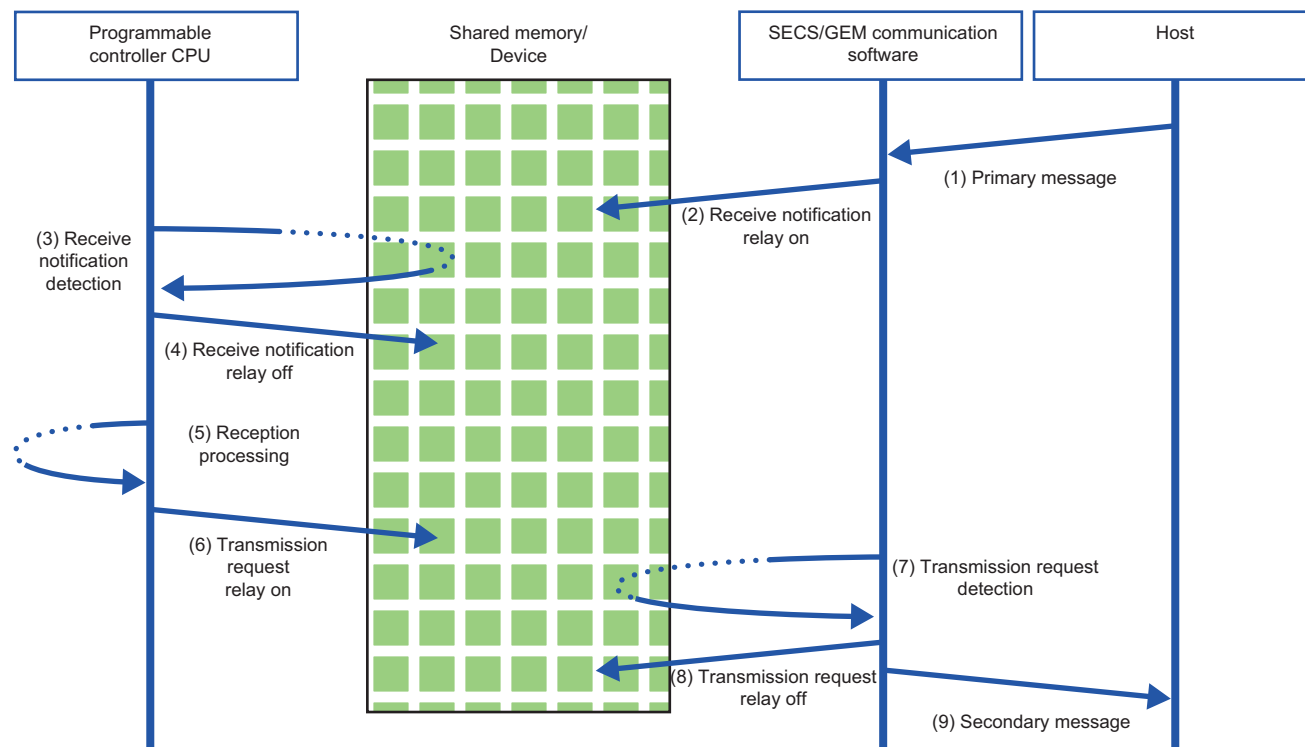
■Handshake for each transaction

The PLC Response Monitoring Timer monitors the time from "(2) Reception notification trigger relay ON" to "(6) Sending request detection". The Secondary Monitoring Timer is not used for a handshake for each transaction.



■Handshake for each message

The PLC Response Monitoring Timer monitors the time from "(2) Reception notification trigger relay ON" to "(4) Reception notification trigger relay OFF". Furthermore, the Secondary Monitoring Timer monitors the time from "(2) Reception notification trigger relay ON" to "(6) Sending request trigger relay ON".



Configuration of number of multi-transaction queues

For multi-transactions, the next primary message is issued without waiting for the arrival of the prescribed secondary message. (In the case of single transactions, the next transaction is never issued until a secondary message is sent for a primary message.)

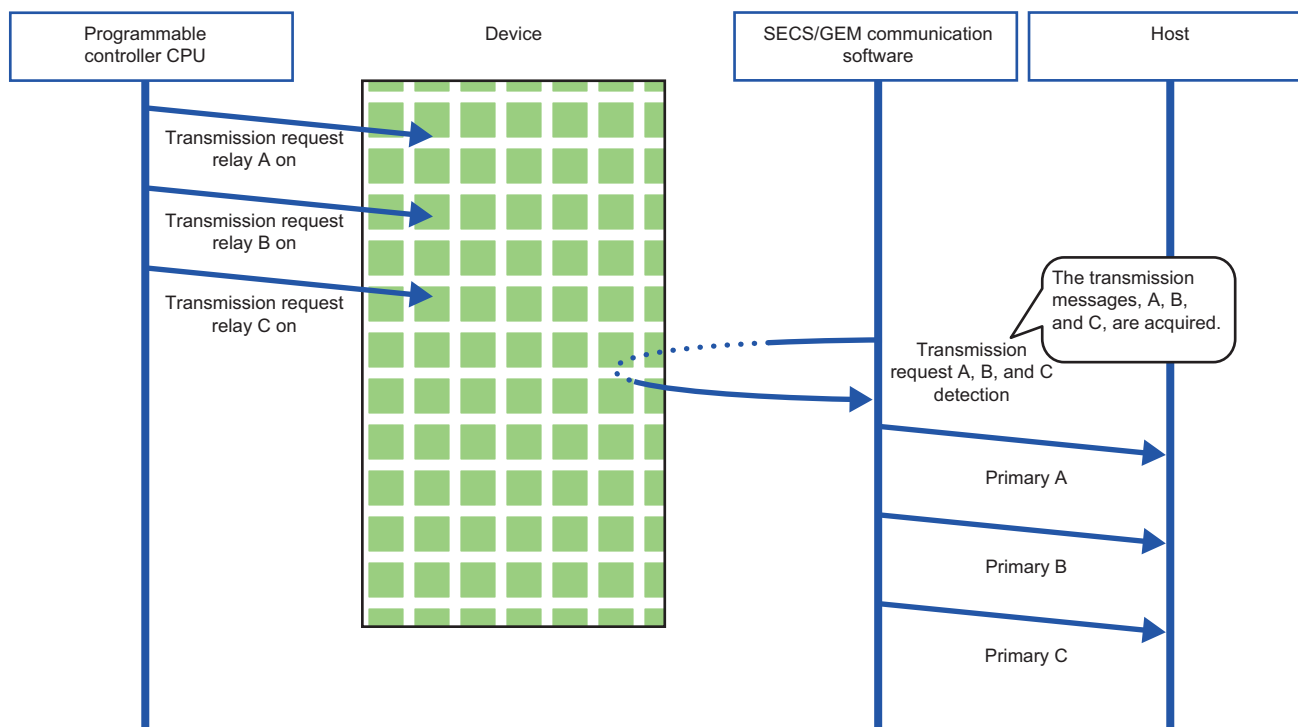
If interleaving (simultaneous processing of multiple transactions) is required, the number of multi-transaction queues should be configured to two or more according to the communication specifications.

The following table shows the objectives and operations of each multi-transaction queue.

| Item | Objective | Operation |
|---|--|---|
| Number of Multi-Transaction Queues For PLC Transmission | Configure the number of primary messages that can be sent simultaneously. | Messages are queued in the sending transaction queue when the queue is full. |
| Number of Transaction Queues For PLC Transaction | Configure the number of queued messages that can be retained simultaneously. | Any subsequent messages are discarded when the queue is full. (Sending failure) |
| Number of Multi-Transaction Queues For PLC Receiving | Configure the number of received messages that can be retained simultaneously. | Any subsequent messages are aborted when the queue is full. |

■Operation when the "Number of Multi-Transaction Queues For PLC Transmission" has been configured multiple times

Messages of the number specified by "Number of Multi-Transaction Queues For PLC Transmission" are sent simultaneously. When the Number of Multi-Transaction Queues For PLC Transaction becomes full, messages that arrive later are accumulated (interleaved) in the Number of Transaction Queues For PLC Transmission.

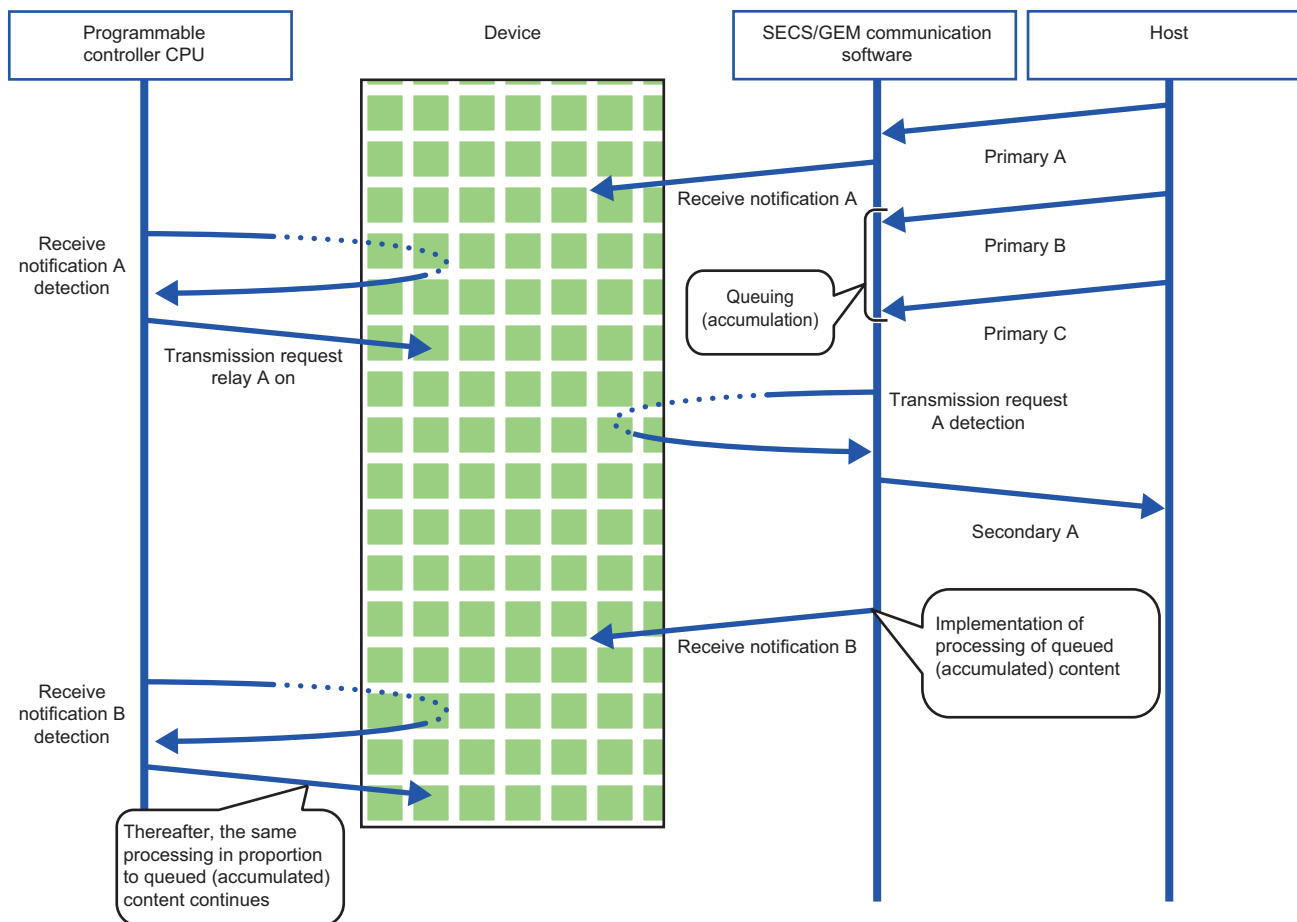


Precautions

If the Number of Transaction Queues For PLC Transaction becomes full, sending fails and later messages are discarded. When "Number of Multi-Transaction Queues For PLC Transmission" has been set multiple times, configure "Number of Transaction Queues For PLC Transmission" multiple times as well.

■Operation when the "Number of Multi-Transaction Queues For PLC Receiving" has been configured multiple times

Messages of the number of specified by "Number of Multi-Transaction Queues For PLC Receiving" are interleaved (accumulated). Interleaved messages are processed after transactions being processed are completed.



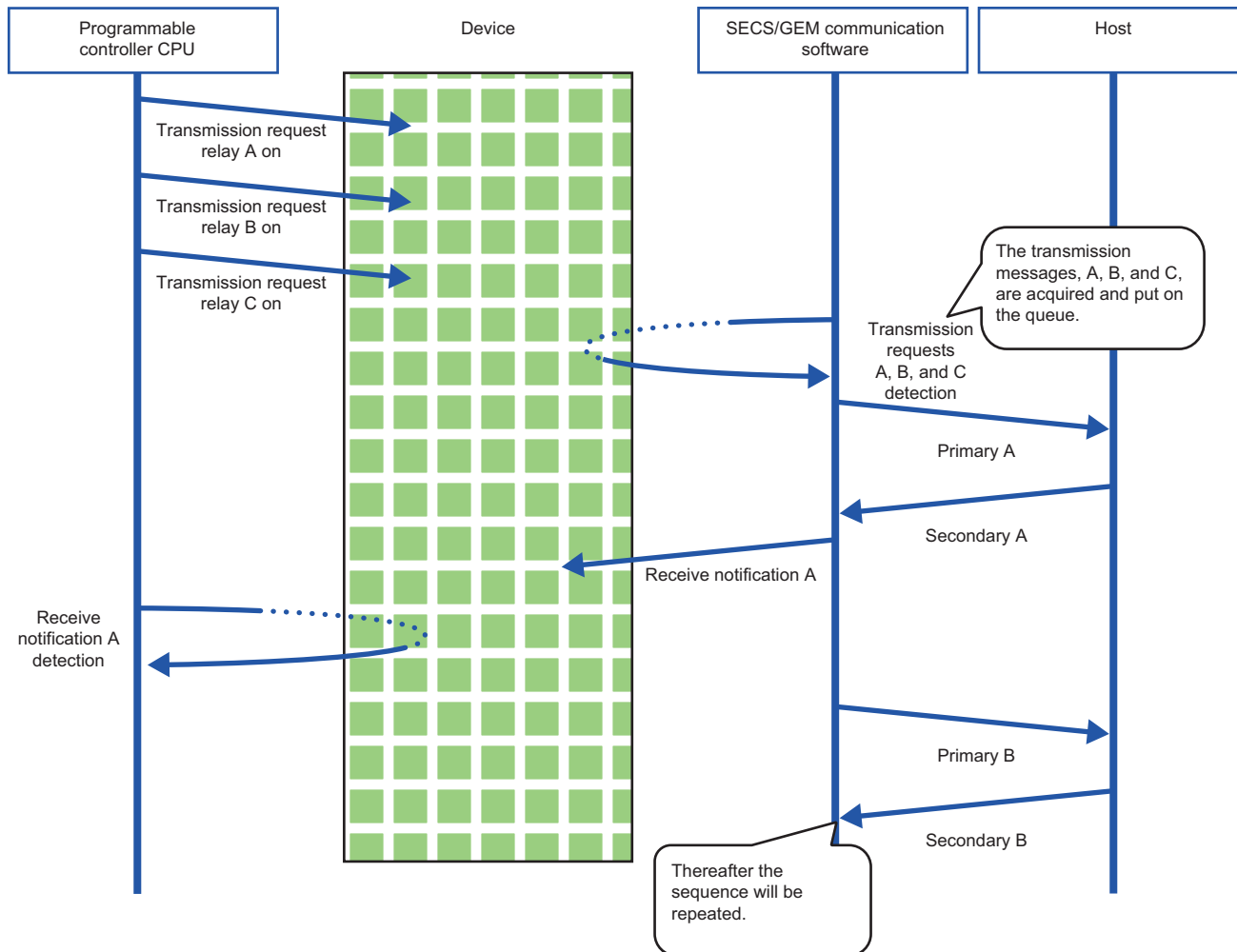
Precautions

When the Number of Multi-Transaction Queues For PLC Receiving becomes full, messages that come later are aborted.

■Operation during sending when multiple items are set for "Number Of Transaction Queues For PLC Transmission"

Messages of the number of specified by "Number of Transaction Queues For PLC Transaction" are interleaved (accumulated).

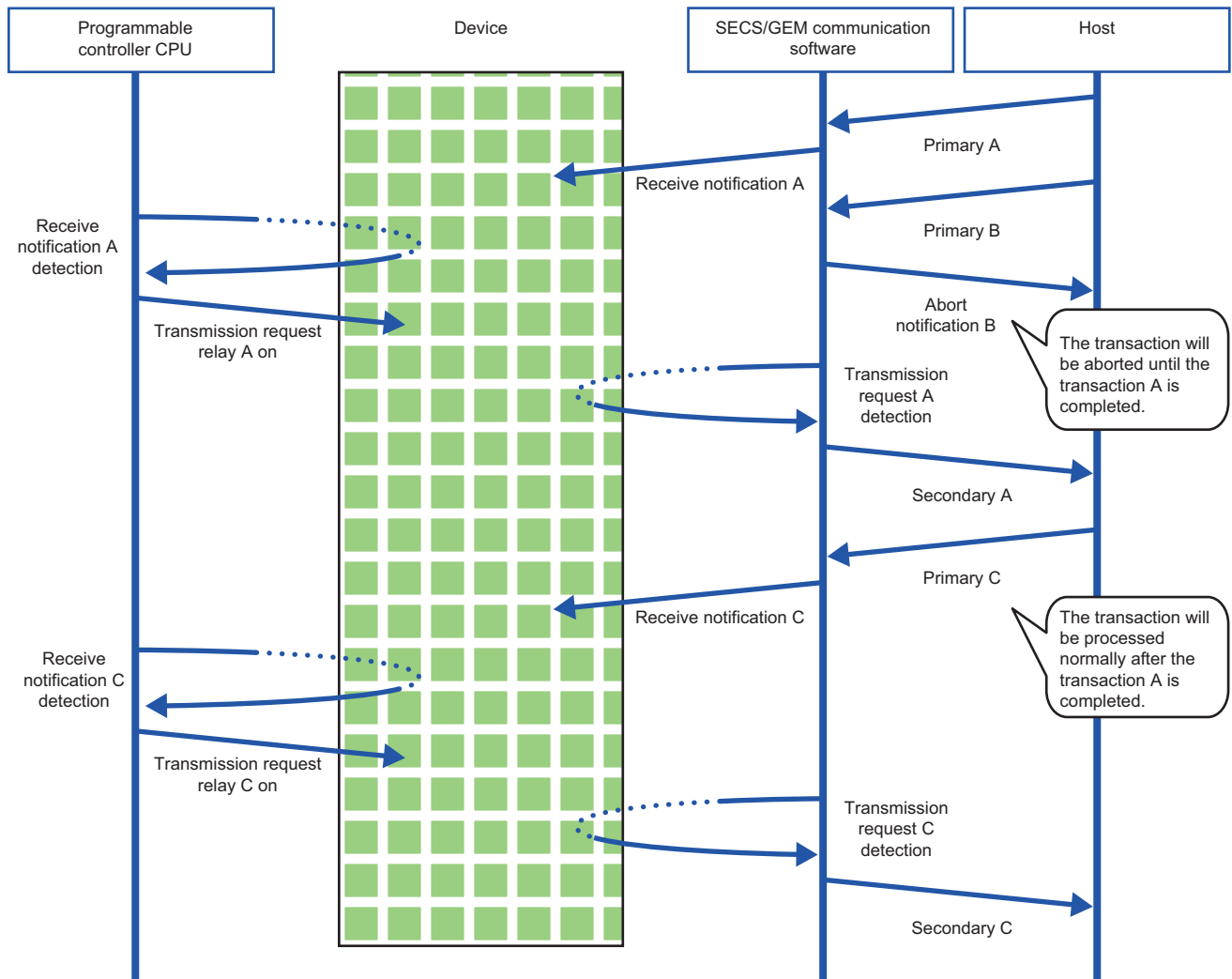
In the case of interleaved messages, the number configured by "Number of Multi-Transaction Queues For PLC Transmission" for each transaction is sent. (Messages are sent one by one when "Number of Multi-Transaction Queues For PLC Transmission" has been set to "1".)



Precautions

If the Number of Transaction Queues For PLC Transaction becomes full, sending fails and later messages are discarded.

■ Operation during reception when multiple items are set for "Number Of Transaction Queues For PLC Transmission"



Control detail

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Window

 [Setting] ⇒ [Option Setting] ⇒ [Control Detail] tab

■MELSEC-Q series

Option Setting

Control | Control Detail | Retry | CA Status | Control Request | SECS Error Notific

Shared Memory Synch. Waiting Timer[msec]

10

☒ Change C Controller's Clock Upon S2F31/S2F18 Reception(S)

Queue Clear Setting

☒ T3 Timeout(T) ☒ T9 Timeout(N) ☒ Violation of Conversation(R)

HOST/GATEWAY Mode Setting

☐ HOST Mode(H) ☐ GATEWAY Mode(G)

Number Of Transaction Queues For PLC Transmission

☐ Queue Counts(Q) CPU-1 D 0

☐ Maximum Queue Counts(S) (+1w)

Communication Interruption Time

Time Format DATE-Q (7w)

☐ Interruption Time(C) CPU-1 D 0

File Output Stop

☐ File Output Stop(F) CPU-1 M 0

OK

Cancel

■MELSEC iQ-R series

Option Setting

Control | Control Detail | CA Status | Control Request | SECS Error Notification Se

Shared Memory Synch. Waiting Timer[msec]

10

☒ Change C Intelligent Function Module's Clock Upon S2F31/S2F18 Reception(S)

Queue Clear Setting

☒ T3 Timeout(T) ☒ T9 Timeout(H) ☒ Violation of Conversation(B)

HOST/GATEWAY Mode Setting

☐ HOST Mode(H) ☐ GATEWAY Mode(S)

Number Of Transaction Queues For PLC Transmission

☐ Queue Counts(Q) CPU-1 D 0

☐ Maximum Queue Counts(S) (+1w)

Communication Interruption Time

Time Format DATE-Q (7w)

☐ Interruption Time(S) CPU-1 D 0


File Output Stop








☐ File Output Stop(E) CPU-1 M 0

OK

Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|---|---|--|
| Shared Memory Synch. Waiting Timer ^{*1} | | Configure the shared memory synchronization adjustment timer. Sometimes adjustments are required when shared memory is assigned to a trigger relay. When shared memory is assigned, SECS/GEM communication software controls the relay by handshaking and then verifies that the prescribed relay status has been updated by a refresh of the multiple CPUs in accordance with the value of this simultaneous adjustment timer. When ladder program processing requires time, a change in the relay status is not detected even if SECS/GEM communication software is delayed by the configured time, resulting in status inconsistency. At this time, adjust the timer value, taking into consideration ladder program scan processing. |
| Change C Controller's Clock Upon S2F31/S2F18 Reception ^{*2} | | Select this checkbox to configure the time of the MELSEC-Q series SECS/GEM communication software pre-installed model module when an S2F31 or S2F18 was received. SECS/GEM communication software uses an S2F18 or S2F31 for reserved transactions and, upon receipt of time data from the host, replaces the time of the MELSEC-Q series SECS/GEM communication software pre-installed model module. However, it synchronizes with the time of CPU No. 1 automatically when Multiple CPU Setting has been configured. For details on S2F18 and S2F31 transactions, refer to the following:  Page 312 List of reserved transactions and format |
| Change C Intelligent Function Module's Clock Upon S2F31/S2F18 Reception ^{*2} | | Select this checkbox to configure the time of the MELSEC iQ-R series SECS/GEM communication software pre-installed model module when an S2F31 or S2F18 is received. S2F18 and S2F31 do not need to be defined by users as they are regarded as reserved transactions. When enabling this function, the time synchronization function between the module and a CPU module is disabled. For details on S2F18 and S2F31 transactions, refer to the following:  Page 312 List of reserved transactions and format For software versions available for this function, refer to the following:  Page 324 Added and Changed Functions |
| Queue Clear Setting | T3 timeout | Select this checkbox to clear the messages accumulated in SECS/GEM communication software sending queue when a T3 timeout has occurred. |
| | T9 timeout | Select this checkbox to clear the messages accumulated in SECS/GEM communication software sending queue when a T9 timeout has occurred. |
| | Violation of Conversation | Select this checkbox to clear the messages accumulated in SECS/GEM communication software sending queue when a dialog violation has occurred. |
| HOST/GATEWAY Mode Setting ^{*3} | HOST Mode | Select this checkbox to use SECS/GEM communication software as a host to communicate with the equipment. When SECS/GEM communication software will be installed on the equipment, clear the checkboxes of HOST mode and GATEWAY mode. |
| | GATEWAY Mode | Select this checkbox to use SECS/GEM communication software as a gateway to intermediate messages. When SECS/GEM communication software will be installed on the equipment, clear the checkboxes of HOST mode and GATEWAY mode. |
| Number of Transaction Queues for PLC Transmission | Queue Counts  | When a register is assigned in this setting, the number of messages currently in queue is output to the specified register by SECS/GEM communication software. |
| | Maximum Queue Counts | When the checkbox of "Maximum Queue Counts" is selected, a value set for "Number Of Transaction Queues For PLC Transmission" is stored in the configured register No. + 1 word. |
| Interruption Time ^{*3} | Time Format | Configure the data type when storing the Communication disconnection occurrence time. If "DATE-Q" or "DATE-A" is selected for the storage format, the time is stored in binary. For an example of a value stored to a register, refer to the following:  Page 107 Register storage formats |
| | Communication disconnection occurrence time  | Configure the register in which the time when the communication state changed from "COMMUNICATING" to "NOT COMMUNICATING" is stored by SECS/GEM communication software. The updating of this register is synchronized with the switching of the CA state notification relay and Communication established relay from ON to OFF. This is normally when a line disconnection detection and communication failure (sending error) occur, but 'T3 timeout' and 'Abort reception for spool message' may also be included in the conditions depending on the settings of the [Control] tab. |
| File Output Stop | File Output Stop  | Configure the relay to instruct file output stop from a programmable controller CPU to SECS/GEM communication software. This setting is used before resetting a module to prevent a file from corrupting. |

- *1 Can be configured for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.
- *2 SECS/GEM communication software uses the time of the SECS/GEM communication software pre-installed model module in log data.
As a result, when the logs are viewed, the order of data may appear different from actual data transmission and reception, in accordance with the time changes.
- *3 Can be configured only by a non-GEM version.

HOST/GATEWAY mode operations

| Name | Operation |
|----------------------|---|
| HOST mode setting | <ul style="list-style-type: none"> S9 messages are not sent automatically. However, there is notification when there is a setting of the S9 sending notification relay. During S9 message receipt, messages are not discarded. The spool is normally disabled. |
| GATEWAY mode setting | <ul style="list-style-type: none"> No restrictions are applied to the transmission of messages, even in the case of communication disconnection or an offline state. The spool is normally disabled. Time is synchronized by sending of S2F31 and S2F18. |

Register storage formats

The following table shows examples of the communication disconnection occurrence times stored to registers.


- "Communication disconnection occurrence time" is configured to D201
- Communication disconnection occurrence time is "2009/12/15 9:46:15.195"

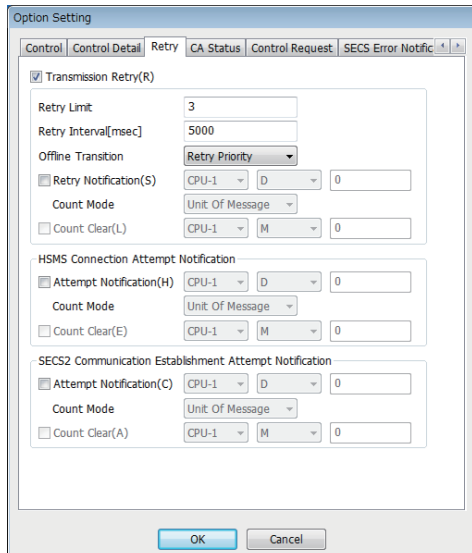
| Register No. | DATE-Q | DATE-A | ASCII 12 | ASCII 14 | ASCII 16 |
|--------------|-----------------|-----------------|---------------|---------------|---------------|
| D201 | 2009 (Year) | 9 (Year) | "09" (Year) | "20" (Year) | "20" (Year) |
| D202 | 12 (Month) | 12 (Month) | "12" (Month) | "09" (Year) | "09" (Year) |
| D203 | 15 (Day) | 15 (Day) | "15" (Day) | "12" (Month) | "12" (Month) |
| D204 | 9 (Hour) | 9 (Hour) | "09" (Hour) | "15" (Day) | "15" (Day) |
| D205 | 46 (Minute) | 46 (Minute) | "46" (Minute) | "09" (Hour) | "09" (Hour) |
| D206 | 15 (Second) | 15 (Second) | "15" (Second) | "46" (Minute) | "46" (Minute) |
| D207 | 2 (Day of week) | 2 (Day of week) | 00(NULL) | "15" (Second) | "15" (Second) |
| D208 | Not used | Not used | Not used | 00(NULL) | "19"(1/100) |
| D209 | Not used | Not used | Not used | Not used | 00(NULL) |

Retry setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | — | — | — |

Window

 [Setting] ⇒ [Option Setting] ⇒ [Retry] tab



Option Setting

Control | Control Detail | **Retry** | CA Status | Control Request | SECS Error Notific

☒ Transmission Retry(R)

Retry Limit: 3

Retry Interval[msec]: 5000

Offline Transition: Retry Priority

☐ Retry Notification(S): CPU-1 | D | 0

Count Mode: Unit Of Message

☐ Count Clear(L): CPU-1 | M | 0

HSMS Connection Attempt Notification

☐ Attempt Notification(H): CPU-1 | D | 0

Count Mode: Unit Of Message

☐ Count Clear(E): CPU-1 | M | 0

SECS2 Communication Establishment Attempt Notification


☐ Attempt Notification(C): CPU-1 | D | 0





Count Mode: Unit Of Message

☐ Count Clear(A): CPU-1 | M | 0

OK Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

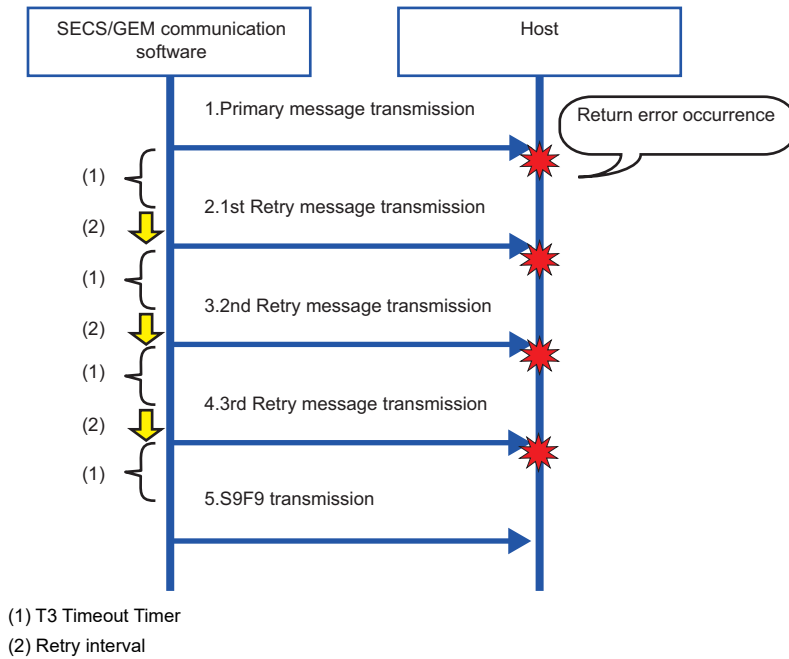
| Item | | Description |
|--|--|---|
| Transmission Retry | — | Select this checkbox to enable a SECS/GEM communication software function to resend automatically when an equipment-issued transaction has failed. A retry occurs when a response timeout (T3 timeout) or sending error of the communication protocol results. A new transaction ID of the retry message is assigned. |
| | Retry Limit | Configure the number of retries. When this number of retries is attempted, and the final message results in a response timeout, it is treated as a T3 timeout error, S9 and F9 are sent, and spooling starts. The initial message is not included in the count. For details, refer to the following:  Page 110 Retry operations during T3 timeouts |
| | Retry Interval | Configure the retry interval in milliseconds. The default is 5000 ms (5 seconds). |
| | Offline Transition | Configure whether to cancel retrying and transfer to an offline state (retry cancel) or transfer to an offline state after retry completion when an "Offline" control request occurred and an offline transition occurred due to a ladder program during message retry. |
| | Retry Notification  | Configure the register to store the number of retries performed. |
| | Count Mode | Select the counting method for the number of retries. • When "By message" was selected for the counting method, the number of message retries during the current retry attempt is stored in the number of retries notification. If the transaction was successful while retrying, this is initialized to 0. When the retry limit was reached, it is initialized to 0 when the next message sent successfully. Normally, it is initialized to 0 at the sending of S9 and F9. • When "Accumulate" was selected as the counting method, the number of retries to be added with each retry occurrence is stored in the number of retries notification. When the value reaches 65535, counting stops. |
| | Count Clear | Configure the trigger to initialize the value of the number of sending retries notification register to "0" at the arbitrary timing of the programmable controller CPU. After initialization is run, this trigger is switched OFF by SECS/GEM communication software. Use this mainly to clear the accumulated number. |
| HSMS Connection Attempt Notification | Attempt Notification  | Configure the register to store the number of times Select.req was sent in a line disconnection state. |
| | Count Mode | Select the counting method for the number of HSMS connection attempts. • When "By message" was selected for the counting method, the number of times Select.req was sent is stored in the HSMS connection attempts notification register. Initialized to 0 by a Selected state transition. • When "Accumulate" was selected for the counting method, the number of times Select.req was sent is stored in the HSMS connection attempts notification register. When the value reaches 65535, counting stops. |
| | Count Clear | Configure the trigger to initialize the value of the number of HSMS connection attempts notification register to "0" at the arbitrary timing of the programmable controller CPU. After initialization is run, this trigger is switched OFF by SECS/GEM communication software. Use this mainly to clear the accumulated number. |
| SECS2 Communication Establishment Attempt Notification | Attempt Notification  | Configure the register to store the number of times S1F13 was sent in a communication disconnection state. |
| | Count Mode | Select the counting method for the number of SECS-2 communication establishment attempts. • When "By message" was selected for the counting method, the number of times an S1F13 was sent from a communication suspended state is stored in the SECS-2 communication establishment attempt notification register. Initialized to 0 by a communication execution state transition. • When "Accumulate" was selected for the counting method, the number of times an S1F13 was sent from a communication suspended state is stored in the SECS-2 communication establishment attempt notification register. When the value reaches 65535, counting stops. Note that the number of message retries is not included in this count. |
| | Count Clear | Configure the trigger to initialize the value of the number of SECS-2 communication establishment attempts notification register to "0" at the arbitrary timing of the programmable controller CPU. After initialization is run, this trigger is switched OFF by SECS/GEM communication software. Use this mainly to clear the accumulated number. |

Retry operations during T3 timeouts

The following diagram is an example of retry operations during T3 timeouts

Ex.

When "3" was configured, the 1st normal-send plus 3 retry-sends equals 4 sends.



CA status

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Window

 [Setting] ⇒ [Option Setting] ⇒ [CA Status] tab

■MELSEC-Q series

Option Setting

Control | Control Detail | Retry | CA Status | Control Request | SECS Error Notific

☐ Online(O)

CPU-1

M

0

☐ Disconnected(D)

CPU-1

M

0

☐ Reconnection Retry(R)

CPU-1

M

0

☐ CIM Control READY(C)

CPU-1

M

0

☐ Communication Established(N)

CPU-1

M

0

☐ Transmission Queue Full(Q)

CPU-1

M

0

☐ Spooling(S)

CPU-1

M

0

☐ Spool Output(P)

CPU-1

M

0

Trigger Keep Time[msec]

100

☐ CA Error Detection(U)

CPU-1

M

0

Detection Interval[sec]

1

☐ CF Error Notification(F)

CPU-1

M

0

☐ Battery Error Notification(B)

CPU-1

M

0

OK

Cancel

■MELSEC iQ-R series

Option Setting

Control | Control Detail | CA Status | Control Request | SECS Error Notification Se

☒ Online(O)

OWN

X

13

☒ Disconnected(D)

OWN

X

11

☐ Reconnection Retry(R)

CPU-1

M

0

☒ CIM Control READY(C)

OWN

X

10

☒ Communication Established(N)

OWN

X

12

☐ Transmission Queue Full(Q)

CPU-1

M

0

☐ Spooling(S)

CPU-1

M

0

☐ Spool Output(P)

CPU-1

M

0

Trigger Keep Time[msec]

100

☐ CA Error Detection(U)

CPU-1

M

0

Detection Interval[sec]

1

☒ SD Error Notification(F)

OWN

X

1F

☐ Battery Error Notification(B)

CPU-1


M

















0

OK

Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|---|--|--|
| Online  | | Configure the relay to notify the programmable controller CPU when an online status (S1F1→S1F2) was established between the host and equipment. S1F1/F2 is treated as a special transaction. |
| Disconnected  | — | Configure the relay to notify the programmable controller CPU when the line was disconnected between the host and equipment. The relay is ON immediately after the start-up of SECS/GEM communication software. In the case of HSMS, the relay is turned OFF at the time when TCP/IP connection completes and when Select.req → Select.rsp is received. For SECS-I communication, the relay remains OFF after SECS/GEM communication software opens the port immediately after start-up. The relay cannot be turned ON even if the line was disconnected. (A T2 protocol timeout error occurs when sending data.) Do not use the relay as a disconnection detection condition of the programmable controller CPU. |
| | Reconnection Retry  | Configure the relay to notify the programmable controller CPU during a line reconnection when the line with the host was disconnected. The reconnection retry relay is switched OFF when reconnection was completed or the Maximum Number of Retries after Line Disconnection was exceeded. For configuration of the Maximum Number of Retries after Line Disconnection, refer to the following:  Page 96 Control To determine whether communication retries are being performed, refer to the following:  Page 113 Reconnection retry |
| CIM Control READY  | | Configure the relay to notify the programmable controller CPU when SECS/GEM communication software starts completely and enters a controllable state. Note that the processing should be programmed so that the programmable controller CPU does not detect errors before the CIM Control READY relay is turned ON. |
| Communication Established  | | Configure the relay to notify the programmable controller CPU when communication (S1F13→S1F14) was established between the host and equipment. Note that the determination of communication establishment depends on the setting that determines whether S1F13 is used for the communication establishment sequence. S1F13/F14 is treated as a special transaction. For setting content, refer to the following:  Page 96 Control |
| Transmission Queue Full  | | Configure the relay to notify the programmable controller CPU when the sending message queue from SECS/GEM communication software reaches a value set for "Number Of Transaction Queues For PLC Transmission". SECS/GEM communication software performs sending processing until the sending queue is full. After that, however, even when sending is requested, sending fails, and the subsequent messages are not sent. Perform sending processing after clearing the sending queue full status. |
| Spooling*1  | | Configure the relay to notify the programmable controller CPU when messages subject to spooling have been spooled. For details on the spooling function, refer to the following:  Page 135 Spool definition settings |
| Spool Output*1  | — | Configure the relay to notify the programmable controller CPU when SECS/GEM communication software is sending messages subject to spooling automatically. If there is no spool data when an S6F23 was received from the host, this relay is ON only for the time configured by the trigger keep time. For details on the spooling function, refer to the following:  Page 135 Spool definition settings |
| | Trigger Keep Time *1 | |
| CA Error Detection  | — | Configure the relay to verify that the SECS/GEM communication software application is running from the ladder program. |
| | Detection Interval | SECS/GEM communication software follows the configured detection period and turns OFF the CA Error Detection relay. |
| CF Error Detection*2  | | Configure the relay to notify of any error detection when SECS/GEM communication software accessed the memory card. |
| SD Error Detection*3  | | |
| Battery Error Notification*2 | | Configure the relay to notify the programmable controller CPU that the built-in battery of the MELSEC-Q series SECS/GEM communication software pre-installed model module has died. |

*1 Can be configured only by a non-GEM version.

*2 Can be configured for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

*3 Can be configured for only the MELSEC iQ-R series SECS/GEM communication software pre-installed model module.

Reconnection retry

Refer to the following table to determine whether a connection retry is being performed by combining the Disconnected relay and Reconnection retrying relay.

| Disconnected relay | Connection retry relay | Status |
|--------------------|------------------------|----------------------|
| ON | ON | Reconnection Retry |
| ON | OFF | Connection retry end |

Point

The "Online" relay and "Communication established" relay are used to notify the programmable controller CPU that the exchange of some specific transaction was performed.

Such transactions are treated as special transactions of SECS/GEM communication software.

For details on special transactions, refer to the following:

☞ Page 313 Special transactions

Precautions

■Setting an X device for each relay

It is possible to configure "OWN (host station)" as the CPU number and device to "X" when the MELSEC iQ-R series SECS/GEM communication software pre-installed model module is being used.

Control request

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Window

 [Setting] ⇒ [Option Setting] ⇒ [Control Request] tab

■MELSEC-Q series

Option Setting

Control | Control Detail | Retry | CA Status | Control Request | SECS Error Notific

☐ Line Connection(P)

CPU-1 | M | 0

Startup Connection Mode

AUTO

Reconnection Mode

AUTO

☐ Line Disconnection(I)

CPU-1 | M | 0

☐ Scenario Interruption(L)

CPU-1 | M | 0

☐ Offline(F)

CPU-1 | M | 0

☐ Disable SECS Communication Upon Offline(N)

☐ Disconnect Upon Offline(E)

Trigger Hold Time[msec]

1000

☐ Disable(X)

☐ Startup Online(O)

CPU-1 | M | 0

☐ Abort Return(A)

CPU-1 | M | 0

☐ S9F7 Return(Q)

CPU-1 | M | 0

☐ Enable Spooling(S)

CPU-1 | M | 0

☐ Spool Output Request(R)

CPU-1 | M | 0

☐ Discard Spooled Data(D)

CPU-1 | M | 0

Trigger Hold Time[msec]

0

☒ Disable(Y)

OK

Cancel

■MELSEC iQ-R series

Option Setting

Control | Control Detail | CA Status | Control Request | SECS Error Notification Se

☒ Line Connection(P)

OWN | Y | 12

Startup Connection Mode

AUTO

Reconnection Mode

AUTO

☒ Line Disconnection(I)

OWN | Y | 11

☐ Conversation Interruption(L)

CPU-1 | M | 0

☒ Offline(F)

OWN | Y | 14

☐ Disable SECS Communication Upon Offline(N)

☐ Disconnect Upon Offline(E)

Trigger Hold Time[msec]

1000

☐ Disable(X)

☒ Startup Online(O)

OWN | Y | 13

☐ Abort Return(A)

CPU-1 | M | 0

☐ S9F7 Return(Q)

CPU-1 | M | 0

☐ Enable Spooling(S)

CPU-1 | M | 0

☐ Spool Output Request(R)

CPU-1 | M | 0

☐ Discard Spooled Data(D)

CPU-1 | M | 0

Trigger Hold Time[msec]

0

☒ Disable(Y)

OK

Cancel

Displayed items

| Item | | Description |
|---|---|--|
| Line Connection | — | <p>Configure the line connection relay.</p> <p>In case of an HSMS connection, the line is connected, and a Select request is sent by the line connection relay trigger. In case of a SECS-I connection, the port is opened.</p> <p>The mode can be configured to specify an automatic connection attempt (AUTO) or a connection attempt based on a request from the programmable controller CPU (MANUAL) during startup and upon line disconnection detection.</p> <p>If the startup connection mode and the reconnection mode were configured to "MANUAL", the line connection relay only is the connection method.</p> |
| | Startup Connection Mode | <p>Select the mode during start-up.</p> <ul style="list-style-type: none"> • AUTO <p>After SECS/GEM communication software start-up, TCP/IP and HSMS connections are attempted automatically.</p> <ul style="list-style-type: none"> • MANUAL <p>After SECS/GEM communication software start-up, TCP/IP and HSMS connections are not attempted until there is a request by the line connection trigger.</p> |
| | Reconnection Mode | <p>Select the mode during disconnection detection.</p> <ul style="list-style-type: none"> • AUTO <p>When a line disconnection was detected, such as a T6 Timer timeout, TCP/IP and HSMS connections are attempted automatically.</p> <p>If the disconnection was intentionally triggered by the disconnection trigger, TCP/IP and HSMS connections are not attempted until there is a request by the line connection trigger.</p> <ul style="list-style-type: none"> • MANUAL <p>Even when a line disconnection was detected, TCP/IP and HSMS connections are not attempted until there is a request by the line connection trigger.</p> |
| Line Disconnection | | <p>Configure the line disconnection relay.</p> <p>In case of an HSMS connection, the line is disconnected by the line connection relay trigger. In case of a SECS-I connection, the port is closed.</p> |
| Scenario Interruption ^{*1} | | <p>Configure the scenario interruption relay.</p> <p>Scenario execution is interrupted by the trigger of the scenario interruption relay.</p> <p>T9 dialog interruption is also possible.</p> |
| Conversation Interruption ^{*2} | | <p>Configure the dialog interruption relay.</p> <p>Dialog execution is interrupted by the trigger of the dialog interruption relay.</p> <p>T9 dialog interruption is also possible.</p> |
| Offline | — | <p>Configure the offline relay.</p> <p>An offline transition is requested of SECS/GEM communication software by the offline relay trigger. When the "Switch Into Offline Status Upon Disconnection" checkbox is cleared at the [Control] tab, SECS/GEM communication software does not transition to offline other than by this request. Nothing occurs when this request was detected in an already offline state.</p> <p>SECS/GEM communication software completes the transition to the offline state by this request. When there is an offline procedure, have it complete before this relay is switched ON.</p> <p>However, it is not necessary to wait for sending completion of an offline report message or secondary message reception.</p> <p>SECS/GEM communication software switches OFF the offline relay immediately after detecting that the offline relay is ON. The relay is switched OFF immediately even when there is already an offline state. Completion of offline transition is checked by the "Online" relay.</p> |
| | Disable SECS Communication Upon Offline ^{*3} | <p>Select this checkbox to configure a communication-disabled state following the offline transfer. In a communication-disabled state, messages other than S1F13/F14 received from the host are discarded.</p> <p>Furthermore, sending requests other than S1F13/14 are canceled.</p> |
| | Disconnect Upon Offline ^{*3} | <p>Select this checkbox to close the TCP/IP port after the Separate procedure following the offline transition.</p> <p>The reconnection procedure is not performed automatically. To start reconnection, use the line connection relay.</p> |
| Trigger Hold Time | | <p>The times that the Line Connection, Line Disconnection, Scenario Interruption, Dialog Interruption, and Offline relays are held are monitored, and triggers are detected.</p> <p>If the "Not Monitored" checkbox is selected, trigger processing is carried out without hold monitoring.</p> |
| Startup Online ^{*3} | | <p>Configure the online-start relay to instruct a start in an online state.</p> <p>To return to an online state after communication establishment (S1F13→F14) without performing an online transfer (S1F1→F2) because, for example, a reset was performed while maintaining an online state, set the online start relay to ON, and then start SECS/GEM communication software.</p> <p>Use the programmable controller CPU to determine advisability of the online start.</p> |

| Item | Description |
|------------------------------------|---|
| Abort Return | <p>Configure the abort return relay.</p> <p>While the abort return relay is ON, an abort message is returned, instead of a secondary message, after a primary message is received.</p> <p>For details, refer to the following:</p> <p>☞ Page 117 Operations of "Abort Return" and "S9F7 Return"</p> |
| S9F7 Return | <p>Configure the S9F7 return relay.</p> <p>While the S9F7 return relay is ON, an S9F7 message is returned, instead of a secondary message, after a primary message is received.</p> <p>For details, refer to the following:</p> <p>☞ Page 117 Operations of "Abort Return" and "S9F7 Return"</p> |
| Enable Spooling ^{*3} | <p>Configure in the Enable spooling relay to enable the spooling function.</p> <p>When the Enable spooling relay has been disabled, the spooling function is always available.</p> <p>If this is OFF during spooling, the Enable spooling relay to be defined at the [CA Status] tab is also OFF. However, all messages being spooled are sent, even after an operation to switch the Enable spooling flag from ON to OFF while spool data is being output.</p> <p>Regarding the spooling relay, refer to the following:</p> <p>☞ Page 111 CA status</p> |
| Spool Output Request ^{*3} | <p>Configure the spool output request relay to request an output of the spool (transfer or discarding). SECS/GEM communication software outputs the spool upon receipt of the S6F23 (Spooled data request) from the host.</p> <p>This operation complies with GEM standards.</p> <p>However, this relay is used, and the spool is output when the spool request message is not used due to communication standards or the format of the spool request message differs from the standards.</p> <p>Turn ON the relay from a ladder program to start transfer of the spool. SECS/GEM communication software turns OFF this relay either after all transfers are completed or the transfer process ends with an error. To determine whether all transfers were completed, check "No. of Spool Items".</p> <p>For "No. of Spool Items", refer to the following:</p> <p>☞ Page 135 Spool definition settings</p> <p>When the spool is to be discarded, with the spool data disposal relay ON, turn ON the spool output request relay.</p> |
| Discard Spooled Data ^{*3} | <p>Configure the spool data disposal relay to discard the spool data and initialize it.</p> <p>This relay does not function on its own. This relay is referenced when the Enable spooling relay is switched ON or OFF or when the Spool output request relay is controlled to ON.</p> <p>After the spool data is discarded, SECS/GEM communication software turns OFF the relay.</p> <p>To dispose of spool data, it is necessary for the programmable controller CPU to turn ON the relay before manipulating the spool enabled flag.</p> |
| Trigger Hold Time ^{*3} | <p>The times that the Enable Spooling, Spool Output Request, and Spool Data Disposal relays are held are monitored, and triggers are detected.</p> <p>If the "Not Monitored" checkbox is selected, trigger processing is carried out without hold monitoring.</p> |

*1 Can be configured for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

*2 Can be configured for only the MELSEC iQ-R series SECS/GEM communication software pre-installed model module.

*3 Can be configured only by a non-GEM version.

Operations of "Abort Return" and "S9F7 Return"

These are used to send an abort or S9F7 in accordance with the data content or return an abort or S9F7 when some processing is being carried out at the equipment after a primary message was received.

When a primary message was received and a secondary message is to be sent, SECS/GEM communication software refers to the status of this relay. If the relay is ON, it sends an abort or S9F7 message. If the relay is OFF, the prescribed secondary message is sent. Accordingly, it is necessary to carry out a sending request of a secondary message as usual, even when an abort or S9F7 is to be sent.

Furthermore, when Abort return or S9F7 return has been switched ON, SECS/GEM communication software does not switch OFF the abort relay but switches OFF the S9F7 relay.

That is why the setting of Abort return is enabled when a transaction other than a special transaction is aborted due to processing being performed at the equipment.

Precautions

■Setting a Y device for each relay

It is possible to configure "OWN (host station)" as the CPU number and device to "Y" when the MELSEC iQ-R series SECS/GEM communication software pre-installed model module is being used.

When "Y" has been configured for the device, SECS/GEM communication software does not switch the output signal (Y) from ON to OFF.

To enable the output signal again, switch the output signal one time from ON to OFF, and then from OFF to ON.

■Online start relay

- For the online start relay, configure the link relay of B devices, etc., and the M device specified to automatic refresh from the X device that directly inputs the equipment switch.
- Before CIM control READY is switched ON, SECS/GEM communication software references the online start relay state. If it is ON, an online start is performed. After CIM control READY turns ON, an online start is not performed even when the online start relay is controlled.

■Abort return relay and S9F7 return relay

Regardless of the setting content, the receipt of primary messages is carried out by normal operation.

It is not the case that an automatic return is performed for primary messages while these relays are ON.

■Spool control

Spool data is saved to the memory card in the SECS/GEM communication software pre-installed model module.

Configure so that the Enable spooling relay is not switched frequently during queuing, spool data output, and other spool processing.

About forced offline during emergencies

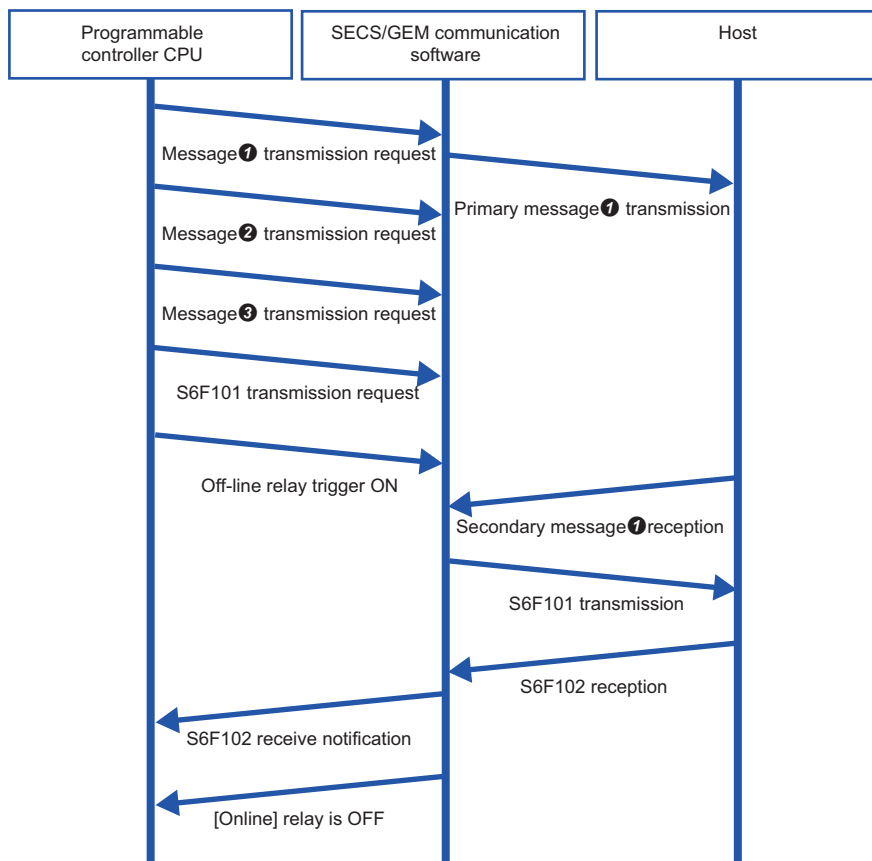
When the offline relay was switched ON, any unsent messages in the sending queue are discarded.

When there is an emergency offline transition after an offline report message was sent, the format specified "OFFLINE" function is used.

Ex.

When multiple messages that have accumulated in the sending queue are discarded, an offline report only is sent, and there is a transition to offline

Setting: Configure the S6F101 format mode to "OFFLINE"



Point

Same sequence applies for disconnection.

In the example above, the S6F101 "Trigger Hold Time" is configured to a value less than the offline "Trigger Hold Time". This is the setting to send S6F101 first when the S6F101 sending request trigger and offline trigger were switched ON simultaneously.

S6F101 is not sent until a secondary message of message ① is received or a T3 timeout occurs. This function sends offline reports by priority for queued messages ② and ③.

It does not prioritize and send just by a sending request of S6F101. Switching ON the offline trigger relay prioritizes and sends S6F101.


Messages ② and ③ are discarded. However, the offline spool is configured to enabled, and messages subject to spooling are spooled.

When message ① resulted in a T3 timeout, the operation differs by the retry setting. When the retry function is disabled or "Retry cancel" has been selected for offline transition, S6F101 is sent immediately. When "Retry priority" has been selected for offline transition, S6F101 is not sent until the retries are complete.

SECS error notification setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Window

 [Setting] ⇒ [Option Setting] ⇒ [SECS Error Notification Setting] tab

MELSEC-Q series

Option Setting

Retry

CA Status

Control Request

SECS Error Notification Setting

S9 Transn

☐ Abort Frame Reception(R)

CPU-1

M

0

☐ Abort Frame Transmission(S)

CPU-1

M

0

☐ Transmission Failure(E)

CPU-1

M

0

☐ PLC Handshake Failure(H)

CPU-1

M

0

☐ T3 Timer Timeout(A)

CPU-1

M

0

☐ Notice Cancel By Disconnection/Offline(C)

☐ T9 Timer Timeout(Q)

CPU-1

M

0

☐ T1 Timer Timeout(O)

CPU-1

M

0

☐ T2 Timer Timeout(P)

CPU-1

M

0

☐ T4 Timer Timeout(B)

CPU-1

M

0

☐ Scenario Interruption(N)

CPU-1

M

0

Trigger Keep Time[msec]

10

☐ Handshake(K)

Communication Error

☐ Frame(F) (2w)

CPU-1

D

0

☐ Trigger(T) (2w)

CPU-1

D

0

OK

Cancel

MELSEC iQ-R series

Option Setting

Control Detail

CA Status

Control Request

SECS Error Notification Setting

SC

☐ Abort Frame Reception(R)

CPU-1

M

0

☐ Abort Frame Transmission(S)

CPU-1

M

0

☐ Transmission Failure(E)

CPU-1

M

0

☐ PLC Handshake Failure(H)

CPU-1

M

0

☐ T3 Timer Timeout(A)

CPU-1

M

0

☐ Notice Cancel By Disconnection/Offline(C)

☐ T9 Timer Timeout(Q)

CPU-1

M

0

☐ T1 Timer Timeout(O)

CPU-1

M

0

☐ T2 Timer Timeout(P)

CPU-1

M

0

☐ T4 Timer Timeout(B)

CPU-1

M

0

Trigger Keep Time[msec]

10

☐ Handshake(K)

Communication Error

☐ Frame(F) (2w)

CPU-1

D

0

☐ Trigger(T) (2w)

CPU-1


D















0

OK

Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|--|---|---|
| Abort Frame Reception  | | Configure the relay to notify the programmable controller CPU that SECS/GEM communication software has received an abort message. |
| Abort Frame Transmission  | | Configure the relay to notify the programmable controller CPU that an abort message has been sent from SECS/GEM communication software. |
| Transmission Failure  | | Configure the relay to notify the programmable controller CPU that a data sending failure has occurred from SECS/GEM communication software. |
| PLC Handshake Failure  | | Configure the relay to notify the programmable controller CPU that a handshake link with the programmable controller CPU failed during data receipt. |
| T3 Timer Timeout  | — | Configure the relay to notify the programmable controller CPU that a response timeout occurred with the host. |
| | Notice Cancel By Disconnection/Offline | Configure the relay to notify the ladder program that the T3 timer is canceled for a transaction in a secondary message standby state due to a line disconnection or offline transition. |
| T9 Timer Timeout  | | Configure the relay to notify the programmable controller CPU that a timeout of T9 timer management occurred. For details on the T9 timer, refer to the following:  Page 73 Message information |
| T1 Timer Timeout *1  | | Configure the relay to notify the programmable controller CPU that a timeout occurred between characters during reception from the host. |
| T2 Timer Timeout *1  | | Configure the relay to notify the programmable controller CPU that a protocol timeout occurred with the host. |
| T4 Timer Timeout *1  | | Configure the relay to notify the programmable controller CPU that a timeout occurred between message blocks during communication with the host. |
| Scenario Interruption *1  | | Configure the relay to notify the programmable controller CPU that the scenario execution was interrupted for some reason. |
| Trigger Keep Time | | Configure the time to keep the configured notification relay. |
| Handshake | | Select this checkbox to link handshakes between the programmable controller CPU and SECS/GEM communication software pre-installed model module with regard to SECS error notification. When this checkbox is selected, the specified relay is monitored for handshaking. Note that programmable controller CPU handshaking fails unless the specified relay is turned OFF by the programmable controller CPU within the time defined by the PLC response monitoring timer. For details on the PLC Response Monitoring Timer, refer to the following:  Page 96 Control |
| Communication Error | Frame  | Configure the register to write the number of the Stream Function that had a transmission error. The Stream number is written to the start register and the Function number is written into the next register. |
| | Trigger  | Configure the register to write the type and number of the trigger relay that had a transmission error. The defined register is the first register, and the next register will also be used for registration. The device type is written to the start register and the device number is written into the next register. Values shown below are written as device types. <ul style="list-style-type: none"> • Device type is M: 4 • Device type is B: 23 |

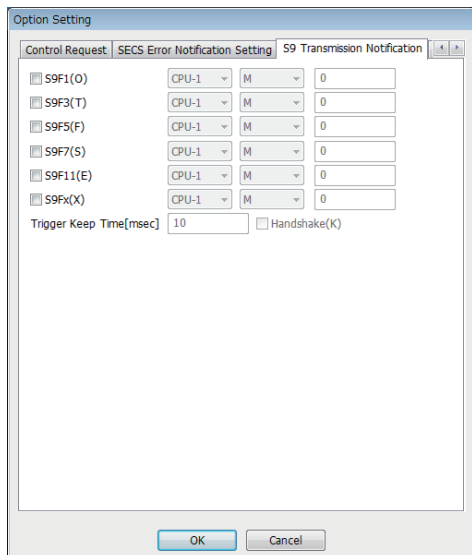
*1 Can be configured for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

S9 transmission notification


| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |









Window

 [Setting] ⇒ [Option Setting] ⇒ [S9 Transmission Notification] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|---|
| S9F1  | Configure the register to notify the programmable controller CPU of sending of an undefined device ID message. |
| S9F3  | Configure the register to notify the programmable controller CPU of sending of an undefined stream type message. |
| S9F5  | Configure the register to notify the programmable controller CPU of sending of an undefined function type message. |
| S9F7  | Configure the relay to notify the programmable controller CPU of sending of an incorrect data message. |
| S9F11  | Configure the register to notify the programmable controller CPU of sending of a message with an incorrect data length. |
| S9Fx  | Configure the relay to notify the programmable controller CPU when one of the following was sent: undefined device ID, undefined stream type, undefined function type, incorrect data, or message with incorrect data length. Operation of S9Fx relays is enabled regardless of the settings of the S9F1, S9F3, S9F5, S9F7, and S9F11 relays. |
| Trigger Keep Time | Configure the time to keep the notification relay. |
| Handshake | Select this checkbox to link handshakes between the SECS/GEM communication software pre-installed model module and programmable controller CPU with regard to S9 sending notification. If this checkbox is selected, S9 sending notifications are subject to handshake monitoring. Programmable controller CPU handshaking fails unless the notification relay is turned OFF by the programmable controller CPU within the time configured by the PLC Response Monitoring Timer. For details on the PLC Response Monitoring Timer, refer to the following:  Page 96 Control For details on programmable controller CPU handshake failures, refer to the following:  Page 119 SECS error notification setting |

Precautions

- To send S9F7 when the data received from the host is illogical, enable the S9F7 return relay setting.
- Detect S9F9 by notification of the T3 timer timeout.
- Detect S9F13 by notification of the T9 timer timeout. Note that a message needs to be created by the programmable controller CPU since S9F13 is not automatically sent.

■When "S9Fx" and individual notification relays have been enabled

Ex.


When "S9Fx" and "S9F7" have been enabled

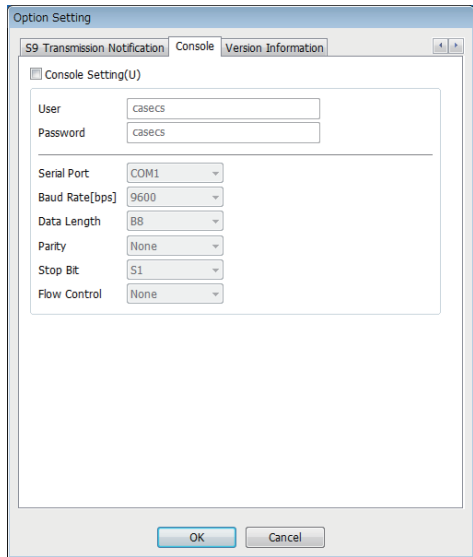
First, the S9Fx notification relay turns ON, and then the S9Fx notification relay is turned OFF by the programmable controller CPU. Next, the S9F7 notification relay turns ON, and then the S9F7 notification relay is turned OFF by the programmable controller CPU.

Console setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | — | — | — |

Window


 [Setting] ⇒ [Option Setting] ⇒ [Console] tab



The image shows the 'Option Setting' dialog box with the 'Console' tab selected. It contains a 'Console Setting(U)' section with a checkbox. Below it are input fields for 'User' (containing 'CASECS') and 'Password' (containing 'CASECS'). There are also dropdown menus for 'Serial Port' (COM1), 'Baud Rate[bps]' (9600), 'Data Length' (8B), 'Parity' (None), 'Stop Bit' (S1), and 'Flow Control' (None). 'OK' and 'Cancel' buttons are at the bottom.

Displayed items

| Item | Description | |
|-----------------|------------------------|--|
| Console Setting | — | Select this checkbox to acquire log data of SECS/GEM communication software from the MELSEC-Q series SECS/GEM communication software pre-installed model module through serial communication. If this checkbox is selected, the console function always runs within SECS/GEM communication software. |
| | User* ¹ | Configure the user name when logging into the console. Do not use invalid characters in C Controller modules or '#' for the user name. |
| | Password* ¹ | Configure the password when logging into the console. Do not use invalid characters in C Controller modules or '#' for the password. |
| | Serial Port | Configure the communication setting information for the console connection. |
| | Baud Rate | |
| | Data Length | |
| | Parity | |
| | Stop Bit | |
| | Flow Control | |

*¹ For characters applicable to the user name and password in C Controller modules, refer to the following:
 C Controller Module User's Manual (Hardware Design, Function Explanation)

How to use the console

Use HyperTerminal, which is included with the Windows operating system, to connect the MELSEC-Q series SECS/GEM communication software pre-installed model module via serial communication.

HyperTerminal can be used with Windows 2000 and Windows XP.

■Start-up and login of HyperTerminal

1. Select [Programs] ⇒ [Accessories] ⇒ [Communications] ⇒ [HyperTerminal] in Windows Start.
2. Enter the user name and password.

■Directory confirmation and manipulation

Use the following commands.

| Command | Description |
|---------------------------|-------------------------|
| dir | Check a directory. |
| cd ***(directory name) | Move a directory. |
| mkdir ***(directory name) | Create a new directory. |
| rmdir ***(directory name) | Delete a directory. |

■Downloading of files

Download a file from the current directory.

1. Enter the download command "down ***(filename)".
2. From the HyperTerminal menu, select [Transfer] ⇒ [Receive File].
3. Configure the file save destination, and configure the protocol to "Xmodem".
4. Click [Receive].

■Uploading of files

Upload a file to the current directory.

1. Enter the upload command "up ***(filename)".
2. From the HyperTerminal menu, select [Transfer] ⇒ [Send File].
3. Configure the file to be sent, and configure the protocol to "Xmodem".
4. Click the [Send] button.

■Browsing Help


Use the following commands.

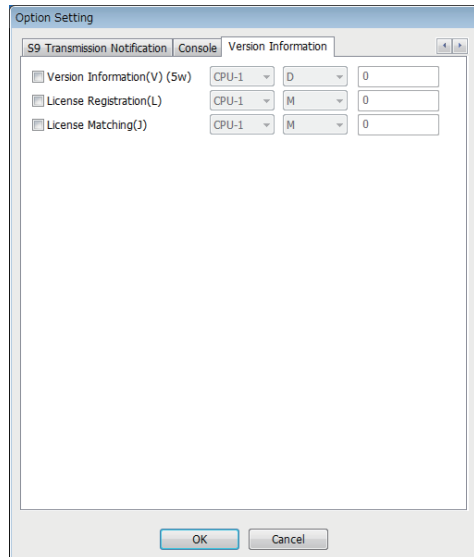
| Command | Description |
|---------|--------------------------------------|
| help | Check the commands that can be used. |

Version information


| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |






Window

 [Setting] ⇒ [Option Setting] ⇒ [Version Information] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.


| Item | Description |
|--|---|
| Version Information  | Configure the register to store the version of SECS/GEM communication software currently running. The version is stored as a character string in a register of 5 consecutive words starting from the configured register. The storage method is the same as the ASCII format item storage method. For the ASCII format item storage method, refer to the following:  Page 305 Data Type Conversion |
| License Registration  | Configure the register to store the presence of the license file. If the license file is recognized, SECS/GEM communication software turns ON the designated trigger. The license registration destination is the transfer destination (ROM or memory card) selected in the "Update Module" screen. If the registration destination is different, SECS/GEM communication software does not recognize the license file. |
| License Matching  | Configure the relay to store the compliance regarding the content registered to the license file. When a genuine license is already registered, SECS/GEM communication software turns ON the designated trigger. For license registration, refer to the following:  Page 37 License Registration |

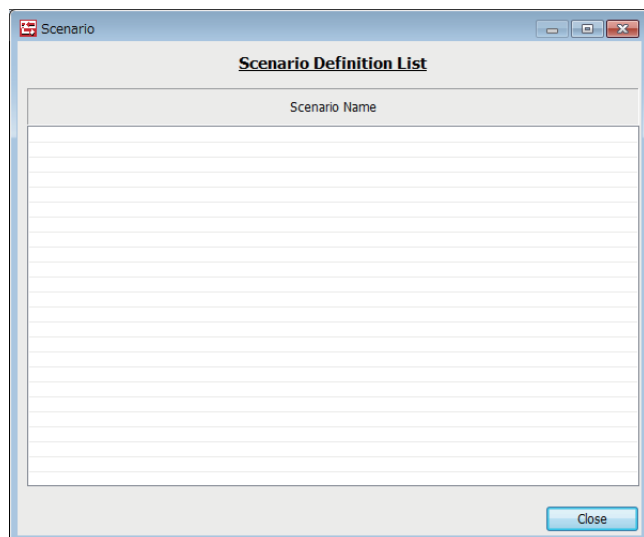
7.8 Scenario Definition

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | — | — | — |

Defining a scenario allows sequential operation of two or more transactions with a single bit trigger.

Window

 [Setting] ⇒ [Scenario Setting]



Operations of "Scenario"

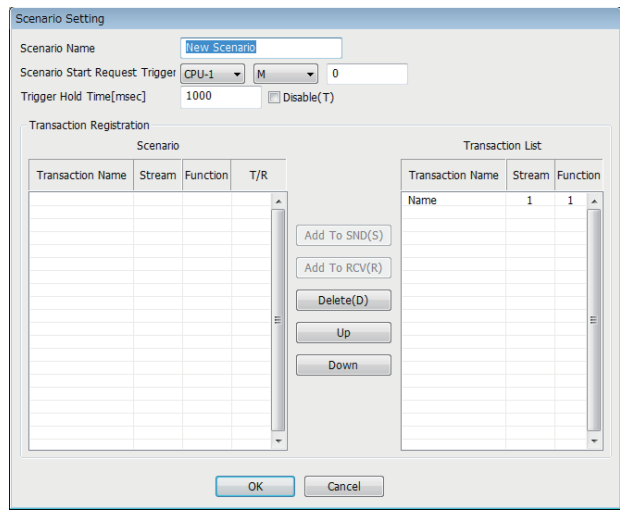
| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Scenario Setting" screen to modify the content of the selected scenario. |
| Right-click ⇒ shortcut menu [Insert] | Add a new scenario. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected scenario, and then copy the copied scenario to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected scenario. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected scenario. |

Scenario setting

Modify the scenario selected in the "Scenario" screen.

Window

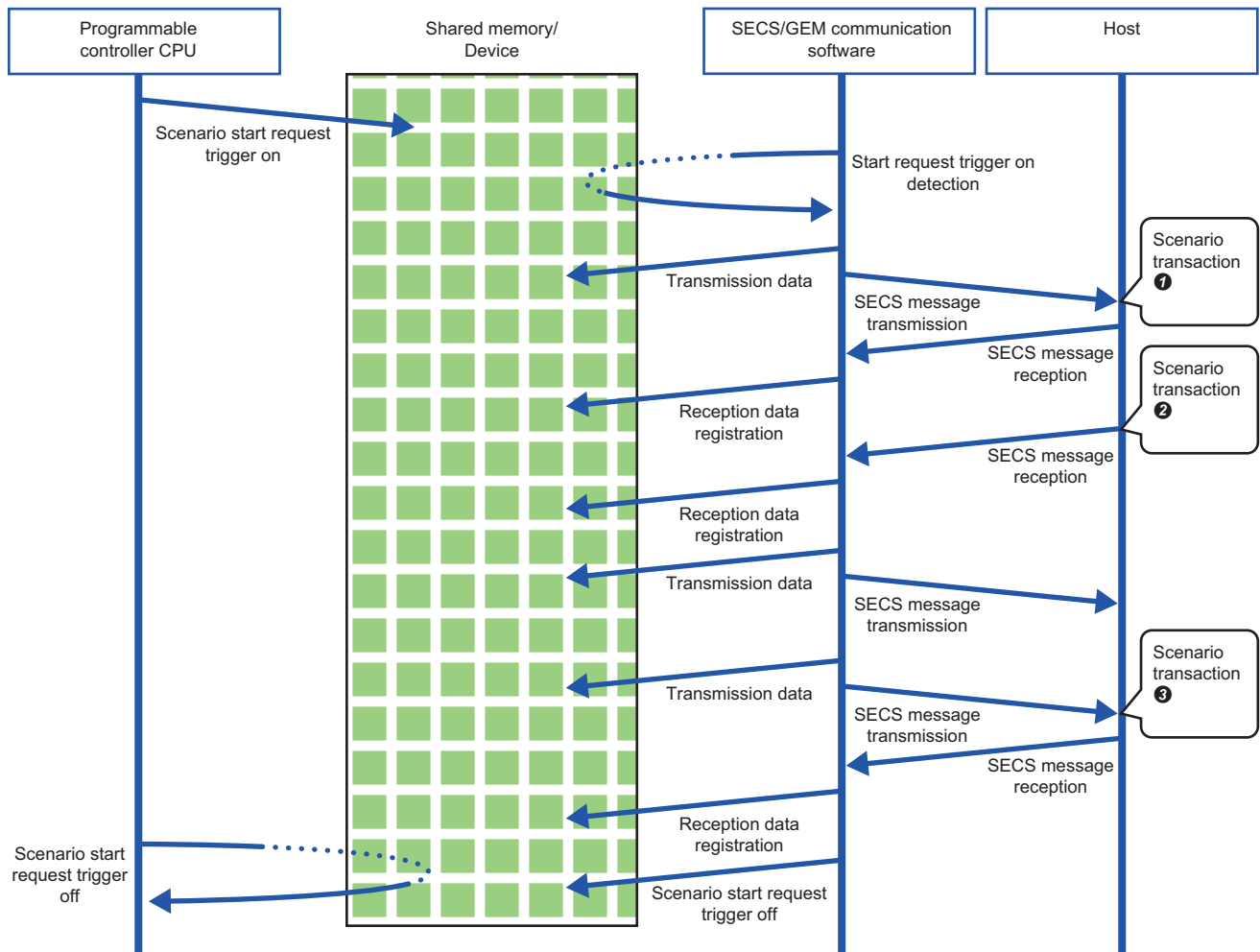
Select a scenario in the "Scenario" screen, right-click ⇒ shortcut menu [Modify]



Displayed items

| Item | Description |
|--------------------------------|--|
| Scenario Name | Configure the scenario name. |
| Scenario Start Request Trigger | Configure the trigger relay to request a scenario start from the programmable controller CPU. |
| Trigger Hold Time | When the scenario start request trigger is held for the configured time, a scenario start trigger results. If the "Disable" checkbox is selected, scenario start request trigger processing is carried out without hold monitoring. |
| Scenario | Lists the transactions registered to the scenario. |
| Transaction List | Displays the defined transaction name and Stream and Function numbers. If an arbitrary transaction is selected, the [Add To SND] button or [Add To RCV] button can be clicked in correspondence with the transmission type of that transaction. |
| [Add To SND] button | Register the transaction selected by "Definition transaction" to the scenario. |
| [Add To RCV] button | |
| [Delete] button | Delete the transaction selected under "Scenario". |
| [Up] button | Change the order of transactions of "Scenario". |
| [Down] button | |

Scenario transaction operation sequence



In the course of transaction operations within a scenario, the software refers to (for sending) or writes data to (for receiving) the related register without controlling the trigger relay.

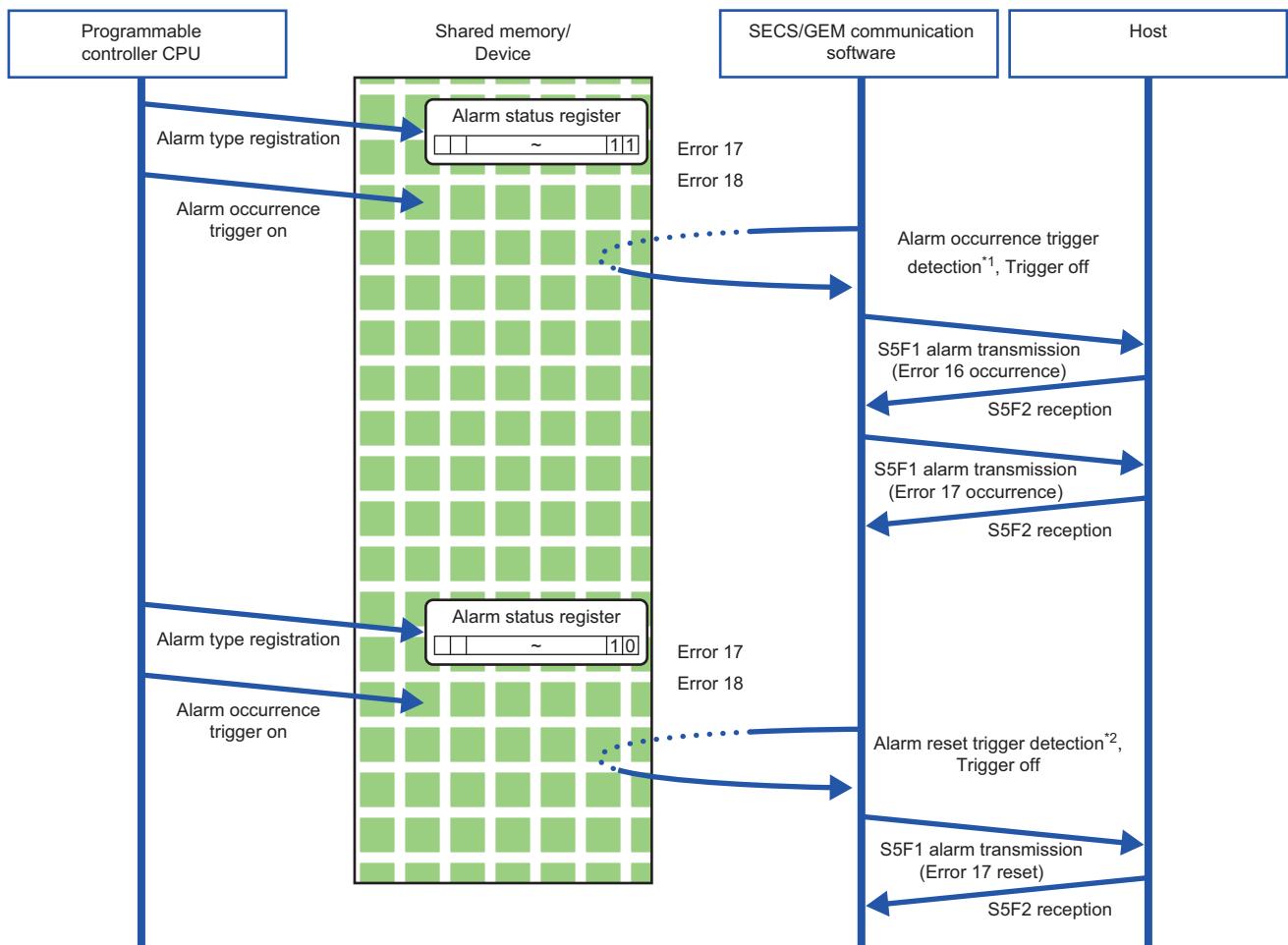
Be aware that the registration-destination register is overwritten every time a message is received.

7.9 Alarm Definition (non-GEM version)

Alarm notification definitions allow arbitrary definition and sending of the content of the alarm notification used by S5F1. This is completed just by controlling the alarm occurrence/recovery trigger and the register that corresponds to the prescribed alarm at the programmable controller CPU.

Operations during alarm notification

When the occurrence of (or recovery from) an alarm has been detected, the fact that a prescribed alarm occurred (or was recovered from) is reported (S5F1 alarm sending) regarding a location in which the register status changed.



*1 Compares with the internal state to detect items in which the register status changed from 0 to 1. (For occurrence trigger)

*2 Compares with the internal state to detect items in which the register status changed from 1 to 0. (For recovery trigger)

Alarm list

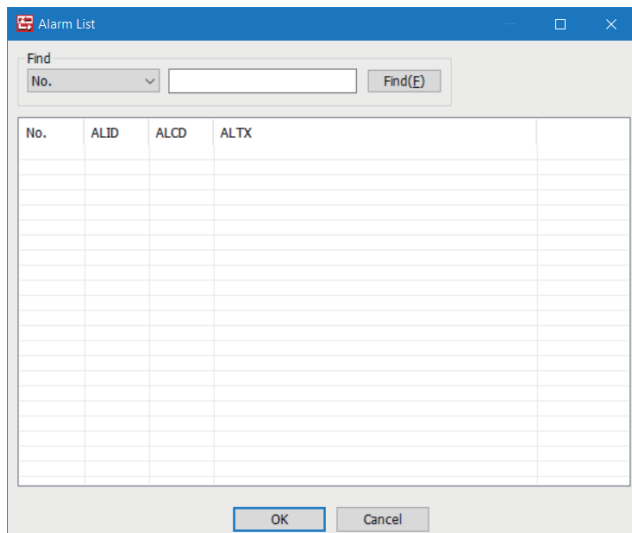
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |

The following shows the screen for displaying a list of defined alarms.

Up to 4096 alarms can be defined.

Window

 [Setting] ⇒ [Alarm Data Setting]



Operations of "Alarm List"

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Alarm Settings" to modify the content of the selected alarm. |
| Right-click ⇒ shortcut menu [Insert] | Add a new alarm. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected alarm, and then copy the copied alarm to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected alarm. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected alarm. |

Point

The content of the alarm list is saved to the following file.

(Project save destination)\ALARM.CSV

When the alarm content is large or redundant, it is convenient to use Microsoft Excel or another external editor to modify this file.

After the corresponding file is edited, the content is updated by opening the same project again.

Alarm settings

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |

Window

Select an alarm in the "Alarm List" screen, right-click ⇒ shortcut menu [Modify]

Alarm Data Setting

Alarm No. 1

Alarm Code 0 ☐ HEX(H)

Alarm ID 0

Alarm Text New Alarm

User Definition Item

OK Cancel

Displayed items

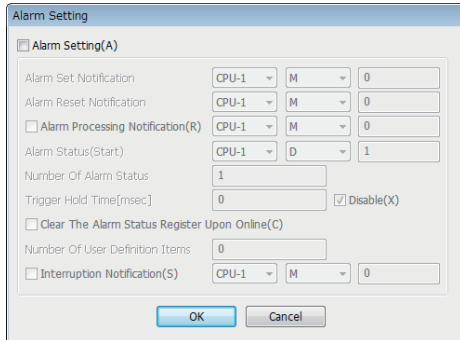
| Item | Description |
|----------------------|---|
| Alarm No. | Configure the number that corresponds to the prescribed alarm state register. (Start from 1) |
| Alarm Code | Configure the content of the alarm code <ALCD > related to the alarm number. |
| HEX | Select this checkbox to convert the alarm code notation to hexadecimal. If this checkbox is cleared, the notation is decimal. |
| Alarm ID | Configure the content of the alarm ID <ALID > related to the alarm number. |
| Alarm Text | Configure the content of the alarm text <ALTX > related to the alarm number. |
| User Definition Item | Configure the content of the user-defined items related to the alarm number. To configure user-defined items, browse to the "Alarm Setting" screen and configure "Number Of User Definition Items" in advance. For details on alarm notification settings, refer to the following: ☞ Page 132 Alarm notification setting User-defined items can be used only for transactions with ALARM configured for the format mode. The content of user-defined items is sent by selecting the user-defined item name for the storage destination type of the item information. |

Alarm notification setting


| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |




Window

 [Setting] ⇒ [Alarm Setting]



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|---------------|---|---|
| Alarm Setting | — | Select this checkbox to use the alarm notification setting. |
| | Alarm Set Notification | Configure the trigger relay to notify SECS/GEM communication software of an alarm occurrence. |
| | Alarm Reset Notification | Configure the trigger relay to notify SECS/GEM communication software of an alarm reset. |
| | Alarm Processing Notification  | Configure the relay to report that alarm sending is being processed. Turned OFF by receipt of a secondary message of the final alarm message. It is possible to check that the ladder program is performing sending processing when a large number of alarms occur at once. |
| | Alarm Status (Start) | Configure the register to display the alarm status. |
| | Number Of Alarm Status | One register can manage the alarm status of 16 items. Configure the quantity of registers to be used according to the number of alarm items. Up to 256 registers can be configured (maximum alarm count is 4096). |
| | Trigger Hold Time | A notification trigger results when the register configured for the alarm occurrence notification trigger or alarm recovery notification trigger was held for the configured time. If the "Not Monitored" checkbox is selected, notification trigger processing is carried out without hold monitoring. |
| | Clear The Alarm Status Register Upon Online | Select this checkbox to clear the content of the alarm status register when an online state is established (S1F1/F2 transmission). When the alarm status register is cleared, the internal alarm status of SECS/GEM communication software is cleared as well. If this checkbox is cleared, make the programmable controller CPU clear the alarm status register and internal alarm status as needed. |
| | Number Of User Definition Items | Configure the maximum number of user-defined items used by transactions with ALARM set for the format mode. For details on user-defined items, refer to the following:  Page 131 Alarm settings |
| | Interrupt Notification | Configure the relay to report that the alarm is being canceled when a large number of alarms occurred at the same time. For details, refer to the following:  Page 134 Alarm cancel notification |

Precautions

■Alarm report sending (S5F1/F2)

Alarm report sending (S5F1/F2) is a reserved transaction and is automatically sent. Configuring a transaction for this purpose is not required.

For details on reserved transactions, refer to the following:

☞ Page 312 List of reserved transactions and format

■Number of alarm status registers

When multiple registers are used, the consecutive registers from the specified start alarm status register up to the configured quantity will be targeted.

Make sure not to overlap with any register defined in other item settings.

■Editing of ALARM.CSV

ALARM.CSV is a text file with items delimited by commas. When editing the data, take care not to change the file format.

Furthermore, back up and store the file before modifying it.

Alarm cancel notification

SECS/GEM communication software may be affected when a large number of alarms occur at the same time.

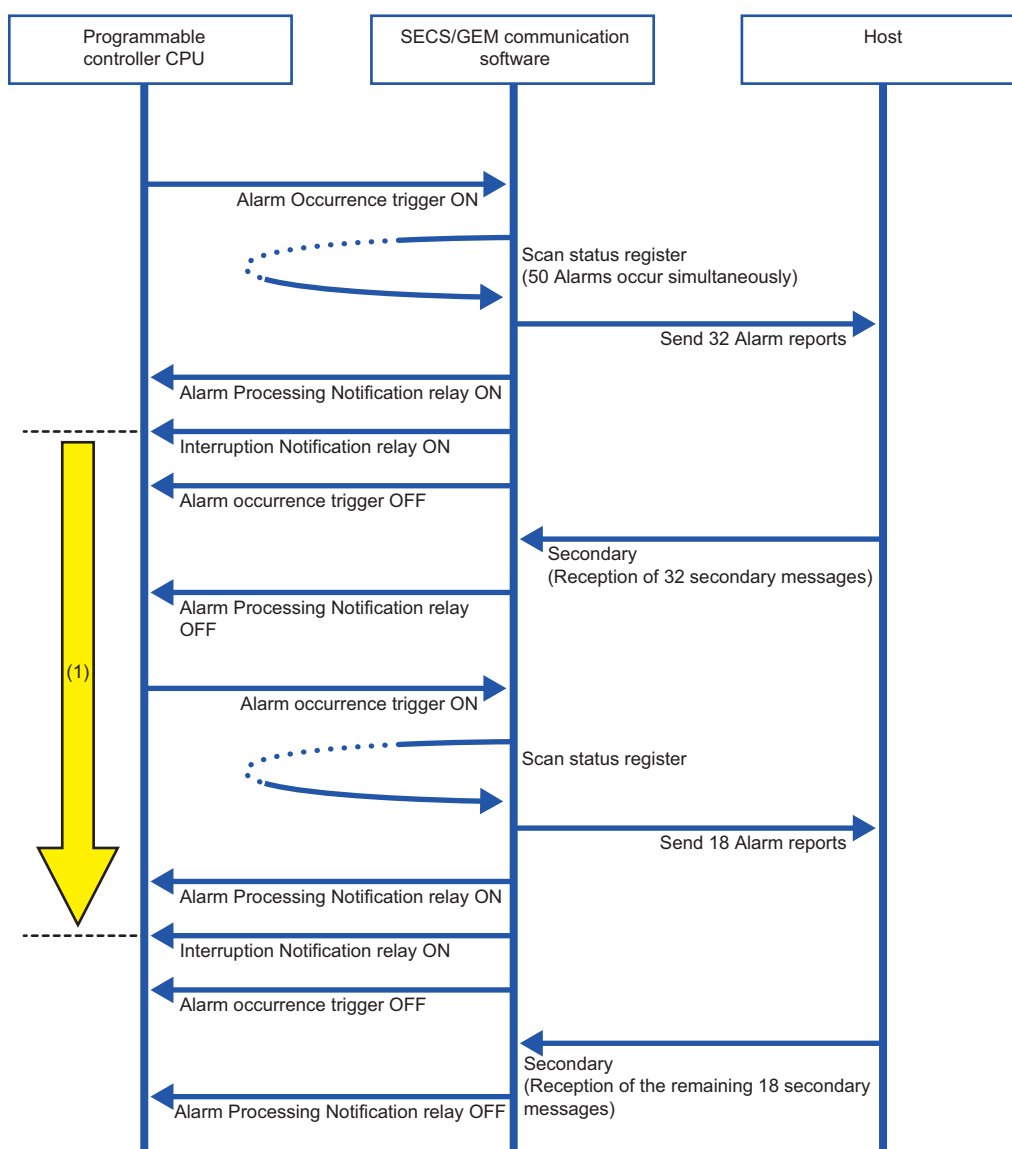
To prevent this, SECS/GEM communication software cancels alarms when 33 or more alarm reports are sent at the same time. Even when the number of alarm reports is 32 or less, alarm reports are canceled when the sending queue becomes full before all sending is finished.

With regard to canceled alarm reports, sending is started again by switching the alarm occurrence (or alarm recovery) trigger to ON, and the report cancel notification relay is switched OFF when all reports are completed.

In addition to the interlock of the alarm status register, a lock by the ladder program is necessary so that recovery processing is not performed until all alarm occurrences are completed when alarms are canceled during alarm occurrence processing.

Similarly, a lock is used to prevent occurrence processing midway when alarms are canceled during alarm recovery processing.

The following diagram shows the processing flow when 50 alarms have occurred.



(1) Locked by the ladder program so that alarm recovery processing is not carried out until all alarm report sending is complete

7.10 Spooling Function (non-GEM version)

Messages that failed to be sent for some reason can be kept as spool messages. Spooled messages can be resent when communication is recovered.


Spooled messages are stored on the memory card.

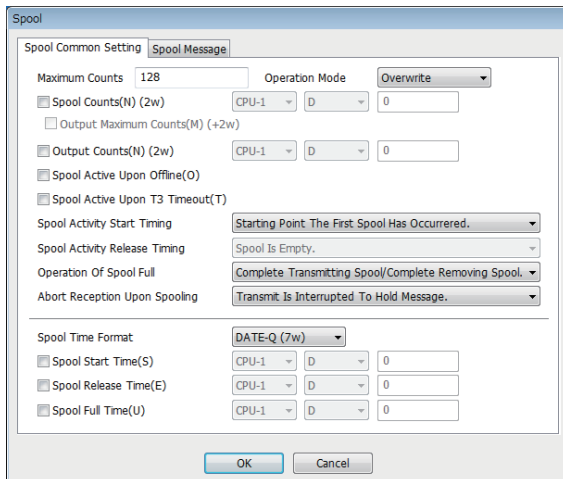
Spool definition settings

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |


Spool common settings




Window





 [Setting] ⇒ [Spool Setting]⇒ [Spool Common Setting] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|---|
| Maximum Counts | Configure the maximum number of messages to be spooled. |
| Operation Mode | Select the operation method when the maximum number of items is exceeded. Overwrite: Overwrite spooled messages. Discard: Discard the overflow. |
| Spool Counts  | — |
| Output Maximum Counts  | Select this checkbox to output the maximum number of data items. The maximum number of data items output is stored from the register configured for spool items plus 2 word positions in data of two-word, 32-bit integers. |
| Output Counts  | Configure a register to store the number of output items. The number of spool output items is stored to the register in 2-word, 32-bit integers. |
| Spool Active Upon Offline | Select this checkbox to use the spool function in an offline state. |
| Spool Active Upon T3 Timeout | Select this checkbox to perform spooling without communication being interrupted due to a T3 timeout. |
| Spool Activity Start Timing | Select the spool activity start timing. <ul style="list-style-type: none"> Starting point the first spool has occurred: The spooling relay switches ON when messages were spooled, and "Spool Start Time" is stored. Treat communication error occurrence time as start: The spooling relay switches ON when a communication error (T3 timeout, etc.) occurred by a sending message, and "Spool Start Time" is stored. |

| Item | Description |
|--|--|
| Spool Activity Release Timing | Select the spool activity release timing. <ul style="list-style-type: none"> Spool is Empty: The spool is cleared when all spool messages of the spool buffer have been transferred or deleted. |
| Operation Of Spool Full | Select the spooling operation after the spool buffer becomes full. <ul style="list-style-type: none"> Complete Transmitting Spool/Complete Removing Spool: After the number of spool items reaches the maximum, spooling is not possible again if the entire spool has not been transferred or deleted. Spooling Possible With Empty Spool Buffer: After the number of spool items has reached the maximum, spooling is possible, even when previous spool data remains, when the spool buffer could be emptied by spool transfer, etc. |
| Abort Reception Upon Spooling | Select the operation when an abort message is sent for a spool transmission message. <ul style="list-style-type: none"> Transmit Is Interrupted To Hold Message: The transfer of the spool is canceled. At the next transfer, the transfer is started from a message that returned an abort. Skipped And Transfer Is Continued: The spool transfer message that returned an abort is skipped, and transfer is continued automatically from the next spooled message. Transfer is completed when there is finally a spooled message. |
| Spool Time Format | Select the format of the spool start time, spool release time, and spool-full time to be stored to the specified register. For details on each format, refer to the following:  Page 107 Register storage formats |
| Spool Start Time  | Configure the register to store the time the spool started. |
| Spool Release Time  | Configure the register to store the time the spool cancelled. |
| Spool Full Time  | Configure the register to store the time until the maximum number of spool items was reached. |

■Number of output items

- The number of spool output items is counted from receipt of an S6F23 (Spooled data request) transfer request.
- Previous values are not retained due to a reset. (Values are not retained after reset.)
- Counted as output items when the spool was discarded.
- Counted as one item by spool transmission success. (When there is a W-bit, when a secondary message is received).
- The final result is stored before the Spooling relay or Spool outputting relay is turned OFF.
- Two words each are used for the number of spool items, maximum number of data items, and number of output items, so take care not to overlap with other register settings.

■Abort reception upon spooling setting

- If "Not Communication Upon Abort Reception For Spool Message" is enabled in the [Control] tab of the option settings and "Skip and continue transfer" is configured, "Skip and continue transfer" is prioritized, and communication is not disconnected when an abort message is received during spool transmission. At times other than spool transmission, communication is disconnected when the conditions are met.
- In the case of "Abort Frame Reception" in the [SECS Error Notification Setting] tab of the option settings, a relay notification is performed regardless of the "Abort Reception Upon Spooling" setting.

■Important points regarding spool definition settings

- SECS/GEM communication software does not turn OFF the sending request relay unless message sending is completed. Accordingly, when primary messages are to be sent, it is necessary to describe the handshake response monitoring timer processing of SECS/GEM communication software at the programmable controller CPU. At this time, the spooling relay turns ON when there are messages subject to spooling.
- When the spooling relay is ON, SECS/GEM communication software does not send a message when the equipment attempts to send a primary message not subject to spooling. However, S1 and S9 related messages are sent.

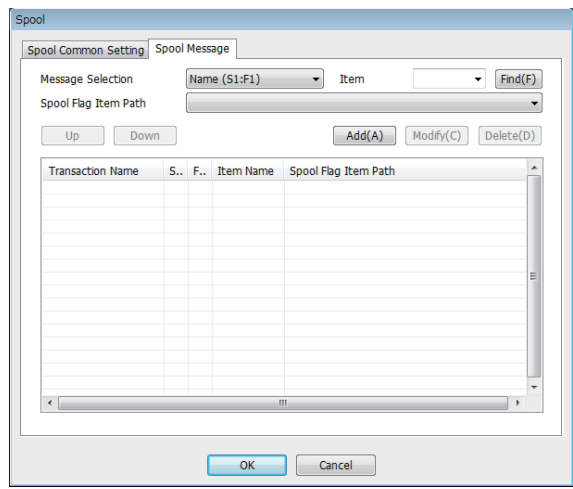
■Considerations when switching the power ON or OFF

- Before turning OFF the power of a C Controller module, disable spooling or hold the Mode switch of the C Controller module from RUN to STOP, and then wait 3 seconds or more. To prevent corruption of logs and spooling files, all file writing is stopped. Furthermore, put the Mode switch back to RUN before turning ON the power. Operation may be affected because there are limits on file access during start-up.
- Before turning OFF the power of the C intelligent function module, disable spooling or unmount the SD card (by holding the Mode switch of the C intelligent function module from the center to the SELECT position for 3 seconds or more). To prevent corruption of logs and spooling files, all file writing is stopped. Furthermore, put the Mode switch back to the center before turning ON the power. Operation may be affected because there are limits on file access during start-up.

Spool message settings

Window

 [Setting] ⇒ [Spool Setting] ⇒ [Spool Message] tab



Displayed items

| Item | Description |
|-------------------------------|--|
| Message Selection | Select the defined message name and Stream/Function number. |
| Item | <p>Select an item.</p> <p>Use when a spool flag is included in the item of a message subject to spool.</p> <p>In this way, the spool flag distinguishes between normal sending and spooling sending.</p> <ul style="list-style-type: none">• Normal sending: conforms to item information• Spooling sending: fixed to "1" <p>When the corresponding item is used as a spool flag, the defined item name is displayed for messages with the spool flag selected, so click the [Search] button.</p> <p>Confirm the message flag path, and then click and configure each button.</p> |
| Spooling setting list display | <p>A list of defined spool messages is displayed.</p> <p>If a message is selected, the message content and spool flag path are displayed.</p> |
| [Up] button | Change the order of messages of "Spooling setting list display" |
| [Down] button | |
| [Add] button | Configure new spool messages. |
| [Modify] button | Change a spool flag of an already configured message. |
| [Delete] button | Cancel messages subject to spooling. |

Precautions

The setting of the spool flag path is defined for content already configured. Accordingly, be aware that it is necessary to configure the spool flag path setting again when the corresponding message was changed.

Spooled message sending

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | — |
| MELSEC iQ-R series | ○ | — | — |

For messages subject spooling, operations are performed particular to the status.

The following table shows operations of messages that can and cannot be sent due to status.

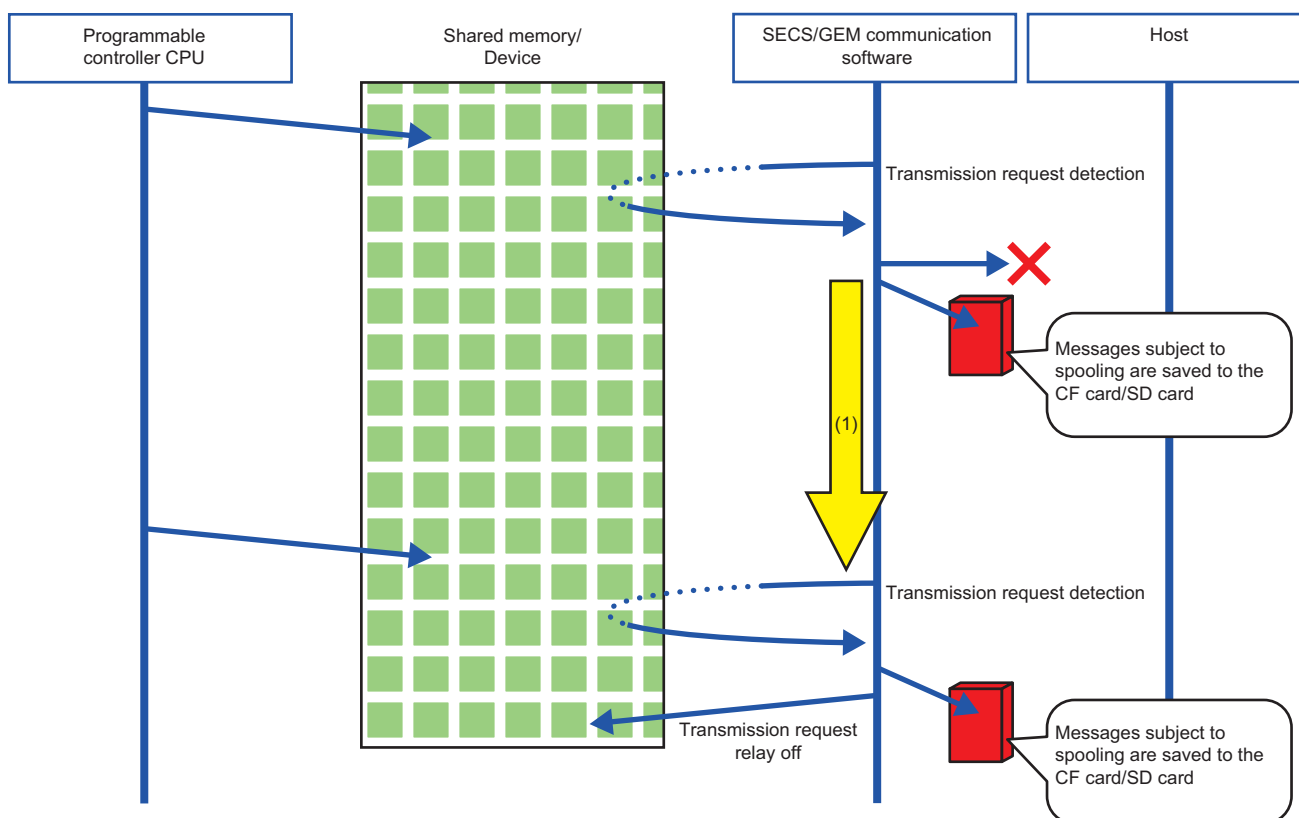
| Message classification | Online | Spooling online | Offline*1 |
|---------------------------------|------------------------------|------------------------------|---|
| Message subject to spooling | Sending possible | Spooling | Spooling |
| Message not subject to spooling | Sending possible | Sending not possible | Sending not possible (sending cancellation) |
| S1 message | Sending possible | Sending possible | Sending possible only for S1F1 and S1F13 |
| S9 message*2 | Sending possible (automatic) | Sending possible (automatic) | Sending possible (automatic) |

*1 When the "Spool during offline" setting is enabled

*2 For S9 messages, sending is automatic, so handshakes are not performed.

Spooling operation sequence

If message sending fails due to a line disconnection, etc., messages subject to spooling are stored on the memory card. Also, messages subject spooling are not sent and are all stored on the memory card while the spooling relay is ON.

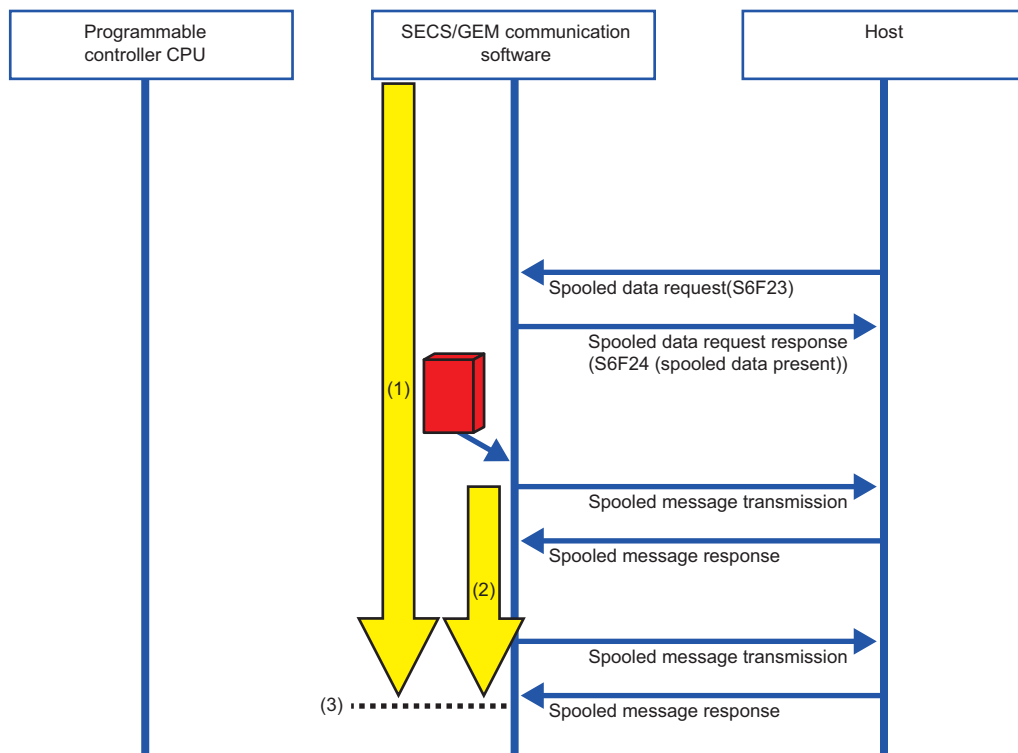


(1) The spooling relay is ON.

Operation sequence during spool message sending

All spool sending is performed by SECS/GEM communication software.

The spool outputting relay is ON during spool sending, and then switches OFF when complete. At this time, the spooling relay is also OFF.



(1) The spooling relay switches ON.

(2) The spooling outputting relay switches ON.

(3) The spool outputting relay and spooling relay switch OFF.

7.11 Project Archive File Get

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


Acquire the user definition archive (USRSET.LZH or USRSET.ZIP^{*1}) transferred to the SECS/GEM communication software pre-installed model module and put it in the prescribed folder.

The user definition archive is obtained from the "Destination" set in the "Update Module" screen.

^{*1} The extension of a user definition archive file to be acquired differs depending on the software version.

| Software version of setting tool | Extension of user definition archive file saved in module | | |
|----------------------------------|---|----------------------|------------------|
| | LZH | ZIP | LZH and ZIP |
| 1.30G or earlier | LZH is acquired. | Neither is acquired. | LZH is acquired. |
| 1.31H or later | | ZIP is acquired. | ZIP is acquired. |

For software versions supporting ZIP extension, refer to the following:

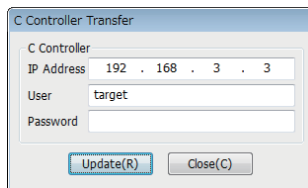
 Page 324 Added and Changed Functions

Point

In the case of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module, replace the term "C Controller" with "C intelligent function module."

Window

 [Setting] ⇒ [Project Archive File Get]



Displayed items

| Item | Description |
|------------|--|
| IP Address | Configure the IP address of the SECS/GEM communication software pre-installed model module. |
| User | Configure the username (login name) of the SECS/GEM communication software pre-installed model module. |
| Password | Configure the password of the SECS/GEM communication software pre-installed model module. |

Operating procedure

1. Specify the folder to store the user definition archive to be acquired in the "Browse Folder" screen.
2. Configure the items of the "Project Archive File Get" screen.
3. Click the [Get] button.
4. Click the [OK] button.

7.12 Updating SECS/GEM Communication Software Pre-installed Model Module

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

From the setting tool, connect to the SECS/GEM communication software pre-installed model module, and then update the setting file stored on the standard ROM or memory card.

If the file is updated, the setting tool is used to apply the configured content to SECS/GEM communication software.

Precautions

- Always save the project before using this function.
- Set the same location (standard ROM or memory card) for the application installation destination, setting file update destination, and the license registration destination.
- When the application was installed on the standard ROM and memory card, the application on the memory card runs.
- If a C Controller module is operating in the basic mode, select the memory card as the transfer destination.
- A memory card is required for a MELSEC-Q series SECS/GEM communication software pre-installed model module. Some settings will be transferred to the memory card even when setting ROM as a transfer destination.
- Do not switch the power supply from OFF to ON while the SECS/GEM communication software pre-installed model module is updating. Otherwise, the internal file system may be corrupted.
- Do not update a SECS/GEM communication software pre-installed model module whose module type is different from the setting tool. Otherwise, the module may not operate properly.

■If the model type of SECS/GEM communication software is unknown

The model type information of SECS/GEM communication software is registered in the event history at the start of a module. Check the model type information from an event of "Source," which is shown as below.


- MELSEC-Q series

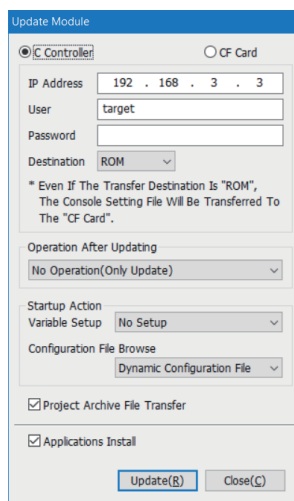
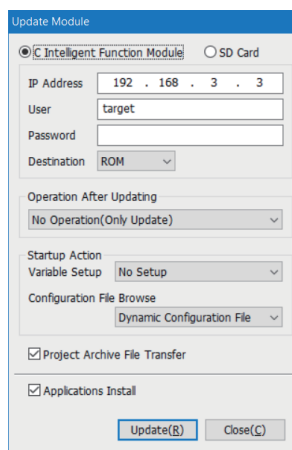
| Module | SECS/GEM communication software | Source | Event information |
|--|---------------------------------|--------|-------------------|
| MELSEC-Q series SECS/GEM communication software pre-installed model module | Non-GEM version | CAS | NON-GEM |
| | GEM version | CASECS | GEM |
| | GEM advanced version | | GEM ADVANCED |

- MELSEC iQ-R series


| Module | SECS/GEM communication software | Source | Detailed event log information |
|---|---------------------------------|------------|--|
| MELSEC iQ-R series SECS/GEM communication software pre-installed model module RD55UP06-V | Non-GEM version | RD55UP06-V | Detail information: [CAS] NON-GEM |
| | GEM version | | Detail information: [CAS] GEM |
| | GEM advanced version | | Detail information: [CAS] GEM ADVANCED |
| MELSEC iQ-R series SECS/GEM communication software pre-installed model module RD55UP12-V | Non-GEM version | RD55UP12-V | Detail information: [CAS] NON-GEM |
| | GEM version | | Detail information: [CAS] GEM |
| | GEM advanced version | | Detail information: [CAS] GEM ADVANCED |

Window

-  [Setting] ⇒ [Update Module] (When using a MELSEC iQ-R series SECS/GEM communication software pre-installed model module)
- [Setting] ⇒ [Update Module] (When using a MELSEC-Q series SECS/GEM communication software pre-installed model module)


Displayed items

| Item | | Description |
|-------------------------------|---|--|
| C Intelligent Function Module | | Select this to transfer the setting file to the Standard ROM or memory card. |
| C Controller | | |
| SD Card | | Select this to save the setting file directly to the memory card via a card reader. |
| CF Card | | |
| — | IP Address | Configure the IP address of the SECS/GEM communication software pre-installed model module. |
| | User | Configure the username (login name) of the SECS/GEM communication software pre-installed model module. |
| | Password | Configure the password of the SECS/GEM communication software pre-installed model module. |
| | Destination | Select the transfer destination of the setting file. |
| Operation After Updating | | Select an operation after updating. For details, refer to the following:  Page 143 Operation after updating |
| Startup Action | Variable Setup ^{*1} | Select whether to change to match the variable definition content the next time SECS/GEM communication software starts. |
| | Configuration File Browse ^{*1} | Select the setting file to be referenced the next time SECS/GEM communication software starts. |
| Project Archive File Transfer | | Select this checkbox to archive and transfer the setting file information. If the information is transferred, a user definition archive file (USRSET.LZH or USRSET.ZIP ^{*2}) is created in the transfer destination folder. When a user definition archive file already exists in the transfer destination, the existing file is overwritten by a new one. |
| Applications Install | | Select this checkbox to transfer the application file of SECS/GEM communication software from the SECS/GEM communication software pre-installed model module. |

^{*1} Can be configured for only a GEM version and GEM advanced version.

^{*2} The extension of a user definition archive file differs depending on the software version.

For software versions supporting ZIP extension, refer to the following:

 Page 324 Added and Changed Functions

Operation after updating

The following shows the operations after an update of the SECS/GEM communication software pre-installed model module.

■No Operation (Only Update)

The setting file is updated.

The setting content is applied the next time the SECS/GEM communication software pre-installed model module is started.

■Restart (Restart Application)

Update the setting file, and then restart only SECS/GEM communication software. Do not restart the SECS/GEM communication software pre-installed model module.

The shared memory / device information is not changed.

The settings can be updated without stopping the equipment.

7.13 IP Address Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

An IP address of the SECS/GEM communication software pre-installed model module can be changed using the setting tool. The IP address can also be changed by storing the address in the register of a programmable controller CPU and using the ladder program which uses the register.

An Ethernet port that is not subject to change using this function operates with an IP address set in the Setting/monitoring tools for the C Controller module or GX Works3.



When changing an IP address using this function, the IP address will be changed to one set at the last time. To change the IP address of multiple channels, change them at once.

Note that changes in the IP address of the SECS/GEM communication software pre-installed model module by this function are available only when SECS/GEM communication software is running.

This section shows the procedure to configure the IP address.

Operating procedure

1. Configure the IP address using one of the following methods.

-  Page 147 Changing the IP address from the setting tool
-  Page 149 IP address setting by PLC

2. Reset the SECS/GEM communication software pre-installed model module.

The IP address is changed after the reset. (An event is registered to the event history of the Setting/monitoring tools for the C Controller module or GX Works3.)

Point

When changing an IP address using the IP address setting function, parameters are changed during the start of a module.


Therefore, a SECS/GEM communication software pre-installed model module may not be connected while the parameter change is in progress.

To change the IP address of the SECS/GEM communication software pre-installed model module, it is recommended to use the Setting/monitoring tools for the C Controller module or GX Works3.

Precautions

■Change of the IP address

Before changing an IP address, check the address carefully. If the changed IP address is forgotten, disable the change of the IP address by referring to the following:

 Page 145 Methods for clearing an IP address set by the IP address changing function

Do not change the IP address of an Ethernet port which is not enabled.

If the IP address of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module cannot be changed using this function, set the IP address from GX Works3 or use a setting tool with version 1.39R or later.

■Application of settings

The IP address is not changed during system operation. Always perform a reset to change the IP address.

■Reset

Before performing a reset, make sure that the CIM control ready relay is ON.

In addition, for changing the IP address of MELSEC-Q series SECS/GEM communication software pre-installed model module, the module must be reset twice.

■When changing the IP address of a MELSEC-Q series SECS/GEM communication software pre-installed model module

When changing the IP address using this function, CCPU parameters managed by the Setting/monitoring tools for the C Controller module are overwritten.

Therefore, when changing the IP address with this function and reading it from the module using the Setting/monitoring tools for the C Controller module, the IP address that is changed by this function is read.

■When changing the IP address of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module

When changing the IP address of MELSEC iQ-R series SECS/GEM communication software pre-installed model module by using this function, the module operates with the IP address set in GX Works3 from when the power is turned ON to when SECS/GEM communication software is started.

In addition, when configuring the IP address of the module by using this function, 'IP address configuration file' remains in the standard ROM.






Therefore, IP address settings from GX Works3 to the MELSEC iQ-R series SECS/GEM communication software pre-installed model module are not effective when SECS/GEM communication software is running.

■Methods for clearing an IP address set by the IP address changing function



The following shows the methods for clearing an IP address set for a module using this function.

Perform any of the following methods:

- MELSEC-Q series SECS/GEM communication software pre-installed model module

| Method | Description |
|--|---|
| Setting an IP address again using the Setting/monitoring tools for the C Controller module | Set the IP address of a module again using the Setting/monitoring tools for the C Controller module. After that, restart the module. For details on the setting method, refer to the following:  MELSEC-Q C Controller Module User's Manual  C Controller Module User's Manual (Hardware Design, Function Explanation) |
| Initializing a module | Initialize a module. For details on the initialization, refer to the following:  MELSEC-Q C Controller Module User's Manual  C Controller Module User's Manual (Hardware Design, Function Explanation) After restarting the module, perform the procedure described in the following section:  Page 21 PROCEDURE BEFORE OPERATION |

• MELSEC iQ-R series SECS/GEM communication software pre-installed model module

| Method | Applicable condition | Description |
|-------------------------------------|---|---|
| Deleting an IP address setting file | When setting ROM or SD as a transfer destination of CA-SECS | <ol style="list-style-type: none"> 1 Copy the following file into the root of an SD card using a card reader. (A SECS/GEM communication software installation folder)/RECOVERY/STARTUP.CMD 2 Insert the SD card into a C intelligent function module and power the module ON. 3 Check that 'CARD RDY' turns ON on the C intelligent function module. 4 When setting ROM as a transfer destination of CA-SECS Specify an IP address set in the parameter settings of GX Works3 and delete '/SD/STARTUP.CMD' of the module by FTP communication. When setting SD as a transfer destination of CA-SECS Select [Setting] ⇒ [Update Module]. After that, specify an IP address set in the parameter settings of GX Works3 and select the checkbox of "Applications Install" to update the IP address. 5 Restart the module. |
| | When setting ROM as a transfer destination of CA-SECS | <ol style="list-style-type: none"> 1 Set "Stop Script File Setting" for an operation mode of "Mode Settings" in the parameter settings of GX Works3. 2 Write parameter settings to a module. 3 Restart the module. 4 Specify an IP address set in the parameter settings of GX Works3 and delete '/ROM/CAS/IPADDR.txt' of the module by FTP communication. 5 Set "Online" for an operation mode in "Mode Settings" of parameter settings in GX Works3. 6 Write parameter settings to a module. 7 Select [Setting] ⇒ [Update Module] in a setting tool. Specify the IP address set in GX Works3 parameter settings and select the checkbox of "Applications Install" to update the IP address. 8 Restart the module. |
| | When setting SD as a transfer destination of CA-SECS | Remove an SD card from a module and perform the procedure described in 'When setting ROM as a transfer destination of CA-SECS' under 'Applicable condition.' |
| Initializing a module | When setting ROM or SD as a transfer destination of CA-SECS | <p>Initialize a module.</p> <p>For details on the initialization, refer to the following:</p> <p> MELSEC iQ-R C Intelligent Function Module User's Manual (Application)</p> <p>After restarting the module, perform the procedure described in the following section:</p> <p> Page 21 PROCEDURE BEFORE OPERATION</p> |

Changing the IP address from the setting tool

Change the IP address of the SECS/GEM communication software pre-installed model module from the setting tool.

Point

In the case of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module, replace the term "C Controller" with "C intelligent function module."

Window

[Function] ⇒ [IP Address Setting]

IP Address Setting

☐ C Controller(CH1)(U)

IP Address: 192 . 168 . 3 . 3
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 0 . 0 . 0 . 0

☐ C Controller(CH2)(V)

IP Address: 0 . 0 . 0 . 0
Subnet Mask: 0 . 0 . 0 . 0
Default Gateway: 0 . 0 . 0 . 0

Update Close

Operating procedure

1. Select the Ethernet port to change the IP address.
For a MELSEC iQ-R series SECS/GEM communication software pre-installed model module, the unselected Ethernet port operates with an IP address set by GX Works3.
For a MELSEC-Q series SECS/GEM communication software pre-installed model module, the unselected Ethernet port operates with an IP address managed by the Setting/monitoring tools for the C Controller module.
2. Set each item.
3. Click the [Update] button.
4. A screen appears. Enter the IP address, user, and password of the target SECS/GEM communication software pre-installed model module.

C Controller Transfer


C Controller

IP Address: 192 . 168 . 3 . 3
User: target
Password:


Update(R) Close(C)

5. Click the [Update] button.
After transfer, the IP address is changed by resetting the SECS/GEM communication software pre-installed model module.

Precautions

- For software versions for which default gateway can be set, refer to the following:
( Page 324 Added and Changed Functions)
- CH2 cannot be set for RD55UP06-V-BZ11, RD55UP06-V-BZ13, and RD55UP06-V-BZ15 because they have only one Ethernet port.
- If the network settings are duplicated between channels that are different from a channel to be set, such as in the following cases, an IP address cannot be changed. The IP address before change is retained.

| Series | Network setting |
|--------------------|--|
| MELSEC iQ-R series | <ul style="list-style-type: none">• When an IP address set in GX Works3 and an IP address set from a setting tool are duplicated• When an IP address set in GX Works3 and the network segment of an IP address set from a setting tool are duplicated |
| MELSEC-Q series | <ul style="list-style-type: none">• When an IP address being set and an IP address set from a setting tool are duplicated• When an IP address being set and the network segment of an IP address set from a setting tool are duplicated |

- If changing an IP address fails, an event log will be registered in the event history. Check the event history and troubleshooting by symptoms and then take corrective actions. ( Page 295 Troubleshooting by Symptom)
- If "Default Gateway" of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module being used is blank or '0.0.0.0,' the default gateway will not be set. If a default gateway has already been set, the setting will be deleted.

IP address setting by PLC

The IP address of the SECS/GEM communication software pre-installed model module can be changed by a handshake with SECS/GEM communication software.

Use this procedure, for example, when changing the IP address from the equipment display.

Point

In the case of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module, replace the term "C Controller" with "C intelligent function module."

Window

[Function] ⇒ [IP Address Setting By PLC]

IP Address Setting By PLC

☐ IP Address(CH1) Setting By PLC(U)

Setting Request Trigger

CPU-1

M

0

Start Register (12w)

CPU-1

D

0

☐ IP Address(CH2) Setting By PLC(V)

Setting Request Trigger

CPU-1

M

0

Start Register (12w)

CPU-1

D

0

OK

Cancel

Displayed items

| Item | | Description |
|------------------------------------|-------------------------|---|
| IP Address (CH1) Setting By PLC | — | Select this checkbox to change the IP addresses of CH1. |
| | Setting Request Trigger | Configure the trigger to set the IP address of CH1. |
| | Start Register (12w) | Configure the register to store the IP address information to be configured to CH1. |
| IP Address (CH2) Setting By PLC | — | Select this checkbox to change the IP address of CH2. |
| | Setting Request Trigger | Configure the trigger to configure the IP address of CH2. |
| | Start Register (12w) | Configure the register to store the IP address information to be set to CH2. |

Operating procedure

1. Configure "Setting Request" and "Start Register" in the "IP Address Setting By PLC" screen.
2. The IP address information is configured by the ladder program as shown below.

| Storage destination register | Description |
|------------------------------|-----------------|
| 0 to +3 | IP Address |
| +4 to +7 | Subnet Mask |
| +8 to +11 | Default gateway |

3. Configure the setting trigger.



SECS/GEM communication software switches OFF the setting trigger.

The file necessary to change the IP address on the SECS/GEM communication software pre-installed model module is created by SECS/GEM communication software.

4. Reset the SECS/GEM communication software pre-installed model module.

After resetting, the IP address of the SECS/GEM communication software pre-installed model module is changed.

Precautions

- For software versions for which default gateway can be set, refer to the following:
( Page 324 Added and Changed Functions)
- CH2 cannot be set for RD55UP06-V-BZ11, RD55UP06-V-BZ13, and RD55UP06-V-BZ15 because they have only one Ethernet port.
- Do not configure the same IP address between the storage destination register of CH1 and the storage destination register of CH2.
- When configuring an invalid IP address for a storage destination register, the IP address of a SECS/GEM communication software pre-installed model module cannot be changed. The value of the storage destination register is changed to that of the current IP address.
- If changing an IP address fails, an event log will be registered in the event history. Check the event history and troubleshooting by symptoms and then take corrective actions. ( Page 295 Troubleshooting by Symptom)
- If the default gateway of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module being used is '0.0.0.0,' the default gateway will not be set. If a default gateway has already been set, the setting will be deleted.

IP address information

The IP address, subnet mask, and default gateway are configured by four words each.

When SECS/GEM communication software starts, the IP address information currently configured for the SECS/GEM communication software pre-installed model module is stored in the IP address information.

The following table shows a configuration sample.

| Register | Description | | | |
|--------------------------|-------------|-----|-----|-----|
| | +0W | +1W | +2W | +3W |
| +0W (IP address) | 192 | 168 | 3 | 3 |
| +4W (Subnet mask) | 255 | 255 | 255 | 0 |
| +8W (Default gateway) | 0 | 0 | 0 | 0 |

7.14 Data Mapping Settings

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

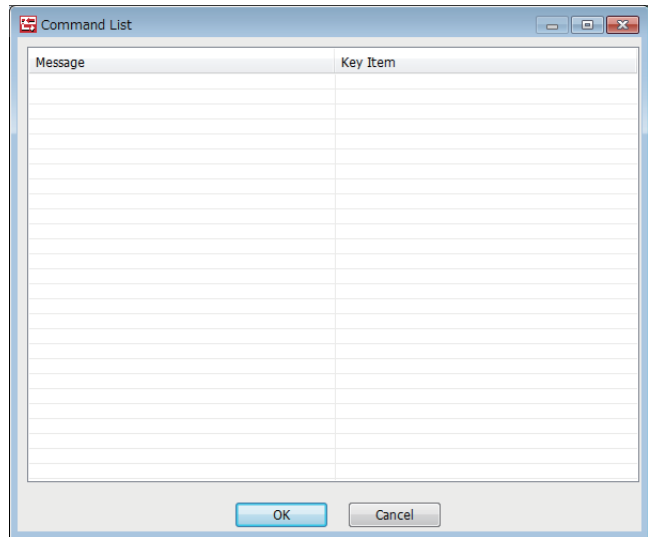
The mapping function can add sending request trigger relays and reception notification trigger relays to the selected transactions and map offsets to the data control register as a command.

In this way, it is possible to configure as shown below for one transaction definition.

- Sending message: Report data from control registers with different offsets by separating sending request trigger relays.
- Receiving message: Assign control registers and reception notification trigger relays to register reception data by the values of items.

Window

 [Function] ⇒ [Data Mapping Setting]



Operations of "Command List"

| Operation | Description |
|---|--|
| Right-click ⇒ shortcut menu [Modify] | Display the "Command Setting" screen to modify the content of the selected command setting. |
| Right-click ⇒ shortcut menu [Insert] | Add a new command setting. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected command setting, and then add the copied command setting to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected command setting. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected command setting. |

Command setting

Window

Select a command setting in the "Command List" screen, right-click ⇒ shortcut menu [Modify]

Displayed items

| Item | | Description |
|--------------------------------------|---------------|---|
| Message | | Select the message to configure the command setting. |
| Use The Key Item | — | Select this checkbox to use the item property defined in the transaction as the key item. The checkbox selection is fixed when a primary message to be received is selected. |
| | Key Item | Select the item property to serve as the key item. |
| | Key Item Path | Select the item path for the item property selected as the key item. When there are multiple names identical to the key item within the same message, select the corresponding key item path. |
| Use Same Offset As Secondary Message | | Select this checkbox to use the same offset in the transmission area of the secondary message information of the selected message. |
| Use Same Offset As Select Register | | Select this checkbox to use the same offset Select Register of the selected message. |

Parameter list

Window

Select a command setting in the "Command List" screen, right-click ⇒ shortcut menu [Modify] ⇒ [Parameter List]

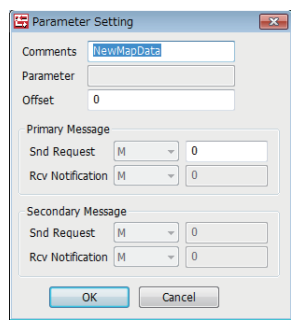
Operations of "Parameter List"

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Parameter Setting" screen to modify the content of the selected parameter. |
| Right-click ⇒ shortcut menu [Insert] | Add a new parameter. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected parameter, and then copy the copied parameter to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected parameter. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected parameter. |

Parameter setting

Window

Select a parameter to be configured in the "Parameter List" screen, right-click ⇒ shortcut menu [Modify]



Displayed items

| Item | Description |
|-------------------|--|
| Comments | Enter a comment. |
| Parameter | Configure the value of the key item defined in the command setting. The value depends on the item property data type specified as the key item. |
| Offset | Configure the offset value for the control register to be defined by the item information. |
| Primary message | Configure the sending request trigger relays and reception notification trigger relays to be added to the primary messages subject to command settings. The device type retains the settings of target primary messages. |
| Secondary message | Configure the sending request trigger relays and reception notification trigger relays to be added to the secondary messages subject to command settings. The device type retains the setting of target secondary messages. |

Mapping setting example

The following explains an example of the register configuration and settings of the mapping by command function. In this example, transmission messages have the following structure.

| Message format | Notes |
|----------------|-----------------------------|
| <Message> | |
| <L, 2> | |
| A <KeyItem> | |
| <L, 256> | |
| U2 <Item1> | Control Register: W(0x0000) |
| U2 <Item2> | Control Register: W(0x0001) |
| U2 <Item3> | Control Register: W(0x0002) |
| ⋮ | ⋮ |
| U2 <Item256> | Control Register: W(0x00FF) |

Sending message example

Select the transactions of trigger settings below for targets of command settings.

Because this is a primary message sending example, the reception notification trigger of the primary message and the sending request trigger of the secondary message are not defined.

| Primary message information | | Secondary message information | |
|-----------------------------|--------------------------------|-------------------------------|--------------------------------|
| Sending request trigger | Reception notification trigger | Sending request trigger | Reception notification trigger |
| B100 | — | — | B400 |

The parameters are configured by the command settings as indicated below.

| Parameter | Offset | Primary message information | | Secondary message information | |
|------------|--------|-----------------------------|--------------------------------|-------------------------------|--------------------------------|
| | | Sending request trigger | Reception notification trigger | Sending request trigger | Reception notification trigger |
| ParameterA | 100 | B101 | — | — | B401 |
| ParameterB | 200 | B102 | — | — | B402 |

When a message added by parameter settings is sent, the specified offset is executed for the control register devices of each item defined in the message by the sending procedure as shown below, and the command register to be used is changed.

| Control Register | | Operation Procedure |
|------------------|---------|---|
| W 0x0000 | Item1 | When B100 was switched ON as the sending request trigger, the software acquires data from the control registers configured in the items defined in the message. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |
| W 0x0100 | Item1 | When B101 was switched ON as the sending request trigger, the software acquires data from the register area that offsets the device numbers of the control registers configured in the items defined in the message by 100. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |
| W 0x0200 | Item1 | When B102 was switched ON as the sending request trigger, the software acquires data from the register area that offsets the device numbers of the control registers configured in the items defined in the message by 200. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |

Reception message example

Select the transactions of trigger settings below for targets of command settings.

Because this is a primary message receiving example, the sending request trigger of the primary message and the reception notification trigger of the secondary message are not defined.

| Primary message information | | Secondary message information | |
|-----------------------------|--------------------------------|-------------------------------|--------------------------------|
| Sending request trigger | Reception notification trigger | Sending request trigger | Reception notification trigger |
| — | B200 | B300 | — |

The parameters are configured by the command settings as indicated below.

| Parameter | Offset | Primary message information | | Secondary message information | |
|------------|--------|-----------------------------|--------------------------------|-------------------------------|--------------------------------|
| | | Sending request trigger | Reception notification trigger | Sending request trigger | Reception notification trigger |
| ParameterA | 100 | — | B201 | B301 | — |
| ParameterB | 200 | — | B202 | B302 | — |

When a message added by parameter settings is received, the specified offset is executed for the control register devices of each item defined in the message by the reception procedure as shown below, and the command register to be used is changed.

| Control Register | | Operation Procedure |
|------------------|---------|--|
| W 0x0000 | Item1 | When the value of the received key item does not match the value configured for the parameter, configure the data to the control register configured by the item defined in the message. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |
| W 0x0100 | Item1 | When the value of the received key item matches "ParameterA", configure the data to the register area offset by 100 to the number of the control register configured by the item defined in the message. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |
| W 0x0200 | Item1 | When the value of the received key item matches "ParameterB", configure the data to the register area offset by 200 to the number of the control register configured by the item defined in the message. |
| | Item2 | |
| | Item3 | |
| | ⋮ | |
| | Item256 | |

Precautions

Comparison of values of key items is determined after removing the space padding of the received item value.

7.15 Conversion Table Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

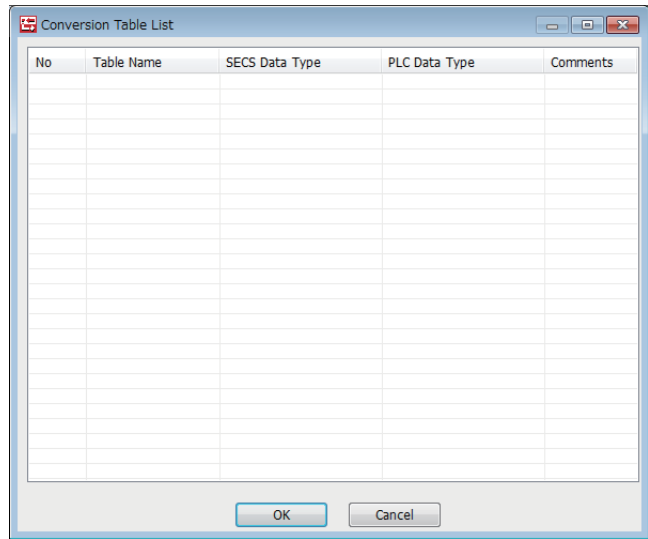
The data before and after replacement can be registered to the conversion table.

Flexible data transfer between the programmable controller CPU and SECS/GEM communication software is possible by applying a conversion table to the message items.

Up to 256 conversion tables can be registered.

Window

 [Function] ⇒ [Data Convert Setting]



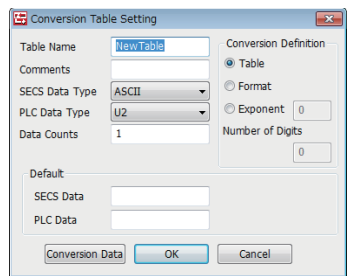
Operations of "Conversion Table List"

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Conversion Table" screen to modify the content of the selected conversion table. |
| Right-click ⇒ shortcut menu [Insert] | Add a new conversion table. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected conversion table, and then copy the copied conversion table to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected conversion table. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected conversion table. |

Conversion table setting

Window

Select a conversion table in the "Conversion Table List" screen, right-click ⇒ shortcut menu [Modify]



Displayed items

| Item | | Description |
|--------------------------|--------------------------------|---|
| Table Name | | Configure the table name. |
| Comments | | Configure the comment. |
| SECS Data Type | | Select the data type to be handled in SECS messages. The number of data sets and variable length setting are in accordance with the definition of the item to be applied. |
| PLC Data Type | | Select the data type to be handled in control registers. |
| Data Counts | | Configure the number of units of data when saving to a register. Set from 1 through 128 when "ASCII" or "JIS8" is the SECS and PLC data type Set 0 or 1 in other cases. |
| Default | SECS Data | Configure the default value of data to be handled in SECS messages. Data is regarded as before replacement during reception and after replacement during sending. When the data does not match the conversion data created in the "Conversion data definition" screen, operation is performed using this value. |
| | PLC Data | Configure the default value of data to be handled in control registers. Data is regarded as after replacement during reception and before replacement during sending. When the data does not match the conversion data created in the "Conversion data definition" screen, operation is performed using this value. |
| Conversion Definition | Table | Select to register data before and after replacement to the conversion table. Clicking the [Conversion Data] button displays the "Conversion Data List" screen. |
| | Format | Select to define the conversion string format to be applied to the data before replacement. Clicking the [Conversion Data] button displays the "Format Conversion Definition Setting" screen. |
| | Exponent | — Select to define n of the index (nth power of 10) to be applied to the data before replacement. The exponential range is from -6 to 6. |
| | Number of Digits ^{*1} | Specify the number of digits in the integer part. The number of digits is 0 to 16. If the integer part is less than the number of digits, fill it with "0". If 1 is specified, 0 suppression results; if 0 is specified, 0 suppression also results for the fractional part as well. |
| [Conversion Data] button | | Configure the details when "Table" or "Format" was selected at "Conversion Definition". |

^{*1} Cannot be configured by a GEM or GEM advanced version of the MELSEC iQ-R series SECS/GEM communication software pre-installed model module.

Precautions

Comparison with the conversion table is determined after removing the space padding of the received item value.

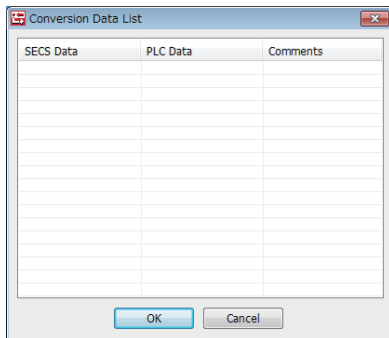
Conversion data list

Register data of before and after conversion to a conversion table.

Up to 32767 units of conversion data can be registered.

Window

Click the [Conversion Data] button in the "Conversion Table" screen.



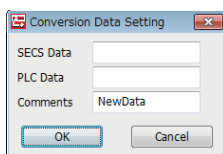
Operations of "Conversion Data List"

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Conversion Data" screen to modify the content of the selected conversion data. |
| Right-click ⇒ shortcut menu [Insert] | Add a new conversion data. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected conversion data, and then copy the copied conversion data to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected conversion data. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected conversion data. |

Conversion data setting

Window

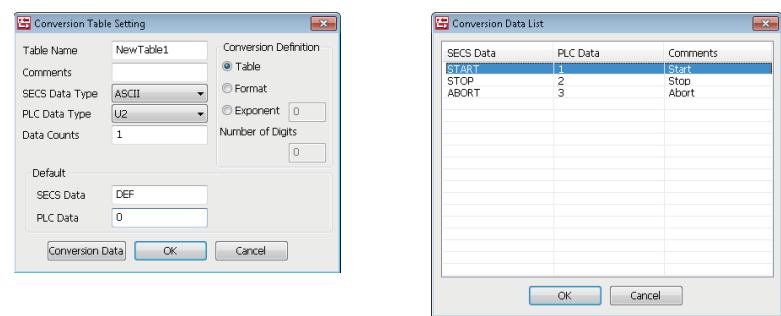
Select conversion data in the "Conversion Data List" screen, right-click ⇒ shortcut menu [Modify]



Displayed items

| Item | Description |
|-----------|---|
| SECS Data | Configure the data to be handled in SECS messages. Data is regarded as before replacement during reception and after replacement during sending. |
| PLC Data | Configure the data to be handled in control registers. Data is regarded as after replacement during reception and before replacement during sending. |
| Comments | A comment can be entered. |

Usage example of a conversion table



Message sending

| Register Value | Description |
|------------------|--|
| 1 | Send START. |
| 2 | Send STOP. |
| 3 | Send ABORT. |
| Other than above | Send DEF (default value). When a default value (SECS data) has not been entered, sending fails. |

Message reception

| Reception Data | Operation |
|----------------------------------|--|
| START | Configures "1" to the item storage register. |
| STOP | Configures "2" to the item storage register. |
| ABORT | Configures "3" to the item storage register. |
| Other than above ("SETUP," etc.) | Configures "0" to the item storage register. When a default value (stored data) has not been entered, S9F7 is returned. |

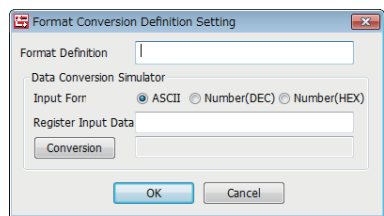
Format conversion definition setting

While normally BIN → ASCII conversion format is left-aligned with space padding, using the format conversion definition setting function enables the format to be freely defined, such as right-aligned with zeros suppressed.

In the "Conversion Table Setting" screen, configure all items below, and then click [Conversion Data]. The "Format Conversion Definition Setting" screen opens.

- SECS Data Type: ASCII
- Conversion Definition: Format

Window



Displayed items

| Item | Description |
|---------------------|--|
| Format Definition | Configure the conversion string format. For the format, refer to the following: 📖 Page 161 Conversion string format |
| Input Form | Configure how conversion string data is to be treated. <ul style="list-style-type: none">• ASCII: Conversion strings are treated as ASCII.• Decimal: Conversion strings are treated as a numerical value (decimal).• Hexadecimal: Conversion strings are treated as a numerical value (hexadecimal). |
| Register Input Data | Configure the conversion verification value. The value is configured as test data for verifying the format defined as the format conversion format. |
| [Conversion] button | Check the conversion results of the defined format definition. |

Precautions

"ASCII" must be configured for the SECS data type. When a data type other than ASCII is configured in an item on the reception side, a format invalid (S9F7) error occurs.

Conversion string format

The format is as follows: %[Flag][Field width].[Accuracy][h/l modification][Conversion string].

The following table indicates the details of each item.

■Flag

| Flag | Description |
|-------|--|
| - | Outputs the conversion string justified to the right when the field width is specified. |
| + | Outputs the conversion string with a leading positive or negative (+/-) sign. |
| Blank | Outputs the conversion string with a leading space (single-byte space) for positive values, and aligns the conversion string with a negative sign for negative values. |
| 0 | Fills areas corresponding to spaces with zeros for numerical output of a specified field width. |
| # | #0 |
| | #x, #X |
| | #f |

■Field width

| Field width | Description |
|-----------------|---|
| Numerical value | Specifies the output width. Left pads with spaces when the number of significant digits is less than the specified width. Ignores the width specification and outputs the significant digits of the data when the number of significant digits specified is greater than the specified width. Counts a decimal point as one place when the width is specified for a real number. |

■H/l modification

| H/l modification | Description |
|------------------|---|
| h | Indicates that the corresponding argument is "short int" or "unsigned short int" when the conversion string is d, i, o, u, x, or X. |
| l | Indicates that the corresponding argument is "long int" or "unsigned long int" when the conversion string is d, i, o, u, x, or X. |

■Conversion string

| Conversion string | Description |
|-------------------|---|
| %s | Outputs the string as a character string. |
| %d, %i | Outputs the string in decimal format. |
| %u | Outputs the string in unsigned decimal format. |
| %o | Outputs the string in octal format. |
| %x, %X | Outputs the string in hexadecimal format. x is output as lower case, and X is output as upper case. |
| %f | Outputs the string as floating decimal point data in decimal format. The conversion result always includes a decimal point. Applicable when numbers do not continue after the decimal point as well. Determines the number of significant digits after the decimal point according to the specified accuracy. (Default: 6 digits) |

Ex.

To send a control register value (binary value) in 5 digit (zero suppression) format, configure "%05d".

Precautions

To perform conversion in units of single characters, use %s. (%c cannot be used.)

7.16 Device Find/Replace

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

This section explains the method for finding and replacing devices used in the project.

The following table shows the ranges of devices that can be found/replaced.

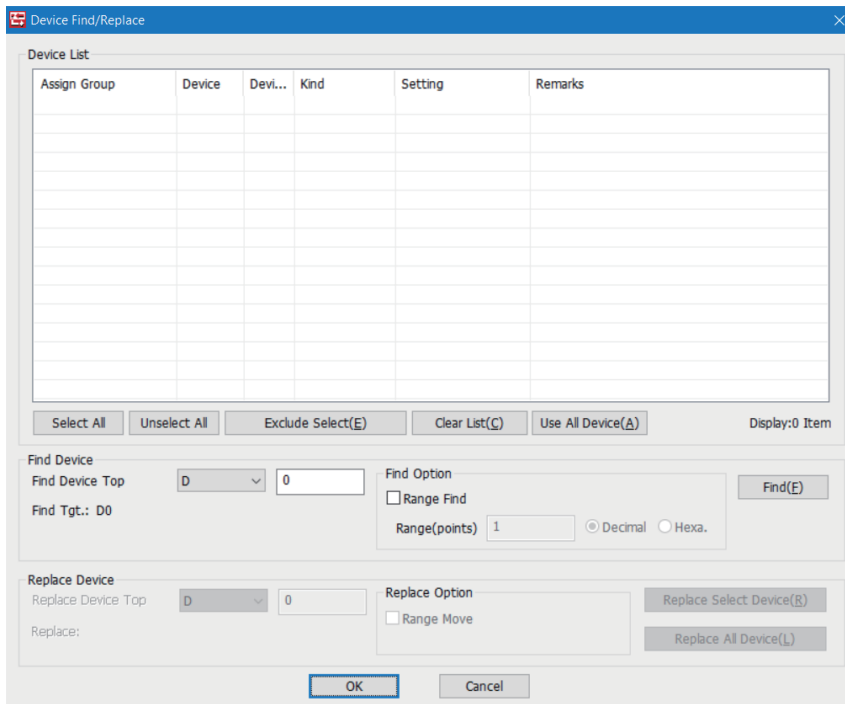
| Device | Range of devices that can be found/replaced | | | |
|--------|---|-----------------------------------|--|---|
| | MELSEC-Q series | | MELSEC iQ-R series | |
| | Non-GEM version | GEM version, GEM advanced version | Non-GEM version (version 1.28E or later)* ¹ | GEM version, GEM advanced version* ² |
| B | B0 to BFFFF | B0 to BFFFF | B0 to B7FFFFFFF | B0 to B7FFF |
| D | D0 to D32767 | D0 to D32767 | D0 to D2147483647 | D0 to D2147483647 |
| M | M0 to M2147483647 | M0 to M2147483647 | M0 to M2147483647 | M0 to M2147483647 |
| R | R0 to R32767 | R0 to R32767 | R0 to R2147483647 | R0 to R32767 |
| W | W0 to W7FFF | W0 to W7FFF | W0 to W7FFFFFFF | W0 to W7FFFFFFF |
| X | X0 to X7FFF | X0 to X7FFF | X0 to X7FFF | X0 to X7FFF |
| Y | Y0 to Y7FFF | Y0 to Y7FFF | Y0 to Y7FFF | Y0 to Y7FFF |
| ZR | ZR0 to ZR2147483647 | ZR0 to ZR2147483647 | ZR0 to ZR2147483647 | ZR0 to ZR2147483647 |

*1 When using version 1.27D or earlier, the ranges of devices that can be found/replaced are the same as those of non-GEM version of MELSEC-Q series.

*2 When using version 1.29F or earlier, the ranges of devices that can be found/replaced are the same as those of non-GEM version of MELSEC-Q series.

Window

 [Setting] ⇒ [Device Find/Replace]



Displayed items

| Item | | Description |
|--------------------------------|--------------------|---|
| Device List | | For details of items displayed in the device list, refer to the following: ☞ Page 163 Device list |
| Find device | Find Device Top | Configure devices to be found. |
| | Find Tgt. | Displays the top of the device to be found. |
| Find Option | Range Find | Configure the search range. |
| | Range(points) | Configure the number of points to be found. |
| Replace Device | Replace Device Top | Configure devices to be replaced. |
| | Replace | Displays the top of the device to be replaced. |
| Replace Option | Range Move | Configure whether to replace the specified range. Replace the range from "Replace Device Top" to the number of points specified by "Range (points)". |
| [Select All] button | | Select all rows in the device list. |
| [Unselect All] button | | Unselect selections in the device list. |
| [Exclude Select] button | | Delete selected rows from the device list. |
| [Clear List] button | | Clear the device list. |
| [Use All Device] button | | Display all devices in use in the project. |
| [Find] button | | Search for devices that match the conditions of "Find device" and "Find Option". |
| [Replace Select Device] button | | Replace the devices selected in the device list with the devices configured by "Replace Device" and "Replace Option". |
| [Replace All Device] button | | Replace all devices selected in the device list with the devices configured by "Replace Device" and "Replace Option". |

■Device list

| Item | Description | Notes |
|------------|---|--|
| Assignment | Shared memory | CPU shared memory allocated devices |
| | CA-SECS device assignment (I/O assignment) | CA-SECS device assignment (I/O assignment) devices |
| | No assignment | Not assigned devices |
| Device | Device type and device number | — |
| Points | n | Consecutive quantity in use |
| Kind | Option Setting | By setting type |
| | Cache settings | |
| | Primary sending settings | |
| | Primary sending (interval) settings | |
| | Primary receiving settings | |
| | Secondary sending settings | |
| | Secondary receiving settings | |
| | Item settings | |
| | Item (selection register) settings | |
| | Command mapping settings (primary sending) | |
| | Command mapping settings (primary receiving) | |
| | Command mapping settings (secondary sending) | |
| | Command mapping settings (secondary receiving) | |
| | Variable settings* ¹ | |
| | Variable cache settings* ¹ | |
| | Event settings (sending)* ¹ | |
| | Event settings (receiving)* ¹ | |
| | GEM trigger information settings* ¹ | |
| | Model state notification settings* ¹ | |
| Setting | Setting location | Setting item name, etc. |
| Remarks | Remarks | User comments, setting item explanations, etc. |

*¹ Can be used with the GEM version and GEM advanced version.

Display all devices in use

Display all devices in use in the project.

Replacement is not possible while devices are being displayed by this function.

Operating procedure

1. Click [Use All Device].

Device search

Search for devices.

Search by device

Find specified devices.

Operating procedure

1. Configure "Find Device Top".
2. Click [Find].

Range search

Find devices in the specified range.

Operating procedure

1. Configure "Find Device Top".
2. Select the "Range Find" checkbox.
3. Configure "Range(points)".
4. Click [Find].

Replace device

Replace found devices.

The correspondence of device types that can be replaced is as follows.

| Before replacement | After replacement |
|--------------------|-------------------|
| B, M | B, M |
| X | B, M, X |
| Y | B, M, Y |
| D, R, W, ZR | D, R, W, ZR |

Precautions

Devices cannot be replaced while all devices in use are displayed.

Replace by device

Replace specified devices.

Operating procedure

1. Select devices to be replaced in the Device List.
2. Configure "Replace Device Top".
3. Click the [Replace Select Device] or [Replace All Device] button.

Replacement by range

Group and replace consecutive devices.

Ex.

Replace (move) devices included in the range from D0 through D99 to D100 through D199.

Specifying a range and replacing can only be done when a range was specified and devices were found.

Operating procedure

1. Select devices to be replaced in the Device List.
2. Configure "Replace Device Top".
3. Select the "Range Move" checkbox.
4. Click the [Replace Select Device] or [Replace All Device] button.

Application of replacement results

Apply the results of device replacement to settings.

Operating procedure

1. In the "Device Find/Replace" screen, click the [OK] button.
2. In the confirmation screen, click the [OK] button.

The replacement results are applied to the settings.

7.17 Log Output

Logs of device access with the programmable controller CPU registers and logs of SECS communication with the host can be output.

Log output setting

Configure the details of the logs to be output.

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Configure the common settings of the log output function.

Window

 [Log] ⇒ [Log Output Setting] ⇒ [Common Setting] tab

Log Output Setting

Common Setting | FTP Setting | User Log Setting | Display Setting

Log Storage Period

7

Log Output

0:SD

☒ SECS Log Setting(C)

☐ SECS Log Output(E)

CPU-1

M

0

☐ Output The Link Test Frame Log(L)

CPU-1

M

0

☒ PLC Log Setting(P)

☐ PLC Log Output(Q)

CPU-1

M

0

☐ Collect The Detailed PLC Log(S)

CPU-1

M

0

☐ Ctrl CPU Interface Log Setting(I)

☐ Ctrl CPU Interface Log Output(K)

CPU-1

M

0

☐ Collect Ctrl CPU Interface Data Log(M)

CPU-1

M

0

OK

Cancel


Displayed items

| Item | Description |
|--------------------|--|
| Log Storage Period | Configure the number of days to store log data (SECS communication logs, programmable controller logs, and user logs). The log data is stored as time-sliced files (in increments of hours), and data before the current time is saved for the set number of days. A log outputted according to FTP settings to the FTP server is not deleted using SECS/GEM communication software. |
| Log Output | Configure the log output destination. ■MELSEC-Q series • 0: CF • 1: FTP ■MELSEC iQ-R series • 0: SD • 1: FTP |

| Item | | Description |
|--|-------------------------------------|--|
| SECS Log Setting | — | Select this checkbox to enable SECS communication log collection. |
| | SECS Log Output | Select this checkbox to control the start or end of log collection by a trigger from the programmable controller CPU. By specifying the trigger relay, SECS log collection will be started when the specified trigger relay turns ON and will be terminated when the trigger relay turns OFF. If this item is not configured, SECS communication logs are always collected from when SECS/GEM communication software starts. |
| | Output The Link Test Frame Log | Select this checkbox to save the host link test log in the SECS communication log. By specifying the trigger relay, the link test log with the host is output to the SECS communication log when the specified trigger relay turns ON and the log collection of link tests will be ended when the trigger relay turns OFF. When this item is not configured, the link test log is not output. |
| PLC Log Setting | — | Select this checkbox to enable programmable controller log collection. |
| | PLC Log Output | Select this checkbox to control the start or end of log collection by a trigger from the programmable controller CPU. By specifying the trigger relay, programmable controller log acquisition will be started when the specified trigger relay turns ON and will be terminated when the trigger relay turns OFF. When the detailed programmable controller CPU log is not collected, only the status change of the device assigned to the sending request trigger relay and reception notification trigger relay of the message are recorded. If this item is not configured, programmable controller logs are always output from when SECS/GEM communication software starts. |
| | Collect The Detailed PLC Log | Select this checkbox to record the status change of all relays defined to the device assignment to the programmable controller log. By specifying the trigger relay, a detailed log is output to the programmable controller log when the specified trigger relay turns ON and will be terminated when the trigger relay turns OFF. When this item is not configured, the detailed programmable controller log is not output. |
| Ctrl CPU Interface Log Setting ^{*1} | — | Select this checkbox to enable control CPU interface log collection. |
| | Ctrl CPU Interface Log Output | Select this checkbox to control the start or end of log collection by a trigger from the control CPU. By specifying the trigger relay, control CPU interface log acquisition will be started when the specified trigger relay turns ON and will be terminated when the trigger relay turns OFF. When the control CPU interface data area is not collected, only the information type, detail type, and data size of the message are recorded. If this item is not configured, control CPU interface logs are always collected from when SECS/GEM communication software starts. |
| | Collect Ctrl CPU Interface Data Log | Select this checkbox to record data in the control CPU interface data area to a log. By specifying the trigger relay, a data area log is output to the control CPU interface log when the specified trigger relay turns ON and the log collection of data will be ended when the trigger relay turns OFF. When this item is not configured, the data in the control CPU interface data area is not output. |

^{*1} Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

FTP setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

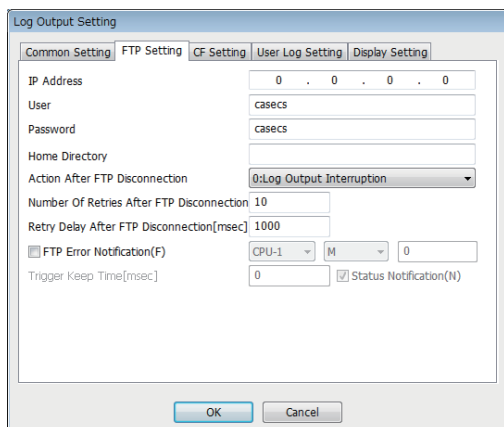
Configure the details for access the FTP server.

By using this setting, it is possible to output logs to the FTP server.


By outputting the logs to the FTP server, the number of writes to the memory card can be mitigated.


Window

 [Log] ⇒ [Log Output Setting] ⇒ [FTP Setting] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description | |
|---|--|--|
| IP Address | Configure the IP address of the FTP server. | |
| User | Configure the username of the FTP account. | |
| Password | Configure the password of the FTP account. | |
| Home Directory | Configure when the log will be output to a sub directory of the FTP account. When left blank, the logs are output under the home directory of the FTP account. | |
| Action After FTP Disconnection | Select the operation when the connection with the FTP server has been disconnected. ■MELSEC-Q series <ul style="list-style-type: none"> • 0: Cancel log output: Logs are not output after FTP disconnection. • 1: Output to CF: Logs are output to the CF card after FTP disconnection. ■MELSEC iQ-R series <ul style="list-style-type: none"> • 0: Cancel log output: Logs are not output after FTP disconnection. • 1: Output to SD: Logs are output to the SD memory card after FTP disconnection. | |
| Number of Retries After FTP Disconnection | Specify the number of retries to connect with the FTP server after FTP disconnection. | |
| Retry Delay After FTP Disconnection | Specify the delay time for connection retries after FTP disconnection. The time is configured in increments of 10 (msec). | |
| FTP Error Notification  | — | Select this checkbox to turn ON the notification relay to report when log output to the FTP server has failed. Furthermore, configure the device to be used as the notification relay. |
| | Trigger Keep Time | Hold the trigger relay for FTP error notification for the specified time. The time is configured in increments of 10 (msec). |
| | Status Notification | Select this checkbox to enable the trigger keep time. Furthermore, switch OFF the FTP error notification relay by SECS/GEM communication software after reconnecting with the FTP server. |

Precautions


- When a subdirectory has not been created in the FTP server, Action After FTP Disconnection results, even when an FTP subdirectory has been configured. However, the FTP error notification relay does not turn ON.
- When the MELSEC iQ-R series SECS/GEM communication software pre-installed model module is used, FTP log output uses the same network as SECS communication.

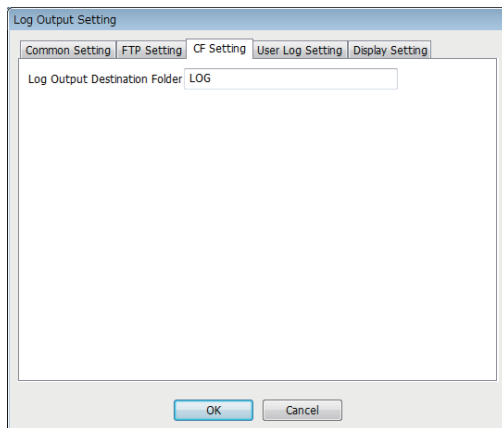
CF setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | — | — | — |

Configure the storage destination of log files to be output to the CF card.

Window

 [Log] ⇒ [Log Output Setting] ⇒ [CF Setting] tab



Displayed items

| Item | Description |
|-------------------------------|--|
| Log Output Destination Folder | Configure the home directory on the CF card to output the log files. |

User log setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The user log settings allow string data stored in the specified register to be output as a log when the specified trigger switching ON is detected and browse data using the "Log View" screen in the setting tool.

Window

 [Log] ⇒ [Log Output Setting] ⇒ [User Log Setting] tab

Log Output Setting

Common Setting

FTP Setting

CF Setting

User Log Setting

Display Setting

☐ User Log Setting(U)

User Log Output Request

CPU-1

M

0

User Log Start Register

CPU-1

D

0

Register

32

OK

Cancel

Displayed items

| Item | Description | |
|------------------|-------------------------|---|
| User Log Setting | — | Select this checkbox to enable the user log setting. |
| | User Log Output Request | Configure the user log output trigger. If the trigger is turned ON by the programmable controller CPU, and the log output ends, it is switched OFF by SECS/GEM communication software. |
| | User Log Start Register | Configure the start register where the data (ASCII strings) to be output to a log are to be stored. |
| | Register Counts | Configure the number of registers (number of words) to be used for data storage counting. When the data does not satisfy this size, fill the terminating byte with NULL characters (0x00). |

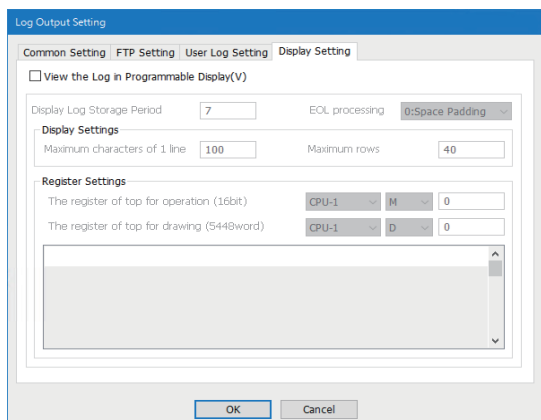
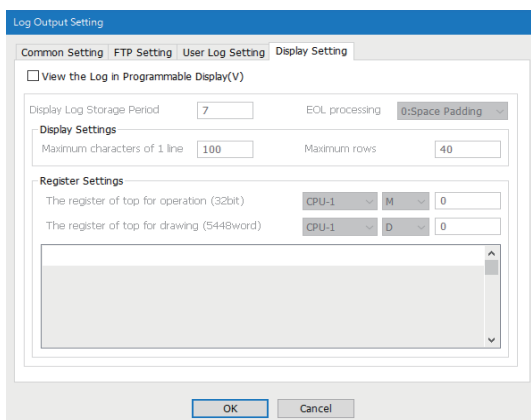
Display setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Configure the details to display logs on a display.

Window





 [Log] ⇒ [Log Output Setting] ⇒ [Display Setting] tab

7

Displayed items


: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|--|
| View the Log in Programmable Display | — Select this checkbox to view the log on the Programmable Display (GOT, etc.). |
| Display Log Storage Period | Configure the number of days to store log data to be displayed on the Programmable Display. The log data is stored as time-sliced files (in increments of hours), and data before the current time is saved for the set number of days. |
| EOL processing | Select the end-of-line processing when the number of characters per line is less than the maximum number of characters. |
| Maximum characters of 1 line | Configure the maximum number of characters to be displayed on one line on the Programmable Display. |
| Maximum rows | Configure the maximum number of rows to be displayed on one screen on the Programmable Display. |
| The register of top for operation (16bit) ^{*1} | Configure the device to be used for the operation register. The 16 continuous points from the configured device can be used as the operation register. Select "CPU-OWN" to specify an M device of the host station for the MELSEC-Q series SECS/GEM communication software pre-installed model module. For details on the operation register, refer to the following:  Page 184 View the log on display device (GOT) |
| The register of top for operation (32bit) ^{*2} | Configure the device to be used for the operation register. The 32 continuous points from the configured device can be used as the operation register. For details on the operation register, refer to the following:  Page 184 View the log on display device (GOT) |
| The register of top for drawing (5448Word)  | Configure the device to be used for the display register. The 5448 continuous words from the configured device can be used as the display register. Select "CPU-OWN" to specify a D device of the host station for the MELSEC-Q series SECS/GEM communication software pre-installed model module. For details on the display register, refer to the following:  Page 184 View the log on display device (GOT) |

*1 Supported only when GEM300 standard support functions are not used.

*2 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Precautions


- The display log file is saved to the SD memory card when the MELSEC iQ-R series SECS/GEM communication software pre-installed model module is being used.
- When a MELSEC-Q series SECS/GEM communication software pre-installed model module is being used, the display log file is saved to the directory configured by the following setting: [CF Setting] ⇒ [Log Output Destination Folder].
- When a device of this host station is used, it must be configured in advance at a row lower than a device of another station in "CA-SECS Device Assignment(I/O assignment)" of the "Device Assign Setting" screen.

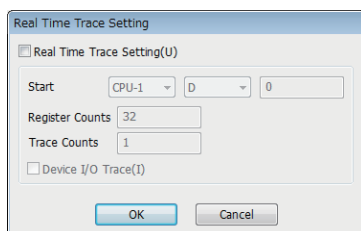
Real time trace setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |


The real-time trace function allows the SECS communication status and device I/O information to be displayed in real-time using a GOT.


Window

 [Log] ⇒ [Real Time Trace Setting]



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|-------------------------|---|--|
| Real Time Trace Setting | — | Select this checkbox to use the real time trace function. |
| | Start  | Configure the start register where the data (ASCII strings) used for a real-time trace is to be stored. |
| | Register Counts | Configure the number of registers (number of words) to be used for data storage counting. When the output message does not satisfy the register count, NULL characters (0x00) are stored at the message end. |
| | Trace Counts | Configure the number of real time traces to be output. |
| | Device I/O Trace | Select this checkbox to display the device I/O information in real time. |

Precautions

In case of multi-line output of real time trace, the total number of registers to be used is calculated as [Register Counts] × [Trace Counts].

Real time trace output message list

■Example of output messages of communication trace

| Type | Message example | | |
|---|-----------------|----------------|-------------------------|
| Message sending | S1,F1 | SEND | 2008/10/21 17:06:05:100 |
| Message reception | S1,F1 | RECEIVE | 2008/10/21 17:06:05:100 |
| Message spool | S6,F11 | SPOOL | 2008/10/21 17:06:05:100 |
| Message spool output | S66,F115 | SPOOL OUT | 2008/10/21 17:06:05:100 |
| CA-SECS start-up | | CA-SECS READY | 2008/10/21 17:06:05:100 |
| Connection (TCP/IP) | | CONNECT | 2008/10/21 17:06:05:100 |
| Disconnection | | DISCONNECT | 2008/10/21 17:06:05:100 |
| Communication established (COMMUNICATING) | | COMMUNICATING | 2008/10/21 17:06:05:100 |
| ONLINE | | ONLINE | 2008/10/21 17:06:05:100 |
| OFFLINE | | OFFLINE | 2008/10/21 17:06:05:100 |
| Spool start | | SPOOL ACTIVE | 2008/10/21 17:06:05:100 |
| Spool stop | | SPOOL INACTIVE | 2008/10/21 17:06:05:100 |

■Example of output messages of device I/O trace

| Type | Message example | | |
|----------------------|-----------------|-----------------|-------------------------|
| Device relay ON | M101 | ON(EQ) | 2008/10/21 17:06:05:100 |
| CA-SECS relay ON | M1024 | ON(CA-SECS) | 2008/10/21 17:06:05:100 |
| Device relay OFF | M5 | OFF(EQ) | 2008/10/21 17:06:05:100 |
| CA-SECS relay OFF | M28 | OFF(CA-SECS) | 2008/10/21 17:06:05:100 |
| Registry read error | D2049 | READ ERROR | 2008/10/21 17:06:05:100 |
| Registry write error | D16 | WRITE ERROR | 2008/10/21 17:06:05:100 |
| Handshake error | M512 | HANDSHAKE ERROR | 2008/10/21 17:06:05:100 |

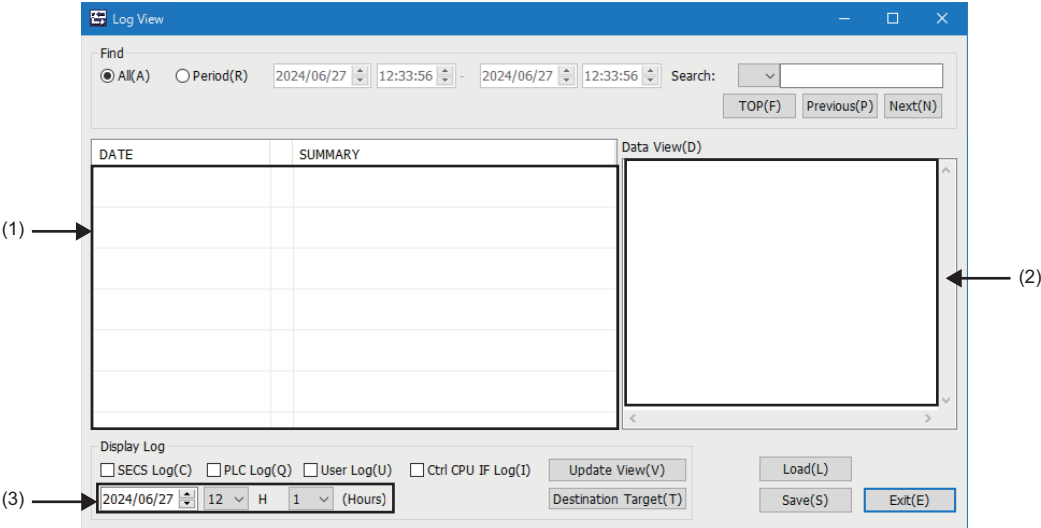
Log view

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Display the log acquired from the SECS/GEM communication software pre-installed model module.

Window

 [Log] ⇒ [Log View]



Displayed items

| Item | | Description |
|-----------------------------|------------------------------|---|
| Find | All | Select to find all logs. |
| | Period | Select to specify the period for search. |
| | Search conditions | To find for log data that matches conditions, either select from the pulldown lists of the search conditions or enter character strings, and then click the [TOP], [Previous], or [Next] button. |
| | [TOP] button | Move to the start of the search target. |
| | [Previous] button | Move to the previous search target. |
| | [Next] button | Move to the next search target. |
| (1)Log list | | Displays log data as a list. If the title "DATE" is clicked, the data is sorted by date in ascending or descending order. If data in the Log list is right clicked while SECS logs or user logs are displayed, the content displayed in the Data View can be selected by a shortcut menu. |
| (2)Data View | | Displays content of log data. |
| Display Log | SECS Log | Select this checkbox to display SECS logs. |
| | PLC Log | Select this checkbox to display programmable controller logs. |
| | User Log | Select this checkbox to display user logs. |
| | Ctrl CPU IF Log ² | Select this checkbox to display control CPU interface logs. |
| | (3)Time specification | Specify the date, hour, and minute of logs to be displayed. |
| | [Update View] button | Import the updated log data selected in "Display Log" from the SECS/GEM communication software pre-installed model module. The imported log data is displayed in time order from when logs are collected. ¹ |
| [Destination Target] button | | Configure the SECS/GEM communication software pre-installed model module to import log data. |
| [Load] button | | Open a saved log data file. |

| Item | Description |
|---------------|--|
| [Save] button | <p>Save the log data currently displayed.</p> <p>The following file formats can be selected.</p> <ul style="list-style-type: none"> • Binary log file (file extension: .log): The binary log data is saved as it is. Use the [Load] button on the screen to view the log later. • Text log file (file extension: .txt): The log data is configured as a list and saved as text data. The text data can be opened and browsed with any text editor. |
| [Exit] button | Close the "Log View" screen. |

*1 If time is changed during log data collection, log data before and after the time change may be displayed.

*2 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Precautions

If a large amount of log data is saved, it may take time to display the logs.


Log types

Display the correspondence of the symbols displayed in log data and log types.

| Symbol | Description | Log Types |
|---------------|---|---|
| O(Output) | Log for which SECS/GEM communication software changed the relay status | Programmable controller log |
| | Control CPU interface log of CITL to CPU | Control CPU interface log ^{*1} |
| I(Input) | Log for which the programmable controller CPU changed the relay status | Programmable controller log |
| | Control CPU interface log of CPU to CITL | Control CPU interface log ^{*1} |
| S(Send) | Message sending log | SECS Log |
| R(Receive) | Message reception log | SECS Log |
| U(User) | User Log | User Log |
| M(Management) | Log to display the SECS status managed by SECS/GEM communication software | SECS Log |
| | Log to display the GEM300 status managed by SECS/GEM communication software | SECS Log |
| E(Error) | Error Log | <ul style="list-style-type: none"> • Programmable controller log • SECS Log • Control CPU interface log^{*1} |

*1 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

SECS log

The following shows the display of SUMMARY.

| Item | Description |
|------|-----------------|
| S | Stream number |
| F | Function number |
| Dev | Device ID |
| No. | Line number |
| LEN | Byte length |

If a SECS communication log is selected in the log list, the content of the log appears in the Data View.

The following explains the operations in the log list.


■Summary display

Provides a summary view showing the data header in binary in the Data View.

 Right-click ⇒ shortcut menu [Summary]


■Dump display

Dumps the SECS communication data content in the Data View.

 Right-click ⇒ shortcut menu [Dump]

■Text display

Shows the SECS communication data content in the Data View in a tree structure.

 Right-click ⇒ shortcut menu [Text]

Programmable controller log

The following shows the display of SUMMARY.

| Item | Description |
|------|---|
| CPU | CPU No. |
| Ch | Channel number (0: 0xFF, other than 0: Channel number for communication function) |
| Ex | Station number |
| Dev | Device type |
| No | Device number and status (ON/OFF display) |

If a programmable controller log is selected in the log list, the content of the I/O log appears in the Data View.

User log

The following shows the display of SUMMARY.

| Item | Description |
|------|---|
| TYPE | Log type (TEXT: Text log, BINARY: Binary log) |
| LEN | Byte length |

If a user log is selected in the Log list, the content of the user log appears in the Data View.

The following explains the operations in the log list.


■Summary display

Provides a summary view showing the data header in binary in the Data View.

 Right-click ⇒ shortcut menu [Summary]

■Dump display


Dumps the user log content stored in the specified register in the Data View.

 Right-click ⇒ shortcut menu [Dump]

■Text display

Displays the user log content stored in the specified register in the Data field.

Even when the data is long, a new line will not be created. A new line appears when "CR + LF" exists within the data.

 Right-click ⇒ shortcut menu [Text]

Control CPU interface log

The following shows the display of SUMMARY.

| Item | Description |
|------|--|
| No | 'Information type' and 'Detail type' in exchanged data identifiers • Display example: No=00039-00001(OSS) |
| LEN | Data size of data area (Byte units) • Display example: LEN=63 |

This is supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

For a control CPU interface, refer to the following:


 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

If a control CPU interface log is selected in the log list, the content of the control CPU interface log appears in the Data View.

The following explains the operations in the log list.

■Text display

Shows the data area of a control CPU interface in the Data View in a tree structure.

 Right-click ⇒ shortcut menu [Text]

SECS status message

Log to display the SECS status managed by SECS/GEM communication software.

The following table shows the item content to be displayed.

| Message | Description | Notes |
|----------------------------|--|--|
| CIMREADY | CIM control is ready. | Output is enabled only when the SECS communication log output trigger is not used (SECS logs are always acquired). |
| CONNECT(Selected) | The line is connected. | Indicates a Selected state for HSMS communication. |
| DISCONNECT(NotSelected) | Disconnection was detected. | Indicates a Not Selected state for HSMS communication. |
| Communicating | Communication is established. | Indicates that the S1F13 transaction was successful. |
| NotCommunicating | Communication is disconnected. | — |
| ON-LINE | The mode transitioned to online. | — |
| OFF-LINE | The mode transitioned to offline. | — |
| SpoolEnabled | The spool function is configured to enabled. | The ON status of the Enable spooling relay is detected. |
| SpoolDisabled | The spool function is configured to disabled. | The OFF status of the Enable spooling relay is detected. |
| SpoolActive | Spooling has started. | — |
| SpoolInactive | Spooling has stopped. | — |
| SpoolTransmitStart | Spool transmission has started. | Triggered by S6F23 (Spooled data request) reception. |
| SpoolTransmitFailure | An error occurred during spool transmission, resulting in transmission cancellation. | T3 timeout, line disconnection, etc. |
| SpoolTransmitComplete | All spool transmission has been completed. | — |
| PurgeSpool | The spool was purged. | Triggered by S6F23 (Spooled data request) reception or the use of the spool data discard trigger. |
| ControllerClock-Changed | The controller time was changed. | — |
| GEM300 START ^{*1} | The operation of GEM300 standard support functions is started. | Triggered by control CPU interface '00000-00001: GEM300 Initial request' reception |

*1 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Precautions

The order of log output before and after a SECS status message may differ from the actual time series.

Error log

Error logs are displayed in red characters.

The following table shows the details of error messages.

■Programmable controller CPU error messages

| Message | Description | Notes |
|-----------------------|---|---|
| READ_ERR(error code) | Data was not read. | An error code is added at the end of the message. |
| WRITE_ERR(error code) | Data was not written. | An error code is added at the end of the message. |
| IncorrectAssign | An area not defined in device assignments was specified in an item storage register, etc. | — |
| PLCHandShakeTime-out | There was no programmable controller CPU response (OFF) to a SECS/GEM communication software trigger notification (ON) within the response monitoring timer setting, causing the trigger to be forcibly turned OFF. | When a handshake is specified for the reception notification trigger, SECS error notification, etc. |

■SECS error messages

| Message | Description | Notes |
|--------------------------------|---|---|
| DMReceptionError | Reception error | <ul style="list-style-type: none"> • HSMS: Data with unknown communication level • SECS1: Checksum error*¹ • SECS2: Full-queue error |
| DMTransmissionError | DM was not sent. | — |
| CMTransmissionError | CM sending error | — |
| TransmissionDMmakingFailure(1) | Initialization failed. | CPU reset is recommended. |
| TransmissionDMmakingFailure(2) | Creation failed. | This error also applies to the register read error, which is often caused by an incorrect register assignment setting. |
| DMtransmissionFailure | Sending failure | The load on SECS/GEM communication software may be high. |
| SecondaryRequestTime-out | After reception of a primary message, no secondary sending request trigger was detected within the response monitoring timer setting. | This error is not output for a secondary reception notification handshake timeout. |
| ReceptionDataFormatError | The reception data includes an incorrect SECS header. | — |
| IncorrectDataLength | Reception error (too long) | S9F11 sending |
| IncorrectFormat | Incorrect format | S9F7 sending, the message received from the host is different from the one configured in terms of item type, list structure, or data length. |
| IncorrectDeviceID | Incorrect device ID | S9F1 sending |
| UndefinedSFCode | Undefined SF code | S9F3/F5 sending, a message is regarded as an undefined message if the reception notification trigger option is not selected in the Message Property window. |
| DataError | Reception data error | This error also applies to the register write error, which is often caused by an incorrect register assignment setting. |
| FullSECSQueue | A memory acquisition error occurred when creating a reception data storage buffer | The CPU must be reset. |
| FullReceptionQueue | Full reception queue | This error may also occur even for single transactions when the software continuously receives the same message and fails to establish handshaking. |
| FullTransmissionQueue | Transmission Queue Full | <ul style="list-style-type: none"> • This error may also occur even for multi-transactions if sending processing is delayed due to too much load. • No spooling is available. |
| FullMulti-TransactionQueue | The multi-transaction queue for sending is full. | — |
| DiscardByNonAvailable | Sending/reception was canceled because communication was disabled. | — |
| DiscardByNotCommunicating | The requested sending message was discarded because communication has not been established. | An attempt was made to send a message other than S1F13 before communication was established. |
| DiscardByExemptSpooling | A non-spoiled sending message requested during spooling was discarded. | — |

| Message | Description | Notes |
|----------------------------------|---|---|
| DiscardBySpoolingFull | A spooled sending message requested during spooling was discarded because the spool is full. | <ul style="list-style-type: none"> The spool must be transferred or discarded. This error is not output during overwriting. |
| SpoolOutputFailure | A spooled message was not remade. | — |
| DiscardByDisableSpooling | A spooled sending message requested during spooling was discarded because spooling is disabled. | Check the Enable spooling relay. Note that the Enable spooling relay can be configured only by a non-GEM version. |
| PPDeletionOutsideMonitoring | Process program deletion is not monitored. | — |
| PPDeletionRcv.UponOffline | The process program deletion completion notification trigger was received while offline. | — |
| RejectByConversationVioration | Host primary was aborted due to conversation violation. | — |
| TransmissionDataSizeError | Transmission data size error | — |
| CycleMeasurementCancel | Although the cyclic message sending request trigger is ON, sending was cancelled due to an offline status, etc. | <ul style="list-style-type: none"> Offline, line disconnected, spooling in progress (excluding cases where the message is a spooled message) An error is output periodically until either the status changes to sending enabled or the request trigger is turned OFF. (Measurement resumes once the status changes to sending enabled.) |
| Offline-TransmissionCancel(1) | Although a message sending request trigger was detected, sending was not performed because the status was offline. | <ul style="list-style-type: none"> An attempt was made to send a message other than S1F1 while offline. Cyclic messages are excluded. |
| Offline-TransmissionCancel(2) | Although a message sending request trigger was detected, a message was not created since the status was offline and the message is a non-spooled message. | <ul style="list-style-type: none"> When the "Spool during offline" option is enabled Cyclic messages are excluded. |
| Offline-TransmissionCancel(3) | Although a message sending request trigger was detected, a message was not created because the status was offline and the spooling is disabled. | <ul style="list-style-type: none"> When the "Spool during offline" option is enabled Cyclic messages are excluded. |
| Disconnect-TransmissionCancel(1) | Although a message sending request trigger was detected, the message was not sent because the line is disconnected. | This error is for secondary messages only. |
| Disconnect-TransmissionCancel(2) | Although a message sending request trigger was detected, the message was not created because the line is disconnected and the message is a non-spooled message. | Cyclic messages are excluded. |
| Disconnect-TransmissionCancel(3) | Although a message sending request trigger was detected, a message was not created because the line is disconnected and spooling is disabled. | Cyclic messages are excluded. |
| ConversationInterruption | A message with the response message monitoring (dialog) setting was sent, but a notification was received from the host regarding a message other than the one subject to monitoring. | The output SF is the one of the sending message with the dialog setting. |
| MB-ConversationInterruption | Violation of conversation | — |
| FullMB-Queue(MsgDiscard) | A multi-block message was discarded because the queue was full. | — |
| MB-ConversationCancel(Error) | A conversation was canceled due to an internal error. | — |
| MB-ConversationCancel | A conversation was canceled due to communication loss or incorrect communication. | — |
| MB-ReachTheLimitOfRetryCount | The number of retries to send a multi-block event has reached the limit. | — |
| MB-HostReject | Sending a multi-block event was rejected by the host. | — |
| Trans.PrimaryMakingFailure | Creating a primary message to be sent has failed. | — |
| Trans.SecondaryMakingFailure | Creating a secondary message to be sent has failed. | — |
| Rcv.PrimaryExpandingFailure | Expanding a received primary message has failed. | — |
| Rcv.SecondaryExpandingFailure | Expanding a received secondary message has failed. | — |
| ConversationMonitoring | This error is output in combination with "ConversationInterruption" or "T9Time-outError." | The SF output is the one of the monitoring target configured to dialog. |
| T1Time-outError | T1 timeout | Only for SECS-I |
| T2Time-outError | T2 timeout | Only for SECS-I |
| T3Time-outError | T3 timeout | S9F9 sending |
| T4Time-outError | T4 timeout | Only for SECS-I |
| T5Time-out | T5 timeout | Only for HSMS |
| T6Time-outError | T6 timeout | Only for HSMS |

| Message | Description | Notes |
|----------------------------------|--|---|
| T7Time-outError | T7 timeout | Only for HSMS |
| T8Time-outError | T8 timeout | Only for HSMS |
| T9Time-outError | T9 timeout | The output SF is the one of the sending message with the dialog setting. |
| ReceptionTriggerUnsetting | Although there is a format definition, notification of message reception is not possible since the reception notification trigger is disabled. | For primary messages, an abort is returned after detection of this error. For secondary messages, this error is not detected. |
| UnknownSecondaryReception | A secondary message that is not transaction-monitored by SECS/GEM communication software has been received. | <ul style="list-style-type: none"> • A T3 timeout already occurred for the secondary message. • The SF code does not match the code of the sent primary message (the stream is different; the function is not primary message +1). • A response was returned from the host for a primary message without a wait bit. • The host sent a message with even-numbered functions as a primary message. |
| DiscardByQueueClear | A sent message was discarded due to queue clear. | — |
| ReceiveAbort(ContinueTransfer)*2 | An abort message was received during spool transmission. | Issued when configuring "Skip and continue transfer" for "Abort Reception Upon Spooling" in the spool common setting. |
| ReceiveAbort(StopTransfer)*2 | An abort message was received during spool transmission. | Issued when setting "Transmit Is Interrupted To Hold Message" for "Abort Reception Upon Spooling" in the spool common setting. |
| SuspendSecondaryRequest | Monitoring secondary sending request waiting was suspended. | — |
| DiscardBySpoolFailure | Spooling has failed. | — |

*1 Displayed for only the MELSEC-Q series SECS/GEM communication software pre-installed model module.

*2 Appears in the non-GEM version only.

Control CPU interface error message

| Message | Description | Notes |
|----------------------------|---|--|
| CPUtoCITL:DataSizeError | CPU to CITL I/F: Data size of data area exceeds 512 KB. | The values in Un\G20470 to Un\G20471 (4FF6H to 4FF7H) 'CPU to CITL I/F: Data size of data area' are out of the setting range. Write the value within 0 to 524288. |
| CPUtoCITL:MessageQueueFull | The number of message queues of CPU to CITL in SECS/GEM communication software is full (five queues). | Wait until SECS/GEM communication software processes the instructions from the control CPU. (Processing cannot keep up with the instructions from the control CPU.) |
| CITLtoCPU:MessageQueueFull | The number of message queues of CITL to CPU in SECS/GEM communication software is full (five queues). | The control CPU has not turned ON Un\G20449 (4FE1H).b1 'CITL to CPU I/F: Read status flag (Read completion flag).' |
| CITLtoCPU:MonitorTime-out | After a write status flag is turned ON, a read completion flag in a read status flag is not turned ON for a certain time; therefore, SECS/GEM communication software automatically cleared the write status flag. | The control CPU exceeds the limit for monitoring time until Un\G20449 (4FE1H).b1 'CITL to CPU I/F: Read status flag (Read completion flag)' is turned ON. |

This is supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

For a control CPU interface, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

View the log on display device (GOT)

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Using a register, display logs saved to the memory card on the display.

Since the data has been displayed via a register, configuring the script in GOT is not required.

If SECS/GEM communication software receives an operation instruction by an operation register, the logs are deployed to the display register.

To display logs on the display, select the checkbox of "View the log in Programmable Display" in the Log Output Settings.

Configure the devices used by the operation register and display register in the device assignment settings.

The following image shows when a log is displayed on a GOT.

```

00001 : 2014/06/18 10:07:04 M : ControllerClock-Changed
00002 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2010 ON
00003 : 2014/06/18 10:07:04 I : CPU=1 Ch=fffh Ex=fffffh Dev=M 2010 OFF
00004 : 2014/06/18 10:07:04 S : S6 F11 Dev=1 No=1 LEN=22[00 01 86 0b 00 00 00 00 05 e9]
00005 : 1. L [3]
00006 : 1. U2 [1] 0
00007 : 2. U2 [1] 1
00008 : 3. L [0]
00009 : 2014/06/18 10:07:04 I : CPU=1 Ch=fffh Ex=fffffh Dev=M 2005 ON
00010 : 2014/06/18 10:07:04 I : CPU=1 Ch=fffh Ex=fffffh Dev=M 2021 ON
00011 : 2014/06/18 10:07:04 S : S6 F11 Dev=1 No=1 LEN=33[00 01 86 0b 00 00 00 00 05 ea]
00012 : 1. L [3]
00013 : 1. U2 [1] 0
00014 : 2. U2 [1] 12
00015 : 3. L [0]
00016 : 1. L [2]
00017 : 1. U2 [1] 12
00018 : 2. L [1]
00019 : 1. ASCII [1] "1"
00020 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2005 OFF
00021 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2021 OFF
00022 : 2014/06/18 10:07:04 R : S6 F12 Dev=1 No=1 LEN=13[00 01 06 0c 00 00 00 00 05 e9]
00023 : 1. BIN [1] 00
00024 : 2014/06/18 10:07:04 R : S1 F13 Dev=1 No=1 LEN=12[00 01 81 0d 00 00 00 00 00 05]
00025 : 1. L [0]
00026 : 2014/06/18 10:07:04 S : S1 F14 Dev=1 No=1 LEN=33[00 01 01 0e 00 00 00 00 00 05]
00027 : 1. L [2]
00028 : 1. BIN [1] 00
00029 : 2. BIN [2]
00030 : 1. ASCII [6] "GANL01"
00031 : 2. ASCII [6] "01.00 "
00032 : 2014/06/18 10:07:04 M : Communicating
00033 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2006 ON
00034 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2100 ON
00035 : 2014/06/18 10:07:04 S : S1 F13 Dev=1 No=1 LEN=28[00 01 81 0d 00 00 00 00 05 eb]
00036 : 1. L [2]
00037 : 1. ASCII [6] "GANL01"
00038 : 2. ASCII [6] "01.00 "
00039 : 2014/06/18 10:07:04 I : CPU=1 Ch=fffh Ex=fffffh Dev=M 2006 OFF
00040 : 2014/06/18 10:07:04 O : CPU=1 Ch=fffh Ex=fffffh Dev=M 2100 OFF

```

Precautions

To display a log on a GOT, a screen must be created on the GOT in advance.

For the GOT drawing method, refer to the following:

GT Designer3 Version1 Screen Design Manual (Fundamentals)

GT Designer3 Version1 Screen Design Manual (Functions)

Operation register list


| No. | Name | Description | Programmable Display Setting Operation |
|-----|--------------------------------|--|--|
| 1 | Prev_Time | ON: Move to the previous hour. | Bit set ^{*1} |
| 2 | Next_Time | ON: Move to the next hour. | |
| 3 | Prev_Page | ON: Move to the previous page. | |
| 4 | Next_Page | ON: Move to the next page. | |
| 5 | Top_Line | ON: Move to the top line. | |
| 6 | End_Line | ON: Move to the end line. | |
| 7 | Jump_Date | ON: Move to the specified date and time. | |
| 8 | Jump_Line | ON: Move to the specified line. | |
| 9 | SECS_S_Mask | ON: Display a summary of SECS communication logs. OFF: Do not display a summary of SECS communication logs. | Bit invert |
| 10 | SECS_D_Mask | ON: Display the data area of a SECS communication log. OFF: Do not display the data area of a SECS communication log. | |
| 11 | PLC_Mask | ON: Display programmable controller logs. OFF: Do not display programmable controller logs. | |
| 12 | USER_Mask | ON: Display user logs. OFF: Do not display user logs. | |
| 13 | WRAP | ON = Wrap at the maximum number of characters. OFF = Do not wrap at the maximum number of characters. | |
| 14 | CLEAR | ON = Clear the screen. | Bit set ^{*1} |
| 15 | Info | ON: Operation error (when there is no move-destination file) OFF: Operation normal | Reference ^{*2} |
| 16 | Not used | Not used | Not used |
| | CTRLCPUIF_S_Mask ^{*3} | ON: Display a summary of control CPU interface logs. OFF: Do not display a summary of control CPU interface logs. | Bit invert |
| 17 | CTRLCPUIF_D_Mask ^{*3} | ON: Display the data area of a control CPU interface log. OFF: Do not display the data area of a control CPU interface log. | |
| 18 | Not used ^{*3} | Not used | Not used |

*1 Turned OFF by SECS/GEM communication software.

*2 Switched ON/OFF by SECS/GEM communication software.

*3 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Display register list

| No. | Name | Description | Size (Word) | Programmable Display Setting Operation |
|-----|-----------|--|-------------|--|
| 1 | Log_Year | Enter the year of the log to be displayed. (YYYY: 0000 to 9999) | 1 | Read/Write ^{*1} |
| 2 | Log_Month | Enter the month of the log to be displayed. (MM: 01 to 12) | 1 | |
| 3 | Log_Day | Enter the day of the log to be displayed. (DD: 01 to 31) | 1 | |
| 4 | Log_Hour | Enter the time of the log to be displayed. (HH: 00 to 23) | 1 | |
| 5 | Line_No | Enter the line number of the jump destination. | 2 | Read/Write ^{*2} |
| 6 | Not used | Not used | 2 | Not used |
| 7 | Log_Area | Start register of the log display area. | 5440 | Read ^{*3} |

*1 Data format is unsigned BIN16.

*2 Data format is unsigned BIN32.

*3 Display by an ASCII string.

Precautions

Log_Area (log display area) does not support the new line character in text display objects.

Set only single line text in each text display object.

Ex.

Ex.) Display text is 100 characters, 40 lines and start is from D0 device.

Text display objects that can display 100 characters are arranged as 40 units.

The text display objects that can display 100 characters will be arranged into 40 items. Each register will be assigned consecutively as D0, D50, D100, D150...D1800, D1850, D1900, and D1950.

Considerations when the log output function is used

- If a large volume of logs are collected in a short interval, the control function performance of SECS/GEM communication software may be affected. Fully take this precaution into account when collecting log data during normal operation.
- If logs are referenced, the control function performance of SECS/GEM communication software may be affected. It is recommended to terminate log data collection (turn OFF the output trigger relay) before referencing log data.
- If logs are collected during operation of SECS/GEM communication software, log collection may fail. In such cases, collect the logs again.
- Log data is stored on the memory card. See the log on the memory card.
- Log writing occurs at an interval of 10 seconds. Logs are not output just after operation.
- When changing a module time while collecting logs, a log file is newly created. Changing a module time frequently may cause many log files to be created, and therefore SECS/GEM communication software may not be able to refer to logs properly.

Considerations when switching the power ON or OFF

Never switch the power supply of the SECS/GEM communication software pre-installed model module OFF during log output. Perform one of the following actions before switching OFF the power supply.

- Make sure that the log output bit is OFF.
- Unmount the SD card of the MELSEC iQ-R series SECS/GEM communication software pre-installed model module (by moving the Mode switch of the MELSEC iQ-R series SECS/GEM communication software pre-installed model module from the center to SELECT for 3 seconds or more)
- Move the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module from RUN to STOP, and then wait 3 seconds or more

To prevent corruption of logs and spooling files, all file writing is stopped.

Furthermore, perform the following actions before switching ON the power supply.

- Return the Mode switch of the MELSEC iQ-R series SECS/GEM communication software pre-installed model module to the center.
- Return the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module to RUN.


Operation may be affected because there are limits on file access during start-up.

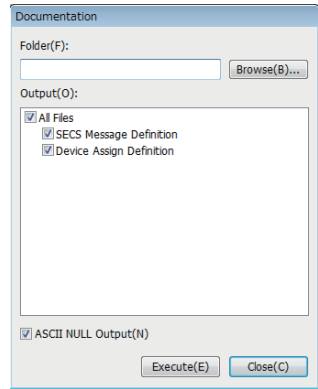
7.18 Documentation

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | — | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

The definition information of SECS/GEM communication software is output as electronic data.
The SECS message definitions, device assignment definitions, and other setting content can be checked as a list.

Window

 [Documentation] ⇒ [Documentation]





Displayed items

| Item | Description |
|-------------------|--|
| Folder | Specify the folder to output the file. |
| Output | Select the data to output as a file. |
| ASCII NULL output | Select this checkbox to output device assignment definitions when one word was added to the NULL stopper register for an ASCII-format item for which an even number is configured for the number of units of data. |



Non-GEM version

The following files can be output by a non-GEM version.

| File name | Form at | Description | Notes |
|------------------------------|---------|--|---|
| SECS Message Definition | csv | Output the content of SECS messages as a list. | For details, refer to the following:  Page 190 SECS message definition |
| Device assignment definition | csv | Output devices that have undergone device assignment definition as a list. | For details, refer to the following:  Page 190 Device assignment definition |



GEM version

The following files can be output by a GEM version.

| File name | Format | Description | Notes |
|------------------------------|--------|--|---|
| SECS Message Definition | csv | Output the content of SECS messages as a list. | For details, refer to the following:  Page 190 SECS message definition |
| Device assignment definition | csv | Output devices that have undergone device assignment definition as a list. | For details, refer to the following:  Page 190 Device assignment definition |

GEM advanced version

The following files can be output by an advanced GEM version.

| File name | Format | Description | Notes |
|------------------------------|--------|--|---|
| GEM settings | csv | Output GEM settings as a list. | — |
| GEM Compliant Table | csv | Output GEM performance definitions as a list. | — |
| Alarm Definition | csv | Output alarms as a list. | Contents same as GEMALM.CSV. |
| Spool Definition | csv | Output spools as a list. | Contents same as GEMSPL.CSV. |
| Variable Definition | csv | Output variables as a list. | Contents same as VALLST.CSV. |
| Report Definition | csv | Output reports as a list. | Contents same as RPTLST.CSV. |
| Event Definition | csv | Output events as a list. | Contents same as EVTLST.CSV. |
| Limit Attribute Definition | csv | Output limit attributes as a list. | Contents same as LMTLST.CSV. |
| Communication State Model | doc | Output a communication state model diagram. | Copy the file created in advance. |
| Control State Model | doc | Output a control state model diagram. | Copy the file created in advance. |
| Processing State Model | doc | Output a processing state model diagram. | Copy the file created in advance. |
| Alarm State Model | doc | Output an alarm state model diagram. | Copy the file created in advance. |
| Spool State Model | doc | Output a spool state model diagram. | Copy the file created in advance. |
| Limit State Model | doc | Output a limit state model diagram. | Copy the file created in advance. |
| SECS Message Definition | csv | Output the content of SECS messages as a list. | For details, refer to the following:  Page 190 SECS message definition |
| Device assignment definition | csv | Output devices that have undergone device assignment definition as a list. | For details, refer to the following:  Page 190 Device assignment definition |

SECS message definition

Output SECS messages created in transaction definitions to a .csv format file.

The following describes the keywords listed in each line of the file.

| Keyword | Description |
|---------|-------------------------------|
| TR | Transaction information |
| PM | Primary message information |
| SM | Secondary message information |
| IT | Item information |

Device assignment definition

Output devices configured by device assignment as a .csv file.

Because the files are sorted in order of device number before output, it is possible to check for duplicate settings.

The following describes the keywords listed in each line of the file.

| Keyword | Description |
|--------------------------|--|
| PM-SND | Control relay for sending request trigger of the primary message |
| PM-RCV | Control relay for reception notification trigger of the primary message |
| SM-SND | Control relay for sending request trigger of the secondary message |
| SM-RCV | Control relay for reception notification of the secondary message |
| IT | Control register for item information screen |
| SC | Scenario Start Request Trigger |
| OP | Trigger setting of option settings |
| CM-PM-SND | Primary message sending request trigger defined by the mapping setting function |
| CM-PM-RCV | Primary message reception notification trigger defined by the mapping setting function |
| CM-SM-SND | Secondary message sending request trigger defined by the mapping setting function |
| CM-SM-RCV | Secondary message reception notification trigger defined by the mapping setting function |
| PM-SND-INTREG | Primary message interval storage register |
| CM-IT | Offset value of the mapping setting function |
| VAL ^{*1} | Storage register of variable |
| GEMTRG ^{*1} | Control relay of each GEM function |
| STSMDL-COM ^{*1} | State notification relay of the communication state model |
| STSMDL-CNT ^{*1} | State notification relay of the control state model |
| STSMDL-PRC ^{*1} | State notification relay of the processing state model |
| STSMDL-SPL ^{*1} | State notification relay of the spool state model |
| CCH ^{*1} | Register defined by variable cache settings |
| EVT-SND ^{*1} | Control relay for sending request trigger of event definition |
| EVT-RCV ^{*1} | Control relay for reception notification trigger of event definition |

*1 Output by the GEM version and GEM advanced version.

8 GEM COMPLIANT FUNCTIONS

8.1 GEM Performance Definition Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

This section shows the method for configuring the GEM performance definition conditions implemented by SECS/GEM communication software.

Select the checkboxes of performances to be implemented in the "GEM Performance Definition" screen.

Window

🖱️ Main screen ⇨ [GEM Performance] tab

GEM Performance Definition

Basic Conditions Of GEM(G):

- ☒ State Model
 - ☒ Communication State Model
 - ☒ Control State Model
- ☒ Device Process State
- ☒ S1F13/F14 Scenario Started By Host
- ☒ Event Notification
- ☒ On-Line Check
- ☒ Error Message
- ☒ Control (Started By Operator)
- ☒ Documentation

Additional Performance(A):

- ☒ Communication Establishment
- ☒ Dynamic Event Report Setting Change
- ☒ Variable Data Acquisition
- ☒ Trace Data Acquisition
- ☒ State Data Acquisition
- ☒ Alarm Management
- ☒ Remote Control
- ☒ Device Constant
- ☒ Process Recipe Management
- ☒ Material Transfer
- ☒ Device Terminal Service
- ☒ Clock
- ☒ Limit Monitoring
- ☒ Spooling
- ☒ Controller (Started By Host)

GEM Performance
Transaction

Displayed items

■ Messages used in basic requirements of GEM

| Performance | Used message | Message name | Direction | Notes |
|------------------------------------|--------------|---|-----------|--|
| Communication State Model | — | — | — | Refer to S1F13/F14 scenario started by host and communication establishment. |
| Control State Model | — | — | — | Refer to control (started by operator) and control (started by host). |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | Transition of control state |
| Device Process State | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | Process start/end and process state change |
| S1F13/F14 Scenario Started By Host | S1F13/14 | Establish Communication Request/ Establish Communication Request Acknowledge | H→E | — |
| Event Notification | S6F5/6 | Multi-Block Data Send Inquire/Multi-Block Grant | H←E | — |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | — |
| | S6F15/16 | Event Report Request/Event Report Data | H→E | — |
| On-Line Check | S1F1/2 | Are You There Request/On Line Data | H→E | — |

| Performance | Used message | Message name | Direction | Notes |
|-------------------------------|--------------|------------------------------------|-----------|---|
| Error Message | S9F1 | Unrecognized Device ID | H←E | Automatic SECS/GEM communication software transmission upon detection |
| | S9F3 | Unrecognized Stream Type | H←E | Automatic SECS/GEM communication software transmission upon detection |
| | S9F5 | Unrecognized Function Type | H←E | Automatic SECS/GEM communication software transmission upon detection |
| | S9F7 | Illegal Data | H←E | Automatic SECS/GEM communication software transmission upon detection |
| | S9F9 | Transaction Timer Timeout | H←E | Automatic SECS/GEM communication software transmission upon detection |
| | S9F13 | Conversation Timeout | H←E | Defined by user and transmitted upon request from ladder program. |
| Control (Started By Operator) | S1F1/2 | Are You There Request/On Line Data | H←E | Implements Operator offline setting; operator local switching |
| Documentation | — | — | — | Supported by GEM advanced version. |

■Messages used in additional GEM performance

| Performance | Used message | Message name | Direction | Notes |
|-------------------------------------|--------------|---|-----------|--------------------------------------|
| Communication Establishment | S1F13/14 | Establish Communication Request/ Establish Communication Request Acknowledge | H←E | — |
| Dynamic Event Report Setting Change | S2F33/34 | Define Report/Define Report Acknowledge | H→E | — |
| | S2F35/36 | Link Event Report/Link Event Report Acknowledge | H→E | — |
| | S2F37/38 | Enable/Disable Event Report/Enable/ Disable Event Report Acknowledge | H→E | — |
| | S2F39/40 | Multi-Block Inquire/Multi-Block Grant | H←E | — |
| Variable Data Acquisition | S6F19/20 | Individual Report Request/Individual Report Data | H→E | — |
| Trace Data Acquisition | S2F23/24 | Trace Initialize Send/Trace Initialize Acknowledge | H→E | Supported by GEM advanced version. |
| | S6F1/2 | Trace Data Send/Trace Data Acknowledge | H←E | Supported by GEM advanced version. |
| State Data Acquisition | S1F3/4 | Selected Equipment Status Request/ Selected Equipment Status Data | H→E | — |
| | S1F11/12 | Status Variable Namelist Request/ Status Variable Namelist Reply | H→E | — |
| Alarm Management | S5F1/2 | Alarm Report Send/Alarm Report Acknowledge | H←E | — |
| | S5F3/4 | Enable/Disable Alarm Send/Enable/ Disable Alarm Acknowledge | H→E | — |
| | S5F5/6 | List Alarm Request/List Alarm Data | H→E | — |
| | S5F7/8 | List Enabled Alarm Request/List Enabled Alarm Data | H→E | —*1 |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | — |
| Remote Control | — | — | — | Requires message definition by user. |
| Device Constant | S2F13/14 | Equipment Constant Request/ Equipment Constant Data | H→E | — |
| | S2F15/16 | New Equipment Constant Send/New Equipment Constant Acknowledge | H→E | — |
| | S2F29/30 | Equipment Constant Namelist Request/Equipment Constant Namelist | H→E | — |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | — |

| Performance | Used message | Message name | Direction | Notes |
|------------------------------|--------------|---|-----------|--------------------------------------|
| Process Recipe Management | S7F17/18 | Delete Process Program Send/Delete Process Program Acknowledge | H→E | Supported by GEM advanced version. |
| | S7F19/20 | Current EPPD Request/Current EPPD Data | H→E | Supported by GEM advanced version. |
| | S7F23/24 | Formatted Process Program Send/Formatted Process Program Acknowledge | H→E | Requires message definition by user. |
| Material Transfer | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | Transport event |
| Device Terminal Service | — | — | — | Requires message definition by user. |
| Clock | S2F17/18 | Date and Time Request/Date and Time Data | H↔E | — |
| | S2F31/32 | Date and Time Set Request/Date and Time Set Acknowledge | H→E | — |
| Limit Monitoring | S2F45/46 | Define Variable Limit Attributes/Variable Limit Attribute Acknowledge | H→E | Supported by GEM advanced version. |
| | S2F47/48 | Variable Limit Attribute Request/Variable Limit Attributes Send | H→E | Supported by GEM advanced version. |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | Inter-area transition event |
| Spooling | S2F43/44 | Reset Spooling Streams and Functions/Reset Spooling Acknowledge | H→E | — |
| | S6F23/24 | Request Spooled Data/Request Spooled Data Acknowledgment Send | H→E | — |
| | S6F11/12 | Event Report Send/Event Report Acknowledge | H←E | Spooling stopped//transfer failure |
| Controller (Started By Host) | S1F15/16 | Request OFF-LINE/OFF-LINE Acknowledge | H→E | — |
| | S1F17/18 | Request ON-LINE/ON-LINE Acknowledge | H→E | — |

*1 Software version 1.29F or later supports the MELSEC iQ-R series SECS/GEM communication software pre-installed model module.

8.2 About State Model Management

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

Of the state models required by GEM, communication state, control state, and spooling state are managed automatically by SECS/GEM communication software.






Therefore, define the notification destination register of the default state (state arbitrarily definable by the equipment) and state number for the setting content.

The current processing state of the equipment must be managed by the programmable controller CPU by the processing state model, and, in addition to the above, the setting content must define the notification content for changes to SECS/GEM communication software.

Regardless of the state, the operation of the state model must be understood. The following section provides explanatory notes for the state model.

Check the transfer operation of each model by each item.

For the message content and scenario operations, see the GEM standards document.

| State Model | Description |
|---|--|
|  | State name |
|  | Transition destination |
|  | Initial state |
|  | Historical selector (return to previous state) |
|  | Conditional Selector |

8.3 GEM Model State Notification Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The model state notification setting is used to display the model state, such as the communication state or control state, on an external display device such as a GOT.

Each state is assigned to a relay device.

To enable this function, select [GEM Function] ⇒ [Model State Notification].

Window

[GEMFunction] ⇒ [Model State Notification Settings]

Model State Data Setting

☐ Communication State Model(C)

State Notification Relay (Top) CPU-1 M 0 7

☐ Control State Model(N)

State Notification Relay (Top) CPU-1 M 0 7

☐ Processing State Model(P)

State Notification Relay (Top) CPU-1 M 0 7


☐ Spooling State Model(S)





State Notification Relay (Top) CPU-1 M 0 7

OK

Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|--|
| Communication State Model  | Select this checkbox to report the state of the communication state model. The state is reported using 8 relays from the start. |
| Control State Model  | Select this checkbox to report the state of the control state model. The state is reported using 8 relays from the start. |
| Processing State Model  | Select this checkbox to report the state of the processing state model. The state is reported using 8 relays from the start. This model state can be output processing unit-wise as far as the processing state is concerned No. of relay devices equal to (8 items from the top × no. of processing units) are used, based on the no. of processing units set in the "Processing State Settings" screen. |
| Spooling State Model  | Select this checkbox to report the state of the spooling state model. The state is reported using 8 relays from the start. |

Details of state notification relays

■State notification relays used in communication state model

| Relay (from top) | Value |
|------------------|--|
| 1 | DISABLED (Communication disabled) |
| 2 | ENABLED(Communication enabled) |
| 3 | NOT COMMUNICATING Communication interrupted) |
| 4 | WAIT CR FROM HOST |
| 5 | WAIT CRA |
| 6 | WAIT DELAY |
| 7 | COMMUNICATING (Communication in progress) |
| 8 | Reserved |

■State notification relays used in control state model

| Relay (from top) | Value |
|------------------|--------------------|
| 1 | OFF-LINE |
| 2 | EQUIPMENT OFF-LINE |
| 3 | ATTEMPT ON-LINE |
| 4 | HOST OFF-LINE |
| 5 | ON-LINE |
| 6 | LOCAL |
| 7 | REMOTE |
| 8 | Reserved |

■State notification relays used in processing state model

| Relay (from top) | Value |
|------------------|-------------------|
| 1 | IDLE |
| 2 | PROCESSING ACTIVE |
| 3 | PROCESS |
| 4 | SETUP |
| 5 | READY |
| 6 | EXECUTING |
| 7 | PAUSE |
| 8 | Reserved |

■State notification relays used in spooling state model

| Relay (from top) | Value |
|------------------|-------------------------------|
| 1 | SPOOL INACTIVE(Spool stopped) |
| 2 | SPOOL ACTIVE(Spool activity) |
| 3 | NO SPOOL OUTPUT |
| 4 | SPOOL OUTPUT(Spool output) |
| 5 | TRANSMIT SPOOL |
| 6 | PURGE SPOOL |
| 7 | SPOOL NOT FULL |
| 8 | SPOOL FULL(Spool full) |

8.4 Communication State Model Management

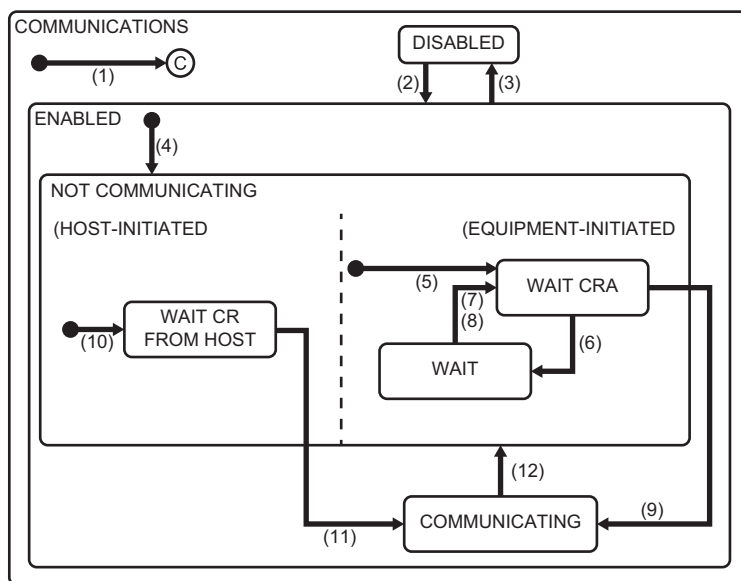
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

Communication link state between host and SECS-II level is managed using the following state model.

Communication between the device and the host is established once the state becomes COMMUNICATING (communication in progress).

The communication state model is completely managed by SECS/GEM communication software.

Using the communication state settings, configure the device assignment, default values of the communication state, etc. to notify the programmable controller CPU about the current communication state.



| No. | Current state | Trigger | New state | Operation | Comment |
|-----|--|---|--|--|---|
| (1) | (Enter COMMUNICATIONS state) | System initialization | System default state | Disabled | System default state can be either Communication DISABLED or ENABLED state. |
| (2) | DISABLED (Communication disabled) | Operator switches from communication disabled to enabled. | ENABLED (Communication enabled) | Disabled | SECS-II communication is enabled. |
| (3) | ENABLED (Communication enabled) | Operator switches from communication enabled to disabled. | DISABLED (Communication disabled) | Disabled | SECS-II communication is disabled. |
| (4) | (Enter to communication ENABLED) | Communication enabled state is activated. | NOT COMMUNICATING (Communication interrupted) | Disabled | Communication enabled state is activated during system initialization, or alternately, it can be switched into by operator. |
| (5) | (Enter equipment initiated connect) | (Entered NOTCOMMUNICATING state) | WAIT CRA (Awaiting communication establishment request confirmation) | Communication initialization Communication delay timer is set for timeout. S1F13 is sent. | Communication establishment is started through equipment initiated connect. |
| (6) | WAIT CRA (Awaiting communication establishment request confirmation) | S1F13 transaction failure* ¹ | WAIT DELAY (Awaiting delay timer timeout) | Communication delay timer is initialized. All messages awaiting transmission are removed from the queue* ² . | Timeout is awaited. |
| (7) | WAIT DELAY (Awaiting delay timer timeout) | Communication delay timer is timed out. | WAIT CRA (Awaiting communication establishment request confirmation) | S1F13 is sent. | S1F14 is awaited. (In some cases S1F13 may be received from the host.) |

| No. | Current state | Trigger | New state | Operation | Comment |
|------|---|---|---|--|--|
| (8) | WAIT DELAY (Awaiting delay timer timeout) | A message other than S1F13 is received. | WAIT CRA (Awaiting communication establishment request confirmation) | Message is discarded (no response). Communication delay timer is set for timeout. S1F13 is sent. | It means that there is a possibility of communication establishment. |
| (9) | WAIT CRA (Awaiting communication establishment request confirmation) | S1F14 with COMMACK = 0 is received as expected. | COMMUNICATING (Communication in progress) | Disabled | Communication shall be established. |
| (10) | (Enter host initiated connect) | (Entered NOTCOMMUNICATING state) | WAIT CR FROM HOST (Awaiting communication establishment) | Disabled | S1F13 is awaited from the host. |
| (11) | WAIT CR FROM HOST (Awaiting communication establishment from the host) | S1F13 is received. | COMMUNICATING (Communication in progress) | S1F14 is sent with COMMACK=0. | Communication is established. |
| (12) | COMMUNICATING (Communication in progress) | Communication loss | NOT COMMUNICATING (Communication interrupted) | All messages awaiting transmission are removed from the queue. | Messages removed from the queue are spooled if necessary. |

*1 Communication loss, response timeout, etc.

*2 Messages to be transmitted from the queue are spooled in the order of creation.

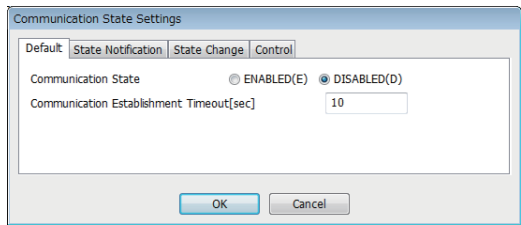
Communication state model setting

The following shows the screens for configuring the details of the communication state model.

Default

Window

[GEMFunction] ⇒ [Communication State] ⇒ [Default] tab



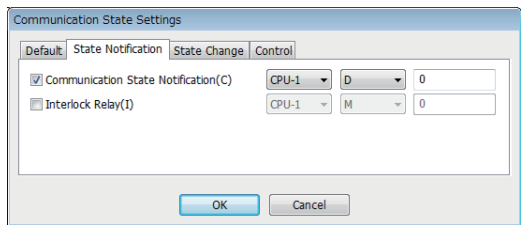
Displayed items

| Item | Description |
|-------------------------------------|---|
| Communication State | Select the default communication state of SECS/GEM communication software upon power. This setting is reflected in the equipment variable DefaultCommunicationsState. |
| Communication Establishment Timeout | Configure the timeout value for communication delay timer. Values from 1 to 240 seconds can be specified. This setting is reflected in the equipment variable EstablishCommunicationsTimeout. |


State notification



Window

[GEMFunction] ⇒ [Communication State] ⇒ [State Notification] tab



Displayed items

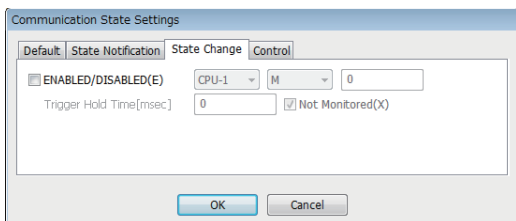
: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|--|---|
|  Communication State Notification | Set the register used by SECS/GEM communication software to notify the current state of the communication state model to the programmable controller CPU. This setting is reflected in the state variable CommunicationsState. For more details of values, refer to the following:  Page 232 Variables defined by default |
| Interlock Relay | To lock transition of the communication state and transition operations, use an interlock relay to switch this relay ON from the programmable controller CPU. |

State change

Window

 [GEMFunction] ⇒ [Communication State] ⇒ [State Change] tab



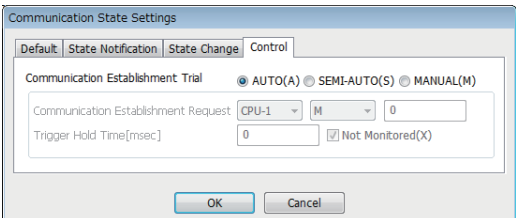
Displayed items

| Item | | Description |
|------------------|-------------------|---|
| ENABLED/DISABLED | — | This relay enables the programmable controller CPU to change the communication state of SECS/GEM communication software. When this setting is enabled, turn the trigger ON to configure an ENABLED state and turn the trigger OFF to configure a DISABLED state. |
| | Trigger Hold Time | An ENABLED/DISABLED trigger results when the ENABLED/DISABLED relay was held for the configured time. If the "Not Monitored" checkbox is selected, ENABLED/DISABLED trigger processing is carried out without hold monitoring. |

Control

Window

 [GEMFunction] ⇒ [Communication State] ⇒ [Control] tab



Displayed items

| Item | | Description |
|-----------------------------------|-------------------------------------|---|
| Communication Establishment Trial | — | Select whether communication establishment is to be attempted automatically by SECS/GEM communication software or upon request from the programmable controller CPU. <ul style="list-style-type: none"> AUTO: SECS/GEM communication software attempts to establish communication automatically. SEMI-AUTO: Attempted automatically by SECS/GEM communication software only when the Communication establishment request relay is ON. MANUAL: Attempts to establish communication upon request from the programmable controller CPU. Determine the value of the communication state notification register by the programmable controller CPU and switch ON the communication establishment relay defined below. |
| | Communication Establishment Request | Configure the relay to notify SECS/GEM communication software about the communication establish attempt when SEMI-AUTO/MANUAL was selected. When this relay is switched ON, SECS/GEM communication software attempts to establish communication. |
| | Trigger Hold Time | A communication establishment request trigger results when the communication establishment request relay is held for the configured time. If the "Not Monitored" checkbox is selected, Communication establishment request trigger processing is carried out without hold monitoring. |

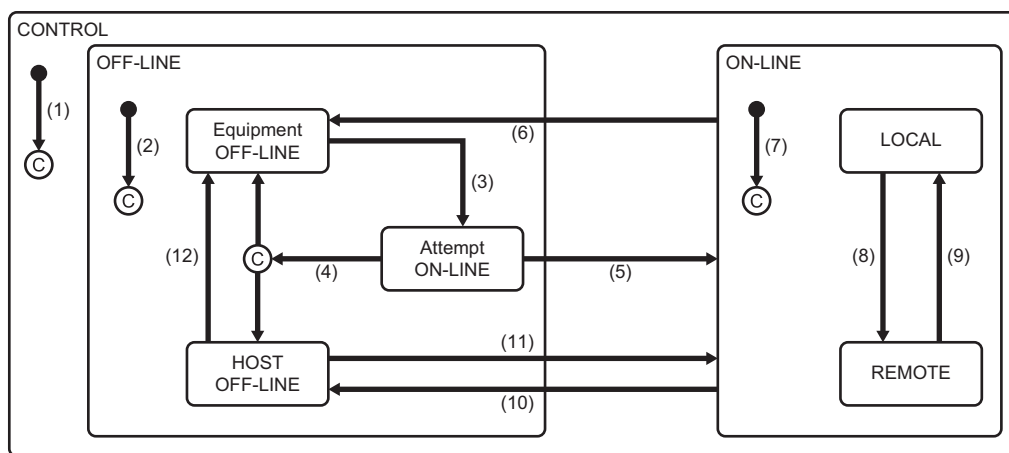
8.5 Control State Model Management

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The following state model is used by the host to manage the state of the 3 control levels (high: remote, medium: local, low: offline) of the equipment.

- Remote: Equipment can be controlled from the host.
- Local: Information of equipment can be accessed from the host, but operations are limited.
- Offline: Equipment cannot be controlled from the host, and access to information is also limited.

SECS/GEM communication software manages the control state model completely, such as device assignment for notifying the current control state to the programmable controller CPU, assignment of the control transition switch relay and setting of the control state default value.



| No. | Current state | Trigger | New state | Operation | Comment |
|-----|--|--|---|-----------------------------|--|
| (1) | (Enter CONTROL state) | System initialization | System default state | Disabled | System default state is set to online or offline. |
| (2) | (Enter OFF-LINE state) | Enters offline state. | OFF-LINE (Offline) Any one of these. • EQUIPMENT OFF-LINE • HOST OFF-LINE • ATTEMPT ON-LINE | Disabled | Equipment enters any of the lower states of the offline state in accordance with default setting. |
| (3) | EQUIPMENT OFF-LINE (Equipment offline) | Operator changes the switch to online. | ATTEMPT ON-LINE (Online establishment attempt) | S1F1 is sent. | On entering the ATTEMPT ON-LINE state, S1F1 shall be sent definitely. |
| (4) | ATTEMPT ON-LINE (Online establishment attempt) | Any one of these. • Communication loss • S1F1 reply timeout • Received S1F0 | Depends on the setting conditions. | Disabled | Depending on the setting, equipment is set to offline or host is set to online. |
| (5) | ATTEMPT ON-LINE (Online establishment attempt) | Expected S1F2 is received. | ON-LINE (Online) | Disabled | No.(7) is entered and transition to online is notified to the host. |
| (6) | ON-LINE (Online) | Operator changes the switch to offline. | EQUIPMENT OFF-LINE (Equipment offline) | Disabled (Event occurrence) | "Equipment offline" event occurs ¹ . In offline state, reply to the event is discarded. |
| (7) | (Enter ON-LINE state) | Enters Online state. | ON-LINE (Online) The lower state is determined based on remote/local switch setting. | Disabled (Event occurrence) | "Control state local" event or "control state remote" event occurs. The actual online lower state to which the transition is done is indicated. |

| No. | Current state | Trigger | New state | Operation | Comment |
|------|---------------------------------|---|---|--------------------------------|---|
| (8) | LOCAL (Local) | Operator sets the switch to remote. | REMOTE (Remote) | Disabled (Event occurrence) | "Control state remote" event occurs. |
| (9) | REMOTE (Remote) | Operator sets the switch to local. | LOCAL (Local) | Disabled (Event occurrence) | "Control state local" event occurs. |
| (10) | ON-LINE (Online) | S1F15 (transition to offline) is received. | HOST OFF-LINE (Host offline) | Disabled (Event occurrence) | "Host offline" event occurs. |
| (11) | HOST OFF-LINE (Host offline) | S1F17 (online transition request) is received and accepted. | ON-LINE (Online) | Disabled | No.(7) is entered and transition to online is notified to the host. |
| (12) | HOST OFF-LINE (Host offline) | Operator changes the switch to offline. | EQUIPMENT OFF-LINE (Equipment offline) | Disabled (Event occurrence) | "Equipment offline" event occurs. |

*1 When there is a transaction started by the host, SECS/GEM communication software sends an abort message after event message transaction completion.

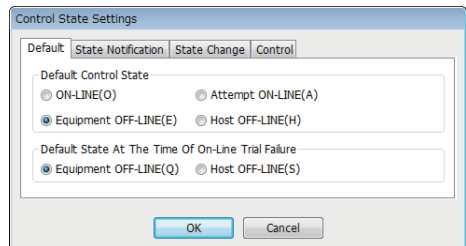
Control state model setting

The following shows the screens for configuring the details of the control state model.

Default

Window

[GEMFunction] ⇒ [Control State] ⇒ [Default] tab



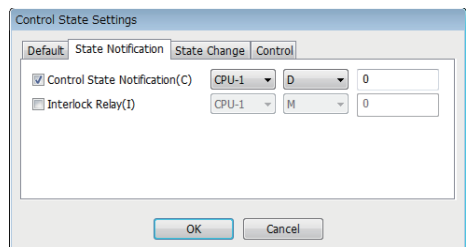
Displayed items

| Item | Description |
|--|--|
| Default Control State | Select the control state of SECS/GEM communication software when the power is turned ON. This cannot be changed from the programmable controller CPU. This setting is reflected in the equipment variable DefaultControlState. |
| Default State At The Time of On-Line Trial Failure | Select the default state when online transition fails. This cannot be changed from the programmable controller CPU. This setting is reflected in the equipment variable DefaultOfflineState. |


State notification



Window

[GEMFunction] ⇒ [Control State] ⇒ [State Notification] tab




Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|--|---|
| Control State Notification  | Set the register used by SECS/GEM communication software to notify the current state of the control state model to the programmable controller CPU. This value is the state variable ControlState. For more details of values, refer to the following:  Page 232 Variables defined by default |
| Interlock Relay | To lock transition of the control state, use an interlock relay to switch this relay ON from the programmable controller CPU. |

State change

Window

 [GEMFunction] ⇒ [Control State] ⇒ [State Change] tab

Control State Settings

Default

State Notification

State Change

Control

☐ ON-LINE/OFF-LINE(O)

CPU-1

M

0

Trigger Hold Time[msec]

0

☒ Not Monitored(X)

☐ REMOTE/LOCAL(R)

CPU-1

M

0

Trigger Hold Time[msec]

0

☒ Not Monitored(Y)

OK

Cancel

Displayed items

| Item | | Description |
|------------------|-------------------|---|
| ON-LINE/OFF-LINE | — | Set the relay used to notify SECS/GEM communication software about the transition to ON-LINE/OFF-LINE from the programmable controller CPU. When this setting is enabled, turn the trigger ON to configure an ON-LINE state and turn the trigger OFF to configure an OFF-LINE state. |
| | Trigger Hold Time | An ON-LINE/OFF-LINE trigger results when the ON-LINE/OFF-LINE relay is held for the configured time. If the "Not Monitored" checkbox is selected, ON-LINE/OFF-LINE trigger processing is carried out without hold monitoring. |
| REMOTE/LOCAL | — | Configure the relay to notify SECS/GEM communication software from the programmable controller CPU of a REMOTE/LOCAL switch. When this setting is enabled, turn the trigger ON to configure a REMOTE state and turn the trigger OFF to configure a LOCAL state. |
| | Trigger Hold Time | A REMOTE/LOCAL trigger results when the REMOTE/LOCAL relay is held for the configured time. If the "Not Monitored" checkbox is selected, REMOTE/LOCAL trigger processing is carried out without hold monitoring. |

Control

Window

 [GEMFunction] ⇒ [Control State] ⇒ [Control] tab

Control State Settings

Default

State Notification

State Change

Control

On-Line Establishment Trial

☒ AUTO(A) ☐ MANUAL(M)

On-Line Request

CPU-1

M

0

Trigger Hold Time[msec]

0

☒ Not Monitored(X)

OK

Cancel

Displayed items

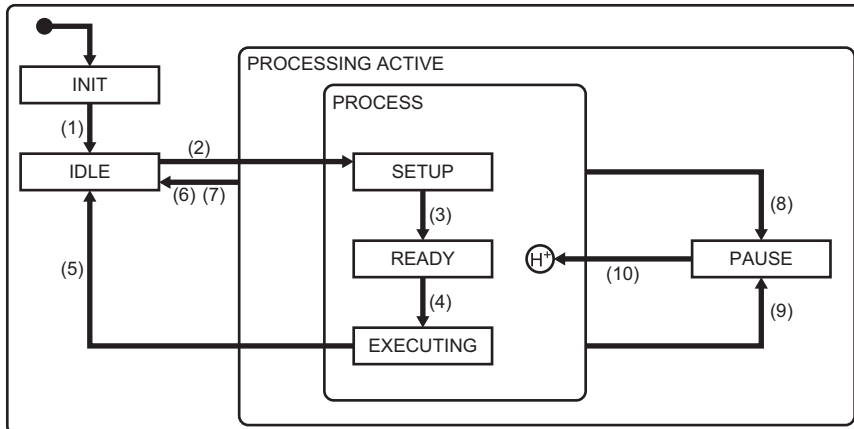
| Item | | Description |
|-----------------------------|-------------------|---|
| On-Line Establishment Trial | — | Select whether online establishment is to be attempted automatically by SECS/GEM communication software or upon request from the programmable controller CPU. <ul style="list-style-type: none">• AUTO: SECS/GEM communication software attempts to establish an online state automatically.• MANUAL: Attempts to establish an online state upon request from the programmable controller CPU. Determine the value of the control state notification register by the programmable controller CPU and switch ON the online request relay defined below. |
| | On-Line Request | Configure the relay to notify SECS/GEM communication software about the online establishment attempt when MANUAL was selected for "On-Line Establishment Trial". When this relay is switched ON, SECS/GEM communication software attempts to establish an online state. |
| | Trigger Hold Time | An online request trigger results when the On-Line Request relay is held for the configured time. If the "Not Monitored" checkbox is selected, online request trigger processing is carried out without hold monitoring. |

8.6 Processing State Model Management

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The processing state of the equipment is managed with the following model. When the equipment enters a PROCESS state, it indicates that the process is ready or executing. When it enters an EXECUTING state, it means that the process is running. The programmable controller CPU must manage the processing state model.

Register assign or assign setting of state transition switch relay are implemented in SECS/GEM communication software to enable reception of a notification from the programmable controller CPU regarding the current processing state.




| No. | Current state | Trigger | New state | Operation | Comment |
|------|-------------------|--|--|---------------------------|---|
| (1) | INIT | System initialization | IDLE | Disabled | — |
| (2) | IDLE | Setup command is issued. | SETUP | Disabled | — |
| (3) | SETUP | Setup is completed and preparation for reception of start instruction is also completed. | READY | Depends on the equipment. | — |
| (4) | READY | Start instruction (START) is received from the host or console. | EXECUTING | Depends on the equipment. | — |
| (5) | EXECUTING | Processing operation is completed. | IDLE | Disabled | — |
| (6) | PROCESSING ACTIVE | Stop instruction (STOP) is received from the host or console. | IDLE | Disabled | — |
| (7) | PROCESSING ACTIVE | Abort instruction (ABORT) is received from the host or console. | IDLE | Depends on the equipment. | — |
| (8) | PROCESS | Decided to pause the process due to alarm occurrence, etc. | PAUSE | Depends on the equipment. | The decision about this transition is normally needs support from the operator. |
| (9) | PROCESS | Pause instruction (PAUSE) is received from the host or console. | PAUSE | Depends on the equipment. | — |
| (10) | PAUSE | Resume instruction (RESUME) is received from the host or console. | PROCESS Previous state within the PROCESS | Depends on the equipment. | Lower state is the previous state before transition to PAUSE. |

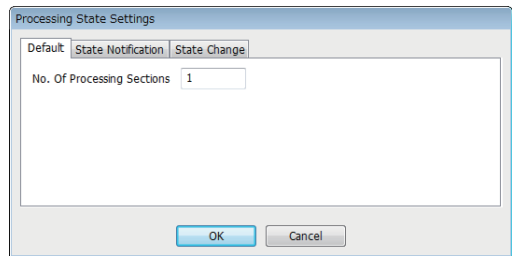
Process state model setting

The following shows the screens for configuring the details of the processing state model.


Default

Window

 [GEMFunction] ⇒ [Processing state] ⇒ [Default] tab


The screenshot shows the 'Processing State Settings' dialog box with the 'Default' tab selected. It contains a single input field labeled 'No. Of Processing Sections' with the value '1' entered. At the bottom are 'OK' and 'Cancel' buttons.

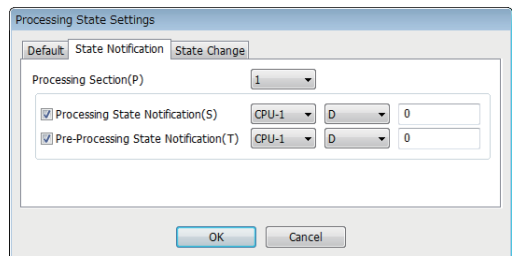
Displayed items

| Item | Description |
|----------------------------|---|
| No. Of Processing Sections | Configure the number of processing sections in the equipment. Up to 99 sections can be set. This setting is reflected in the equipment variable ProcessPartsCount.  Page 232 Variables defined by default |


State notification





Window

 [GEMFunction] ⇒ [Processing state] ⇒ [State Notification] tab

The screenshot shows the 'Processing State Settings' dialog box with the 'State Notification' tab selected. It features a dropdown for 'Processing Section(P)' set to '1'. Below are two checked checkboxes: 'Processing State Notification(S)' and 'Pre-Processing State Notification(T)'. Each checkbox has associated dropdowns for 'CPU-1' and 'D', and a numeric input field set to '0'. 'OK' and 'Cancel' buttons are at the bottom.

Displayed items

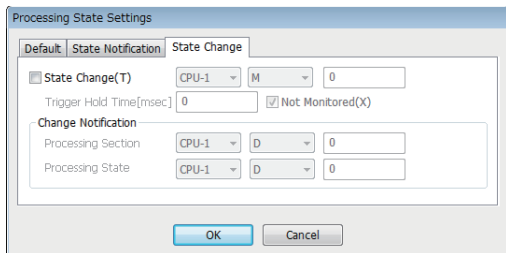
: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description | |
|--------------------|---|---|
| Processing Section | — | Select the processing section to configure the register for state notification. |
| | Processing State Notification  | Configure the register to notify the programmable controller CPU of the current processing state. This setting is reflected in the state variable ProcessState_part01. For more details of values, refer to the following:  Page 232 Variables defined by default |
| | Pre-Processing State Notification  | Configure the register to notify the programmable controller CPU of the processing state before transition. This setting is reflected in the state variable PreviousProcessState_part01. For more details of values, refer to the following:  Page 232 Variables defined by default |

State change


Window

 [GEMFunction] ⇒ [Processing state] ⇒ [State Change] tab



The dialog box is titled "Processing State Settings". It has three tabs: "Default", "State Notification", and "State Change". The "State Change" tab is selected. Inside this tab, there is a section for "State Change(T)" with a checkbox, a dropdown menu set to "CPU-1", a dropdown menu set to "M", and a text box set to "0". Below this is a "Trigger Hold Time[msec]" text box set to "0" and a checked checkbox labeled "Not Monitored(X)". There is also a "Change Notification" section with two rows: "Processing Section" and "Processing State". Each row has a dropdown menu set to "CPU-1", a dropdown menu set to "D", and a text box set to "0". At the bottom are "OK" and "Cancel" buttons.

Displayed items

| Item | | Description |
|--------------|--------------------|---|
| State Change | — | Set the replay used by the programmable controller CPU to notify SECS/GEM communication software about the transition of the processing state. The processor and processing state changes are reported when the trigger was detected. |
| | Processing Section | Configure the register to notify SECS/GEM communication software from the programmable controller CPU of a processor number that changed its processing state. This setting is reflected in the discrete variable ProcessChangePart. For more details of values, refer to the following:  Page 232 Variables defined by default |
| | Processing State | Configure the register to notify SECS/GEM communication software from the programmable controller CPU of a processing state number that changed its processing state. This setting is reflected in the discrete variable ProcessChangeStatus. |

■ Processing state numbers

For the processing state number to be stored to the processing state register, refer to the following:


| No.*1 | State/Command | Notes |
|-------|---------------|---|
| 1 | IDLE | State variable ProcessState_part01 |
| 2 | SETUP | State variable ProcessState_part01 |
| 3 | READY | State variable ProcessState_part01 |
| 4 | EXECUTING | State variable ProcessState_part01 |
| 5 | PAUSE | State variable ProcessState_part01 |
| 32 | SETUP | Setup command IDLE→SETUP |
| 33 | READY | Setup completed SETUP→READY |
| 34 | START | Start instruction READY→EXECUTING |
| 35 | COMPLETE | Processing completed EXECUTING→IDLE |
| 36 | STOP | Stop instruction Switch to IDLE |
| 37 | ABORT | Abort instruction Switch to IDLE |
| 38 | PAUSE | Pause instruction PROCESS→PAUSE |
| 39 | RESUME | Resume instruction PAUSE→PROCESS previous state |

*1 From 6 through 31, specify any state as a user defined range.

8.7 Alarm Definition (GEM/GEM Advanced Version)

Alarm notification definitions allow arbitrary definition and sending of the content of the alarm notification used by S5F1. This is completed just by controlling the alarm occurrence/recovery trigger and the register that corresponds to the prescribed alarm at the programmable controller CPU.

For operations during alarm notifications, refer to the following:

 Page 129 Operations during alarm notification


Alarm list

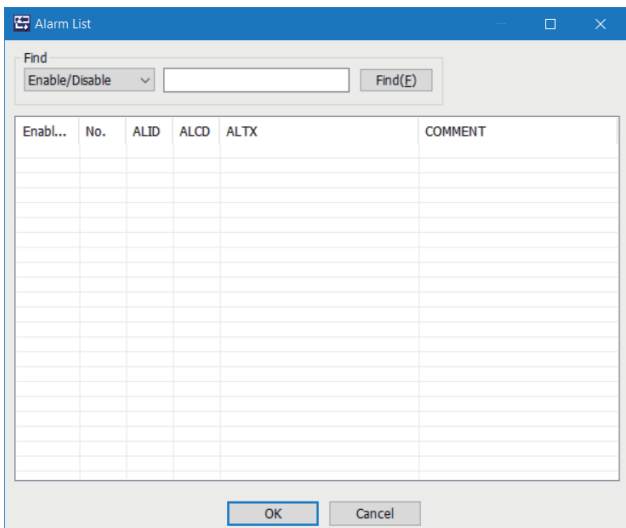
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The following shows the screen for displaying a list of defined alarms.

Up to 4096 alarms can be defined.

Window

 [GEM Function] ⇒ [Alarm]



Operations of "Alarm List"

The following table shows the operations of the "Alarm List" screen.

| Operation | Description |
|---|--|
| Right-click ⇒ shortcut menu [Modify] | Display the "Alarm Definition" screen to modify the content of the selected alarm. |
| Right-click ⇒ shortcut menu [Insert] | Add a new alarm. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected alarm, and then copy the copied alarm to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected alarm. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected alarm. |

Point

The content of the alarm list is saved to the following file.
(Project save destination)\GEMALM.CSV
When the alarm content is large or redundant, it is convenient to use Microsoft Excel or another external editor to modify this file.
After the corresponding file is edited, the content is updated by opening the same project again.

Alarm definition

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The following shows the screen for editing the alarm definition.

Window

Select an alarm in the "Alarm List" screen, right-click ⇒ shortcut menu [Modify]

Alarm Definition

☒ Enable Alarm(E)

Alarm No.

ALID ALCD ☐ Hexadecimal(H)

ALTX

Comment

Link The Event

Alarm Occurrence

No

Alarm Cancel

No

OK

Cancel

Displayed items

| Item | | Description |
|----------------|------------------|---|
| Enable Alarm | | Select this checkbox to use alarms. For the alarms to be used, the alarm report status may be switched by S5F3 (enable/disable alarm send) from the host. |
| Alarm No. | | Configure the number that corresponds to the prescribed alarm state register. (Start from 1) |
| ALID | | Configure the content of the alarm ID <ALID > related to the alarm number. |
| ALCD | | Configure the alarm category code (except for the most significant bit) of the alarm code <ALCD> related to the alarm number. The alarm status of the most significant bit (0: Reset/1: Occurrence) is sent after conversion to a value corresponding to "Alarm Status Register" by SECS/GEM communication software. |
| Hexadecimal | | Select this checkbox to configure ALCD in hexadecimal. If this checkbox is cleared, the notation is decimal. |
| ALTX | | Configure the content of the alarm text <ALTX > related to the alarm number. |
| Comment | | Configure the alarm comment. The content of the comment is not sent as an alarm message. |
| Link The Event | Alarm Occurrence | Select an event report to send when an alarm has occurred. |
| | Alarm Cancel | Select whether to send an event report when an alarm was cancelled. |


Common alarm settings

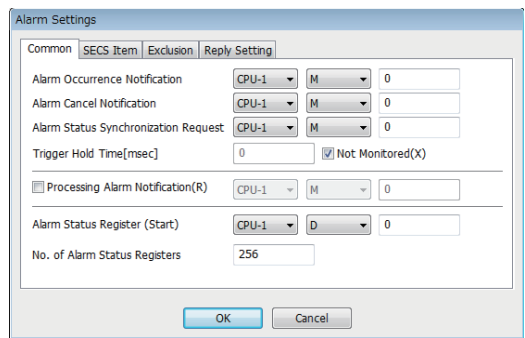
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The following shows the screens for configuring the common settings to control the content configured by the Alarm list.


Common



Window

 [GEM Function] ⇒ [Common Alarm] ⇒ [Common] tab




Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|---|
| Alarm Occurrence Notification | Configure the trigger relay to notify SECS/GEM communication software of an alarm occurrence. |
| Alarm Cancel Notification | Configure the trigger relay to notify SECS/GEM communication software of an alarm reset. |
| Alarm Status Synchronization Request | Configure the trigger relay to match the alarm status managed by the programmable controller CPU internally and the alarm status managed by SECS/GEM communication software internally. Upon receiving this trigger request, the alarm state managed by SECS/GEM communication software is revised to the contents of the prescribed state register. |
| Trigger Hold Time | A trigger results when the relays configured for Alarm Cancel Notification and Alarm Status Synchronization Request were held just for the configured time. If the "Not Monitored" checkbox is selected, trigger processing is carried out without hold monitoring. |
| Processing Alarm Notification  | Configure the relay to report that alarm sending is being processed. Turned OFF by receipt of a secondary message of the final alarm message. It is possible to check that the ladder program is performing sending processing when a large number of alarms occur at once. |
| Alarm Status Register (Start) | Configure the register to display the alarm status. This setting is reflected in the state variable AlarmsSet. For more details of values, refer to the following:  Page 232 Variables defined by default |
| No. of Alarm Status Registers | One register can manage the alarm status of 16 items. Configure the quantity of registers to be used according to the number of alarm items. Up to 256 registers can be registered (maximum alarm count is 4,096). |

SECS item

Window

 [GEM Function] ⇒ [Common Alarm] ⇒ [SECS Item] tab

Alarm Settings

CommonSECS ItemExclusionReply Setting

Item(I)ALCD

Data TypeBIN

Data Count1☐ Variable Length(V)

OKCancel

Displayed items

| Item | | Description |
|------|-----------------|--|
| Item | — | Configure the data type and data count of items used by the message. |
| | Data Type | Select the data type of the item. |
| | Data Count | Configure the data count of the item. |
| | Variable Length | Select this checkbox to configure the data count to a variable length. |

Exclusion

Window

 [GEM Function] ⇒ [Common Alarm] ⇒ [Exclusion] tab

Alarm Settings

CommonSECS ItemExclusionReply Setting


Scenario(S)S5/F3☒ Enable(E)


☐ Processing Notification(P)CPU-1M0

☐ Data Lock(D)CPU-1M0☒ ABORT(B)

OKCancel


Displayed items

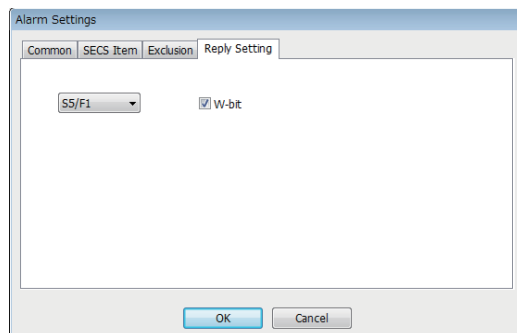
: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|----------|--|---|
| Scenario | — | Select the transaction in the GEM alarm scenario. |
| | Enable | Select this checkbox to enable automated response of the selected transaction. |
| | Processing Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU that the selected scenario is being executed. |
| | Data Lock | Configure the relay to deny the above-mentioned transaction request because of equipment processing, errors, etc. When this relay is ON, secondary messages are not returned when a message related to the selected transaction is received from the host. |
| | ABORT | When the "ABORT" checkbox is selected, an S5F0 secondary message is sent. |

Reply setting

Window

 [GEM Function] ⇒ [Common Alarm] ⇒ [Reply Setting] tab



Displayed items

| Item | Description |
|-------|--|
| W-bit | Unselect this checkbox to send an S5F1 message without a W-bit. When unselecting the checkbox, "Processing Alarm Notification" in the [Common] tab is also required to be unselected. |

Precautions

■Alarm report sending (S5F1/F2)

Alarm report sending (S5F1/F2) is a reserved transaction, so transaction settings are not necessary.

For details on reserved transactions, refer to the following:

 Page 312 List of reserved transactions and format

■Number of alarm status registers

When multiple registers are used, the consecutive registers from the specified start alarm status register up to the configured quantity will be targeted.

Make sure not to overlap with any register defined in other item settings.

■Editing of GEMALM.CSV

GEMALM.CSV is a text file with items delimited by commas. When editing the data, take care not to change the file format.

Furthermore, back up and store the file before modifying it.

■When reporting multiple alarms simultaneously

If there are too many alarms to be reported simultaneously, some notifications to the host may be missed.

As a guideline, set up to 32 alarms to perform sending requests at one time.

8.8 Spool Function (GEM/GEM Advanced Version)

Messages that failed to be sent for some reason can be kept as spool messages. Spooled messages can be resent when communication is recovered.

Spooled messages are stored on the memory card.

For the spooling operation, refer to the following:

☞ Page 138 Spooling operation sequence

For the operation during spool message sending, refer to the following:

☞ Page 139 Operation sequence during spool message sending

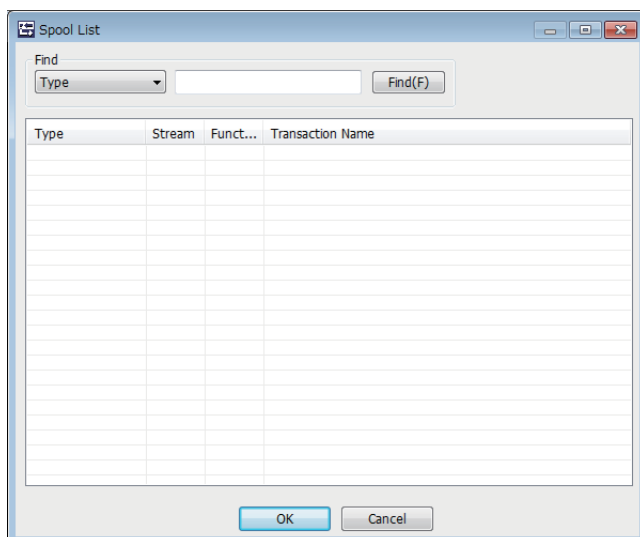
Spool list

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The following shows the screen for displaying a list of messages subject to spooling.

Window

☞ [GEM Function] ⇒ [Spool]



Operations of "Spool List"


| Operation | Description |
|---|--|
| Right-click ⇒ shortcut menu [Modify] | Display the "Spool Definition" screen to modify the content of the selected spool. |
| Right-click ⇒ shortcut menu [Insert] | Add a new spool. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected spool. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected spool. |

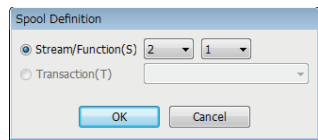
Spool definition

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | — | <input type="radio"/> | <input type="radio"/> |

The following shows the screen for editing the spool definition.

Window

 Select a message in the "Spool list" screen, right-click ⇒ Shortcut menu [Modify]



Displayed items

| Item | Description |
|-----------------|--|
| Stream/Function | Select when setting spool targets by Stream/Function. |
| Transaction | Select when setting a defined transaction to be subject to spooling. |

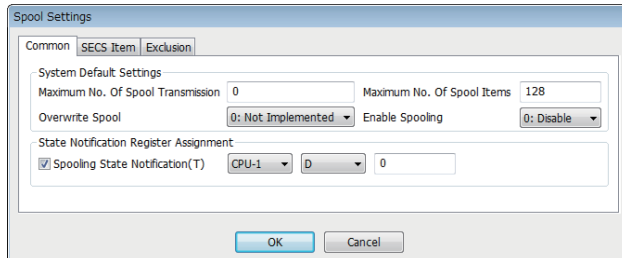
Spool common settings

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |


Common



Window

 [GEM Function] ⇒ [Common Spool] ⇒ [Common] tab




Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description | |
|--|---|--|
| System Default Settings | Maximum No. of Spool Transmission | Specify the maximum number of spool data items to be sent at once from the equipment for an S6F23 (spooled data request) from the host. To have no limit on the maximum number, set 0. The maximum number is reflected in the equipment variable MaxSpoolTransmit and can be changed by an S2F15 (new equipment variable change) from the host. |
| | Maximum No. Of Spool Items | Set the maximum number of messages to be spooled at the equipment. This setting is reflected in the equipment variable MaxSpoolCount. |
| | Overwrite Spool | Select the operation method when the maximum number of spool items is exceeded. • "0: Not performed": Discard the overflow. • "1: Perform": Overwrite spooled messages. This setting is reflected in the equipment variable OverWriteSpool. |
| | Enable Spooling | Configure whether to use the spooling function. This setting is reflected in the equipment variable EnableSpooling. |
| State Notification Register Assignment | Spooling State Notification () | This register enables SECS/GEM communication software to notify the programmable controller CPU of spooling state. This setting is reflected in the state variable SpoolingState. For more details of values, refer to the following:  Page 232 Variables defined by default |

SECS item

Window

 [GEM Function] ⇒ [Common Spool] ⇒ [SECS Item] tab

Spool Settings

CommonSECS ItemExclusion

Item(I)STRID

Data TypeU1

Data Count1☐ Variable Length(V)


OKCancel

Displayed items

| Item | | Description |
|------|-----------------|--|
| Item | — | Configure the data type and data count of items used by the message. |
| | Data Type | Select the data type of the item. |
| | Data Count | Configure the data count of the item. |
| | Variable Length | Select this checkbox to configure the data count to a variable length. |

Exclusion

Window

 [GEM Function] ⇒ [Common Spool] ⇒ [Exclusion] tab

Spool Settings

CommonSECS ItemExclusion


Scenario(S)S2/F43☒ Enable(E)


☐ Processing Notification(P)CPU-1M0

☐ Data Lock(D)CPU-1M0☒ ABORT(B)

OKCancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|----------|--|---|
| Scenario | — | Select the transaction in the GEM spool scenario. The following transactions can be selected. <ul style="list-style-type: none">• S2F43: Reset Spooling Streams and Functions• S6F23: Request Spooled Data |
| | Enable | Select this checkbox to enable automated response of the selected transaction. |
| | Processing Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU that the selected transaction is being executed. |
| | Data Lock | Configure the relay to deny the above-mentioned transaction request because of equipment processing, errors, etc. When this relay is ON, secondary messages are not returned when a message related to the selected transaction is received from the host. |
| | ABORT | When the "ABORT" checkbox is selected, an SxF0 secondary message is sent. |

Important points about spooling

- If spool transmission and trace and fixed cycle sending messages are implemented at the same time, performance may drop. It is recommended that trace / fixed-cycle sending messages are stopped during spool transmission.
- Spool data is saved as files on a memory card so the data is retained even after a power reset. However, if the power is cut suddenly during spooling, the spool files may be corrupted. If the files are corrupted, spooling does not function normally. Please restart the system after deleting the SPOOL.IDX file under the root folder of the memory card. In this case, spool data cannot be recovered.
- If the "overwrite spool" is not implemented, the maximum number of spool items may be lower than the specified spool maximum due to the size of messages to be spooled. When "overwrite spool" is implemented, operations are implemented with the minimum guaranteed number of items.
- SECS/GEM communication software does not turn OFF the sending request relay if message sending is not complete. Accordingly, describe the handshake response monitoring timer processing of SECS/GEM communication software at the programmable controller CPU, and switch OFF the sending request trigger relay during a timeout. When the message is subject to spooling at this time, the value of the spooling state notification (SpoolingState) is active.
- While the spooling state notification (SpoolingState) is active, SECS/GEM communication software does not send a message when the equipment attempts to send a primary message not subject to spooling. However, S1 and S9 related messages are sent.

8.9 Process Program

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | ○ |
| MELSEC iQ-R series | — | — | ○ |

The following actions are possible: an automatic return of S7F20 (current EPPD data) for an S7F19 (current EPPD request) from the host, deletion of a process program set by an S7F17 (process program deletion command) from the host, and automatic return of S7F18 (confirmation of deletion of process program).

If the process program was changed at the equipment, the host is notified of the change information of the process program by an S6F11 (event report sending).

This function supports the scenario that use S7F23 (Formatted Process Program Send).

In order to use an S7F3 (process program sending), define the transaction and use with the method for device association.

For usage method of process programs, refer to the following:

📖 Page 290 Using the Process Program

Process program settings

The following shows the screens for configuring the details of the process program.

🔗 [GEMFunction] ⇒ [Process Program]

Directory

Set the directory information and number of directory entries that can be registered for the process program.

8

Window

Process Program Settings

Directory | Change Notification | SECS Item | Exclusion

Directory Entry (Start) CPU-1 D 0

Directory Information (Start) CPU-1 D 0

No. Of Directory Entries 32

OK Cancel

Displayed items

| Item | Description |
|-------------------------------|---|
| Directory Entry (Start) | Configure the start of the register to store the entry information of the process program directory. For more details of entry information, refer to the following: 📖 Page 220 Directory entry information of process program |
| Directory Information (Start) | Configure the start of the register to store the directory information. For more details of directory information, refer to the following: 📖 Page 220 Directory information of process program |
| No. Of Directory Entries | Configure the number of directory entries. Up to 1024 directory entries can be configured. |

■Directory entry information of process program

| Name | Required no. of devices | Description |
|----------|-------------------------|---|
| USE flag | 1 | 0 (disabled)/1 (enabled) |
| DevNo | 1 | Device no. of the EPPD to be associated |

■Directory information of process program

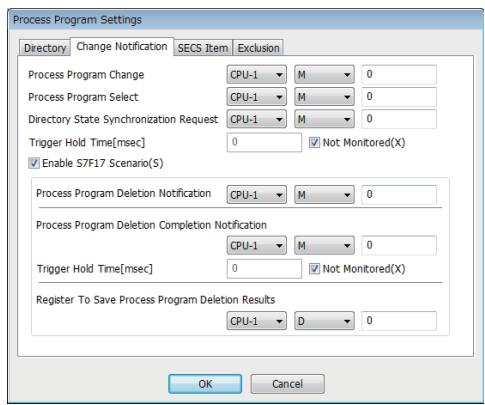
| Name | Required no. of devices | Description |
|-------------------------|-------------------------|---|
| PPID | 41 | Process program ID |
| ChangeStatus | 1 | 0 (no state change)/1 (create)/2 (edit)/ 3 (delete) |
| Host delete instruction | 1 | 0 (not specified)/1 (specified) |
| Selection state | 1 | 0 (not selected)/1 (selected) |
| DSNAME | 17 | Data set name |
| UDStatus | 1 | 0 (none)/1 (upload)/2 (download) |
| RECLEN | 1 | Discrete Maximum record length |
| RTYPE | 1 | 0 (stream)/1 (discrete) |
| ACK | 1 | ACK value during upload/download |

Change notification


Configure the trigger information to report that a process program was changed or selected from the programmable controller CPU to SECS/GEM communication software.


To use the process program deletion function, select the [Enable S7F17 Scenario] checkbox, and then define the information of the device to detect notification of deletion, deletion completion, etc. by the programmable controller CPU.

Window



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|---|
| Process Program Change | Configure the trigger to report that the process program was changed at the equipment to SECS/GEM communication software. |
| Process Program Select | Configure the trigger to report that the process program was selected at the equipment to SECS/GEM communication software. |
| Directory State Synchronization Request | Configure the trigger to request directory state synchronization to SECS/GEM communication software. |
| Trigger Hold Time | A trigger results when the relays configured for Process Program Change, Process Program Select, and Directory State Synchronization Request were held just for the configured time. If the "Not Monitored" checkbox is selected, trigger processing is carried out without hold monitoring. |
| Enable S7F17 Scenario | Select this checkbox to enable the S7F17 (Process program deletion instruction). |
| Process Program Deletion Notification  | Configure the trigger to report that an S7F17 (process program deletion command) was received from the host to the programmable controller CPU. |
| Process Program Deletion Completion Notification | Configure the trigger to report that the process program was deleted to SECS/GEM communication software. |
| Trigger Hold Time | A notification trigger results when the relays configured for Process Program Deletion Completion Notification was held just for the configured time. If the "Not Monitored" checkbox is selected, notification trigger processing is carried out without hold monitoring. |
| Register to Save Process Program Deletion Results | Configure the register to report that the process program was deleted by a deletion command to SECS/GEM communication software. |

SECS item

Configure the SECS-data item-format related to process programs.

Window

Process Program Settings

Directory | Change Notification | SECS Item | Exclusion

Item(I) PPID

Data Type ASCII

Data Count 80

☐ Variable Length(V)

OK Cancel

Displayed items

| Item | | Description |
|------|-----------------|--|
| Item | — | Configure the data type and data count of items used by the message. |
| | Data Type | Select the data type of the item. |
| | Data Count | Configure the data count of the item. |
| | Variable Length | Select this checkbox to configure the data count to a variable length. |

Exclusion

Window

Process Program Settings

Directory | Change Notification | SECS Item | Exclusion

Scenario(S) S7/F19

☒ Enable(E)

☐ Processing Notification(P)

CPU-1

M

0

☐ Data Lock(D)

CPU-1


M


0

☒ ABORT(B)

OK Cancel

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | | Description |
|----------|--|---|
| Scenario | — | Select the transaction in the GEM process program scenario. |
| | Enable | Select this checkbox to enable automated response of the selected transaction. |
| | Processing Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU that the selected scenario is being executed. |
| | Data Lock | Configure the relay to deny the above-mentioned transaction request because of equipment processing, errors, etc. When this relay is ON, secondary messages are not returned when a message related to the selected transaction is received from the host. |
| | ABORT | If ABORT option is checked, S7F0 secondary message is sent. |

8.10 Clock

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

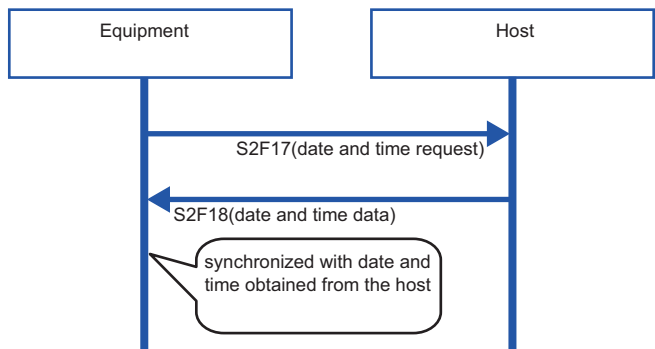
Clock function is used to synchronize internal time of the equipment with the host time.

SECS/GEM communication software registers the time data received by an S2F18 (date and time data) or an S2F31 (date and time set request) from the host to the clock data storage destination register. The time of the equipment can be synchronized with the host by changing the clock data to this time at the programmable controller CPU.

When an S2F17 (date and time request) was received from the host, the clock data of the C Controller module or C intelligent function module is sent to the host by an S2F18 (date and time data) automatically.

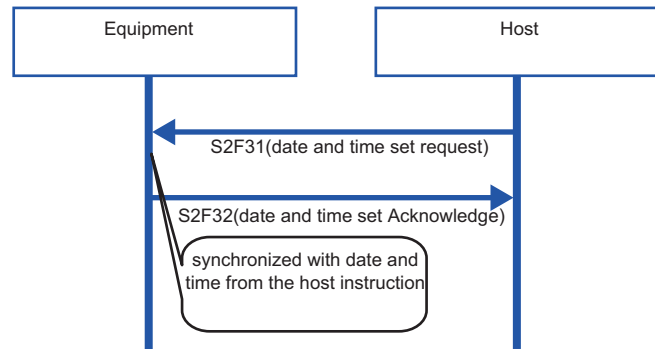
- When the equipment requests the time from the host

An S2F17 (date and time request) is sent from the equipment, and the time of the host is configured to the equipment by an S2F18 (date and time data) received from the host.



- When the time is designated by the host to the equipment

The time of the host is received by an S2F31 (date and time set request) from the host, and the equipment sends an S2F32 (date and time set confirmation).




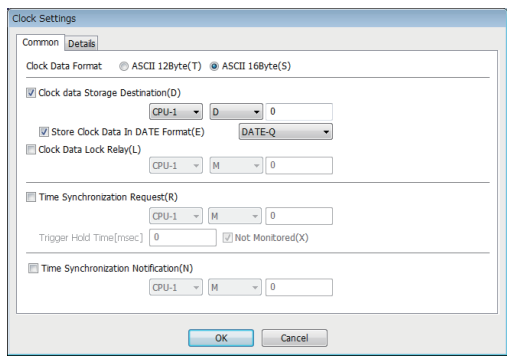
Clock setting

The following shows the screens for configuring the details of the clock function.


Common



Window

 [GEMFunction] ⇒ [Clock] ⇒ [Common] tab



Displayed items

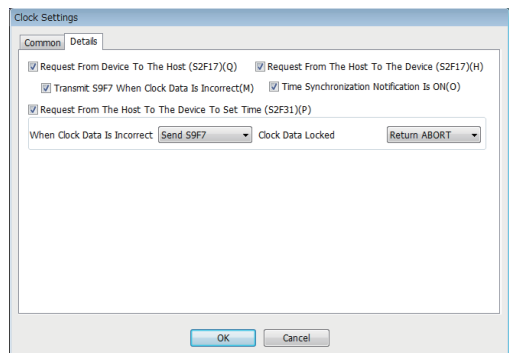
: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|---|--|
| Clock Data Format | Selects whether clock data received in SECS message is of ASCII12Byte or ASCII16Byte. This setting is reflected in the equipment variable TimeFormat. |
| Clock Data Storage Destination  | Configure the register to notify the programmable controller CPU about the received clock data. This setting is linked to the state variable Clock. To convert received ASCII data to numerical data that the programmable controller CPU can process easily, select the "Store Clock Data In DATE Format" checkbox and select either "DATE-A" or "DATE-Q". |
| Clock Data Lock Relay | To lock the update of clock data, a clock-data lock relay is used, and this relay is turned ON from the Programmable Controller CPU. |
| Time Synchronization Request | Configure the relay to request sending of an S2F17 (date and time synchronization request) to SECS/GEM communication software from the programmable controller CPU when there is a time synchronization request from the equipment to the host. It is necessary to select the checkbox in addition to "Request From Device To The Host (S2F17)" of Advanced Settings. |
| Time Synchronization Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU of receipt of clock data when the host request time synchronization to the equipment. |

Detail

Window

[GEMFunction] ⇒ [Clock] ⇒ [Details] tab



Displayed items

| Item | | Description |
|---|--|---|
| Request From Device to The Host (S2F17) | — | Select this checkbox to send an S2F17 (date and time synchronization request) from the equipment to the host. It is necessary to also define the Time Synchronization Request relay of the Common settings. |
| | Transmit S9F7 When Clock Data Is Incorrect | Select this checkbox when it is necessary to send a S9F7 (incorrect format) message to the host when the received clock data is of an incorrect format. |
| Request From The Host To The Device (S2F17) | — | Select this checkbox to receive an S2F17 (date and time synchronization request) from the host. |
| | Time Synchronization Notification Is ON | Do not select this checkbox when time synchronization between a programmable controller CPU and SECS/GEM communication software pre-installed model module is enabled. Select this checkbox for SECS/GEM communication software to report time data, sent to the host in an S2F18 (date and time data) message, to a programmable controller CPU. In this case, it is also necessary to configure the settings in "Clock Data Storage Destination" and "Time Synchronization Notification" in the [Common] tab. |
| Request From The Host To The Device To Set Time (S2F31) | | Select this checkbox to receive an S2F31 (date and time set request) at equipment from the host. Configure the content of the response message if the received clock data format is incorrect (Return TIACK = 1 / Return ABORT / Send S9F7 / No judgment) and the content of the response message if clock data update is locked (Return TIACK = 1 / Return ABORT). |

8.11 Variable Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |


This section shows the method for configuring the various state variable data and equipment variables stored in the equipment.

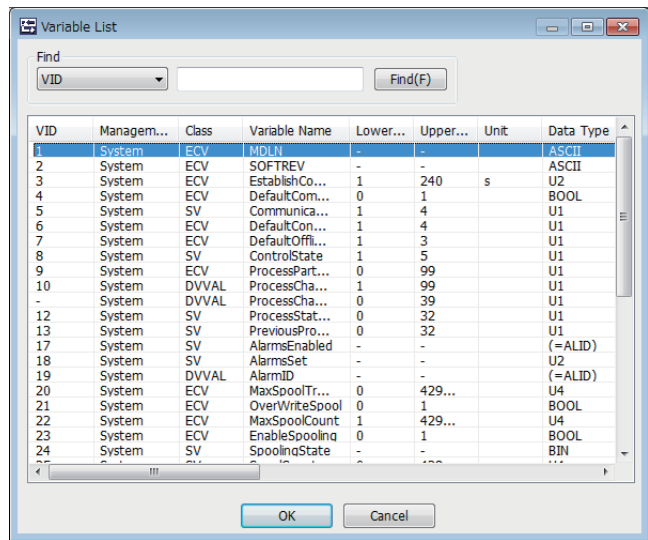
Variable data can be reported as an event report. Furthermore, it is possible to change settings via instructions from the host and report list data.

Variable list

The following shows the screen for displaying the default variable stored in SECS/GEM communication software, and a list of added user defined variables.

Window

 [GEMData] ⇒ [Variable]




Operations of "Variable List"

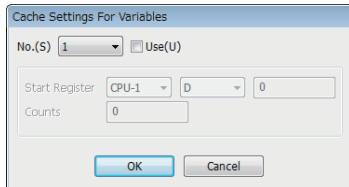
| Operation | Description |
|---|--|
| Right-click ⇒ shortcut menu [Modify] | Display the "Variable Definition" screen to modify the content of the selected variable. |
| Right-click ⇒ shortcut menu [Insert] | Add a new variable. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected variable, and then copy the copied variable to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected variable. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected variable. |

Cache settings variables

If there are many storage registers of registered variables and these are defined by CA-SECS device assignment (I/O assignment), the cache settings need to be configured to ensure performance.

Window

 [GEMData] ⇄ [Variable Cache]



Operating procedure

1. Select the variable cache number to be configured by "No."
2. Select the "Use" checkbox.
3. Configure the first register to be used and the number of registers to be used.

Precautions

Up to 32 items for variable cache can be configured.

One cache setting must be up to 4 KB (2048 registers).

However, restrict the range of cache registration to a smaller one, to secure the SECS/GEM communication software operation performance.

Variable definition

The following shows the screens for configuring the variables.

Basic

Window

Select a variable in the "Variable list" screen, right-click ⇒ shortcut menu [Modify] ⇒ [Basic] tab

Variable Definition

BasicDetails

Class

ECV

Management Classification

System

VID

3

Variable Name

EstablishCommunicationsTimeout

Comment

Sec

Unit

s

Data Type Settings

Data Type

U2

SECS Type

U2

Data Count

1

☐ Variable Length(V)

List Setup

Conversion Table

Unuse

Variable Value Settings

Variable Type

Default Value

Variable Value

10

Storage Register

CPU-1

D

0

GEM300 Variable Settings

TargetObject

-

No.



TargetAttribute

OK

Cancel


Displayed items

| Item | Description |
|---------------------------|--|
| Class | Configure the variable attribute. <ul style="list-style-type: none">SV: State variableECV: Equipment constantDVVAL: Discrete variableMEMBER: Variables used as list members |
| Management Classification | Displays the management classification. <ul style="list-style-type: none">System: Variables defined in advance by SECS/GEM communication softwareEquipment: Newly added variables |
| VID | Configure the variable ID. A unique value is set to VID in all classes except for MEMBER class. |
| Variable Name | Configure the variable name. |
| Comment | Configure a comment for the variable. |
| Unit | Select a unit for the value defined in GEM. |

| Item | | Description |
|----------------------------|---------------------|---|
| Data Type Settings | Data Type | Configure the data type to be stored in the register. If SECS data stored in the register as a numerical value is to be sent as ASCII, SECS/GEM communication software can automatically convert the data and send it just by setting the respective data type. |
| | SECS Type | Configure the format code of SECS data based on communication specifications. |
| | Data Count | Configure the data count. The Data Count displayed differs by the configured Data Type. <ul style="list-style-type: none"> • BIN: Byte count • ASCII/JIS8: Character count (one-byte character) • LIST: Number of member variables configured by the list setting • Other data types: Fixed to 1 |
| | Variable Length | Select this checkbox to configure the data count to a variable length. The Variable Length setting is enabled when the data type is "ASCII" or "LIST". Operation when the variable length was configured is as follows. <ul style="list-style-type: none"> • ASCII: The size up to Null stopper of the register is the number of data items. • LIST: The number of member variables received from the programmable controller CPU is the number of data items. |
| | [List Setup] button | Configure the member variables. Available when the data type is "LIST". For details, refer to the following:  Page 231 List setting |
| Variable Value Settings | Variable Type | Select the handling method of the value configured to "Variable Value". <ul style="list-style-type: none"> • Fixed value: "Variable Value" is the fixed value of the variable. This setting cannot be changed from the programmable controller CPU or host. • Setup value: "Variable Value" is the initial value of the "Storage destination register." Applied as the initial value when "Variable Setup" is "With Setup" of operations at start-up and the "Configuration File Browse" was set to "Tool Configuration File" when updating SECS/GEM communication software pre-installed model module.  Page 141 Updating SECS/GEM Communication Software Pre-installed Model Module • Default value: "Variable Value" is the default value of the "Storage destination register." • GEM300 value: This method is used for GEM300 objects.*1 |
| | Variable Value | Configure the variable value. |
| | Storage Register | Configure the register to store the value of the variable. Variable Type can be configured to "Setup Value" or "Default Value". |
| GEM300 Variable Settings*1 | TargetObject | ObjType of an object to which the variable is related is displayed. |
| | No. | The value to identify an object to which the variable is related is displayed. |
| | TargetAttribute | An attribute name to which the variable is related is displayed. The value of a GEM300 variable synchronizes with an attribute value of an object to which the variable is related. |

*1 Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Detail

Window

Select a variable in the Variable list, right-click ⇒ shortcut menu [Modify]⇒[Details] tab

Displayed items

| Item | | Description |
|---|-------------------------|--|
| Upper Limit Value/Lower Limit Value Defined | | If the variable is data that has upper and lower limit values, select the "Upper Limit Value/Lower Limit Value Defined" checkbox, and then configure the values. |
| Limit Attribute Settings*1 | — | If the variable is subject to limit monitoring, select the "With Limit Monitoring" checkbox. It is necessary to click the [Limit Attribute Definition] button, and then configure the limit settings. For details of limit attribute definitions, refer to the following: ☞ Page 236 Limit Attribute Definition |
| | No. Of Limit Monitoring | Configure the number of limit attributes to be monitored using this variable. |
| | Event Link | Select the event to be reported to the host when the variable value crosses the region configured by the limit attribute. |

*1 Handled by only the GEM advanced version.

Point

- Limit attributes can be configured for variables that satisfy all the following conditions.
- At the [Basic] tab, configure [SV] for "Class"
 - At the [Basic] tab, configure a numeric type (BOOL, I1, I2, I4, U1, U2, U4, F4, or F8) for "Data Type"
 - At the [Details] tab, select the "Upper Limit Value/Lower Limit Value Defined" checkbox

Precautions

If the limit monitoring function is enabled, a sampling operation of the device that is storing the variable value is performed. Pay sufficient attention to performance when using this function.

Changing default variables

- Variables with [System] as the management classification cannot be deleted.
 - To disable variables with [System] as the management classification, set a blank for "VID", and configure "Variable Type" to "Fixed Value".
 - When changing "VID", variables subject to reports cannot have "VID" changed. Change the setting after either excluding from reports or deleting reports. However, when the software version is 1.40S or later and also RD55UP12-V-BZ15 is used, "VID" can be changed even if variables are subject to reports.
- ☞ Page 241 Default definition reports

Variables defined by default

The following table shows predefined variables of SECS/GEM communication software.

These include variables independently defined by SECS/GEM communication software also.

| Name | Classification | Description | Format | E30 standard | Variable value setting | Notes |
|--------------------------------|----------------|---|-------------|--------------|-------------------------------------|--|
| MDLN | ECV | Module name | ASCII 6Byte | — | Fixed value Can be set | It is defined in system default settings. It is used in S1F13 and S1F2. |
| SOFTREV | ECV | Software revision | ASCII 6Byte | — | Fixed value Can be set | It is defined in system default settings. It is used in S1F13 and S1F2. |
| EstablishCommunicationsTimeout | ECV | Attempt Communication establishment attempt timer | U2 | ○ | Can be set | It is defined in communication state model settings. Default value: 10s (1 to 240) |
| DefaultCommunicationsState | ECV | Default communication state | U1 | — | Can be set | It is defined in communication state model settings. 0: DISABLED 1: ENABLED |
| CommunicationsState | SV | Communication state | U1 | — | Register notification Can be set | It is defined in communication state model settings. 1: Communication disabled (DISABLED) 2: Communication interrupted (WAIT CRA/WAIT CR FROM HOST) 3: Communication interrupted (WAIT DELAY/WAIT CR FROM HOST) 4: Communication in progress (COMMUNICATING) Default value: 1 |
| DefaultControlState | ECV | Default control state | U1 | — | Fixed value Can be set | It is defined in control state model settings. 1: Equipment OFF-LINE 2: Attempt ON-LINE 3: Host OFF-LINE 4: ON-LINE Default value: 1 |
| DefaultOfflineState | ECV | Default state upon online establishment failure | U1 | — | Fixed value Can be set | It is defined in control state model settings. 1: Equipment OFF-LINE 3: Host OFF-LINE Default value: 1 |
| ControlState | SV | Control state | U1 | ○ | Register notification Can be set | It is defined in control state model settings. 1: Equipment OFF-LINE 2: Attempt ON-LINE 3: Host OFF-LINE 4: LOCAL 5: REMOTE Default value: 1 |
| ProcessPartsCount | ECV | No. of processing sections | U1 | — | Fixed value Can be set | It is defined in processing state model settings. Default value: 1 (0 to 99) |
| ProcessChangePart | DVVAL | Process state change processing unit number | U1 | — | Can be set | It is defined in processing state model settings. The programmable controller CPU notifies the processing unit number whose state has been changed. |

| Name | Classification | Description | Format | E30 standard | Variable value setting | Notes |
|-----------------------------|----------------|--|--------|--------------|-------------------------------------|--|
| ProcessChangeStatus | DVVAL | Process state change state | U1 | — | Register reference Can be set | It is defined in processing state model settings. State number related to the processor with the changed state is reported from the programmable controller CPU 1: IDLE 2: SETUP 3: READY 4: EXECUTING 5: PAUSE 32: Setup command IDLE → SETUP 33: Setup completed SETUP → READY 34: Start instruction READY → EXECUTING 35: Process completed EXECUTING → IDLE 36: Stop instruction, switch to IDLE 37: Abort instruction, switch to IDLE 38: Pause instruction PROCESS → PAUSE 39: Resume instruction PAUSE → Previous PROCESS state |
| ProcessState_part01 | SV | Current process state | U1 | ○ | Register notification Can be set | It is defined in processing state model settings. State number related to the corresponding processor can be configured for notification to a register 1: IDLE 2: SETUP 3: READY 4: EXECUTING 5: PAUSE |
| PreviousProcessState_part01 | SV | State prior to process state change | U1 | ○ | Register notification Can be set | It is defined in processing state model settings. State number related to the corresponding processor can be configured for notification to a register 1: IDLE 2: SETUP 3: READY 4: EXECUTING 5: PAUSE |
| AlarmsEnabled | SV | Show the list of alarm IDs in the current alarm occurrence state | LIST | ○ | Cannot be set | It is managed within SECS/GEM communication software. (0 to 4096) |
| AlarmsSet | SV | Show the list of currently occurring alarm IDs | LIST | ○ | (Refer to Remarks) | It is defined in alarm definition settings. The occurring state details are defined in the alarm state register. |
| AlarmID | DVVAL | Occurred/ Cancelled Alarm ID | — | ○ | — | It is managed within SECS/GEM communication software. |
| MaxSpoolTransmit | ECV | Maximum No. of Spool Transmission | U4 | ○ | Can be set | It is defined in spool settings. Default value: 1024 (0 to 4294967295, 0 means all is transmitted) |
| OverWriteSpool | ECV | Operation upon full spool | BOOL | ○ | Can be set | It is defined in spool settings. 0: Do not spool further 1: Overwrite from the oldest Default value: 0 |
| MaxSpoolCount | ECV | Maximum no. of spool items | U4 | — | Can be set | It is defined in spool settings. Default value: 32767 (1 to 4294967295) |
| EnableSpooling | ECV | Enable Spooling | BOOL | ○ | Can be set | It is defined in spool settings. 0: Disable spool 1: Enable spool Default value: 0 |

| Name | Classification | Description | Format | E30 standard | Variable value setting | Notes |
|------------------------|----------------|---|--------------------|--------------|-------------------------------------|--|
| SpoolingState | SV | Spooling state | BIN | — | Register notification Can be set | It is defined in spool settings. 00H: Spool stopped 01H: Active, no input, empty spool 02H: Active, spool transmission, empty spool 03H: Active, purge spool, empty spool 81H: Active, no output, full spool 82H: Active, spool transmission, full spool 83H: Active, purge spool, full spool |
| SpoolCountActual | SV | No. of actual spool messages | U4 | ○ | Cannot be set | It is managed within SECS/GEM communication software (0 to 4294967295). |
| SPoolCountTotal | SV | No. of cumulative spool messages | U4 | ○ | Cannot be set | It is managed within SECS/GEM communication software (0 to 4294967295). |
| SpoolFullTime | SV | Spool full time | ASCII | ○ | Cannot be set | Format: YYYYMMDDhhmmsscc |
| SpoolStartTime | SV | Spool start-up time | ASCII | ○ | Cannot be set | Format: YYYYMMDDhhmmsscc |
| Clock | SV | Current time within equipment | ASCII 16/12Byte | ○ | Can be set | Time data of the SECS/GEM communication software pre-installed model module (Format: YYYYMMDDhhmmsscc) |
| TimeFormat | ECV | Time data format | U1 | ○ | — | It is defined in clock settings 0: 12 byte format 1: 16 byte format Default value: 16 byte |
| ChangeECID | DVVAL | Changed Equipment constant ID | — | — | Register reference Can be set | The format is the same as that of Equipment constant ID |
| HostChangeECID | DVVAL | Equipment constant ID changed by host | — | — | Register notification Can be set | The format is the same as that of Equipment constant ID |
| LimitsSamplingInterval | ECV | Sampling cycle for limit monitoring | U4 | — | Fixed value Can be set | It is defined in limit monitoring settings. Default value: 5000ms (1000 to 4294967295) |
| EventLimit | DVVAL | Limit/Cross limit ID | — | ○ | Cannot be set | It is managed within SECS/GEM communication software. The format is the same as that of limit ID (list structure in case of multiple occurrence) |
| LimitVariable | DVVAL | VID that exceeded limit monitoring area | — | ○ | Cannot be set | It is managed within SECS/GEM communication software. The format is the same as that of variable ID |
| TransitionType | DVVAL | Transition direction of the monitoring scope of the occurred limits | BIN | — | Cannot be set | It is managed within SECS/GEM communication software. 0: Transition from downward direction to upward direction 1: Transition from upward direction to downward direction |
| EventsEnabled | SV | List of events enabled for report | LIST | ○ | Cannot be set | It is managed within SECS/GEM communication software. |
| PPChangeName | DVVAL | Process program name changed by operator | — | ○ | Cannot be set | It is managed within SECS/GEM communication software. The format is the same as that of Process program ID |
| PPChangeStatus | DVVAL | Process program changed event contents | U1 | ○ | Cannot be set | It is managed within SECS/GEM communication software. 1: Created 2: Edited 3: Deleted 4 to 63: Reserved |
| PPExecName | SV | Process program ID of the selected Process program | LIST | ○ | Cannot be set | — |
| PPDeleteResult | DVVAL | Process program deletion results | BIN | — | Can be set | It is used in S7F18 return |

| Name | Classification | Description | Format | E30 standard | Variable value setting | Notes |
|------------|----------------|---------------------------|--------|--------------|------------------------|---|
| PPEEnabled | ECV | Effective process program | — | — | Cannot be set | It is managed within SECS/GEM communication software. |
| EPPD | ECV | Process program directory | LIST | — | — | Directory information of process program |

Precautions

For the storage register of variables defined by default, "CPU-1" and "D0 device" are set temporarily. Review the settings in the "Variable Definition" screen before using variables.

8.12 Limit Attribute Definition

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | ○ |
| MELSEC iQ-R series | — | — | ○ |

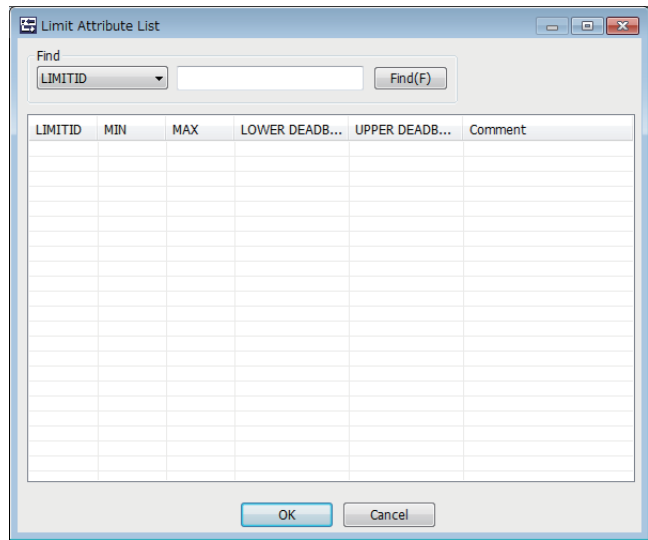
If limit attributes are defined, events can be reported to the host when the variable value crosses the region configured by the limit attribute.

Limit attribute list


The following shows the screen for displaying the defined limits.
The limit attribute settings of the selected variables are displayed on the "Limit Attribute List" screen.
Up to 16 limits can be configured.

Window

Select a variable in the Variable list, right-click ⇒ shortcut menu [Modify] ⇒ [Limit Attribute Definition] button



Operations of "Limit Attribute List"

| Operation | Description |
|---|---|
| Right-click ⇒ shortcut menu [Modify] | Display the "Limit Attribute Definition" screen to modify the content of the selected limit. ( Page 237 Limit attribute definition) |
| Right-click ⇒ shortcut menu [Insert] | Add a new limit. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected limit, and then copy the copied limit to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected limit. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected limit. |

Limit attribute definition

The following shows the screen for defining the limit attribute.

Window

Select the limit attribute in the "Limit Attribute List" screen, right-click ⇒ shortcut menu [Modify]

Limit Attribute Definition

LIMITID

Comment: New Limit Attribute

Information Of Variable To Be Monitored

Variable: 41, NewValue, New Variable

Lower Limit Value:

Upper Limit Value:

Dead Band

LOWER:

UPPER:

Displayed items

| Item | Description |
|---|---|
| LIMITID | Configure the management number of the limit attribute. |
| Comment | Configure the comment of the limit attribute. |
| Information Of Variable To Be Monitored | The variable name, and the upper and lower values are displayed. |
| Dead Band | Configure the upper and lower limit dead-band values for limit monitoring region. |

8.13 Report Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

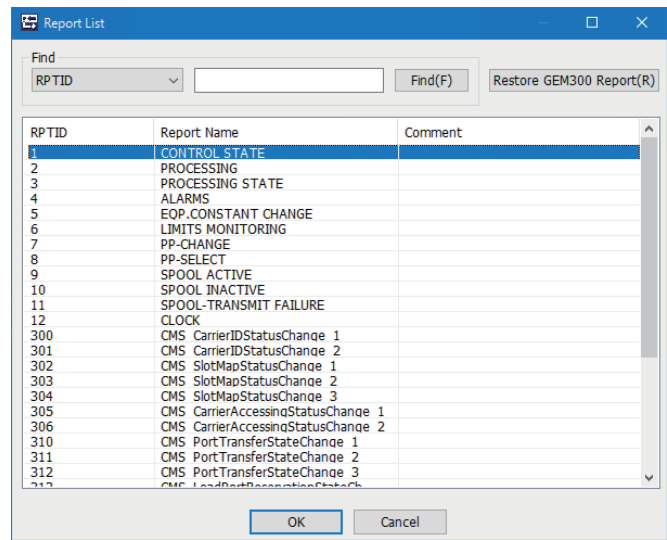
Event report data transmitted from the equipment consists of one or more reports, and a report consists of one or more collections of variables.

Report list



The following shows the screen for displaying the default reports in SECS/GEM communication software, and a list of added user reports.
Up to 512 reports can be defined.


Window

 [GEMData] ⇒ [Report]



Operations of "Report List"

| Operation | Description |
|--|--|
| Right-click ⇒ shortcut menu [Modify] | Display the "Report Definition" screen to modify the content of the selected report. ( Page 239 Report definition) |
| Right-click ⇒ shortcut menu [Insert] | Add a new report. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected report, and then copy the copied report to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected report. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected report. |
| [Restore GEM300 Report] button* ¹ | Display the "GEM300 Restore Reports" screen. ( Page 242 GEM300 report restoration) |

*¹ Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.
To use GEM300 standard support functions, refer to the following:
 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Report definition

The following the screen for defining a report.

Window

Select a report in the "Report List" screen, right-click ⇒ shortcut menu [Modify]

Report Definition

RPTID15Report NameNewReportCommentNew Report

OKCancelCreate Report(M)

Displayed items

| Item | Description |
|------------------------|---|
| RPTID | Configure the report ID. |
| Report Name | Configure the report name. |
| Comment | Configure the comment. |
| [Create Report] button | Display the "Create Report" screen. For details, refer to the following: ⇒ Page 240 Create report |

Changing default definition reports

"RPTID" linked to an event cannot be changed. Exclude it from events or change it after deleting an event. However, when the software version is 1.40S or later and also RD55UP12-V-BZ15 is used, "RPTID" linked to an event can be changed.

Default definition reports

The following table shows reports that are predefined in SECS/GEM communication software.

| Report name | Used variable | Remarks, related events |
|------------------------|---|---|
| CONTROL STATE | ControlState, Clock | Control state transition event |
| PROCESSING | Clock, PreviousProcessState_part01 | Process start, completion and stop event |
| PROCESSING STATE | Clock, ProcessState_part01, PreviousProcessState_part01 | Equipment process state transition event |
| ALARMS | Clock, AlarmID, AlarmSet | Basic format of report linked to alarm |
| EQP.CONSTANT CHANGE | ChangeECID | Equipment constant change event |
| LIMITS MONITORING | Clock, LimitVariable, EventLimit, TransitionType | Event of transition within the Limit area |
| PP-CHANGE | PPChangeName, PPChangeStatus | Process program change event |
| PP-SELECT | PPExecName | Process program selection event |
| SPOOL ACTIVE | SpoolStartTime | Spooling start-up event |
| SPOOL INACTIVE | SpoolCountTotal | Spooling stop event |
| SPOOL-TRANSMIT FAILURE | Clock, SpoolCountActual, SpoolCountTotal | Spool transmission failure event |
| CLOCK | Clock | Material transfer, terminal service event, etc. |

The following shows the screen for restoring a report name of GEM300 reports and link information of a variable that were deleted from the report list.

Window

[illegible]

| Item | Description |
|---------------------------|---|
| Standard | <p>Select a standard for GEM300 to be restored.</p> <ul style="list-style-type: none"> • ALL: Select this to display all deleted reports for GEM300 in the list. • CMS: Select this to display only deleted CMS reports in the list. • STS: Select this to display only deleted STS reports in the list. |
| Number Of Restore Reports | The number of deleted reports in the selected standard and the number of reports in the selected standard are displayed with a slash separating them. |
| Restore | Select the checkboxes to restore reports. |

1. Select a standard that contains a report to be restored in "Standard."
2. Select the "Restore" checkbox in the report to be restored.
3. Click the [OK] button.

The smallest and unused number is assigned to RPTID of a restored report.
RPTID before deletion cannot be restored.

8.14 Event Setting

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

Events are created by combining the timing of the event occurrence and the defined report.

The event timing can be configured as the time of occurrence of an event recognized by SECS/GEM communication software, such as online confirmation or an alarm occurrence, or an arbitrary timing from the programmable controller CPU.

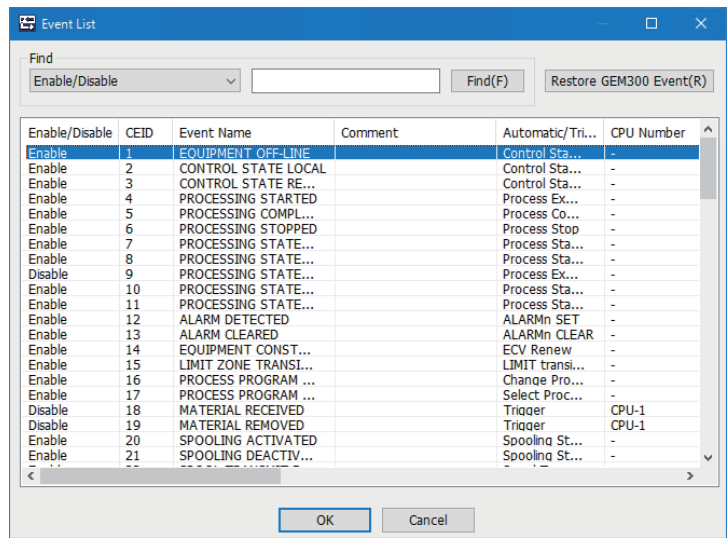
Event list



The following shows the screen for displaying the default variable events stored in SECS/GEM communication software and a list of added user defined events.

Up to 512 events can be defined.

Window


 [GEMData] ⇒ [Event]



| Operations of "Event List" | |
|---|---|
| Operation | Description |
| Right-click ⇒ shortcut menu [Modify] | Display the "Event Definition" screen to modify the content of the selected event. ( Page 244 Event definition) |
| Right-click ⇒ shortcut menu [Insert] | Add a new event. |
| Right-click ⇒ shortcut menu [Duplicate] | Copy the selected event, and then copy the copied event to the row below. |
| Right-click ⇒ shortcut menu [Move Up] | Move the selected event. |
| Right-click ⇒ shortcut menu [Move Down] | |
| Right-click ⇒ shortcut menu [Delete] | Delete the selected event. |
| [Restore GEM300 Event] button ^{*1} | Display the "GEM300 Restore Events" screen. ( Page 247 GEM300 event restoration) |

^{*1} Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.

To use GEM300 standard support functions, refer to the following:

 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Event definition

The following shows the screen for defining an event.

Window

Select an event in the "Event List" screen, right-click ⇒ shortcut menu [Modify]

Event Definition

☐ Enable Event(E)

CEID24Event NameNewEvent

CommentNew Event

☐ Automatic Event Transmission(A)

Control State(ON-LINE->OFF-LINE)

☒ Sequencer Transmission Request(S)

Transmission RequestCPU-1M0

Specify HandshakeEach Transaction

Trigger Hold Time[msec]10☒ Not Monitored(Y)

☐ Automatic GEM300 Event Transmission(G)

Standard

State Model / Additional Event

Trigger

☒ Monitor Response(W)

☐ Notify Secondary Reception(C)

Reception NotificationCPU-1M0


Trigger Retention Time[msec]10☒ Handshake(K)



OK


Cancel

Create Event(M)

Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

| Item | Description |
|--|---|
| Enable Event | Select this checkbox to enable the event. |
| CEID | Configure the event ID based on communication specifications. |
| Event Name | Configure the event name based on communication specifications. |
| Comment | Configure the comment. |
| Automatic Event Transmission | Select this to set the timing of the event occurrence as the control event occurrence time of SECS/GEM communication software. The control event of SECS/GEM communication software is required to be set. |
| Sequencer Transmission Request | Select this to set the timing of the event occurrence as the detection time of the trigger from the programmable controller CPU. "Transmission Request," "Specify Handshake," and "Trigger Hold Time" are required to be set. |
| Automatic GEM300 Event Transmission ^{*1} | Select this to set the timing of the event occurrence as the timing related to GEM300. "Standard," "State Model/Additional Event," and "Trigger" are required to be set. |
| Monitor Response | Select this checkbox to perform response monitoring of S6F11 (event report sending) to be sent. When this option is checked, W bit (response request) is added to the message to be transmitted. |
| Notify Secondary Reception  | Select this checkbox to detect whether the secondary message was received normally. If the handshake unit of "Sequencer Transmission Request" is configured to "Handshake (for each message)", configure a relay that is different from the sending request trigger. |
| [Create Event] button | Display the "Create Event" screen. For details, refer to the following:  Page 245 Create event |

^{*1} Supported only when the software version is 1.40S or later and also GEM300 standard support functions are used in RD55UP12-V-BZ15.
To use GEM300 standard support functions, refer to the following:
 SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

Create event

The following shows the screen for configuring the report to be sent by the event.
Up to 64 reports can be configured for one event.

Window

- Click the [Create Event] button in the "Event Definition" screen.
Alternatively, select [GEM Data] ⇒ [Create Event]

| RPTID | Report Name | Comment |
|-------|-------------|---------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Operations of "Create Event"

■Add

Add a report.

1. Select the event to be configured the report by using "Event".
When the [Create Event] button was clicked on the "Event Definition" screen, and the "Create Event" screen was opened, the event is fixed to the selected event of the "Event Definition" screen.
2. Select the report to be configured to the event by using "Report".
3. Click the [Add] button.

■Move Up / Move Down

Move the selected variable.

- Right-click ⇒ shortcut menu [Move Up]/[Move Down]

■Delete

Delete the selected variable.

- Right-click ⇒ shortcut menu [Delete]

Events defined by default



The following table shows events that are predefined in SECS/GEM communication software.

| Event name | Trigger | Link report and remarks |
|----------------------------|--|---|
| EQUIPMENT OFF-LINE | Automatic (ON-LINE->OFF-LINE) | Control state report |
| CONTROL STATE LOCAL | Automatic (OFF-LINE->ON-LINE, REMOTE->LOCAL) | Control state report |
| CONTROL STATE REMOTE | Automatic (OFF-LINE->ON-LINE, LOCAL->REMOTE) | Control state report |
| PROCESSING STARTED | Automatic (->EXECUTING) | Process report |
| PROCESSING COMPLETED | Automatic (COMPLETE) | Process report (enabled only for transition based on command) |
| PROCESSING STOPPED | Automatic (STOP) | Process report (enabled only for transition based on command) |
| PROCESSING STATE SETUP | Automatic (->SETUP) | Processing state report |
| PROCESSING STATE READY | Automatic (->READY) | Processing state report |
| PROCESSING STATE EXECUTING | Automatic (->EXECUTING) | Processing state report |
| PROCESSING STATE IDLE | Automatic (->IDLE) | Processing state report |
| PROCESSING STATE PAUSE | Automatic (->PAUSE) | Processing state report |
| ALARM DETECTED | Automatic (ALARM n occurred) | Alarm report (defined only for alarms required by event) |
| ALARM CLEARED | Automatic (ALARM n cancelled) | Alarm report (defined only for alarms required by event) |
| EQUIPMENT CONSTANT CHANGE | Automatic (Equipment constant change) | Equipment constant change report |
| LIMIT ZONE TRANSITION | Automatic (Transition within LIMIT area) | Limit transition report (defined for each limit variable) |
| PROCESS PROGRAM CHANGE | Automatic (Process Program change) | Process program change report |
| PROCESS PROGRAM SELECTED | Automatic (Process Program selection) | Process program selection report |
| MATERIAL RECEIVED | Relay request | Time report |
| MATERIAL REMOVED | Relay request | Time report |
| SPOOLING ACTIVATED | Automatic (SPOOL INACTIVE->SPOOL ACTIVE) | Spool start report |
| SPOOLING DEACTIVATED | Automatic (SPOOL ACTIVE->SPOOL INACTIVE) | Spool stop report |
| SPOOL TRANSMIT FAILURE | Automatic (SPOOL transmission failure) | Spool transmission failure report |
| MESSAGE RECOGNITION | Relay request | Time report |

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | — |
| MELSEC iQ-R series | — | — | ○*1 |


A project of SECS/GEM communication software identifies each unit of GEM data by the following IDs:

- The ID find/replace function enables range searching and batch replacement for the above IDs.

Point  The range of IDs that can be found and replaced in the ID find/replace function can be set in the [SECS Item] tab in the detailed settings. ( Page 258 SECS items)

 [GEMData] ⇒ [ID Find/Replace]

Displayed items

| Item | | Description |
|-------------------------|----------------------------|--|
| Find ID | Type Of Search | Select the type of IDs to be found. • VID • RPTID • CEID |
| | Top ID to Search | Configure the top of IDs to be found. |
| | End ID to Search | Configure the end of IDs to be found. |
| | Find Tgt. | IDs to be found are displayed. |
| | [Find] button | Click this to find IDs that are within the set range by using ID type specified in "Type Of Search." The result is displayed in "ID List." |
| Replace ID | Replace ID Top | Configure the top of IDs after replacement. |
| | Replace | IDs after replacement are displayed. |
| | [Replace Select ID] button | Click this to replace the ID in a row selected in "ID List" with the ID set in "Replace ID." |
| | [Replace All ID] button | Click this to replace all IDs displayed in "ID List" with the ID set in "Replace ID." |
| Replace Option | Range Movement | Select this to replace the found IDs with the offset maintained so that those IDs begin with the number configured in "Replace ID Top." |
| | Consecutive | Select this to replace the found IDs so that the numbers are consecutive beginning with the one configured in "Replace ID Top." |
| [Select All] button | | Click this to select all rows in "ID List." |
| [Unselect All] button | | Click this to unselect all rows in "ID List." |
| [Exclude Select] button | | Click this to delete the selected rows from "ID List." |
| [Clear List] button | | Clear "ID List." |
| [Use All ID] button | | Click this to display all IDs used in a project. |
| Display | | The number of IDs displayed in "ID List" is displayed. |
| ID List | | For details on items displayed in "ID List," refer to the following:  Page 249 ID List |

■ ID List

| Item | Description |
|---------|---|
| Type | Any of the following ID types is displayed. • VID • RPTID • CEID |
| ID | An ID set in each item |
| Name | A name set in each item |
| Remark | Remarks are displayed according to the type of the ID. • VID: Class • RPTID: — • CEID: Event sending condition |
| Comment | A user comment |

Displaying all IDs being used

The following explains the procedure to display all IDs used in a project.
IDs cannot be replaced while the IDs are displayed by this function.

Operating procedure

1. Click the [Use All ID] button.

Finding IDs

The following explains the procedure to find IDs within the specified range.

Operating procedure

1. Set "Type Of Search," "Top ID to Search," and "End ID to Search."
2. Click the [Find] button.

Replacing IDs

The following explains the methods to replace the found IDs.

Precautions

IDs cannot be replaced while all IDs being used are displayed.

Replacing IDs by specifying a range

The following explains the procedure to replace the consecutive IDs in a batch.

Ex.

Replace the IDs within VID 11 to 20 with those within VID 111 to 120 (by moving the range).

Operating procedure

1. Set "Replace ID Top."
2. Select "Range Movement" in "Replace Option."
3. Select the ID to be replaced in "ID List" and then click the [Replace Select ID] button, or click the [Replace All ID] button.

Replacing IDs to be consecutive

The following shows the procedure to replace IDs in order from the one specified in "Replace ID Top."

Ex.

Replace IDs that are not numbered consecutively with those numbered consecutively (by assigning numbers again).
(When specifying 11 in "Replace ID Top" and replacing six IDs numbered with 12, 13, 17, 18, 19, and 20, the new IDs are consecutive numbers within 11 to 16.)

Operating procedure

1. Set "Replace ID Top."
2. Select "Consecutive" in "Replace Option."
3. Select the ID to be replaced in "ID List" and then click the [Replace Select ID] button, or click the [Replace All ID] button.

Precautions

IDs are replaced (numbered again) from the one displayed on top of "ID List."

Application of replacement results

The following explains the procedure to apply the results of ID replacement to the setting.

Operating procedure

1. Click the [OK] button in "ID Find/Replace" screen.
2. In the confirmation screen, click the [OK] button.

8.16 Dynamic Setting Change

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

SECS/GEM communication software can change settings dynamically from the host by using the following messages.

- S2F33 (Define Report)
- S2F35 (Link Event Report)
- S2F37 (Enable/Disable Event Report)
- S2F43 (Reset Spooling Streams and Functions (RSSF))
- S2F45 (Define Variable Limit Attributes)
- S5F3 (Enable/Disable Alarm Send)

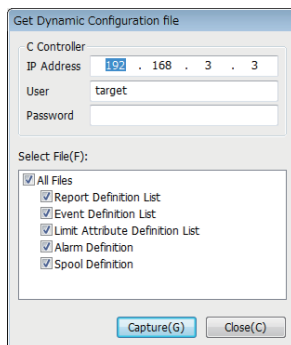
Content for which settings have been changed dynamically from the host can be saved to the SECS/GEM communication software pre-installed model module and acquired and referenced by the setting tool.

Point

Check the [GEM Function] ⇒ [Create Dynamic Configuration File] option to store dynamic setting changes in SECS/GEM communication software.

Window

 [GEMFunction] ⇒ [Acquire Dynamic Configuration File]



Operating procedure

1. Enter the IP address, user, and password of the SECS/GEM communication software pre-installed model module.
2. Select the checkboxes of the files to be acquired from the SECS/GEM communication software pre-installed model module.
3. Click the [Capture] button.

8.17 Equipment Constant

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

This section shows the method for configuring settings required for changing equipment variables (ECV) from the host and reporting changes of equipment variables from the equipment to the host.

Change from device

The following shows the screen for configuring settings to notify SECS/GEM communication software of a change of the equipment constant from the programmable controller CPU.

Window

[GEMData] ⇒ [Device Constant] ⇒ [Change From Device] tab

Device Constant Settings

Change From Device | Change From Host

☐ Device Constant Change(M) CPU-1 M 0

Trigger Hold Time[msec] 0 ☒ Not Monitored(X)

☒ Device Constant Change ID Notification(N) CPU-1 D 0

OK Cancel

Displayed items

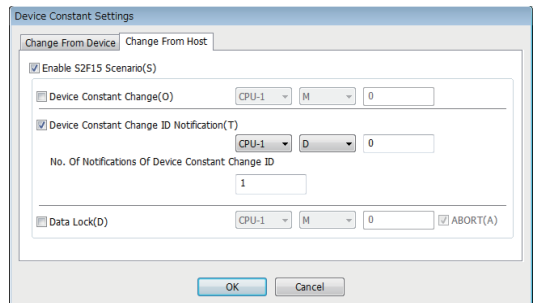
| Item | Description | |
|--|-------------------|--|
| Device Constant Change | — | Configure the relay to notify SECS/GEM communication software from the programmable controller CPU of a change of the equipment variable. SECS/GEM communication software switches OFF the equipment variable change trigger. |
| | Trigger Hold Time | A notification trigger results when the register configured for the Device Constant Change was held for the configured time. If the "Not Monitored" checkbox is selected, notification trigger processing is carried out without hold monitoring. |
| Device Constant Change ID Notification | | Configure the equipment constant change ID notification register to store the variable ID of the changed constant. Before a trigger notification, it is necessary to configure the variable ID at the programmable controller CPU. |

Change from host

The following shows the screen for configuring settings when the equipment constant is changed from the host.

Window

[GEMData] ⇒ [Device Constant] ⇒ [Change From Host] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

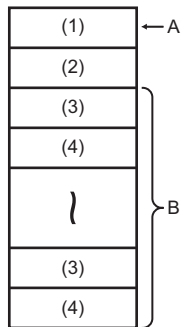
| Item | Description | |
|-----------------------|---|--|
| Enable S2F15 Scenario | — | Select this checkbox to change the equipment constant from the host. |
| | Device Constant Change | Defines the relay used by SECS/GEM communication software to notify the programmable controller CPU that S2F15 (New Equipment Constant Send) is received. |
| | Device Constant Change ID | — |
| | No. of Notifications of Device Constant Change ID | Configure the register to store the variable ID of the changed constant. |
| | Data Lock | Configure the number of equipment variables that can be changed at one time by an S2F15 (new equipment variable change) from the host. Up to 32 items can be configured. |
| Data Lock | | To block changes of equipment variables from the host, switch ON the data lock relay from the programmable controller CPU. Select the "ABORT" checkbox to return an abort message. |

■Required Quantity of Device Constant Change ID Notification Registers

The required quantity of registers is found by the following formula: 2 start items (number of changes n, overall result) + (device constant change ID notification quantity × 2)

However, when the data type of ECID (equipment constant ID) is [U4], the formula is as follows: 2 start items (number of changes, overall result) + (equipment variable change ID notification quantity × 3)

The data type of the ECID can be checked in the [SECS Item] tab of the "Detailed Setting" screen. (Page 258 SECS items)



- A: Start register
B: No. of Notifications Of Device Constant Change ID
(1) Number of changes n
(2) Overall result (0: normal / -1: error)
(3) Equipment constant ID
(4) Results

Precautions

The changed equipment constant is not saved to the memory card of the SECS/GEM communication software pre-installed model module.

Assign the equipment constant to the file register if it is required to save.

8.18 Advanced Settings

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

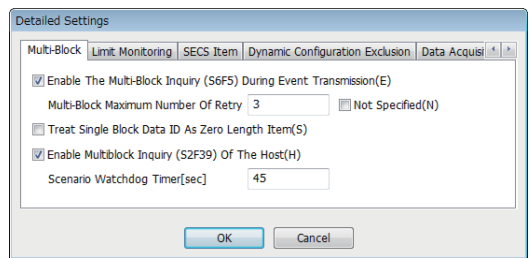
This section shows the method for configuring settings required for implementing the various scenarios defined in GEM.

Multi-block

If messages from device or host are exchanged across multiple blocks, it is necessary to implement multi-block inquiry in advance.

Window

 [GEMData] ⇒ [Details] ⇒ [Multi-Block] tab



Displayed items

| Item | Description |
|---|---|
| Enable The Multi-Block Inquiry (S6F5) During Event Transmission | Select this checkbox if it is necessary to send an S6F5 (multi-block data sending inquiry) at the time of an S6F11 (event report sending). The maximum number multi-block retries is 32. |
| Treat Single Block Data ID As Zero Length Item | Select this checkbox to treat the item <DATAID> of an S6F11 (event report sending) to be sent in single block as a zero length item. |
| Enable Multiblock Inquiry (S2F39) Of The Host | Select this checkbox if an S2F39 (multi-block inquiry) may be received ahead of receiving the following messages from the host. S2F33 (Define Report) S2F35 (Link Event Report) S2F45 (Define Variable Limit Attributes) S2F49 (Enhanced Remote Command) Whether all messages are received within a time set for "Scenario Watchdog Timer" is monitored. If a timeout occurs, S9F13 (Conversation Timeout) is automatically sent. The item data in this case shall be "S2" for <MEXP> and the target DATAID for <EDID>. The Scenario Watchdog Timer can be configured up to 999 seconds. |

Multi-block inquiry

Note the following about the Multi-block inquiry of the host.

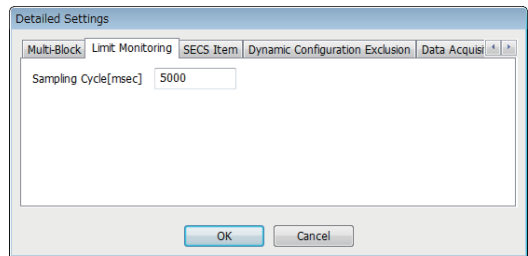
- S2F23 (trace condition configuration) is a message subject to multi-block by SEMI E5, but SECS/GEM communication software cannot receive multi-blocks because <DATAID> has not been attributed.

Limit monitoring

The following shows the screen for configuring the sampling cycle so that SECS/GEM communication software can monitor the limits of variables.

Window

[GEMData] ⇒ [Details] ⇒ [Limit Monitoring] tab



Displayed items

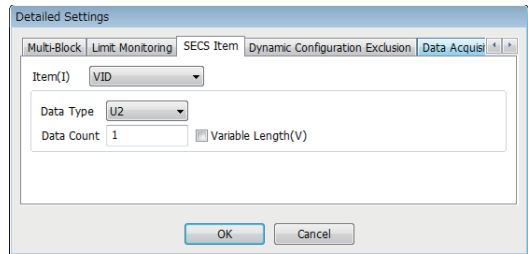
| Item | Description |
|----------------|--|
| Sampling Cycle | Configure the cycle to monitor devices that store variable values. The sampling cycle can be configured from 1000 through 4294967295 ms. This setting is reflected in the equipment variable LimitsSamplingInterval. |

SECS items

The following shows the screen for configuring the SECS-data item-format used by SECS/GEM communication software.

Window

 [GEMData] ⇒ [Details] ⇒ [SECS Item] tab



Displayed items

| Item | | Description |
|------|-----------------|---|
| Item | — | Select an item to be defined. |
| | Data Type | Select the data type of the item. |
| | Data Count | Configure the data count of the item. |
| | Variable Length | Select this checkbox to configure the data count to a variable length. Configuring a variable length enables 0 length reception. |

Default data type of SECS items

The following table shows default formats by item.

| Item | Description | Data type |
|--------------------|-----------------------------|--------------|
| VID | Variable ID | U2 |
| UNITS | Unit | ASCII 16Byte |
| ECID | Equipment constant ID | U2 |
| ECNAME | Equipment constant name | ASCII 32Byte |
| SVID | State variable ID | U2 |
| SVNAME | State variable ID | ASCII 32Byte |
| CEID | Acquired event ID | U2 |
| RPTID | Report ID | U2 |
| CEED ^{*1} | Trace YES/NO code | BOOL |
| DATAID | Data ID | U2 |
| DATALENGTH | Total no. of data bytes | U2 |
| TRID | Trace request ID | U2 |
| DSPER | Data acquisition time | ASCII 8Byte |
| TOTSMP | Total sample count | U2 |
| REPGSZ | Report group size | U2 |
| SMPLN | Sample number | U2 |
| LIMITID | Limit ID | BIN |
| MEXP | Message SxFy to be received | ASCII 6Byte |

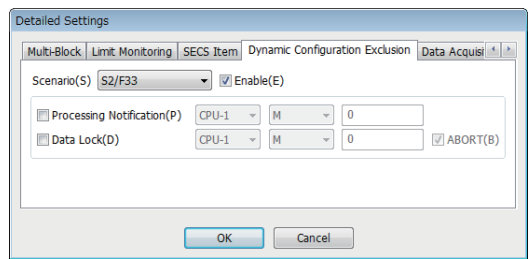
^{*1} In the software version 1.35M or later, a true value for a CEED item (BOOL type) is other than 0.

Dynamic setting exclusion


This setting is used to enable host to notify a programmable controller CPU that event report pertaining to the equipment etc. is subjected to dynamic changes, and used to enable a programmable controller CPU to prohibit host from introducing dynamic changes.


Window

 [GEMData] ⇒ [Details] ⇒ [Dynamic Configuration Exclusion] tab



Displayed items


: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

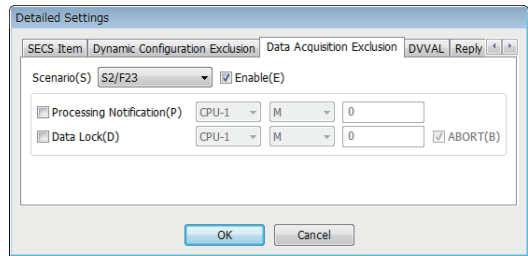
| Item | | Description |
|----------|--|--|
| Scenario | — | Select a scenario. The following scenarios can be selected. <ul style="list-style-type: none">• S2F33: Specified report• S2F35: Link event report• S2F37: Enable/disable event report• S2F45: Variable limit attribute definition |
| | Enable | Select this checkbox to enable dynamic configuration exclusion control of scenarios. |
| | Processing Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU that processing is occurring for each scenario. |
| | Data Lock | To lock changes when a change notification of a dynamic setting is received from the host, the data lock relay is used, and this relay is turned ON from the programmable controller CPU. Lock cannot be enabled after receiving the change notification message from the host. The lock should be turned ON in advance based on the equipment state. Select the "ABORT" checkbox to return an abort message. |

Data acquisition exclusion


The following shows the screen for configuring settings to notify the programmable controller CPU that data, such as equipment variables, is being collected from the host to the equipment and to prohibit data collection by the host from the programmable controller CPU.


Window

 [GEMData] ⇒ [Details] ⇒ [Data Acquisition Exclusion] tab



Displayed items

: A device assigned to an item with this mark is controlled by SECS/GEM communication software.

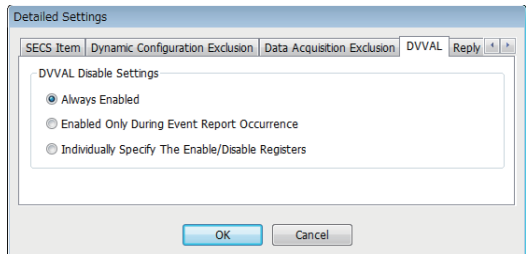
| Item | | Description |
|----------|--|---|
| Scenario | — | Select a scenario. The following scenarios can be selected. <ul style="list-style-type: none">• S2F23: Trace condition setting• S6F15: Event report request• S6F19: Individual report request• S1F3: Specified device state request• S1F11: State variable name list request• S2F13: Equipment constant request• S2F29: Equipment constant name list request• S2F47: Variable limit attribute request |
| | Enable | Select this checkbox to enable data collection exclusion control of scenarios. |
| | Processing Notification  | Configure the relay for SECS/GEM communication software to notify the programmable controller CPU that processing is occurring for each scenario. |
| | Data Lock | Select this checkbox to turn the data lock relay ON from the programmable controller CPU when locking data collection from the host. Lock cannot be enabled after receiving the acquisition message from the host. The lock should be turned ON in advance based on the equipment state. Select the "ABORT" checkbox to return an abort message. |

DVVAL

The following shows the screen for configuring the conditions to disable the variables of the DVVAL class.

Window

[GEMData] ⇒ [Details] ⇒ [DVVAL] tab




Displayed items

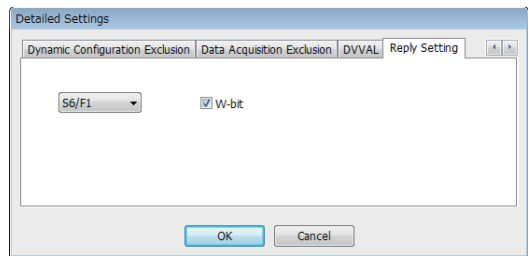
| Item | | Description |
|------------------------|---|--|
| DVVAL Disable Settings | Always Enabled | Select to have the variables of the DVVAL class always enabled. Actual data is sent when sending an S6F11/S6F16/S6F20. |
| | Enabled Only During Event Report Occurrence | Select to have the variables of the DVVAL class enabled only for S6F11 sending. When reporting in S6F16 and S6F20, send it as a 0 length item. |
| | Individually Specify The Enable/Disable Registers | Select to specify enable/disable for registers individually and dynamically for variables of the DVVAL class. The first word of the specified register is used as the enable/disable register for all user-defined variables that specify the DVVAL class. The actual data is stored in the first + one word. The Enable/disable register specifies "1" If the variable is valid, and "0" from the programmable controller CPU if it is disabled. |

Reply setting

The following shows the screen for setting the W-bit of S6F1 message.

Window

 [GEMData] ⇒ [Details] ⇒ [Reply Setting] tab



Displayed items

| Item | Description |
|-------|---|
| W-bit | Unselect this checkbox to send an S6F1 message without a W-bit. |

8.19 GEM Compliant Table

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | ○ |
| MELSEC iQ-R series | — | — | ○ |

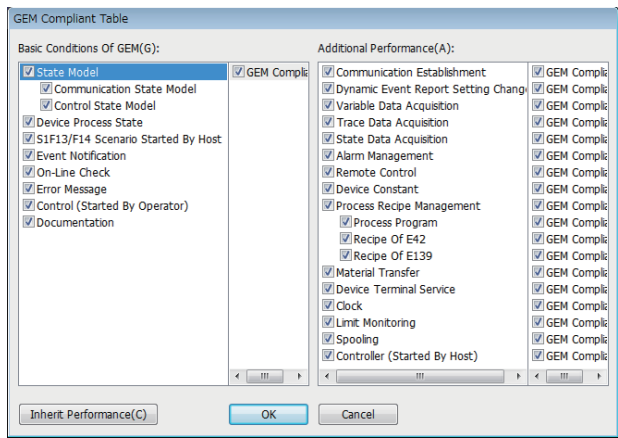
This section shows the screen for configuring whether to comply with the items of the basic requirements and additional performance of GEM.

This setting is applied to the GEM compliant table that is output by the documentation function.

GEM compliant table is created based on the functions specified in "GEM Performance Definition" screen and based on contents specified in the original GEM compliant table.

Window

[Documentation] ⇒ [GEM Compliant Table]



Select the checkboxes of compliant items.

To update and retain details displayed in "GEM Performance Definition" screen as it is, click the [Inherit Performance] button.

9 SECS/GEM COMMUNICATION SOFTWARE KNOWLEDGE

This section explains the points and knowledge to conveniently use SECS/GEM communication when using SECS/GEM communication software.

9.1 Checking the Completion of Starting SECS/GEM Communication Software

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In the case of a ladder program of a programmable controller CPU, always first make sure that the [CIM Control READY] relay that reports from SECS/GEM communication software is ON after starting SECS/GEM communication software.

When the start-up process of SECS/GEM communication software finishes, the CIM Control READY relay switches ON.

A handshake with SECS/GEM communication software cannot be used until this relay switches on.

Usage method

To use notification of the CIM control ready relay, it is necessary to configure the relay to report. (📖 Page 111 CA status)

After SECS/GEM communication software starts, first make sure that the CIM control ready relay is ON.

A handshake with SECS/GEM communication software cannot be used until the [CIM Control READY] notification relay turns ON.

9.2 Checking the SECS Line State

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The connection state of the SECS communication line is reported by the Disconnected relay.

This relay turns OFF when the line is connected and turns ON when the line is disconnected.

In the case of HSMS communication, the TCP/IP communication line is established, the "select" control procedure is completed via a HSMS message, and then a line connection is created by the Selected state.

In the case of SECS-I communication, a line connection is created when the RS-232C line is completely opened.

Usage method

To use notification of the Disconnected relay, it is necessary to configure the relay to report. (📖 Page 111 CA status)

Precautions

The line connection state of the SECS communication line can be checked by the Disconnected relay.

In the case of HSMS communication, a line connection state is not formed by just a TCP/IP line connection.

9.3 Checking the Registration State of the SECS/GEM Communication Software License


| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The SECS/GEM communication software license is pre-installed on the SECS/GEM communication software pre-installed model module, but the license is erased when the SECS/GEM communication software pre-installed model module has been initialized.

In such a case, the license must be registered again using the license file stored on the product CD-ROM.

If the license state notification function is used, an automatic stop of SECS/GEM communication software due to a license registration error can be detected in advance.

Usage method

To use notification of the license state, it is necessary to configure the relay and register to report. ( Page 125 Version information)

Configuring the setting makes it possible to check the following states.

| License state | Notification content |
|----------------------|---|
| Version Information | The version of SECS/GEM communication software is stored as an ASCII character string (null termination). Five words are used. |
| License Registration | The registration state of the license file is reported by relay. 0: No registration 1: Registration |
| License Matching | The validity of the license file is reported by relay. 0: Non-genuine license 1: Genuine license |

When the License Registration and License Matching relays are both ON, a genuine license has been registered.

Whether a genuine license has been registered can be determined by the [License Matching] relay.

9.4 Sending and Receiving Messages

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

SECS/GEM communication software sends and receives SECS messages by handshakes of trigger relays from the programmable controller CPU and the data register.

The format of messages to be sent and received, sending and receiving trigger relays, and mapping of sending and receiving message items with storage registers must be defined in advance using the setting tool.

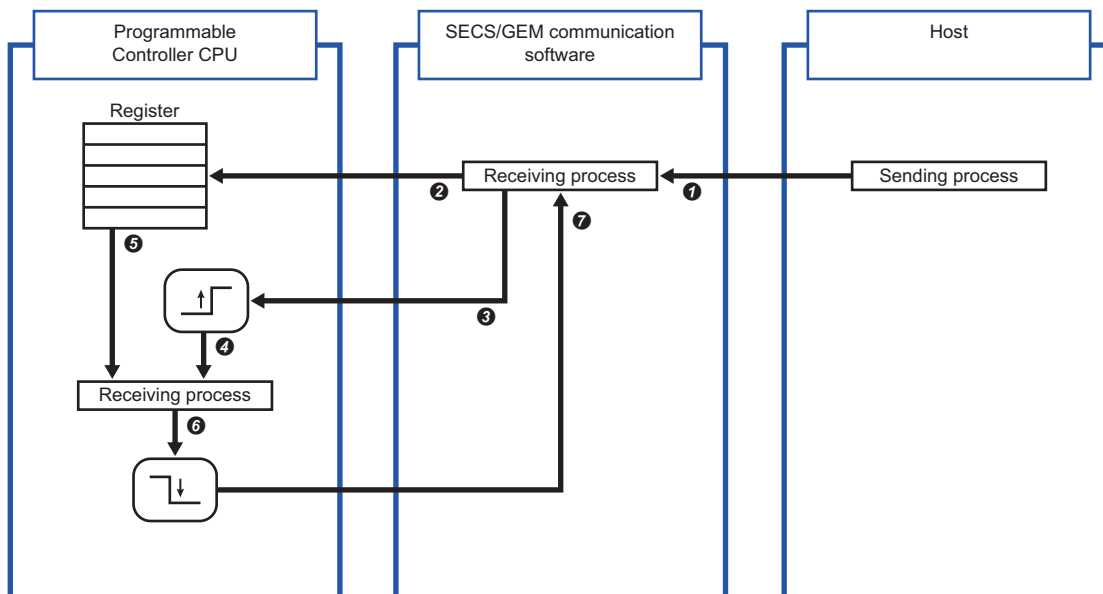
Understand the basic structure of SECS message sending and receiving by SECS/GEM communication software before using the message sending and receiving function.



Usage method

■Receiving SECS messages

When a SECS message is received from the host, SECS/GEM communication software stores the received data in the prescribed register mapped to the corresponding message item, and then the receiving notification trigger relay configured for the corresponding message is switched on.

The programmable controller CPU detects that a message was received by the receiving notification trigger being switched ON, and then extracts the received data from the register. Next, the receiving notification trigger is switched OFF, and SECS/GEM communication software is informed that receipt is complete.



| No. | Description |
|-----|--|
| ① | SECS/GEM communication software receives a SECS message |
| ② | The received data is stored in the register specified by the item property definition of the message ( Page 76 Item information) |
| ③ | The reception notification trigger relay of the programmable controller CPU specified by the message property definition is switched ON ( Page 73 Message information) |
| ④ | The programmable controller CPU detects the message reception by the reception notification trigger relay switching ON |
| ⑤ | Received data is read from the register |
| ⑥ | After the received data is read, the reception notification trigger relay is switched OFF |
| ⑦ | The programmable controller reports receipt completion to SECS/GEM communication software |

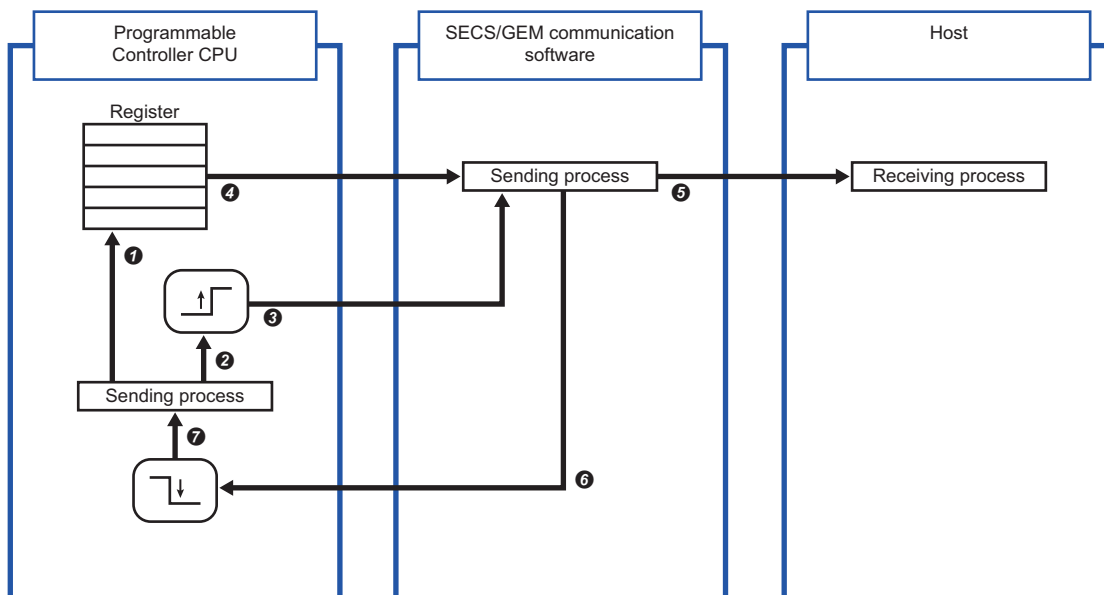
The reception notification trigger relay is configured in the "Primary message information" screen or "Secondary message information" screen. Select the "Reception Notification Trigger" checkbox, and then configure the notification destination.

( Page 73 Message information)

■ Sending SECS messages

When a SECS message is sent from programmable controller CPU to the host, the sent data is stored in the prescribed register mapped to the corresponding sending message item, and then the sending request trigger relay configured for the corresponding message is switched ON.

SECS/GEM communication software detects that the transmission request trigger relay is ON, extracts the data of the corresponding message item from the configured prescribed register, creates a SECS message, and then sends the message to the host according to the SECS protocol. After sending, the transmission request trigger relay is switched OFF, and the programmable controller CPU is notified of the completion of sending.



| No. | Description |
|-----|---|
| ① | The sent data is stored in the register specified by the item property definition (Page 76 Item information) |
| ② | The sending request trigger relay specified by the message property definition is switched ON (Page 73 Message information) |
| ③ | SECS/GEM communication software detects storage of sent data to the register from the sending request trigger relay of the programmable controller CPU switching ON |
| ④ | SECS/GEM communication software reads the sent data from the register of the programmable controller CPU |
| ⑤ | SECS/GEM communication software constructs a SECS message based on the imported data, and then sends it to the host |
| ⑥ | The sending request trigger relay of the programmable controller CPU switches OFF |
| ⑦ | Sending completion is reported to the programmable controller CPU by the sending request trigger relay switching OFF |

The sending request trigger relay is configured in the "Primary message information" screen or "Secondary message information" screen. Select the "Transmission Request Trigger" checkbox, and then configure the notification destination. (Page 73 Message information)

Point

- Configure the transmission request trigger hold time at the message settings screen of the scenario explorer.
SECS/GEM communication software confirms that the time trigger relay configured here is ON before it recognizes that the relay is ON.
- To notify of an error during SECS communication, configure it at the [SECS Error Notification Setting] tab of the "Option Setting" screen. Select the checkboxes for information to be reported, and then configure the notification destination. (Page 111 CA status)
In the case of a sending failure, select the [Sending failure] checkbox, and then configure the relay for reporting.

Important points regarding message sending and receiving handshakes

- When sending consecutive messages, make sure that the sending request trigger relay of the previous message is OFF before switching ON the sending request trigger relay of the next message.
- Set a 20 ms trigger hold time for the transmission request trigger of the secondary message after receipt of the primary message. This allows SECS/GEM communication software to be notified that the primary message receiving notification trigger relay is off before the notification that the transmission request trigger relay of the secondary message is on.
- When sending has failed, the sending request trigger relay is switched OFF. The sending-failed relay switches ON. The programmable controller CPU must not only switch OFF the sending request trigger relay, it must also monitor that the sending failure relay is ON.

9.5 Sending Alarm Messages (S5F1)

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

When an alarm message (S5F1) is sent from the programmable controller CPU, SECS/GEM communication software notifies the host of the alarm message automatically simply by Alert Status and a handshake operation of Alert Set/Reset Notification, without defining multiple alarm messages as transactions.



Usage method

■Alarm information definitions

Alarms to be disclosed by the equipment are defined by the setting tool in advance.

Each alarm is managed by a unique identifier and alarm number appended to each alarm. SECS/GEM communication software and programmable controller CPU transfer the alarm state by setting the "Alarm No." as a key.

The alarm information is configured as shown below.

- Non-GEM version: Configured in the "Alarm Settings" screen. ( Page 131 Alarm settings)
- GEM version and advanced GEM version: Configured in the "Alarm Definition" screen. ( Page 210 Alarm definition)



■Alarm notification settings

Configure the handshake to report the alarm.

| Setting item | Setting content |
|--|--|
| Alarm Notification Setting ^{*1} | Select the checkbox. |
| Alarm Occurrence Notification | Configure the relay to report the alarm occurrence. |
| Alarm Reset Notification | Configure the relay to report the alarm reset. |
| Alarm Status Register (Start) | Specify the first register of alarm status information to retain the alarm status. |
| No. of Alarm Status Registers | Specify the size of the alarm status information by word count. Because alarm statuses are retained by a bit map, one word retains 16 alarm statuses. |

^{*1} Configure the non-GEM version only.

Handshakes are configured as shown below.

- Non-GEM version: Configured in the "Alarm Notification Setting" screen. ( Page 132 Alarm notification setting)
- GEM version and advanced GEM version: Configured in the "Alarm Settings" screen. ( Page 211 Common alarm settings)

Alarm status

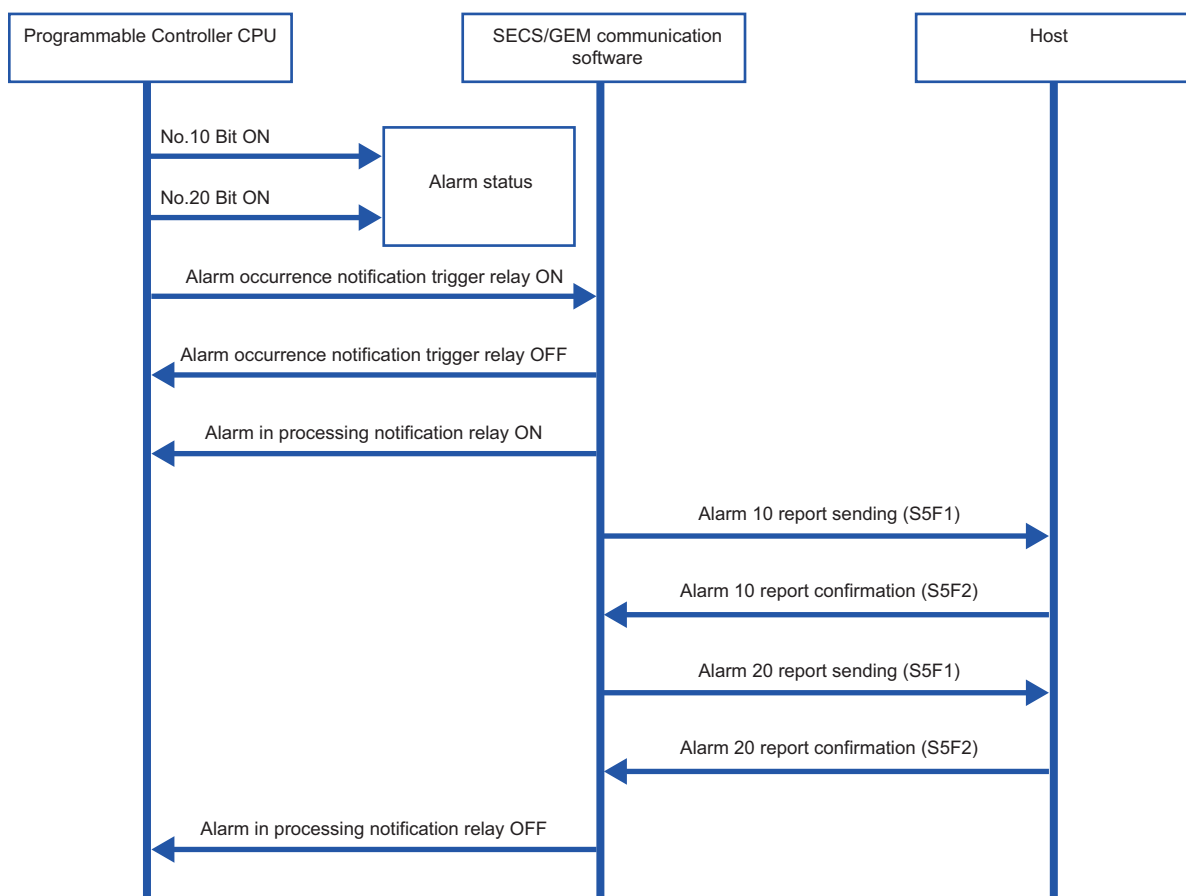
The alarm information retains the alarm states as bits.

Each word retains 16 alarm statuses, and the alarm Status 0 and 1 indicate reset and occurrence, respectively.

| Register | b15 | b14 | b13 | b12 | b11 | b10 | b9 | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| +0W | No.16 | No.15 | No.14 | No.13 | No.12 | No.11 | No.10 | No.9 | No.8 | No.7 | No.6 | No.5 | No.4 | No.3 | No.2 | No.1 |
| +1W | No.32 | No.31 | No.30 | No.29 | No.28 | No.27 | No.26 | No.25 | No.24 | No.23 | No.22 | No.21 | No.20 | No.19 | No.18 | No.17 |
| +2W | No.48 | No.47 | No.46 | No.45 | No.44 | No.43 | No.42 | No.41 | No.40 | No.39 | No.38 | No.37 | No.36 | No.35 | No.34 | No.33 |
| +3W | No.64 | No.63 | No.62 | No.61 | No.60 | No.59 | No.58 | No.57 | No.56 | No.55 | No.54 | No.53 | No.52 | No.51 | No.50 | No.49 |

Alarm report procedure

The following diagram shows the sequence of reporting the alarms of Alarm No. 10 (alarm 10) and Alarm No. 20 (alarm 20). In the case of an alarm reset, the alarm status is set to 0 (reset), and then Alarm Reset Notification is switched ON.



Precautions

- When multiple alarms are reported by the set/reset notification triggers simultaneously, the alarms are sent in order from the alarm with the lowest alarm number.
- To reduce the load, reduce the number of alarms to be simultaneously reported as possible.

9.6 Using the Spool Function

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

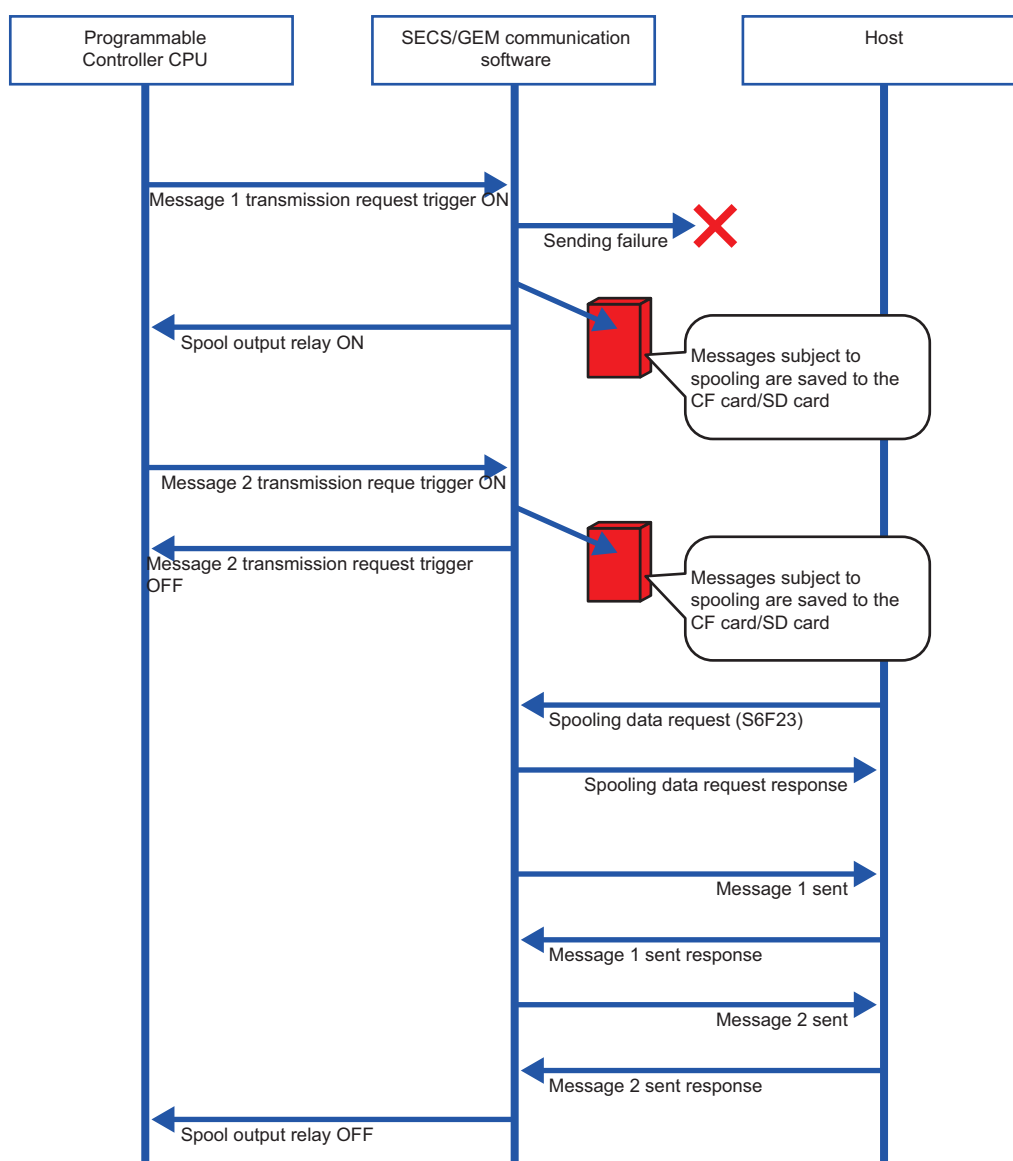
Of the messages to be reported to the host, the spool function temporarily saves messages that must not be lost due to communication failure at the equipment, and then reports the saved messages to the host when communication is restored. Configure messages that must not be lost (primary messages) to be subject to spooling.

When a message subject to spooling fails to be sent, the message is saved in the spool queue. Once communication is restored, the message saved in the spool queue is sent back or discarded by a Spooled data request (S6F23) from the host.

Operation

The following figure shows the spooling operation sequence.

Both Message 1 and Message 2 are configured for spooling.



Usage method (non-GEM version)

■Configuring messages for spooling

Set messages subject to spooling at the [Spool Message] tab of the "Spool" screen. (☞ Page 137 Spool message settings)
Select a message to be subject to spooling from the pull-down list of [Message selection] and click the [Add] button to configure the selected message for spooling.

■Configuring the spooling function

Configure the spooling function at the [Common Spool Definition Settings] tab of the "Spool Settings" screen. (☞ Page 135 Spool common settings)

■Turning spooling ON or OFF

Configure the setting to enable or disable the spooling function at the [Control Request] tab of the "Option Setting" screen. (☞ Page 114 Control request)

To toggle spooling at the equipment, select the [Turn spooling on/off] checkbox, and then configure the relay to turn spooling on or off.

The spool is OFF or ON when the relay is OFF or ON, respectively.

If the "Turn spooling on" checkbox is not selected, the spool is always active.

■Spooling actions

Configure the Spool Outputting Relay at the [CA Status] tab of the "Option Setting" screen. Select the "Spool Outputting Relay" checkbox, and then configure the notification destination. (☞ Page 111 CA status)

■Spooling data request from programmable controller CPU

Configure the Spool Request Relay at the [Control Request] tab of the "Option Setting" screen. (☞ Page 114 Control request)

Spooling data can also be sent to the host or discarded by operations via trigger relays from the programmable controller CPU.

If the "Spool Output Request" checkbox is selected, and a trigger relay is configured, spooling data transfer to the host is started when the trigger relay is ON. SECS/GEM communication software switches OFF the trigger relay.

If the "Discard Spooled Data" checkbox is selected, and a trigger relay is configured, spooled data is discarded when the trigger relay is ON. SECS/GEM communication software switches OFF the trigger relay.

Usage method (GEM version and GEM ADVANCED version)

■Configuring messages for spooling

Set messages subject to spooling in the "Spool List" screen. Double-click a row inserted by using the shortcut menu of the spool list to display the "Spool Definition" screen, and then define the messages subject to spooling. (☞ Page 214 Spool list)

■Configuring the spooling function

Configure the spooling function at the [Common] tab of the "Spool Settings" screen. (☞ Page 216 Common)

■Turning spooling ON or OFF

Configure the setting to enable or disable the spooling function at the [Common] tab of the "Spool Settings" screen. If "1: Enable" is selected for "Enable Spooling", the spool is active. (☞ Page 216 Common)


9.7 Changing the Communication Settings from the Ladder Program

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The SECS communication settings can be changed via a handshake with SECS/GEM communication software. Use this procedure when changing the communication settings from the equipment.

Usage method


■Communication settings change handshake settings

Configure the handshake interface for a communication setting change in the "Communication Setting By PLC" screen. ( Page 85 Communication setting by PLC)

Select the "Communication Setting by PLC" checkbox, specify the setting request trigger, and then configure the storage address of each communication setting.

IP addresses use four words.

For details of IP addresses made up of four words, see the following reference.

 Page 150 IP address information

SECS/GEM communication software changes the communication settings when the setting request trigger is ON, and then switches OFF the setting request trigger.

Note that changes to the communication settings are applied the next time the SECS/GEM software is started.

When SECS/GEM communication software is started, the communication setting information set in the SECS/GEM communication software pre-installed model module is stored in each piece of information of the communication settings.

Considerations

- Whether the settings are HSMS or SECS-I, they are determined by "Port Type" in the "Communication Setting" screen displayed by selecting [Settings] ⇒ [Communication Setting] in the menu.
- The communication settings are applied the next time the SECS/GEM software is started.

9.8 Using the Mapping Function

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

For example, host command sending messages (S2F41) have different parameter (CPNAME, CPVAL) numbers and targets due to the remote command (RCMD), even when the message structure is the same.

If the mapping function is applied to these messages, message sending request trigger relays and reception notification trigger relays of each parameter of key items and offsets for control registers of message items can be configured in one transaction definition.

Therefore, the reference destination or storage destination of parameters can be changed by the values of particular key items.

Point

Example of locations for applying mapping function

- Mapping host command sending messages (S2F41) by remote command
- Mapping the data of discrete variable data sending messages (S6F3) to message data by load port

Usage method

Configure messages for command mapping in the mapping settings, and then configure command parameters.


■Mapping settings

Mapping settings can be configured in the "Command Setting" screen. ( Page 152 Command setting)

Under "Message", select the message to be command mapped from the pull-down list. Under "Key Item", select the item to be the mapping key from the pull-down list.

When offsets will be applied to secondary messages as well, select the "Use the same offset for secondary messages" checkbox.

■Parameter settings (mapping settings by parameters of key items)

In the "Parameter Setting" screen, configure offsets message sending request trigger relays, reception notification trigger relays, and offsets for control registers of message items for each parameter of key items. ( Page 153 Parameter setting)

Usage example

The host controls the equipment using the four host command sending messages (S2F41) described below. Each message has different command parameters <CPNAME> and <CPVAL> for each remote command <RCMD>. A remote command <RCMD> is set as a key item, and reception notification trigger relays, sending request trigger relays, and offsets of control registers are mapped to each remote command <RCMD>.

■Board retrieval message

The equipment retrieves the board of the specified slot from the carrier placed in the specified load port, and then sets the board in the specified equipment processing unit.

The message has three parameters.

| Message format | Item value | Notes |
|--------------------|------------|---|
| <HCS> | | |
| <L, 2> | | |
| 1. ASCII <RCMD> | LOAD | Board retrieval command |
| 2. <L, 3> | | Number of parameters |
| 1. <L, 2> | | |
| 1. ASCII <CPNAME1> | PORT | Load port number parameter name |
| 2. U2 <CPVAL1> | 1 to 2 | Load port number |
| 2. <L, 2> | | |
| 1. ASCII <CPNAME2> | SLOT | Slot number parameter name |
| 2. U2 <CPVAL2> | 1 to 4 | Slot number |
| 3. <L, 2> | | |
| 1. ASCII <CPNAME3> | PNO | Equipment processing unit number parameter name |
| 2. U2 <CPVAL3> | 1 to 2 | Equipment processing unit No. |

■Processing-start message

The equipment performs processing using the specified temperature and pressure parameters at the processing unit specified by the host.

The message has three parameters.

| Message format | Item value | Notes |
|--------------------|--------------|---|
| <HCS> | | |
| <L, 2> | | |
| 1. ASCII <RCMD> | START | Processing-start command |
| 2. <L, 3> | | Number of parameters |
| 1. <L, 2> | | |
| 1. ASCII <CPNAME1> | PNO | Equipment processing unit number parameter name |
| 2. U2 <CPVAL1> | 1 to 2 | Equipment processing unit No. |
| 2. <L, 2> | | |
| 1. ASCII <CPNAME2> | TEMP | Temperature parameter name |
| 2. U2 <CPVAL2> | 0 to 800 | Temperature |
| 3. <L, 2> | | |
| 1. ASCII <CPNAME3> | PRESS | Pressure parameter name |
| 2. U2 <CPVAL3> | 2000 to 8000 | Pressure |

■Processing-stop message

The equipment stops current processing at the processing unit specified by the host.

The message has one parameter.

| Message format | Item value | Notes |
|--------------------|------------|---|
| <HCS> | | |
| <L, 2> | | |
| 1. ASCII <RCMD> | STOP | Processing-stop command |
| 2. <L, 1> | | Number of parameters |
| 1. <L, 2> | | |
| 1. ASCII <CPNAME1> | PNO | Equipment processing unit number parameter name |
| 2. U2 <CPVAL1> | 1 to 2 | Equipment processing unit No. |

■Board withdrawal message

The equipment withdraws the board of the processing unit specified by the host to the specified slot of the carrier of the specified load port.

The message has three parameters.

| Message format | Item value | Notes |
|--------------------|------------|---|
| <HCS> | | |
| <L, 2> | | |
| 1. ASCII <RCMD> | UNLOAD | Board retrieval command |
| 2. <L, 3> | | Number of parameters |
| 1. <L, 2> | | |
| 1. ASCII <CPNAME1> | PORT | Load port number parameter name |
| 2. U2 <CPVAL1> | 1 to 2 | Load port number |
| 2. <L, 2> | | |
| 1. ASCII <CPNAME2> | SLOT | Slot number parameter name |
| 2. U2 <CPVAL2> | 1 to 4 | Slot number |
| 3. <L, 2> | | |
| 1. ASCII <CPNAME3> | PNO | Equipment processing unit number parameter name |
| 2. U2 <CPVAL3> | 1 to 2 | Equipment processing unit No. |

Command mapping setting example

■Definitions of messages

- Define the transactions of base host command sending messages (S2F41).
- Because the number of parameters is variable, the number of parameters in the list is defined by a variable length list.
- Because the maximum number of parameters is three, three parameter lists are defined.

■Definitions of command mapping by parameters of key items

- Use the mapping setting function to specify the remote commands <RCMD> of the host command sending messages (S2F41) for the keywords of message mapping. Because receiving data of primary messages and return data of secondary messages are both subject to mapping, specify "Use the same offset for secondary messages".
- Specify the item value of <RCMD> to the parameter, and then specify the sending request trigger relays and reception notification trigger relays of messages and offsets for the command registers of message items.

■Setting example for host command sending message (S2F41) definitions

The following section shows a setting example for host command sending messages (S2F41) and an example of command mapping by remote command.

| Message format | Data type | Data count | Control Register |
|--------------------|-----------|------------|------------------|
| <HCS> | | | |
| <L, 2> | | | |
| 1. ASCII <RCMD> | ASCII | 16 | R2500 |
| 2. <L, 3> | U2 | 1 | R2509 |
| 1. <L, 2> | | | |
| 1. ASCII <CPNAME1> | ASCII | 16 | R2510 |
| 2. U2 <CPVAL1> | U2 | 1 | R2519 |
| 2. <L, 2> | | | |
| 1. ASCII <CPNAME2> | ASCII | 16 | R2520 |
| 2. U2 <CPVAL2> | U2 | 1 | R2529 |
| 3. <L, 2> | | | |
| 1. ASCII <CPNAME3> | ASCII | 16 | R2530 |
| 2. U2 <CPVAL3> | U2 | 1 | R2539 |

■Command mapping setting example

| Item value of remote command (RCMD) | Primary message reception notification trigger relay | Secondary message sending request trigger the relay | Message data control register offset |
|-------------------------------------|--|---|--------------------------------------|
| LOAD | M160 | M161 | 0 |
| START | M162 | M163 | 100 |
| STOP | M164 | M165 | 200 |
| UNLOAD | M166 | M167 | 300 |

9.9 Using the Conversion Table Function (Table Conversion)

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


Table conversion definitions are used to switch to the relevant data during message transmission between SECS message items and control registers data.

For example, an ASCII character string of the remote command of host message sending (S2F41) can be converted automatically to code easily processed by the programmable controller CPU.

Usage method

Add a conversion table in the "Conversion Table List" screen, and then configure a conversion table to be used in the "Item Information" screen.


■ Adding a conversion table

Configure the conversion table settings in the "Conversion Table Setting" screen. ( Page 156 Conversion Table Setting, Page 157 Conversion table setting)

| Setting item | Setting content |
|-----------------------|--|
| Conversion definition | Select "Table". |
| Table name | Enter a conversion table name. |
| Comment | An arbitrary comment can be entered. |
| SECS Data Type | Specify the data type of the SECS item. |
| PLC Data Type | Specify the data type stored in the programmable controller CPU. |
| Data Counts | Specify the number of characters when the storage type is ASCII. For other types, set 1. |
| Default (SECS Data) | Specify the data to be configured to a SECS item when conversion data that matches the conversion table was not found. |
| Default (PLC Data) | Specify the data to be stored in the storage register of the programmable controller CPU when conversion data that matches the conversion table was not found. |

Configure the conversion data in the "Conversion Data Setting" screen. ( Page 158 Conversion data setting)

■ Specification of table conversion

Specify a table added in the "Conversion Table List" screen by "Data Type" of the control register in the "Item Information" screen. ( Page 76 Item information)



The function is also used when messages are sent

9.10 Using the Conversion Table Function (Format Conversion)


| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Format conversion definitions are used to change data stored in control registers to data that follow format definitions and send the data as a SECS message.


Usage method

Add a conversion table in the "Conversion Table List" screen, and then configure a conversion table to be used in the "Item Information" screen.


■Adding a conversion table

Configure the format conversion settings in the "Conversion Table Setting" screen. ( Page 156 Conversion Table Setting, Page 157 Conversion table setting)

| Setting item | Setting content |
|-----------------------|---|
| Conversion definition | Select "Format". |
| Table name | Enter a conversion table name. |
| Comment | An arbitrary comment can be entered. |
| SECS Data Type | Specify the data type of the SECS item. (Specify ASCII.) |
| PLC Data Type | Specify the data type stored in the programmable controller CPU. |
| Data Counts | Specify the number of characters when the storage type is ASCII. For other types, set 1. |

Configure the formatting in the "Format conversion definition setting" screen. ( Page 160 Format conversion definition setting)

■Format conversion specification

Specify a table added in the "Conversion Table List" screen by "Data Type" of the control register in the "Item Information" screen. ( Page 76 Item information)

Point

The format conversion function can be checked in advance.

Whether the format of the specified format conversion is correct can be checked using the data conversion simulator function in the "Format Conversion Definition Setting" screen.

Enter the data before conversion into the "Register Input Data" field, and then select the data format of this data for "Input Form". Click [Conversion] button to display the editing result.


9.11 Using the Conversion Table Function (Index Conversion)

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-----------------------|-----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MELSEC iQ-R series | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Index conversion definitions are used to send floating-point number data stored as integers in control registers as a decimal-point format ASCII string by a SECS message.


Usage method

■Adding a conversion table

Configure the index conversion settings in the "Conversion Table Setting" screen. ( Page 156 Conversion Table Setting, Page 157 Conversion table setting)

When adding a table, select "Exponent," and then specify 'n' of the index (nth power of 10) to be applied to the data before replacement for "Exponent," and the number of digits of the integer section for "Number of digits of integer section."

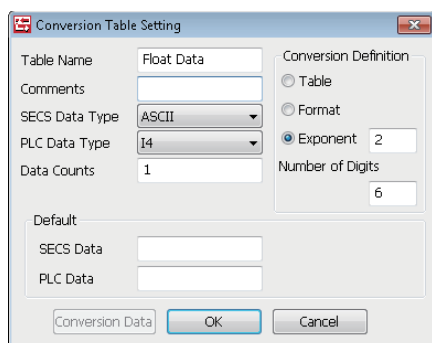
■Specifying index conversion

Specify a table added in the "Conversion Table List" screen by "Data Type" of the control register in the "Item Information" screen. ( Page 76 Item information)



Indexes can also be converted using the format conversion function.

The same functions as index conversion can be used by the format of format conversion.



If the example above is listed by the format of format conversion, the result is "%9.2f".

The total number of characters including the decimal point is "9", and the number of decimal places is "2".

9.12 Remote Command Control Using the Selection List Function

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

Use the selection list function to select items to be sent within the limit of the defined message structure or distinguish only items received in messages to change the item list number by the conditions.

Usage example

■ Sending only disabled parameters during host command confirmation message (S2F42) sending

Use the selection list to return only disabled parameters of the parameters (<L, 2 <CPNAME/><CPVAL/>>) received by a host command sending message (S2F41) such as with a host command confirmation message (S2F42).

Configure disabled parameters of the host command confirmation message (S2F42) to the selection list, and then configure each disabled parameter below to the selection register.

SECS/GEM communication software sends only parameters with a value other than zero configured to the selection register during message sending.

The following table shows the configuration of the host command confirmation message (S2F42) format.

| Message format | Item | Notes |
|--------------------|--|--|
| <HCA> | | |
| <L, 2> | | |
| 1. BIN <HCAACK> | Host command parameter confirmation code | 0: confirmation (command was executed) 1: command cannot be confirmed 2: currently cannot be executed 3: at least one parameter is invalid 4: confirmed (the command was executed, and confirmation has been reported by an event) 5: denied (already requested) 6: this object does not exist |
| 2. <L, 3> | Invalid parameter list | |
| 1. <L, 2> | Invalid parameter 1 | |
| 1. ASCII <CPNAME1> | Invalid parameter name 1 | |
| 2. U2 <CPACK1> | | 1: parameter name does not exist 2: invalid as a parameter value specified by the parameter name 3: not a format of a parameter value specified by the parameter name >3: equipment specific definition |
| 2. <L, 2> | Invalid parameter 2 | |
| 1. ASCII <CPNAME2> | Invalid parameter name 2 | |
| 2. U2 <CPACK2> | Invalid parameter reason 2 | |
| 3. <L, 2> | Invalid parameter 3 | |
| 1. ASCII <CPNAME3> | Invalid parameter name 3 | |
| 2. U2 <CPACK3> | Invalid parameter reason 3 | |

■Received parameters are distinguished upon receipt of a host command sending message (S2F41)

When there is a parameter list that differs by remote command, such as with a host command sending message (S2F41), it is possible to send and receive messages by simply defining one message that includes all parameter elements without defining messages for each remote command if the selection list function is used.

By configuring the selection register for each parameter list, and furthermore specifying a selection keyword for each parameter name of each parameter list, whether the parameter names of the received parameters match the keywords specified for each parameter list is sent back to each selection register.

When there was a match, 1 is returned. When there is no match, 0 is returned.

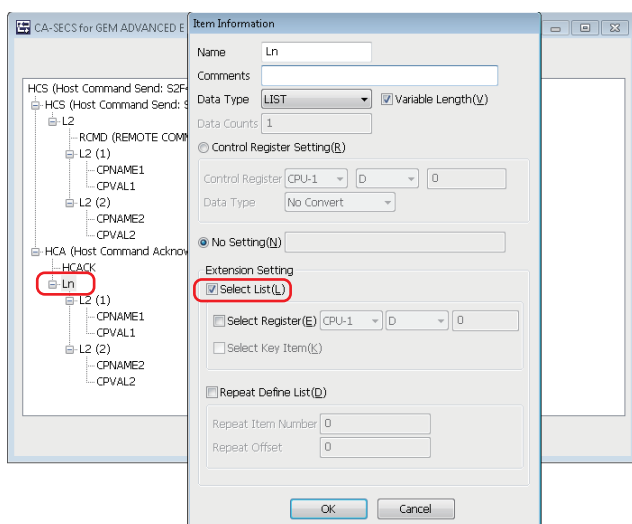
It is possible to conserve data storage space because message definition is concluded by a single item and the assignment is completed only by the data storage area of the necessary parameter element count.

Usage method

■Configuring selection lists

Select the "Select List" checkbox for the new list of the parameter list.

The following section is an example of the case of a host command confirmation message (S2F42).



■Configuring selection registers

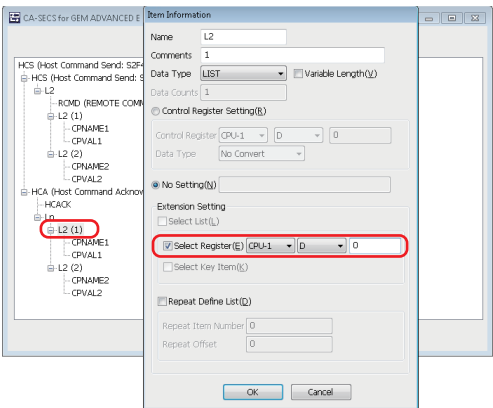
Configure "Select Register" for each parameter list.
In the case of a sending message, configure as shown below at the programmable controller CPU.

| Sending message | In case of a register | In the case of a relay |
|--------------------|-----------------------|------------------------|
| Sending target | Not 0 | ON |
| Not sending target | 0 | OFF |

In the case of a reception message, SECS/GEM communication software configures in the following manner.

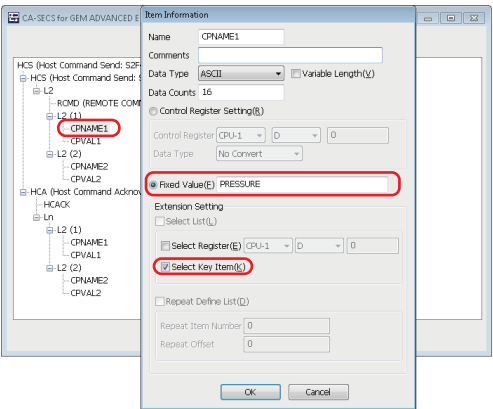
| Reception message | In case of a register | In the case of a relay |
|-------------------|-----------------------|------------------------|
| Received | 1 | ON |
| Not received | 0 | OFF |

The following section is an example of the case of a host command confirmation message (S2F42).



■Configuring selection key items

Configure the fixed value and selection key item for the parameter name.
If a parameter that matches this fixed value is received, 1 is stored in the selection register of the new parameter list.
It is necessary to configure the selection list and selection register in advance to use the selection key item.
The following section is an example of the case of a host command sending message (S2F41).



Ladder program processing can be reduced by using both the mapping and selection list / selection register function.

9.13 Synchronizing the Clocks of Equipment and Host

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | ○ | ○ | ○ |
| MELSEC iQ-R series | ○ | ○ | ○ |

Three time synchronization scenarios can be used through settings.

Time synchronization scenarios

■Time request from equipment to host

| Scenario | Function |
|----------------------------------|--|
| S2F17 (Date and time request) | A date and time request message (S2F17) is sent from the equipment, and the host time is received by a date and time data message (S2F18) from the host. The time received from the host can be stored in the register. |

■Time request from host to equipment


| Scenario | Function |
|----------------------------------|---|
| S2F17 (Date and time request) | A date and time request message (S2F17) is received from the host, and the equipment time is sent by a date and time data message (S2F18) from the equipment. The return of the time to the host can be reported by the time synchronization notification relay. |

■Time set instruction from host to equipment

| Scenario | Function |
|--------------------------------------|---|
| S2F31 (Date and time set request) | The host time is received by a date and time set request message (S2F31) from the host, and the equipment sends a date and time set confirmation message (S2F32). The synchronization of the time by the instruction from the host can be reported by the time synchronization notification relay. The time received from the host can be stored in the register. |

Usage method

The clock time in the SECS/GEM communication software pre-installed model module can be changed to the time of the received item <TIME>.

The setting for changing the time can be configured in the [Control Detail] tab in the "Option Setting" screen. ( Page 104 Control detail)

Check the setting of "Change C Controller's Clock Upon S2F31/S2F18 Reception" or "Change C Intelligent Function Module's Clock Upon S2F31/S2F18 Reception."

Point

If a date and time request message (S2F17) is received from the host, SECS/GEM communication software returns the date and time of the SECS/GEM communication software pre-installed model module automatically.

9.14 Transitioning to a Communication State

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The communication state is managed according to the communication model state of GEM. The following three control methods can be selected by SECS/GEM communication software.


| Control method | Function |
|----------------|--|
| AUTO | SECS/GEM communication software controls the communication state automatically according to the communication state model of GEM. |
| SEMI-AUTO | SECS/GEM communication software controls the communication state automatically only while the communication establishment request relay is ON. |
| MANUAL | A communication establishment request message (S1F13) is sent when triggered by the communications establishment request relay switching ON. If a communication establishment request confirmation message (S1F14) is received, the state transitions to a communication establishment state. SECS/GEM communication software switches OFF the communications establishment request relay. |

Usage method

■Enabling or disabling communication

Communication can be enabled or disabled by an operator.


Configure the setting from the screen displayed by the [State Change] tab of the "Communication State Settings" screen.

( Page 200 State change)

Select the "ENABLED/DISABLED" checkbox, and then configure a switching relay for enabling or disabling communication.

Communication is enabled or disabled when the relay is ON or OFF, respectively.

■Communication state control settings

Configure the setting at the [Control] tab of the "Communication state settings" screen. ( Page 200 Control)

Select the control method. With a setting other than AUTO, configure the communication establishment request relay.



The communication state can be saved in a state variable in the settings at the [State Notification] tab of the "Communication State Settings" screen.

9.15 Transitioning to a Control State

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

The control state is managed according to the control model state of GEM.

The following two control methods can be selected by SECS/GEM communication software.

| Control method | Function |
|----------------|---|
| AUTO | SECS/GEM communication software controls the control state automatically according to the control state model of GEM. |
| MANUAL | An online confirmation request message (S1F1) is sent when triggered by the online request relay switching ON. If an online data message (S1F2) is received, the state transitions to an online state. SECS/GEM communication software switches OFF the online request relay. |

Usage method

■Control state switching by an operator

Configure the setting at the [State Change] tab of the "Control State Settings" screen. (📖 Page 204 State change)

Select the checkbox of the switching functions to be used, and then configure the switching request trigger relays.

The control state can be switched between online and offline and between online local and online remote by an operator.

■Configuring the control state switching control

Configure the setting at the [Control] tab of the "Control State Settings" screen. (📖 Page 205 Control)

Select the control method. When MANUAL is selected, configure the On-Line Request trigger relay.



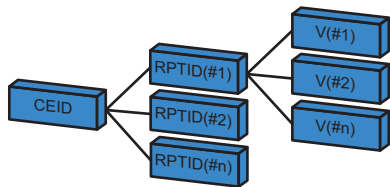
The control state can be set in a state variable in the settings at the [State Notification] tab of the "Control State Settings" screen.

If the automatic event sending function of GEM is used, the host can be notified of the control state via an event when transitioning the control communication state.

9.16 Configuring Collected Events

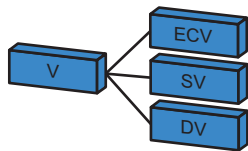
| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | ○ | ○ |
| MELSEC iQ-R series | — | ○ | ○ |

Events are made up of report lists, and reports are made up of variable lists.
Both are configured by the setting tool.
Events and reports are identified by event IDs and report IDs.



CEID: Event ID
RPTID: Report ID
V: Variables

There are three variable (V) types: state variables (SV), discrete variables (DV), and equipment constants (ECV), which are configured by the setting tool.



Usage method

■Configuring variables

Variables disclosed by the equipment are configured by the setting tool.
Double-click a row inserted by [Insert] of the shortcut menu of the "Variable List" screen to display the "Variable Definition" screen, and then configure the settings. (Page 226 Variable list, Page 228 Variable definition)

■Configuring reports

Double-click a row inserted by [Insert] of the shortcut menu of the "Report List" screen to display the "Report Definition" screen, and then configure the settings. (Page 238 Report list, Page 239 Report definition)
To create a report, click [Create Report] button in the "Report Definition" screen, and then create the report in the "Create Report" screen. (Page 240 Create report)
For variables, select the variable to be added from the "Variables" pull-down list of the "Create Report" screen, and then click the [Add] button.

■Configuring events

Double-click a row inserted by [Insert] of the shortcut menu of the "Event List" screen to display the "Event Definition" screen, and then configure the settings. (Page 243 Event list, Page 244 Event definition)
To create an event, click [Create Event] button in the "Event Definition" screen, and then create the event in the "Create Event" screen. (Page 245 Create event)
For the report, select the report to be added from the [Reports] pull-down list of the "Create Event" screen, and then click the [Add] button.

■Event notification method

Automatic and manual notifications can be selected in the "Event Definition" screen.

- Automatic notification: If "Automatic Event Transmission" is selected, and a GEM automatic notification time is selected via the pull-down list just below, the selected event is reported to the host at the specified timing.
- Manual notification (sending via a trigger instruction from a programmable controller CPU): If "Sequencer Transmission Request" is selected, and the transmission request trigger is configured, the host is notified of the corresponding event when the transmission request trigger is ON. The trigger is switched OFF after SECS/GEM communication software reports to the host. (When a handshake has been selected)

Point

SECS/GEM communication software processes the following event functions automatically.

- A report or event can be also generated dynamically by an instruction from the host.
 - The event report or individual report requested by the host is sent back automatically.
-

9.17 Using the Process Program

| Series | SECS/GEM communication software | | |
|--------------------|---------------------------------|-------------|----------------------|
| | Non-GEM version | GEM version | GEM advanced version |
| MELSEC-Q series | — | — | ○ |
| MELSEC iQ-R series | — | — | ○ |

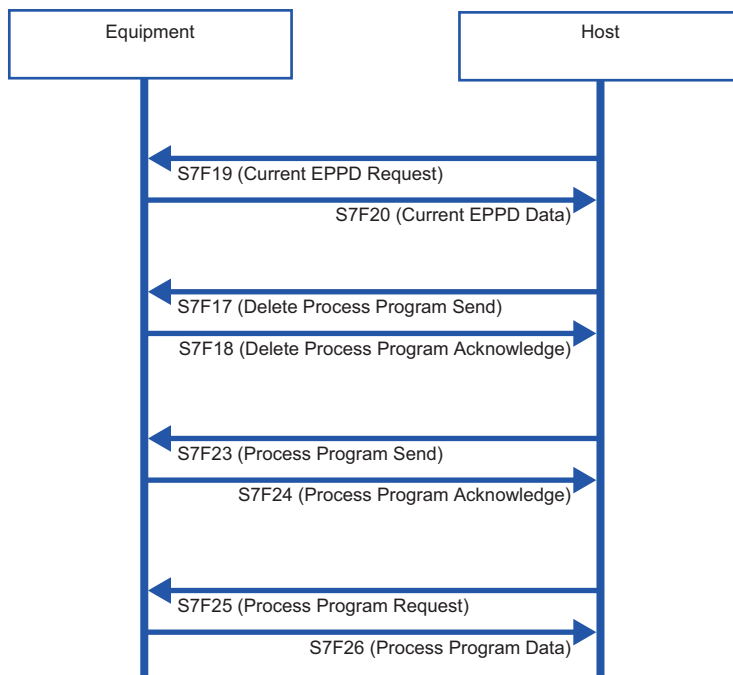
The GEM advanced version of SECS/GEM communication software provides functions that assist the management of the process program directory (PPID list).

The three helper functions are as follows.

- Response to process program deletion command (S7F17)^{*1}
- Automatic response to current EPPD request (S7F19)
- Sending of process program change event (S6F11) from equipment ^{*1}

^{*1} Manage the process programs by the equipment application.

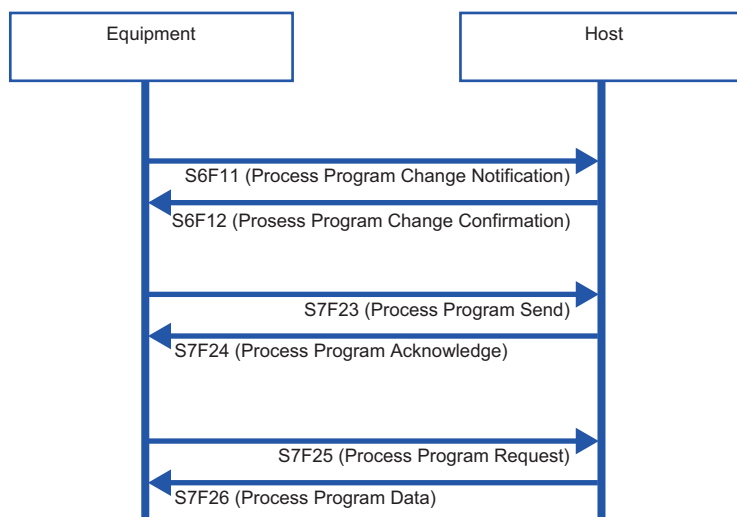
Example of management by the host



| Host → Equipment | Equipment action |
|---|---|
| S7F19 (Process program directory request) | The process program directory is sent back to the host. The following information is returned. • List of the process program names (PPID) retained by the equipment |
| S7F17 (Process program deletion instruction) | Deletes the process program requested (PPID). |
| S7F23 (Process program sending) | Reports the received process program to the equipment. ^{*1} |
| S7F25 (Process program request) | The process program requested (PPID) is sent back to the host. ^{*1} |

^{*1} Define the transaction, and process via equipment application.

Example of management by the equipment



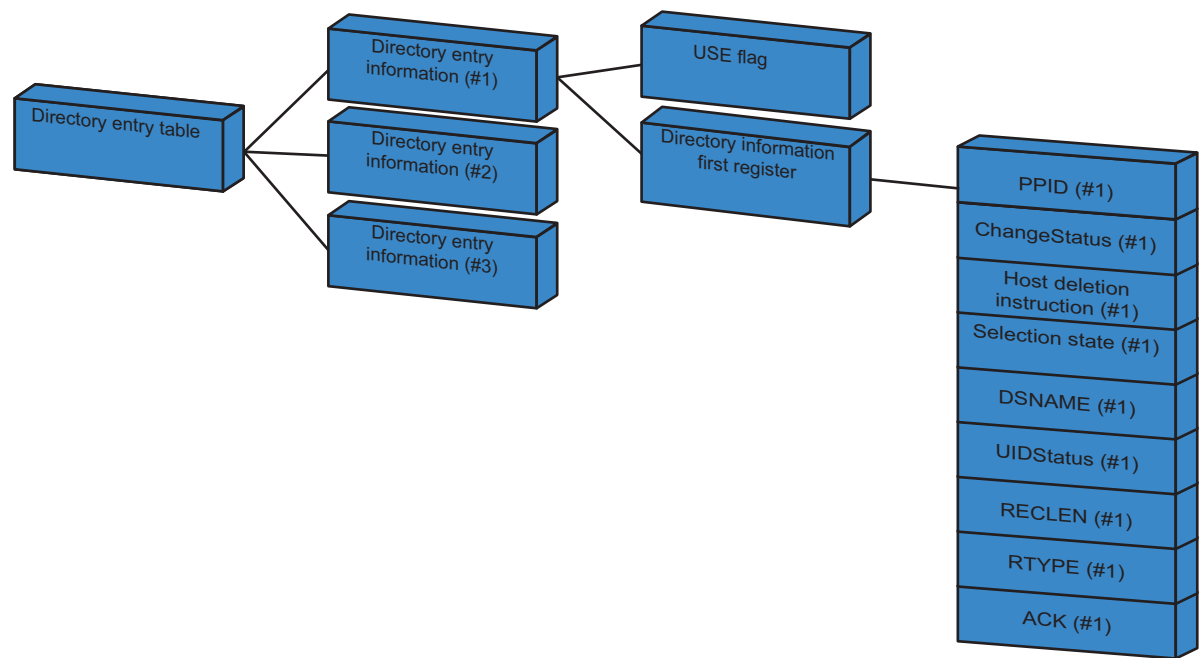
| Equipment operation | Equipment → Host | Description |
|---------------------------------------|--|--|
| Change of process program | S6F11 (Event report: Change of process program) | When a process program is created, modified, or deleted at the equipment, the host is notified of the change of the process program via an event. The notification contains the following information. <ul style="list-style-type: none"> • Process program name (PPID) • Changed state (creation/modification/deletion) |
| Upload of process program to host | S7F23 (Process program sending) | The process program retained at the equipment is uploaded to the host.* ¹ |
| Download of process program from host | S7F25 (Process program request) | The process program is obtained from the host.* ¹ |

*¹ Define the transaction, and process via equipment application.

Usage method

Directory settings

The directory of the process program (EPPD) is configured by the setting tool.
Configure the settings at the [Directory] tab of the "Process program settings" screen. (📖 Page 219 Directory)
Configure the number of directory entries, and the start register for the directory entry and directory information.



■Directory entry information

For the directory entry (start), configure the first register of the directory entry information table.
The directory entry information table holds the entry (first register) of each directory information item and defines consecutively the number of directory entries set by "No. Of Directory Entries".
The following section shows the structure of the directory entry information.

| Item | Size (Word) | Description |
|--------------------------------------|-------------|---|
| USE flag | 1 | 0: not used 1: used |
| Directory information first register | 1 | First register of directory information linked to the corresponding entry |

The following table shows a directory entry table with three directory entries.
The first register of the directory entry table is configured in "Directory Entry (Start)".

| Offset | Directory entry table | | Description |
|--------|-------------------------------|--------------------------------------|--|
| +0W | Directory entry information 1 | USE flag | 1 (use) |
| | | Directory information first register | Directory information 1 first register |
| +2W | Directory entry information 2 | USE flag | 1 (use) |
| | | Directory information first register | Directory information 2 first register |
| +4W | Directory entry information 3 | USE flag | 1 (use) |
| | | Directory information first register | Directory information 3 first register |

■Structure of directory information

The following section shows the structure of each directory information item.

Directory information of the amount specified by the number of directory entries is assigned.

The entry of each directory information item is linked and defined by each directory entry of the directory entry information table.

The following directory information items must be initialized when the equipment is started.

The current process program ID retained by the equipment is set to PPID.

| Item | Size (Word) | Description |
|-------------------------|-------------|---|
| PPID | 41 | Process program ID |
| ChangeStatus | 1 | 0: no change 1: creation 2: modification 3: deletion |
| Host delete instruction | 1 | 0: no instruction 1: instruction |
| Selection state | 1 | 0: no selection 1: selected |
| DSNAME | 17 | Data set name ^{*1} |
| UIDStatus | 1 | 0: none 1: upload 2: download ^{*1} |
| RECLen | 1 | Directory maximum record length ^{*1} |
| RType | 1 | 0: stream 1 = discrete ^{*1} |
| ACK | 1 | ACK during upload/download ^{*1} |

^{*1} Items reserved for future functions. Initialize using "0" at equipment startup processing.

Directory request from host

When a current EPPD request message (S7F19) was received from the host, SECS/GEM communication software creates a current EPPD data message (S7F20) from the current directory information content, and then sends it to the host automatically.

Directory deletion request from host

Configure the handshake to delete the process program of the PPID specified by the host at the [Change notification] tab of the "Process Program Settings" screen. (🔑 Page 221 Change notification)

Select the "Enable S7F17 Scenario" checkbox, and then configure the notification destination trigger and storage register.

■Handshake methods

When a process program deletion instruction message (S7F17) has been received from the host, SECS/GEM communication software configures [Deletion instruction] for the directory information of the corresponding process program, and then switches ON the Process Program Deletion Notification.

When this relay is ON, the programmable controller CPU deletes the process program it was instructed to delete. The result of the deletion is set to the register to save process program deletion results. Next, the process program deletion notification trigger is switched OFF, and the process program deletion completion notification trigger is switched ON.

SECS/GEM communication software receives that the process program deletion completion notification is ON, sends a process program deletion confirmation message (S7F18) message to the host, and then switches OFF the process program deletion completion notification.

Notification of process program change from the equipment

Configure the notification to the host that the process program was changed at the equipment at the screen of the [Change Notification] tab of the "Process Program Settings" screen. (🔑 Page 221 Change notification)

Specify the notification destination using "Process Program Change".

■Handshake methods

When the process program has been changed at the equipment, the change status is configured for [Change Status] of the corresponding directory information, and the process program change trigger relay is switched ON.

SECS/GEM communication software sends a process program change notification (S6F11) to the host, and then switches OFF the process program change trigger relay.

Notification of process program selection at the equipment

Configure the notification to the host that the process program was selected at the equipment at the screen of the [Change Notification] tab of the "Process Program Settings" screen. (🔑 Page 221 Change notification)

Specify the notification destination using "Process Program Select".

■Handshake methods

When a process program has been selected at the equipment, the selection status is set for [Selection State] of the corresponding directory information, and the process program select trigger relay is switched ON.

SECS/GEM communication software sends the selection of a process program (S6F11) to the host, and then switches OFF the process program select trigger relay.



When the automatic process program processing function of SECS/GEM communication software is not used, select the [Exclusion] tab of the "Process program settings" screen, and then clear the [On] checkbox of each scenario.

10 TROUBLESHOOTING

This chapter explains the troubleshooting of a SECS/GEM communication software pre-installed model module.

10.1 Checking error description

10

The following shows checking methods for an error that occurred in SECS/GEM communication software.

| Checking method | Description |
|--------------------------------------|--|
| Event history of an engineering tool | The status of SECS/GEM communication software can be checked in the event history of an engineering tool. <ul style="list-style-type: none">• For Q12DCCPU-V-BZ11: Event information with "CAS" displayed for "Source"• For Q12DCCPU-V-BZ13 or 15: Event information with "CASECS" displayed for "Source"• For RD55UP06-V-BZ11, 13, or 15: Event information whose "Source" is "RD55UP06-V" and name starts with 'detail information: [CAS]' in "Detailed event log information"• For RD55UP12-V-BZ11, 13, or 15: Event information whose "Source" is "RD55UP12-V" and name starts with 'detail information: [CAS]' in "Detailed event log information" |
| Device | The status of SECS/GEM communication software can be checked using devices assigned to SECS/GEM communication software. Page 111 CA status Page 119 SECS error notification setting |
| Buffer memory ^{*1} | The status of SECS/GEM communication software can be checked using the following buffer memories: <ul style="list-style-type: none">• CA-SECS status (Un\G16384 to 16385)• CPU to CITL I/F error-detected information (Un\G20432 to 20436) |
| Log view in the setting tool | The status of SECS/GEM communication software can be checked in log view in the setting tool. Page 166 Log Output |

^{*1} Supported only when the software version is 1.38Q or later and also RD55UP12-V-BZ15 is used.


For details on the buffer memories, refer to the following:







SECS/GEM Communication Software Reference Manual (For GEM300 Standards)

10.2 Troubleshooting by Symptom


This section shows the troubleshooting by phenomenon for a SECS/GEM communication software pre-installed model module.

| Symptom | Check item | Corrective action |
|---|--|---|
| A multi-CPU error occurred with the programmable controller CPU and MELSEC-Q series SECS/GEM communication software pre-installed model module. | Do the multi-CPU settings of the programmable controller CPU and MELSEC-Q series SECS/GEM communication software pre-installed model module match? | During use with a multi-CPU configuration, the settings of the parameters of the CPU must match. Review the parameter settings. For the parameter setting method, refer to the manual of the programmable controller CPU to be used. |
| A ladder program cannot be written to the programmable controller CPU. | Is there a problem with the GX Works2 or GX Works3 settings? | When the GX Works2 or GX Works3 cannot connect with the programmable controller CPU, check for problems in the settings of the GX Works2 or GX Works3 . For the parameter setting method, refer to the manual of the programmable controller CPU to be used. |
| | Is there an error during Ethernet diagnosis? | When the GX Works2 or GX Works3 and programmable controller CPU are connected via Ethernet, check the details of the Ethernet diagnosis error, and then remove the cause of the error. |
| The user login settings of the C Controller module or C intelligent function module are unknown. | Has the C Controller module or C intelligent function module been initialized? | The following table shows the default values when the C Controller module or C intelligent function module has been initialized. IP address (CH1): 192.168.3.3 Username: "target" Password: "password" For the initialization method, refer to the manual of the C Controller module or C intelligent function module. The pre-installed SECS/GEM communication software license is erased when the C Controller module or C intelligent function module has been initialized. |
| C language settings cannot be written to the C Controller module. | Is there a problem with settings of the Setting/monitoring tools for the C Controller module? | When the Setting/monitoring tools for the C Controller module cannot connect with the programmable controller CPU, check for problems in the settings of Setting/monitoring tools for the C Controller module. For the configuration method, see the manual of the Setting/monitoring tools for the C Controller module. |








| Symptom | Check item | Corrective action |
|---|--|---|
| SECS/GEM communication software cannot be installed on the personal computer. | Does the user currently logged in have administrative rights for the personal computer? | A user with administrative rights must login and install the software. |
| The project file of SECS/GEM communication software cannot be opened. | Was the PC restarted after installing the setting tool? | Restart the PC after installing the setting tool. |
| The SECS/GEM communication software pre-installed model module cannot be updated. | Is there a response from the SECS/GEM communication software pre-installed model module with a ping command? | <p>Check for problems with the LAN cable connection.</p> <p>From the command prompt of the PC, etc., issue a ping command.</p> <p>Specification method: ping (IP address)</p> <p>Example: ping 192.168.3.3</p> <p>If there is no response, the IP address of the SECS/GEM communication software pre-installed model module may be different. Check the IP address using GX Works3 or the Setting/monitoring tools for the C Controller module.</p> <p>Connection is not possible when the IP address settings of the computer differ with the subnet mask of the SECS/GEM communication software pre-installed model module. Configure the correct IP address.</p> |
| | Is the user and password entered in [Update Module] of [Setting] incorrect? | The entry may be incorrect if the caps lock key is ON. Switch OFF the caps lock key, and then make sure there are no mistakes in the entered information. |
| | Is the program blocked by the firewall settings? | <p>If ["CA-SECS (product name)"] is blocked in the firewall settings, communication is not possible.</p> <p>Check the firewall settings, and then changes the setting to allow ["CA-SECS (product name)"].</p> <p>For the method for setting a firewall, refer to the following:</p> <p> Page 23 Procedure for setting a firewall</p> |
| | Is a proxy server being used? | If a proxy server is being used, the IP address of the SECS/GEM communication software pre-installed model module must be configured so that a proxy server is not used. |
| | Is the network device connected to the SECS/GEM communication software pre-installed model module enabled? | <p>In the network connection settings, enable the network device connected to the SECS/GEM communication software pre-installed model module.</p> <p>Furthermore, an update may not be possible if other network devices are enabled. In this case, check by disabling other network devices temporarily.</p> |
| | Is [Work Offline] configured in Internet Explorer? | When Internet Explorer 10 or earlier is being used during offline work, click the [File] menu, and then clear the checkbox beside [Work offline]. |
| | Is antivirus software installed? | <p>It may not be possible to update the SECS/GEM communication software pre-installed model module due to the antivirus software.</p> <p>Switch off the antivirus software temporarily, and then see if the problem is resolved.</p> |
| | Is the free space of the transfer destination sufficient? | <p>The free space of the transfer destination may be insufficient.</p> <p>Check the transfer destination via FTP, and delete unnecessary files.</p> |
| | Is a CF card selected as the transfer destination when operating a MELSEC-Q series SECS/GEM communication software pre-installed model module in the basic mode? | <p>The standard ROM does not exist in the MELSEC-Q series SECS/GEM communication software pre-installed model module operated in the basic mode.</p> <p>Select the CF card as the transfer destination when operating the MELSEC-Q series SECS/GEM communication software pre-installed model module in the basic mode.</p> |








| Symptom | Check item | Corrective action |
|---|--|---|
| SECS/GEM communication software transferred to the SECS/GEM communication software pre-installed model module does not start. | Is the CIM control READY relay ON? | If the CIM Control READY relay is ON, SECS/GEM communication software is running. For the settings of the CIM control READY relay, refer to the following:  Page 111 CA status |
| | Is there CA-SECS event information in the event history of the SECS/GEM communication software pre-installed model module? | If SECS/GEM communication software starts, version information, license registration information, and target modules of control software appear in the event history of the SECS/GEM communication software pre-installed model module. Check if there is event information described in the following: <ul style="list-style-type: none"> When using a non-GEM version of MELSEC-Q series SECS/GEM communication software pre-installed model module, check if there is event information with "CAS" displayed for "Source." When using a GEM or GEM advanced version of MELSEC-Q series SECS/GEM communication software pre-installed model module, check if there is event information with "CASECS" displayed for "Source." When using RD55UP06-V-BZ11, RD55UP06-V-BZ13, or RD55UP06-V-BZ15, check if there is event information whose "Source" is "RD55UP06-V" and name starts with 'detail information: [CAS]' in "Detailed event log information." When using RD55UP12-V-BZ11, RD55UP12-V-BZ13, or RD55UP12-V-BZ15, check if there is event information whose "Source" is "RD55UP12-V" and name starts with 'detail information: [CAS]' in "Detailed event log information." |
| | Is SECS/GEM communication software installed on the SECS/GEM communication software pre-installed model module? | Make sure that SECS/GEM communication software is installed at the transfer destination of the SECS/GEM communication software pre-installed model module. Transfer destination: /CF, /SD, or /ROM Transfer file name: CIMOP.OUT or CIMOP_GEM.OUT For the method to install SECS/GEM communication software on the SECS/GEM communication software pre-installed model module, refer to the following:  Page 141 Updating SECS/GEM Communication Software Pre-installed Model Module |
| | Is the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module set to RUN? | If the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module set to "STOP", device control to the programmable controller CPU is not possible. When SECS/GEM communication is used, always set the switch to "RUN". |
| | Are there any other applications on the SECS/GEM communication software pre-installed model module? | If other applications are running, SECS/GEM communication software may be affected. Do not run any other applications. |
| | Is a CF card installed in the MELSEC-Q series SECS/GEM communication software pre-installed model module? | SECS/GEM communication software requires a CF card. For CF cards with confirmed operation, refer to the following:  Technical bulletin No. FA-D-0023 For the specifications of CF cards, see the website of the product. |
| | Is an SD memory card installed in the MELSEC iQ-R series SECS/GEM communication software pre-installed model module? | SECS/GEM communication software requires a SD memory card. For SD memory cards with confirmed operation, refer to the following:  MELSEC iQ-R C Intelligent Function Module User's Manual (Startup)  Technical bulletin No. FA-D-0023 For the specifications of SD cards, see the website of the product. |
| | Are there incorrect device assignment settings in SECS/GEM communication software? | Define all device assignment settings for devices used by SECS/GEM communication software. If devices not defined by the device assignment settings are configured by various functions, access is not authorized. For details on device assignment settings, refer to the following:  Page 88 Device Assignment When the MELSEC-Q series SECS/GEM communication software pre-installed model module will be used, the multi-CPU settings of the programmable controller CPU unit and MELSEC-Q series SECS/GEM communication software pre-installed model module must also be defined in the range settings of shared memory. For the multi-CPU settings, refer to the manual of each module. |
| SECS/GEM communication software transferred to the SECS/GEM communication software pre-installed model module does not start. | Is the MELSEC-Q series SECS/GEM communication software pre-installed model module operating in the basic mode? | To start SECS/GEM communication software in the basic mode, version 1.32J or later is required. Check if it is version 1.32J or later. When using version 1.31H or earlier, start the MELSEC-Q series SECS/GEM communication software pre-installed model module in the extended mode. Check the version of SECS/GEM communication software in the event history of the Setting/monitoring tools for the C Controller module. |



| Symptom | Check item | Corrective action |
|---|--|---|
| The IP address setting by PLC function does not operate properly. | Is either of the following messages displayed in the event history: "Failed To Change Address. The IP Address Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Before The Change." or "Failed To Change Address. The IP Address Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Set In GX Works3."? | <p>A value set for the IP address is invalid.</p> <p>Check the following range and set an IP address again.</p> <p>The available setting range of an IP address is from 0.0.0.1 to 223.255.255.254.</p> <p>However, note that the IP address that meets the following conditions is not available.</p> <ul style="list-style-type: none"> • Loopback address (127.0.0.0 to 127.255.255.255) • The fourth octet is 0 or 255. • All of the bits in the host address portion of the IP address (the '0' portion of a subnet mask) are set to 0 or 1. • All of the bits in the network address portion of the IP address (the '1' portion of a subnet mask) are set to 0 or 1. |
| | Is either of the following messages displayed in the event history: "Failed To Change Address. The Subnet Mask Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Before The Change." or "Failed To Change Address. The Subnet Mask Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Set In GX Works3."? | <p>A value set for the subnet mask is invalid.</p> <p>Check the following range and set a subnet mask again.</p> <p>The available setting range of a subnet mask is from 192.0.0.0 to 255.255.255.252.</p> <p>A subnet mask is a value for distinguishing the network address and host address portions of an IP address.</p> <p>It is used to indicate a border between the network address and host address portions of an IP address.</p> <p>The network address portion (the '1' portion of a subnet mask) and the host address portion (the '0' portion of a subnet mask) cannot be set alternatively.</p> |
| | Is either of the following messages displayed in the event history: "Failed To Change Address. The Default Gateway Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Before The Change." or "Failed To Change Address. The Default Gateway Of Ch.○*1 Is Invalid. CA-SECS Operates With The IP Address Set In GX Works3."? | <p>A value set for the default gateway is invalid. Check the following range and set a default gateway again.</p> <p>When not using the default gateway, set 0.0.0.0.</p> <p>The available setting range of a default gateway is from 0.0.0.1 to 223.255.255.254.</p> <p>However, note that a default gateway that meets the following conditions cannot be set.</p> <ul style="list-style-type: none"> • Loopback address (127.0.0.0 to 127.255.255.255) • The fourth octet is 255. |
| The IP address setting function does not operate properly. | Is either of the following messages displayed in the event history: "Failed To Change Address. The IP Addresses Or Segment Of Ch.1 And Ch.2 Is Overlapped. CA-SECS Operates With The IP Address Before The Change." or "Failed To Change Address. The IP Addresses Or Segment Of Ch.1 And Ch.2 Is Overlapped. CA-SECS Operates With The IP Address Set In GX Works3."? | <p>Check the following contents and set an IP address again.</p> <ul style="list-style-type: none"> • IP addresses are not duplicated between CH.1 and CH.2. • The network address portions (the '1' portion of a subnet mask) are not duplicated between CH.1 and CH.2. <p>Example: IP address of CH.1 and CH.2 are duplicated when changing the IP address of CH.1 with the IP address changing function and using the IP address of CH.2 set in GX Works3.</p> <p>If only one of the channels is changed, the address of the unchanged channel will be as shown below.</p> <p>MELSEC-Q series: Current settings are maintained.</p> <p>MELSEC iQ-R series: Operates with an IP address set in GX Works3.</p> |
| | Is either of the following messages displayed in the event history: "Failed To Change IP Address. To Use Or Not To Use Setting Of Ch.○*1 Is Setting To "Not use". Use Setting/ Monitoring Tools For The C Controller Module To Change The Usage Settings." or "Failed To Change IP Address. To Use Or Not To Use Setting Of Ch.○*1 Is Setting To "Not use" Or IP Address Is Not Set. Please Check The Settings Of The GX Works3."? | <p>The changed channel is invalid.</p> <p>Check the following contents and set the channel again by using the Setting/ monitoring tools for the C Controller module or GX Works3.</p> <ul style="list-style-type: none"> • The channel setting is enabled. • The IP address of the channel is set. |

| Symptom | Check item | Corrective action |
|--|---|--|
| SECS communication via HSMS is not possible between SECS/GEM communication software and host | Is SECS/GEM communication software started? | Refer to "SECS/GEM communication software transferred to the SECS/GEM communication software pre-installed model module does not start" in "Troubleshooting," and then check that SECS/GEM communication software has started. |
| | Is the line disconnection relay OFF? | After starting, SECS/GEM communication software attempts to connect with the correspondence destination automatically. If the HSMS communication state is SELECTED, the line disconnection relay is switched OFF, so check whether this relay is OFF. For the settings of the line disconnection relay, refer to the following:  Page 111 CA status |
| | Communication settings with the correspondence destination are incorrect. | When SECS/GEM communication software is running, and the line disconnection relay is ON, the communication setting content may be incorrect. Check whether the following items have matching settings at the equipment and host. (Example: Is the connection mode set to Active on one side and Passive on the other?) <ul style="list-style-type: none"> • Connection mode: Active/Passive • IP address: Local/Remote • IP port: Local/Remote |
| | Is the communication port of the correspondence destination opened? | Using the netstat command, check whether the port of the correspondence destination is open. |

| Symptom | Check item | Corrective action |
|---|--|--|
| A SECS message is not sent even when the sending request trigger is ON. | Is the communication-established relay ON? | SECS/GEM communication software manages the communication establishment state, and establishing an S1F13/14 transaction results in a communication establishment state, and the communication-established relay switches ON. When communication is not established, messages other than S1F13/14 cannot be sent. For the settings of the Communication established relay, refer to the following: ☞ Page 111 CA status |
| | Is the online relay ON? | SECS/GEM communication software manages the online state, and establishing an S1F1/2 transaction establishes an online state, and the online relay is switched ON. During an offline state, messages other than S1Fx cannot be sent. For the settings of the online relay, refer to the following: ☞ Page 111 CA status |
| | Is the programmable controller CPU set to "STOP" and the sending request trigger set to ON manually? | If the programmable controller CPU is set to "STOP" and messages can be sent, check the program of the programmable controller CPU. If the messages cannot be sent even when the programmable controller CPU is set to "STOP", check the above check items: "Is the communication-established relay ON?" and "Is the online relay ON?". |
| | Is there no spooling state? | A spooling state results if there is an attempt to send a message subject to spooling in an offline state. In a spooling state, the following messages subject to spooling are spooled and not sent. The spooling state is not cleared until a S6F23/24 transaction is established from the correspondence destination. For the settings of the spooling state, refer to the following: ☞ Page 135 Spooling Function (non-GEM version) ☞ Page 214 Spool Function (GEM/GEM Advanced Version) |
| | Are there incorrect device assignment settings in SECS/GEM communication software? | Define all device assignment settings for devices used by SECS/GEM communication software. If devices not defined by the device assignment settings are configured by various functions, access is not authorized. For details on device assignment settings, refer to the following: ☞ Page 88 Device Assignment When the MELSEC-Q series SECS/GEM communication software pre-installed model module will be used, the multi-CPU settings of the programmable controller CPU unit and MELSEC-Q series SECS/GEM communication software pre-installed model module must also be defined in the range settings of shared memory. For the multi-CPU settings, refer to the manual of each module. |
| | Is a device of the MELSEC-Q series SECS/GEM communication software pre-installed model module within the shared memory being used for a trigger? | When a device within the shared memory range is used as a trigger relay, configure a device of the programmable controller CPU. When a device of the MELSEC-Q series SECS/GEM communication software pre-installed model module has been configured, access from the programmable controller CPU is not possible, and it cannot be used as a trigger relay. |
| | Is "Shared Memory Synch Waiting Timer" setting inappropriate? | SECS/GEM communication software performs a synchronization check to confirm the handshake with the programmable controller CPU. By default, the "Shared Memory Synch. Waiting Timer" is configured to 10 ms. Adjust the shared memory synch. waiting timer according to the scan time of the programmable controller CPU. For the settings of the Shared Memory Synch. Waiting Timer, refer to the following: ☞ Page 104 Control detail |

| Symptom | Check item | Corrective action |
|---|--|--|
| The reception notification trigger does not switch ON even when receiving a SECS message. | Has an S9 related error occurred? | Check whether an S9 related error has occurred in the SECS communication log. If an error has occurred, remove the cause of the error. For the log reference method, refer to the following:  Page 166 Log Output |
| | The transaction created with the settings tool does not match the list structure of the receiving message. | When the message received from the correspondence destination is different from the list structure, item type, and data length of the transaction created with the setting tool, an S9 related error message is sent, and the corresponding reception notification trigger is not switched ON. Review the structure of the transaction. For the transaction creation method, refer to the following:  Page 67 Transaction List |
| | Is the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module set to RUN? | If the Mode switch of the MELSEC-Q series SECS/GEM communication software pre-installed model module set to "STOP", device control to the programmable controller CPU is not possible. When SECS/GEM communication is used, always set the switch to "RUN". |
| | Are there incorrect device assignment settings in SECS/GEM communication software? | Define all device assignment settings for devices used by SECS/GEM communication software. If devices not defined by the device assignment settings are configured by various functions, access is not authorized. For details on device assignment settings, refer to the following:  Page 88 Device Assignment When the MELSEC-Q series SECS/GEM communication software pre-installed model module will be used, the multi-CPU settings of the programmable controller CPU unit and MELSEC-Q series SECS/GEM communication software pre-installed model module must also be defined in the range settings of shared memory. For the multi-CPU settings, refer to the manual of each module. |
| Communication erroneously stops during SECS communication. (The communication established relay turns OFF.) | Has a line disconnection request been received from the programmable controller CPU? | Check the PLC log and check whether a line disconnection request has been received. If an unintentional request has been received, remove the cause. |
| | Has a line disconnection request been received from the correspondence destination? | Check the SECS communication log, and then check whether a line disconnection request has been received. If an unintentional request has been received, remove the cause. |
| | Check for physical problems with the LAN cable. | Check whether the LAN cable has been unplugged or disconnected. |
| | Are IP addresses conflicting? | If the IP address of the C Controller module is conflicting, the line may be disconnected. If the IP address was conflicting, remove the cause. |
| | Is CIM Control READY OFF? | If the CIM Control READY is set to OFF in the program of the programmable controller CPU, SECS/GEM communication software no longer operates. Do not operate by the program of the programmable controller CPU. |
| | Is the load on SECS/GEM communication software high? | Check the SECS communication log, and then check whether DM sending failure has occurred. When the load on SECS/GEM communication software is high, Send Complete Waiting Timeout occurs. To reduce the load, reduce the frequency of sending request or set a larger value for "Send Complete Waiting Timer." For the settings of "Send Complete Waiting Timer," refer to the following:  Page 96 Control Check the SECS communication log, and then check whether transmission queue full has occurred. To reduce the load, reduce the frequency of sending request or set a larger number for "Number Of Transaction Queues For PLC Transmission." For the settings of "Number Of Transaction Queues For PLC Transmission," refer to the following:  Page 96 Control |
| The sending and receiving of SECS messages are delayed. | Are the cache settings of the referent device set? | When a device defined in the CA-SECS device assignment (I/O assignment) of device assignment settings is configured as the data referent of the transaction item, the speed performance can be improved by setting the cache settings of the corresponding transaction. For the transaction cache settings, refer to the following:  Page 71 Cache settings |
| | Is the trigger hold time of the sending request trigger inappropriate? | The detection time of the sending request trigger can be adjusted by the settings of the trigger hold time. Configure an appropriate time. For the settings of the trigger hold time, refer to the following:  Page 73 Message information |

| Symptom | Check item | Corrective action |
|--|---|--|
| A SECS message is sent twice erroneously by a single sending request. | Is "Shared Memory Synch Waiting Timer" setting inappropriate? | SECS/GEM communication software performs a synchronization check to confirm the handshake with the programmable controller CPU. By default, the "Shared Memory Synch. Waiting Timer" is configured to 10 ms. Adjust the shared memory synch. waiting timer according to the scan time of the programmable controller CPU. For the settings of the Shared Memory Synch. Waiting Timer, refer to the following:  Page 104 Control detail |
| The log cannot be accessed by the settings tool of SECS/GEM communication software. | Are the log output settings configured? | Browse to [Log] ⇒ [Log Output Setting], and then check the settings to output the log. For log output settings, refer to the following:  Page 166 Log Output |
| | Is the log output trigger ON before SECS/GEM communication software starts? | When log aggregation is to be controlled by the log output trigger, use the CIM Control READY relay, make sure that SECS/GEM communication software has started, and then switch on the log output trigger. For log output trigger settings, refer to the following:  Page 166 Log Output |
| | Is the mode switch of the C Controller module "STOP"? | If the mode switch of the C Controller module is "STOP", SECS/GEM communication software cannot output the log. When SECS/GEM communication is used, always set the switch to "RUN". |
| | Are the connection destination settings incorrect? | Make sure that the entries of the IP address, username, and password of the connection destination are correct. |
| | The C Controller module or C intelligent function module time is offset | The time information of the log data is dependent on the time of the C Controller module or C intelligent function module. Check the time of the C Controller module or C intelligent function module, and then specify the referenced time. For the method to access the log using the settings tool, refer to the following:  Page 175 Log view |
| | The settings tool is not installed on the personal computer | When settings are configured at [Log] ⇒ [Log Output Setting] ⇒ [Device Display Setting] to display the log on the equipment display, a text-format log file (*.log) is output under the "Log output destination/GOT/" folder. The text-format log file can be acquired and accessed via FTP. Furthermore, it is possible to use the display register to access the content of the text-format log file at the equipment display, etc. For details on the text-format log file, refer to the following:  Page 184 View the log on display device (GOT) |
| A SECS error message is generated. | Are too many log files created? | Check the output destination of log files and check if too many log files (.log) exist in the destination. If too many log files exist, logs cannot be referred to because it takes time to read the files. An output destination of log files can be set in "Log Output" by selecting [Log] ⇒ [Log Output Setting] ⇒ [Common Setting]. Normally, one folder can store up to 100 files or less. If too many log files are stored in a folder, logs cannot be referred to using the [Update View] button of the log view function. Copy log files onto a personal computer via FTP, and read logs using the [Load] button of the log view function. A log file is named as shown below. <ul style="list-style-type: none"> • SECS logs: S*.log • Programmable controller log: P*.log • User log: U*.log |
| | Is the online relay ON? | SECS/GEM communication software manages the online state, and establishing an S1F1/2 transaction establishes an online state, and the online relay is switched ON. During an offline state, messages other than S1Fx cannot be sent. For the settings of the online relay, refer to the following:  Page 111 CA status |
| A 'Memory insufficient.' message is displayed by SECS/GEM communication software setting tool. | Is the SECS/GEM communication software setting tool being used when the personal computer is under a high load? | Close unnecessary applications to reduce the load of the personal computer before using SECS/GEM communication software setting tool. |
| | Is SECS/GEM communication software consuming a large amount of virtual memory? | Check the device assignment settings. Do not configure devices that will not or cannot be used. Furthermore, when the number of bit devices (word count) is configured, make sure the entered value is the word count. For details on device assignment settings, refer to the following:  Page 88 Device Assignment |

| Symptom | Check item | Corrective action |
|---|---|---|
| Converting a project to an RD55UP12-V project fails. | Is the conversion attempted from a project created in the setting tool with the version 1.34L or earlier? | Convert a project to be converted so that its version is 1.35M or later. For details on the conversion method between module types, refer to the following:  Page 52 Conversion |
| An IP address cannot be changed in "IP Address Setting By PLC." | Are the values of the IP address, subnet mask, and default gateway out of range? | The setting range is a range that can be set in each module. For the applicable address range, refer to the manual of each module. |
| | Has the C intelligent function module been initialized? | Check that the "CAS" folder exists in the "/ROM" folder of the SECS/GEM communication software pre-installed model module. When initializing the SECS/GEM communication software pre-installed model module, refer to the following to install SECS/GEM communication software and register a license again.  Page 23 When initializing a SECS/GEM communication software pre-installed model module |

*1 "○" in "Ch.○" indicates an invalid channel number.

APPENDIX

Appendix 1 Input/Output Signals

This section explains the input/output signals of a MELSEC iQ-R series SECS/GEM communication software pre-installed model module.

Only specifications that differ with the C intelligent function module are explained. For common specifications, refer to the following:

📖 MELSEC iQ-R C Intelligent Function Module User's Manual (Application)

Initialization setting of host station device

input signal

| Device number | Description |
|---------------|---------------------------|
| X10 | CIM Control READY |
| X11 | Disconnected |
| X12 | Communication Established |
| X13 | Online |
| X14 | Not set |
| X15 | Not set |
| X16 | Not set |
| X17 | Not set |
| X18 | Not set |
| X19 | Not set |
| X1A | Not set |
| X1B | Not set |
| X1C | Not set |
| X1D | Not set |
| X1E | Not set |
| X1F | SD error |

Output signal

| Device number | Description |
|---------------|--------------------|
| Y10 | Not set |
| Y11 | Line Disconnection |
| Y12 | Line Connection |
| Y13 | Online Start |
| Y14 | Offline |
| Y15 | Not set |
| Y16 | Not set |
| Y17 | Not set |
| Y18 | Not set |
| Y19 | Not set |
| Y1A | Not set |
| Y1B | Not set |
| Y1C | Not set |
| Y1D | Not set |
| Y1E | Not set |
| Y1F | Not set |

Appendix 2 Data Type Conversion

This section explains data type conversion.

Conversion from SECS/GEM communication software to programmable controller CPU

■Binary→ASCII

| Source | Dest | | | | | | | | | | | | |
|--|--|---------------|------|--------------|------------------|-------------------|---------|----------|---------------|-----|---------|---|-----|
| <div>• I1, I2, U1, or U2</div> <div>I1 or U1</div> <div>I2 or U2</div> | <div>• ASCII</div> <div>D</div> <div>D+1</div> <div>D+2</div> <div>D+3</div> <table><tr><td>Ten thousands</td><td>Sign</td></tr><tr><td>Hundred</td><td>Thousand</td></tr><tr><td>One</td><td>Ten</td></tr><tr><td>0</td><td></td></tr></table> | Ten thousands | Sign | Hundred | Thousand | One | Ten | 0 | | | | | |
| Ten thousands | Sign | | | | | | | | | | | | |
| Hundred | Thousand | | | | | | | | | | | | |
| One | Ten | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | |
| <div>• I4 or U4</div> <div>I4 or U4</div> | <div>• ASCII</div> <div>D</div> <div>D+1</div> <div>D+2</div> <div>D+3</div> <div>D+4</div> <div>D+5</div> <table><tr><td>Billion</td><td>Sign</td></tr><tr><td>Ten millions</td><td>Hundred millions</td></tr><tr><td>Hundred thousands</td><td>Million</td></tr><tr><td>Thousand</td><td>Ten thousands</td></tr><tr><td>Ten</td><td>Hundred</td></tr><tr><td>0</td><td>One</td></tr></table> | Billion | Sign | Ten millions | Hundred millions | Hundred thousands | Million | Thousand | Ten thousands | Ten | Hundred | 0 | One |
| Billion | Sign | | | | | | | | | | | | |
| Ten millions | Hundred millions | | | | | | | | | | | | |
| Hundred thousands | Million | | | | | | | | | | | | |
| Thousand | Ten thousands | | | | | | | | | | | | |
| Ten | Hundred | | | | | | | | | | | | |
| 0 | One | | | | | | | | | | | | |

■ASCII→Binary

| Source | Dest | | | | | | | | | | | | | | |
|--|---------------|------|---|---------------|---|----------|---|---------|---|-----|---|-----|---|---|--|
| <div>• ASCII</div> <table><tr><td>0</td><td>Sign</td></tr><tr><td>1</td><td>Ten thousands</td></tr><tr><td>2</td><td>Thousand</td></tr><tr><td>3</td><td>Hundred</td></tr><tr><td>4</td><td>Ten</td></tr><tr><td>5</td><td>One</td></tr><tr><td>6</td><td>0</td></tr></table> <div>From the sign, specify a numerical character string to the stopper. Signs can be omitted. Treated as + when signs were omitted.</div> | 0 | Sign | 1 | Ten thousands | 2 | Thousand | 3 | Hundred | 4 | Ten | 5 | One | 6 | 0 | <div>• I1, I2, U1, or U2</div> <div>D</div> <div>I1, I2, U1, or U2</div> |
| 0 | Sign | | | | | | | | | | | | | | |
| 1 | Ten thousands | | | | | | | | | | | | | | |
| 2 | Thousand | | | | | | | | | | | | | | |
| 3 | Hundred | | | | | | | | | | | | | | |
| 4 | Ten | | | | | | | | | | | | | | |
| 5 | One | | | | | | | | | | | | | | |
| 6 | 0 | | | | | | | | | | | | | | |

| Source | | Dest |
|---------|-------------------|---------------------|
| • ASCII | | • I4 or U4 |
| 0 | Sign | D Low-order word |
| 1 | Billion | D+1 High-order word |
| 2 | Hundred millions | |
| 3 | Ten millions | |
| 4 | Million | |
| 5 | Hundred thousands | |
| 6 | Ten thousands | |
| 7 | Thousand | |
| 8 | Hundred | |
| 9 | Ten | |
| 10 | One | |
| 11 | 0 | |

From the sign, specify a numerical character string to the stopper.
Signs can be omitted. Treated as + when signs were omitted.

■ASCII→DATE-A

| Source | | Dest |
|---------|---|--|
| • ASCII | | • DATE-A |
| 0 | y | D Year (0 to 99) |
| 1 | y | D+1 Month (1 to 12) |
| 2 | y | D+2 Date (1 to 31) |
| 3 | y | D+3 Hour (0 to 23) |
| 4 | m | D+4 Minute (0 to 59) |
| 5 | m | D+5 Second (0 to 59) |
| 6 | d | D+6 Day of week (0 to 6: Sunday to Saturday) |
| 7 | d | |
| 8 | h | |
| 9 | h | |
| 10 | m | |
| 11 | m | |
| 12 | s | |
| 13 | s | |
| 14 | c | |
| 15 | c | |

For year data, only the last two digits are effective. (The first two digits are ignored.)
cc is not registered to a register.

■ASCII→DATE-Q

| Source | | | Dest | | |
|---------|---|--|-------------------------------------|-------------|----------------------|
| • ASCII | | | • DATE-Q | | |
| 0 | y | | D | Year | (2000 to xxxx) |
| 1 | y | | D+1 | Month | (1 to 12) |
| 2 | y | | D+2 | Date | (1 to 31) |
| 3 | y | | D+3 | Hour | (0 to 23) |
| 4 | m | | D+4 | Minute | (0 to 59) |
| 5 | m | | D+5 | Second | (0 to 59) |
| 6 | d | | D+6 | Day of week | (0 to 6: Sun to Sat) |
| 7 | d | | cc is not registered to a register. | | |
| 8 | h | | | | |
| 9 | h | | | | |
| 10 | m | | | | |
| 11 | m | | | | |
| 12 | s | | | | |
| 13 | s | | | | |
| 14 | c | | | | |
| 15 | c | | | | |

■ASCII→Float

| Source | Dest | | | | | | | | | | | | | | | |
|--|-------------------------------|----------|----------|---------------|----------|------------|---|---|---|------------------------------|-----|-------------------------------|-----|-------------------------------|-----|-------------------------------|
| <div>• ASCII</div> <div><table><tr><td>Sign</td></tr><tr><td>Number 1</td></tr><tr><td>Number 2</td></tr></table><div>-</div><table><tr><td>Decimal point</td></tr><tr><td>Number n</td></tr><tr><td>Number n+1</td></tr><tr><td>0</td></tr></table><div>Signs can be omitted. Treated as + when signs were omitted. 0 is the stopper.</div></div> | Sign | Number 1 | Number 2 | Decimal point | Number n | Number n+1 | 0 | <div>• F4</div> <div><table><tr><td>D</td><td>Float type: Bit 0 to Bit 15</td></tr><tr><td>D+1</td><td>Float type: Bit 16 to Bit 31</td></tr></table></div> | D | Float type: Bit 0 to Bit 15 | D+1 | Float type: Bit 16 to Bit 31 | | | | |
| Sign | | | | | | | | | | | | | | | | |
| Number 1 | | | | | | | | | | | | | | | | |
| Number 2 | | | | | | | | | | | | | | | | |
| Decimal point | | | | | | | | | | | | | | | | |
| Number n | | | | | | | | | | | | | | | | |
| Number n+1 | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | |
| D | Float type: Bit 0 to Bit 15 | | | | | | | | | | | | | | | |
| D+1 | Float type: Bit 16 to Bit 31 | | | | | | | | | | | | | | | |
| <div>• ASCII</div> <div><table><tr><td>Sign</td></tr><tr><td>Number 1</td></tr><tr><td>Number 2</td></tr></table><div>-</div><table><tr><td>Decimal point</td></tr><tr><td>Number n</td></tr><tr><td>Number n+1</td></tr><tr><td>0</td></tr></table><div>Signs can be omitted. Treated as + when signs were omitted. 0 is the stopper.</div></div> | Sign | Number 1 | Number 2 | Decimal point | Number n | Number n+1 | 0 | <div>• F8</div> <div><table><tr><td>D</td><td>Double type: Bit 0 to Bit 15</td></tr><tr><td>D+1</td><td>Double type: Bit 16 to Bit 31</td></tr><tr><td>D+2</td><td>Double type: Bit 32 to Bit 47</td></tr><tr><td>D+3</td><td>Double type: Bit 48 to Bit 63</td></tr></table></div> | D | Double type: Bit 0 to Bit 15 | D+1 | Double type: Bit 16 to Bit 31 | D+2 | Double type: Bit 32 to Bit 47 | D+3 | Double type: Bit 48 to Bit 63 |
| Sign | | | | | | | | | | | | | | | | |
| Number 1 | | | | | | | | | | | | | | | | |
| Number 2 | | | | | | | | | | | | | | | | |
| Decimal point | | | | | | | | | | | | | | | | |
| Number n | | | | | | | | | | | | | | | | |
| Number n+1 | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | |
| D | Double type: Bit 0 to Bit 15 | | | | | | | | | | | | | | | |
| D+1 | Double type: Bit 16 to Bit 31 | | | | | | | | | | | | | | | |
| D+2 | Double type: Bit 32 to Bit 47 | | | | | | | | | | | | | | | |
| D+3 | Double type: Bit 48 to Bit 63 | | | | | | | | | | | | | | | |

■Float→ASCII

| Source | Dest |
|--|---|
| <div><div>• F4</div><div>Float type</div></div> | <div><div>• ASCII</div><div><div>D</div><div>D+1</div><div>D+2</div><div>-</div><div>Decimal point</div><div>(Decimal) Number 2</div><div>(Decimal) Number 4</div><div>-</div><div>0</div></div><div><div>Number 1</div><div>Number 3</div><div>Number 5</div><div>Number m</div><div>(Decimal) Number 1</div><div>(Decimal) Number 3</div><div>(Decimal) Number n</div></div></div> <div>Signs can be omitted. Treated as + when signs were omitted. 0 is the stopper.</div> |
| <div><div>• F8</div><div>Double type</div></div> | <div><div>• ASCII</div><div><div>D</div><div>D+1</div><div>D+2</div><div>-</div><div>Decimal point</div><div>(Decimal) Number 2</div><div>(Decimal) Number 4</div><div>-</div><div>0</div></div><div><div>Number 1</div><div>Number 3</div><div>Number 5</div><div>Number m</div><div>(Decimal) Number 1</div><div>(Decimal) Number 3</div><div>(Decimal) Number n</div></div></div> <div>Signs can be omitted. Treated as + when signs were omitted. 0 is the stopper.</div> |

Conversion from programmable controller CPU to SECS/GEM communication software

■Binary→ASCII

| Source | Dest |
|--|---|
| <div>• I1, I2, U1, or U2</div> <div>D<div>I1, U1, I2, or U2</div></div> | <div>• ASCII</div> <div><div>0<div>Sign</div></div><div>1<div>Number 1</div></div><div>2<div>Number 2</div></div><div>3<div>Number 3</div></div><div>-<div>Number n</div><div>0</div></div></div> <div>Signs (+) are omitted.</div> |
| <div>• I4 or U4</div> <div>D<div>Low-order word</div></div> <div>D+1<div>High-order word</div></div> | <div>• ASCII</div> <div><div>0<div>Sign</div></div><div>1<div>Number 1</div></div><div>2<div>Number 2</div></div><div>3<div>Number 3</div></div><div>-<div>Number n</div><div>0</div></div></div> <div>Signs (+) are omitted.</div> |

■ASCII→Binary

| Source | Dest |
|--|--|
| <div>• ASCII</div> <div>D<div><div>Ten thousands</div><div>Sign</div></div></div> <div>D+1<div><div>Hundred</div><div>Thousand</div></div></div> <div>D+2<div><div>One</div><div>Ten</div></div></div> <div>D+3<div>0</div></div> <div>Fixed format</div> | <div>• I1, I2, U1, or U2</div> <div><div>I1, I2, U1, or U2</div></div> |
| <div>• ASCII</div> <div>D<div><div>Billion</div><div>Sign</div></div></div> <div>D+1<div><div>Ten millions</div><div>Hundred millions</div></div></div> <div>D+2<div><div>Hundred thousands</div><div>Million</div></div></div> <div>D+3<div><div>Thousand</div><div>Ten thousands</div></div></div> <div>D+4<div><div>Ten</div><div>Hundred</div></div></div> <div>D+5<div><div>0</div><div>One</div></div></div> <div>Fixed format</div> | <div>• I4 or U4</div> <div><div>I4 or U4</div></div> |

A

■DATE-A→ASCII

| Source | | | Dest | | |
|----------|-------------|------------------------------|---------|--|---|
| • DATE-A | | | • ASCII | | |
| D | Year | (0 to 99) | 0 | | y |
| D+1 | Month | (1 to 12) | 1 | | y |
| D+2 | Date | (1 to 31) | 2 | | y |
| D+3 | Hour | (0 to 23) | 3 | | y |
| D+4 | Minute | (0 to 59) | 4 | | m |
| D+5 | Second | (0 to 59) | 5 | | m |
| D+6 | Day of week | (0 to 6: Sunday to Saturday) | 6 | | d |
| | | | 7 | | d |
| | | | 8 | | h |
| | | | 9 | | h |
| | | | 10 | | m |
| | | | 11 | | m |
| | | | 12 | | s |
| | | | 13 | | s |
| | | | 14 | | c |
| | | | 15 | | c |

■DATE-Q→ASCII

| Source | | | Dest | | |
|----------|-------------|----------------------|---------|--|---|
| • DATE-Q | | | • ASCII | | |
| D | Year | (2000 to xxxx) | 0 | | y |
| D+1 | Month | (1 to 12) | 1 | | y |
| D+2 | Date | (1 to 31) | 2 | | y |
| D+3 | Hour | (0 to 23) | 3 | | y |
| D+4 | Minute | (0 to 59) | 4 | | m |
| D+5 | Second | (0 to 59) | 5 | | m |
| D+6 | Day of week | (0 to 6: Sun to Sat) | 6 | | d |
| | | | 7 | | d |
| | | | 8 | | h |
| | | | 9 | | h |
| | | | 10 | | m |
| | | | 11 | | m |
| | | | 12 | | s |
| | | | 13 | | s |
| | | | 14 | | c |
| | | | 15 | | c |

■Float→ASCII

| Source | Dest |
|--|--|
| <div>• F4</div> <div>D<div>Float type: Bit 0 to Bit 15</div></div> <div>D+1<div>Float type: Bit 16 to Bit 31</div></div> | <div>• ASCII</div> <div>Sign</div> <div>Number 1</div> <div>Number 2</div> <div>Number 3</div> <div>-</div> <div>Number m</div> <div>Decimal point</div> <div>(Decimal) Number 1</div> <div>(Decimal) Number 2</div> <div>-</div> <div>(Decimal) Number n</div> <div>0</div> |
| <div>• F8</div> <div>D<div>Double type: Bit 0 to Bit 15</div></div> <div>D+1<div>Double type: Bit 16 to Bit 31</div></div> <div>D+2<div>Double type: Bit 32 to Bit 47</div></div> <div>D+3<div>Double type: Bit 48 to Bit 63</div></div> | <div>• ASCII</div> <div>Sign</div> <div>Number 1</div> <div>Number 2</div> <div>Number 3</div> <div>-</div> <div>Number m</div> <div>Decimal point</div> <div>(Decimal) Number 1</div> <div>(Decimal) Number 2</div> <div>-</div> <div>(Decimal) Number n</div> <div>0</div> |

Appendix 3 Reserved Transactions

This section shows transactions and message formats used internally by SECS/GEM communication software.

List of reserved transactions and format

The following tables show reserved transactions and message formats.

The names and formats of reserved transactions are reserved and defined by SECS/GEM communication software and cannot be used for user definitions.

| No. | Name | Transaction | Description |
|-----|---|--|--|
| 1 | DTR ^{*1} (Date and time request) | Primary message: S2F17(H→E) Secondary message: S2F18(H←E) | Sends clock data of the SECS/GEM communication software pre-installed model module. The programmable controller CPU is not notified. |
| 2 | RSD ^{*1} (Spooled data request) | Primary message: S6F23(H→E) Secondary message: S6F24(H←E) | Requests the spooled data transfer from the host. |
| 3 | CA_ARS ^{*1} (Alarm report transmission) | Primary message: S5F1(H←E) Secondary message: S5F2(H→E) | Used by the CA-SECS alarm function. |
| 4 | H_SCABT (Host scenario interruption request) | Primary message: S99F1(H→E) Secondary message: Unused | Interrupts the ongoing scenario from the host. |
| 5 | E_SCABT (Equipment scenario interruption notification) | Primary message: S99F3(H←E) Secondary message: Unused | Notifies that the ongoing scenario was interrupted by equipment request or processing error. |

*1 Reserved transaction of non-GEM version.

1. DTR (Date and time request)

| | |
|--|---|
| <S2F17>(H→E) (Header only) <S2F18>(H←E) A<TIME>YYYYMMDDhhmmsscc | Acquires the time configured to the CPU of the SECS/GEM communication software pre-installed model module, and then returns it as 16-byte ASCII data. This transaction does not involve notification to the programmable controller CPU or acquisition of the equipment time data. |
|--|---|

2. RSD (Spooled data request)

| | |
|---|--|
| <S6F23>(H→E) U1<RSDC>...(1) <S6F24>(H←E) B<RSDA>...(2) | (1) The following code will apply. 0: Transfer the spooled message(s) 1: Discard the spooled messages(s) (2) One of the following values is returned. 0: OK (initiate the spool output) 1: Error 2: No spooled data exists. • If communication has been established, this transaction can be executed even before CA-SECS becomes online (i.e., before the transaction S1F1 is executed). • The reception of this message will not be notified to the programmable controller CPU. |
|---|--|

3. CA_ARS (Alarm report transmission)

| | |
|---|--|
| <S5F1>(H←E) <L, 3> B<ALCD>...(1) U2<ALID>...(2) A<ALTXT>...(3) <S5F2>(H→E) B<ACKC5> | (1) The settings in the Alarm Data Setting window are edited as follows and then transmitted. When an alarm occurs: The first bit is "1". When an alarm is reset: The first bit is "0". (2) The set value is transmitted as it is. (3) The set text is transmitted as it is. Up to 120 characters can be transmitted. • Response monitoring is enabled in accordance with the standard for SECS-II. However, the reception notification of a secondary message will not be reported to the programmable controller CPU. • To send an alarm report as a normal transaction triggered by the sending request, set the user definition by another transaction name. |
|---|--|

4. H_SCABT (Host scenario interruption request)

| | |
|-------------------------------|--|
| <S99F1>(H→E) (Header only) | This transaction is transmitted from the host to interrupt the ongoing scenario. |
|-------------------------------|--|

5. E_SCABT (Equipment scenario interruption notification)

| | |
|-------------------------------|--|
| <S99F3>(H←E) (Header only) | When the ongoing scenario was interrupted by any other than the host scenario interruption request, this transaction is transmitted to the host. |
|-------------------------------|--|

Special transactions

The following tables show special transactions and message formats.

The special transactions shown below are user definable transactions but are specially processed by SECS/GEM communication software internally at the same time as a notification to the programmable controller CPU.

| No. | Name | Transaction | Description |
|-----|----------------------------------|--|---|
| 1 | R (Online request) | Primary message: S1F1(H↔E) Secondary message: S1F2(H↔E) | Establishes the SECS/GEM communication software online status when this transaction is completed |
| 2 | CR (Communication request) | Primary message: S1F13(H↔E) Secondary message: S1F14(H↔E) | Where line disconnection is not considered as offline, this transaction will be automatically transmitted when the line is reconnected. |
| 3 | DTR_2 (Date and time request) | Primary message: S2F17(H←E) Secondary message: S2F18(H→E) | Configures the time data returned from the host to the clock of the SECS/GEM communication software pre-installed model module. |
| 4 | DTS (Date and time setting) | Primary message: S2F31(H→E) Secondary message: S2F32(H←E) | Configures clock data of the SECS/GEM communication software pre-installed model module. |

| | |
|--|--|
| 1. R (Online request) | |
| <S1F1>(H↔E) (Header only) <S1F2>(H↔E) <L, 2> A<MDLN> A<SOFTREV> | SECS/GEM communication software becomes online when this transaction is completed. Online status established based on this transaction is determined from the SF code. Even if this transaction has a different name or format from that shown in the left, the same processing will be performed. |
| 2. CR (Communication request) | |
| <S1F13>(H↔E) <L, 2> A<MDLN> A<SOFTREV> <S1F14>(H↔E) <L, 2> B<COMMACK> <L, 2> A<MDLN> A<SOFTREV> | When the "Automatically Transmit S1F13 Upon Line Reconnection" is enabled in the Option Setting window, this transaction is transmitted automatically to the host when the line is reconnected. If the transaction is undefined, automatic transmission will not be performed. Online status established based on this transaction is determined from the SF code. Even if this transaction has a different name or format from that shown in the left, the same processing will be performed. <ul style="list-style-type: none">Setting the parent list of MDLN and SOFTREV to a variable length list makes it possible for the host to transmit this as <L, 0>.When handshake for each transaction is enabled, note that the reception of secondary messages at the time of automatic transmission will no longer be notified to the programmable controller CPU. |
| 3. DTR_2 (Date and time request) | |
| <S2F17>(H←E) (Header only) <S2F18>(H→E) A<TIME>YYYYMMDDhhmmsscc ^{*1,2} | The time data received in <TIME> is configured in the clock of the SECS/GEM communication software pre-installed model module. However, for a MELSEC-Q series SECS/GEM communication software pre-installed model module, configure the time of CPU No.1 by the programmable controller CPU because a multiple CPU system depends on the time zone of CPU No.1. Notification to the programmable controller CPU is performed according to the setting. This differs with a DTS transaction in that the time of the host is acquired by a request on the programmable controller CPU. The transaction name "DTR" is not available since it is already used for a reserved transaction. When any other name is given, the sequence above will be executed and the reserved transaction "DTR" will be invalid. (The reserved transaction "DTR" is a time request from the host). |

- *1 When the number of units of data in <TIME> is set to 16 and variable length setting is enabled, it supports the reception of the following three formats:
 16 byte format (YYYYMMDDhhmmsscc)
 14 byte format (YYYYMMDDhhmmss)
 12 byte format (YYMMDDhhmmss)
- *2 <TIME> can be set within the range from 0:00:00 on January 1st, 2000 to 23:59:59 on December 31st, 2079.

4. DTS (Date and time setting)

| | |
|--|---|
| <p><S2F31>(H→E) A<TIME>YYYYMMDDhhmmsscc^{*1,*2} <S2F32>(H←E) B<TIACK></p> | <p>The time data given in <TIME> is configured in the clock of the of the SECS/GEM communication software pre-installed model module.</p> <p>However, for a MELSEC-Q series SECS/GEM communication software pre-installed model module, configure the time of CPU No.1 by the programmable controller CPU because a multiple CPU system depends on the time zone of CPU No.1.</p> <p>Notification to the programmable controller CPU is performed according to the setting.</p> <p>The online status setting of the C Controller module with this transaction is based on the SF code. Even if the transaction name differs from the name on the left, the processing will be the same.</p> |
|--|---|

*1 When the number of units of data in <TIME> is set to 16 and variable length setting is enabled, it supports the reception of the following three formats:

- 16 byte format (YYYYMMDDhhmmsscc)
- 14 byte format (YYYYMMDDhhmmss)
- 12 byte format (YYMMDDhhmmss)

*2 <TIME> can be set within the range from 0:00:00 on January 1st, 2000 to 23:59:59 on December 31st, 2079.

System error (S9Fx)

SECS/GEM communication software provides the following error messages.

| No. | Name | Transaction | Description |
|-----|-------------------------------------|-------------|---|
| 1 | UDN (Incorrect device ID) | S9F1(H←E) | Notifies that the device ID in the header of the received message is different from the device ID set in SECS/GEM communication software. |
| 2 | USN (Unrecognized Stream Type) | S9F3(H←E) | The Stream code of a received message notifies of a lack of the definition at SECS/GEM communication software. |
| 3 | UFN (Unrecognized Function Type) | S9F5(H←E) | The Function code of a received message notifies of a lack of the definition at SECS/GEM communication software. |
| 4 | IDN (Illegal Data) | S9F7(H←E) | Notifies that the format of the received message from the host is different from the message format set in SECS/GEM communication software. |
| 5 | TTN (Transaction time-out) | S9F9(H←E) | Notifies that T3 timer (host response monitoring timer) time-out occurred. |
| 6 | DLN (Data Too Long) | S9F11(H←E) | Notifies that CA-SECS received an improperly sized message that cannot be processed by SECS/GEM communication software. |

1. Incorrect device ID, 2. Unrecognized Stream Type, 3. Unrecognized Function Type, 4. Illegal Data, 6. Data Too Long

| | |
|---|---|
| <p>Example: S9F1 <S9F1>(H←E) B10<MHEAD> <S9F2> (Unused)</p> | <p>The header of the received message (erroneous message) is configured to <MHEAD>.</p> |
|---|---|

5. Transaction time-out

| | |
|---|---|
| <p>S9F9 <S9F9>(H←E) B10<SHEAD> <S9F10> (Unused)</p> | <p>The header of the sending message (primary) in the timed-out transaction is configured to <SHEAD>.</p> |
|---|---|

S9F13. CTN (Conversation Timeout)

| | |
|--|---|
| <p>S9F13 <S9F13>(H←E) <L, 2> A<MEXP> - <EDID> <S9F14> (Unused)</p> | <p>User definition of S9F13 is necessary.</p> |
|--|---|

Appendix 4 SECS Item List

This section shows a list of items SECS/GEM communication software uses with GEM scenarios.

| Item name | Description | Item format | | |
|------------|---|--|--|---------------|
| | | Supported data type | Supported data size (Byte) | Changeability |
| ACKC5 | Confirmation code | BIN | 1 | × |
| ACKC6 | Confirmation code | BIN | 1 | × |
| ACKC7 | Confirmation code | BIN | 1 | × |
| ALCD | Alarm code | BIN | 1 | ○ |
| ALED | Alarm on/off code | BIN | 1 | ○ |
| ALID | Alarm ID | U1, U2, U4 | 1 | ○ |
| ALTX | Alarm text | ASCII | Maximum of 120 | ○ |
| CEED | Collected events or trace on/off code | BOOL | 1 | ○ |
| CEID | Acquired event ID | U1, U2, U4 | 1 | ○ |
| COMMACK | Communication establishment confirmation code | BIN | 1 | × |
| DATAID | Data ID | U1, U2, U4 | 1 | ○ |
| DATALENGTH | Total number of sending data bytes | U1, U2, U4 | 1 | ○ |
| DRACK | Definition report agreement code | BIN | 1 | × |
| DSPER | Data acquisition time | ASCII | 6, 8 | ○ |
| EAC | Equipment confirmation code | BIN | 1 | × |
| ECDEF | Equipment variable default value | — | — | × |
| ECID | Equipment constant ID | U1, U2, U4 | 1 | ○ |
| ECMAX | Equipment variable maximum value | — | — | × |
| ECMIN | Equipment variable minimum value | — | — | × |
| ECNAME | Equipment constant name | ASCII | Maximum of 32 | ○ |
| ECV | Device constant | BIN, BOOL, ASCII, JIS8, I1, I2, I4, U1, U2, U4, F4, F8 | Maximum of 2048 for BIN, ASCII, and JIS8 Otherwise, 1 | ○ |
| EDID | Date ID that should be received | U1, U2, U4 | 1 | × |
| ERACK | Enable/disable event report confirmation code | BIN | 1 | × |
| FCNID | Function identification | U1 | 1 | ○ |
| GRANT | Permission code | BIN | 1 | × |
| GRANT6 | Sending permission | BIN | 1 | × |
| LIMITACK | Confirmation code for variable limit attribute setting | BIN | 1 | × |
| LIMITID | Specific limit for a variable referenced by a corresponding limit attribute | BIN | 1 | ○ |
| LIMITMAX | Maximum permitted value for limit value of specific variable | — | — | × |
| LIMITMIN | Minimum permitted value for limit value of specific variable | — | — | × |
| LOWERDB | Dead band lower limit | — | — | × |
| LRACK | Link report confirmation code | BIN | 1 | × |
| LVACK | Response code for variable limit attribute setting | BIN | 1 | × |
| MDLN | Equipment form | ASCII | Maximum of 20 | ○ |
| MEXP | Message SxxFyy that should be received | ASCII | Minimum of 2, maximum of 6 | ○ |
| OFLACK | Confirmation code for offline request | BIN | 1 | × |
| ONLACK | Confirmation code for online request | BIN | 1 | × |
| PPID | Process program ID | ASCII | Maximum of 80 | ○ |
| REPGSZ | Report group size | U1, U2, U4 | 1 | ○ |
| RPTID | Report ID | U1, U2, U4 | 1 | ○ |

| Item name | Description | Item format | | |
|-----------|-----------------------------------|--|--|---------------|
| | | Supported data type | Supported data size (Byte) | Changeability |
| RSDA | Spoiled data request confirmation | BIN | 1 | × |
| RSDC | Spoiled data request code | U1 | 1 | ○ |
| RSPACK | Spoiled data setting confirmation | BIN | 1 | × |
| SMPLN | Sample number | U1, U2, U4 | 1 | ○ |
| SOFTREV | Revision code of software | ASCII | Maximum of 20 | ○ |
| STIME | Sample time | ASCII | 12, 16 | ○ |
| STRACK | Spool stream response | BIN | 1 | × |
| STRID | Stream identification | U1 | 1 | ○ |
| SV | State variable data | LIST, BIN, BOOL, ASCII, JIS8, I1, I2, I4, U1, U2, U4, F4, F8 | Maximum of 2048 for BIN, ASCII, and JIS8 Otherwise, 1 | ○ |
| SVID | State variable ID | U1, U2, U4 | 1 | ○ |
| SVNAME | State variable ID | ASCII | Maximum of 32 | ○ |
| TIAACK | Equipment response code | BIN | 1 | × |
| TIACK | Time confirmation code | BIN | 1 | × |
| TIME | Date and time | ASCII | 12, 16 | ○ |
| TOTSMP | Total sample count | U1, U2, U4 | 1 | ○ |
| TRID | Trace request ID | U1, U2, U4 | 1 | ○ |
| UNITS | Item to identify unit | ASCII | Maximum of 16 | ○ |
| UPPERDB | Dead band upper limit | — | — | × |
| V | Variable data | — | — | × |
| VID | Variable ID | U1, U2, U4 | 1 | ○ |
| VLAACK | Limit attribute confirmation code | BIN | 1 | × |

Appendix 5 Communication Specifications Check Sheet

The check sheet shows what to check in definition of SECS communication. The check sheet is useful for checking the specifications.

| Setting item | Setting content | Notes |
|---|------------------------|--|
| Communication port | SECS-I/HSMS | — |
| Device ID | | — |
| SECS-I setting | | — |
| Mode | Master / Slave | — |
| Transmission speed [bps] | | — |
| T1 [sec] (0.1 to 10) | | Inter-character time-out |
| T2 [sec] (0.2 to 25) | | Protocol time-out |
| T3 [sec] (1 to 120) | | Response time-out |
| T4 [sec] (1 to 120) | | Inter-block time-out |
| HSMS setting | | — |
| Host IP address | | — |
| Own station IP address | | — |
| Host port number | | — |
| Own station port number | | — |
| Mode | Passive / Active | — |
| T3 [sec] (1 to 120) | | Response time-out |
| T5 [sec] (1 to 240) | | Connection separation time-out |
| T6 [sec] (1 to 240) | | Control transaction time-out |
| T7 [sec] (1 to 240) | | Not Selected time-out |
| T8 [sec] (1 to 120) | | Inter-character time-out for network |
| Link Test timer [sec] (1 to 65535) | | — |
| Number of retries after line disconnection (Endless retries / specified number of times) | Endless / times | — |
| Line disconnection from own station | Enable / Disable | — |
| Sending-side interleaving (multi-open transaction) | Enable / Disable | Number of multi-transaction queues for PLC transmission |
| Interleaving for reception (open multi-transactions) | Enable / Disable | Number of multi-transaction queues for PLC reception |
| Variable length lists | Enable / Disable | — |
| Variable length items | Enable / Disable | Set the maximum value for the number of data sets. |
| Switch into offline status upon disconnection | Enable / Disable | — |
| Spooling | Enable / Disable | — |
| Multi-block transmission permission by host | Enable / Disable | If Enable is set, a scenario for permission frame must be defined. |
| SxF0 transmission | Enable / Disable | — |
| SxF0 reception | Enable / Disable | — |
| S9F1/F3/F5/F9/F11 transmission | Automatic transmission | — |
| S9F7(item data error) transmission | Enable / Disable | A scenario for illogical data processing must be defined. |
| S9F13 transmission | Enable / Disable | If Enable is set, a scenario must be defined for this purpose. |
| SECS communication log storage | Enable / Disable | — |

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Appendix 6 SEMI E30(GEM) Support Message

This section shows a list of SEMI E30(GEM) compliant messages.

Stream1 Equipment Status

◎: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|---|---------|
| S1F0 | H↔E | Abort Transaction (S1F0) | ◎ |
| S1F1 | H↔E | Are You There Request (R) | ◎ |
| S1F2 | H↔E | On Line Data (D) | ◎ |
| S1F3 | H→E | Selected Equipment Status Request (SSR) | ◎ |
| S1F4 | H←E | Selected Equipment Status Data (SSD) | ◎ |
| S1F5 | H→E | Formatted Status Request (FSR) | ○ |
| S1F6 | H←E | Formatted Status Data (FSD) | ○ |
| S1F11 | H→E | Status Variable Namelist Request (SVNR) | ◎ |
| S1F12 | H←E | Status Variable Namelist Reply (SVNRR) | ◎ |
| S1F13 | H↔E | Establish Communication Request (CR) | ◎ |
| S1F14 | H↔E | Establish Communication Request Acknowledge (CRA) | ◎ |
| S1F15 | H→E | Request OFF-LINE (ROFL) | ◎ |
| S1F16 | H←E | OFF-LINE Acknowledge (OFLA) | ◎ |
| S1F17 | H→E | Request ON-LINE (RONL) | ◎ |
| S1F18 | H←E | ON-LINE Acknowledge (ONLA) | ◎ |

Stream2 Equipment Control and Diagnostics

◎: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|--|---------|
| S2F0 | H↔E | Abort Transaction (S2F0) | ◎ |
| S2F13 | H→E | Equipment Constant Request (ECR) | ◎ |
| S2F14 | H←E | Equipment Constant Data (ECD) | ◎ |
| S2F15 | H→E | New Equipment Constant Send (ECS) | ◎ |
| S2F16 | H←E | New Equipment Constant Acknowledge (ECA) | ◎ |
| S2F17 | H↔E | Date and Time Request (DTR) | ◎ |
| S2F18 | H↔E | Date and Time Data (DTD) | ◎ |
| S2F21 | H→E | Remote Command Send (RCS) | ○ |
| S2F22 | H←E | Remote Command Acknowledge (RCA) | ○ |
| S2F23 | H→E | Trace Initialize Send (TIS) | ◎*1 |
| S2F24 | H←E | Trace Initialize Acknowledge (TIA) | ◎*1 |
| S2F25 | H↔E | Loopback Diagnostic Request (LDR) | ○ |
| S2F26 | H↔E | Loopback Diagnostic Data (LDD) | ○ |
| S2F29 | H→E | Equipment Constant Namelist Request (ECNR) | ◎ |
| S2F30 | H←E | Equipment Constant Namelist (ECN) | ◎ |
| S2F31 | H→E | Date and Time Set Request (DTR) | ◎ |
| S2F32 | H←E | Date and Time Set Acknowledge (DTA) | ◎ |
| S2F33 | H→E | Define Report (DR) | ◎ |
| S2F34 | H←E | Define Report Acknowledge (DRA) | ◎ |
| S2F35 | H→E | Link Event Report (LER) | ◎ |
| S2F36 | H←E | Link Event Report Acknowledge (LERA) | ◎ |
| S2F37 | H→E | Enable/Disable Event Report (EDER) | ◎ |
| S2F38 | H←E | Enable/Disable Event Report Acknowledge (EERA) | ◎ |
| S2F39 | H→E | Multi-block Inquire(DMBI) | ◎ |
| S2F40 | H←E | Multi-Block Grant (MBG) | ◎ |

| Message | Sender | Name | Support |
|---------|--------|---|---------|
| S2F41 | H→E | Host Command Send (HCS) | ○ |
| S2F42 | H←E | Host Command Acknowledge (HCA) | ○ |
| S2F43 | H→E | Reset Spooling Stream and Function (RSSF) | ◎ |
| S2F44 | H←E | Reset Spooling Acknowledge (RSA) | ◎ |
| S2F45 | H→E | Define Variable Limit Attributes (DVLA) | ◎*1 |
| S2F46 | H←E | Variable Limit Attribute Acknowledge (VLAA) | ◎*1 |
| S2F47 | H→E | Variable Limit Attributes Request (VLAR) | ◎*1 |
| S2F48 | H←E | Variable Limit Attributes Send (VLAS) | ◎*1 |
| S2F49 | H→E | Enhanced Remote Command | ○ |
| S2F50 | H←E | Enhanced Remote Command Acknowledge | ○ |

*1 A GEM version requires a definition.

Stream5 Exception Handling

◎: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|--|---------|
| S5F0 | H↔E | Abort Transaction (S5F0) | ◎ |
| S5F1 | H←E | Alarm Report Send (ARS) | ◎ |
| S5F2 | H→E | Alarm Report Acknowledge (ARA) | ◎ |
| S5F3 | H→E | Enable/Disable Alarm Send (EAS) | ◎ |
| S5F4 | H←E | Enable/Disable Alarm Acknowledge (EAA) | ◎ |
| S5F5 | H→E | List Alarm Request (LAR) | ◎ |
| S5F6 | H←E | List Alarm Data (LAD) | ◎ |
| S5F7 | H→E | List Enabled Alarm Request (LEAR) | ◎*1 |
| S5F8 | H←E | List Enabled Alarm Data (LEAD) | ◎*1 |

*1 A MELSEC iQ-R series requires a definition.

Stream6 Data Collection

◎: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|--|---------|
| S6F0 | H↔E | Abort Transaction (S6F0) | ◎ |
| S6F1 | H←E | Trace Data Send (TDS) | ◎ |
| S6F2 | H→E | Trace Data Acknowledge (TDA) | ◎ |
| S6F5 | H←E | Multi-Block Data Send Inquire (MBI) | ◎ |
| S6F6 | H→E | Multi-Block Grant (MBG) | ◎ |
| S6F11 | H←E | Event Report Send (ERS) | ◎ |
| S6F12 | H→E | Event Report Acknowledge (ERA) | ◎ |
| S6F15 | H→E | Event Report Request (ERR) | ◎ |
| S6F16 | H←E | Event Report Data (ERD) | ◎ |
| S6F19 | H→E | Individual Report Request (IRR) | ◎ |
| S6F20 | H←E | Individual Report Data (IRD) | ◎ |
| S6F23 | H→E | Request Spooled Data (RSD) | ◎ |
| S6F24 | H←E | Request Spooled Data Acknowledgment Send (RSDAS) | ◎ |

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Stream7 Process Program Management

⊙: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|--|---------|
| S7F0 | H↔E | Abort Transaction (S7F0) | ⊙ |
| S7F1 | H↔E | Process Program Load Inquire (PPI) | ○ |
| S7F2 | H↔E | Process Program Load Grant (PPG) | ○ |
| S7F3 | H↔E | Process Program Send (PPS) | ○ |
| S7F4 | H↔E | Process Program Acknowledge (PPA) | ○ |
| S7F5 | H↔E | Process Program Request (PPR) | ○ |
| S7F6 | H↔E | Process Program Data (PPD) | ○ |
| S7F7 | H←E | Process Program ID Request (PIR) | ○ |
| S7F8 | H→E | Process Program ID Data (PID) | ○ |
| S7F17 | H→E | Delete Process Program Send (DPS) | ⊙*1 |
| S7F18 | H←E | Delete Process Program Acknowledge (DPA) | ⊙*1 |
| S7F19 | H→E | Current EPPD Request (RER) | ⊙*1 |
| S7F20 | H←E | Current EPPD Data (RED) | ⊙*1 |
| S7F23 | H↔E | Formatted Process Program Send (FPS) | ○ |
| S7F24 | H↔E | Formatted Process Program Acknowledge (FPA) | ○ |
| S7F25 | H↔E | Formatted Process Program Request (FPR) | ○ |
| S7F26 | H↔E | Formatted Process Program Data (FPD) | ○ |
| S7F27 | H←E | Process Program Verification Send (PVS) | ○ |
| S7F28 | H→E | Process Program Verification Acknowledge (PVA) | ○ |

*1 A GEM version requires a definition.

Stream9 System Errors

⊙: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|----------------------------------|---------|
| S9F0 | H↔E | Abort Transaction (S9F0) | ⊙ |
| S9F1 | H←E | Unrecognized Device ID (UDN) | ⊙ |
| S9F3 | H←E | Unrecognized Stream Type (USN) | ⊙ |
| S9F5 | H←E | Unrecognized Function Type (UFN) | ⊙ |
| S9F7 | H←E | Illegal Data (IDN) | ⊙ |
| S9F9 | H←E | Transaction Timer Timeout (TTN) | ⊙ |
| S9F11 | H←E | Data Too Long (DLN) | ⊙ |
| S9F13 | H←E | Conversation Timeout (CTN) | ○ |

Stream10 Terminal Services

⊙: Defined, ○: Definition required

| Message | Sender | Name | Support |
|---------|--------|--|---------|
| S10F0 | H↔E | Abort Transaction (S10F0) | ⊙ |
| S10F1 | H←E | Terminal Request (TRN) | ○ |
| S10F2 | H→E | Terminal Request Acknowledge (TRA) | ○ |
| S10F3 | H→E | Terminal Display, Single (VTN) | ○ |
| S10F4 | H←E | Terminal Display, Single Acknowledge (VTA) | ○ |
| S10F5 | H→E | Terminal Display, Multi-block (VTN) | ○ |
| S10F6 | H←E | Terminal Display, Multi-BlockAcknowledge (VMA) | ○ |
| S10F7 | H←E | Multi-block Not Allowed(MNN) | ○ |

Appendix 7 SECS/GEM Communication Software Unique ACK Code List

This section shows the list of ACK codes.

| Name | Item Format Code | Description | Value | | Application |
|----------|------------------|--|---|---|-------------|
| | | | E5-1107 | SECS/GEM communication software inherent | |
| ACKC5 | 10 | Confirmation code, 1 byte | 0 = Agreement >0 = Error, cannot be comprehended 1 to 63: reserved | 1 = ALID does not exist | S5F2, F4 |
| DRACK | 10 | Definition report agreement code, 1 byte | 0 = Agreement 1 = Denied, space insufficient 2 = Denied, disabled format 3 = Denied, at least one RPTID is already defined. 4 = Denied, not even one VID exists. >4 = Other error 5 to 63: reserved | 5 = RPTID value incorrect (RPTID=0) 6 = Excessive linkable VID for one RPTID | S2F34 |
| EAC | 10 | Equipment confirmation code, 1 byte | 0 = Agreement 1 = Denied, not even one variable exists. 2 = Denied, busy 3 = Denied, at least one variable is outside the range >3 = Other equipment inherent error 4 to 63: Reserved | 4 = Batch conversion ECV value exceeded 5 = Variable cannot be changed 6 = System error (register writing) | S2F16 |
| LIMITACK | 10 | Confirmation code for variable limit attribute setting, 1 byte | 1 = LIMITID does not exist. 2 = UPPERDB > LIMITMAX 3 = LOWERDB < LIMITMIN 4 = UPPERDB < LOWERDB 5 = Clearly incorrect format for UPPERDB or LOWERDB 6 = Cannot be interpreted as a numerical value because it is an ASCII value 7 = Limit definitions overlap for this variable >7 = Other equipment specific error 8 to 63: reserved | 8 = Limit definition cannot be registered | S2F46 |
| LRACK | 10 | Link report confirmation code, 1 byte | 0 = Agreement 1 = Denied, space insufficient 2 = Denied, disabled format 3 = Denied, at least one CEID link is already defined. 4 = Denied, not even one CEID exists. 5 = Denied, not even one RPTID exists. >5 = Other error 6 to 63: reserved | 6 = Excessive linkable RPTID for one CEID | S2F36 |
| TIAACK | 10 | Equipment response code, 1 byte | 0 = Normal 1 = Too many state variable IDs (SVID) 2 = Trace not possible after this 3 = Invalid trace interval >3 = Machine inherent error 4 to 63: Reserved | 4 = SV not registered 5 = SV incorrect format 6 = TRID value incorrect (TRID=0) 7 = Excessive reportable sample number at one time | S2F24 |

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Appendix 8 Open Source Software

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Appendix 9 Added and Changed Functions

This section shows the functions added or changed for SECS/GEM communication software, and the software versions of SECS/GEM communication software for these functions.


Software version is displayed in the event history of the SECS/GEM communication software pre-installed model module.

The event history can be checked by the following methods:

- MELSEC-Q series: Check the event history of the Setting/monitoring tools for the C Controller module.
- MELSEC iQ-R series: Check the event history of GX Works3.

—: Not supported

| Added/changed contents | Software version of SECS/GEM communication software | | | | | | | | | Reference |
|--|---|-------------|----------------------|--------------------|-------------|----------------------|-----------------|-------------|----------------------|---|
| | MELSEC-Q series | | | MELSEC iQ-R series | | | | | | |
| | | | | RD55UP06-V | | | RD55UP12-V | | | |
| | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | |
| Device find/replace function | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 162 Device Find/Replace |
| Display setting for logs Viewing the log on display device (GOT) | Ver.1.01 B | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.26 C | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 171 Display setting Page 184 View the log on display device (GOT) |
| The ranges of devices that can be used for I/O assignment are extended. | — | — | — | Ver.1.28 E | Ver.1.31 H | Ver.1.31 H | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 95 Available device ranges |
| The number of units of data that can be set for item information is increased. | — | — | — | Ver.1.28 E | — | — | Ver.1.35 M | — | — | Page 79 Data types (item format codes) |
| The ranges of devices that can be found/replaced are extended. | — | — | — | Ver.1.28 E | Ver.1.31 H | Ver.1.31 H | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 162 Device Find/Replace |
| Default gateway setting becomes available. | Ver.1.29 F | Ver.1.29 F | Ver.1.29 F | Ver.1.30 G | Ver.1.29 F | Ver.1.29 F | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 144 IP Address Setting |
| The function of changing time in the C intelligent function module at the reception of an S2F31 or S2F18 message is added. | — | — | — | Ver.1.30 G | Ver.1.29 F | Ver.1.29 F | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 104 Control detail |
| The function of returning an S5F8 message automatically at the reception of an S5F7 message is added. | — | Ver.100A | Ver.100A | — | Ver.1.29 F | Ver.1.29 F | — | Ver.1.35 M | Ver.1.35 M | Page 191 GEM Performance Definition Setting |
| The extension of a user definition archive file is changed from LZH to ZIP. | Ver.1.31 H | Ver.1.31 H | Ver.1.31 H | Ver.1.31 H | Ver.1.31 H | Ver.1.31 H | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 140 Project Archive File Get |
| The basic mode is supported. | Ver.1.32 J | Ver.1.32 J | Ver.1.32 J | — | — | — | — | — | — | — |
| The maximum available data size for sending and receiving variable data with ASCII, BIN and JIS8 is increased from 1024 to 2048. | — | Ver.1.33 K | Ver.1.33 K | — | Ver.1.33 K | Ver.1.33 K | — | Ver.1.35 M | Ver.1.35 M | Page 315 SECS Item List |
| The maximum number of characters for the alarm text (ALTX) is increased from 40 to 120. | — | Ver.1.34 L | Ver.1.34 L | — | Ver.1.34 L | Ver.1.34 L | — | Ver.1.35 M | Ver.1.35 M | Page 315 SECS Item List |
| RD55UP12-V is supported. | — | — | — | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | — |
| The RD55UP06-V/ RD55UP12-V switching function is supported. | — | — | — | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Ver.1.35 M | Page 57 Target Module Switching Function |

| Added/changed contents | Software version of SECS/GEM communication software | | | | | | | | | Reference |
|--|---|-------------|----------------------|--------------------|-------------|----------------------|-----------------|-------------|----------------------|--|
| | MELSEC-Q series | | | MELSEC iQ-R series | | | | | | |
| | | | | RD55UP06-V | | | RD55UP12-V | | | |
| | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | Non-GEM version | GEM version | GEM advanced version | |
| A true value for CEED (BOOL type) is changed from 1 to a value other than 0. | — | Ver.1.35 M | Ver.1.35 M | — | Ver.1.35 M | Ver.1.35 M | — | Ver.1.35 M | Ver.1.35 M | Page 258 Default data type of SECS items |
| Ethernet port CH2 of RD55UP12-V is available for SECS communication. | — | — | — | — | — | — | Ver.1.37 P | Ver.1.37 P | Ver.1.37 P | Page 27 Overall System Configuration |
| GEM300 standard support function (a part of E87-CMS) | — | — | — | — | — | — | — | — | Ver.1.38 Q | Page 11 SEMI Standards Compliance Page 14 GEM300 standards compliance Page 20 GEM300-related specifications  SECS/GEM Communication Software Reference Manual (For GEM300 Standards) |
| The IP address setting function is modified according to the specifications of RD55UP06-V and RD55UP12-V with the firmware version '04.' | — | — | — | Ver.1.39 R | Ver.1.39 R | Ver.1.39 R | Ver.1.39 R | Ver.1.39 R | Ver.1.39 R | Page 144 IP Address Setting |
| The ID find/replace function is added. | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 248 ID Find/Replace |
| RD55UP12-V (GEM300) is added for a project type. | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 57 Target Module Switching Function |
| GEM300 standard support functions are supported additionally. (A part of E39-OSS, E87-CMS, and E90-STs) | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 14 GEM300 standards compliance Page 20 GEM300-related specifications |
| A GEM300 report restoration function is added. | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 238 Report Setting Page 242 GEM300 report restoration |
| A GEM300 event restoration function is added. | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 243 Event Setting Page 247 GEM300 event restoration |
| 'VID for a report' and 'RPTID linked to an event' can be changed. | — | — | — | — | — | — | — | — | Ver.1.40 S | Page 228 Variable definition Page 239 Report definition |

REVISIONS

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

| Revision date | *Manual number | Description |
|----------------|--------------------|--|
| January 2020 | BCN-89999-6494-A | First edition |
| February 2020 | BCN-89999-6494-B | ■Added or modified parts Section 9.8, Appendix 4, Appendix 6 |
| June 2020 | BCN-89999-6494-C | ■Added or modified parts Section 7.6, Section 7.12, Section 8.1, Section 9.13, Appendix 3, Appendix 8 |
| November 2020 | BCN-89999-6494-D | ■Added or modified parts Section 7.5, Section 7.10, Section 7.11, Section 7.15, Section 10.1, Appendix 8, Appendix 9 |
| April 2021 | BCN-89999-6494-E | ■Added or modified parts RELEVANT MANUALS, Chapter 2, Chapter 3, Section 3.3, Chapter 4, Section 5.3, Section 7.1, Section 7.6, Section 7.11, Section 7.12, Section 10.1, Appendix 9 |
| June 2021 | BCN-89999-6494-F | ■Added or modified parts Section 7.1, Appendix 4, Appendix 9 |
| October 2021 | BCN-89999-6494-G | ■Added or modified parts Appendix 3, Appendix 4, Appendix 9 |
| April 2022 | SH(NA)-082483ENG-A | ■Added or modified parts RELEVANT MANUALS, GENERIC TERMS AND ABBREVIATIONS, Section 1.1, Section 1.2, Chapter 2, Section 3.1, Section 3.4, Section 5.1, Section 5.2, Section 5.3, Section 5.4, Chapter 6, Section 7.1, Section 7.2, Section 7.4, Section 7.6, Section 7.7, Section 7.11, Section 7.12, Section 7.13, Section 7.15, Section 8.11, Section 8.12, Section 8.13, Section 8.14, Section 8.17, Section 9.13, Section 10.1, Appendix 9 |
| September 2022 | SH(NA)-082483ENG-B | ■Added or modified parts Section 7.17, COPYRIGHTS |
| March 2023 | SH(NA)-082483ENG-C | ■Added or modified parts Section 3.1, Section 7.2, Section 9.11, Appendix 9 |
| May 2023 | SH(NA)-082483ENG-D | ■Added or modified parts Section 1.1, Section 1.2, Section 1.5, Section 3.4, Section 5.2, Section 7.5, Section 7.7, Section 7.9, Section 7.10, Section 7.17, Section 8.3, Section 8.7, Section 8.8, Section 8.9, Section 8.10, Section 8.11, Section 8.14, Section 8.16, Section 8.17, Appendix 6, Appendix 8, Appendix 9 |
| November 2023 | SH(NA)-082483ENG-E | ■Added or modified parts Section 7.13, Section 10.1, Appendix 9 |
| September 2024 | SH(NA)-082483ENG-F | ■Added or modified parts Section 1.1, Section 1.2, Section 1.5, Section 3.2, Section 5.2, Section 7.1, Section 7.2, Section 7.17, Section 8.9, Section 8.11, Section 8.13, Section 8.14, Section 8.15, Section 10.1, Appendix 9 |

Japanese manual number: SH-082482-F

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Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

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- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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 Page 322 Open Source Software

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