

Programmable Controller

MELSEC iQ-R
series

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

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.

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- 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.

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(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.

Relevant product

RD55UP12-V-BZ15

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RELEVANT MANUALS

The following manuals are relevant to this product.

Manual name [manual number]	Description
SECS/GEM Communication Software Reference Manual (For GEM300 Standards) [SH-082616ENG] (this manual)	GEM300 standards supported by SECS/GEM communication software
C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual [SH-082483ENG]	Specifications, procedure before operation, wiring, functions, and troubleshooting of a C Controller module pre-installed model

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Buffer memory	Memory in an intelligent function module to store data such as setting values and monitor values. For CPU modules, it refers to memory to store data such as setting values and monitor values of the Ethernet function, or data used for data communication of the multiple CPU system function.
Global label	A label that is valid for all the program data when multiple program data are created in the project. There are two types of global label: a module specific label (module label), which is generated automatically by GX Works3, and an optional label, which can be created for any specified device.

GENERIC TERMS AND ABBREVIATIONS

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

Generic term/abbreviation	Description
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
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
Object	A generic term for GEM300-related objects managed by SECS/GEM communication software pre-installed models
Setting tool	A SECS/GEM communication software setting tool pre-installed on a personal computer

MEMO

1 OVERVIEW

SECS/GEM communication software is software that allows a C Controller module or C intelligent function module to communicate with manufacturing equipment using SECS without a gateway personal computer used for communication between the equipment and MES.

For details on SECS/GEM communication software, refer to the following:

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

This manual explains GEM300 standards that SECS/GEM communication software is compliant with.

Compliance with GEM300 standards

SECS/GEM communication software (for GEM300 standards) allows RD55UP12-V-BZ15, which is compliant with SEMI E30 (GEM), to communicate using SECS for semiconductor manufacturing equipment handling 300 mm wafers.

■GEM300 standard support functions

SECS communication-related general functions, which are compliant with GEM300 standards, can be performed simply by SECS/GEM communication software settings and commands from a control CPU.

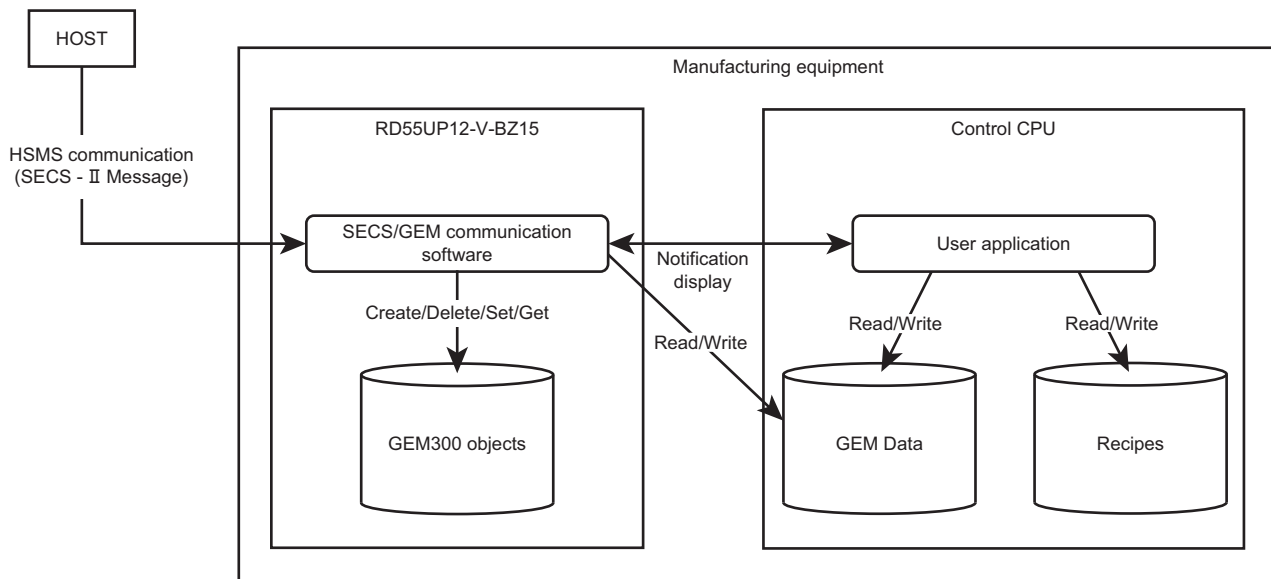
- Unnecessary to assign devices related for GEM300.*¹
- Available to exchange data with a control CPU by offset specification.*²

*¹ Assignment settings of devices related for SEMI E30 (GEM) are required.

*² Data can be read and written for each structure label using an engineering tool. However, offset needs to be defined according to the label.

■Management of GEM300 objects

GEM300 objects are managed by RD55UP12-V-BZ15. Therefore, GEM300 objects do not need to be managed by a user application.



Recipes and data for SEMI E30 (GEM) are managed by devices of a control CPU.

2 SPECIFICATIONS


This chapter explains specifications for GEM300 standard support functions.

Point

This manual does not explain the following specifications:

- SEMI standards compliance
- GEM300 standards compliance
- GEM300-related specifications

For details, refer to the following:

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

2.1 Control CPU Interfaces


GEM300 standard support functions use the buffer memory of RD55UP12-V and exchange data with a control CPU and external devices in an event message format.

For details on the control CPU interfaces, refer to the following:


 Page 94 Control CPU Interface Formats

The fixed buffer memory areas for 'CITL to CPU (when this product issues a control CPU interface)' and 'CPU to CITL (when a control CPU issues a control CPU interface)' are used to exchange data. (Each area consists of the following sections: status flag, header, and data.)

For details on the buffer memory, refer to the following:

 Page 259 Buffer Memory

Exchanged data

- Exchanged data is identified by a combination of an information type (decimal) and detail type (decimal).
( Page 10 Information type and detail type)
- An acknowledge is required for a request. In addition, the number of a detail type is the same for them.
- A response is required for a notification from a control CPU.
- A response is not required for a notification from this product.

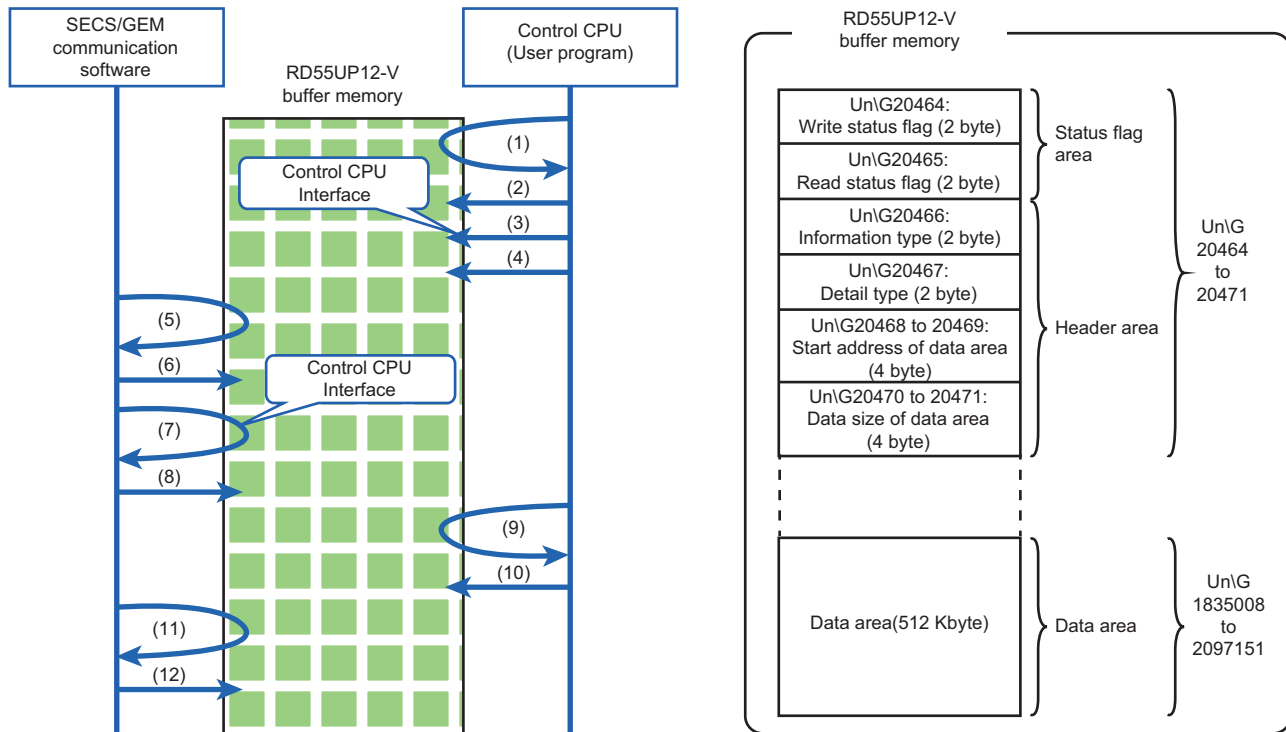
This product notifies a control CPU of the processing result of a service message by using GEM300 standard support functions.

■ Information type and detail type

- The information type consists of 'data sending direction (1 digit) + SEMI standard number (4 digits).'
- (Data sending direction: '0: CPU to CITL,' '1: CITL to CPU')
- For example, the information types related to E87-CMS are as follows:
- 00087: Indicates information related to E87-CMS transmitted from CPU to CITL.
 - 10087: Indicates information related to E87-CMS transmitted from CITL to CPU.
- The detail type consists of 'category (3 digits) + sequential number (2 digits).'

2.2 CPU to CITL (when a Control CPU Issues a Control CPU Interface)

This section explains the buffer memory configuration for data exchange and the operation flow when a control CPU interface is issued.



No.	SECS/GEM communication software	Control CPU (controlled by user program)
(1)	—	A control CPU checks that 'Queue full of control CPU interfaces for CPU to CITL' (b7) of 'CA-SECS status' (Un\G16384) and 'In-use flag' (b0) of 'Read status flag' (Un\G20465) are turned OFF.
(2)	—	The CPU turns ON 'In-use flag' (b0) of 'Write status flag' (Un\G20464). (OFF→ON control)
(3)	—	The CPU writes data of the header area in the control CPU interface according to ① to ③, and also writes data of the data area according to ④. <ul style="list-style-type: none"> ① 'Information type' (Un\G20466): Information type ② 'Detail type' (Un\G20467): Detail type ③ 'Data size of data area' (Un\G20470 to 20471): Data size ④ Data for the data size starting from 'Data writing area' (Un\G1835008) For details on exchanged data identifiers of 'CPU to CITL,' refer to the following: Page 102 00000: CPU to CITL, Page 107 00039: CPU to CITL, Page 123 00087: CPU to CITL, Page 229 00090: CPU to CITL
(4)	—	The CPU turns ON 'Write completion flag' (b1) of 'Write status flag' (Un\G20464). (OFF→ON control)
(5)	SECS/GEM communication software detects that 'Write completion flag' (b1) of 'Write status flag' (Un\G20464) is turned ON.	—
(6)	The software turns ON 'In-use flag' (b0) of 'Read status flag' (Un\G20465). (OFF→ON control)	—
(7)	The software reads data of the header area in the control CPU interface according to ① to ③, and also reads data of the data area according to ④. <ul style="list-style-type: none"> ① 'Information type' (Un\G20466): Information type ② 'Detail type' (Un\G20467): Detail type ③ 'Data size of data area' (Un\G20470 to 20471): Data size ④ Data for the data size starting from 'Data writing area' (Un\G1835008) 	—

No.	SECS/GEM communication software	Control CPU (controlled by user program)
(8)	The software turns ON 'Read completion flag' (b1) of 'Read status flag' (Un\G20465). (OFF→ON control)	—
(9)	—	The CPU detects that 'Read completion flag' (b1) of 'Read status flag' (Un\G20465) is turned ON.
(10)	—	The CPU clears (3→0 control) 'Write status flag' (Un\G20464).
(11)	The software detects that 'Write status flag' (Un\G20464) is cleared.	—
(12)	The software clears (3→0 control) 'Read status flag' (Un\G20465).	—

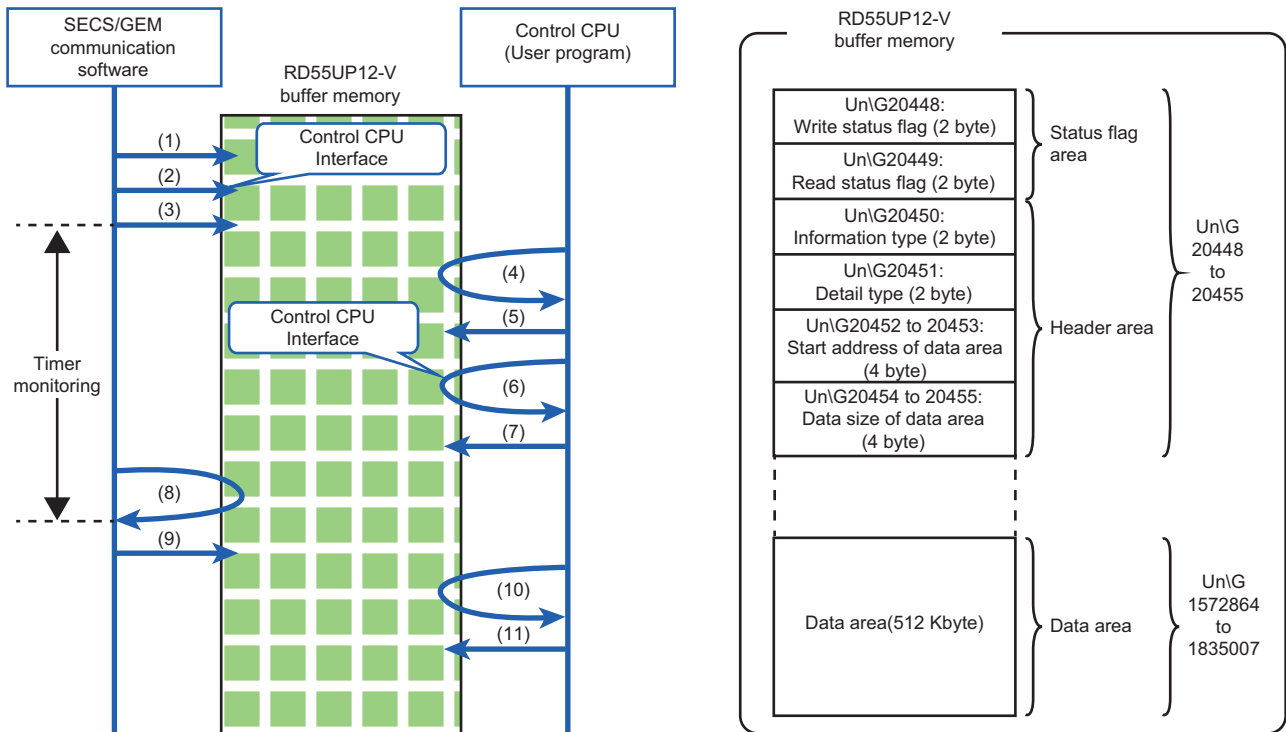
Point

- If an error occurs in event data stored by a control CPU, SECS/GEM communication software will store the information type, detail type, and data size to the following buffer memory range: 'Latest CPU to CITL I/F error-detected information (Un\G20432)' to 'Data size at latest error detection' (Un\G20435 to 20436).
- SECS/GEM communication software has an internal memory area called the control CPU interface queue for CPU to CITL to temporarily store data in consideration of delays in processing of a control CPU interface under high load. If the next control CPU interface from a control CPU is stored before the processing of the previous control CPU interface is completed, the data is temporarily stored in the control CPU interface queue for CPU to CITL after performing the processing from No.(5) to (8).
- Up to five control CPU interfaces can be stored in the control CPU interface queue for CPU to CITL. If the next control CPU interface from a control CPU is stored while five control CPU interfaces are stored ('Queue full of control CPU interfaces for CPU to CITL' (b7) of 'CA-SECS status' (Un\G16384) is ON), data exchange of SECS/GEM communication software is stopped and the error description is output to a control CPU interface log.
- When the processing of the control CPU interfaces by SECS/GEM communication software is completed and the control CPU interface queue for CPU to CITL becomes available, the data exchange is restarted. If 'Queue full of control CPU interfaces for CPU to CITL' (b7) of 'CA-SECS status' (Un\G16384) turns ON, stop issuing control CPU interfaces from a control CPU to SECS/GEM communication software, then perform the processing again after a while.

2.3 CITL to CPU (when SECS/GEM communication software Issues a Control CPU Interface)


This section explains the buffer memory configuration for data exchange and the operation flow when a control CPU interface is issued.

2



No.	SECS/GEM communication software	Control CPU (controlled by user program)
(1)	SECS/GEM communication software turns ON 'In-use flag' (b0) of 'Write status flag' (Un\G20448) while 'Read status flag' (Un\G20449) is OFF. (OFF→ON control)* ¹	—
(2)	The software writes data of the header area in the control CPU interface according to ① to ③, and also writes data of the data area according to ④. <ul style="list-style-type: none"> ① 'Information type' (Un\G20450): Information type ② 'Detail type' (Un\G20451): Detail type ③ 'Data size of data area' (Un\G20454 to 20455): Data size ④ Data for the data size starting from 'Data reading area' (Un\G1572864) 	—
(3)	The software turns ON 'Write completion flag' (b1) of 'Write status flag' (Un\G20448). (OFF→ON control)* ¹	—
(4)	—	A control CPU detects that 'Write completion flag' (b1) of 'Write status flag' (Un\G20448) is turned ON.
(5)	—	The CPU turns ON 'In-use flag' (b0) of 'Read status flag' (Un\G20449). (OFF→ON control)* ²
(6)	—	The CPU reads data of the header area in the control CPU interface according to ① to ③, and also reads data of the data area according to ④. <ul style="list-style-type: none"> ① 'Information type' (Un\G20450): Information type ② 'Detail type' (Un\G20451): Detail type ③ 'Data size of data area' (Un\G20454 to 20455): Data size ④ Data for the data size starting from 'Data reading area' (Un\G1572864) For details on exchanged data identifiers of 'CITL to CPU,' refer to the following: ☞ Page 104 10000: CITL to CPU, Page 116 10039: CITL to CPU, Page 169 10087: CITL to CPU, Page 242 10090: CITL to CPU
(7)	—	The CPU turns ON 'Read completion flag' (b1) of 'Read status flag' (Un\G20449) after acquiring event data. (OFF→ON control)* ²

No.	SECS/GEM communication software	Control CPU (controlled by user program)
(8)	The software detects that 'Read completion flag' (b1) of 'Read status flag' (Un\G20449) is turned ON.	—
(9)	The software clears (3→0 control) 'Write status flag' (Un\G20448). ^{*1}	—
(10)	—	The CPU detects that 'Write status flag' (Un\G20448) is cleared.
(11)	—	The CPU clears (3→0 control) 'Read status flag' (Un\G20449). ^{*2}


*1 The flag is turned OFF after the time set for "CPU Interface Timer" elapses, regardless of the operation of the control CPU. ( Page 29 CPU interface)

*2 The control is not required if 'Write status flag' (Un\G20448) is cleared (3→0 control) due to timeout.

Point

- When SECS/GEM communication software issues a new control CPU interface (such as when a service message of GEM300 standard support functions is issued from the host) during the operations from No.(1) to (11) before the control CPU completes the operations up to No.(11), the interface is stored in the control CPU interface queue for CITL to CPU (a memory area to temporarily store data).
- Up to five control CPU interfaces can be stored in the control CPU interface queue for CITL to CPU. When five control CPU interfaces are stored and the queue becomes unavailable, 'Queue full of control CPU interfaces for CITL to CPU' (b8) of 'CA-SECS status' (Un\G16384) turns ON.
- If SECS/GEM communication software issues the next control CPU interface while five control CPU interfaces are stored in the control CPU interface queue for CITL to CPU, the error description is output to a control CPU interface log. In addition, the issued interface is discarded.
When the queue full state of the control CPU interface queue for CITL to CPU is cleared, 'Queue full of control CPU interfaces for CITL to CPU' (b8) turns OFF.
- When the operations up to No.(11) (buffer memory data reading processing) are completed in the control CPU while the control CPU interfaces are stored in the control CPU interface queue for CITL to CPU, the operations from No.(1) to (3) are immediately performed. (Among the stored control CPU interfaces, the oldest one is written and the data in the buffer memory is overwritten.)

Precautions


- If a control CPU interface is issued by SECS/GEM communication software while the control CPU interface queue for CITL to CPU is full, the interface is discarded. To prevent this, perform the following actions until 'Queue full of control CPU interfaces for CITL to CPU' (b8) of 'CA-SECS status' (Un\G16384) turns OFF.
 - Prevent a control CPU from issuing a control CPU interface.
 - Notify the host not to send a service message. ( Page 268 Service Messages)
- When the value of 'Write status flag' (Un\G20448) is cleared (3→0 control) due to a timeout while that of 'Read status flag' (Un\G20449) is '0', data stored in the control CPU interface queue for CITL to CPU is immediately written. (Data in the buffer memory is overwritten.)
To prevent missing any control CPU interfaces, read them before a timeout occurs.

3 PROCEDURE BEFORE OPERATION

This chapter shows the procedure before the operation of GEM300 standard support functions.

Point

To use the functions, settings are required according to the pre-operation procedure for a SECS/GEM communication software pre-installed model module. For details, refer to the following:

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

1. Setting equipment specifications

Set an equipment name and the number of load ports using a setting tool.

 Page 22 EQUIPMENT SPECIFICATION SETTINGS


For using GEM300 standard support functions, select "RD55UP12-V(GEM300)" for the target module.



After setting equipment specifications, update the setting file stored on the SECS/GEM communication software pre-installed model module.

2. Starting the operation of GEM300 standard support functions

Command '00000-00001: GEM300 Initial request' to start the operation of GEM300 standard support functions.

3.1 Starting the Operation of GEM300 Standard Support Functions

To start the operation of GEM300 standard support functions, use the control CPU interface '00000-00001: GEM300 Initial request' from a control CPU to request SECS/GEM communication software to start and initialize the functions. ( Page 102 00001: GEM300 Initial request)

- A processing result is returned by the control CPU interface '10000-00001 : GEM300 Initial acknowledge.' ( Page 104 00001: GEM300 Initial acknowledge)
- When the GEM300 standard support functions start running, 'GEM300 status' (b5) of 'CA-SECS status' (Un\G16384) turns ON (is enabled). ( Page 261 CA-SECS status (Un\G16384))

For the specifications of a control CPU interface, refer to the following:


 Page 10 SPECIFICATIONS

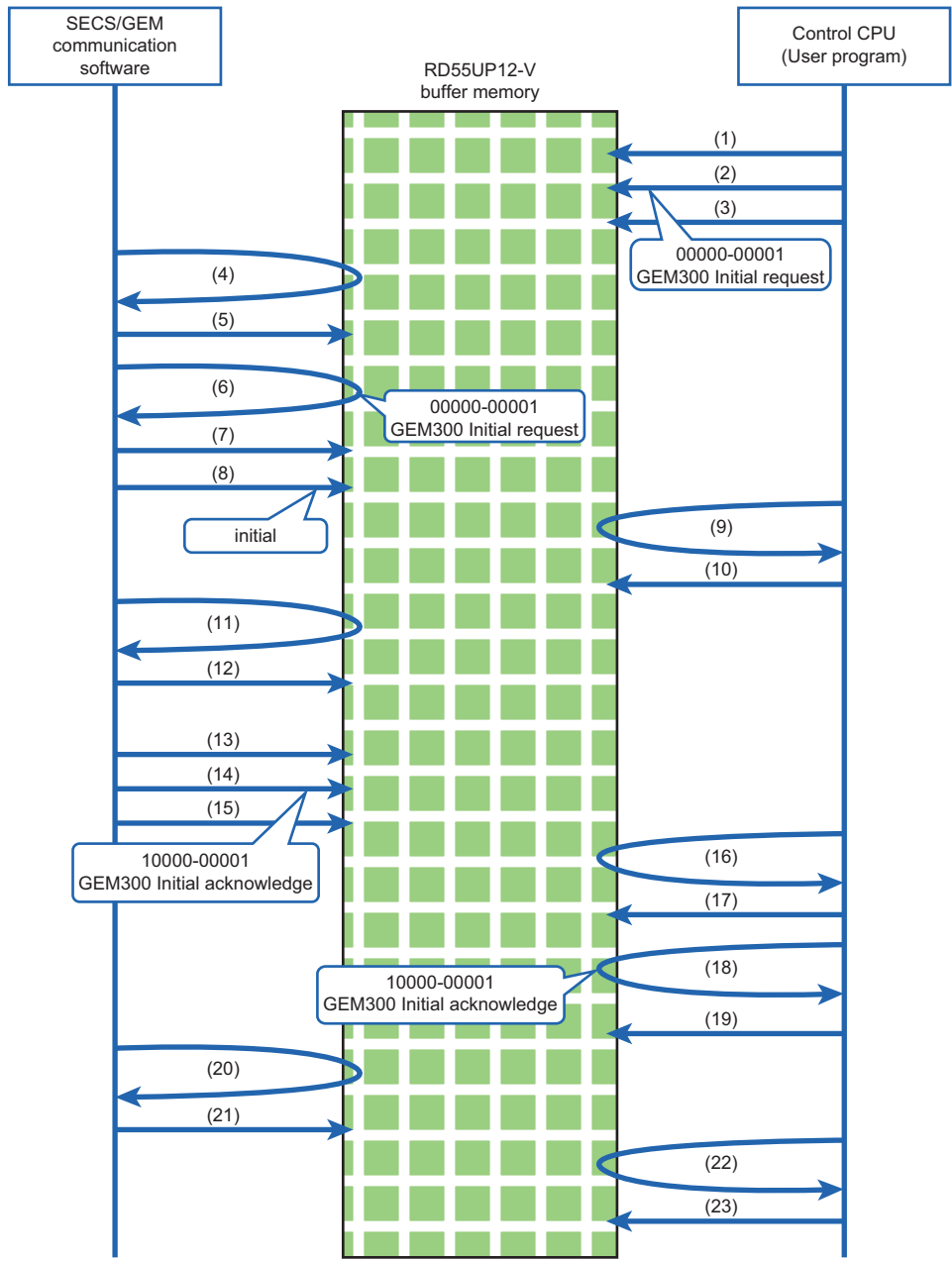
For the format of a control CPU interface, refer to the following:

 Page 94 Control CPU Interface Formats

The following shows the flow when starting the operation of GEM300 standard support functions.

Point

- For on-line operation, use the communication establishment function and online transition function of SEMI E30 (GEM).
- For examples of using control CPU interfaces when creating a user program compliant with GEM300 standards, refer to the use cases. ( Page 358 Use Cases)



No.	SECS/GEM communication software	Control CPU (controlled by user program)
(1)	—	A control CPU turns ON 'In-use flag' (b0) of 'Write status flag' (Un\G20464). (OFF→ON control)
(2)	—	<p>The CPU writes data of the header area in '00000-00001: GEM300 Initial request' according to ❶ to ❸.</p> <ul style="list-style-type: none"> • ❶ 'Information type' (Un\G20466): 0 • ❷ 'Detail type' (Un\G20467): 1 • ❸ 'Data size of data area' (Un\G20470 to 20471): 0 (byte units) <p>There is no data to be written for the data area of '00000-00001: GEM300 Initial request.'</p> <p>For details, refer to the following:</p> <p>☞ Page 102 00001: GEM300 Initial request</p>
(3)	—	The CPU turns ON 'Write completion flag' (b1) of 'Write status flag' (Un\G20464). (OFF→ON control)
(4)	SECS/GEM communication software detects that 'Write completion flag' (b1) of 'Write status flag' (Un\G20464) is turned ON.	—
(5)	The software turns ON 'In-use flag' (b0) of 'Read status flag' (Un\G20465). (OFF→ON control)	—
(6)	<p>The software reads data of the header area in '00000-00001: GEM300 Initial request' according to ❶ to ❸.</p> <ul style="list-style-type: none"> • ❶ 'Information type' (Un\G20466): 0 • ❷ 'Detail type' (Un\G20467): 1 • ❸ 'Data size of data area' (Un\G20470 to 20471): 0 (byte units) 	—
(7)	The software turns ON 'Read completion flag' (b1) of 'Read status flag' (Un\G20465). (OFF→ON control)	—
(8)	The software turns ON 'GEM300 status' (b5) of 'CA-SECS status' (Un\G16384). (OFF→ON control)	—
(9)	—	The CPU detects that 'Read completion flag' (b1) of 'Read status flag' (Un\G20465) is turned ON.
(10)	—	The CPU clears (3→0 control) 'Write status flag' (Un\G20464).
(11)	The software detects that 'Write status flag' (Un\G20464) is cleared.	—
(12)	The software clears (3→0 control) 'Read status flag' (Un\G20465).	—
(13)	The software turns ON 'In-use flag' (b0) of 'Write status flag' (Un\G20448). (OFF→ON control) ^{*1*2}	—
(14)	<p>The software writes data of the header area in '10000-00001: GEM300 Initial acknowledge' according to ❶ to ❸, and also write data of the data area according to ❹.^{*1}</p> <ul style="list-style-type: none"> • ❶ 'Information type' (Un\G20450): 10000 • ❷ 'Detail type' (Un\G20451): 1 • ❸ 'Data size of data area' (Un\G20454 to 20455): 2 (byte units) • ❹ Data of '10000-00001: GEM300 Initial acknowledge' starting from 'Data reading area' (Un\G1572864) (for 2 bytes) 	—
(15)	The software turns ON 'Write completion flag' (b1) of 'Write status flag' (Un\G20448). (OFF→ON control) ^{*1*2}	—
(16)	—	The CPU detects that 'Write completion flag' (b1) of 'Write status flag' (Un\G20448) is turned ON.
(17)	—	The CPU turns ON 'In-use flag' (b0) of 'Read status flag' (Un\G20449). (OFF→ON control) ^{*3}
(18)	—	<p>The CPU reads data of the header area in '10000-00001: GEM300 Initial acknowledge' according to ❶ to ❸, and also reads data of the data area according to ❹.</p> <ul style="list-style-type: none"> • ❶ 'Information type' (Un\G20450): 10000 • ❷ 'Detail type' (Un\G20451): 1 • ❸ 'Data size of data area' (Un\G20454 to 20455): 2 (byte units) • ❹ Data of '10000-00001: GEM300 Initial acknowledge' starting from 'Data reading area' (Un\G1572864) (for 2 bytes) <p>For details on '10000-00001: GEM300 Initial acknowledge,' refer to the following:</p> <p>☞ Page 104 00001: GEM300 Initial acknowledge</p>
(19)	—	The CPU turns ON 'Read completion flag' (b1) of 'Read status flag' (Un\G20449). (OFF→ON control) ^{*3}
(20)	The software detects that 'Read completion flag' (b1) of 'Read status flag' (Un\G20449) is turned ON.	—
(21)	The software clears (3→0 control) 'Write status flag' (Un\G20448).	—

No.	SECS/GEM communication software	Control CPU (controlled by user program)
(22)	—	The CPU detects that 'Write status flag' (Un\G20448) is cleared.
(23)	—	The CPU clears (3→0 control) 'Read status flag' (Un\G20449). ^{*3}

*1 It is executed without waiting for 'Write status flag' (Un\G20464) to be cleared.

*2 The flag is turned OFF after the time set for "CPU Interface Timer" elapses. (☞ Page 29 CPU interface)

*3 The control is not required if 'Write status flag' (Un\G20448) is cleared (3→0 control) due to timeout.

4 FUNCTION LIST

This chapter explains GEM300 standard support functions.

Function		Description	Reference
Equipment specification setting		To set equipment specifications (such as the number of load ports and carrier slots)	Page 22 EQUIPMENT SPECIFICATION SETTINGS
Object management	Carrier object	To manage objects compliant with E87-CMS	Page 38 Carrier Objects
	Substrate object ^{*1}	To manage objects compliant with E90-STC	Page 82 Substrate Objects
	Substrate location object ^{*1}		Page 85 Substrate Location Objects
	Batch location object ^{*1}		Page 86 Batch Location Objects
	Load port object	To manage the load port status ^{*2}	Page 33 Load port object
	Carrier location object ^{*1}	To manage the carrier location status ^{*2}	Page 35 Location object
	Internal buffer object ^{*1}	To manage the internal buffer status ^{*2}	Page 36 Internal buffer object
Object attribute variable definition	CMS variable	To define variables with object attributes. Object attributes can be used as discrete variables (DVVAL).	Page 60 CMS Variables
	STS variable ^{*1}		Page 88 STS Variables
Logging ^{*1}	Control CPU interface log	To log sending and receiving for a control CPU interface	Page 30 Control CPU Interface Log
State model compliance	Carrier State Model	To transition the status of 'Carrier ID Status (CIDS),' 'Carrier Slot Map Status (CSMS),' and 'Carrier Accessing Status (CAS)'	Page 42 Carrier State Model
	Load Port Transfer State Model	To transition the status of 'Load Port Transfer State (LTS)'	Page 48 Load Port Transfer State Model
	Load Port Reservation State Model	To transition the status of 'Load Port Reservation State (LRS)'	Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)
	Load Port/Carrier Association State Model	To transition the status of 'Load Port/Carrier Association State (LCAS)'	Page 55 Load Port/Carrier Association State Model
	Access Mode State Model	To transition the status of 'Access Mode State (AMS)'	Page 58 Access Mode State Model
GEM300 service message	OSS service message ^{*1}	To help service processing which is compliant with service messages from the host	Page 37 OSS Service Messages
	CMS service message		Page 41 CMS Service Messages
	STS service message ^{*1}		Page 87 STS Service Messages
Event notification	CMS event	To notify the host automatically or manually of an event requested by GEM300	Page 63 CMS Events and Reports
	STS event ^{*1}		Page 90 STS Events and Reports
Control CPU interface		To exchange GEM300-related data with a control CPU in an event message format via the fixed buffer memory (maximum 512 KB)	Page 10 Control CPU Interfaces

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

*2 A proprietary object which is compliant with GEM300 standards

5 EQUIPMENT SPECIFICATION SETTINGS

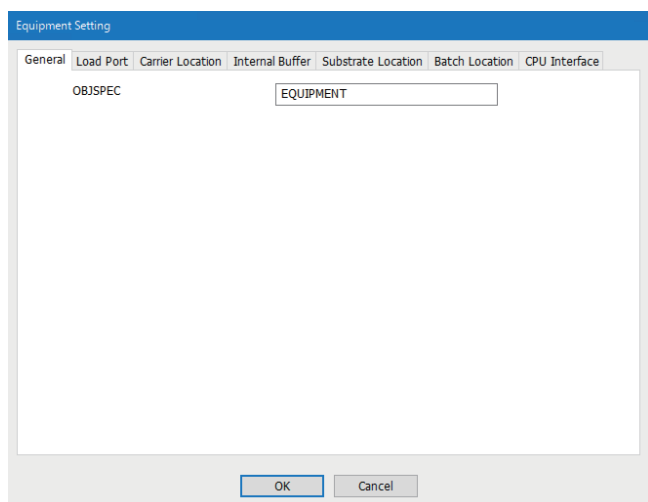
This function can set equipment specifications, such as the number of load ports and carrier slots.

5.1 Equipment Settings

This section explains the method for setting whether to use GEM300 standard support functions.

Window

🔗 Main screen ⇒ [GEM300Function] ⇒ [Equipment Setting]



Displayed items

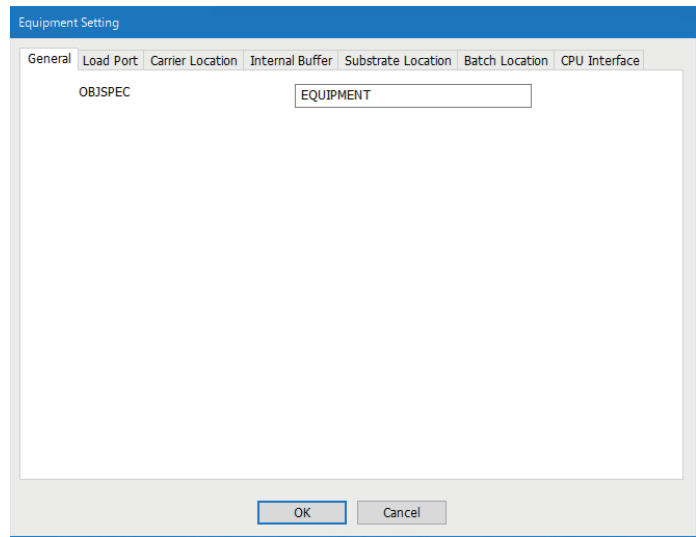
Item	Description	Setting range	Default
[General] tab	Set OBJSPEC. (🔗 Page 23 General)	—	—
[Load Port] tab	Set the number of load ports and the load port ID. (🔗 Page 24 Load port)		
[Carrier Location] tab	Set the number of locations and the location ID. (🔗 Page 25 Carrier location)		
[Internal Buffer] tab	Set the number of partitions, a partition ID, partition type, and the maximum capacity of a logical partition. (🔗 Page 26 Internal buffer)		
[Substrate Location] tab	Set a substrate location, substrate location ID, and the event disable setting for a substrate location that are specific to equipment. (🔗 Page 27 Substrate location)		
[Batch Location] tab	Set the number of batch locations, a batch location ID, the number of batch configuration substrates, and the event disable setting for a batch location. (🔗 Page 28 Batch location)		
[CPU Interface] tab	Set the monitoring timer for a control CPU interface. (🔗 Page 29 CPU interface)		

General

The following explains the method for setting parameters specific to equipment.

Window

 [Equipment Setting] ⇒ [General] tab



5


Displayed items

Item	Description	Setting range	Default
OBJSPEC	Set OBJSPEC.	1 to 80 characters	EQUIPMENT

Load port

The following explains the method for setting a load port ID.

Window

 [Equipment Setting] ⇒ [Load Port] tab

[illegible]


Displayed items

Item	Description	Setting range	Default
Load Port Count	Specify the number of load ports on equipment.	1 to 6	6
Load Port ID	Specify ObjID linked to PTN (material port number) of a load port. The specified ObjID is applied to the instance of a load port object.	1 to 80 characters	<ul style="list-style-type: none"> • LP1 • LP2 • LP3 • LP4 • LP5 • LP6

Carrier location

The following explains the method for setting the location ID of a carrier specific to equipment.

Window

 [Equipment Setting] ⇒ [Carrier Location] tab

[illegible]


Displayed items

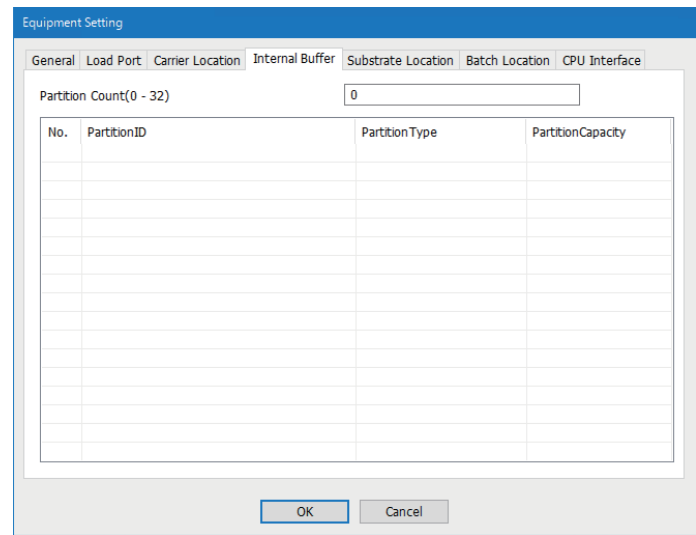
Item	Description	Setting range	Default
Location Count	Specify the number of carrier locations on equipment.	1 to 32	6
LocationID	Set the list of carrier location IDs. The specified LocationID is applied to the instance of a location object.	1 to 80 characters	<ul style="list-style-type: none"> • Location 01 • Location 02 • Location 03 • Location 04 • Location 05 • Location 06

Internal buffer

The following explains the method for setting a partition of the internal buffer.

Window

 [Equipment Setting] ⇒ [Internal Buffer] tab




Displayed items

Item	Description	Setting range	Default
Partition Count	Specify the number of internal buffer partitions on equipment.	0 to 32	0
PartitionID	Set the list of partition IDs. The specified PartitionID is applied to the instance of an internal buffer object.	1 to 80 characters	None
PartitionType	Set the list of partition types. The specified PartitionType is applied to the instance of an internal buffer object.	1 to 64 characters	None
PartitionCapacity	Set the list of the maximum capacities of logical partitions. The specified PartitionCapacity is applied to the instance of an internal buffer object.	1 to 32	None

Substrate location

The following explains the method for setting a substrate location specific to equipment.

Window

 [Equipment Setting] ⇒ [Substrate Location] tab

[illegible]

Displayed items

Item	Description	Setting range	Default
Equipment Substrate Location Count	Specify the number of substrate locations specific to equipment.	0 to 32	0
Equipment Substrate LocationID	Set the list of substrate location IDs specific to equipment. The specified EquipmentSubstrateLocationID is applied to the instance of a substrate location object.	1 to 80 characters	None
Equipment Substrate Location DisableEvents	Set whether to enable or disable an event for a substrate location specific to equipment. The specified DisableEvents is applied to the instance of a substrate location object.	<ul style="list-style-type: none"> • Not selected • Selected 	Not selected

vwindow




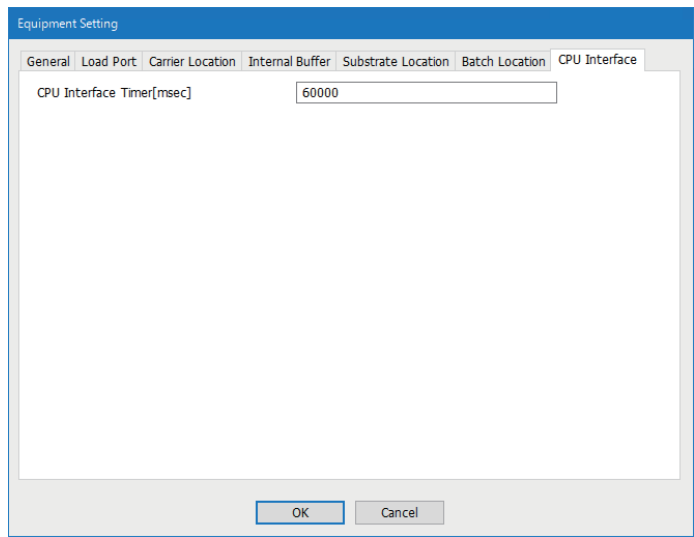
Displayed Items

CPU interface

The following explains the method for configuring settings for a control CPU interface.

Window

 [Equipment Setting] ⇒ [CPU Interface] tab



5

Displayed items

Item	Description	Setting range	Default
CPU Interface Timer[msec]	Set a monitoring time (milliseconds) from when SECS/GEM communication software turns ON 'Write completion flag' (b1) of 'Write status flag' (Un\G20448) in a control CPU interface to when a control CPU turns ON 'Read completion flag' (b1) of 'Read status flag' (Un\G20449). When the specified time elapses, SECS/GEM communication software clears (3→0 control) 'Write status flag' (Un\G20448) regardless of the operation of the control CPU.	10 to 120000	60000

5.2 Control CPU Interface Log

The content of data exchanged in the form of an event message via buffer memory is output as a control CPU interface log. The output log can be checked in a setting tool or display device in the same manner as conventional log data (SECS communication logs, programmable controller logs, and user logs).

For details on log output, refer to the following:

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



6 E39-OSS COMPLIANT FUNCTION

This chapter explains the E39-OSS compliant function.

All GEM300 standard-related objects supported by SECS/GEM communication software are inherited from the top object defined by E39-OSS.

6.1 Usage Method

For the usage method of this function, refer to the following:

-  Page 359 E87-CMS compliance
-  Page 443 E90-STC compliance

6.2 Top Object

This section explains the top object provided by SECS/GEM communication software.

Attributes

The following table shows the attributes of the top object.

Name	Format	Access from host	Description
ObjType	ASCII[1..80]* ¹	Read Only	Object type
ObjID	ASCII[1..80]* ¹	Read Only	Object ID

*1 Excluding the control characters.

6.3 GEM300-Related Object List

This section shows objects managed by SECS/GEM communication software.

Name	ObjType	Description
Carrier object	Carrier	E87 compliant object
Load port object	LoadPort	
Location object	Location	
Internal buffer object	InternalBuffer	
Substrate object	Substrate	E90 compliant object
Substrate location object	SubstLoc	
Batch location object	BatchLoc	

6.4 Proprietary Object List

This section explains proprietary objects of SECS/GEM communication software.

Load port objects, carrier locations, and internal buffer objects are not defined as objects in SEMI standards. In SECS/GEM communication software, the objects are provided as proprietary objects to improve operability from a control CPU. Use them as necessary.

Load port object

SECS/GEM communication software instantiates load port-related information to an object and provides the function for exchanging the information between the host and equipment using E39-OSS and E87-CMS services. The software creates the same number of load port objects as the number of load ports set in "Load Port Count" of "Equipment Setting." Load port objects cannot be created or deleted from the host and a control CPU. The status of each load port is applied to the buffer memory from 'Port access mode' (Un\G24576) to 'Port reservation state' (Un\G24597).

Attributes

The following table shows the attributes of a load port object provided by SECS/GEM communication software.

Name	Format	Access from host	Description	Linked buffer memory
ObjType	ASCII[8] ^{*1}	Read Only	Object type (LoadPort)	None
ObjID	ASCII[1..80] ^{*1}	Read Only	Object ID	None
PTN	U1[1]	Read Only	PortID Material port number (material location) of a load port (positive integer)	None
AccessMode	U1[1]	Read Only	Access mode of a load port • 0: MANUAL • 1: AUTO	'Port access mode' (Un\G24576)
PortAssociationState	U1[1]	Read Only	Association status of a load port • 0: NOT ASSOCIATED • 1: ASSOCIATED	'Port association state' (Un\G24596)
LoadPortReservationState	U1[1]	Read Only	Reservation status of a load port • 0: NOT RESERVED • 1: RESERVED	'Port reservation state' (Un\G24597)
PortTransferState	U1[1]	Read Only	Transfer status of a load port ^{*2} • 0: OUT OF SERVICE • 1: TRANSFER BLOCKED • 2: READY TO LOAD • 3: READY TO UNLOAD	'Port transfer state' (Un\G24577 to 24592)
ServiceStatus	U1[1]	Read Only	Service status of a load port • 0: OUT OF SERVICE • 1: IN SERVICE	'Service status' (Un\G24593)
InServiceStatus	U1[1]	Read Only	Lower state of IN SERVICE • 0: TRANSFER READY • 1: TRANSFER BLOCKED	'In service status' (Un\G24594)
TransferReadyStatus	U1[1]	Read Only	Lower state of TRANSFER READY • 0: READY TO LOAD • 1: READY TO UNLOAD	'Transfer ready status' (Un\G24595)
CarrierIDReaderStatus ^{*3}	U1[1]	Read Only	Status of a carrier ID reader • 0: UNAVAILABLE (unusable or unimplemented) • 1: AVAILABLE (usable)	'Carrier ID reader status' (Un\G24599)

*1 Excluding the control characters.

*2 Only lower state is included. (Upper state is excluded.)

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

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to OSS.

☞ Page 107 00039: CPU to CITL, Page 116 10039: CITL to CPU

In addition, structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■M+GEM300_LoadPortObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+80	uPTN	PTN(PortID)	Word [Unsigned]	1 to 6
+81	uAccessMode	AccessMode	Word [Unsigned]	• 0: MANUAL • 1: AUTO
+82	uPortAssociationState	PortAssociationState	Word [Unsigned]	• 0: NOT ASSOCIATED • 1: ASSOCIATED
+83	uLoadPortReservationState	LoadPortReservationState	Word [Unsigned]	• 0: NOT RESERVED • 1: RESERVED
+84	uPortTransferState	PortTransferState	Word [Unsigned]	• 0: OUT OF SERVICE • 1: TRANSFER BLOCKED • 2: READY TO LOAD • 3: READY TO UNLOAD
+85	uServiceStatus	ServiceStatus	Word [Unsigned]	• 0: OUT OF SERVICE • 1: IN SERVICE
+86	uInServiceStatus	InServiceStatus	Word [Unsigned]	• 0: TRANSFER READY • 1: TRANSFER BLOCKED
+87	uTransferReadyStatus	TransferReadyStatus	Word [Unsigned]	• 0: READY TO LOAD • 1: READY TO UNLOAD
+88	uCarrierIDReaderStatus ^{*3}	CarrierIDReaderStatus	Word [Unsigned]	• 0: UNAVAILABLE (unusable or unimplemented) • 1: AVAILABLE (usable)

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

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

Location object

SECS/GEM communication software instantiates location object-related information to an object and provides the function for exchanging the information between the host and equipment using E39-OSS service. Location objects cannot be created or deleted from the host and a control CPU.

Attributes

The following table shows the attributes of a location object provided by SECS/GEM communication software.

Name	Format	Access from host	Description
ObjType	ASCII[8] ^{*1}	Read Only	Object type (Location)
ObjID	ASCII[1..80] ^{*1}	Read Only	Object ID (Matrix)
CarrierLocationMatrix	LIST[1..32]	Read Only	List of LocationID and CarrierID LIST [1..32] LIST [2] LocationID CarrierID :

*1 Excluding the control characters.

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to OSS.

☞ Page 107 00039: CPU to CITL, Page 116 10039: CITL to CPU

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■M+GEM300_LocationObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+80 to 2639	st32CarrierLocation	CarrierLocationMatrix	M+GEM300_CarrierLocation (0..31)	☞ Page 35 M+GEM300_CarrierLocation

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■M+GEM300_CarrierLocation

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40LocationID	LocationID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}
+40 to 79	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Internal buffer object

SECS/GEM communication software instantiates internal buffer object-related information to an object and provides the function for exchanging the information between the host and equipment using E39-OSS service. The software creates the same number of internal buffer objects as the number of partitions set in "Partition Count" of "Equipment Setting." Internal buffer objects cannot be created or deleted from the host and a control CPU.

Attributes

The following table shows the attributes of an internal buffer object provided by SECS/GEM communication software.

Name	Format	Access from host	Description
ObjType	ASCII[14]* ¹	Read Only	Object type (InternalBuffer)
ObjID	ASCII[1..80]* ¹	Read Only	Partition ID of a logical partition (PartitionID)
PartitionType	ASCII[1..64]* ¹	Read Only	Partition type of a logical partition (example: Product, Dummy, Substrate, and Seed)
PartitionCapacity	U1[1]	Read Only	Maximum capacity of a logical partition (Maximum number of carriers that can be stored)
AvailPartitionCapacity	U1[1]	Read Only	Free space (remaining amount) of a logical partition (Free space (remaining amount) = Maximum capacity of a logical partition - Number of stored carriers)
UnallocatedPartitionCapacity	U1[1]	Read Only	Unassigned space (remaining amount) of a logical partition (Unassigned amount (remaining amount) = Maximum capacity of a logical partition - (Number of stored carriers + Number of carriers to be stored))

*1 Excluding the control characters.

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to OSS.

☞ Page 107 00039: CPU to CITL, Page 116 10039: CITL to CPU

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■M+GEM300_InternalBufferObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)* ¹ * ²
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)* ¹ * ²
+80 to 111	u32PartitionType	PartitionType	Word [Unsigned] (0..31)	1 to 64 characters (ASCII)* ¹ * ²
+112	uPartitionCapacity	PartitionCapacity	Word [Unsigned]	0 to 32
+113	uAvailPartitionCapacity	AvailPartitionCapacity	Word [Unsigned]	0 to 32
+114	uUnallocatedPartitionCapacity	UnallocatedPartitionCapacity	Word [Unsigned]	0 to 32

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

6.5 OSS Service Messages

SECS/GEM communication software supports OSS service messages. Sent or received OSS service messages can be checked in the communication log.

Additionally, the software notifies the processing result of each service message to a control CPU in the form of an event message via buffer memory.

For details, refer to the following:

☞ Page 116 10039: CITL to CPU

For messages supported by SECS/GEM communication software, refer to the following:

☞ Page 268 Service Messages

6.6 OSS Service for a Control CPU

SECS/GEM communication software provides an OSS service interface for a control CPU in the form of an event message via buffer memory.

For details, refer to the following:

☞ Page 107 00039: CPU to CITL

For the usage method of an OSS service for a control CPU, refer to the following:

- ☞ Page 359 E87-CMS compliance
- ☞ Page 443 E90-STC compliance

7 E87-CMS COMPLIANT FUNCTION

This chapter explains the E87-CMS compliant function.

7.1 Usage Method

For the usage method of this function, refer to the following:

☞ Page 359 E87-CMS compliance

7.2 Carrier Objects

This section explains carrier objects provided by SECS/GEM communication software.

SECS/GEM communication software instantiates carrier-related information to an object and exchanges the information between the host and equipment using E39-OSS and E87-CMS services. The number of instantiated carrier objects is stored in 'Carrier object count' (Un\G24598). (☞ Page 259 Buffer Memory)

Attributes

The following table shows the attributes of a carrier object.

Name	Format	Access from host	Description
ObjType	ASCII[1..80]* ¹	Read Only	Object type (Carrier)
ObjID	ASCII[1..80]* ¹	Read Only	Carrier ID (CarrierID)
Capacity	U1[1]	Read Only	Capacity (the maximum number of wafers a carrier can hold)* ²
SubstrateCount	U1[1]	Read Only	The number of wafers currently in the carrier* ³
ContentMap	LIST[1..Capacity]	Read Only	List of slot contents LIST[1..Capacity] LIST[2] ASCII[0..80] LotID* ¹ ASCII[0..80] SubstrateID* ¹ ⋮
SlotMap	LIST[1..Capacity]	Read Only	List of slot statuses LIST[1..Capacity] U1[1]SlotStatus ⋮ • 0: UNDEFINED • 1: EMPTY • 2: NOT EMPTY • 3: CORRECTLY OCCUPIED • 4: DOUBLE SLOTTED • 5: CROSS SLOTTED
Usage	ASCII[0..80]* ¹	Read Only	Intended use (Example: PRODUCT, DUMMY, and TEST)
CarrierIDStatus	U1[1]	Read Only	Verification status of a carrier ID • 0: ID NOT READ • 1: WAITING FOR HOST • 2: ID VERIFICATION OK • 3: ID VERIFICATION FAILED
CarrierAccessingStatus	U1[1]	Read Only	Access status to a carrier • 0: NOT ACCESSED • 1: IN ACCESS • 2: CARRIER COMPLETE • 3: CARRIER STOPPED
SlotMapStatus	U1[1]	Read Only	Verification status of a slot map • 0: SLOT MAP NOT READ • 1: WAITING FOR HOST • 2: SLOT MAP VERIFICATION OK • 3: SLOT MAP VERIFICATION FAILED
LocationID	ASCII[0..80]* ¹	Read Only	ID indicating the location of a carrier in equipment

Name	Format	Access from host	Description
Reason	U1 [1]	Read Only	Reason for the occurrence of the state transition No.(14) in Carrier State Model <ul style="list-style-type: none"> • 0: VERIFICATION NEEDED • 1: VERIFICATION BY EQUIPMENT UNSUCCESSFUL • 2: READ FAIL • 3: IMPROPER SUBSTRATE POSITION

*1 Excluding the control characters.

*2 The maximum number of slots of a supported carrier is available. (📖 IC Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual)

*3 Can be stored within the range of 'Capacity.'

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to CMS.

☞ Page 123 00087: CPU to CITL, Page 169 10087: CITL to CPU

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■M+GEM300_CarrierObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**1*2
+40 to 79	u40ObjID	ObjID (CarrierID)	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**1*2
+80	uCapacity	Capacity	Word [Unsigned]	1 to 25
+81	uSubstrateCount	SubstrateCount	Word [Unsigned]	0 to 25
+82 to 2081	st25ContentMap	ContentMap	M+GEM300_ContentMap (0..24)	☞ Page 40 M+GEM300_ContentMap
+2082 to 2106	st25SlotMap	SlotMap	M+GEM300_SlotMap (0..24)	☞ Page 40 M+GEM300_SlotMap
+2107 to 2146	u40Usage	Usage	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)**1*2
+2147	uCarrierIDStatus	CarrierIDStatus	Word [Unsigned]	<ul style="list-style-type: none"> • 0: ID NOT READ • 1: WAITING FOR HOST • 2: ID VERIFICATION OK • 3: ID VERIFICATION FAILED
+2148	uCarrierAccessingStatus	CarrierAccessingStatus	Word [Unsigned]	<ul style="list-style-type: none"> • 0: NOT ACCESSED • 1: IN ACCESS • 2: CARRIER COMPLETE • 3: CARRIER STOPPED
+2149	uSlotMapStatus	SlotMapStatus	Word [Unsigned]	<ul style="list-style-type: none"> • 0: SLOT MAP NOT READ • 1: WAITING FOR HOST • 2: SLOT MAP VERIFICATION OK • 3: SLOT MAP VERIFICATION FAILED
+2189	u40LocationID	LocationID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)**1*2
+2190	uReason	Reason	Word [Unsigned]	<ul style="list-style-type: none"> • 0: VERIFICATION NEEDED • 1: VERIFICATION BY EQUIPMENT UNSUCCESSFUL • 2: READ FAIL • 3: IMPROPER SUBSTRATE POSITION

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■M+GEM300_ContentMap

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40LotID	LotID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)**1*2
+40 to 79	u40SubstrateID	SubstrateID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)**1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■M+GEM300_SlotMap

Offset	Label name	Name	Data type	Applicable range
+0	uSlotStatus	SlotStatus	Word [Unsigned]	<ul style="list-style-type: none"> • 0: UNDEFINED • 1: EMPTY • 2: NOT EMPTY • 3: CORRECTLY OCCUPIED • 4: DOUBLE SLOTTED • 5: CROSS SLOTTED

7.3 CMS Service Messages

SECS/GEM communication software supports CMS service messages and automatically replies to the messages. Sent or received CMS service messages can be checked in the communication log.

Additionally, the software notifies the processing result of each service message to a control CPU in the form of an event message via buffer memory.

For details, refer to the following:

☞ Page 169 10087: CITL to CPU

For messages supported by SECS/GEM communication software, refer to the following:

☞ Page 268 Service Messages

7.4 CMS Service for a Control CPU

SECS/GEM communication software provides a CMS service interface for a control CPU in the form of an event message via buffer memory.

For details, refer to the following:






☞ Page 123 00087: CPU to CITL

For the usage method of a CMS service for a control CPU, refer to the following:

☞ Page 359 E87-CMS compliance

7.5 CMS State Model Management

SECS/GEM communication software supports the following state models:

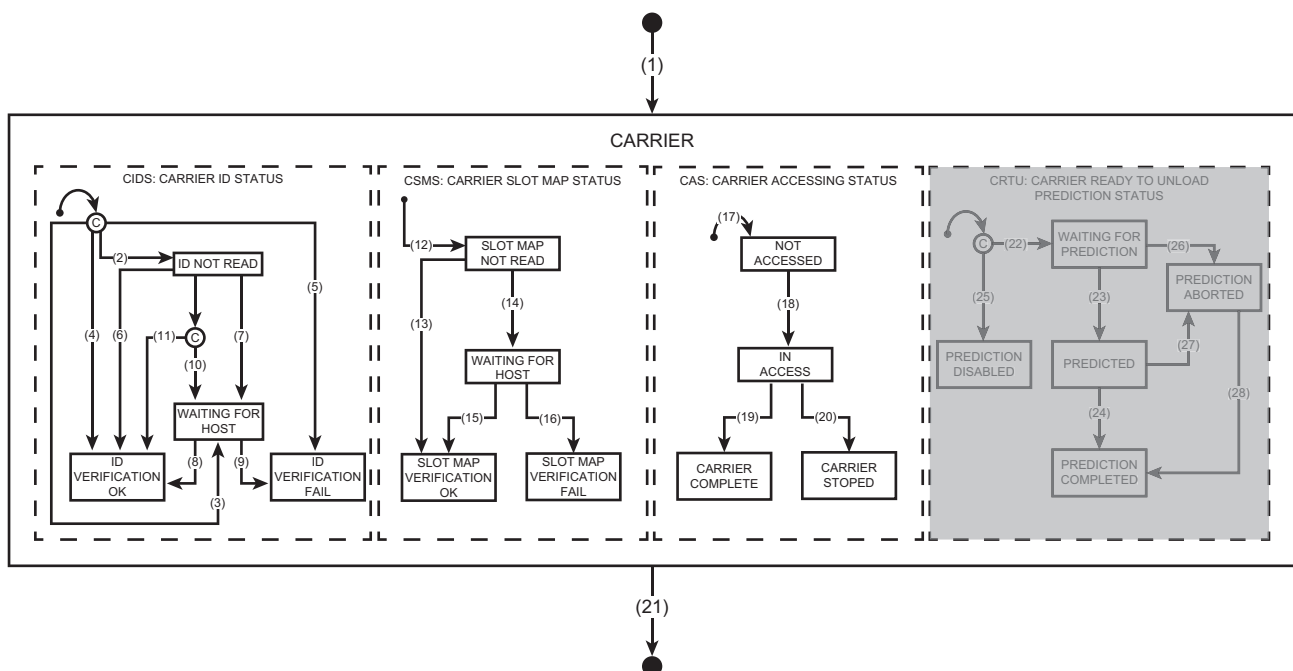
-  Page 42 Carrier State Model
-  Page 48 Load Port Transfer State Model
-  Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)
-  Page 55 Load Port/Carrier Association State Model
-  Page 58 Access Mode State Model


Carrier State Model

Values of carrier object attributes (CarrierIDStatus, SlotMapStatus, and CarrierAccessingStatus) are managed according to the diagram of Carrier State Model and the event report (S6F11) is sent to the host at each state transition.

For details on the event report (S6F11), refer to the following:

 Page 338 CMS Reports, Page 339 CMS Events



 Not supported



For the Harel notation used in the state model diagram, refer to 'R1-5 Harel Notation' in SEMI E30 (GEM).

State transition of a model diagram

The following table shows the state transition of the Carrier State Model diagram.

Point

- Numbers in the table indicate numbers (1) to (28) of state transition described in the model diagram.
- To manage the state model in a control CPU, use '00087-00003: CarrierObject SetAttr request' or '00087-00004: CarrierObject GetAttr request.' This allows only the values of CarrierIDStatus, SlotMapStatus, and CarrierAccessingStatus to be changed.

—: State transition which is not supported by this product

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(1)	(NO STATE)	A carrier object is instantiated. (Refer to the state transition No.(2), (3), (4), and (5).)	CARRIER	Refer to the action of state transition No.(2), (3), (4), (5), (12), and (17).
(2)	(NO STATE)	<ul style="list-style-type: none"> ❶ A 'Bind (S3F17)' service message is received from the host. (☞ Page 271 S3F17: Bind) ❷ A 'CarrierNotification (S3F17)' service message is received from the host. (☞ Page 290 S3F17: CarrierNotification)*¹ ❸ The state transition is changed from No.(21). (When a 'CarrierReCreate (S3F17)' service message with PropertiesList provided is received) (☞ Page 295 S3F17: CarrierReCreate)*¹ 	ID NOT READ	<p>■Common action for ❶, ❷, and ❸</p> <ul style="list-style-type: none"> Generating the instance of a carrier object Changing the CarrierIDStatus attribute value to '0: ID NOT READ' Sending the 'CEID 30000: NO STATE to ID NOT READ' event report (S6F11) to the host <p>■Common action for ❶ and ❷</p> <ul style="list-style-type: none"> Sending 'Carrier Action Acknowledge (S3F18)' to the host (☞ Page 307 S3F18: Carrier Action Acknowledge) <p>■Action only for ❶</p> <ul style="list-style-type: none"> Sending '10087-00901: Bind service notification' to a control CPU (☞ Page 214 00901: Bind service notification) <p>■Action only for ❷</p> <ul style="list-style-type: none"> Sending '10087-00910: CarrierNotification service notification' to a control CPU (☞ Page 222 00910: CarrierNotification service notification) <p>■Action only for ❸</p> <ul style="list-style-type: none"> None (Refer to ❹ of the state transition No.(21).)
(3)	(NO STATE)	<p>'00087-00501: CarrierID read successful notification' is received from a control CPU. (☞ Page 160 00501: CarrierID read successful notification)*¹</p> <p>■Unregistered carriers in the following two cases are targeted. (☞ Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> An unregistered carrier is delivered to an available load port. An unregistered carrier is delivered to another load port for which the 'Bind' service is used. 	WAITING FOR HOST	<ul style="list-style-type: none"> Generating the instance of a carrier object Changing the CarrierIDStatus attribute value to '1: WAITING FOR HOST' Sending the 'CEID 30001: NOSTATE to WAITING FOR HOST' event report (S6F11) to the host Sending '10087-00501: CarrierID read successful response' to a control CPU (☞ Page 204 00501: CarrierID read successful response)
(4)	(NO STATE)	<p>A 'ProceedWithCarrier (S3F17)' service message is received from the host in response to the 'CEID 30054: CarrierID Read Fail' event or 'CEID 30057: Unknown CarrierID' event notified by the equipment to the host. (☞ Page 300 S3F17: ProceedWithCarrier)*¹</p> <p>(When the host instructs to continue processing as a carrier ID that is not registered in advance as a result of notifying the host of the failure or unavailability of carrier ID reading for a carrier loaded to a load port in the NOT ASSOCIATED state)</p>	ID VERIFICATION OK	<ul style="list-style-type: none"> Generating the instance of a carrier object Changing the CarrierIDStatus attribute value to '2: ID VERIFICATION OK' Sending 'Carrier Action Acknowledge (S3F18)' to the host (☞ Page 307 S3F18: Carrier Action Acknowledge) Sending the 'CEID 30002: NOSTATE to ID VERIFICATIONOK' event report (S6F11) to the host Sending '10087-00918: ProceedWithCarrier service notification' to a control CPU (☞ Page 228 00918: ProceedWithCarrier service notification)
(5)	(NO STATE)	<p>A 'CancelCarrier (S3F17)' service message is received from the host in response to the 'CEID 30054: CarrierID Read Fail' event or 'CEID 30057: Unknown CarrierID' event notified by the equipment to the host. (☞ Page 277 S3F17: CancelCarrier)*¹</p> <p>(When the host instructs to cancel processing as a carrier ID that is not registered in advance as a result of notifying the host of the failure or unavailability of carrier ID reading for a carrier loaded to a load port in the NOT ASSOCIATED state)</p>	ID VERIFICATION FAIL	<ul style="list-style-type: none"> Generating the instance of a carrier object Changing the CarrierIDStatus attribute value to '3: ID VERIFICATIONFAILED' Sending 'Carrier Action Acknowledge (S3F18)' to the host (☞ Page 307 S3F18: Carrier Action Acknowledge) Sending the 'CEID 30003: NOSTATE to ID VERIFICATIONFAIL' event report (S6F11) to the host Sending '10087-00904: CancelCarrier service notification' to a control CPU (☞ Page 217 00904: CancelCarrier service notification)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(6)	ID NOT READ	<p>'00087-00501: CarrierID read successful notification' is received from a control CPU. (☞ Page 160 00501: CarrierID read successful notification)*¹</p> <p>■Registered carriers that succeed in equipment verification in the following three cases are targeted. (☞ Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • A carrier registered by using the 'Bind' service is delivered to a load port for which the 'Bind' service is used. • A carrier registered by using the 'Bind' service is delivered to an available load port. • A carrier registered by using the 'CarrierNotification' service is delivered to an available load port. <p>If a 'ProceedWithCarrier (S3F17)' service message is received, an error is returned. (☞ Page 300 S3F17: ProceedWithCarrier)</p>	ID VERIFICATION OK	<ul style="list-style-type: none"> • Changing the CarrierIDStatus attribute value to '2: ID VERIFICATION OK' • Sending the 'CEID 30004: IDNOT READ to ID VERIFICATIONOK' event report (S6F11) to the host • Sending '10087-00501: CarrierID read successful response' to a control CPU (☞ Page 204 00501: CarrierID read successful response)
(7)	ID NOT READ	<ul style="list-style-type: none"> • ① '00087-00501: CarrierID read successful notification' is received from a control CPU. (☞ Page 160 00501: CarrierID read successful notification)*¹ • ② '00087-00502: CarrierID read fail notification' is received from a control CPU. (☞ Page 161 00502: CarrierID read fail notification)*¹ <p>■For ①, registered carriers in the following two cases are targeted. (☞ Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • A carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used. • A carrier registered by using the 'CarrierNotification' service is delivered to another load port for which the 'Bind' service is used. <p>■For ②, a carrier associated with a load port in the following case is targeted. (☞ Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • Carrier ID reading fails for a carrier delivered to a load port reserved by using the 'Bind' service. 	WAITING FOR HOST	<p>■Common action for ① and ②</p> <ul style="list-style-type: none"> • Changing the CarrierIDStatus attribute value to '1: WAITING FOR HOST' • Sending the 'CEID 30005: ID NOT READ to WAITING FOR HOST' event report (S6F11) to the host <p>■Action only for ①</p> <ul style="list-style-type: none"> • Sending '10087-00501: CarrierID read successful response' to a control CPU (☞ Page 204 00501: CarrierID read successful response) <p>■Action only for ②</p> <ul style="list-style-type: none"> • Sending '10087-00502: CarrierID read fail response' to a control CPU (☞ Page 206 00502: CarrierID read fail response)
(8)	WAITING FOR HOST	A 'ProceedWithCarrier (S3F17)' service message is received from the host. (☞ Page 300 S3F17: ProceedWithCarrier)* ¹	ID VERIFICATION OK	<ul style="list-style-type: none"> • Changing the CarrierIDStatus attribute value to '2: ID VERIFICATION OK' • Sending 'Carrier Action Acknowledge (S3F18)' to the host (☞ Page 307 S3F18: Carrier Action Acknowledge) • Sending the 'CEID 30006: WAITING FOR HOST to ID VERIFICATION OK' event report (S6F11) to the host • Sending '10087-00918: ProceedWithCarrier service notification' to a control CPU (☞ Page 228 00918: ProceedWithCarrier service notification)
(9)	WAITING FOR HOST	A 'CancelCarrier (S3F17)' service message is received from the host. (☞ Page 277 S3F17: CancelCarrier)* ¹	ID VERIFICATION FAIL	<ul style="list-style-type: none"> • Changing the CarrierIDStatus attribute value to '3: ID VERIFICATION FAILED' • Sending 'Carrier Action Acknowledge (S3F18)' to the host (☞ Page 307 S3F18: Carrier Action Acknowledge) • Sending the 'CEID 30007: WAITING FOR HOST to ID VERIFICATION FAIL' event report (S6F11) to the host • Sending '10087-00904: CancelCarrier service notification' to a control CPU (☞ Page 217 00904: CancelCarrier service notification)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(10)	ID NOT READ	<p>'00087-00503: Unknown CarrierID notification' is received from a control CPU. (When the PortAssociationState attribute value of a specified load port is '1: ASSOCIATED' and its CarrierIDReaderStatus attribute value is '0: UNAVAILABLE,' and the BypassReadID equipment constant value is 'false') (Page 162 00503: Unknown CarrierID notification)*1*2*3</p> <p>■A carrier associated with a load port in the following case is targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> A carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is false. 	WAITING FOR HOST	<ul style="list-style-type: none"> Changing the CarrierIDStatus attribute value to '1: WAITING FOR HOST' Sending the 'CEID 30008: ID NOT READ to WAITING FOR HOST' event report (S6F11) to the host Sending '10087-00503: Unknown CarrierID response' to a control CPU (Page 207 00503: Unknown CarrierID response)
(11)	ID NOT READ	<p>'00087-00503: Unknown CarrierID notification' is received from a control CPU. (When the PortAssociationState attribute value of a specified load port is '1: ASSOCIATED' and its CarrierIDReaderStatus attribute value is '0: UNAVAILABLE,' and the BypassReadID equipment constant value is 'true') (Page 162 00503: Unknown CarrierID notification)*1*2*3</p> <p>■A carrier associated with a load port in the following case is targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> A carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is true. 	ID VERIFICATION OK	<ul style="list-style-type: none"> Changing the CarrierIDStatus attribute value to '2: ID VERIFICATION OK' Sending the 'CEID 30009: ID NOT READ to ID VERIFICATION OK' event report (S6F11) to the host Sending '10087-00503: Unknown CarrierID response' to a control CPU (Page 207 00503: Unknown CarrierID response)
(12)	(NO STATE)	A carrier is instantiated. (Refer to the state transition No.(2), (3), (4), and (5).)	SLOT MAP NOT READ	Changing the SlotMapStatus attribute value to '0: SLOT MAP NOT READ'
(13)	SLOT MAP NOT READ	'00087-00601: SlotMap verification ok notification' is received from a control CPU. (Page 164 00601: SlotMap verification ok notification)*1	SLOT MAP VERIFICATION OK	<ul style="list-style-type: none"> Changing the SlotMapStatus attribute value to '2: SLOT MAP VERIFICATION OK' Sending the 'CEID 30010: SLOT MAP NOT READ to SLOT MAP VERIFICATION OK' event report (S6F11) to the host Sending '10087-00601: SlotMap verification ok response' to a control CPU (Page 209 00601: SlotMap verification ok response)
(14)	SLOT MAP NOT READ	<ul style="list-style-type: none"> ① '00087-00602: SlotMap waiting for host verification notification' is received from a control CPU. (Page 165 00602: SlotMap waiting for host verification notification)*1 ② '00087-00603: SlotMap verification fail notification' is received from a control CPU. (Page 166 00603: SlotMap verification fail notification)*1 ③ '00087-00604: SlotMap read fail notification' is received from a control CPU. (Page 167 00604: SlotMap read fail notification)*1 ④ '00087-00605: SlotMap abnormal substrate position notification' is received from a control CPU. (Page 168 00605: SlotMap abnormal substrate position notification)*1 	WAITING FOR HOST	<p>■Common action for ①, ②, ③, and ④</p> <ul style="list-style-type: none"> Changing the SlotMapStatus attribute value to '1: WAITING FOR HOST' Sending the 'CEID 30011: SLOT MAP NOT READ to WAITING FOR HOST' event report (S6F11) to the host <p>■Action only for ①</p> <ul style="list-style-type: none"> Changing the Reason attribute value to '0: VERIFICATION NEEDED' Sending '10087-00602: SlotMap waiting for host verification response' to a control CPU (Page 210 00602: SlotMap waiting for host verification response) <p>■Action only for ②</p> <ul style="list-style-type: none"> Changing the Reason attribute value to '1: VERIFICATION BY EQUIPMENT UNSUCCESSFUL' Sending '10087-00603: SlotMap verification fail response' to a control CPU (Page 211 00603: SlotMap verification fail response) <p>■Action only for ③</p> <ul style="list-style-type: none"> Changing the Reason attribute value to '2: READ FAIL' Sending '10087-00604: SlotMap read fail response' to a control CPU (Page 212 00604: SlotMap read fail response) <p>■Action only for ④</p> <ul style="list-style-type: none"> Changing the Reason attribute value to '3: IMPROPER SUBSTRATE POSITION' Sending '10087-00605: SlotMap abnormal substrate position response' to a control CPU (Page 213 00605: SlotMap abnormal substrate position response)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(15)	WAITING FOR HOST	A 'ProceedWithCarrier (S3F17)' service message is received from the host. (📄 Page 300 S3F17: ProceedWithCarrier)* ¹	SLOT MAP VERIFICATION OK	<ul style="list-style-type: none"> Changing the SlotMapStatus attribute value to '2: SLOT MAP VERIFICATION OK' Sending 'Carrier Action Acknowledge (S3F18)' to the host (📄 Page 307 S3F18: Carrier Action Acknowledge) Sending the 'CEID 30012: WAITING FOR HOST to SLOT MAP VERIFICATION OK' event report (S6F11) to the host Sending '10087-00918: ProceedWithCarrier service notification' to a control CPU (📄 Page 228 00918: ProceedWithCarrier service notification)
(16)	WAITING FOR HOST	A 'CancelCarrier (S3F17)' service message is received from the host. (📄 Page 277 S3F17: CancelCarrier)* ¹	SLOT MAP VERIFICATION FAIL	<ul style="list-style-type: none"> Changing the SlotMapStatus attribute value to '3: SLOT MAP VERIFICATION FAILED' Sending 'Carrier Action Acknowledge (S3F18)' to the host (📄 Page 307 S3F18: Carrier Action Acknowledge) Sending the 'CEID 30013: WAITING FOR HOST to SLOT MAP VERIFICATION FAIL' event report (S6F11) to the host Sending '10087-00904: CancelCarrier service notification' to a control CPU (📄 Page 217 00904: CancelCarrier service notification)
(17)	(NO STATE)	A carrier is instantiated. (Refer to the state transition No.(2), (3), (4), and (5).)	NOT ACCESSED	Changing the CarrierAccessingStatus attribute value to '0: NOT ACCESSED'
(18)	NOT ACCESSED	'00087-00311: Carrier accessing started notification' is received from a control CPU. (📄 Page 147 00311: Carrier accessing started notification)* ¹	IN ACCESS	<ul style="list-style-type: none"> Changing the CarrierAccessingStatus attribute value to '1: IN ACCESS' Sending the 'CEID 30014: NOT ACCESSED to IN ACCESS' event report (S6F11) to the host Sending '10087-00311: Carrier accessing started response' to a control CPU (📄 Page 191 00311: Carrier accessing started response)
(19)	IN ACCESS	'00087-00313: Carrier accessing normally finished notification' is received from a control CPU. (📄 Page 149 00313: Carrier accessing normally finished notification)* ¹	CARRIER COMPLETE	<ul style="list-style-type: none"> Changing the CarrierAccessingStatus attribute value to '2: CARRIER COMPLETE' Sending the 'CEID 30015: IN ACCESS to CARRIER COMPLETE' event report (S6F11) to the host Sending '10087-00313: Carrier accessing normally finished response' to a control CPU (📄 Page 193 00313: Carrier accessing normally finished response)
(20)	IN ACCESS	'00087-00314: Carrier accessing abnormally finished notification' is received from a control CPU. (📄 Page 150 00314: Carrier accessing abnormally finished notification)* ¹	CARRIER STOPPED	<ul style="list-style-type: none"> Changing the CarrierAccessingStatus attribute value to '3: CARRIER STOPPED' Sending the 'CEID 30016: IN ACCESS to CARRIER STOPPED' event report (S6F11) to the host Sending '10087-00314: Carrier accessing abnormally finished response' to a control CPU (📄 Page 194 00314: Carrier accessing abnormally finished response)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(21)	CARRIER	<ul style="list-style-type: none"> ① '00087-00305: UNLOAD completed notification' is received from a control CPU. (Case in which the processing is successfully completed) (Page 141 00305: UNLOAD completed notification) ② A 'CancelBind (S3F17)' service message is received from the host. (Page 274 S3F17: CancelBind) ③ A 'CancelCarrierNotification (S3F17)' service message is received from the host. (Page 285 S3F17: CancelCarrierNotification)*¹ ④ A 'CarrierReCreate (S3F17)' service message is received from the host. (Page 295 S3F17: CarrierReCreate)*¹ ⑤ '00087-00501: CarrierID read successful notification' is received from a control CPU. (Page 160 00501: CarrierID read successful notification)*¹ ⑥ '00087-00415: UNLOAD completed and Carrier move started to Load Port notification' is received from a control CPU. (Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification)*¹ <p>■For ⑤, other carriers for which the 'Bind' service is used in the following three cases are targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> A carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used. A carrier registered by using the 'CarrierNotification' service is delivered to another load port for which the 'Bind' service is used. An unregistered carrier is delivered to another load port for which the 'Bind' service is used. 	(NO STATE)	<p>■Common action for ①, ②, ③, ④, ⑤, and ⑥</p> <ul style="list-style-type: none"> Deleting an instance. Sending the 'CEID 30017: CARRIER to NO STATE' event report (S6F11) to the host <p>■Action only for ①</p> <ul style="list-style-type: none"> Sending '10087-00305: UNLOAD completed response' to a control CPU (Page 185 00305: UNLOAD completed response) <p>■Common action for ②, ③, and ④</p> <ul style="list-style-type: none"> Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (Page 307 S3F18: Carrier Action Acknowledge) <p>■Action only for ②</p> <ul style="list-style-type: none"> Sending '10087-00903: CancelBind service notification' to a control CPU (Page 216 00903: CancelBind service notification) <p>■Action only for ③</p> <ul style="list-style-type: none"> Sending '10097-00906: CancelCarrierNotification service notification' to a control CPU (Page 219 00906: CancelCarrierNotification service notification) <p>■Action only for ④</p> <ul style="list-style-type: none"> Sending '10087-00912: CarrierReCreate service notification' to a control CPU (Page 224 00912: CarrierReCreate service notification) <p>[When PropertiesList is not provided] Not creating a new instance [When PropertiesList is provided] Creating a new instance in the state transition No.(2)</p> <p>■Action only for ⑤</p> <ul style="list-style-type: none"> Sending '10087-00501: CarrierID read successful response' to a control CPU (Page 204 00501: CarrierID read successful response) <p>■Action only for ⑥</p> <ul style="list-style-type: none"> Sending '10087-00415: UNLOAD completed and Carrier move started to Load Port response' to a control CPU (Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)
(22)	(NO STATE)	—	WAITING FOR PREDICTION	—
(23)	WAITING FOR PREDICTION	—	PREDICTED	—
(24)	PREDICTED	—	PREDICTION COMPLETED	—
(25)	(NO STATE)	—	PREDICTION DISABLED	—
(26)	WAITING FOR PREDICTION	—	PREDICTION ABORTED	—
(27)	PREDICTED	—	PREDICTION ABORTED	—
(28)	PREDICTION ABORTED	—	PREDICTION COMPLETED	—

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

*2 If a carrier ID reader for a load port is no longer available, use '00087-00204: ID READER unavailable notification.'

*3 To change the value of BypassReadID, use the equipment constant function of SEMI E30 (GEM).

Precautions

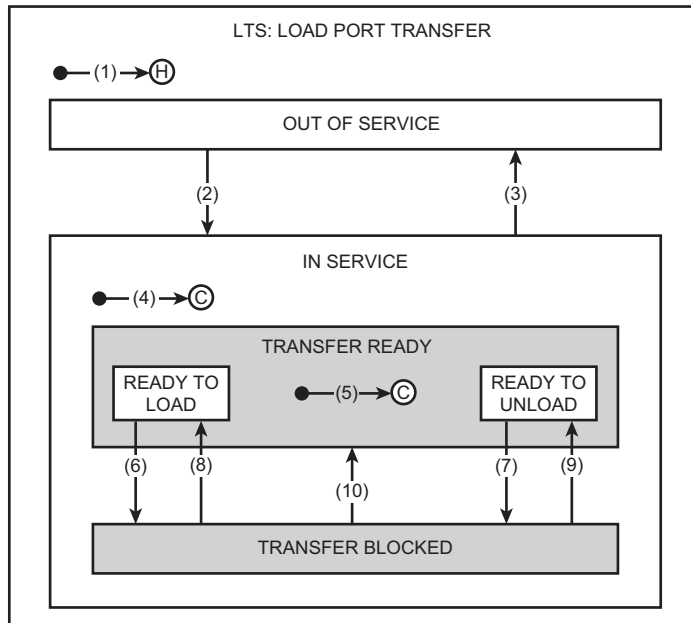
SECS/GEM communication software does not support 'Carrier Ready To Unload (CRTU).'

Load Port Transfer State Model

Values of the load object attribute (PortTransferState) are managed according to the diagram of a load port transport status model and the event report (S6F11) is sent to the host at each state transition.

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events



Point

For the Harel notation used in the state model diagram, refer to 'R1-5 Harel Notation' in SEMI E30 (GEM).

State transition of a model diagram

The following table shows the state transition of the load port transport status model diagram.

Point

- Numbers in the table indicate numbers (1) to (10) of state transition described in the model diagram.
- To manage the state model in a control CPU, use '00039-00103: LoadPortObject SetAttr request' or '00039-00104: LoadPortObject GetAttr request.' This allows only the value of PortTransferState to be changed.
- Attribute values changed by an action of SECS/GEM communication software can be checked in the following buffer memories after an acknowledge/response or notification for a trigger is sent to a control CPU. (📖 Page 259 Buffer Memory)
 - Port transfer state (Un\G24577 to 24592)
 - Service status (Un\G24593)
 - In service status (Un\G24594)
 - Transfer ready status (Un\G24595)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(1)	(NO STATE)	'00000-00002: LoadPort initial request' is received from a control CPU. (Page 103 00002 : LoadPort initial request)	OUT OF SERVICE, TRANSFER BLOCKED, or READY TO LOAD (History)	<ul style="list-style-type: none"> • Generating an instance • Changing the value of the PortTransferState attribute to that of PortTransferHistory specified in '00000-00002: LoadPort initial request' (Page 103 00002 : LoadPort initial request) • Sending '10000-00002: LoadPort initial acknowledge' to a control CPU (Page 105 00002 : LoadPort initial acknowledge) ■When the PortTransferHistory attribute is '0: OUT OF SERVICE' <ul style="list-style-type: none"> • Sending the 'CEID 30025: NO STATE to OUT OF SERVICE' event report (S6F11) to the host ■When the PortTransferHistory attribute is '1: TRANSFER BLOCKED' <ul style="list-style-type: none"> • Changing the ServiceStatus attribute value to '1: IN SERVICE' • Changing the InServiceStatus attribute value to '1: TRANSFER BLOCKED' • Sending the 'CEID 30026: NO STATE to IN SERVICE' event report (S6F11) to the host • Sending the 'CEID 30030: IN SERVICE to TRANSFER BLOCKED' event report (S6F11) to the host ■When the PortTransferHistory attribute is '2: READY TO LOAD' <ul style="list-style-type: none"> • Changing the ServiceStatus attribute value to '1: IN SERVICE' • Changing the InServiceStatus attribute value to '0: TRANSFER READY' • Changing the TransferReadyStatus attribute value to '0: READY TO LOAD' • Sending the 'CEID 30026: NO STATE to IN SERVICE' event report (S6F11) to the host • Sending the 'CEID 30029: IN SERVICE to TRANSFER READY' event report (S6F11) to the host • Sending the 'CEID 30031: TRANSFER READY to READY TO LOAD' event report (S6F11) to the host ■When the PortTransferHistory attribute value is '3: READY TO UNLOAD' <ul style="list-style-type: none"> • Changing the ServiceStatus attribute value to '1: IN SERVICE' • Changing the InServiceStatus attribute value to '0: TRANSFER READY' • Changing the TransferReadyStatus attribute value to '1: READY TO UNLOAD' • Sending the 'CEID 30026: NO STATE to IN SERVICE' event report (S6F11) to the host • Sending the 'CEID 30029: IN SERVICE to TRANSFER READY' event report (S6F11) to the host • Sending the 'CEID 30032: TRANSFER READY to READY TO UNLOAD' event report (S6F11) to the host
(2)	OUT OF SERVICE	'00087-00201: IN SERVICE request' is received from a control CPU. (Page 133 00201: IN SERVICE request)	IN SERVICE	<ul style="list-style-type: none"> • Changing the ServiceStatus attribute value to '1: IN SERVICE' • Sending the 'CEID 30027: OUT OF SERVICE to IN SERVICE' event report (S6F11) to the host • Transitioning to the state transition No.(4) • Sending '10087-00201: IN SERVICE acknowledge' to a control CPU (Page 177 00201: IN SERVICE acknowledge)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(3)	IN SERVICE	'00087-00202: OUT OF SERVICE request' is received from a control CPU. (Page 134 00202: OUT OF SERVICE request)	OUT OF SERVICE	<ul style="list-style-type: none"> Changing the PortTransferState attribute value to '0: OUT OF SERVICE' Changing the ServiceStatus attribute value to '0: OUT OF SERVICE' Sending the 'CEID 30028: IN SERVICE to OUT OF SERVICE' event report (S6F11) to the host Sending '10087-00202: OUT OF SERVICE acknowledge' to a control CPU (Page 178 00202: OUT OF SERVICE acknowledge)
(4)	IN SERVICE	The state transition is changed from No.(2).	TRANSFER READY or TRANSFER BLOCKED	<p>■When the InServiceStatus attribute value is '0: TRANSFER READY'</p> <ul style="list-style-type: none"> Sending the 'CEID 30029: IN SERVICE to TRANSFER READY' event report (S6F11) to the host Transitioning to the state transition No.(5) <p>■When the InServiceStatus attribute value is '1: TRANSFER BLOCKED'</p> <ul style="list-style-type: none"> Changing the PortTransferState attribute value to '1: TRANSFER BLOCKED' Sending the 'CEID 30030: IN SERVICE to TRANSFER BLOCKED' event report (S6F11) to the host
(5)	TRANSFER READY	<ul style="list-style-type: none"> ❶ The state transition is changed from No.(4). ❷ The state transition is changed from No.(10). 	READY TO LOAD or READY TO UNLOAD	<p>■When the TransferReadyStatus attribute value is '0: READY TO LOAD'</p> <ul style="list-style-type: none"> Changing the PortTransferState attribute value to '2: READY TO LOAD' Sending the 'CEID 30031: TRANSFER READY to READY TO LOAD' event report (S6F11) to the host <p>■When the TransferReadyStatus attribute value is '1: READY TO UNLOAD'</p> <ul style="list-style-type: none"> Changing the PortTransferState attribute value to '3: READY TO UNLOAD' Sending the 'CEID 30032: TRANSFER READY to READY TO UNLOAD' event report (S6F11) to the host
(6)	READY TO LOAD	<ul style="list-style-type: none"> ❶ '00087-00301: LOAD started notification' is received from a control CPU. (Page 137 00301: LOAD started notification) ❷ '00087-00413: Carrier move started to Load Port notification' is received from a control CPU. (Page 157 00413: Carrier move started to Load Port notification)^{*1} 	TRANSFER BLOCKED	<p>■Common action for ❶ and ❷</p> <ul style="list-style-type: none"> Changing the PortTransferState attribute value to '1: TRANSFER BLOCKED' Changing the InServiceStatus attribute value to '1: TRANSFER BLOCKED' Sending the 'CEID 30033: READY TO LOAD to TRANSFER BLOCKED' event report (S6F11) to the host <p>■Action only for ❶</p> <ul style="list-style-type: none"> Sending '10087-00301: LOAD started response' to a control CPU (Page 181 00301: LOAD started response) <p>■Action only for ❷</p> <ul style="list-style-type: none"> Sending '10087-00413: Carrier move started to Load Port response' to a control CPU (Page 201 00413: Carrier move started to Load Port response)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(7)	READY TO UNLOAD	<ul style="list-style-type: none"> • ❶ A 'CarrierReCreate (S3F17)' service message is received from the host. (☞ Page 295 S3F17: CarrierReCreate)*¹ • ❷ '00087-00304: UNLOAD started notification' is received from a control CPU. (☞ Page 140 00304: UNLOAD started notification) • ❸ '00087-00411: Carrier move started to Internal Buffer notification' is received from a control CPU. (☞ Page 155 00411: Carrier move started to Internal Buffer notification)*¹ 	TRANSFER BLOCKED	<p>■ Common action for ❶, ❷, and ❸</p> <ul style="list-style-type: none"> • Changing the PortTransferState attribute value to '1: TRANSFER BLOCKED' • Changing the InServiceStatus attribute value to '1: TRANSFER BLOCKED' • Sending the 'CEID 30034: READY TO UNLOAD to TRANSFER BLOCKED' event report (S6F11) to the host <p>■ Action only for ❶</p> <ul style="list-style-type: none"> • Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (☞ Page 307 S3F18: Carrier Action Acknowledge) • Sending '10087-00912: CarrierReCreate service notification' to a control CPU (☞ Page 224 00912: CarrierReCreate service notification) <p>■ Action only for ❷</p> <ul style="list-style-type: none"> • Sending '10087-00304: UNLOAD started response' to a control CPU (☞ Page 184 00304: UNLOAD started response) <p>■ Action only for ❸</p> <ul style="list-style-type: none"> • Sending '10087-00411: Carrier move started to Internal Buffer response' to a control CPU (☞ Page 199 00411: Carrier move started to Internal Buffer response)
(8)	TRANSFER BLOCKED	<ul style="list-style-type: none"> • ❶ '00087-00305: UNLOAD completed notification' is received from a control CPU. (☞ Page 141 00305: UNLOAD completed notification) • ❷ '00087-00412: Carrier move completed to Internal Buffer notification' is received from a control CPU. (☞ Page 156 00412: Carrier move completed to Internal Buffer notification)*¹ 	READY TO LOAD	<p>■ Common action for ❶ and ❷</p> <ul style="list-style-type: none"> • Changing the PortTransferState attribute value to '2: READY TO LOAD' • Changing the InServiceStatus attribute value to '0: TRANSFER READY' • Changing the TransferReadyStatus attribute value to '0: READY TO LOAD' • Sending the 'CEID 30035: TRANSFER BLOCKED to READY TO LOAD' event report (S6F11) to the host <p>■ Action only for ❶</p> <ul style="list-style-type: none"> • Sending '10087-00305: UNLOAD completed response' to a control CPU (☞ Page 185 00305: UNLOAD completed response) <p>■ Action only for ❷</p> <ul style="list-style-type: none"> • Sending '10087-00412: Carrier move completed to Internal Buffer response' to a control CPU (☞ Page 200 00412: Carrier move completed to Internal Buffer response)
(9)	TRANSFER BLOCKED	'00087-00303: UNLOAD available notification' is received from a control CPU. (☞ Page 139 00303: UNLOAD available notification)	READY TO UNLOAD	<ul style="list-style-type: none"> • Changing the PortTransferState attribute value to '3: READY TO UNLOAD' • Changing the InServiceStatus attribute value to '0: TRANSFER READY' • Changing the TransferReadyStatus attribute value to '1: READY TO UNLOAD' • Sending the 'CEID 30036: TRANSFER BLOCKED to READY TO UNLOAD' event report (S6F11) to the host • Sending '10087-00303: UNLOAD available response' to a control CPU (☞ Page 183 00303: UNLOAD available response)
(10)	TRANSFER BLOCKED	'00087-00306: TRANSFER failed notification' is received from a control CPU. (☞ Page 142 00306: TRANSFER failed notification)	TRANSFER READY	<ul style="list-style-type: none"> • Changing the InServiceStatus attribute value to '0: TRANSFER READY' • Sending the 'CEID 30037: TRANSFER BLOCKED to TRANSFER READY' event report (S6F11) to the host • Transitioning to the state transition No.(5) • Sending '10087-00306: TRANSFER failed response' to a control CPU

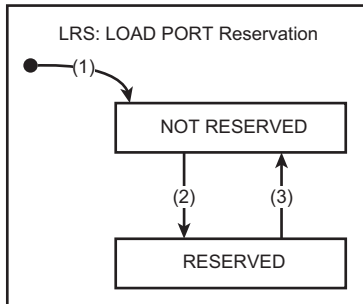
*1 Supported only by SECS/GEM communication software with software version 1.40S or later.

Load Port Reservation State Model (internal buffer equipment/ fixed buffer equipment)

Values of the load port object attribute (LoadPortReservationState) are managed according to the diagram of Load Port Reservation State Model and the event report (S6F11) is sent to the host at each state transition.

For details on the event report (S6F11), refer to the following:

 Page 338 CMS Reports, Page 339 CMS Events















For the Harel notation used in the state model diagram, refer to 'R1-5 Harel Notation' in SEMI E30 (GEM).

State transition of a model diagram

The following table shows the state transition of the Load Port Reservation State Model diagram.

Point

- Numbers in the table indicate numbers (1) to (3) of state transition described in the model diagram.
- To manage the state model in a control CPU, use '00039-00103: LoadPortObject SetAttr request' or '00039-00104: LoadPortObject GetAttr request.' This allows only the value of LoadPortReservationState to be changed.
- Attribute values changed by an action of SECS/GEM communication software can be checked in the following buffer memory after an acknowledge/response or notification for a trigger is sent to a control CPU.
( Page 259 Buffer Memory)
- Port reservation state (Un\G24597)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(1)	(NO STATE)	'00000-00002: LoadPort initial request' is received from a control CPU. ( Page 103 00002 : LoadPort initial request)	NOT RESERVED	<ul style="list-style-type: none"> • Changing the LoadPortReservationState attribute value to '0: NOT RESERVED' • Sending '10000-00002: LoadPort initial acknowledge' to a control CPU ( Page 105 00002 : LoadPort initial acknowledge)
(2)	NOT RESERVED	<ul style="list-style-type: none"> • ❶ A 'Bind (S3F17)' service message is received from the host. ( Page 271 S3F17: Bind) • ❷ '00087-00413: Carrier move started to Load Port notification' is received from a control CPU. ( Page 157 00413: Carrier move started to Load Port notification) • ❸ '00087-00111: Load Port reservation request' is received from a control CPU. ( Page 131 00111: Load Port reservation request) • ❹ '00087-00415: UNLOAD completed and Carrier move started to Load Port notification' is received from a control CPU. ( Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification) 	RESERVED	<p>■Common action for ❶, ❷, ❸, and ❹</p> <ul style="list-style-type: none"> • Changing the LoadPortReservationState attribute value to '1: RESERVED' • Sending the 'CEID 30038: NOT RESERVED to RESERVED' event report (S6F11) to the host <p>■Action only for ❶</p> <ul style="list-style-type: none"> • Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) ( Page 307 S3F18: Carrier Action Acknowledge) • Sending '10087-00901: Bind service notification' to a control CPU ( Page 214 00901: Bind service notification) <p>■Action only for ❷</p> <ul style="list-style-type: none"> • Sending '10087-00413: Carrier move started to Load Port response' to a control CPU ( Page 201 00413: Carrier move started to Load Port response) <p>■Action only for ❸</p> <ul style="list-style-type: none"> • Sending '10087-00111: Load Port reservation acknowledge' to a control CPU ( Page 175 00111: Load Port reservation acknowledge) <p>■Action only for ❹</p> <ul style="list-style-type: none"> • Sending '10087-00415: UNLOAD completed and Carrier move started to Load Port response' to a control CPU ( Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)

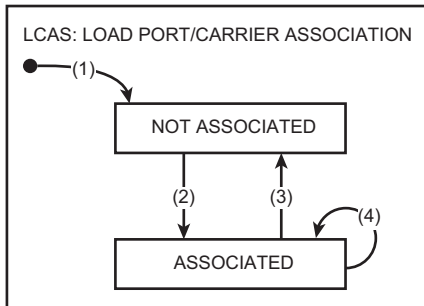
No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(3)	RESERVED	<ul style="list-style-type: none"> • ❶ A 'CancelBind (S3F17)' service message is received from the host. (🔗 Page 274 S3F17: CancelBind) • ❷ '00087-00302: LOAD completed notification' is received from a control CPU. (🔗 Page 138 00302: LOAD completed notification) • ❸ '00087-00501: CarrierID read successful notification' is received from a control CPU. (🔗 Page 160 00501: CarrierID read successful notification) • ❹ '00087-00414: Carrier move completed to Load Port notification' is received from a control CPU. (🔗 Page 158 00414: Carrier move completed to Load Port notification) • ❺ '00087-00112: Load Port cancel reservation request' is received from a control CPU. (🔗 Page 132 00112: Load Port cancel reservation request) <p>■For ❸, load ports to which carriers were to be delivered in the following two cases are targeted. (🔗 Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • A carrier registered by using the 'Bind' service is delivered to an available load port. • A carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used. 	NOT RESERVED	<p>■Common action for ❶, ❷, ❸, ❹, and ❺</p> <ul style="list-style-type: none"> • Changing the LoadPortReservationState attribute value to '0: NOT RESERVED' • Sending the 'CEID 30039: RESERVED to NOT RESERVED' event report (S6F11) to the host <p>■Action only for ❶</p> <ul style="list-style-type: none"> • Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (🔗 Page 307 S3F18: Carrier Action Acknowledge) • Sending '10087-00903: CancelBind service notification' to a control CPU (🔗 Page 216 00903: CancelBind service notification) <p>■Action only for ❷</p> <ul style="list-style-type: none"> • Sending '10087-00302: LOAD completed response' to a control CPU (🔗 Page 182 00302: LOAD completed response) <p>■Action only for ❸</p> <ul style="list-style-type: none"> • Sending '10087-00501: CarrierID read successful response' to a control CPU (🔗 Page 204 00501: CarrierID read successful response) <p>■Action only for ❹</p> <ul style="list-style-type: none"> • Sending '10087-00414: Carrier move completed to Load Port response' to a control CPU (🔗 Page 202 00414: Carrier move completed to Load Port response) <p>■Action only for ❺</p> <ul style="list-style-type: none"> • Sending '10087-00112: Load Port cancel reservation acknowledge' to a control CPU (🔗 Page 176 00112: Load Port cancel reservation acknowledge)

Load Port/Carrier Association State Model

Values of the load port object attribute (PortAssociationState) are managed according to the diagram of Load Port/Carrier Association State Model and the event report (S6F11) is sent to the host at each state transition.

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events



For the Harel notation used in the state model diagram, refer to 'R1-5 Harel Notation' in SEMI E30 (GEM).

State transition of a model diagram

The following table shows the state transition of the Load Port/Carrier Association State Model diagram.

Point

- Numbers in the table indicate numbers (1) to (4) of state transition described in the model diagram.
- To manage the state model in a control CPU, use '00039-00103: LoadPortObject SetAttr request' or '00039-00104: LoadPortObject GetAttr request.' This allows only the value of PortAssociationState to be changed.
- Attribute values changed by an action of SECS/GEM communication software can be checked in the following buffer memory after an acknowledge/response or notification for a trigger is sent to a control CPU.
([Page 259 Buffer Memory](#))
- Port association state (Un\G24596)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(1)	(NO STATE)	'00000-00002: LoadPort initial request' is received from a control CPU. (Page 103 00002 : LoadPort initial request)	NOT ASSOCIATED	<ul style="list-style-type: none"> • Changing the PortAssociationState attribute value to '0: NOT ASSOCIATED' • Sending '10000-00002: LoadPort initial acknowledge' to a control CPU (Page 105 00002 : LoadPort initial acknowledge)
(2)	NOT ASSOCIATED	<ul style="list-style-type: none"> • ❶ A 'Bind (S3F17)' service message is received from the host. (Page 271 S3F17: Bind) • ❷ A 'ProceedWithCarrier (S3F17)' service message is received from the host. (Page 300 S3F17: ProceedWithCarrier) • ❸ A 'CancelCarrier (S3F17)' service message is received from the host. (Page 277 S3F17: CancelCarrier) • ❹ '00087-00501: CarrierID read successful notification' is received from a control CPU. (Page 160 00501: CarrierID read successful notification)*1 • ❺ '00087-00401: Load Port Carrier association request' is received from a control CPU. (Page 151 00401: Load Port Carrier association request)*1 • ❻ '00087-00413: Carrier move started to Load Port notification' is received from a control CPU. (Page 157 00413: Carrier move started to Load Port notification) • ❼ '00087-00415: UNLOAD completed and Carrier move started to Load Port notification' is received from a control CPU. (Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification) <p>■For ❷ and ❸, available load ports in the following two cases are targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • Carrier ID reading fails for a carrier delivered to an available load port. • A carrier is delivered to a load port that is available but the carrier ID reader is not available. <p>■For ❹, available load ports in the following three cases are targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> • A carrier registered by using the 'Bind' service is delivered to an available load port. • A carrier registered by using the 'CarrierNotification' service is delivered to an available load port. • An unregistered carrier is delivered to an available load port. <p>■For ❼, an available load port is targeted.</p>	ASSOCIATED	<p>■Common action for ❶, ❷, ❸, ❹, ❺, and ❻</p> <ul style="list-style-type: none"> • Changing the PortAssociationState attribute value to '1: ASSOCIATED' • Sending the 'CEID 30040: NOT ASSOCIATED to ASSOCIATED' event report (S6F11) to the host <p>■Common action for ❶, ❷, and ❸</p> <ul style="list-style-type: none"> • Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (Page 307 S3F18: Carrier Action Acknowledge) <p>■Action only for ❶</p> <ul style="list-style-type: none"> • Sending '10087-00901: Bind service notification' to a control CPU (Page 214 00901: Bind service notification) <p>■Action only for ❷</p> <ul style="list-style-type: none"> • Sending '10087-00918: ProceedWithCarrier service notification' to a control CPU (Page 228 00918: ProceedWithCarrier service notification) <p>■Action only for ❸</p> <ul style="list-style-type: none"> • Sending '10087-00904: CancelCarrier service notification' to a control CPU (Page 217 00904: CancelCarrier service notification) <p>■Action only for ❹</p> <ul style="list-style-type: none"> • Sending '10087-00501: CarrierID read successful response' to a control CPU (Page 204 00501: CarrierID read successful response) <p>■Action only for ❺</p> <ul style="list-style-type: none"> • Sending '10087-00401: Load Port Carrier association acknowledge' to a control CPU (Page 195 00401: Load Port Carrier association acknowledge) <p>■Action only for ❻</p> <ul style="list-style-type: none"> • Sending '10087-00413: Carrier move started to Load Port response' to a control CPU (Page 201 00413: Carrier move started to Load Port response) <p>■Action only for ❼</p> <ul style="list-style-type: none"> • Sending '10087-00415: UNLOAD completed and Carrier move started to Load Port response' to a control CPU (Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(3)	ASSOCIATED	<ul style="list-style-type: none"> 1 A 'CancelBind (S3F17)' service message is received from the host. (Page 274 S3F17: CancelBind) 2 '00087-00305: UNLOAD completed notification' is received from a control CPU. (Page 141 00305: UNLOAD completed notification) 3 '00087-00501: CarrierID read successful notification' is received from a control CPU. (Page 160 00501: CarrierID read successful notification)*¹ 4 '00087-00412: Carrier move completed to Internal Buffer notification' is received from a control CPU. (Page 156 00412: Carrier move completed to Internal Buffer notification)*¹ 5 A 'CarrierReCreate (S3F17)' service message without PropertiesList provided is received from the host. (Page 295 S3F17: CarrierReCreate)*¹ 6 '00087-00402: Load Port Carrier cancel association request' is received from a control CPU. (Page 152 00402: Load Port Carrier cancel association request)*¹ <p>■For 3, load ports to which carriers were to be delivered in the following two cases are targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> A carrier registered by using the 'Bind' service is delivered to an available load port. A carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used. 	NOT ASSOCIATED	<p>■Common action for 1, 2, 3, 4, 5, and 6</p> <ul style="list-style-type: none"> Changing the PortAssociationState attribute value to '0: NOT ASSOCIATED' Sending the 'CEID 30041: ASSOCIATED to NOT ASSOCIATED' event report (S6F11) to the host <p>■Common action for 1 and 5</p> <ul style="list-style-type: none"> Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (Page 307 S3F18: Carrier Action Acknowledge) <p>■Action only for 1</p> <ul style="list-style-type: none"> Sending '10087-00903: CancelBind service notification' to a control CPU (Page 216 00903: CancelBind service notification) <p>■Action only for 2</p> <ul style="list-style-type: none"> Sending '10087-00305: UNLOAD completed response' to a control CPU (Page 185 00305: UNLOAD completed response) <p>■Action only for 3</p> <ul style="list-style-type: none"> Sending '10087-00501: CarrierID read successful response' to a control CPU (Page 185 00305: UNLOAD completed response) <p>■Action only for 4</p> <ul style="list-style-type: none"> Sending '10087-00412: Carrier move completed to Internal Buffer response' to a control CPU (Page 200 00412: Carrier move completed to Internal Buffer response) <p>■Action only for 5</p> <ul style="list-style-type: none"> Sending '10087-00912: CarrierReCreate service notification' to a control CPU (Page 224 00912: CarrierReCreate service notification) <p>■Action only for 6</p> <ul style="list-style-type: none"> Sending '10087-00402: Load Port Carrier cancel association acknowledge' to a control CPU (Page 196 00402: Load Port Carrier cancel association acknowledge)
(4)	ASSOCIATED	<ul style="list-style-type: none"> 1 '00087-00501: CarrierID read successful notification' is received from a control CPU. (Page 160 00501: CarrierID read successful notification)*¹ 2 '00087-00401: Load Port Carrier association request' is received from a control CPU. (Page 151 00401: Load Port Carrier association request)*¹ 3 A 'CarrierReCreate (S3F17)' service message with PropertiesList provided is received from the host. (Page 295 S3F17: CarrierReCreate)*¹ 4 '00087-00415: UNLOAD completed and Carrier move started to Load Port notification' is received from a control CPU. (Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification) <p>■For 1, load ports to which carriers are delivered in the following three cases are targeted. (Page 64 Carrier ID Verification)</p> <ul style="list-style-type: none"> A carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used. A carrier registered by using the 'CarrierNotification' service is delivered to another load port for which the 'Bind' service is used. An unregistered carrier is delivered to another load port for which the 'Bind' service is used. 	ASSOCIATED	<p>■Common action for 1, 2, 3, and 4</p> <ul style="list-style-type: none"> Changing the PortAssociationState attribute value to '1: ASSOCIATED' Sending the 'CEID 30042: ASSOCIATED to ASSOCIATED' event report (S6F11) to the host <p>■Action only for 1</p> <ul style="list-style-type: none"> Sending '10087-00501: CarrierID read successful response' to a control CPU (Page 204 00501: CarrierID read successful response) <p>■Action only for 2</p> <ul style="list-style-type: none"> Sending '10087-00401: Load Port Carrier association acknowledge' to a control CPU (Page 195 00401: Load Port Carrier association acknowledge) <p>■Action only for 3</p> <ul style="list-style-type: none"> Sending 'Carrier Action Acknowledge (S3F18)' to the host (prior to the event report (S6F11)) (Page 307 S3F18: Carrier Action Acknowledge) Sending '10087-00912: CarrierReCreate service notification' to a control CPU (Page 224 00912: CarrierReCreate service notification) <p>■Action only for 4</p> <ul style="list-style-type: none"> Sending '10087-00415: UNLOAD completed and Carrier move started to Load Port response' to a control CPU (Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)

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

Access Mode State Model

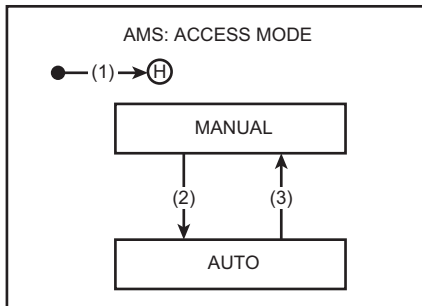
Values of the load port object attribute (AccessMode) are managed according to the diagram of Access Mode State Model and the event report (S6F11) is sent to the host at each state transition.

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

Point

A change request is denied when the reservation status (LoadPortReservationState) of a target load port is 'RESERVED' or when the transfer status (PortTransferState) of the load port is 'TRANSFER BLOCKED.'



Point

For the Harel notation used in the state model diagram, refer to 'R1-5 Harel Notation' in SEMI E30 (GEM).

State transition of a model diagram

The following table shows the state transition of the Access Mode State Model diagram.

Point

- Numbers in the table indicate numbers (1) to (3) of state transition described in the model diagram.
- To manage the state model in a control CPU, use '00039-00103: LoadPortObject SetAttr request' or '00039-00104: LoadPortObject GetAttr request.' This allows only the value of AccessMode to be changed.
- Attribute values changed by an action of SECS/GEM communication software can be checked in the following buffer memory after an acknowledge/response or notification for a trigger is sent to a control CPU. (☞ Page 259 Buffer Memory)
 - Port access mode (Un\G24576)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(1)	(NO STATE)	'00000-00002: LoadPort initial request' is received from a control CPU. (☞ Page 103 00002 : LoadPort initial request)	AUTO or MANUAL (History)	<ul style="list-style-type: none"> • Changing the value of the AccessMode attribute to that of AccessModeHistory specified in '00000-00002: LoadPort initial request' (☞ Page 103 00002 : LoadPort initial request) • Sending '10000-00002: LoadPort initial acknowledge' to a control CPU (☞ Page 105 00002 : LoadPort initial acknowledge) ■When the AccessModeHistory attribute value is '0: MANUAL' *1 <ul style="list-style-type: none"> • Sending the 'CEID 30043: NO STATE to MANUAL' event report (S6F11) to the host ■When the AccessModeHistory attribute value is '1: AUTO' <ul style="list-style-type: none"> • Sending the 'CEID 30044: NO STATE to AUTO' event report (S6F11) to the host
(2)	MANUAL	'00087-00101: AccessMode AUTO request' is received from a control CPU. (☞ Page 129 00101: AccessMode AUTO request) *1	AUTO	<ul style="list-style-type: none"> • Changing the AccessMode attribute value to '1: AUTO' • Sending the 'CEID 30045: MANUAL to AUTO' event report (S6F11) to the host • Sending '10087-00101: AccessMode AUTO acknowledge' to a control CPU (☞ Page 173 00101: AccessMode AUTO acknowledge)

No.	Current state	Trigger	New state	Action by SECS/GEM communication software
(3)	AUTO	'00087-00102: AccessMode MANUAL request' is received from a control CPU. (📄 Page 130 00102: AccessMode MANUAL request)* ¹	MANUAL	<ul style="list-style-type: none"> • Changing the AccessMode attribute value to '0: MANUAL' • Sending the 'CEID 30046: AUTO to MANUAL' event report (S6F11) to the host • Sending '10087-00102: AccessMode MANUAL acknowledge' to a control CPU (📄 Page 174 00102: AccessMode MANUAL acknowledge)

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

7.6 CMS Variables

SECS/GEM communication software provides variables required for E87-CMS.

A value of each variable whose class is SV or DVVAL refers to the attributes of an object provided by SECS/GEM communication software.

○: Complied


VID	Class	Variable name	Format	Access from host	Target object	Description	E87 standard
30000	DVVAL	AccessMode	U1[1]	ReadOnly	Load port object	Access mode of a load port • 0: MANUAL • 1: AUTO	○
30001 to 30006	SV	AccessMode_1 to AccessMode_6	U1[1]	ReadOnly	Load port object	Access modes ^{*1} of load port 1 to 6 • 0: MANUAL • 1: AUTO	○
30007 to 30012	ECV	BypassReadID_1 to BypassReadID_6	BOOL[1]	• Read • Write	None	BypassReadID of load port 1 to 6 Switching the state transition of Carrier State Model between No.(10) and No.(11) when a carrier ID reader is not available • true: Transitioned to 'ID VERIFICATION OK' (No.(11)) • false: Transitioned to 'WAITING FOR HOST' (No.(10))	○
30013	DVVAL	CarrierAccessingStatus	U1[1]	ReadOnly	Carrier object	Access status to a carrier • 0: NOT ACCESSED • 1: IN ACCESS • 2: CARRIER COMPLETE • 3: CARRIER STOPPED	○
30014	DVVAL	CarrierID	ASCII[1..80] J ²	ReadOnly	Carrier object	Carrier ID (ObjID)	○
30015 to 30046	SV	CarrierID_1 to CarrierID_32	ASCII[0..80] J ²	ReadOnly	Location object	CarrierID that exists in the carrier location 1 to 32 ^{*3}	○
30047	DVVAL	CarrierIDStatus	U1[1]	ReadOnly	Carrier object	Verification status of a carrier ID • 0: ID NOT READ • 1: WAITING FOR HOST • 2: ID VERIFICATION OK • 3: ID VERIFICATION FAILED	○
30048	SV	CarrierLocationMatrix	LIST[1..32]	ReadOnly	Location object	List of LocationID and CarrierID ^{*3} LIST[1..32] LIST [2] LocationID CarrierID ⋮	○
30049	DVVAL	LocationID	ASCII[0..80] J ²	ReadOnly	Carrier object	ID indicating the location of a carrier in equipment	○
30050 to 30081	SV	LocationID_1 to LocationID_32	ASCII[0..80] J ²	ReadOnly	Location object	LocationID of carrier location 1 to 32 ^{*3}	○
30082	DVVAL	LoadPortReservationState	U1[1]	ReadOnly	Load port object	Reservation status of a load port • 0: NOT RESERVED • 1: RESERVED	○
30083 to 30088	SV	LoadPortReservationState_1 to LoadPortReservationState_6	U1[1]	ReadOnly	Load port object	Reservation statuses ^{*1} of load port 1 to 6 • 0: NOT RESERVED • 1: RESERVED	○
30089	SV	LoadPortReservationStateList	LIST[1..6]	ReadOnly	None	List of reservation statuses of all load ports LIST[1..6] LoadPortReservationState ⋮	○
30090	DVVAL	PortAssociationState	U1[1]	ReadOnly	Load port object	Association status of a load port • 0: NOT ASSOCIATED • 1: ASSOCIATED	○

VID	Class	Variable name	Format	Access from host	Target object	Description	E87 standard
30091 to 30096	SV	PortAssociationState_1 to PortAssociationState_6	U1[1]	ReadOnly	Load port object	Association statuses ^{*1} of load port 1 to 6 • 0: ASSOCIATED • 1: NOT ASSOCIATED	○
30097	SV	PortAssociationStateList	LIST[1..6]	ReadOnly	None	List of association states of all load ports LIST[1..6] PortAssociationState ⋮	○
30098	DVVAL	PortID	U1[1]	ReadOnly	Load port object	PTN: Material port number (material location) of a load port (positive integer) • 1 to 6	○
30099 to 30104	SV	PortID_1 to PortID_6	U1[1]	ReadOnly	Load port object	PTN: Material port numbers (material locations) of load port 1 to 6 (positive integer) ^{*1} • 0, 1 to 6 (0: Invalid)	○
30105	DVVAL	PortStateInfo	LIST[2]	ReadOnly	Load port object	Association and transfer status of a load port LIST[2] PortTransferState PortAssociationState	○
30106 to 30111	SV	PortStateInfo_1 to PortStateInfo_6	LIST[2]	ReadOnly	Load port object	Association and transfer statuses ^{*1} of load port 1 to 6 LIST[2] PortTransferState PortAssociationState	○
30112	SV	PortStateInfoList	LIST[1..6]	ReadOnly	None	List of association and transfer statuses of all load ports LIST[1..6] PortStateInfo ⋮	○
30113	DVVAL	PortTransferState	U1[1]	ReadOnly	Load port object	Transfer status of a load port • 0: OUT OF SERVICE • 1: TRANSFER BLOCKED • 2: READY TO LOAD • 3: READY TO UNLOAD	○
30114 to 30119	SV	PortTransferState_1 to PortTransferState_6	U1[1]	ReadOnly	Load port object	Transfer statuses ^{*1} of load port 1 to 6 • 0: OUT OF SERVICE • 1: TRANSFER BLOCKED • 2: READY TO LOAD • 3: READY TO UNLOAD	○
30120	SV	PortTransferStateList	LIST[1..6]	ReadOnly	None	List of transfer statuses of all load ports LIST[1..6] PortTransferState ⋮	○
30121	DVVAL	Reason	U1[1]	ReadOnly	Carrier object	Reason for the occurrence of the state transition No.(14) in Carrier State Model • 0: VERIFICATION NEEDED • 1: VERIFICATION BY EQUIPMENT UNSUCCESSFUL • 2: READ FAIL • 3: IMPROPER SUBSTRATE POSITION	○
30122	DVVAL	SlotMap	LIST[0..25]	ReadOnly	Carrier object	List of slot statuses LIST[0..25] U1[1] SlotStatus ⋮ ■SlotStatus • 0: UNDEFINED • 1: EMPTY • 2: NOT EMPTY • 3: CORRECTLY OCCUPIED • 4: DOUBLE SLOTTED • 5: CROSS SLOTTED	○
30123	DVVAL	SlotMapStatus	U1[1]	ReadOnly	Carrier object	Verification status of a slot map • 0: SLOT MAP NOT READ • 1: WAITING FOR HOST • 2: SLOT MAP VERIFICATION OK • 3: SLOT MAP VERIFICATION FAILED	○

VID	Class	Variable name	Format	Access from host	Target object	Description	E87 standard
30124	DVVAL	AvailPartitionCapacity	U1[1]	ReadOnly	Internal buffer object	Free space (remaining amount) of a logical partition • 0 to 32	○
30125 to 30156	SV	AvailPartitionCapacity_1 to AvailPartitionCapacity_32	U1[1]	ReadOnly	Internal buffer object	Free space (remaining amount) of logical partition 1 to 32 • 0 to 32	○
30157	SV	BufferCapacityList	LIST[1..32]	ReadOnly	Internal buffer object	List of information related to logical partition 1 to 32 LIST[1..32] BufferPartitionInfo :	○
30158	DVVAL	BufferPartitionInfo	LIST[5]	ReadOnly	Internal buffer object	Logical partition-related information LIST[5] PartitionID PartitionType AvailPartitionCapacity PartitionCapacity UnAllocatedPartitionCapacity	○
30159 to 30190	SV	BufferPartitionInfo_1 to BufferPartitionInfo_32	LIST[5]	ReadOnly	Internal buffer object	Information related to logical partition 1 to 32 LIST[5] PartitionID PartitionType AvailPartitionCapacity PartitionCapacity UnAllocatedPartitionCapacity	○
30191	DVVAL	PartitionCapacity	U1[1]	ReadOnly	Internal buffer object	Maximum capacity of a logical partition • 0 to 32	○
30192 to 30223	SV	PartitionCapacity_1 to PartitionCapacity_32	U1[1]	ReadOnly	Internal buffer object	Maximum capacity of logical partition 1 to 32 • 0 to 32	○
30224	DVVAL	PartitionID	ASCII[1..80] j ^{*2}	ReadOnly	Internal buffer object	Partition ID of a logical partition	○
30225 to 30256	SV	PartitionID_1 to PartitionID_32	ASCII[1..80] j ^{*2}	ReadOnly	Internal buffer object	Partition ID of logical partition 1 to 32	○
30257	DVVAL	PartitionType	ASCII[1..64] j ^{*2}	ReadOnly	Internal buffer object	Partition type of a logical partition	○
30258 to 30289	SV	PartitionType_1 to PartitionType_32	ASCII[1..64] j ^{*2}	ReadOnly	Internal buffer object	Partition type of logical partition 1 to 32	○
30290	DVVAL	UnAllocatedPartitionCapacity	U1[1]	ReadOnly	Internal buffer object	Unassigned space (remaining amount) of a logical partition • 0 to 32	○
30291 to 30322	SV	UnAllocatedPartitionCapacity_1 to UnAllocatedPartitionCapacity_32	U1[1]	ReadOnly	Internal buffer object	Unassigned space (remaining amount) of logical partition 1 to 32 • 0 to 32	○

*1 Up to the maximum number of load ports set for equipment specification settings are available. ( Page 24 Load port)

*2 Excluding the control characters.

*3 Up to the maximum number of carrier locations set for equipment specification settings are available. ( Page 25 Carrier location)

7.7 CMS Events and Reports


SECS/GEM communication software supports state transition events, additional events, and reports of state models for CMS state model management.

Supported events and reports are subjected to the dynamic event report setting function, which is compliant with GEM (E30).

For the dynamic event report setting, refer to the "Dynamic Setting Change" of the following manual:

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

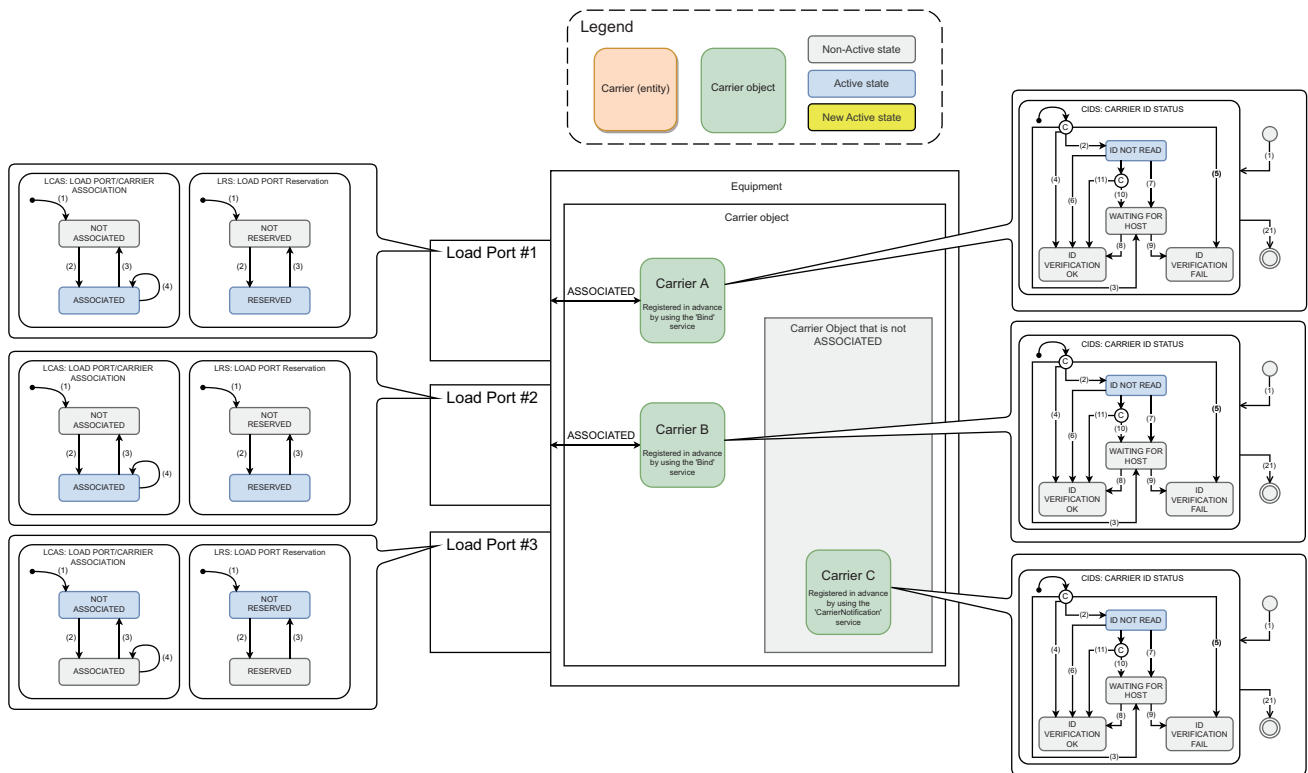
For supported events and reports, refer to the following:

 Page 338 CMS Reports, Page 339 CMS Events

7.8 Carrier ID Verification

SECS/GEM communication software supports the carrier ID verification function required for E87-CMS.

Status example before carrier delivery



■Processing cases for carrier ID verification

The following table shows the processing cases for carrier ID verification performed by SECS/GEM communication software for the status example before carrier delivery.

Case No.	Description	Carrier ID reading	Carrier ID verification processing
1	Page 66 Case in which a carrier registered by using the 'Bind' service is delivered to a load port for which the 'Bind' service is used	Success	Equipment verification: Success
2	Page 67 Case in which a carrier registered by using the 'Bind' service is delivered to an available load port		
3	Page 68 Case in which a carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used		Host verification: Waiting for a verification result from the host
4	Page 70 Case in which a carrier registered by using the 'CarrierNotification' service is delivered to an available load port		Equipment verification: Success
5	Page 71 Case in which a carrier registered by using the 'CarrierNotification' service is delivered to another load port for which the 'Bind' service is used		Host verification: Waiting for a verification result from the host
6	Page 72 Case in which an unregistered carrier is delivered to an available load port		
7	Page 73 Case in which an unregistered carrier is delivered to another load port for which the 'Bind' service is used		
8	Page 75 Case in which carrier ID reading fails for a carrier delivered to a load port reserved by using the 'Bind' service	Failure	
9	Page 76 Case in which carrier ID reading fails for a carrier delivered to an available load port		
10	Page 77 Case in which a carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is false	Unavailable	
11	Page 78 Case in which a carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is true		Carrier ID verification omitted
12	Page 79 Case in which a carrier is delivered to an available load port while BypassReadID is false		Host verification: Waiting for a verification result from the host
13	Page 80 Case in which a carrier is delivered to an available load port while BypassReadID is true		

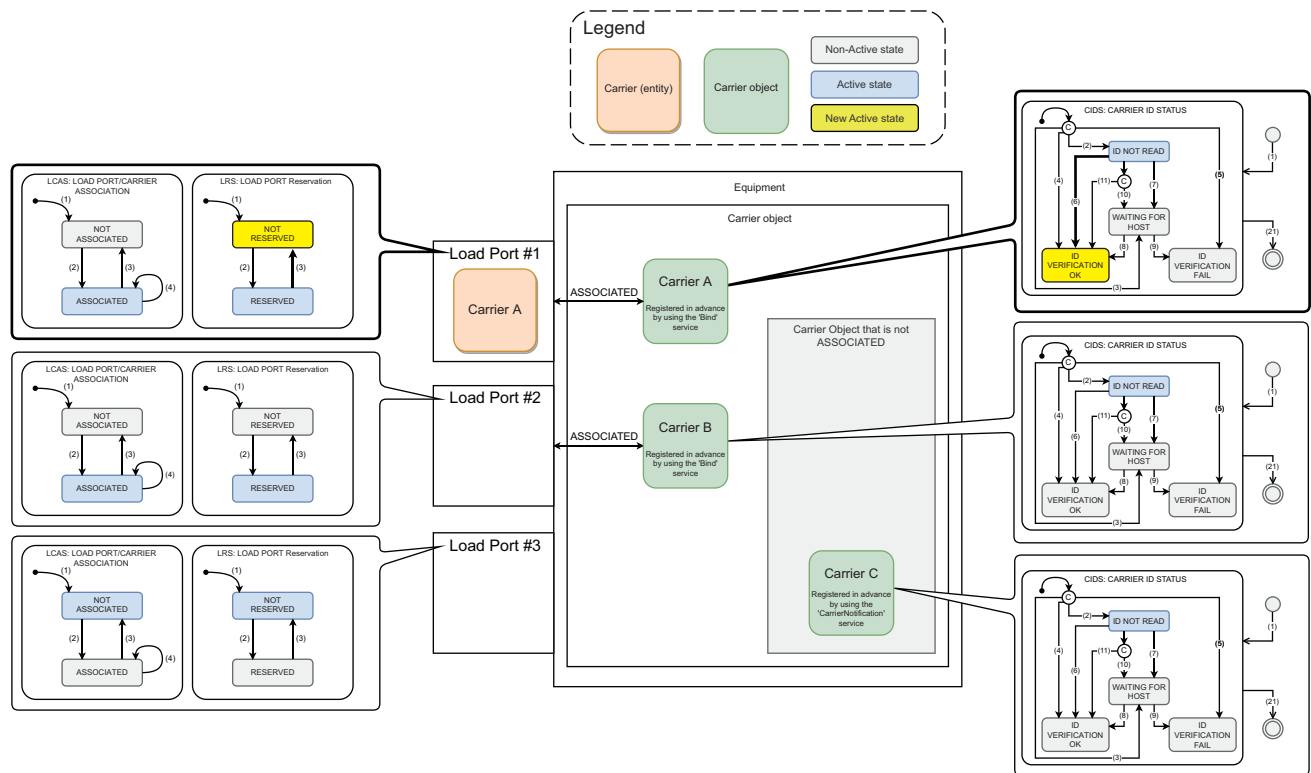
When carrier ID reading succeeds

The following shows the flow of carrier ID verification when carrier ID reading succeeds.

■ Case in which a carrier registered by using the 'Bind' service is delivered to a load port for which the 'Bind' service is used

Case in which carrier A is delivered to Load Port#1

- Status example after carrier delivery



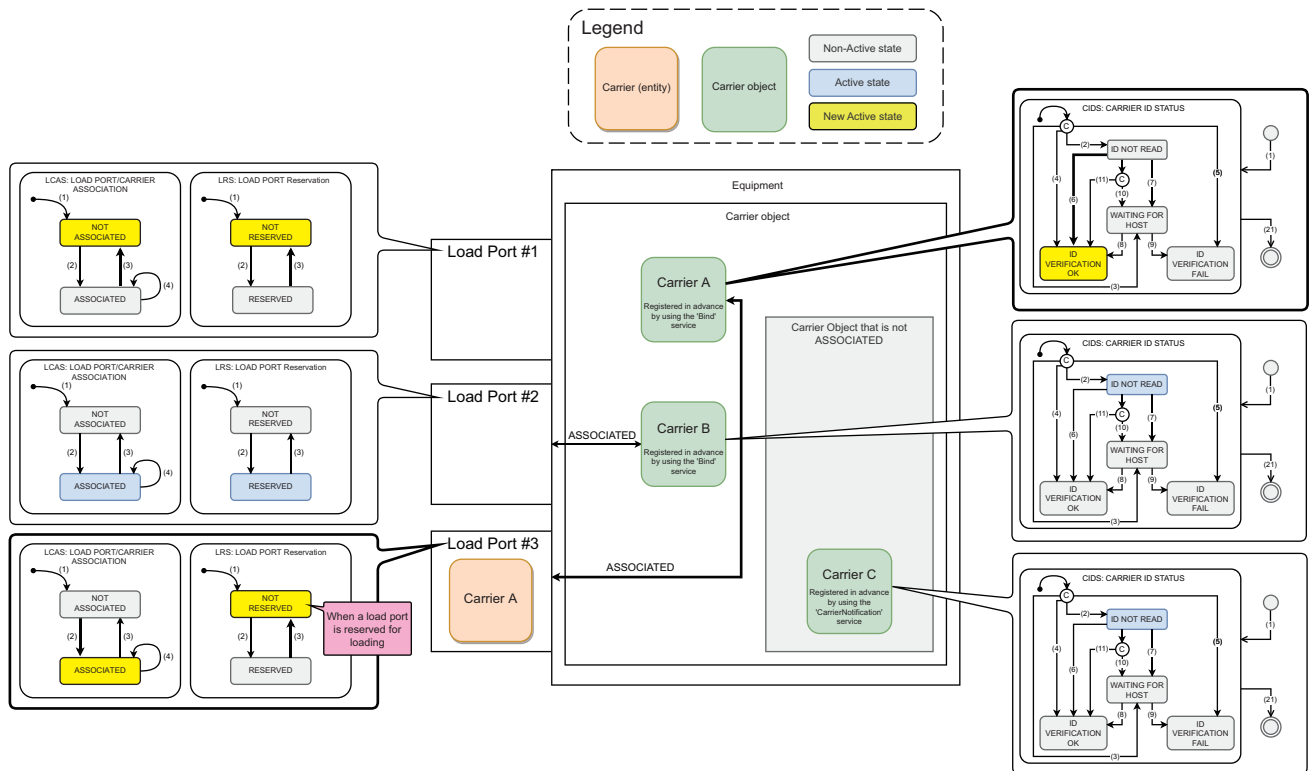
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading a carrier in Load Port#1 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#1 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#1 and the result that the carrier ID is 'A' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	Carrier A is delivered to Load Port#1 as scheduled; therefore, the equipment verification for the carrier ID succeeds. Refer to the Carrier State Model state transition No.(6). (Page 42 Carrier State Model)	—

■Case in which a carrier registered by using the 'Bind' service is delivered to an available load port

Case in which carrier A is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



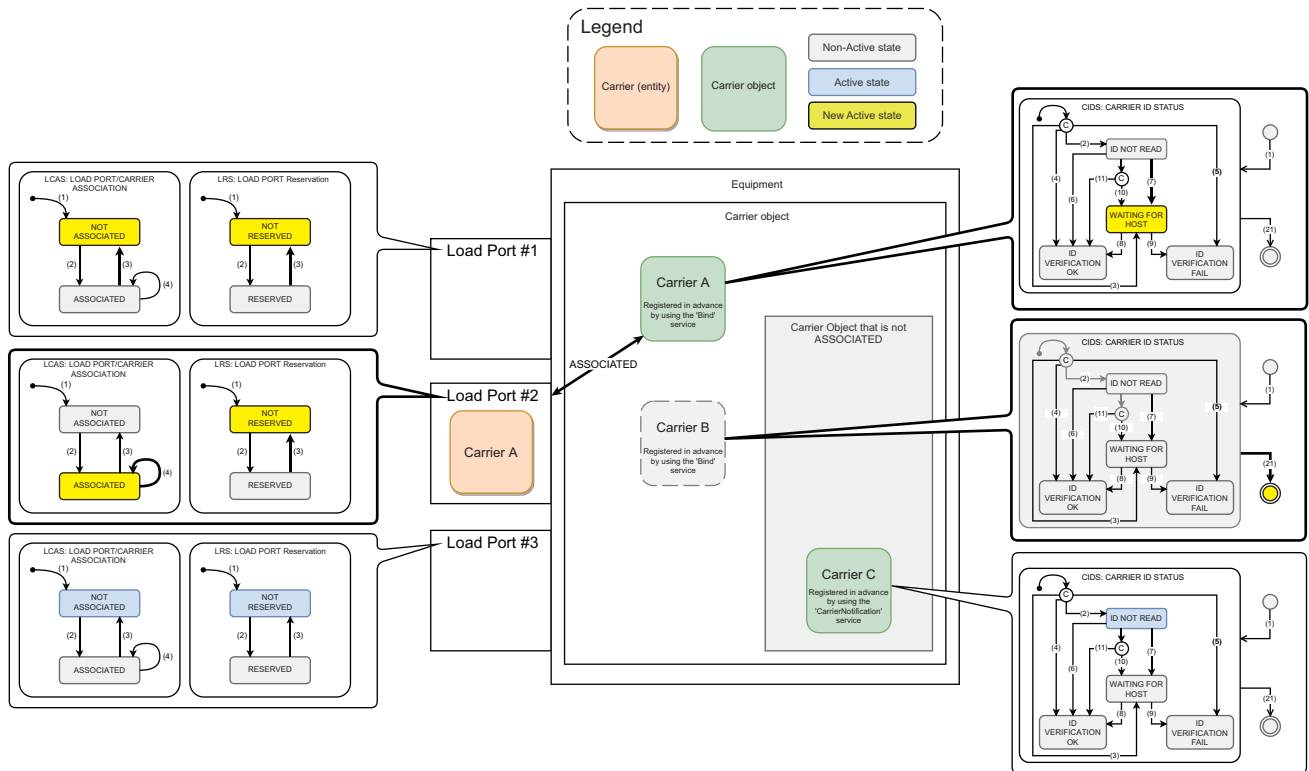
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#3 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#3 and the result that the carrier ID is 'A' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	ASSOCIATED for Load Port#1 to which carrier A was to be delivered is canceled. Refer to the Load Port/Carrier Association State Model state transition No.(3). (Page 55 Load Port/Carrier Association State Model)	—
4-2	RESERVED for Load Port#1 to which carrier A was to be delivered is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
4-3	Load Port#3 to which a carrier is delivered and carrier A are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(2). (Page 55 Load Port/Carrier Association State Model)	—
4-4	Carrier A is delivered to Load Port#3 that is not as scheduled but is available; therefore, the equipment verification for the carrier ID succeeds. Refer to the Carrier State Model state transition No.(6). (Page 42 Carrier State Model)	—

■ Case in which a carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used

Case in which carrier A is delivered to Load Port#2

- Status example after carrier delivery



- Flow of carrier ID verification

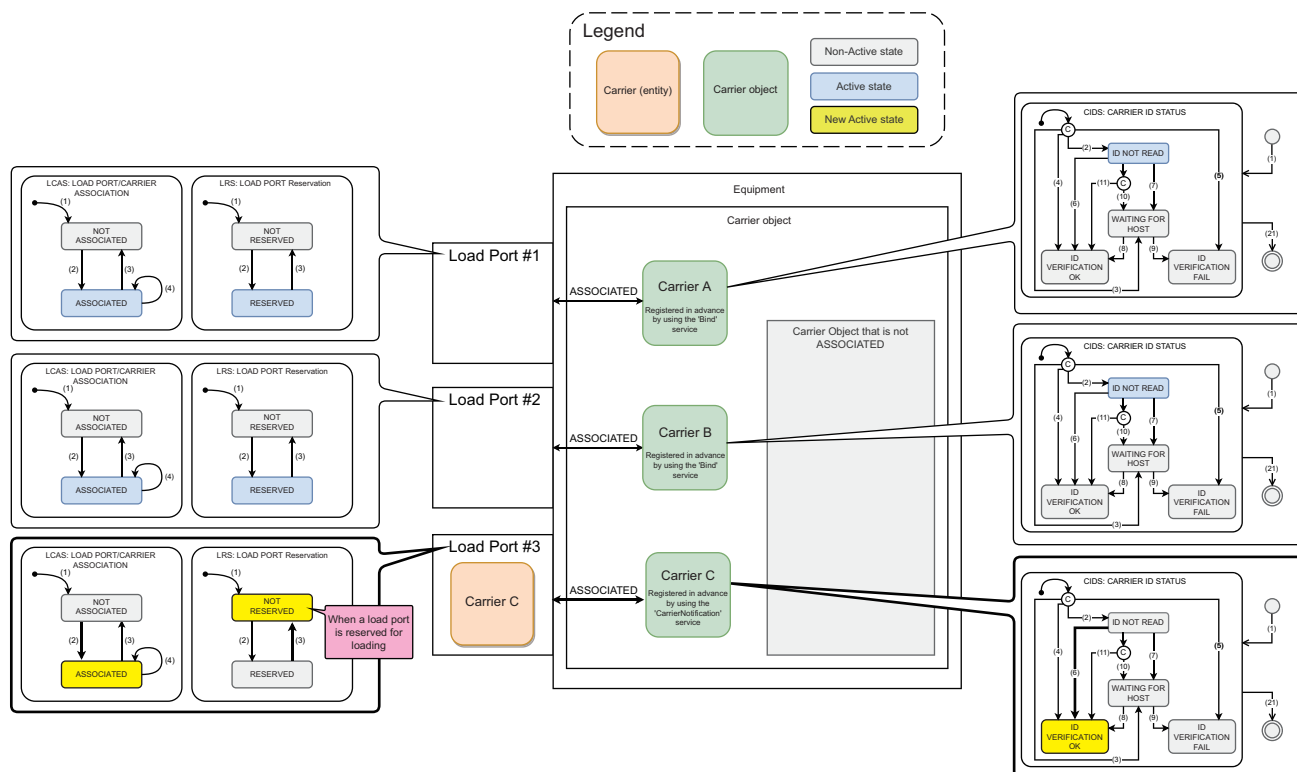
No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#2 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#2 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#2 and the result that the carrier ID is 'A' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	ASSOCIATED for Load Port#1 to which carrier A was to be delivered is canceled. Refer to the Load Port/Carrier Association State Model state transition No.(3). (Page 55 Load Port/Carrier Association State Model)	—
4-2	RESERVED for Load Port#1 to which carrier A was to be delivered is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
4-3	Carrier B ASSOCIATED with Load Port#2 to which a carrier is delivered is deleted. Refer to the Carrier State Model state transition No.(21). (Page 42 Carrier State Model)	—
4-4	Load Port#2 to which the carrier is delivered and carrier A are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(4). (Page 55 Load Port/Carrier Association State Model)	—

No.	SECS/GEM communication software	Control CPU
4-5	<p>Carrier A is delivered to Load Port#2 reserved for carrier B; therefore, the processing transitions to the host verification for the carrier ID, and the carrier A is set to wait for instructions from the host.</p> <p>Refer to the Carrier State Model state transition No.(7). (Page 42 Carrier State Model)</p>	—

■Case in which a carrier registered by using the 'CarrierNotification' service is delivered to an available load port

Case in which carrier C is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



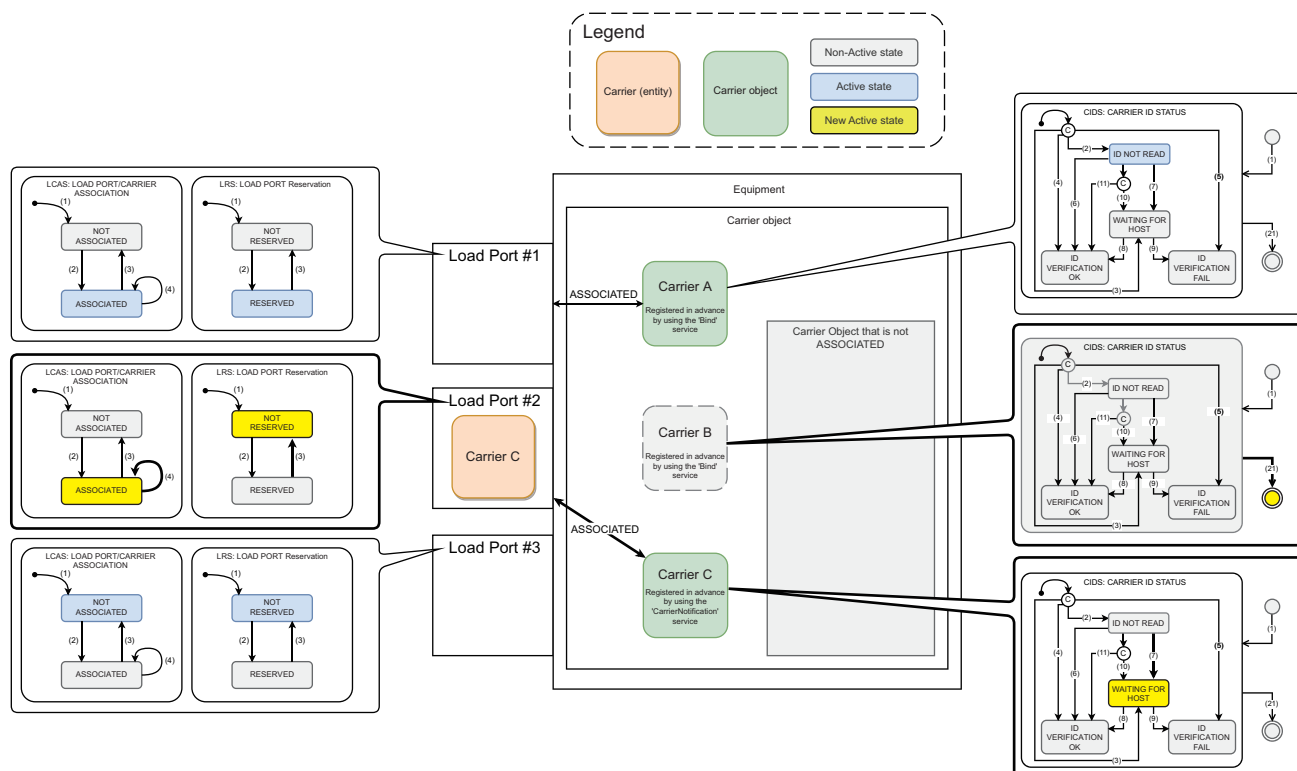
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#3 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#3 and the result that the carrier ID is 'C' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	Load Port#3 to which a carrier is delivered and carrier C are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(2). (Page 55 Load Port/Carrier Association State Model)	—
4-2	Carrier C is delivered to Load Port#3 that is available; therefore, the equipment verification for the carrier ID succeeds. Refer to the Carrier State Model state transition No.(6). (Page 42 Carrier State Model)	—

■Case in which a carrier registered by using the 'CarrierNotification' service is delivered to another load port for which the 'Bind' service is used

Case in which carrier C is delivered to Load Port#2

- Status example after carrier delivery



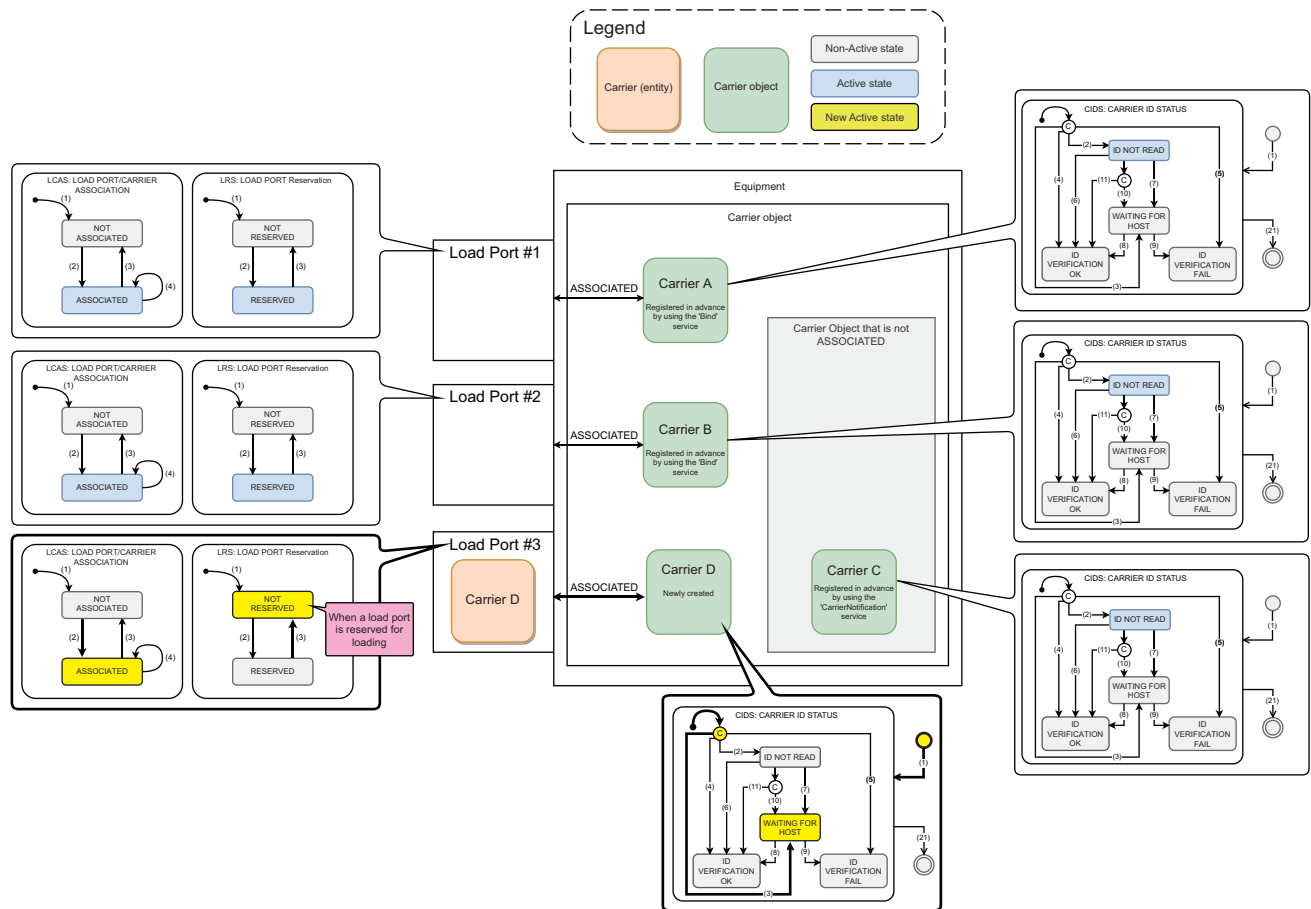
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#2 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#2 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#2 and the result that the carrier ID is 'C' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	Carrier B ASSOCIATED with Load Port#2 to which a carrier is delivered is deleted. Refer to the Carrier State Model state transition No.(21). (Page 42 Carrier State Model)	—
4-2	Load Port#2 to which the carrier is delivered and carrier C are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(4). (Page 55 Load Port/Carrier Association State Model)	—
4-3	Carrier C is delivered to Load Port#2 reserved for carrier B; therefore, the processing transitions to the host verification for the carrier ID, and the carrier C is set to wait for instructions from the host. Refer to the Carrier State Model state transition No.(7). (Page 42 Carrier State Model)	—

■Case in which an unregistered carrier is delivered to an available load port

Case in which an unregistered carrier is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



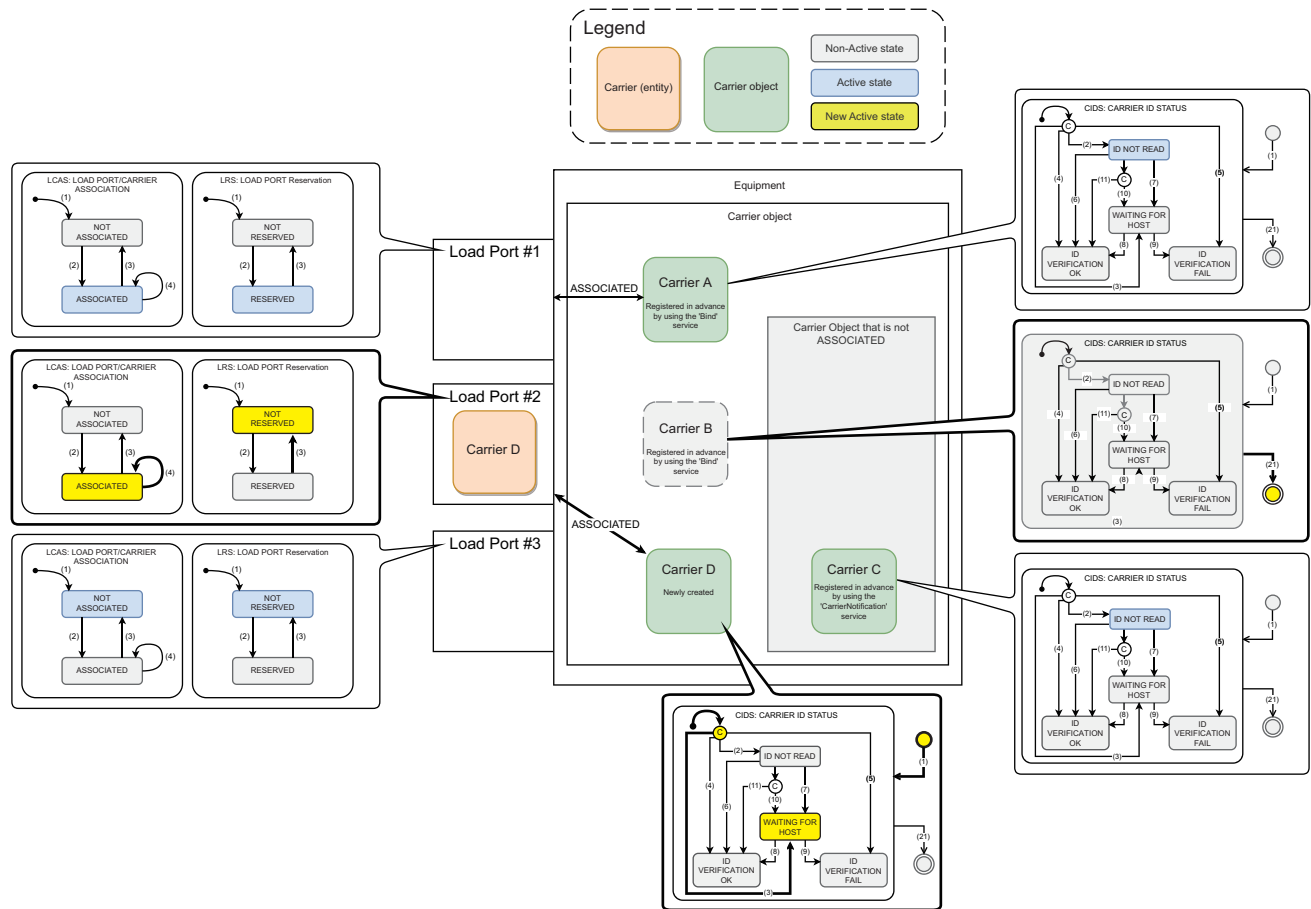
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#3 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#3 and the result that the carrier ID is 'D' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	Carrier D is not registered in advance; therefore, a new instance is created. Refer to the Carrier State Model state transition No.(1). (Page 42 Carrier State Model)	—
4-2	Load Port#3 to which a carrier is delivered and carrier D are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(4). (Page 55 Load Port/Carrier Association State Model)	—
4-3	Carrier D is not registered in advance; therefore, the processing transitions to the host verification for the carrier ID, and the carrier D is set to wait for instructions from the host. Refer to the Carrier State Model state transition No.(3). (Page 42 Carrier State Model)	—

■Case in which an unregistered carrier is delivered to another load port for which the 'Bind' service is used

Case in which an unregistered carrier is delivered to Load Port#2

- Status example after carrier delivery



- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#2 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#2 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The success of carrier ID reading in Load Port#2 and the result that the carrier ID is 'D' are notified by using '00087-00501: CarrierID read successful notification.'
4	The carrier ID verification is performed.	—
4-1	Carrier B ASSOCIATED with Load Port#2 to which a carrier is delivered is deleted. Refer to the Carrier State Model state transition No.(21). (Page 42 Carrier State Model)	—
4-2	Carrier D is not registered in advance; therefore, a new instance is created. Refer to the Carrier State Model state transition No.(1). (Page 42 Carrier State Model)	—
4-3	Load Port#2 to which the carrier is delivered and carrier D are ASSOCIATED. Refer to the Load Port/Carrier Association State Model state transition No.(4). (Page 55 Load Port/Carrier Association State Model)	—

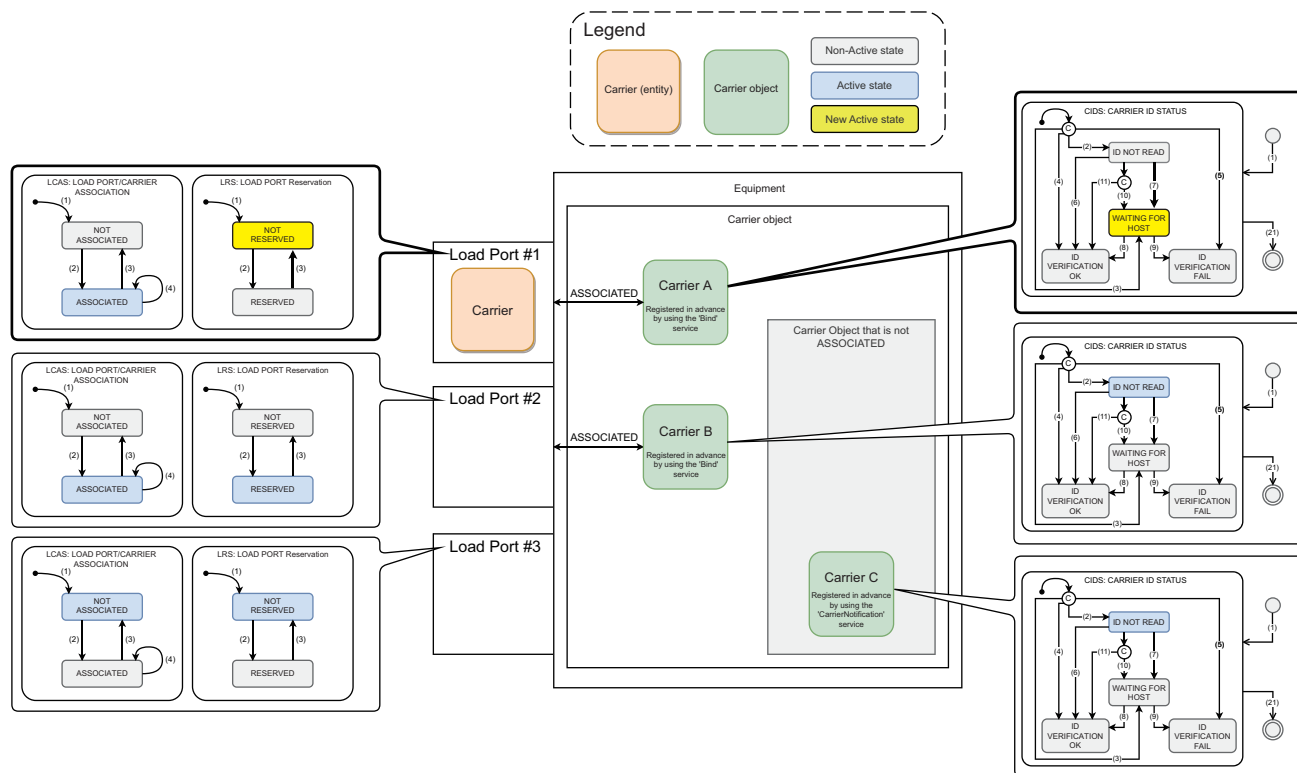
No.	SECS/GEM communication software	Control CPU
4-4	<p>Carrier D is not registered in advance; therefore, the processing transitions to the host verification for the carrier ID, and the carrier D is set to wait for instructions from the host.</p> <p>Refer to the Carrier State Model state transition No.(3). (Page 42 Carrier State Model)</p>	—

When carrier ID reading fails

■ Case in which carrier ID reading fails for a carrier delivered to a load port reserved by using the 'Bind' service

Case in which a carrier is delivered to Load Port#1

- Status example after carrier delivery



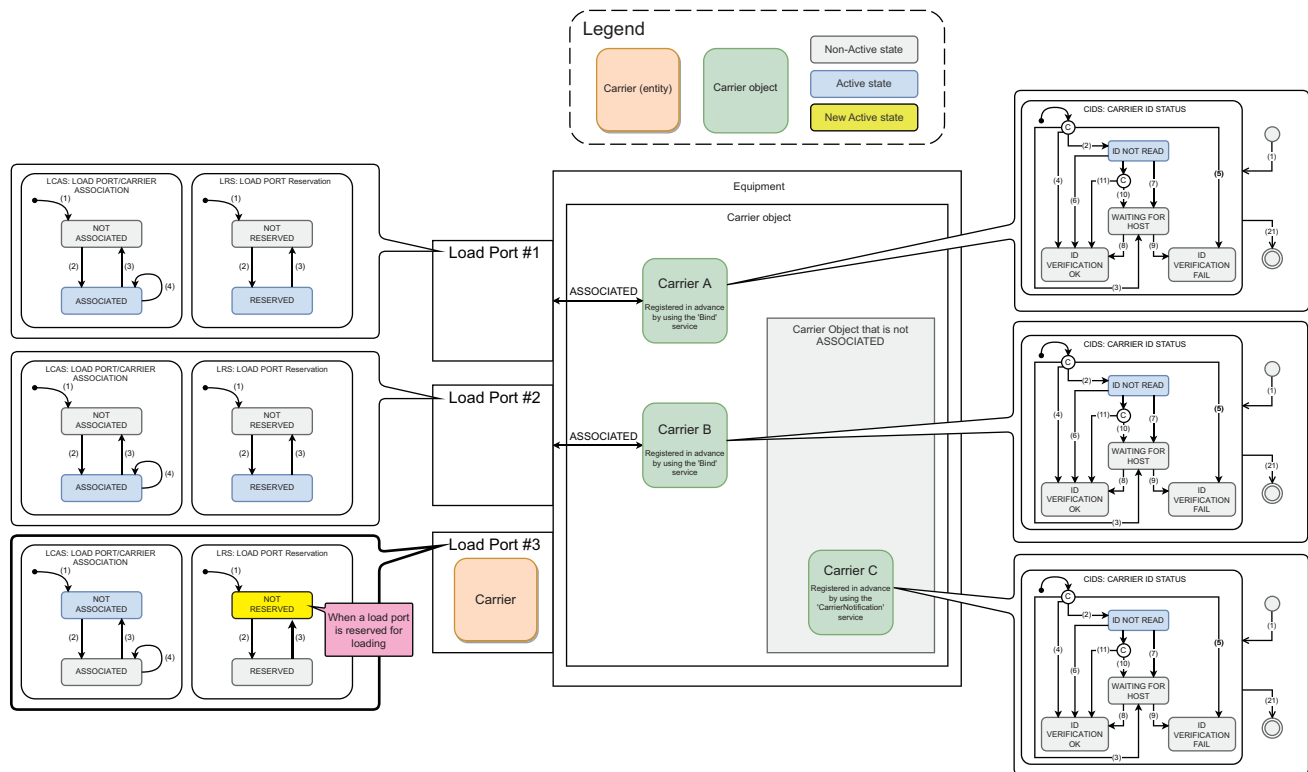
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#1 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#1 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The failure of carrier ID reading in Load Port#1 is notified by using '00087-00502: CarrierID read fail notification.'
4	Carrier ID reading fails; therefore, the processing transitions to the host verification.	—
4-1	Carrier A is associated with Load Port#1; therefore, the carrier A is set to wait for instructions from the host. Refer to the Carrier State Model state transition No.(7). (Page 42 Carrier State Model)	—

■Case in which carrier ID reading fails for a carrier delivered to an available load port

Case in which a carrier is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



- Flow of carrier ID verification

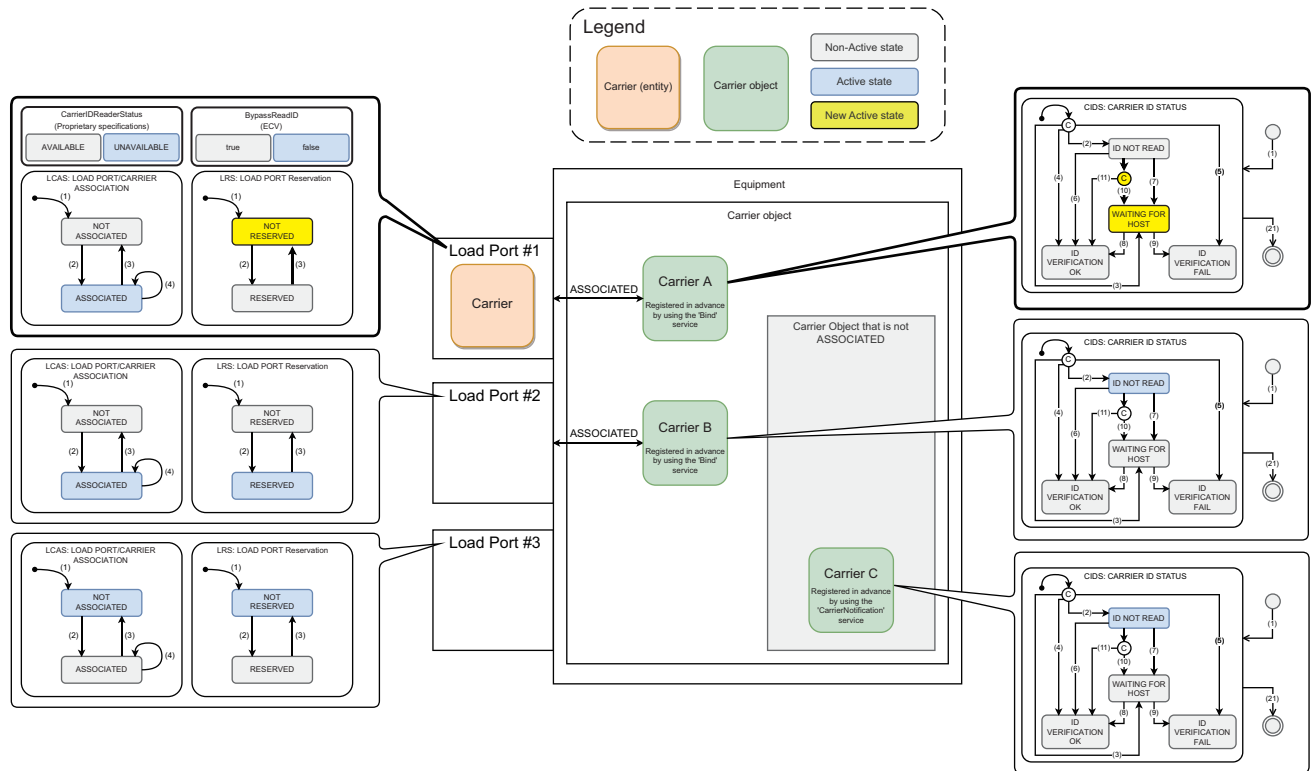
No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#3 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	The failure of carrier ID reading in Load Port#3 is notified by using '00087-00502: CarrierID read fail notification.'
4	Carrier ID reading fails; therefore, the processing transitions to the host verification.	—
4-1	A carrier is not associated with Load Port#3; therefore, 'CarrierID read fail event report (S6F11)' is sent to the host and SECS/GEM communication software waits for instructions from the host.	—

When a carrier ID reader is not available or not implemented

■ Case in which a carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is false

Case in which a carrier is delivered to Load Port#1

- Status example after carrier delivery



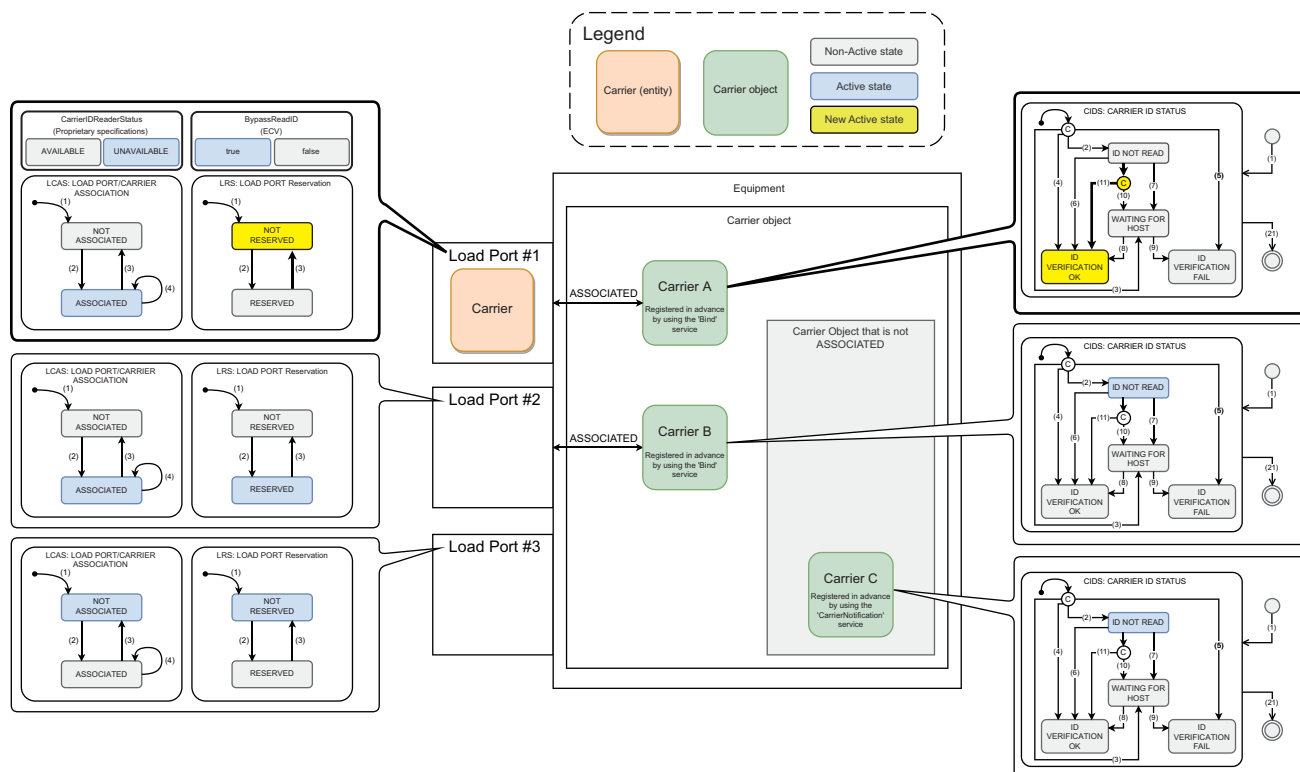
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#1 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#1 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	A carrier ID reader is not available for Load Port#1; therefore, it is notified that the carrier ID is unknown by using '00087-00503: Unknown CarrierID notification.'
4	A carrier ID reader is not available and BypassReadID is false; therefore, the processing transitions to the host verification.	—
4-1	Carrier A is associated with Load Port#1; therefore, the carrier A is set to wait for instructions from the host. Refer to the Carrier State Model state transition No.(10). (Page 42 Carrier State Model)	—

■Case in which a carrier is delivered to a load port reserved by using the 'Bind' service while BypassReadID is true

Case in which a carrier is delivered to Load Port#1

- Status example after carrier delivery



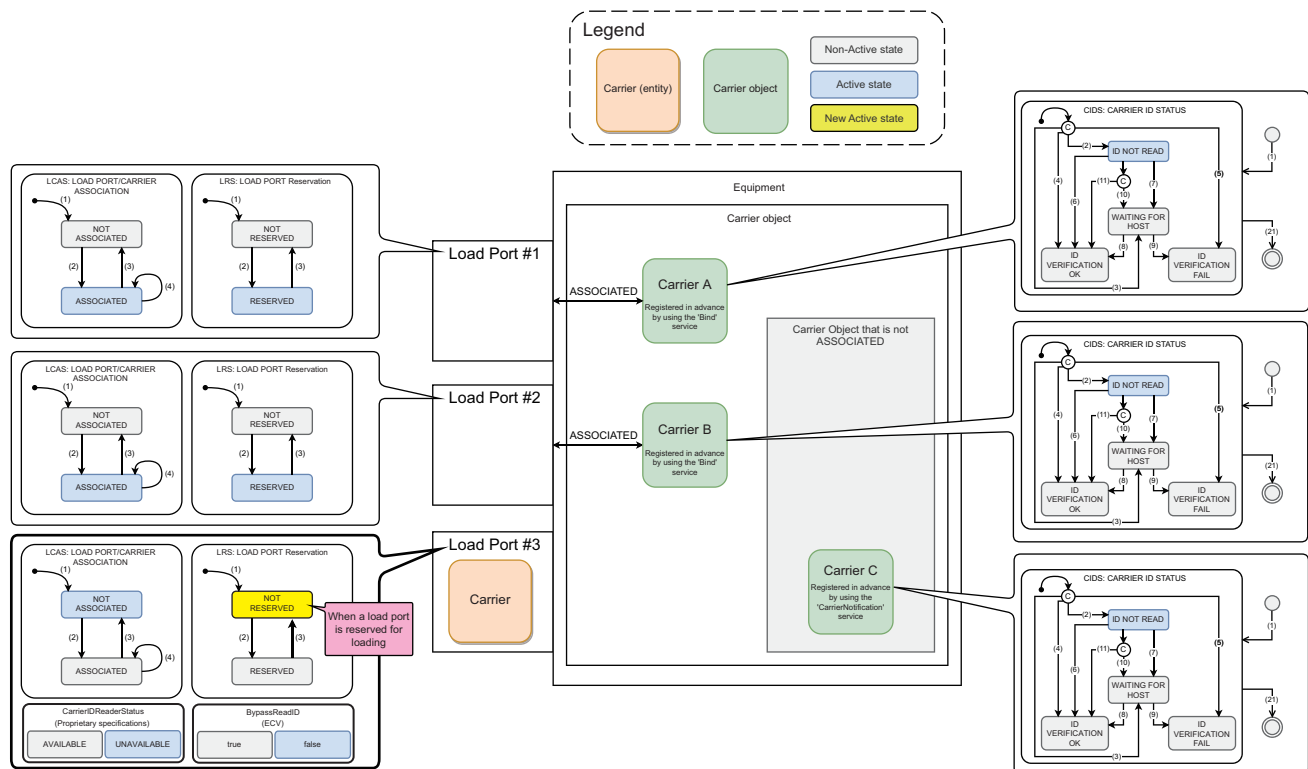
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#1 is notified by using '00087-00302: LOAD completed notification.'
2	RESERVED for Load Port#1 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	A carrier ID reader is not available for Load Port#1; therefore, it is notified that the carrier ID is unknown by using '00087-00503: Unknown CarrierID notification.'
4	A carrier ID reader is not available and BypassReadID is true; therefore, the carrier ID verification is omitted and the equipment verification succeeds. Refer to the Carrier State Model state transition No.(11). (Page 42 Carrier State Model)	—

■Case in which a carrier is delivered to an available load port while BypassReadID is false

Case in which a carrier is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



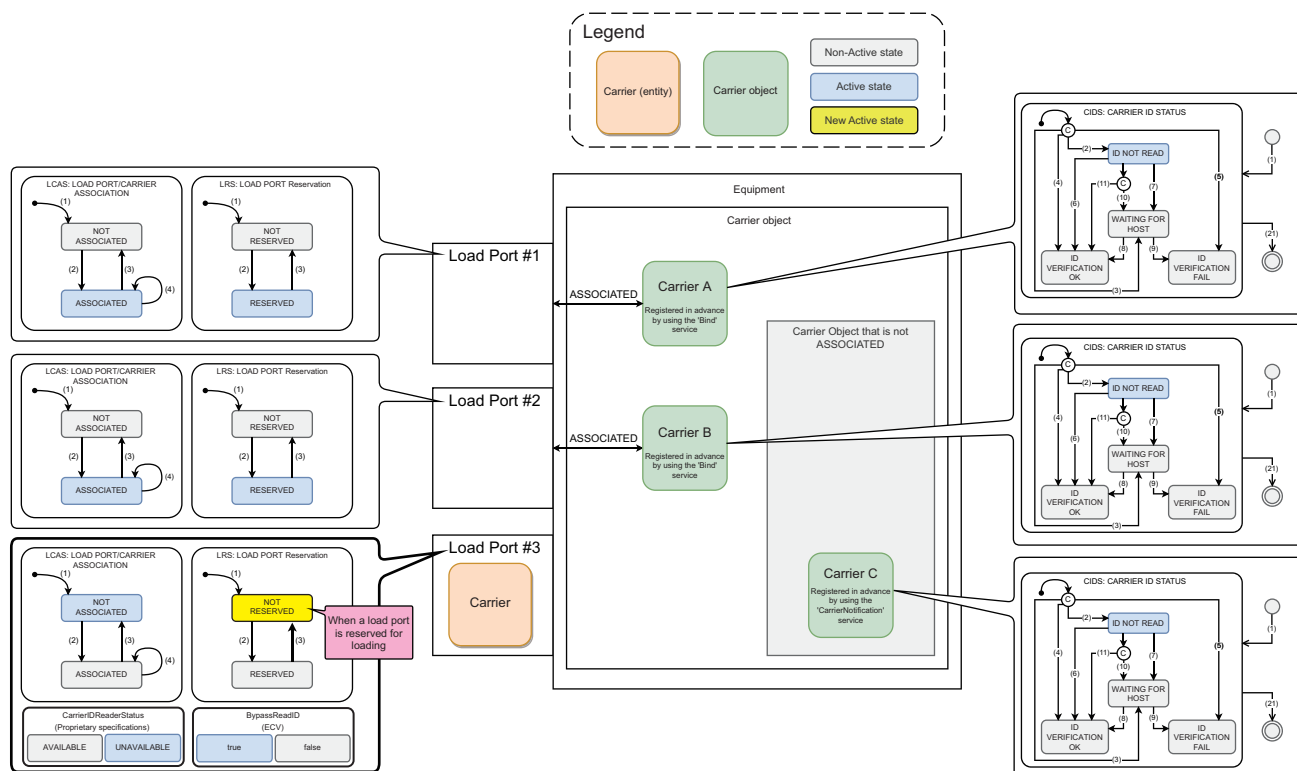
- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#3 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	A carrier ID reader is not available for Load Port#3; therefore, it is notified that the carrier ID is unknown by using '00087-00503: Unknown CarrierID notification.'
4	A carrier is not associated with Load Port#3; therefore, 'UnKnown CarrierID event report (S6F11)' is sent to the host, and SECS/GEM communication software waits for instructions from the host.	—

■Case in which a carrier is delivered to an available load port while BypassReadID is true

Case in which a carrier is delivered to Load Port#3 that is not ASSOCIATED or RESERVED in advance

- Status example after carrier delivery



- Flow of carrier ID verification

No.	SECS/GEM communication software	Control CPU
1	—	The completion of loading in Load Port#1 is notified by using '00087-00302: LOAD completed notification.'
2	If Load Port#3 is RESERVED when loading, the reservation of Load Port#3 is canceled. Refer to the Load Port Reservation State Model state transition No.(3). (Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	—
3	—	A carrier ID reader is not available for Load Port#3; therefore, it is notified that the carrier ID is unknown by using '00087-00503: Unknown CarrierID notification.'
4	A carrier is not associated with Load Port#3; therefore, 'UnKnown CarrierID event report (S6F11)' is sent to the host, and SECS/GEM communication software waits for instructions from the host.	—

8 E90-STS COMPLIANT FUNCTION

This chapter explains the E90-STS compliant function.

8.1 Usage Method

For the usage method of this function, refer to the following:

☞ Page 443 E90-STS compliance

8.2 Substrate Objects

This section explains substrate objects provided by SECS/GEM communication software.

SECS/GEM communication software instantiates substrate-related information to an object and exchanges the information between the host and equipment using E39-OSS and E90-STS services. The number of instantiated substrate objects is stored in 'Substrate object count' (Un\G36864). (☞ Page 259 Buffer Memory)

Attributes

The following table shows the attributes of a substrate object.

Name	Format	Access from host	Description
ObjType	ASCII[1..80]* ¹	Read Only	Object type (Substrate)
ObjID	ASCII[1..80]* ¹	Read Only	Substrate ID (SubstID)
SubstState	U1[1]	Read Only	Substrate Transport • 0: AT SOURCE • 1: AT WORK • 2: AT DESTINATION
SubstProcState	U1[1]	Read Only	Substrate Processing • 0: NEEDS PROCESSING • 1: IN PROCESS • 2: PROCESSED • 3: ABORTED • 4: STOPPED • 5: REJECTED • 6: LOST • 7: SKIPPED
SubstLocID	ASCII[0..80]* ¹	Read Only	Substrate location (Location)* ²
SubstSource	ASCII[0..80]* ¹	Read Only	Substrate location where a substrate is initially stored
SubstDestination	ASCII[0..80]* ¹	Read Only	Substrate location where a substrate is finally collected* ³
SubstHistory	LIST [0..32]	Read Only	History of a location passed by a substrate LIST[0..32] LIST[3] ASCII* ¹ [1..80] SubstLocID or BatchLocID.SubstPosInBatch ASCII* ¹ [0, 12, 16] TimeIn* ⁴ ASCII* ¹ [0, 12, 16] TimeOut* ^{4,5}
BatchLocID	ASCII[0..80]* ¹	Read Only	Current batch location ID* ⁶
SubstPosInBatch	ASCII[0..80]* ¹	Read Only	Current location of a substrate in a batch location* ⁶
SubstIDStatus	U1[1]	Read Only	Substrate Reading Status • 0: NOT CONFIRMED • 1: WAITING FOR HOST • 2: CONFIRMED • 3: CONFIRMATION FAILED
AcquiredID	ASCII[0..80]* ¹	Read Only	ID read from a substrate* ⁷
LotID	ASCII[0..80]* ¹	Read Write	Lot ID specified by the host
MaterialStatus	U1[1]	Read Only	Substrate processing quality status* ⁸
SubstType	U1[1]	Read Write	Substrate type • 0: WAFER • 1: FLAT PANEL • 2: CD • 3: MASK

Name	Format	Access from host	Description
SubstUsage	U1[1]	Read Write	Intended use of a substrate • 0: PRODUCT • 1: TEST • 2: FILLER

*1 Excluding the control characters.

*2 A null character for batch process equipment

*3 If it is a null character, it means that a substrate is collected at the same location as SubstSource.

*4 The format of TimeIn and TimeOut follows "Clock Data Format" in [GEMFunction] ⇒ [Clock] ⇒ [Common] tab.

*5 The format of TimeOut is ASCII [0] when there is any substrate in a location.

*6 Used only for batch process equipment.

*7 Used only for equipment with a substrate ID reader.

*8 A value according to the equipment specifications

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to STS.

📖 Page 229 00090: CPU to CITL, Page 242 10090: CITL to CPU

Structure labels defined in this product are provided in a sample library.

📖 Page 346 Sample Library



■M+GEM300_SubstrateObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2
+80	uSubstState	SubstState	Word [Unsigned]	• 0: AT SOURCE • 1: AT WORK • 2: AT DESTINATION
+81	uSubstProcState	SubstProcState	Word [Unsigned]	• 0: NEEDS PROCESSING • 1: IN PROCESS • 2: PROCESSED • 3: ABORTED • 4: STOPPED • 5: REJECTED • 6: LOST • 7: SKIPPED
+82 to 121	u40SubstLocID	SubstLocID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+122 to 161	u40SubstSource	SubstSource	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+162 to 201	u40SubstDestination	SubstDestination	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+202 to 1993	st32SubstHistory	SubstHistory	M+GEM300_SubstHistory (0..31)	📖 Page 84 M+GEM300_SubstHistory
+1994 to 2033	u40BatchLocID	BatchLocID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+2034 to 2073	u40SubstPosInBatch	SubstPosInBatch	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+2074	uSubstIDStatus	SubstIDStatus	Word [Unsigned]	• 0: NOT CONFIRMED • 1: WAITING FOR HOST • 2: CONFIRMED • 3: CONFIRMATION FAILED
+2075 to 2114	u40AcquiredID	AcquiredID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+2115 to 2154	u40LotID	LotID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+2155	uMaterialStatus	MaterialStatus	Word [Unsigned]	0 to 255
+2156	uSubstType	SubstType	Word [Unsigned]	• 0: WAFER • 1: FLAT PANEL • 2: CD • 3: MASK
+2157	uSubstUsage	SubstUsage	Word [Unsigned]	• 0: PRODUCT • 1: TEST • 2: FILLER

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■M+GEM300_SubstHistory

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40SubstrateLocation	SubstrateLocation	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2
+40 to 47	w8Timeln	Timeln	Word [Signed] (0..7)	 Offset
+48 to 55	w8TimeOut	TimeOut	Word [Signed] (0..7)	 Offset

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


- Offset

The offsets for w8Timeln and w8TimeOut are the same as the reading expansion clock data instruction (S(P).DATERD).

Offset	Description	Setting range of the reading expansion clock data instruction (S(P).DATERD)
+0	Year	1980 to 2079
+1	Month	1 to 12
+2	Day	1 to 31
+3	Hour (24-hour)	0 to 23
+4	Minute	0 to 59
+5	Second	0 to 59
+6	Day of the week	0 to 6 (0: Sun, 1: Mon, 2: Tue, 3: Wed, 4: Thu, 5: Fri, 6: Sat)
+7	1/1000 second	0 to 999

8.3 Substrate Location Objects

This section explains substrate location objects provided by SECS/GEM communication software.

SECS/GEM communication software instantiates substrate location-related information to an object and exchanges the information between the host and equipment using E39-OSS and E90-STs services. The number of instantiated substrate location objects is stored in 'Carrier substrate location object count' (Un\G36865). ( Page 259 Buffer Memory)

There are two types of substrate locations: 'Equipment Substrate Location' and 'Carrier Substrate Location.' The following operations can be performed for them.

Item	Description
Equipment Substrate Location	An instance of Equipment Substrate Location is automatically generated by SECS/GEM communication software based on the setting contents in a setting tool when activating and initializing GEM300 functions. It cannot be generated or deleted dynamically from the host or a control CPU.
Carrier Substrate Location	An instance of Carrier Substrate Location can be generated and deleted dynamically from the host or a control CPU.

Attributes

The following table shows the attributes of a substrate location object.

Name	Format	Access from host	Description
ObjType	ASCII[1..80] ^{*1}	Read Only	Object type (SubstLoc)
ObjID	ASCII[1..80] ^{*1}	Read Only	Substrate location ID (SubstLocID)
SubstID	ASCII[0..80] ^{*1}	Read Only	ID of a substrate in a substrate location
SubstLocState	U1[1]	Read Only	Substrate location status • 0: UNOCCUPIED • 1: OCCUPIED
DisableEvents	BOOL[1] ^{*2}	Read Write	Whether to enable or disable state transition event reporting in a substrate location • true: Event disabled (event not reported) • false: Event enabled (event reported)

*1 Excluding the control characters.


*2 The byte value is '0' for false, and a value other than 0 for true' according to SEMI E5.

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to STS.

 Page 229 00090: CPU to CITL, Page 242 10090: CITL to CPU

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■M+GEM300_SubstLocObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+80 to 119	u40SubstID	SubstID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}
+120	uSubstLocState	SubstLocState	Word [Unsigned]	• 0: UNOCCUPIED • 1: OCCUPIED
+121	uDisableEvents	DisableEvents	Word [Unsigned]	• 0: false (event enabled: event reported) • 1 to 65535: true (event disabled: event not reported)

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

8.4 Batch Location Objects

This section explains batch location objects provided by SECS/GEM communication software.

SECS/GEM communication software instantiates batch location-related information to an object and exchanges the information between the host and equipment using E39-OSS and E90-STs services.

Attributes

The following table shows the attributes of a batch location object.

Name	Format	Access from host	Description
ObjType	ASCII[1..80] ^{*1}	Read Only	Object type (BatchLoc)
ObjID	ASCII[1..80] ^{*1}	Read Only	Batch location ID (BatchLocID)
BatchSubstIDMap	LIST[1..1024]	Read Only	List of substrate IDs that comprise a batch location LIST[1..1024] LIST[0..80] ^{*1} SubstID ⋮
BatchLocState	U1[1]	Read Only	Batch location status • 0: UNOCCUPIED • 1: OCCUPIED
DisableEvents	BOOL[1] ^{*2}	Read Write	Whether to enable or disable state transition event reporting in a batch location • true: Event disabled (event not reported) • false: Event enabled (event reported)

*1 Excluding the control characters.

*2 The byte value is '0' for false, and a value other than 0 for true' according to SEMI E5.

Format for interface with a control CPU (structure labels)

Structures are used for control CPU interfaces related to STS.

📖 Page 229 00090: CPU to CCTL, Page 242 10090: CCTL to CPU

Structure labels defined in this product are provided in a sample library.

📖 Page 346 Sample Library

■M+GEM300_BatchLocObject

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+40 to 79	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}
+80 to 41039	st1024BatchSubstIDMap	BatchSubstIDMap	M+GEM300_BatchSubstIDMap (0..1023)	📖 Page 86 M+GEM300_BatchSubstIDMap
+41040	uBatchLocState	BatchLocState	Word [Unsigned]	• 0: UNOCCUPIED • 1: OCCUPIED
+41041	uDisableEvents	DisableEvents	Word [Unsigned]	• 0: false (event enabled: event reported) • 1 to 65535: true (event disabled: event not reported)

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■M+GEM300_BatchSubstIDMap

Offset	Label name	Name	Data type	Applicable range
+0 to 39	u40SubstID	SubstID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

8.5 STS Service Messages

SECS/GEM communication software supports STS service messages. Sent or received STS service messages can be checked in the communication log.

Additionally, the software notifies the processing result of each service message to a control CPU in the form of an event message via buffer memory.

For details, refer to the following:

☞ Page 242 10090: CITL to CPU

For messages supported by SECS/GEM communication software, refer to the following:

☞ Page 268 Service Messages

8.6 STS Service for a Control CPU

SECS/GEM communication software provides an STS service interface for a control CPU in the form of an event message via buffer memory.

For details, refer to the following:

☞ Page 229 00090: CPU to CITL

For the usage method of an STS service for a control CPU, refer to the following:

☞ Page 443 E90-STs compliance

8.7 STS Variables

SECS/GEM communication software provides variables required for E90-STs.

A value of each variable whose class is SV or DVVAL refers to the attributes of an object provided by SECS/GEM communication software.

○: Complied

VID	Class	Variable name	Format	Access from host	Target object	Description	E90 standard
31000	DVVAL	AcquiredID	ASCII[0..80] J ^{*1}	Read Only	Substrate object	ID read from a substrate	○
31001	DVVAL	SubstID	ASCII[1..80] J ^{*1}	Read Only	Substrate object	Substrate ID (attribute name: ObjID)	○
31002	DVVAL	SubstIDStatus	U1[1]	Read Only	Substrate object	Substrate Reading Status (Substrate ID reading status) • 0: NOT CONFIRMED • 1: WAITING FOR HOST • 2: CONFIRMED • 3: CONFIRMATION FAILED	○
31003	DVVAL	SubstBatchLocID	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Current batch location ID (attribute name: BatchLocID)	○
31004	DVVAL	SubstDestination	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Substrate location where a substrate is finally collected	○
31005	DVVAL	SubstHistory	LIST[0..32]	Read Only	Substrate object	History of a location passed by a substrate LIST[0..32] LIST[3] SubstLocID or BatchLocID.SubstPosInBatch TimeIn TimeOut :	○
31006	DVVAL	SubstSubstLocID	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Substrate location (Location) (attribute name: SubstLocID)	○
31007	DVVAL	SubstLotID	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Lot ID specified by the host (attribute name: LotID)	○
31008	DVVAL	SubstMtrlStatus	U1[1]	Read Only	Substrate object	Substrate processing quality status (attribute name: MaterialStatus) • 0 to 255	○
31009	DVVAL	SubstPosInBatch	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Current location of a substrate in a batch location	○
31010	DVVAL	SubstProcState	U1[1]	Read Only	Substrate object	Substrate Processing (Substrate processing status) • 0: NEEDS PROCESSING • 1: IN PROCESS • 2: PROCESSED • 3: ABORTED • 4: STOPPED • 5: REJECTED • 6: LOST • 7: SKIPPED	○
31011	DVVAL	SubstSource	ASCII[0..80] J ^{*1}	Read Only	Substrate object	Substrate location where a substrate is initially stored	○
31012	DVVAL	SubstState	U1[1]	Read Only	Substrate object	Substrate Transport (Substrate transport status) • 0: AT SOURCE • 1: AT WORK • 2: AT DESTINATION	○
31013	DVVAL	SubstType	U1[1]	Read Only	Substrate object	Substrate type • 0: WAFER • 1: FLAT PANEL • 2: CD • 3: MASK	○

VID	Class	Variable name	Format	Access from host	Target object	Description	E90 standard
31014	DVVAL	SubstUsage	U1[1]	Read Only	Substrate object	Intended use of a substrate • 0: PRODUCT • 1: TEST • 2: FILLER	○
31030	ECV	SubstrateReaderEnabled	BIN[1]	• Read • Write	None	Whether to use a Substrate Reading Status state model • 0: Disabled (not used) • 1: Enabled (used)	○
31031	DVVAL	SubstLocID	ASCII[1..80] J ^{*1}	Read Only	Substrate location object	Substrate location ID (attribute name: ObjID)	○
31032	DVVAL	SubstLocState	U1[1]	Read Only	Substrate location object	Substrate location status • 0: UNOCCUPIED • 1: OCCUPIED	○
31033	DVVAL	SubstLocSubstID	ASCII[0..80] J ^{*1}	Read Only	Substrate location object	ID of a substrate in a substrate location (attribute name: SubstID)	○
31034	DVVAL	BatchLocID	ASCII[1..80] J ^{*1}	Read Only	Batch location object	Batch location ID (attribute name: ObjID)	○
31035	DVVAL	BatchLocState	U1[1]	Read Only	Batch location object	Batch location status • 0: UNOCCUPIED • 1: OCCUPIED	○
31036	DVVAL	BatchSubstIDMap	LIST[1..1024]	Read Only	Batch location object	List of substrate IDs that comprise a batch location LIST[1..1024] SubstID[0..80] ⋮	○
31037 to 31068	SV	SubstLocID_1 to SubstLocID_32	ASCII[1..80] J ^{*1}	Read Only	Substrate location object	Substrate location ID of substrate location 1 to 32 specific to equipment (attribute name: ObjID)	○
31069 to 31100	SV	SubstLocState_1 to SubstLocState_32	U1[1]	Read Only	Substrate location object	Substrate location status of substrate location 1 to 32 specific to equipment • 0: UNOCCUPIED • 1: OCCUPIED	○
31101 to 31132	SV	SubstLocSubstID_1 to SubstLocSubstID_32	ASCII[0..80] J ^{*1}	Read Only	Substrate location object	ID of a substrate in substrate location 1 to 32 specific to equipment (attribute name: SubstID)	○
31133 to 31164	SV	BatchLocID_1 to BatchLocID_32	ASCII[1..80] J ^{*1}	Read Only	Batch location object	Batch location ID of batch location 1 to 32 (attribute name: ObjID)	○
31165 to 31196	SV	BatchLocState_1 to BatchLocState_32	U1[1]	Read Only	Batch location object	Batch location status of batch location 1 to 32 • 0: UNOCCUPIED • 1: OCCUPIED	○
31197 to 31228	SV	BatchSubstIDMap_1 to BatchSubstIDMap_32	LIST[1..1024]	Read Only	Batch location object	List of substrate IDs that comprise batch locations 1 to 32 LIST[1..1024] SubstID[0..80] ⋮	○


*1 Excluding the control characters.

8.8 STS Events and Reports

SECS/GEM communication software supports events and reports required for E90-STs.

Supported events and reports are subjected to the dynamic event report setting function, which is compliant with GEM (E30).

For the dynamic event report setting, refer to the "Dynamic Setting Change" of the following manual:

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

For supported events and reports, refer to the following:

 Page 344 STS Reports, Page 345 STS Events

9 TROUBLESHOOTING

This chapter shows the troubleshooting related to the supported GEM300 standards.

For the troubleshooting of SECS/GEM communication software, refer to the following:

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

9.1 Checking error descriptions

For the checking method for descriptions of an error occurred in SECS/GEM communication software, refer to the following:






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

Point

For the error message output to the control CPU interface log, refer to 'Control CPU interface error message' of the log output function.

9.2 Troubleshooting by Symptom

This section shows the troubleshooting related to the supported GEM300 standards by the symptom.

Symptom	Check item	Corrective action
Fails to save a file.	Does a file of the open project exist?	When the file of the open project is deleted, the file cannot be saved. Create a project again.
GEM300 functions cannot be enabled.	Is a license file registered?	Register a license file. For details, refer to the following:  C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual
	Is RD55UP12-V (GEM300) selected as a target module?	For using GEM300 standard support functions, select "RD55UP12-V(GEM300)" for the target module.  C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual
When receiving a GEM300-related service message, S9F3 (undefined stream type) or S9F5 (undefined function type) is sent.	Is a license file registered?	Register a license file.  C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual
Even though '00000-00001: GEM300 Initial request' is written, '10000-00001: GEM300 Initial acknowledge' is not returned.	Is a license file registered?	Register a license file.  C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual
	Is "RD55UP12-V(GEM300)" selected for the target module?	For using GEM300 standard support functions, select "RD55UP12-V(GEM300)" for the target module.  C Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual

9.3 Error Code List

The following table shows the codes for errors that occur in GEM300 standards.

The error codes can be checked in the labels (error codes) included in 'acknowledge' from SECS/GEM communication software.

For details, refer to the following:

 Page 94 Control CPU Interface Formats

Error code	Error name	Error description	Corrective action
0	No error	—	—
3	Unknown object instance	<ul style="list-style-type: none"> An instance that matches the specified ObjID does not exist. ObjID is not specified. 	Specify ObjID that exists.
6	Unknown object type	<ul style="list-style-type: none"> An object type that matches the specified ObjType does not exist. ObjType is not specified. 	Specify ObjType that exists.
7	Invalid attribute value	The specified attribute value is invalid.	<ul style="list-style-type: none"> An attribute value out of the applicable range is specified. Set a value within the applicable range.
11	Object identifier in use	The specified ObjID already exists.	Specify ObjID that is not used.
12	Parameters improperly specified	<ul style="list-style-type: none"> The specified attribute value is invalid. The specified parameter is invalid. 	A value or parameter out of the applicable range is specified. Set a value within the applicable range.
13	Insufficient parameters specified	Not all parameters that need to be specified are specified.	For '10090-00001: SubstrateObject create acknowledge' and '10090-00003: SubstrateObject SetAttr acknowledge,' specify 'SubstLocID' only or 'BatchLocID' and 'SubstPosInBatch.'
15	Busy	The specified CarrierID is already verified.	For '10087-00501: CarrierID read successful response,' use '00087-00504: Duplicate CarrierID in process notification' and report 'Additional event: Duplicate CarrierID In Process Event' to the host.
17	Command not valid for current state	<ul style="list-style-type: none"> The specified command is not executable. No more the specified object can be created. 	<ul style="list-style-type: none"> Check the status of GEM300 functions. Check the status of the specified object.
48	Load port does not exist	The specified load port does not exist.	Specify PortID (PTN) that exists.
49	Load port already in use	The specified load port is in use.	For '10087-00413: Carrier move started to Load Port response,' specify PortID (PTN) PortTransferState of which is '3: READY TO LOAD.'
50	Missing Carrier	An instance of a carrier object CarrierID of which is associated with a load port does not exist.	Review the processing so that the instance is not deleted by mistake.
32770	Action failed due to errors	An error occurred in SECS/GEM communication software.	Check the contents of the following error information in the event history of SECS/GEM communication software pre-installed model module. <ul style="list-style-type: none"> An error information whose "Source" is "RD55UP12-V" and name starts with 'detail information: [CAS]' in "Detailed event log information"

APPENDIX

Appendix 1 Available Characters

This section shows the available characters for the equipment specification settings.

Screen	Item	Available/inhibited character	Reference
[General] tab	OBJSPEC	■ Available character • ASCII character ^{*1}	☞ Page 23 General
[Load Port] tab	Load Port Count	■ Available character • Unsigned integer	☞ Page 24 Load port
	Load Port ID	■ Available character • ASCII character ^{*1}	
[Carrier Location] tab	Location Count	■ Available character • Unsigned integer	☞ Page 25 Carrier location
	LocationID	■ Available character • ASCII character ^{*1}	
[Internal Buffer] tab	Partition Count	■ Available character • Unsigned integer	☞ Page 26 Internal buffer
	PartitionID	■ Available character • ASCII character ^{*1}	
	PartitionType	■ Available character • ASCII character ^{*1}	
	PartitionCapacity	■ Available character • Unsigned integer	
[Substrate Location] tab	Equipment Substrate Location Count	■ Available character • Unsigned integer	☞ Page 27 Substrate location
	Equipment Substrate LocationID	■ Available character • ASCII character ^{*1}	
	Equipment Substrate Location DisableEvents	BOOL	
[Batch Location] tab	Batch Location Count	■ Available character • Unsigned integer	☞ Page 28 Batch location
	Batch LocationID	■ Available character • ASCII character ^{*1}	
	Batch SubstID Map Count	■ Available character • Unsigned integer	
	Batch Location DisableEvents	BOOL	
[CPU Interface] tab	CPU Interface Timer[msec]	■ Available character • Unsigned integer	☞ Page 29 CPU interface

*1 Excluding the control characters.

Appendix 2 Control CPU Interface Formats

This section shows the control CPU interface formats.

Interface format list

The following shows the interface format list.

General				
Information type (decimal)	Detail type (decimal)	Name	Description	Reference
00000	00001	GEM300 Initial request	Requests to activate and initialize GEM300 functions.	☞ Page 102 00001: GEM300 Initial request
	00002	LoadPort initial request	Requests to initialize a load port.	☞ Page 103 00002 : LoadPort initial request
10000	00001	GEM300 Initial acknowledge	Returns the processing result of 'GEM300 Initial request.'	☞ Page 104 00001: GEM300 Initial acknowledge
	00002	LoadPort initial acknowledge	Returns the processing result of 'LoadPort initial request.'	☞ Page 105 00002 : LoadPort initial acknowledge

OSS-related control CPU Interfaces

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
00039	00006*1	Get AttrName List request	Requests to acquire the AttrName list of GEM300-related objects.	☞ Page 107 00006: Get AttrName List request
	00103*1	LoadPortObject SetAttr request	Requests to set all attribute values of a load port object.	☞ Page 108 00103: LoadPortObject SetAttr request
	00104*1	LoadPortObject GetAttr request	Requests to acquire all attribute values of a load port object.	☞ Page 110 00104: LoadPortObject GetAttr request
	00203*1	LocationObject SetAttr request	Requests to set all attribute values of a location object.	☞ Page 111 00203: LocationObject SetAttr request
	00204*1	LocationObject GetAttr request	Requests to acquire all attribute values of a location object.	☞ Page 112 00204: LocationObject GetAttr request
	00303*1	InternalBufferObject SetAttr request	Requests to set all attribute values of an internal buffer object.	☞ Page 113 00303: InternalBufferObject SetAttr request
	00304*1	InternalBufferObject GetAttr request	Requests to acquire all attribute values of an internal buffer object.	☞ Page 115 00304: InternalBufferObject GetAttr request
10039	00006*1	Get AttrName List acknowledge	Returns the processing result of 'Get AttrName List request.'	☞ Page 116 00006: Get AttrName List acknowledge
	00103*1	LoadPortObject SetAttr acknowledge	Returns the processing result of 'LoadPortObject SetAttr request.'	☞ Page 117 00103: LoadPortObject SetAttr acknowledge
	00104*1	LoadPortObject GetAttr acknowledge	Returns the processing result of 'LoadPortObject GetAttr request.'	☞ Page 118 00104: LoadPortObject GetAttr acknowledge
	00203*1	LocationObject SetAttr acknowledge	Returns the processing result of 'LocationObject SetAttr request.'	☞ Page 119 00203: LocationObject SetAttr acknowledge
	00204*1	LocationObject GetAttr acknowledge	Returns the processing result of 'LocationObject GetAttr request.'	☞ Page 120 00204: LocationObject GetAttr acknowledge
	00303*1	InternalBufferObject SetAttr acknowledge	Returns the processing result of 'InternalBufferObject SetAttr request.'	☞ Page 121 00303: InternalBufferObject SetAttr acknowledge
	00304*1	InternalBufferObject GetAttr acknowledge	Returns the processing result of 'InternalBufferObject GetAttr request.'	☞ Page 122 00304: InternalBufferObject GetAttr acknowledge

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

CMS-related control CPU Interfaces

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
00087	00001 ^{*1}	CarrierObject create request	Requests to create a carrier object.	☞ Page 123 00001: CarrierObject create request
	00002 ^{*1}	CarrierObject delete request	Requests to delete a carrier object.	☞ Page 125 00002: CarrierObject delete request
	00003 ^{*1}	CarrierObject SetAttr request	Requests to set all attribute values of a carrier object.	☞ Page 126 00003: CarrierObject SetAttr request
	00004 ^{*1}	CarrierObject GetAttr request	Requests to acquire all attribute values of a carrier object.	☞ Page 128 00004: CarrierObject GetAttr request
	00101 ^{*1}	AccessMode AUTO request	Requests to change mode to 'AUTO.'	☞ Page 129 00101: AccessMode AUTO request
	00102 ^{*1}	AccessMode MANUAL request	Requests to change mode to 'MANUAL.'	☞ Page 130 00102: AccessMode MANUAL request
	00111 ^{*1}	Load Port reservation request	Requests to reserve a load port.	☞ Page 131 00111: Load Port reservation request
	00112 ^{*1}	Load Port cancel reservation request	Requests to cancel the reservation of a load port.	☞ Page 132 00112: Load Port cancel reservation request
	00201	IN SERVICE request	Requests to change status to 'IN SERVICE.'	☞ Page 133 00201: IN SERVICE request
	00202	OUT OF SERVICE request	Requests to change status to 'OUT OF SERVICE.'	☞ Page 134 00202: OUT OF SERVICE request
	00203 ^{*1}	ID READER available notification	Notifies the completion of the preparation of a carrier ID reader.	☞ Page 135 00203: ID READER available notification
	00204 ^{*1}	ID READER unavailable notification	Notifies the unavailability of a carrier ID reader.	☞ Page 136 00204: ID READER unavailable notification
	00301	LOAD started notification	Notifies the start of loading a carrier.	☞ Page 137 00301: LOAD started notification
	00302	LOAD completed notification	Notifies the completion of loading a carrier.	☞ Page 138 00302: LOAD completed notification
	00303	UNLOAD available notification	Notifies that a carrier can be unloaded.	☞ Page 139 00303: UNLOAD available notification
	00304	UNLOAD started notification	Notifies the start of unloading a carrier.	☞ Page 140 00304: UNLOAD started notification
	00305	UNLOAD completed notification	Notifies the completion of unloading a carrier.	☞ Page 141 00305: UNLOAD completed notification
	00306	TRANSFER failed notification	Notifies that transferring a carrier is failed.	☞ Page 142 00306: TRANSFER failed notification
	00307 ^{*1}	Carrier clamped notification	Notifies the clamping of a carrier.	☞ Page 143 00307: Carrier clamped notification
	00308 ^{*1}	Carrier unclamped notification	Notifies the unclamping of a carrier.	☞ Page 144 00308: Carrier unclamped notification
	00309 ^{*1}	Carrier opened notification	Notifies the opening of the door of a carrier.	☞ Page 145 00309: Carrier opened notification
	00310 ^{*1}	Carrier closed notification	Notifies the closing of the door of a carrier.	☞ Page 146 00310: Carrier closed notification
	00311 ^{*1}	Carrier accessing started notification	Notifies the start of accessing a carrier.	☞ Page 147 00311: Carrier accessing started notification
	00312 ^{*1}	Carrier approaching complete notification	Notifies the approaching completion of accessing a carrier.	☞ Page 148 00312: Carrier approaching complete notification

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
00087	00313 ^{*1}	Carrier accessing normally finished notification	Notifies the normal completion of accessing a carrier.	☞ Page 149 00313: Carrier accessing normally finished notification
	00314 ^{*1}	Carrier accessing abnormally finished notification	Notifies the abnormal completion of accessing a carrier.	☞ Page 150 00314: Carrier accessing abnormally finished notification
	00401 ^{*1}	Load Port Carrier association request	Requests to associate a load port with a carrier.	☞ Page 151 00401: Load Port Carrier association request
	00402 ^{*1}	Load Port Carrier cancel association request	Requests to cancel the association of a load port with a carrier.	☞ Page 152 00402: Load Port Carrier cancel association request
	00403 ^{*1}	Carrier Location change notification	Notifies the change of a carrier location.	☞ Page 153 00403: Carrier Location change notification
	00404 ^{*1}	Buffer Capacity changed notification	Notifies the change of the internal buffer capacity.	☞ Page 154 00404: Buffer Capacity changed notification
	00411 ^{*1}	Carrier move started to Internal Buffer notification	Notifies the start of moving a carrier to the internal buffer.	☞ Page 155 00411: Carrier move started to Internal Buffer notification
	00412 ^{*1}	Carrier move completed to Internal Buffer notification	Notifies the completion of moving a carrier to the internal buffer.	☞ Page 156 00412: Carrier move completed to Internal Buffer notification
	00413 ^{*1}	Carrier move started to Load Port notification	Notifies the start of moving a carrier to a load port.	☞ Page 157 00413: Carrier move started to Load Port notification
	00414 ^{*1}	Carrier move completed to Load Port notification	Notifies the completion of moving a carrier to a load port.	☞ Page 158 00414: Carrier move completed to Load Port notification
	00415 ^{*1}	UNLOAD completed and Carrier move started to Load Port notification	Notifies the completion of unloading carrier A and the start of moving carrier B to a load port by using the queued 'CarrierOut' service.	☞ Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification
	00501 ^{*1}	CarrierID read successful notification	Notifies the success of CarrierID reading.	☞ Page 160 00501: CarrierID read successful notification
	00502 ^{*1}	CarrierID read fail notification	Notifies the failure of CarrierID reading.	☞ Page 161 00502: CarrierID read fail notification
	00503 ^{*1}	Unknown CarrierID notification	Notifies the unavailability of a carrier ID reader and the arrival of a carrier at a load port in the NOT ASSOCIATED state.	☞ Page 162 00503: Unknown CarrierID notification
	00504 ^{*1}	Duplicate CarrierID inprocess notification	Notifies the duplication of CarrierID of a received carrier.	☞ Page 163 00504: Duplicate CarrierID in process notification
	00601 ^{*1}	SlotMap verification ok notification	Notifies the success of equipment verification of a slot map.	☞ Page 164 00601: SlotMap verification ok notification
	00602 ^{*1}	SlotMap waiting for host verification notification	Notifies the waiting for the host verification of a slot map.	☞ Page 165 00602: SlotMap waiting for host verification notification
	00603 ^{*1}	SlotMap verification fail notification	Notifies the failure of equipment verification of a slot map.	☞ Page 166 00603: SlotMap verification fail notification
	00604 ^{*1}	SlotMap read fail notification	Notifies the failure of slot map reading.	☞ Page 167 00604: SlotMap read fail notification
	00605 ^{*1}	SlotMap abnormal substrate position notification	Notifies the detection of an abnormal substrate position.	☞ Page 168 00605: SlotMap abnormal substrate position notification

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
10087	00001* ¹	CarrierObject create acknowledge	Returns the processing result of 'CarrierObject create request.'	☞ Page 169 00001: CarrierObject create acknowledge
	00002* ¹	CarrierObject delete acknowledge	Returns the processing result of 'CarrierObject delete request.'	☞ Page 170 00002: CarrierObject delete acknowledge
	00003* ¹	CarrierObject SetAttr acknowledge	Returns the processing result of 'CarrierObject SetAttr request.'	☞ Page 171 00003: CarrierObject SetAttr acknowledge
	00004* ¹	CarrierObject GetAttr acknowledge	Returns the processing result of 'CarrierObject GetAttr request.'	☞ Page 172 00004: CarrierObject GetAttr acknowledge
	00101* ¹	AccessMode AUTO acknowledge	Returns the processing result of 'AccessMode AUTO request.'	☞ Page 173 00101: AccessMode AUTO acknowledge
	00102* ¹	AccessMode MANUAL acknowledge	Returns the processing result of 'AccessMode MANUAL request.'	☞ Page 174 00102: AccessMode MANUAL acknowledge
	00111* ¹	Load Port reservation acknowledge	Returns the processing result of 'Load Port reservation request.'	☞ Page 175 00111: Load Port reservation acknowledge
	00112* ¹	Load Port cancel reservation acknowledge	Returns the processing result of 'Load Port cancel reservation request.'	☞ Page 176 00112: Load Port cancel reservation acknowledge
	00201	IN SERVICE acknowledge	Returns the processing result of 'IN SERVICE request.'	☞ Page 177 00201: IN SERVICE acknowledge
	00202	OUT OF SERVICE acknowledge	Returns the processing result of 'OUT OF SERVICE request.'	☞ Page 178 00202: OUT OF SERVICE acknowledge
	00203* ¹	ID READER available response	Returns the processing result of 'ID READER available notification.'	☞ Page 179 00203: ID READER available response
	00204* ¹	ID READER unavailable response	Returns the processing result of 'ID READER unavailable notification.'	☞ Page 180 00204: ID READER unavailable response
	00301* ¹	LOAD started response	Returns the processing result of 'LOAD started notification.'	☞ Page 181 00301: LOAD started response
	00302* ¹	LOAD completed response	Returns the processing result of 'LOAD completed notification.'	☞ Page 182 00302: LOAD completed response
	00303* ¹	UNLOAD available response	Returns the processing result of 'UNLOAD available notification.'	☞ Page 183 00303: UNLOAD available response
	00304* ¹	UNLOAD started response	Returns the processing result of 'UNLOAD started notification.'	☞ Page 184 00304: UNLOAD started response
	00305* ¹	UNLOAD completed response	Returns the processing result of 'UNLOAD completed notification.'	☞ Page 185 00305: UNLOAD completed response
	00306* ¹	TRANSFER failed response	Returns the processing result of 'TRANSFER failed notification.'	☞ Page 186 00306: TRANSFER failed response
	00307* ¹	Carrier clamped response	Returns the processing result of 'Carrier clamped notification.'	☞ Page 187 00307: Carrier clamped response
	00308* ¹	Carrier unclamped response	Returns the processing result of 'Carrier unclamped notification.'	☞ Page 188 00308: Carrier unclamped response
	00309* ¹	Carrier opened response	Returns the processing result of 'Carrier opened notification.'	☞ Page 189 00309: Carrier opened response

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
10087	00310* ¹	Carrier closed response	Returns the processing result of 'Carrier closed notification.'	☞ Page 190 00310: Carrier closed response
	00311* ¹	Carrier accessing started response	Returns the processing result of 'Carrier accessing started notification.'	☞ Page 191 00311: Carrier accessing started response
	00312* ¹	Carrier approaching complete response	Returns the processing result of 'Carrier approaching complete notification.'	☞ Page 192 00312: Carrier approaching complete response
	00313* ¹	Carrier accessing normally finished response	Returns the processing result of 'Carrier accessing normally finished notification.'	☞ Page 193 00313: Carrier accessing normally finished response
	00314* ¹	Carrier accessing abnormally finished response	Returns the processing result of 'Carrier accessing abnormally finished notification.'	☞ Page 194 00314: Carrier accessing abnormally finished response
	00401* ¹	Load Port Carrier association acknowledge	Returns the processing result of 'Load Port Carrier association request.'	☞ Page 195 00401: Load Port Carrier association acknowledge
	00402* ¹	Load Port Carrier cancel association acknowledge	Returns the processing result of 'Load Port Carrier cancel association request.'	☞ Page 196 00402: Load Port Carrier cancel association acknowledge
	00403* ¹	Carrier Location change response	Returns the processing result of 'Carrier Location change notification.'	☞ Page 197 00403: Carrier Location change response
	00404* ¹	Buffer Capacity changed response	Returns the processing result of 'Buffer Capacity changed notification.'	☞ Page 198 00404: Buffer Capacity changed response
	00411* ¹	Carrier move started to Internal Buffer response	Returns the processing result of 'Carrier move started to Internal Buffer notification.'	☞ Page 199 00411: Carrier move started to Internal Buffer response
	00412* ¹	Carrier move completed to Internal Buffer response	Returns the processing result of 'Carrier move completed to Internal Buffer notification.'	☞ Page 200 00412: Carrier move completed to Internal Buffer response
	00413* ¹	Carrier move started to Load Port response	Returns the processing result of 'Carrier move started to Load Port notification.'	☞ Page 201 00413: Carrier move started to Load Port response
	00414* ¹	Carrier move completed to Load Port response	Returns the processing result of 'Carrier move completed to Load Port notification.'	☞ Page 202 00414: Carrier move completed to Load Port response
	00415* ¹	UNLOAD completed and Carrier move started to Load Port response	Returns the processing result of 'UNLOAD completed and Carrier move started to Load Port notification.'	☞ Page 203 00415: UNLOAD completed and Carrier move started to Load Port response
	00501* ¹	CarrierID read successful response	Returns the processing result of 'CarrierID read successful notification.'	☞ Page 204 00501: CarrierID read successful response
	00502* ¹	CarrierID read fail response	Returns the processing result of 'CarrierID read fail notification.'	☞ Page 206 00502: CarrierID read fail response
	00503* ¹	Unknown CarrierID response	Returns the processing result of 'Unknown CarrierID notification.'	☞ Page 207 00503: Unknown CarrierID response
	00504* ¹	Duplicate CarrierID in process response	Returns the processing result of 'Duplicate CarrierID in process notification.'	☞ Page 208 00504: Duplicate CarrierID in process response

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
10087	00601 ^{*1}	SlotMap verification ok response	Returns the processing result of 'SlotMap verification ok notification.'	☞ Page 209 00601: SlotMap verification ok response
	00602 ^{*1}	SlotMap waiting for host verification response	Returns the processing result of 'SlotMap waiting for host verification notification.'	☞ Page 210 00602: SlotMap waiting for host verification response
	00603 ^{*1}	SlotMap verification fail response	Returns the processing result of 'SlotMap verification fail notification.'	☞ Page 211 00603: SlotMap verification fail response
	00604 ^{*1}	SlotMap read fail response	Returns the processing result of 'SlotMap read fail notification.'	☞ Page 212 00604: SlotMap read fail response
	00605 ^{*1}	SlotMap abnormal substrate position response	Returns the processing result of 'SlotMap abnormal substrate position notification.'	☞ Page 213 00605: SlotMap abnormal substrate position response
	00901	Bind service notification	Notifies the result of an automatic response to the 'Bind' service.	☞ Page 214 00901: Bind service notification
	00902 ^{*1}	CancelAllCarrierOut service notification	Notifies the result of an automatic response to the 'CancelAllCarrierOut' service.	☞ Page 215 00902: CancelAllCarrierOut service notification
	00903	CancelBind service notification	Notifies the result of an automatic response to the 'CancelBind' service.	☞ Page 216 00903: CancelBind service notification
	00904 ^{*1}	CancelCarrier service notification	Notifies the result of an automatic response to the 'CancelCarrier' service.	☞ Page 217 00904: CancelCarrier service notification
	00905 ^{*1}	CancelCarrierAtPort service notification	Notifies the result of an automatic response to the 'CancelCarrierAtPort' service.	☞ Page 218 00905: CancelCarrierAtPort service notification
	00906 ^{*1}	CancelCarrierNotification service notification	Notifies the result of an automatic response to the 'CancelCarrierNotification' service.	☞ Page 219 00906: CancelCarrierNotification service notification
	00907 ^{*1}	CancelCarrierOut service notification	Notifies the result of an automatic response to the 'CancelCarrierOut' service.	☞ Page 220 00907: CancelCarrierOut service notification
	00909 ^{*1}	CarrierIn service notification	Notifies the result of an automatic response to the 'CarrierIn' service.	☞ Page 221 00909: CarrierIn service notification
	00910 ^{*1}	CarrierNotification service notification	Notifies the result of an automatic response to the 'CarrierNotification' service.	☞ Page 222 00910: CarrierNotification service notification
	00911 ^{*1}	CarrierOut service notification	Notifies the result of an automatic response to the 'CarrierOut' service.	☞ Page 223 00911: CarrierOut service notification
	00912 ^{*1}	CarrierReCreate service notification	Notifies the result of an automatic response to the 'CarrierReCreate' service.	☞ Page 224 00912: CarrierReCreate service notification
	00913 ^{*1}	CarrierRelease service notification	Notifies the result of an automatic response to the 'CarrierRelease' service.	☞ Page 226 00913: CarrierRelease service notification
	00917	ChangeServiceStatus service notification	Notifies the result of an automatic response to the 'ChangeServiceStatus' service.	☞ Page 227 00917: ChangeServiceStatus service notification
	00918 ^{*1}	ProceedWithCarrier service notification	Notifies the result of an automatic response to the 'ProceedWithCarrier' service.	☞ Page 228 00918: ProceedWithCarrier service notification

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

STS-related control CPU Interfaces

Information type (decimal)	Detail type (decimal)	Name	Description	Reference
00090	00001* ¹	SubstrateObject create request	Requests to create a substrate object.	☞ Page 229 00001: SubstrateObject create request
	00002* ¹	SubstrateObject delete request	Requests to delete a substrate object.	☞ Page 231 00002: SubstrateObject delete request
	00003* ¹	SubstrateObject SetAttr request	Requests to set all attribute values of a substrate object.	☞ Page 232 00003: SubstrateObject SetAttr request
	00004* ¹	SubstrateObject GetAttr request	Requests to acquire all attribute values of a substrate object.	☞ Page 234 00004: SubstrateObject GetAttr request
	00011* ¹	CarrierSubstLocObject create request	Requests to create a substrate location object in a carrier.	☞ Page 235 00011: CarrierSubstLocObject create request
	00012* ¹	CarrierSubstLocObject delete request	Requests to delete a substrate location object in a carrier.	☞ Page 236 00012: CarrierSubstLocObject delete request
	00013* ¹	SubstLocObject SetAttr request	Requests to set all attribute values of a substrate location object specific to equipment or in a carrier.	☞ Page 237 00013: SubstLocObject SetAttr request
	00014* ¹	SubstLocObject GetAttr request	Requests to acquire all attribute values of a substrate location object specific to equipment or in a carrier.	☞ Page 239 00014: SubstLocObject GetAttr request
	00023* ¹	BatchLocObject SetAttr request	Requests to set all attribute values of a batch location object.	☞ Page 240 00023: BatchLocObject SetAttr request
	00024* ¹	BatchLocObject GetAttr request	Requests to acquire all attribute values of a batch location object.	☞ Page 241 00024: BatchLocObject GetAttr request
10090	00001* ¹	SubstrateObject create acknowledge	Returns the processing result of 'SubstrateObject create request.'	☞ Page 242 00001: SubstrateObject create acknowledge
	00002* ¹	SubstrateObject delete acknowledge	Returns the processing result of 'SubstrateObject delete request.'	☞ Page 243 00002: SubstrateObject delete acknowledge
	00003* ¹	SubstrateObject SetAttr acknowledge	Returns the processing result of 'SubstrateObject SetAttr request.'	☞ Page 244 00003: SubstrateObject SetAttr acknowledge
	00004* ¹	SubstrateObject GetAttr acknowledge	Returns the processing result of 'SubstrateObject GetAttr request.'	☞ Page 245 00004: SubstrateObject GetAttr acknowledge
	00011* ¹	CarrierSubstLocObject create acknowledge	Returns the processing result of 'CarrierSubstLocObject create request.'	☞ Page 246 00011 : CarrierSubstLocObject create acknowledge
	00012* ¹	CarrierSubstLocObject delete acknowledge	Returns the processing result of 'CarrierSubstLocObject delete request.'	☞ Page 247 00012: CarrierSubstLocObject delete acknowledge
	00013* ¹	SubstLocObject SetAttr acknowledge	Returns the processing result of 'SubstLocObject SetAttr request.'	☞ Page 248 00013: SubstLocObject SetAttr acknowledge
	00014* ¹	SubstLocObject GetAttr acknowledge	Returns the processing result of 'SubstLocObject GetAttr request.'	☞ Page 249 00014: SubstLocObject GetAttr acknowledge
	00023* ¹	BatchLocObject SetAttr acknowledge	Returns the processing result of 'BatchLocObject SetAttr request.'	☞ Page 250 00023: BatchLocObject SetAttr acknowledge
	00024* ¹	BatchLocObject GetAttr acknowledge	Returns the processing result of 'BatchLocObject GetAttr request.'	☞ Page 251 00024: BatchLocObject GetAttr acknowledge
	01001* ¹	Create service (Register substrate service) notification	Notifies the creation of an instance of a substrate object by using the 'Create (Register substrate)' service.	☞ Page 252 01001: Create service (Register substrate service) notification
	01002* ¹	Delete service (Remove substrate service) notification	Notifies the deletion of an instance of a substrate object by using the 'Delete (Remove substrate)' service.	☞ Page 253 01002: Delete service (Remove substrate service) notification
	01003* ¹	SetAttr service (Substrate) notification	Notifies the change of an attribute value of a substrate object by using the 'SetAttr' service.	☞ Page 254 01003: SetAttr service (Substrate) notification
	01013* ¹	SetAttr service (SubstLoc) notification	Notifies the change of an attribute value of a substrate location object by using the 'SetAttr' service.	☞ Page 255 01013: SetAttr service (SubstLoc) notification
	01023* ¹	SetAttr service (BatchLoc) notification	Notifies the change of an attribute value of a batch location object by using the 'SetAttr' service.	☞ Page 257 01023: SetAttr service (BatchLoc) notification

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

00000: CPU to CITL

The following shows the format of CPU to CITL.

00001: GEM300 Initial request

■Information type

00000

■Detail type

00001

■Data size of data area (Byte units)

0 byte

■Processing

Activating and initializing GEM300 functions is requested.

■Relevant state transition

None

■Data

None

■Relevant item

🔍 Page 104 00001: GEM300 Initial acknowledge

00002 : LoadPort initial request

■Information type

00000

■Detail type

00002





■Data size of data area (Byte units)

34 byte

■Processing

Initializing all load ports is requested.

■Relevant state transition

- Load Port Transfer State Model state transition No.(1)
( Page 48 Load Port Transfer State Model)
- Load Port Reservation State Model state transition No.(1)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(1)
( Page 55 Load Port/Carrier Association State Model)
- Access Mode State Model state transition No.(1)
( Page 58 Access Mode State Model)


■Data

Structure label

- M+GEM300_00000-00002


Offset	Label name	Name	Data type	Applicable range	Description
+0	uAccessModeHistory	AccessModeHistory	Bit String [16-bit]	• 0: MANUAL ^{*1} • 1: AUTO	Specify the initial value of AccessMode of each load port. ^{*2} <ul style="list-style-type: none">• b0: AccessMode of PortID (PTN) 1• b1: AccessMode of PortID (PTN) 2• b2: AccessMode of PortID (PTN) 3• b3: AccessMode of PortID (PTN) 4• b4: AccessMode of PortID (PTN) 5• b5: AccessMode of PortID (PTN) 6• b6 to b15: Ignored even if specified.
+1 to 16	u16PortTransferHistory	PortTransferHistory	Word [Unsigned] (0..15)	• 0: OUT OF SERVICE • 1: TRANSFERBLOCKED2: READY TO LOAD • 2: READY TO LOAD • 3: READY TO UNLOAD ^{*1}	Specify the initial value of PortTransferState of each load port. ^{*3} <ul style="list-style-type: none">• (+0): PortTransferState of PortID (PTN) 1• (+1): PortTransferState of PortID (PTN) 2• (+2): PortTransferState of PortID (PTN) 3• (+3): PortTransferState of PortID (PTN) 4• (+4): PortTransferState of PortID (PTN) 5• (+5): PortTransferState of PortID (PTN) 6• (+6 to 15): Ignored even if specified.

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

^{*2} When specifying the number of load ports, which is out of the range of what is set in the equipment specification setting, a value out of the applicable range is ignored. ( Page 24 Load port)

For example, when '4' is specified for the number of load ports, the following values are ignored:


- b4: AccessMode of PortID (PTN) 5
- b5: AccessMode of PortID (PTN) 6

^{*3} When specifying the number of load ports, which is out of the range of what is set in the equipment specification setting, a value out of the applicable range is ignored. ( Page 24 Load port)

For example, when '4' is specified for the number of load ports, the following values are ignored:

- (+4): PortTransferState of PortID (PTN) 5
- (+5): PortTransferState of PortID (PTN) 6

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 105 00002 : LoadPort initial acknowledge)

10000: CITL to CPU

The following shows the format of CITL to CPU.

00001: GEM300 Initial acknowledge

■Information type

10000

■Detail type

00001

■Data size of data area (Byte units)

2 byte

■Processing

- The processing result of 'GEM300 Initial request' is returned.
- A processing result is reflected to 'GEM300 status' (b5) of 'CA-SECS status' (Un\G16384).

■Relevant state transition

None


■Data

Structure label

- M+GEM300_10000-00001

Offset	Label name	Name	Data type	Applicable range	Description
+0	uErrorCode	Error code	Word [Unsigned]	0 to 65535	The code for an error occurred for the request is returned.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library


Error code

Error code	Error name
0	No error
17	Command not valid for current state

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 102 00001: GEM300 Initial request

00002 : LoadPort initial acknowledge

■Information type

10000

■Detail type

00002





■Data size of data area (Byte units)

32 byte

■Processing

The processing result of 'LoadPort initial request' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(1)
( Page 48 Load Port Transfer State Model)
- Load Port Reservation State Model state transition No.(1)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(1)
( Page 55 Load Port/Carrier Association State Model)
- Access Mode State Model state transition No.(1)
( Page 58 Access Mode State Model)

■Data

Structure label

- M+GEM300_10000-00002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 15	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred for the request is returned. <ul style="list-style-type: none">• (+0): Error code of PortID (PTN) 1• (+1): Error code of PortID (PTN) 2• (+2): Error code of PortID (PTN) 3• (+3): Error code of PortID (PTN) 4• (+4): Error code of PortID (PTN) 5• (+5): Error code of PortID (PTN) 6• (+6 to 15): Not used


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
12	Parameters improperly specified
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

A

Precautions

Outside the range of the number of load ports that can be set in "Load Port Count" in the [Load Port] tab is not used. An error code (48) is always sent. (👉 Page 24 Load port)

Example: When the number of load ports is 4, and the parameter of load port number (PTN) which is set to 3 is incorrect

- u16ErrorCode[0, 0, 12, 0, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48]^{*1}

*1 If even one error code (12) exists, all load ports cannot be initialized.

Example: When the number of load ports is 4, and all load ports are initialized

- u16ErrorCode[17, 17, 17, 17, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48]

■Relevant item

👉 Page 103 00002 : LoadPort initial request

00039: CPU to CITL

The following shows the format of CPU to CITL.

00006: Get AttrName List request

Information type

00039

Detail type

00006

Data size of data area (Byte units)

80 byte

Processing

Acquiring the AttrName list of GEM300-related objects specified in ObjType is requested.

Relevant state transition

None

Data

Structure label


- M+GEM300_00039-00006

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify ObjType.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item

 Page 116 00006: Get AttrName List acknowledge



00103: LoadPortObject SetAttr request

■Information type

00039

■Detail type

00103

■Data size of data area (Byte units)

178 byte

■Processing

Setting all attribute values of a load port object is requested.

■Relevant state transition

None

Point

- Even if the attribute value related to the load port object state model is changed by this request, 'Action by this product' is not taken. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the values of CMS variables 'DVVAL' and 'SV' corresponding to the attribute values of load port objects are changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable values.

■Data

Structure label

- M+GEM300_00039-00103

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 88	stLoadPortObject	LoadPortObject	M+GEM300_LoadPortObject	☞ Page 34 M+GEM300_LoadPortObject	Specify all attribute values of a load port object to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType ^{*1}	○	—	—	None	—
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
PTN ^{*1}	○	—	—	None	—
AccessMode	○	—	—	Yes	7: Out of applicable range
PortAssociationState	○	—	—	Yes	7: Out of applicable range
LoadPortReservationState	○	—	—	Yes	7: Out of applicable range
PortTransferState	○	—	—	Yes	7: Out of applicable range
ServiceStatus	○	—	—	Yes	7: Out of applicable range
InServiceStatus	○	—	—	Yes	7: Out of applicable range
TransferReadyStatus	○	—	—	Yes	7: Out of applicable range
CarrierIDReaderStatus	○	—	—	Yes	7: Out of applicable range


*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

Point

All attribute values of load port objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■ Relevant item

 Page 117 00103: LoadPortObject SetAttr acknowledge

A

00104: LoadPortObject GetAttr request

Information type
00039

Detail type
00104

Data size of data area (Byte units)
80 byte


Processing
Acquiring all attribute values of a load port object specified in ObjID is requested.

Relevant state transition
None

Data
Structure label
• M+GEM300_00039-00104

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (load port ID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item
 Page 118 00104: LoadPortObject GetAttr acknowledge

00203: LocationObject SetAttr request

■Information type

00039

■Detail type

00203

■Data size of data area (Byte units)

5280 byte

■Processing

Setting all attribute values of a location object is requested.

■Relevant state transition

None

Point

- Even if the attribute value related to the carrier location is changed by this request, the additional event 'Carrier Location Change Event' is not sent. Therefore, the carrier location can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of CMS variable 'SV' corresponding to the attribute value of a location object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable value.

■Data

Structure label

- M+GEM300_00039-00203

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2639	stLocationObject	LocationObject	M+GEM300_LocationObject	☞ Page 35 M+GEM300_LocationObject	Specify all attribute values of a location object to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType ^{*1}	○	—	—	None	—
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
CarrierLocationMatrix ^{*3}	○	—	—	Yes	7: Other than ASCII ^{*4} (except for 0x00)

*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

*3 LocationID and CarrierID, the numbers of which exceed the number of locations set in a setting tool, are ignored.

*4 Excluding the control characters.

Point

All attribute values of location objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■Relevant item

☞ Page 119 00203: LocationObject SetAttr acknowledge

00204: LocationObject GetAttr request

Information type
00039

Detail type
00204

Data size of data area (Byte units)
80 byte


Processing
Acquiring all attribute values of a location object specified in ObjID is requested.

Relevant state transition
None

Data
Structure label
• M+GEM300_00039-00204

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (fixed with 'Matrix')

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item
 Page 120 00204: LocationObject GetAttr acknowledge

00303: InternalBufferObject SetAttr request

■Information type

00039

■Detail type

00303

■Data size of data area (Byte units)

230 byte

■Processing

Setting all attribute values of an internal buffer object is requested.

■Relevant state transition

None

Point

- Even if the attribute value related to the partition capacity of an internal buffer object is changed by this request, the additional event 'Buffer Capacity Changed Event' is not sent. Therefore, the partition capacity can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the values of CMS variables 'DVVAL' and 'SV' corresponding to the attribute values of internal buffer objects are changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable values.

■Data

Structure label

- M+GEM300_00039-00303

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 114	stInternalBufferObject	InternalBufferObject	M+GEM300_InternalBufferObject	☞ Page 36 M+GEM300_InternalBufferObject	Specify all attribute values of an internal buffer object to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType ^{*1}	○	—	—	None	—
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
PartitionType	○	—	—	Yes	7: Other than ASCII ^{*3}
PartitionCapacity	○	—	—	Yes	7: Out of applicable range
AvailPartitionCapacity ^{*4}	○	—	—	Yes	7: Out of applicable range
UnallocatedPartitionCapacity ^{*4}	○	—	—	Yes	7: Out of applicable range

*1 Cannot be changed. (Ignored even if provided.)


*2 Cannot be changed.

*3 Excluding the control characters.

*4 Can be applied within the range of 'PartitionCapacity.'

All attribute values of internal buffer objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■ Relevant item

 Page 121 00303: InternalBufferObject SetAttr acknowledge

00304: InternalBufferObject GetAttr request

Information type
00039

Detail type
00304

Data size of data area (Byte units)
80 byte


Processing
Acquiring all attribute values of an internal buffer object specified in ObjID is requested.


Relevant state transition
None

Data
Structure label
• M+GEM300_00039-00304

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (PartitionID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item
 Page 122 00304: InternalBufferObject GetAttr acknowledge

10039: CITL to CPU

The following shows the format of CITL to CPU.

00006: Get AttrName List acknowledge

■Information type

10039

■Detail type

00006

■Data size of data area (Byte units)

20596 byte

■Processing

The processing result of 'Get AttrName List request' is returned.

■Relevant state transition

None

■Data

Structure label

- M+GEM300_10039-00006

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjType	ObjType	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjType is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57	uAttrCount	Number of attributes	Word [Unsigned]	0 to 256	The number of attributes of requested ObjType is returned.
+58 to 10297	st256AttrIDList	AttrIDList	M+GEM300_AttrID List (0..255)	M+GEM300_AttrIDList	When an error code is '0' and the number of attributes is 1 or more, the attribute name (AttrID) of required ObjType is returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

- M+GEM300_AttrIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40AttrID	AttrID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Attribute name (AttrID) of required ObjType

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

Page 346 Sample Library

Error code

Error code	Error name
0	No error
6	Unknown object type
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

Page 92 Error Code List

■Relevant item

Page 107 00006: Get AttrName List request

00103: LoadPortObject SetAttr acknowledge

■Information type

10039

■Detail type

00103

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'LoadPortObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10039-00103

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 108 00103: LoadPortObject SetAttr request

00104: LoadPortObject GetAttr acknowledge

■Information type

10039

■Detail type

00104

■Data size of data area (Byte units)

292 byte

■Processing

The processing result of 'LoadPortObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label


• M+GEM300_10039-00104

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 145	stLoadPortObject	LoadPortObject	M+GEM300_LoadPortObject	 Page 34 M+GEM300_LoadPortObject	When an error code is '0', all attribute values of a requested load port object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 110 00104: LoadPortObject GetAttr request

00203: LocationObject SetAttr acknowledge

■Information type

10039

■Detail type

00203

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'LocationObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10039-00203

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 111 00203: LocationObject SetAttr request

00204: LocationObject GetAttr acknowledge

■Information type

10039

■Detail type

00204

■Data size of data area (Byte units)

5394 byte

■Processing

The processing result of 'LocationObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label


• M+GEM300_10039-00204

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 2696	stLocationObject	LocationObject	M+GEM300_LocationObject	 Page 35 M+GEM300_LocationObject	When an error code is '0', all attribute values of a requested location object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 112 00204: LocationObject GetAttr request

00303: InternalBufferObject SetAttr acknowledge

■Information type

10039

■Detail type

00303

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'InternalBufferObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10039-00303

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 113 00303: InternalBufferObject SetAttr request

00304: InternalBufferObject GetAttr acknowledge

■Information type

10039

■Detail type

00304

■Data size of data area (Byte units)

344 byte

■Processing

The processing result of 'InternalBufferObject GetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label

• M+GEM300_10039-00304

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 171	stInternalBufferObject	InternalBufferObject	M+GEM300_InternalBufferObject	Page 36 M+GEM300_InternalBufferObject	When an error code is '0', all attribute values of a required internal buffer object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

Page 92 Error Code List

■Relevant item

Page 115 00304: InternalBufferObject GetAttr request

00087: CPU to CITL

The following shows the format of CPU to CITL.

00001: CarrierObject create request

■Information type

00087

■Detail type

00001

■Data size of data area (Byte units)

4382 byte

■Processing

Creating a carrier object specified in CarrierObject is requested.

■Relevant state transition

None

Point

- Even if a carrier object is created by this request, the state transition of Carrier State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
 - When this request ends normally, the value of CMS variable 'DVVAL' corresponding to the attribute value of a carrier object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable value.
-

■Data

Structure label

- M+GEM300_00087-00001

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2190	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	☞ Page 40 M+GEM300_CarrierObject	Specify the attribute value of a carrier object. (ObjID is required.)

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition	Initial value
ObjType* ¹	—	—	—	None	—	"Carrier"
ObjID* ²	○	—	—	Yes	<ul style="list-style-type: none"> • 12: Omitted (0x00) • 11: ID duplication • 12: Other than ASCII*³ • 17: Creation limit exceeded 	—
Capacity	—	○	—	Yes	7: Out of applicable range	25
SubstrateCount* ⁴	—	○	—	Yes	7: Out of applicable range	0
ContentMap* ⁵	—	○	—	Yes	<ul style="list-style-type: none"> • 7: Out of applicable range • 7: Other than ASCII*³ (except for 0x00) 	LIST[Capacity]
SlotMap* ⁵	—	○	—	Yes	7: Out of applicable range	LIST[Capacity]
Usage	—	○	—	Yes	7: Other than ASCII* ³ (except for 0x00)	(Null character)
CarrierIDStatus* ¹	—	—	—	None	—	0: ID NOT READ
CarrierAccessingStatus* ¹	—	—	—	None	—	0: NOT ACCESSED
SlotMapStatus* ¹	—	—	—	None	—	0: SLOT MAP NOT READ
LocationID* ¹	—	—	—	None	—	(Null character)
Reason* ¹	—	—	—	None	—	0: VERIFICATION NEEDED

*1 Not required. (Ignored even if provided.)

*2 When an error occurs, no carrier objects are created.

*3 Excluding the control characters.

*4 Can be applied within the range of 'Capacity.'

*5 Outside the range of 'Capacity' is ignored.

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■Relevant item

☞ Page 169 00001: CarrierObject create acknowledge

00002: CarrierObject delete request

Information type
00087

Detail type
00002

Data size of data area (Byte units)
80 byte

Processing
Deleting a carrier object specified in ObjID is requested.

Relevant state transition
None

Point

- Even if a carrier object is deleted by this request, the state transition of Carrier State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of CMS variable 'DVVAL' corresponding to the attribute value of a carrier object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable value.

Data
Structure label
• M+GEM300_00087-00002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Object ID (CarrierID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
Page 346 Sample Library

Relevant item
Page 170 00002: CarrierObject delete acknowledge

A

00003: CarrierObject SetAttr request

■Information type

00087

■Detail type

00003

■Data size of data area (Byte units)

4382 byte

■Processing

Setting all attribute values of a carrier object specified in CarrierObject is requested.

■Relevant state transition

None

Point

- Even if the attribute value of a carrier object is changed by this request, the state transition of Carrier State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of CMS variable 'DVVAL' corresponding to the attribute value of a carrier object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the CMS variable value.

■Data

Structure label

- M+GEM300_00087-00003

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2190	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	☞ Page 40 M+GEM300_CarrierObject	Specify all attribute values of a carrier object.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType ^{*1}	○	—	—	None	—
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
Capacity	○	—	—	Yes	7: Out of applicable range
SubstrateCount ^{*3}	○	—	—	Yes	7: Out of applicable range
ContentMap ^{*4}	○	—	—	Yes	• 7: Out of applicable range • 7: Other than ASCII ^{*5} (except for 0x00)
SlotMap ^{*4}	○	—	—	Yes	7: Out of applicable range
Usage	○	—	—	Yes	7: Other than ASCII ^{*5} (except for 0x00)
CarrierIDStatus	○	—	—	Yes	7: Out of applicable range
CarrierAccessingStatus	○	—	—	Yes	7: Out of applicable range
SlotMapStatus	○	—	—	Yes	7: Out of applicable range

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
LocationID	○	—	—	Yes	7: Other than ASCII ^{*5} (except for 0x00)
Reason	○	—	—	Yes	7: Out of applicable range

*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

*3 Can be applied within the range of 'Capacity.'


*4 Outside the range of 'Capacity' is ignored.

*5 Excluding the control characters.

Point

All attribute values of carrier objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

 Page 171 00003: CarrierObject SetAttr acknowledge

00004: CarrierObject GetAttr request

Information type
00087

Detail type
00004

Data size of data area (Byte units)
80 byte


Processing
Acquiring all attribute values of a carrier object specified in ObjID is requested.

Relevant state transition
None

Data
Structure label
• M+GEM300_00087-00004

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (CarrierID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item
 Page 172 00004: CarrierObject GetAttr acknowledge


00101: AccessMode AUTO request


Information type
00087

Detail type
00101

Data size of data area (Byte units)
2 byte

Processing
Changing 'AccessMode' which is an attribute of a load port specified in PortID (PTN) to the 'AUTO' mode is requested.


Relevant state transition
• Access Mode State Model state transition No.(2)
( Page 58 Access Mode State Model)


Point

When a load port is already reserved or transferring, 'AccessMode' cannot be changed to AUTO. (When the value of 'LoadPortReservationState' or 'PortTransferState' of a load port specified in PortID (PTN) is '1: RESERVED' or '1: TRANSFER BLOCKED,' respectively)

Data
Structure label
• M+GEM300_00087-00101

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 173 00101: AccessMode AUTO acknowledge

00102: AccessMode MANUAL request

■Information type

00087

■Detail type

00102


■Data size of data area (Byte units)

2 byte

■Processing

Changing 'AccessMode' which is an attribute of a load port specified in PortID (PTN) to the 'MANUAL' mode is requested.

■Relevant state transition

- Access Mode State Model state transition No.(3)
( Page 58 Access Mode State Model)

Point

When a load port is already reserved or transferring, 'AccessMode' cannot be changed to MANUAL. (When the value of 'LoadPortReservationState' or 'PortTransferState' of a load port specified in PortID (PTN) is '1: RESERVED' or '1: TRANSFER BLOCKED,' respectively)


■Data

Structure label

- M+GEM300_00087-00102

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 174 00102: AccessMode MANUAL acknowledge)

00111: Load Port reservation request

■Information type

00087

■Detail type

00111


■Data size of data area (Byte units)

2 byte

■Processing

Changing 'LoadPortReservationState' which is an attribute of a load port specified in PortID (PTN) to 'RESERVED' is requested.

■Relevant state transition

- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))

Point

'LoadPortReservationState' can be changed to 'RESERVED' only when the 'PortTransferState' attribute of a load port is '2: READY TO LOAD.'


■Data

Structure label

- M+GEM300_00087-00111

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 175 00111: Load Port reservation acknowledge)


00112: Load Port cancel reservation request

Information type
00087

Detail type
00112


Data size of data area (Byte units)
2 byte


Processing
Changing 'LoadPortReservationState' which is an attribute of a load port specified in PortID (PTN) to 'NOT RESERVED' is requested.

Relevant state transition
• Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))

Data
Structure label
• M+GEM300_00087-00112

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 176 00112: Load Port cancel reservation acknowledge

00201: IN SERVICE request


Information type
00087

Detail type
00201

Data size of data area (Byte units)
2 byte

Processing
Changing 'PortTransferState' which is an attribute of a load port specified in PortID (PTN) to 'IN SERVICE' is requested.

Relevant state transition


- Load Port Transfer State Model state transition No.(2)
( Page 48 Load Port Transfer State Model)


Data

Structure label

- M+GEM300_00087-00201

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 177 00201: IN SERVICE acknowledge

00202: OUT OF SERVICE request

Information type
00087

Detail type
00202

Data size of data area (Byte units)
2 byte

Processing
Changing 'PortTransferState' which is an attribute of a load port specified in PortID (PTN) to 'OUT OF SERVICE' is requested.

Relevant state transition


- Load Port Transfer State Model state transition No.(3)
( Page 48 Load Port Transfer State Model)

Data

Structure label

- M+GEM300_00087-00202

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item

 Page 178 00202: OUT OF SERVICE acknowledge

00203: ID READER available notification

Information type
00087

Detail type
00203

Data size of data area (Byte units)
2 byte

Processing
The completion of the preparation of a carrier ID reader for a load port specified in PortID (PTN) is notified.

Relevant state transition
• Additional event: ID Reader Available Event
(Page 341 Additional events)

Data
Structure label
• M+GEM300_00087-00203

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
(Page 346 Sample Library)

Relevant item
(Page 179 00203: ID READER available response)


00204: ID READER unavailable notification

Information type
00087

Detail type
00204


Data size of data area (Byte units)
2 byte

Processing
The unavailability of a carrier ID reader for a load port specified in PortID (PTN) is notified.

Relevant state transition
• Additional event: ID Reader Unavailable Event
( Page 341 Additional events)

Data
Structure label
• M+GEM300_00087-00204

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 180 00204: ID READER unavailable response

00301: LOAD started notification

Information type
00087

Detail type
00301

Data size of data area (Byte units)
2 byte

Processing
The start of loading a carrier in a load port specified in PortID (PTN) is notified.

Relevant state transition
• Load Port Transfer State Model state transition No.(6)
(Page 48 Load Port Transfer State Model)

Data
Structure label
• M+GEM300_00087-00301

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
(Page 346 Sample Library)

Relevant item
(Page 181 00301: LOAD started response)

00302: LOAD completed notification

■Information type

00087

■Detail type

00302


■Data size of data area (Byte units)

2 byte

■Processing

The completion of loading a carrier in a load port specified in PortID (PTN) is notified.

■Relevant state transition

- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))

Point

When the loading of a carrier is completed in a load port not reserved, the Load Port Reservation State Model state transition No.(3) does not occur and a response is sent normally. (When the 'LoadPortReservationState' value of a load port specified in PortID (PTN) is '0: NOT RESERVED')


■Data

Structure label

- M+GEM300_00087-00302

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 182 00302: LOAD completed response)

00303: UNLOAD available notification

Information type
00087

Detail type
00303

Data size of data area (Byte units)
2 byte

Processing
The completion of the preparation for unloading a carrier in a load port specified in PortID (PTN) is notified.

Relevant state transition


- Load Port Transfer State Model state transition No.(9)
( Page 48 Load Port Transfer State Model)

Data

Structure label

- M+GEM300_00087-00303

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 183 00303: UNLOAD available response


00304: UNLOAD started notification

■Information type
00087

■Detail type
00304


■Data size of data area (Byte units)
2 byte

■Processing
The start of unloading a carrier in a load port specified in PortID (PTN) is notified.

■Relevant state transition
• Load Port Transfer State Model state transition No.(7)
( Page 48 Load Port Transfer State Model)

■Data
Structure label
• M+GEM300_00087-00304

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

■Relevant item
 Page 184 00304: UNLOAD started response

00305: UNLOAD completed notification

■Information type

00087

■Detail type

00305

■Data size of data area (Byte units)




2 byte

■Processing


The completion of unloading a carrier in a load port specified in PortID (PTN) is notified.

■Relevant state transition

When CarrierID is associated with a load port specified in PortID (PTN)

- Carrier State Model state transition No.(21)
( Page 42 Carrier State Model)
- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)
- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

When CarrierID is not associated with a load port specified in PortID (PTN)

- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)

■Data

Structure label

- M+GEM300_00087-00305

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 185 00305: UNLOAD completed response)


00306: TRANSFER failed notification

Information type
00087

Detail type
00306


Data size of data area (Byte units)
2 byte

Processing
The failure of the transfer of a carrier in a load port specified in PortID (PTN) is notified.

Relevant state transition
• Load Port Transfer State Model state transition No.(10)
( Page 48 Load Port Transfer State Model)

Data
Structure label
• M+GEM300_00087-00306

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 186 00306: TRANSFER failed response

00307: Carrier clamped notification

■Information type

00087

■Detail type

00307


■Data size of data area (Byte units)

162 byte

■Processing

Clamping of a carrier at the delivery position in a load port specified in PortID (PTN) is notified.

■Relevant state transition

- Additional event: Carrier Clamped Event
( Page 341 Additional events)

■Data

Structure label

- M+GEM300_00087-00307

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	Specify CarrierID of a clamped carrier. When a carrier object of the clamped carrier has not been created, specify '0x00.'
+41 to 80	u40LocationID	LocationID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	Specify LocationID in which a carrier has been clamped. When LocationID does not need to be notified, specify '0x00.'

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

A

Point

LocationID specified with this request is applied to 'VID 30049: LocationID (DVVAL)' only, and not applied to the attribute of an object. To change the carrier location, use '00087-00402: Carrier Location change notification.'

■Relevant item

( Page 187 00307: Carrier clamped response)

00308: Carrier unclamped notification

■Information type

00087

■Detail type

00308


■Data size of data area (Byte units)

162 byte

■Processing

Unclamping of a carrier at the delivery position in a load port specified in PortID (PTN) is notified.

■Relevant state transition

- Additional event: Carrier Unclamped Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_00087-00308

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	Specify CarrierID of a unclamped carrier. When a carrier object of the unclamped carrier has not been created, specify '0x00.'
+41 to 80	u40LocationID	LocationID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	Specify LocationID in which a carrier has been unclamped. When not notifying LocationID to the host, specify '0x00.'

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)



LocationID specified with this request is applied to 'VID 30049: LocationID (DVVAL)' only, and not applied to the attribute of an object. To change the carrier location, use '00087-00402: Carrier Location change notification.'

■Relevant item

( Page 188 00308: Carrier unclamped response)

00309: Carrier opened notification

■Information type

00087

■Detail type

00309


■Data size of data area (Byte units)

80 byte

■Processing

Opening of the door of a carrier specified in CarrierID is notified.

■Relevant state transition

- Additional event: Carrier Opened Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_00087-00309

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 189 00309: Carrier opened response)

A

00310: Carrier closed notification

■Information type

00087

■Detail type

00310


■Data size of data area (Byte units)

80 byte

■Processing

Closing of the door of a carrier specified in CarrierID is notified.

■Relevant state transition

- Additional event: Carrier Closed Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_00087-00310

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 190 00310: Carrier closed response)

00311: Carrier accessing started notification

■Information type

00087

■Detail type

00311


■Data size of data area (Byte units)

80 byte

■Processing

The start of accessing a carrier specified in CarrierID is notified.

■Relevant state transition

- Carrier State Model state transition No.(18)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_00087-00311

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 191 00311: Carrier accessing started response)

A


00312: Carrier approaching complete notification

Information type
00087

Detail type
00312


Data size of data area (Byte units)
80 byte


Processing
The approaching completion of accessing a carrier specified in CarrierID is notified.

Relevant state transition
• Additional event: Carrier Approaching Complete Event
( Page 341 Additional events)

Data
Structure label
• M+GEM300_00087-00312

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 192 00312: Carrier approaching complete response

00313: Carrier accessing normally finished notification

Information type
00087

Detail type
00313

Data size of data area (Byte units)
80 byte

Processing
The normal completion of accessing a carrier specified in CarrierID is notified.

Relevant state transition
• Carrier State Model state transition No.(19)
(Page 42 Carrier State Model)

Data
Structure label
• M+GEM300_00087-00313

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
(Page 346 Sample Library)

Relevant item
(Page 193 00313: Carrier accessing normally finished response)



00314: Carrier accessing abnormally finished notification

Information type
00087

Detail type
00314


Data size of data area (Byte units)
80 byte


Processing
The abnormal completion of accessing a carrier specified in CarrierID is notified.

Relevant state transition
• Carrier State Model state transition No.(20)
( Page 42 Carrier State Model)

Data
Structure label
• M+GEM300_00087-00314

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 194 00314: Carrier accessing abnormally finished response

00401: Load Port Carrier association request

■Information type

00087

■Detail type

00401


■Data size of data area (Byte units)

82 byte

■Processing

Associating a load port specified in PortID (PTN) with a carrier specified in CarrierID is requested.

■Relevant state transition

- Load Port/Carrier Association State Model state transition No.(2), (4)
( Page 55 Load Port/Carrier Association State Model)

Point

- When the 'PortTransferState' value of a load port specified in PortID (PTN) is '0: OUT OF SERVICE,' the specified load port and carrier cannot be associated.
- When a carrier specified in CarrierID is already associated with an load port, the specified load port and carrier cannot be associated. Cancel the association by '00087-00402: Load Port Carrier cancel association request' in advance.

■Data

Structure label


- M+GEM300_00087-00401

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 195 00401: Load Port Carrier association acknowledge)


00402: Load Port Carrier cancel association request

Information type
00087

Detail type
00402


Data size of data area (Byte units)
2 byte

Processing
Changing 'PortAssociationState' which is an attribute of a load port specified in PortID (PTN) to 'NOT ASSOCIATED' is requested.

Relevant state transition
• Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

Data
Structure label
• M+GEM300_00087-00402

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 196 00402: Load Port Carrier cancel association acknowledge

00403: Carrier Location change notification

■Information type

00087

■Detail type

00403


■Data size of data area (Byte units)

160 byte

■Processing

Changing the location of a carrier specified in CarrierID to the one specified in LocationID is notified.

■Relevant state transition

- Additional event: Carrier Location Change Event
( Page 341 Additional events)

■Data

Structure label

- M+GEM300_00087-00403

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	Specify CarrierID.
+40 to 79	u40LocationID	LocationID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify LocationID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Point

- LocationID, the attribute of a carrier object specified in CarrierID, is changed to the location specified in LocationID. In addition, CarrierLocationMatrix, the attribute of a location object, is updated.
- When CarrierID cannot be read, specify a unique ASCII character (such as "UNKNOWN") for it. CarrierID of the location specified in LocationID is changed to the ASCII character specified in CarrierID. (Only 'CarrierLocationMatrix,' the attribute of a location object, is updated.)
- After unloading a carrier, CarrierID of a location specified in LocationID is deleted by 'not specifying (0x00)' CarrierID. (Only 'CarrierLocationMatrix,' the attribute of a location object, is updated.)

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 197 00403: Carrier Location change response)

A

00404: Buffer Capacity changed notification

■Information type

00087

■Detail type

00404

■Data size of data area (Byte units)


84 byte

■Processing

The change of the buffer capacity of a logical partition specified in PartitionID is notified.

■Relevant state transition

- Additional event: Buffer Capacity Changed Event

( Page 341 Additional events)

■Data

Structure label


- M+GEM300_00087-00404

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40PartitionID	PartitionID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify the partition ID of a logical partition.
+40	uAvailPartitionCapacity	AvailPartitionCapacity	Word [Unsigned]	0 to 32	Specify the free space (remaining amount) of a logical partition.
+41	uUnallocatedPartitionCapacity	UnallocatedPartitionCapacity	Word [Unsigned]	0 to 32	Specify the unassigned space (remaining amount) of a logical partition.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 198 00404: Buffer Capacity changed response)

00411: Carrier move started to Internal Buffer notification

Information type

00087

Detail type

00411


Data size of data area (Byte units)

82 byte

Processing

The start of moving a carrier specified in CarrierID, in a load port specified in PortID (PTN), to the internal buffer, is notified.

Relevant state transition

- Load Port Transfer State Model state transition No.(7)
( Page 48 Load Port Transfer State Model)

Point

- When a load port specified in PortID (PTN) and a carrier specified in CarrierID are associated
- When the loading of a carrier is completed and transferring the carrier to the internal buffer, the Load Port Transfer State Model state transition No.(7) does not occur and a response is sent normally. (When the 'PortTransferState' value of a load port specified in PortID (PTN) is '1: TRANSFER BLOCKED')
 - When transferring a carrier that can be unloaded to the internal buffer, the Load Port Transfer State Model state transition No.(7) occurs. (When the 'CarrierIn' service is instructed by the host to a carrier for which the 'CarrierOut' service is completed, and the 'PortTransferState' value of a load port specified in PortID (PTN) is '3: READY TO UNLOAD')
- When a load port specified in PortID (PTN) and a carrier specified in CarrierID are not associated
- Load Port Transfer State Model state transition No.(7) does not occur, and an error response is sent.

Data

Structure label


- M+GEM300_00087-00411

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Relevant item

( Page 199 00411: Carrier move started to Internal Buffer response)

00412: Carrier move completed to Internal Buffer notification

■Information type

00087

■Detail type

00412



■Data size of data area (Byte units)

82 byte

■Processing

The completion of moving a carrier specified in CarrierID, in a load port specified in PortID (PTN), to the internal buffer, is notified.

■Relevant state transition

- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)
- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

Point

When a load port specified in PortID (PTN) and a carrier specified in CarrierID are not associated, no state transitions occur and an error response is sent.

■Data

Structure label

- M+GEM300_00087-00412

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Point

For the change of buffer capacity notification, use '00087-00404: Buffer Capacity changed notification.'

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 200 00412: Carrier move completed to Internal Buffer response)




00413: Carrier move started to Load Port notification

Information type
00087

Detail type
00413

Data size of data area (Byte units)
82 byte

Processing
The start of moving a carrier specified in CarrierID to a load port specified in PortID (PTN) is notified.


- Relevant state transition
- Load Port Transfer State Model state transition No.(6)
( Page 48 Load Port Transfer State Model)
 - Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
 - Load Port/Carrier Association State Model state transition No.(2)
( Page 55 Load Port/Carrier Association State Model)


Point
When a carrier specified in CarrierID is already associated with an load port, no state transitions occur and an error response is sent.

Data
Structure label
• M+GEM300_00087-00413

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Relevant item
 Page 201 00413: Carrier move started to Load Port response

00414: Carrier move completed to Load Port notification

■Information type

00087

■Detail type

00414

■Data size of data area (Byte units)


82 byte

■Processing

The completion of moving a carrier specified in CarrierID to a load port specified in PortID (PTN) is notified.

■Relevant state transition

- Load Port Reservation State Model state transition No.(3)

( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))

Point

When a load port specified in PortID (PTN) and a carrier specified in CarrierID are not associated, no state transitions occur and an error response is sent.

■Data

Structure label


- M+GEM300_00087-00414

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 202 00414: Carrier move completed to Load Port response)

00415: UNLOAD completed and Carrier move started to Load Port notification

■Information type

00087

■Detail type

00415

■Data size of data area (Byte units)

82 byte

■Processing

The start of moving a carrier specified in CarrierID, from the internal buffer to a load port specified in PortID (PTN), is notified via a carrier unloading completion notification and the 'CarrierOut' service. (Refer to 'Carrier-out queuing' in the use case. (Page 358 Use Cases))

■Relevant state transition

When CarrierID is associated with a load port specified in PortID (PTN)

- Carrier State Model state transition No.(21)
(Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(2)
(Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(4)
(Page 55 Load Port/Carrier Association State Model)

When CarrierID is not associated with a load port specified in PortID (PTN)

- Load Port Reservation State Model state transition No.(2)
(Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2)
(Page 55 Load Port/Carrier Association State Model)

■Data

Structure label

- M+GEM300_00087-00415

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	Specify CarrierID that has started moving.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

(Page 346 Sample Library)

■Relevant item

(Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)

00501: CarrierID read successful notification

■Information type

00087

■Detail type

00501

■Data size of data area (Byte units)

82 byte

■Processing

The completion of reading CarrierID successfully in a load port specified in PortID (PTN) is notified.



SECS/GEM communication software performs the carrier ID verification. (Page 64 Carrier ID Verification)

■Relevant state transition

- Carrier State Model state transition No.(3), (6), (7), (21)
(Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(3)
(Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2), (3), (4)
(Page 55 Load Port/Carrier Association State Model)

■Data

Structure label

- M+GEM300_00087-00501

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID that has been read successfully.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

(Page 346 Sample Library)

■Relevant item

(Page 204 00501: CarrierID read successful response)

00502: CarrierID read fail notification

■Information type
00087


■Detail type
00502



■Data size of data area (Byte units)
2 byte

■Processing
The failure of reading CarrierID in a load port specified in PortID (PTN) is notified.

Point


SECS/GEM communication software performs the following processing:

- When a carrier is ASSOCIATED with a load port specified in PortID (PTN), the carrier ID verification is performed. ( Page 64 Carrier ID Verification)
- When a carrier is NOT ASSOCIATED with a load port specified in PortID (PTN), CarrierID Read Fail Event is sent.

- Relevant state transition
- Carrier State Model state transition No.(7)
( Page 42 Carrier State Model)
 - Additional event: CarrierID Read Fail Event
( Page 341 Additional events)

- Data
- Structure label
- M+GEM300_00087-00502

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

■Relevant item
 Page 206 00502: CarrierID read fail response

A

00503: Unknown CarrierID notification

■Information type

00087

■Detail type

00503

■Data size of data area (Byte units)


2 byte

■Processing



The arrival of a carrier at a load port for which a carrier ID reader cannot be used is notified.

Point

SECS/GEM communication software performs the following processing only when the 'CarrierIDReaderStatus' value of a load port specified in PortID (PTN) is '0: UNAVAILABLE.'

- When a carrier is ASSOCIATED with a load port specified in PortID (PTN), the carrier ID verification is performed. ( Page 64 Carrier ID Verification)
- When a carrier is NOT ASSOCIATED with a load port specified in PortID (PTN), UnknownCarrierID Event is sent.

■Relevant state transition

- Carrier State Model state transition No.(10), (11)
( Page 42 Carrier State Model)
- Additional event: UnknownCarrierID Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_00087-00503

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	Specify PortID (PTN).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 207 00503: Unknown CarrierID response)

00504: Duplicate CarrierID in process notification

■Information type

00087

■Detail type

00504

■Data size of data area (Byte units)

80 byte

■Processing


The start of processing a carrier with the same CarrierID as the one already specified is notified.

■Relevant state transition

- Additional event: Duplicate CarrierID In Process Event

( Page 341 Additional events)

Point

For the alarm notification (sending S5F1) when CarrierID is duplicated, use the alarm notification definition (GEM/GEM advanced version) function of SEMI E30(GEM). ( IC Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual)

■Data

Structure label


- M+GEM300_00087-00504

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Point

CarrierID specified with this request is applied to 'VID 30014: CarrierID (DVVAL)' only.

■Relevant item

( Page 208 00504: Duplicate CarrierID in process response)

A

00601: SlotMap verification ok notification

■Information type

00087

■Detail type

00601


■Data size of data area (Byte units)

80 byte

■Processing

The completion of equipment verification of a slot map for a carrier specified in CarrierID is notified.

■Relevant state transition

- Carrier State Model state transition No.(13)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_00087-00601

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 209 00601: SlotMap verification ok response)

00602: SlotMap waiting for host verification notification

Information type
00087

Detail type
00602

Data size of data area (Byte units)
130 byte

Processing
Waiting for the host verification of a slot map of a carrier specified in CarrierID is notified.

Relevant state transition
• Carrier State Model state transition No.(14)
(Page 42 Carrier State Model)

Data
Structure label
• M+GEM300_00087-00602

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.
+40 to 64	st25SlotMap	SlotMap	M+GEM300_SlotMap (0..24)	Page 40 M+GEM300_SlotMap	A read slot map is notified.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
(Page 346 Sample Library)

Relevant item
(Page 210 00602: SlotMap waiting for host verification response)



00603: SlotMap verification fail notification

Information type
00087


Detail type
00603


Data size of data area (Byte units)
130 byte

Processing
The failure of equipment verification of a slot map for a carrier specified in CarrierID is notified.

Relevant state transition
• Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

Data
Structure label
• M+GEM300_00087-00603

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Specify CarrierID.
+40 to 64	st25SlotMap	SlotMap	M+GEM300_SlotMap (0..24)	 Page 40 M+GEM300_SlotMap	A read slot map is notified.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
 Page 346 Sample Library

Relevant item
 Page 211 00603: SlotMap verification fail response

00604: SlotMap read fail notification

■Information type

00087

■Detail type

00604


■Data size of data area (Byte units)

80 byte

■Processing

The failure of reading a slot map for a carrier specified in CarrierID is notified.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label

- M+GEM300_00087-00604

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 212 00604: SlotMap read fail response)

A

00605: SlotMap abnormal substrate position notification

■Information type

00087

■Detail type

00605


■Data size of data area (Byte units)

80 byte

■Processing

Abnormal substrate position found in a carrier specified in CarrierID is notified.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_00087-00605

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Specify CarrierID.


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

( Page 213 00605: SlotMap abnormal substrate position response)

10087: CITL to CPU

The following shows the format of CITL to CPU.

00001: CarrierObject create acknowledge

■Information type

10087

■Detail type

00001

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'CarrierObject create request' is returned.

■Relevant state transition

None

■Data

Structure label


- M+GEM300_10087-00001

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
7	Invalid attribute value
11	Object identifier in use
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 123 00001: CarrierObject create request

A

00002: CarrierObject delete acknowledge

■Information type

10087

■Detail type

00002

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'CarrierObject delete request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10087-00002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 125 00002: CarrierObject delete request

00003: CarrierObject SetAttr acknowledge

■Information type

10087

■Detail type

00003

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'CarrierObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10087-00003

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library


Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 126 00003: CarrierObject SetAttr request

00004: CarrierObject GetAttr acknowledge

■Information type

10087

■Detail type

00004

■Data size of data area (Byte units)

4496 byte

■Processing

The processing result of 'CarrierObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label

• M+GEM300_10087-00004

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 2247	stCarrierObject	CarrierObject	M+GEM300_CarrierObject	 Page 40 M+GEM300_CarrierObject	When an error code is '0', all attribute values of a required carrier object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 128 00004: CarrierObject GetAttr request

00101: AccessMode AUTO acknowledge

■Information type

10087

■Detail type

00101


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'AccessMode AUTO request' is returned.

■Relevant state transition

- Access Mode State Model state transition No.(2)
( Page 58 Access Mode State Model)


■Data

Structure label

- M+GEM300_10087-00101

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 129 00101: AccessMode AUTO request)

A

00102: AccessMode MANUAL acknowledge

■Information type

10087

■Detail type

00102


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'AccessMode MANUAL request' is returned.

■Relevant state transition

- Access Mode State Model state transition No.(3)
( Page 58 Access Mode State Model)


■Data

Structure label

- M+GEM300_10087-00102

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 130 00102: AccessMode MANUAL request)

00111: Load Port reservation acknowledge

■Information type

10087

■Detail type

00111


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'Load Port reservation request' is returned.

■Relevant state transition

- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))


■Data

Structure label

- M+GEM300_10087-00111

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 131 00111: Load Port reservation request)

00112: Load Port cancel reservation acknowledge

■Information type

10087

■Detail type

00112


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'Load Port cancel reservation request' is returned.

■Relevant state transition

- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))


■Data

Structure label

- M+GEM300_10087-00112

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 132 00112: Load Port cancel reservation request)

00201: IN SERVICE acknowledge

■Information type

10087

■Detail type

00201


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'IN SERVICE request' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(2)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00201

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 133 00201: IN SERVICE request)

A

00202: OUT OF SERVICE acknowledge

■Information type

10087

■Detail type

00202


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'OUT OF SERVICE request' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(3)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00202

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 134 00202: OUT OF SERVICE request)

00203: ID READER available response

■Information type

10087

■Detail type

00203


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'ID READER available notification' is returned.

■Relevant state transition

- Additional event: ID Reader Available Event
( Page 341 Additional events)


■Data

Structure label

- M+GEM300_10087-00203

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 135 00203: ID READER available notification)

A

00204: ID READER unavailable response

■Information type

10087

■Detail type

00204


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'ID READER unavailable notification' is returned.

■Relevant state transition

- Additional event: ID Reader Unavailable Event
( Page 341 Additional events)


■Data

Structure label

- M+GEM300_10087-00204

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 136 00204: ID READER unavailable notification)

00301: LOAD started response

■Information type

10087

■Detail type

00301


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'LOAD started notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(6)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00301

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 137 00301: LOAD started notification)

A

00302: LOAD completed response

■Information type

10087

■Detail type

00302


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'LOAD completed notification' is returned.

■Relevant state transition

- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))


■Data

Structure label

- M+GEM300_10087-00302

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 138 00302: LOAD completed notification)

00303: UNLOAD available response

■Information type

10087

■Detail type

00303


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'UNLOAD available notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(9)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00303

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 139 00303: UNLOAD available notification)

A

00304: UNLOAD started response

■Information type

10087

■Detail type

00304


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'UNLOAD started notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(7)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00304

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 140 00304: UNLOAD started notification)

00305: UNLOAD completed response

■Information type

10087

■Detail type

00305

■Data size of data area (Byte units)




36 byte

■Processing


The processing result of 'UNLOAD completed notification' is returned.

■Relevant state transition

When CarrierID is associated with a load port specified in PortID (PTN)

- Carrier State Model state transition No.(21)
( Page 42 Carrier State Model)
- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)
- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

When CarrierID is not associated with a load port specified in PortID (PTN)

- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00305

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 141 00305: UNLOAD completed notification)

00306: TRANSFER failed response

■Information type

10087

■Detail type

00306


■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'TRANSFER failed notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(10)
( Page 48 Load Port Transfer State Model)


■Data

Structure label

- M+GEM300_10087-00306

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 142 00306: TRANSFER failed notification)

00307: Carrier clamped response

■Information type

10087

■Detail type

00307


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier clamped notification' is returned.

■Relevant state transition

- Additional event: Carrier Clamped Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00307

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
12	Parameters improperly specified
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 143 00307: Carrier clamped notification)

00308: Carrier unclamped response

■Information type

10087

■Detail type

00308


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier unclamped notification' is returned.

■Relevant state transition

- Additional event: Carrier Unclamped Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00308

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
12	Parameters improperly specified
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 144 00308: Carrier unclamped notification)

00309: Carrier opened response

■Information type

10087

■Detail type

00309


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier opened notification' is returned.

■Relevant state transition

- Additional event: Carrier Opened Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00309

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 145 00309: Carrier opened notification)

00310: Carrier closed response

■Information type

10087

■Detail type

00310


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier closed notification' is returned.

■Relevant state transition

- Additional event: Carrier Closed Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00310

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 146 00310: Carrier closed notification)

00311: Carrier accessing started response

■Information type

10087

■Detail type

00311


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier accessing started notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(18)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00311

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 147 00311: Carrier accessing started notification)

00312: Carrier approaching complete response

■Information type

10087

■Detail type

00312

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier approaching complete notification' is returned.

■Relevant state transition

- Additional event: Carrier Approaching Complete Event

( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00312

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 148 00312: Carrier approaching complete notification)

00313: Carrier accessing normally finished response

■Information type

10087

■Detail type

00313


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier accessing normally finished notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(19)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00313

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 149 00313: Carrier accessing normally finished notification)

00314: Carrier accessing abnormally finished response

■Information type

10087

■Detail type

00314


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Carrier accessing abnormally finished notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(20)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00314

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 150 00314: Carrier accessing abnormally finished notification)

00401: Load Port Carrier association acknowledge

■Information type

10087

■Detail type

00401


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'CarrierID change request' is returned.

■Relevant state transition

- Load Port/Carrier Association State Model state transition No.(2), (4)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00401

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 151 00401: Load Port Carrier association request)

A

00402: Load Port Carrier cancel association acknowledge

■Information type

10087

■Detail type

00402


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Load Port Carrier cancel association request' is returned.

■Relevant state transition

- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00402

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A required PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+18 to 57	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)**2	When an error code is '0', a CarrierID with the association canceled is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 152 00402: Load Port Carrier cancel association request)

00403: Carrier Location change response

■Information type

10087

■Detail type

00403


■Data size of data area (Byte units)

194 byte

■Processing

The processing result of 'Carrier Location change notification' is returned.

■Relevant state transition

- Additional event: Carrier Location Change Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00403

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+40 to 79	u40LocationID	LocationID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified LocationID is returned.
+80	uErrorCo unt	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+81 to 96	u16ErrorCo de	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 153 00403: Carrier Location change notification)

00404: Buffer Capacity changed response

■Information type

10087

■Detail type

00404


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'Buffer Capacity changed notification' is returned.

■Relevant state transition

- Additional event: Buffer Capacity Changed Event
( Page 341 Additional events)

■Data

Structure label


- M+GEM300_10087-00404

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40PartitionID	PartitionID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified PartitionID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 154 00404: Buffer Capacity changed notification)

00411: Carrier move started to Internal Buffer response

■Information type

10087

■Detail type

00411


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier move started to Internal Buffer notification' is returned.

■Relevant state transition

- Load Port/Carrier Association State Model state transition No.(7)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00411

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 155 00411: Carrier move started to Internal Buffer notification)

00412: Carrier move completed to Internal Buffer response

■Information type

10087

■Detail type

00412



■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier move complete to Internal Buffer notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(8)
( Page 48 Load Port Transfer State Model)
- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00412

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 156 00412: Carrier move completed to Internal Buffer notification)

00413: Carrier move started to Load Port response

■Information type

10087

■Detail type

00413




■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier move started to Load Port notification' is returned.

■Relevant state transition

- Load Port Transfer State Model state transition No.(6)
( Page 48 Load Port Transfer State Model)
- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00413

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
49	Load port already in use
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 157 00413: Carrier move started to Load Port notification)

A

00414: Carrier move completed to Load Port response

■Information type

10087

■Detail type

00414


■Data size of data area (Byte units)

116 byte

■Processing

The processing result of 'Carrier move completed to Load Port notification' is returned.

■Relevant state transition

- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))

■Data

Structure label


- M+GEM300_10087-00414

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 158 00414: Carrier move completed to Load Port notification)

00415: UNLOAD completed and Carrier move started to Load Port response

■Information type

10087

■Detail type

00415

■Data size of data area (Byte units)




116 byte

■Processing



The processing result of 'UNLOAD completed and Carrier move started to Load Port notification' is returned.

■Relevant state transition

When CarrierID is associated with a load port specified in PortID (PTN)

- Carrier State Model state transition No.(21)
( Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(4)
( Page 55 Load Port/Carrier Association State Model)

When CarrierID is not associated with a load port specified in PortID (PTN)

- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00415

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification)

00501: CarrierID read successful response

■Information type

10087

■Detail type

00501




■Data size of data area (Byte units)

202 byte

■Processing

The processing result of 'CarrierID read successful notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(3), (6), (7), (21)
( Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2), (3), (4)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00501

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+41	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+42 to 57	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+58	uCarrierIDStatus	CarrierIDStatus	Word [Unsigned]	0 to 3	Enabled when an error code is '0' or '50.' The equipment verification result for a notified CarrierID is notified. • 0: ID NOT READ • 1: WAITING FOR HOST • 2: ID VERIFICATION OK • 3: ID VERIFICATION FAILED
+59	uAllPortAssociationState	AllPortAssociationState	Bit String [16-bit]	• 0: NOT ASSOCIATED • 1: ASSOCIATED	Enabled when an error code is '0' or '50'.*3 A snapshot of 'PortAssociationState' of all load ports for the equipment verification result of a notified CarrierID is notified. (Same as 'Port reservation state' (Un\G24597)) • b0: PortAssociationState of PortID (PTN) 1 • b1: PortAssociationState of PortID (PTN) 2 • b2: PortAssociationState of PortID (PTN) 3 • b3: PortAssociationState of PortID (PTN) 4 • b4: PortAssociationState of PortID (PTN) 5 • b5: PortAssociationState of PortID (PTN) 6 • b6 to b15: Not used

Offset	Label name	Name	Data type	Applicable range	Description
+60	uAllLoadPortReservationState	AllLoadPortReservationState	Bit String [16-bit]	<ul style="list-style-type: none"> • 0: NOT RESERVED • 1: RESERVED 	<p>Enabled when an error code is '0' or '50'.^{*4}</p> <p>A snapshot of 'LoadPortReservationState' of all load ports for the equipment verification result of a notified CarrierID is notified. (Same as 'Carrier object count' (Un\G24598))</p> <ul style="list-style-type: none"> • b0: LoadPortReservationState of PortID (PTN) 1 • b1: LoadPortReservationState of PortID (PTN) 2 • b2: LoadPortReservationState of PortID (PTN) 3 • b3: LoadPortReservationState of PortID (PTN) 4 • b4: LoadPortReservationState of PortID (PTN) 5 • b5: LoadPortReservationState of PortID (PTN) 6 • b6 to b15: Not used
+61 to 100	u40DeleteCarrierID	DeleteCarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII) ^{*1*2}	<p>Enabled when an error code is '0' or '50.'</p> <p>CarrierID deleted after the equipment verification of a notified CarrierID is notified.</p> <p>If not deleted, '0x00' is notified.</p>


*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

*3 When specifying the number of load ports, which is out of the range of what is set in the equipment specification setting, a value out of the applicable range is not used. ( Page 24 Load port)

For example, when '4' is specified for the number of load ports, the following values are not used:


- b4: PortAssociationState of PortID (PTN) 5
- b5: PortAssociationState of PortID (PTN) 6

*4 When specifying the number of load ports, which is out of the range of what is set in the equipment specification setting, a value out of the applicable range is not used. ( Page 24 Load port)

For example, when '4' is specified for the number of load ports, the following values are not used:

- b4: LoadPortReservationState of PortID (PTN) 5
- b5: LoadPortReservationState of PortID (PTN) 6


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
12	Parameters improperly specified
15	Busy
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 160 00501: CarrierID read successful notification

00502: CarrierID read fail response

■Information type

10087

■Detail type

00502



■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'CarrierID read fail notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(7)
( Page 42 Carrier State Model)
- Additional event: CarrierID Read Fail Event
( Page 341 Additional events)


■Data

Structure label

- M+GEM300_10087-00502

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 161 00502: CarrierID read fail notification)

00503: Unknown CarrierID response

■Information type

10087

■Detail type

00503



■Data size of data area (Byte units)

36 byte

■Processing

The processing result of 'Unknown CarrierID notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(10), (11)
( Page 42 Carrier State Model)
- Additional event: UnknownCarrierID Event
( Page 341 Additional events)


■Data

Structure label

- M+GEM300_10087-00503

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	A notified PortID (PTN) is returned.
+1	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+2 to 17	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
17	Command not valid for current state
48	Load port does not exist
50	Missing Carrier
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 162 00503: Unknown CarrierID notification)

00504: Duplicate CarrierID in process response

■Information type

10087

■Detail type

00504

■Data size of data area (Byte units)


114 byte

■Processing


The processing result of 'Duplicate CarrierID in process notification' is returned.

■Relevant state transition

- Additional event: Duplicate CarrierID In Process Event

( Page 341 Additional events)

Point

For the alarm notification (sending S5F1) when CarrierID is duplicated, use the alarm notification definition (GEM/GEM advanced version) function of SEMI E30(GEM). ( IC Controller/C Intelligent Function Module SECS/GEM Communication Software Pre-installed Model User's Manual)

■Data

Structure label


- M+GEM300_10087-00504

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 163 00504: Duplicate CarrierID in process notification)

00601: SlotMap verification ok response

■Information type

10087

■Detail type

00601


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SlotMap verification ok notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(13)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00601

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 164 00601: SlotMap verification ok notification)

00602: SlotMap waiting for host verification response

■Information type

10087

■Detail type

00602


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SlotMap waiting for host verification notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00602

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 165 00602: SlotMap waiting for host verification notification)

00603: SlotMap verification fail response

■Information type

10087

■Detail type

00603


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SlotMap verification fail notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00603

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 166 00603: SlotMap verification fail notification)

00604: SlotMap read fail response

■Information type

10087

■Detail type

00604


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SlotMap read fail notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00604

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 167 00604: SlotMap read fail notification)

00605: SlotMap abnormal substrate position response

■Information type

10087

■Detail type

00605


■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SlotMap abnormal substrate position notification' is returned.

■Relevant state transition

- Carrier State Model state transition No.(14)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00605

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A notified CarrierID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

( Page 92 Error Code List)

■Relevant item

( Page 168 00605: SlotMap abnormal substrate position notification)

00901: Bind service notification

■Information type

10087

■Detail type

00901




■Data size of data area (Byte units)

4466 byte

■Processing

The result of an automatic response to the 'Bind' service is notified.


■Relevant state transition

- Carrier State Model state transition No.(1), (2), (12), and (17)
( Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(2)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(2)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00901

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	PortID (PTN) requested by the host is notified.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.
+42 to 2232	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	 Page 40 M+GEM300_CarrierObject	All attribute values of a created carrier object are notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

None

00902: CancelAllCarrierOut service notification

■Information type

10087

■Detail type

00902

■Data size of data area (Byte units)

2 byte

■Processing

The result of an automatic response to the 'CancelAllCarrierOut' service is notified.

■Relevant state transition

None

■Data

Structure label

- M+GEM300_10087-00902

Offset	Label name	Name	Data type	Applicable range	Description
+0	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command.• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

A

00903: CancelBind service notification

■Information type

10087

■Detail type

00903




■Data size of data area (Byte units)

84 byte

■Processing

The result of an automatic response to the 'CancelBind' service is notified.

■Relevant state transition

- Carrier State Model state transition No.(21)
( Page 42 Carrier State Model)
- Load Port Reservation State Model state transition No.(3)
( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))
- Load Port/Carrier Association State Model state transition No.(3)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00903

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	0 to 6	PortID (PTN) requested by the host is notified. When there are no requests, '0' is notified.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified. When there are no requests, '0x00' is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

None

00904: CancelCarrier service notification

■Information type

10087

■Detail type

00904


■Data size of data area (Byte units)

84 byte

■Processing

The result of an automatic response to the 'CancelCarrier' service is notified.

■Relevant state transition

- Carrier State Model state transition No.(1), (5), (9), (12), (16), (17)
( Page 42 Carrier State Model)

■Data

Structure label

- M+GEM300_10087-00904

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	CarrierID requested by the host is notified.
+40	uPortID	PortID (PTN)	Word [Unsigned]	0 to 6	PortID (PTN) requested by the host is notified. When there are no requests, '0' is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">0: Acknowledge, command has been performed.1: Invalid command2: Can not perform now.3: Invalid data or argument.4: Acknowledge, request will be performed with completion signaled later by an event.5: Rejected. Invalid state.6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

None

00905: CancelCarrierAtPort service notification

■Information type

10087

■Detail type

00905

■Data size of data area (Byte units)

4 byte

■Processing

The result of an automatic response to the 'CancelCarrierAtPort' service is notified.

■Relevant state transition

None


■Data

Structure label

• M+GEM300_10087-00905

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	PortID (PTN) requested by the host is notified.
+1	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

00906: CancelCarrierNotification service notification

Information type
10087

Detail type
00906

Data size of data area (Byte units)
82 byte

Processing
The result of an automatic response to the 'CancelCarrierNotification' service is notified.

Relevant state transition
• Carrier State Model state transition No.(21)
(Page 42 Carrier State Model)

Data
Structure label
• M+GEM300_10087-00906

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified.
+40	uCAACK	CAACK	Word [Unsigned]	• 0: Acknowledge, command has been performed. • 1: Invalid command • 2: Can not perform now. • 3: Invalid data or argument. • 4: Acknowledge, request will be performed with completion signaled later by an event. • 5: Rejected. Invalid state. • 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).
Structure labels defined in this product are provided in a sample library.
(Page 346 Sample Library)

Relevant item
None



00907: CancelCarrierOut service notification

■Information type

10087

■Detail type

00907

■Data size of data area (Byte units)

82 byte

■Processing

The result of an automatic response to the 'CancelCarrierOut' service is notified.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10087-00907

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	CarrierID requested by the host is notified.
+40	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

00909: CarrierIn service notification

■Information type

10087

■Detail type

00909

■Data size of data area (Byte units)

82 byte

■Processing

The result of an automatic response to the 'CarrierIn' service is notified.

■Relevant state transition

None

■Data

Structure label

• M+GEM300_10087-00909

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	CarrierID requested by the host is notified.
+40	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

00910: CarrierNotification service notification

■Information type

10087

■Detail type

00910


■Data size of data area (Byte units)

4464 byte

■Processing

The result of an automatic response to the 'CarrierNotification' service is notified.


■Relevant state transition

- Carrier State Model state transition No.(1), (2), (12), and (17)
( Page 42 Carrier State Model)

■Data

Structure label


- M+GEM300_10087-00910

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified.
+40	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.
+41 to 2231	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	 Page 40 M+GEM300_CarrierObject	All attribute values of a created carrier object are notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

None

00911: CarrierOut service notification

■Information type

10087

■Detail type

00911

■Data size of data area (Byte units)

84 byte

■Processing

The result of an automatic response to the 'CarrierOut' service is notified.

■Relevant state transition

None

■Data

Structure label

• M+GEM300_10087-00911

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	CarrierID requested by the host is notified.
+40	uPortID	PortID (PTN)	Word [Unsigned]	0 to 6	PortID (PTN) requested by the host is notified. When there are no requests, '0' is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

00912: CarrierReCreate service notification

■Information type

10087

■Detail type

00912



■Data size of data area (Byte units)

24948 byte

■Processing

The result of an automatic response to the 'CarrierReCreate' service is notified.



■Relevant state transition

- Carrier State Model state transition No.(3), (4), (21)
( Page 42 Carrier State Model)
- Load Port Transfer State Model state transition No.(7)
( Page 48 Load Port Transfer State Model)

■Data

Structure label

- M+GEM300_10087-00912

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified.
+40	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	PortID (PTN) the target carrier of which is READY TO UNLOAD is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.
+42	uAttrCount	Number of attributes	Word [Unsigned]	0 to 256	The number of attributes specified in PropertiesList is notified. ('0' when PropertiesList is not provided)
+43 to 10282	st256AttrIDList	AttrIDList	M+GEM300_AttrID List (0..255)	 M+GEM300_AttrIDList	An attribute name (AttrID) with the changed value is notified.
+10283 to 12473	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	 Page 40 M+GEM300_CarrierObject	When PropertiesList is provided (the number of attributes is 1 or more), all attribute values of created carrier objects are notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


• M+GEM300_AttrIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40AttrID	AttrID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Attribute name (AttrID) with the value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■ Relevant item

None

00913: CarrierRelease service notification

■Information type

10087

■Detail type

00913

■Data size of data area (Byte units)

84 byte

■Processing

The result of an automatic response to the 'CarrierRelease' service is notified.

■Relevant state transition

None

■Data

Structure label


- M+GEM300_10087-00913

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	0 to 6	PortID (PTN) requested by the host is notified. When there are no requests, '0' is notified.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	0 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified. When there are no requests, '0x00' is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

00917: ChangeServiceStatus service notification

■Information type

10087

■Detail type

00917

■Data size of data area (Byte units)

8 byte

■Processing

The result of an automatic response to the 'ChangeServiceStatus' service is notified.

■Relevant state transition


None

■Data

Structure label

• M+GEM300_10087-00917

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	1 to 6	PortID (PTN) requested by the host is notified.
+1	uServiceStatus	ServiceStatus	Word [Unsigned]	• 0: OUT OF SERVICE • 1: IN SERVICE	ServiceStatus requested by the host is notified.
+2	uCAACK	CAACK	Word [Unsigned]	• 0: Acknowledge, command has been performed. • 1: Invalid command. • 2: Can not perform now. • 3: Invalid data or argument. • 4: Acknowledge, request will be performed with completion signaled later by an event. • 5: Rejected. Invalid state. • 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.
+3	uAllServiceStatus	AllServiceStatus	Bit String [16-bit]	• 0: OUT OF SERVICE • 1: IN SERVICE	A snapshot of ServiceStatus of all load ports right after the service execution is notified. (Same as 'Service status' (Un\G24593)) ^{*1} • b0: ServiceStatus of PortID (PTN) 1 • b1: ServiceStatus of PortID (PTN) 2 • b2: ServiceStatus of PortID (PTN) 3 • b3: ServiceStatus of PortID (PTN) 4 • b4: ServiceStatus of PortID (PTN) 5 • b5: ServiceStatus of PortID (PTN) 6 • b6 to b15: Not used

*1 When specifying the number of load ports, which is out of the range of what is set in the equipment specification setting, a value out of the applicable range is not used. ( Page 24 Load port)

For example, when specifying '4' for the number of load ports, the following values are not used.

- b4: ServiceStatus of PortID (PTN) 5

- b5: ServiceStatus of PortID (PTN) 6

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

A

00918: ProceedWithCarrier service notification

■Information type

10087

■Detail type

00918



■Data size of data area (Byte units)

4466 byte

■Processing

The result of an automatic response to the 'ProceedWithCarrier' service is notified.


■Relevant state transition

- Carrier State Model state transition No.(1), (4), (8), (12), (15), (17)
( Page 42 Carrier State Model)
- Load Port/Carrier Association State Model state transition No.(2)
( Page 55 Load Port/Carrier Association State Model)

■Data

Structure label


- M+GEM300_10087-00918

Offset	Label name	Name	Data type	Applicable range	Description
+0	uPortID	PortID (PTN)	Word [Unsigned]	0 to 6	PortID (PTN) requested by the host is notified. When there are no requests, '0' is notified.
+1 to 40	u40CarrierID	CarrierID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	CarrierID requested by the host is notified.
+41	uCAACK	CAACK	Word [Unsigned]	<ul style="list-style-type: none">• 0: Acknowledge, command has been performed.• 1: Invalid command.• 2: Can not perform now.• 3: Invalid data or argument.• 4: Acknowledge, request will be performed with completion signaled later by an event.• 5: Rejected. Invalid state.• 6: Command performed with errors.	A confirmation code of carrier action responses to the host is notified.
+42 to 2232	stCarrierObject	CarrierObject	M+GEM300_Carrier Object	 Page 40 M+GEM300_CarrierObject	All attribute values of target carrier objects are notified.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

( Page 346 Sample Library)

■Relevant item

None

00090: CPU to CITL

The following shows the format of CPU to CITL.

00001: SubstrateObject create request

■Information type

00090

■Detail type

00001

■Data size of data area (Byte units)

4316 byte

■Processing

Creating a substrate object specified in SubstrateObject is requested.

■Relevant state transition

None

Point

- Even if a substrate object is created by this request, the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_00090-00001

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2157	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	Page 83 M+GEM300_SubstrateObject	Specify the attribute value of a substrate object. (ObjID is required.)

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition	Initial value
ObjType* ¹	—	—	—	None	—	"Substrate"
ObjID* ²	○	—	—	Yes	• 12: Omitted (0x00) • 11: ID duplication • 12: Other than ASCII* ³ • 17: Creation limit exceeded	—
SubstState	—	○	—	Yes	7: Out of applicable range	0: AT SOURCE
SubstProcState	—	○	—	Yes	7: Out of applicable range	0: NEEDS PROCESSING
SubstLocID* ⁴	—	—	○	Yes	• 7: Other than ASCII* ³ (except for 0x00) • Refer to 'Other error judgment.'	(Null character)

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition	Initial value
SubstSource	—	○	—	Yes	7: Other than ASCII* ³ (except for 0x00)	(Null character)
SubstDestination	—	○	—	Yes	7: Other than ASCII* ³ (except for 0x00)	(Null character)
SubstHistory* ⁵	—	○	—	Yes	7: Other than ASCII* ³ (except for 0x00)	LIST[0]
BatchLocID* ⁶	—	—	○	Yes	• 7: Other than ASCII* ³ (except for 0x00) • Refer to 'Other error judgment.'	(Null character)
SubstPosInBatch* ⁶	—	—	○	Yes	• 7: Other than ASCII* ³ (except for 0x00) • Refer to 'Other error judgment.'	(Null character)
SubstIDStatus	—	—	—	Yes	7: Out of applicable range	0: NOT CONFIRMED
AcquiredID	—	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)	(Null character)
LotID	—	○	—	Yes	7: Other than ASCII* ³ (except for 0x00)	(Null character)
MaterialStatus	—	○	—	None	—	0
SubstType	—	○	—	None	—	0: WAFER
SubstUsage	—	○	—	None	—	0: PRODUCT

*1 Not required. (Ignored even if provided.)

*2 When an error occurs, no substrate objects are created.

*3 Excluding the control characters.

*4 Required when instantiating a substrate object on the substrate location.

*5 Only errors for SubstrateLocation are determined, not for TimeIn and TimeOut.

*6 Required when instantiating a substrate object on the batch location.

• Other error judgment

The following table shows the combinations of 'Conditional' attributes (SubstLocID, BatchLocID, SubstPosInBatch).

When the judgment result for the combination is 'NG,' a substrate object is not created.

○: Provided, —: Not provided

SubstLocID	BatchLocID	SubstPosInBatch	Judgment result	Error code
○	—	—	OK	—
○	○	○	NG	12
○	○	—	NG	12
○	—	○	NG	12
—	○	○	OK	—
—	○	—	NG	13
—	—	○	NG	13
—	—	—	NG	13

■ Relevant item

Page 242 00001: SubstrateObject create acknowledge

00002: SubstrateObject delete request

Information type
00090

Detail type
00002

Data size of data area (Byte units)
80 byte

Processing
Deleting a substrate object specified in ObjID is requested.

Relevant state transition
None

Point

- Even if a substrate object is deleted by this request, the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

Data
Structure label

- M+GEM300_00090-00002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Object ID (SubstID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Relevant item
Page 243 00002: SubstrateObject delete acknowledge

00003: SubstrateObject SetAttr request

■Information type

00090

■Detail type

00003

■Data size of data area (Byte units)

4316 byte

■Processing

Setting all attribute values of a substrate object specified in SubstrateObject is requested.

■Relevant state transition

None

Point

- Even if the attribute value of a substrate object is changed by this request, the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_00090-00003

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2157	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	☞ Page 83 M+GEM300_SubstrateObject	Specify all attribute values of a substrate object to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType* ¹	—	—	—	None	—
ObjID* ²	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
SubstState	○	—	—	Yes	7: Out of applicable range
SubstProcState	○	—	—	Yes	7: Out of applicable range
SubstLocID	○	—	—	Yes	• 7: Other than ASCII* ³ (except for 0x00) • Refer to 'Other error judgment.'
SubstSource	○	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)
SubstDestination	○	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)
SubstHistory* ⁴	○	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)
BatchLocID	○	—	—	Yes	• 7: Other than ASCII* ³ (except for 0x00) • Refer to 'Other error judgment.'

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
SubstPosInBatch	○	—	—	Yes	<ul style="list-style-type: none"> • 7: Other than ASCII*³ (except for 0x00) • Refer to 'Other error judgment.'
SubstIDStatus	○	—	—	Yes	7: Out of applicable range
AcquiredID	○	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)
LotID	○	—	—	Yes	7: Other than ASCII* ³ (except for 0x00)
MaterialStatus	○	—	—	None	—
SubstType	○	—	—	None	—
SubstUsage	○	—	—	None	—

*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

*3 Excluding the control characters.

*4 Only errors for SubstrateLocation are determined, not for TimeIn and TimeOut.

• Other error judgment

The following table shows the combinations of 'Conditional' attributes (SubstLocID, BatchLocID, SubstPosInBatch).

When the judgment result for the combination is 'NG,' a substrate object is not created.

○: Provided, —: Not provided

SubstLocID	BatchLocID	SubstPosInBatch	Judgment result	Error code
○	—	—	OK	—
○	○	○	NG	12
○	○	—	NG	12
○	—	○	NG	12
—	○	○	OK	—
—	○	—	NG	13
—	—	○	NG	13
—	—	—	NG	13

A



All attribute values of location objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

■ Relevant item

Page 244 00003: SubstrateObject SetAttr acknowledge

00004: SubstrateObject GetAttr request

■Information type

00090

■Detail type

00004

■Data size of data area (Byte units)

80 byte

■Processing

Acquiring all attribute values of a substrate object specified in ObjID is requested.

■Relevant state transition

None

■Data

Structure label

- M+GEM300_00090-00004

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (SubstID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■Relevant item

📖 Page 245 00004: SubstrateObject GetAttr acknowledge

00011: CarrierSubstLocObject create request

■Information type

00090

■Detail type

00011

■Data size of data area (Byte units)

244 byte

■Processing

Creating a substrate location object in a carrier specified in SubstLocObject is requested.

■Relevant state transition

None

Point

- Even if a substrate location object in a carrier is created by this request, the state transition of Dynamic Behavior Model of Substrate Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate location object in a carrier is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_00090-00011

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 122	stSubstLocObject	SubstLocObject	M+GEM300_SubstLocObject	☞ Page 85 M+GEM300_SubstLocObject	Specify the attribute value of a substrate location object in a carrier. (ObjID is required.)

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition	Initial value
ObjType ^{*1}	—	—	—	None	—	"SubstLoc"
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 11: ID duplication • 12: Other than ASCII ^{*3} • 17: Creation limit exceeded	—
SubstID	—	○	—	Yes	7: Other than ASCII ^{*3} (except for 0x00)	(Null character)
SubstLocState	—	○	—	Yes	7: Out of applicable range	0: UNOCCUPIED
DisableEvents	—	○	—	Yes	7: Out of applicable range	0: false (event enabled: event reported)

*1 Not required. (Ignored even if provided.)

*2 When an error occurs, no substrate location objects are created.

*3 Excluding the control characters.

■Relevant item

☞ Page 246 00011 : CarrierSubstLocObject create acknowledge

A

00012: CarrierSubstLocObject delete request

■Information type

00090

■Detail type

00012

■Data size of data area (Byte units)

80 byte

■Processing

Deleting a substrate location object in a carrier specified in ObjID is requested.

■Relevant state transition

None

Point

- Even if a substrate location object in a carrier is deleted by this request, the state transition of Dynamic Behavior Model of Substrate Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate location object in a carrier is changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_00090-00012

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Object ID (SubstLocID)

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■Relevant item

 Page 247 00012: CarrierSubstLocObject delete acknowledge

00013: SubstLocObject SetAttr request

■Information type

00090

■Detail type

00013

■Data size of data area (Byte units)

244 byte

■Processing

Setting all attribute values of a substrate location object specific to equipment or in a carrier specified in SubstLocObject is requested.

■Relevant state transition

None

Point

- Even if the attribute value of a substrate location object specific to equipment or one in a carrier is changed by this request, the state transition of Dynamic Behavior Model of Substrate Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the values of STS variables 'DVVAL' and 'SV' corresponding to the attribute values of substrate location objects specific to equipment, or the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate location object in a carrier are changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable values.

■Data

Structure label

- M+GEM300_00090-00013

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 122	stSubstLocObject	SubstLocObject	M+GEM300_SubstLocObject	Page 85 M+GEM300_SubstLocObject	Specify all attribute values of a substrate location object specific to equipment or in a carrier to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType ^{*1}	—	—	—	None	—
ObjID ^{*2}	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
SubstID	○	—	—	Yes	7: Other than ASCII ^{*3} (except for 0x00)
SubstLocState	○	—	—	Yes	7: Out of applicable range
DisableEvents	○	—	—	Yes	7: Out of applicable range

*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

*3 Excluding the control characters.

Point

All attribute values of location objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

A

■ Relevant item

☞ Page 248 00013: SubstLocObject SetAttr acknowledge

00014: SubstLocObject GetAttr request

Information type
00090

Detail type
00014

Data size of data area (Byte units)
80 byte

Processing
Acquiring all attribute values of a substrate location object specific to equipment or in a carrier specified in ObjID is requested.

Relevant state transition
None

Data
Structure label
• M+GEM300_00090-00014

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (SubstLocID)

*1 Excluding the control characters.
*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Relevant item
Page 249 00014: SubstLocObject GetAttr acknowledge

00023: BatchLocObject SetAttr request

■Information type

00090

■Detail type

00023

■Data size of data area (Byte units)

82084 byte

■Processing

Setting all attribute values of a batch location object specified in BatchLocObject is requested.

■Relevant state transition

None


Point

- Even if the attribute value of a batch location object is changed by this request, the state transition of Dynamic Behavior Model of Batch Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When this request ends normally, the values of STS variables 'DVVAL' and 'SV' corresponding to the attribute values of batch location objects are changed accordingly. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable values.

■Data

Structure label

- M+GEM300_00090-00023

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 41041	stBatchLocObject	BatchLocObject	M+GEM300_BatchLocObject	 Page 86 M+GEM300_BatchLocObject	Specify all attribute values of a batch location object to be set.

- Error judgment of the attribute value

○: Applicable, —: Not applicable

Attribute name	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Error judgment presence	Error code and error judgment condition
ObjType* ¹	—	—	—	None	—
ObjID* ²	○	—	—	Yes	• 12: Omitted (0x00) • 3: Unknown
BatchSubstIDMap* ³	○	—	—	Yes	7: Other than ASCII* ⁴ (except for 0x00)
BatchLocState	○	—	—	Yes	7: Out of applicable range
DisableEvents	○	—	—	Yes	7: Out of applicable range

*1 Cannot be changed. (Ignored even if provided.)

*2 Cannot be changed.

*3 Substrate ID, the number of which exceeds the number of batch configuration substrates of batch location objects with matching ObjID, is ignored.

*4 Excluding the control characters.

Point

All attribute values of batch location objects with matching ObjID are overwritten. Therefore, attribute values cannot be partially set. However, an attribute value with an error is not overwritten.

■Relevant item

 Page 250 00023: BatchLocObject SetAttr acknowledge

00024: BatchLocObject GetAttr request

Information type
00090

Detail type
00024

Data size of data area (Byte units)
80 byte

Processing
Acquiring all attribute values of a batch location object specified in ObjID is requested.

Relevant state transition
None

Data
Structure label
• M+GEM300_00090-00024

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	Object ID (BatchLocID)

^{*1} Excluding the control characters.
^{*2} If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Relevant item
 Page 251 00024: BatchLocObject GetAttr acknowledge

10090: CITL to CPU

The following shows the format of CITL to CPU.

00001: SubstrateObject create acknowledge

■Information type

10090

■Detail type

00001

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SubstrateObject create request' is returned.

■Relevant state transition

None

■Data

Structure label


- M+GEM300_10090-00001

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
7	Invalid attribute value
11	Object identifier in use
12	Parameters improperly specified
13	Insufficient parameters specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 229 00001: SubstrateObject create request

00002: SubstrateObject delete acknowledge

■Information type

10090

■Detail type

00002

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SubstrateObject delete request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 231 00002: SubstrateObject delete request

00003: SubstrateObject SetAttr acknowledge

■Information type

10090

■Detail type

00003

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SubstrateObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00003

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
13	Insufficient parameters specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 232 00003: SubstrateObject SetAttr request

00004: SubstrateObject GetAttr acknowledge

■Information type

10090

■Detail type

00004

■Data size of data area (Byte units)

4430 byte

■Processing

The processing result of 'SubstrateObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00004

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 2214	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	 Page 83 M+GEM300_SubstrateObject	When an error code is '0', all attribute values of a required substrate object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 234 00004: SubstrateObject GetAttr request

00011 : CarrierSubstLocObject create acknowledge

■Information type

10090

■Detail type

00011

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'CarrierSubstLocObject create request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00011

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library


Error code

Error code	Error name
0	No error
7	Invalid attribute value
11	Object identifier in use
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 235 00011: CarrierSubstLocObject create request

00012: CarrierSubstLocObject delete acknowledge

■Information type

10090

■Detail type

00012

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'CarrierSubstLocObject delete request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00012

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 236 00012: CarrierSubstLocObject delete request

00013: SubstLocObject SetAttr acknowledge

■Information type

10090

■Detail type

00013

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'SubstLocObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00013

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 237 00013: SubstLocObject SetAttr request

00014: SubstLocObject GetAttr acknowledge

■Information type

10090

■Detail type

00014

■Data size of data area (Byte units)

358 byte

■Processing

The processing result of 'SubstLocObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00014

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 178	stSubstLocObject	SubstLocObject	M+GEM300_SubstLocObject	 Page 85 M+GEM300_SubstLocObject	When an error code is '0', all attribute values of a requested substrate location object specific to equipment or in a carrier are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library


Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 239 00014: SubstLocObject GetAttr request

A

00023: BatchLocObject SetAttr acknowledge

■Information type

10090

■Detail type

00023

■Data size of data area (Byte units)

114 byte

■Processing

The processing result of 'BatchLocObject SetAttr request' is returned.

■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00023

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
7	Invalid attribute value
12	Parameters improperly specified
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 240 00023: BatchLocObject SetAttr request

00024: BatchLocObject GetAttr acknowledge

■Information type

10090

■Detail type

00024

■Data size of data area (Byte units)

82198 byte

■Processing

The processing result of 'SubstLocObject GetAttr request' is returned.


■Relevant state transition

None

■Data

Structure label


• M+GEM300_10090-00024

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	A required ObjID is returned.
+40	uErrorCodeCount	Number of error codes	Word [Unsigned]	0 to 16	The number of codes for errors occurred is notified.
+41 to 56	u16ErrorCode	Error code array	Word [Unsigned] (0..15)	0 to 65535	The code for an error occurred is notified. If there are multiple error codes, they are notified in ascending order.
+57 to 41098	stBatchLocObject	BatchLocObject	M+GEM300_BatchLocObject	 Page 86 M+GEM300_BatchLocObject	When an error code is '0', all attribute values of a requested batch location object are returned.

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

Error code

Error code	Error name
0	No error
3	Unknown object instance
17	Command not valid for current state
32770	Action failed due to errors

For details on the error codes, refer to the following:

 Page 92 Error Code List

■Relevant item

 Page 241 00024: BatchLocObject GetAttr request

01001: Create service (Register substrate service) notification

■Information type

10090

■Detail type

01001

■Data size of data area (Byte units)

4316 byte

■Processing

Creating an instance of a substrate object by using the 'Register substrate' service (S14F9) is notified.

■Relevant state transition

None


Point

- Even if a substrate object is created by using the 'Register substrate' service (S14F9), the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- Even if the 'Register substrate' service ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is not changed. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.


■Data

Structure label

- M+GEM300_10090-01001

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2157	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	 Page 83 M+GEM300_SubstrateObject	A created substrate object is notified.

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

01002: Delete service (Remove substrate service) notification

Information type
10090

Detail type
01002

Data size of data area (Byte units)
4316 byte

Processing
Deleting an instance of a substrate object by using the 'Remove substrate' service (S14F11) is notified.

Relevant state transition
None

Point

- Even if a substrate object is deleted by using the 'Remove substrate' service (S14F11), the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- Even if the 'Remove substrate' service ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is not changed. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

Data
Structure label

- M+GEM300_10090-01002

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 2157	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	Page 83 M+GEM300_SubstrateObject	A deleted substrate object is notified.

Structure labels defined in this product are provided in a sample library.
Page 346 Sample Library

Relevant item
None

01003: SetAttr service (Substrate) notification

■Information type

10090

■Detail type

01003

■Data size of data area (Byte units)

106720 byte

■Processing

Changing the attribute value of a substrate object by using the 'SetAttr' service (S14F3) is notified.

■Relevant state transition

None

Point

- Even if the attribute value of a substrate object is changed by using the 'SetAttr' service (S14F3), the state transition of Substrate Object State Model does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- Even if the 'SetAttr' service ends normally, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate object is not changed. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_10090-01003

Offset	Label name	Name	Data type	Applicable range	Description
+0	uObjIDCount	Number of objects	Word [Unsigned]	1 to 1024	The number of substrate objects with changed attribute values is notified.
+1	uAttrCount	Number of attributes	Word [Unsigned]	1 to 256	The number of attributes with changed values is notified.
+2 to 40961	st1024ObjIDList	ObjIDList	M+GEM300_ObjID List (0..1023)	☞ M+GEM300_ObjIDList	ObjID with the changed attribute value is notified.
+40962 to 51201	st256AttrIDList	AttrIDList	M+GEM300_AttrID List (0..255)	☞ M+GEM300_AttrIDList	An attribute name (AttrID) with the changed value is notified.
+51202 to 53359	stSubstrateObject	SubstrateObject	M+GEM300_SubstrateObject	☞ Page 83 M+GEM300_SubstrateObject	A changed attribute value is notified. For the value of an attribute not included in AttrIDList, '0x00' is notified.

- M+GEM300_ObjIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	ObjID (SubstID) with the attribute value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

- M+GEM300_AttrIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40AttrID	AttrID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Attribute name (AttrID) with the value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

☞ Page 346 Sample Library

■Relevant item

None

01013: SetAttr service (SubstLoc) notification

■Information type

10090

■Detail type

01013

■Data size of data area (Byte units)

102648 byte

■Processing

Changing the attribute value of a substrate location object specific to equipment or one in a carrier by using the 'SetAttr' service (S14F3) is notified.

■Relevant state transition

None

Point

- Even if the attribute value of a substrate location object specific to equipment or one in a carrier is changed by using the 'SetAttr' service (S14F3), the state transition of Dynamic Behavior Model of Substrate Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When the 'SetAttr' service ends normally, the value of STS variable 'SV' corresponding to the attribute value of a substrate location object specific to equipment is changed accordingly. However, the value of STS variable 'DVVAL' corresponding to the attribute value of a substrate location object in a carrier is not changed. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_10090-01013

Offset	Label name	Name	Data type	Applicable range	Description
+0	uObjIDCount	Number of objects	Word [Unsigned]	1 to 1024	The number of substrate location objects specific to equipment or ones in a carrier with changed attribute values is notified.
+1	uAttrCount	Number of attributes	Word [Unsigned]	1 to 32	The number of attributes with changed values is notified.
+2 to 40961	st1024ObjIDList	ObjIDList	M+GEM300_ObjID List (0..1023)	☞ M+GEM300_ObjIDList	ObjID with the changed attribute value is notified.
+40962 to 51201	st256AttrIDList	AttrIDList	M+GEM300_AttrID List (0..255)	☞ M+GEM300_AttrIDList	An attribute name (AttrID) with the changed value is notified.
+51202 to 51323	stSubstLocObject	SubstLocObject	M+GEM300_SubstLocObject	☞ Page 85 M+GEM300_SubstLocObject	A changed attribute value is notified. For the value of an attribute not included in AttrIDList, '0x00' is notified.

- M+GEM300_ObjIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII) ^{*1*2}	ObjID (SubstLocID) with the attribute value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


• M+GEM300_AttrIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40AttrID	AttrID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Attribute name (AttrID) with the value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■Relevant item

None

01023: SetAttr service (BatchLoc) notification

■Information type

10090

■Detail type

01023

■Data size of data area (Byte units)

184488 byte

■Processing

Changing the attribute value of a batch location object by using the 'SetAttr' service (S14F3) is notified.

■Relevant state transition

None

Point

- Even if the attribute value of a batch location object is changed by using the 'SetAttr' service (S14F3), the state transition of Dynamic Behavior Model of Batch Location does not occur. Therefore, the state model can be managed by the control CPU. In this case, take action in the control CPU accordingly.
- When the 'SetAttr' service ends normally, the value of STS variable 'SV' corresponding to the attribute value of a batch location object is changed accordingly. However, the value of STS variable 'DVVAL' corresponding to the attribute value of a batch location object is not changed. When taking action and sending the event report (S6F11) in the control CPU, pay attention to the timing to change the STS variable value.

■Data

Structure label

- M+GEM300_10090-01023

Offset	Label name	Name	Data type	Applicable range	Description
+0	uObjIDCount	Number of objects	Word [Unsigned]	1 to 1024	The number of batch location objects with changed attribute values is notified.
+1	uAttrCount	Number of attributes	Word [Unsigned]	1 to 32	The number of attributes with changed values is notified.
+2 to 40961	st1024ObjIDList	ObjIDList	M+GEM300_ObjIDList (0..1023)	☞ M+GEM300_ObjIDList	ObjID with the changed attribute value is notified.
+40962 to 51201	st256AttrIDList	AttrIDList	M+GEM300_AttrIDList (0..255)	☞ M+GEM300_AttrIDList	An attribute name (AttrID) with the changed value is notified.
+51202 to 92243	stBatchLocObject	BatchLocObject	M+GEM300_BatchLocObject	☞ Page 86 M+GEM300_BatchLocObject	A changed attribute value is notified. For the value of an attribute not included in AttrIDList, '0x00' is notified.

- M+GEM300_ObjIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40ObjID	ObjID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)**2	ObjID (SubstLocID) with the attribute value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).


• M+GEM300_AttrIDList

Offset	Label name	Name	Data type	Applicable range	Description
+0 to 39	u40AttrID	AttrID	Word [Unsigned] (0..39)	1 to 80 characters (ASCII)*1*2	Attribute name (AttrID) with the value changed

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Structure labels defined in this product are provided in a sample library.

 Page 346 Sample Library

■ Relevant item

None

Appendix 3 Buffer Memory

This section shows the buffer memory list and its detailed information.

Buffer memory list

The following table shows the buffer memory list.

R: Read-only, W: Write-only

Address decimal (hexadecimal)	Application	Name	Initial value	R/W
16384 (4000H)	CA-SECS status	CA-SECS status information	0	R
16385 (4001H)		CA-SECS error-detected information	0	R
16386 to 20431 (4002H to 4FCFH)	System area	—	—	—
20432 (4FD0H)	CPU to CITL I/F error- detected information	Latest CPU to CITL I/F error-detected information	0	R
20433 (4FD1H)		Information type at latest error detection	0	R
20434 (4FD2H)		Detail type at latest error detection	0	R
20435 to 20436 (4FD3H to 4FD4H)		Data size at latest error detection	0	R
20437 to 20447 (4FD5H to 4FDFH)	System area	—	—	—
20448 (4FE0H)	CITL to CPU I/F	Write status flag	0	R
20449 (4FE1H)		Read status flag	0	W
20450 (4FE2H)		Information type	0	R
20451 (4FE3H)		Detail type	0	R
20452 to 20453 (4FE4H to 4FE5H)		Start address of data area	1572864 (180000H)	R
20454 to 20455 (4FE6H to 4FE7H)		Data size of data area	0	R
20456 to 20463 (4FE8H to 4FEFH)	System area	—	—	—
20464 (4FF0H)	CPU to CITL I/F	Write status flag	0	W
20465 (4FF1H)		Read status flag	0	R
20466 (4FF2H)		Information type	0	W
20467 (4FF3H)		Detail type	0	W
20468 to 20469 (4FF4H to 4FF5H)		Start address of data area	1835008 (1C0000H)	R
20470 to 20471 (4FF6H to 4FF7H)		Data size of data area	0	W
20472 to 24575 (4FF8H to 5FFFFH)	System area	—	—	—

Address decimal (hexadecimal)	Application	Name	Initial value	R/W
24576 (6000H)	Load port status	Port access mode	0	R
24577 to 24592 (6001H to 6010H)		Port transfer state	0	R
24593 (6011H)		Service status	0	R
24594 (6012H)		In service status	0	R
24595 (6013H)		Transfer ready status	0	R
24596 (6014H)		Port association state	0	R
24597 (6015H)		Port reservation state	0	R
24598 (6016H)	Carrier	Carrier object count	0	R
24599 (6017H)	Carrier ID reader status* ¹	Carrier ID reader status	0	R
24600 to 24831 (6018H to 60FFH)	System area	—	—	—
24832 to 24871 (6100H to 6127H)	Load port/carrier association status* ¹	CarrierID associated with PortID (PTN) 1	0	R
24872 to 24911 (6128H to 614FH)		CarrierID associated with PortID (PTN) 2	0	R
24912 to 24951 (6150H to 6177H)		CarrierID associated with PortID (PTN) 3	0	R
24952 to 24991 (6178H to 619FH)		CarrierID associated with PortID (PTN) 4	0	R
24992 to 25031 (61A0H to 61C7H)		CarrierID associated with PortID (PTN) 5	0	R
25032 to 25071 (61C8H to 61EFH)		CarrierID associated with PortID (PTN) 6	0	R
25072 to 36863 (61F0H to 8FFFH)	System area	—	—	—
36864 (9000H)	Substrate object* ¹	Number of substrate objects	0	R
36865 (9001H)	Substrate location object* ¹	Number of substrate location objects in a carrier	0	R
36866 to 1572863 (9002H to 17FFFFH)	System area	—	—	—
1572864 to 1835007 (180000H to 1BFFFFH)	CITL to CPU I/F	Data reading area	0	R
1835008 to 2097151 (1C0000H to 1FFFFFH)	CPU to CITL I/F	Data writing area	0	W

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

Buffer memory details

The following shows the details of buffer memories.

CA-SECS status

■CA-SECS status (Un\G16384)

Name	Address	Bit	Description
CA-SECS status	Un\G16384	0 to 15	The CA-SECS status is stored. <ul style="list-style-type: none">• b0: CIM control READY (0: NOT READY, 1: READY)• b1: HSMS line communication status (0: Disconnected, 1: Connected)• b2: HSMS reconnection retry (0: Retried, 1: Retrying)• b3: GEM communication establishment status (0: Not established, 1: Establishing)• b4: GEM online status (0: Offline, 1: Online)• b5: GEM300 status (0: Invalid, 1: Valid)• b6: Transaction queue full for PLC Transmission (0: Queue is not full, 1: Queue is full)• b7: Queue full of control CPU interfaces for CPU to CITL (0: Queue is not full, 1: Queue is full)• b8: Queue full of control CPU interfaces for CITL to CPU (0: Queue is not full, 1: Queue is full)• b9 to b15: System area

■CA-SECS error-detected information (Un\G16385)


Name	Address	Bit	Description
CA-SECS status	Un\G16385	0 to 15	CA-SECS error-detected information is stored. <ul style="list-style-type: none">• b0: System area• b1: SD memory card file access error detection (0: Normal, 1: Error detected)• b2 to b15: System area

CPU to CITL I/F error-detected information

■Latest CPU to CITL I/F error-detected information (Un\G20432)

Name	Address	Bit	Description
Latest CPU to CITL I/F error-detected information	Un\G20432	0 to 15	The latest error-detected information of CPU to CITL I/F is stored. <ul style="list-style-type: none">• b0: Information type error detection (0: Normal, 1: Error detected)• b1: Detail type error detection (0: Normal, 1: Error detected)• b2: Data size error detection (0: Normal, 1: Error detected)• b3 to b15: System area

■Information type at latest error detection (Un\G20433)

Name	Address	Bit	Description
Information type at latest error detection	Un\G20433	0 to 15	The information type at the latest error detection is stored. For details on the information type, refer to the following:  Page 94 Control CPU Interface Formats

■Detail type at latest error detection (Un\G20434)

Name	Address	Bit	Description
Detail type at latest error detection	Un\G20434	0 to 15	The detail type at the latest error detection is stored. For details on the detail type, refer to the following:  Page 94 Control CPU Interface Formats

■Data size at latest error detection (Un\G20435 to 20436)

Name	Address	Bit	Description
Data size at latest error detection	Un\G20435 to 20436	0 to 31	The data size at the latest error detection is stored in byte units. <ul style="list-style-type: none">• Data size: 0 to 4294967295 (0H to FFFFFFFFH)

A

CITL to CPU I/F

■Write status flag (Un\G20448)

Name	Address	Bit	Description
Write status flag	Un\G20448	0 to 15	A write status flag is stored. <ul style="list-style-type: none">• b0: In-use flag (0: Not used, 1: In use)• b1: Write completion flag (0: Writing, 1: Writing completed)• b2 to b15: System area

Point

When 'Write completion flag' (b1) turns ON, the timer monitoring for a control CPU interface starts. The write status flag clears (3→0 control) when a timeout occurs.

Due to timeout, missing data may occur. (📖 Page 29 CPU interface)

■Read status flag (Un\G20449)

Name	Address	Bit	Description
Read status flag	Un\G20449	0 to 15	Store a read status flag. <ul style="list-style-type: none">• b0: In-use flag (0: Not used, 1: In use)• b1: Read completion flag (0: Reading, 1: Reading completed)• b2 to b15: System area

Point

Read the data from 'Data reading area' (Un\G1572864 to 1835007) within the time set for "CPU Interface Timer" and turn ON 'Read completion flag' (b1).

Due to timeout, missing data may occur. (📖 Page 29 CPU interface)

■Information type (Un\G20450)

Name	Address	Bit	Description
Information type	Un\G20450	0 to 15	An information type is stored. For details on the information type, refer to the following: 📖 Page 94 Control CPU Interface Formats

■Detail type (Un\G20451)

Name	Address	Bit	Description
Detail type	Un\G20451	0 to 15	A detail type is stored. For details on the detail type, refer to the following: 📖 Page 94 Control CPU Interface Formats

■Start address of data area (Un\G20452 to 20453)

Name	Address	Bit	Description
Start address of data area	Un\G20452 to 20453	0 to 31	The start address of the data area is stored. Start address: Fixed to 1572864 (180000H)

■Data size of data area (Un\G20454 to 20455)

Name	Address	Bit	Description
Data size of data area	Un\G20454 to 20455	0 to 31	The data size of the data area is stored in byte units. Data size: 0 to 262144 (0H to 40000H) (maximum 256 KB)

CPU to CITL I/F

■Write status flag (Un\G20464)

Name	Address	Bit	Description
Write status flag	Un\G20464	0 to 15	Store a write status flag. <ul style="list-style-type: none">• b0: In-use flag (0: Not used, 1: In use)• b1: Write completion flag (0: Writing, 1: Writing completed)• b2 to b15: System area

■Read status flag (Un\G20465)

Name	Address	Bit	Description
Read status flag	Un\G20465	0 to 15	A read status flag is stored. <ul style="list-style-type: none">• b0: In-use flag (0: Not used, 1: In use)• b1: Read completion flag (0: Reading, 1: Reading completed)• b2 to b15: System area

■Information type (Un\G20466)

Name	Address	Bit	Description
Information type	Un\G20466	0 to 15	Store an information type. For details on the information type, refer to the following:  Page 94 Control CPU Interface Formats

■Detail type (Un\G20467)

Name	Address	Bit	Description
Detail type	Un\G20467	0 to 15	Store a detail type. For details on the detail type, refer to the following:  Page 94 Control CPU Interface Formats

■Start address of data area (Un\G20468 to 20469)

Name	Address	Bit	Description
Start address of data area	Un\G20468 to 20469	0 to 31	The start address of the data area is stored. Start address: Fixed to 1835008 (1C0000H)

■Data size of data area (Un\G20470 to 20471)

Name	Address	Bit	Description
Data size of data area	Un\G20470 to 20471	0 to 31	Store the data size of the data area in byte units. Data size: 0 to 262144 (0H to 40000H) (maximum 256 KB)

Load port status

■Port access mode (Un\G24576)

Name	Address	Bit	Description
Port access mode	Un\G24576	0 to 15	<p>The access mode of a load port is stored.</p> <ul style="list-style-type: none"> • b0: AccessMode of PortID (PTN) 1 (0: MANUAL, 1: AUTO) • b1: AccessMode of PortID (PTN) 2 (0: MANUAL, 1: AUTO) • b2: AccessMode of PortID (PTN) 3 (0: MANUAL, 1: AUTO) • b3: AccessMode of PortID (PTN) 4 (0: MANUAL, 1: AUTO) • b4: AccessMode of PortID (PTN) 5 (0: MANUAL, 1: AUTO) • b5: AccessMode of PortID (PTN) 6 (0: MANUAL, 1: AUTO) • b6 to b15: System area

■Port transfer state (Un\G24577 to 24592)

Name	Address	Bit	Description
PortTransferState of PortID (PTN) 1	Un\G24577	0 to 15	<p>The transfer status of a load port is stored.</p> <ul style="list-style-type: none"> • 0: OUT OF SERVICE • 1: TRANSFER BLOCKED • 2: READY TO LOAD • 3: READY TO UNLOAD
PortTransferState of PortID (PTN) 2	Un\G24578	0 to 15	
PortTransferState of PortID (PTN) 3	Un\G24579	0 to 15	
PortTransferState of PortID (PTN) 4	Un\G24580	0 to 15	
PortTransferState of PortID (PTN) 5	Un\G24581	0 to 15	
PortTransferState of PortID (PTN) 6	Un\G24582	0 to 15	
System area	Un\G24583 to 24592	—	

■Service status (Un\G24593)

Name	Address	Bit	Description
Service status	Un\G24593	0 to 15	<p>The service status of a load port is stored.</p> <ul style="list-style-type: none"> • b0: ServiceStatus of PortID (PTN) 1 (0: OUT OF SERVICE, 1: IN SERVICE) • b1: ServiceStatus of PortID (PTN) 2 (0: OUT OF SERVICE, 1: IN SERVICE) • b2: ServiceStatus of PortID (PTN) 3 (0: OUT OF SERVICE, 1: IN SERVICE) • b3: ServiceStatus of PortID (PTN) 4 (0: OUT OF SERVICE, 1: IN SERVICE) • b4: ServiceStatus of PortID (PTN) 5 (0: OUT OF SERVICE, 1: IN SERVICE) • b5: ServiceStatus of PortID (PTN) 6 (0: OUT OF SERVICE, 1: IN SERVICE) • b6 to b15: System area

■In service status (Un\G24594)

Name	Address	Bit	Description
In service status	Un\G24594	0 to 15	<p>The lower state of IN SERVICE is stored.</p> <ul style="list-style-type: none"> • b0: InServiceStatus of PortID (PTN) 1 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b1: InServiceStatus of PortID (PTN) 2 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b2: InServiceStatus of PortID (PTN) 3 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b3: InServiceStatus of PortID (PTN) 4 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b4: InServiceStatus of PortID (PTN) 5 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b5: InServiceStatus of PortID (PTN) 6 (0: TRANSFER READY, 1: TRANSFER BLOCKED) • b6 to b15: System area

■Transfer ready status (Un\G24595)

Name	Address	Bit	Description
Transfer ready status	Un\G24595	0 to 15	<p>The lower state of TRANSFER READY is stored.</p> <ul style="list-style-type: none"> • b0: TransferReadyStatus of PortID (PTN) 1 (0: READY TO LOAD, 1: READY TO UNLOAD) • b1: TransferReadyStatus of PortID (PTN) 2 (0: READY TO LOAD, 1: READY TO UNLOAD) • b2: TransferReadyStatus of PortID (PTN) 3 (0: READY TO LOAD, 1: READY TO UNLOAD) • b3: TransferReadyStatus of PortID (PTN) 4 (0: READY TO LOAD, 1: READY TO UNLOAD) • b4: TransferReadyStatus of PortID (PTN) 5 (0: READY TO LOAD, 1: READY TO UNLOAD) • b5: TransferReadyStatus of PortID (PTN) 6 (0: READY TO LOAD, 1: READY TO UNLOAD) • b6 to b15: System area

■Port association state (Un\G24596)

Name	Address	Bit	Description
Port association state	Un\G24596	0 to 15	<p>The port association status is stored.</p> <ul style="list-style-type: none"> • b0: PortAssociationState of PortID (PTN) 1 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b1: PortAssociationState of PortID (PTN) 2 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b2: PortAssociationState of PortID (PTN) 3 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b3: PortAssociationState of PortID (PTN) 4 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b4: PortAssociationState of PortID (PTN) 5 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b5: PortAssociationState of PortID (PTN) 6 (0: NOT ASSOCIATED, 1: ASSOCIATED) • b6 to b15: System area

■Port reservation state (Un\G24597)

Name	Address	Bit	Description
Port reservation state	Un\G24597	0 to 15	<p>The port reservation status is stored.</p> <ul style="list-style-type: none"> • b0: LoadPortReservationState of PortID (PTN) 1 (0: NOT RESERVED, 1: RESERVED) • b1: LoadPortReservationState of PortID (PTN) 2 (0: NOT RESERVED, 1: RESERVED) • b2: LoadPortReservationState of PortID (PTN) 3 (0: NOT RESERVED, 1: RESERVED) • b3: LoadPortReservationState of PortID (PTN) 4 (0: NOT RESERVED, 1: RESERVED) • b4: LoadPortReservationState of PortID (PTN) 5 (0: NOT RESERVED, 1: RESERVED) • b5: LoadPortReservationState of PortID (PTN) 6 (0: NOT RESERVED, 1: RESERVED) • b6 to b15: System area

Carrier

■Carrier object count (Un\G24598)

Name	Address	Bit	Description
Carrier object count	Un\G24598	0 to 15	<p>The number of carrier objects is stored.</p> <ul style="list-style-type: none"> • Number of objects: 0 to 6

Carrier ID reader status

■Carrier ID reader status (Un\G24599)

Name	Address	Bit	Description
Carrier ID reader status	Un\G24599	0 to 15	The availability of an ID reader is stored. <ul style="list-style-type: none">• b0: Carrier ID reader status of PortID (PTN) 1 (0: UNAVAILABLE, 1: AVAILABLE)• b1: Carrier ID reader status of PortID (PTN) 2 (0: UNAVAILABLE, 1: AVAILABLE)• b2: Carrier ID reader status of PortID (PTN) 3 (0: UNAVAILABLE, 1: AVAILABLE)• b3: Carrier ID reader status of PortID (PTN) 4 (0: UNAVAILABLE, 1: AVAILABLE)• b4: Carrier ID reader status of PortID (PTN) 5 (0: UNAVAILABLE, 1: AVAILABLE)• b5: Carrier ID reader status of PortID (PTN) 6 (0: UNAVAILABLE, 1: AVAILABLE)• b6 to b15: System area

Load port/carrier association status

■CarrierID associated with PortID (PTN) 1 (Un\G24832 to 24871)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 1	Un\G24832 to 24871	0 to 15	CarrierID associated with PortID (PTN) 1 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■CarrierID associated with PortID (PTN) 2 (Un\G24872 to 24911)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 2	Un\G24872 to 24911	0 to 15	CarrierID associated with PortID (PTN) 2 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■CarrierID associated with PortID (PTN) 3 (Un\G24912 to 24951)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 3	Un\G24912 to 24951	0 to 15	CarrierID associated with PortID (PTN) 3 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■CarrierID associated with PortID (PTN) 4 (Un\G24952 to 24991)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 4	Un\G24952 to 24991	0 to 15	CarrierID associated with PortID (PTN) 4 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■CarrierID associated with PortID (PTN) 5 (Un\G24992 to 25031)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 5	Un\G24992 to 25031	0 to 15	CarrierID associated with PortID (PTN) 5 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

■CarrierID associated with PortID (PTN) 6 (Un\G25032 to 25071)

Name	Address	Bit	Description
CarrierID associated with PortID (PTN) 6	Un\G25032 to 25071	0 to 15	CarrierID associated with PortID (PTN) 6 is stored. CarrierID: 0 to 80 characters (ASCII)*1*2

*1 Excluding the control characters.

*2 If the number of characters is less than the maximum, ensure that a character string ends with the NULL code (00H).

Substrate object

■Substrate object count (Un\G36864)

Name	Address	Bit	Description
Number of substrate objects	Un\G36864	0 to 15	The number of substrate objects is stored. Number of substrate objects: 0 to 1024


Substrate location object

■Carrier substrate location object count (Un\G36865)

Name	Address	Bit	Description
Number of substrate location objects in a carrier	Un\G36865	0 to 15	The number of substrate location objects in a carrier is stored. Number of substrate objects: 0 to 800

CITL to CPU I/F

■Data reading area (Un\G1572864 to 1835007)

Name	Address	Bit	Description
Data reading area	Un\G1572864 to 1835007	0 to 31	Data is stored in the data structure of the control CPU interface format. ( Page 94 Control CPU Interface Formats)

CPU to CITL I/F

■Data writing area (Un\G1835008 to 2097151)







Name	Address	Bit	Description
Data writing area	Un\G1835008 to 2097151	0 to 31	Store data in the data structure of the control CPU interface format. ( Page 94 Control CPU Interface Formats)

Appendix 4 Service Messages

This section shows the lists and details of service messages.

All primary messages in the service message lists have secondary messages.

OSS service message list

Service name	Target primary message	Name	Description
GetAttr ^{*1}	S14F1	GetAttr Request ( Page 316 S14F1: GetAttr Request)	Acquiring an attribute value specified by the specified object is requested. ^{*2}
SetAttr ^{*1}	S14F3	SetAttr Request ( Page 321 S14F3: SetAttr Request)	Setting an attribute value specified by the specified object is requested.
GetType ^{*1}	S14F5	GetType Request ( Page 326 S14F5: GetType Request)	Acquiring the ObjType list is requested.
GetAttrName ^{*1}	S14F7	GetAttrName Request ( Page 328 S14F7: GetAttrName Request)	Acquiring the attribute name list of the specified object is requested. ^{*3}
Create ^{*1}	S14F9	Create Object Request ( Page 331 S14F9 : Create Object Request)	Creating the specified object and setting the specified attribute value is requested.
Delete ^{*1}	S14F11	Delete Object Request ( Page 335 S14F11: Delete Object Request)	Deleting the specified object is requested.

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

^{*2} SECS/GEM communication software does not support AttrFilter.

^{*3} SECS/GEM communication software does not support wild card characters (* and ?).



CMS service message list

Service name	Target primary message	Name	Description
Bind	S3F17	Carrier Action Request ( Page 271 S3F17: Bind)	Reserving a load port and associating CarrierID with the load port is requested. This is enabled only when PortTransferState of the target load port is '2: READY TO LOAD.'
CancelAllCarrierOut ^{*1}	S3F19	Cancel All Carrier Out Request ( Page 311 S3F19: CancelAllCarrierOut)	Deleting all queues for the 'CarrierOut' service is requested. ^{*2}
CancelBind	S3F17	Carrier Action Request ( Page 274 S3F17: CancelBind)	Canceling the reservation of a load port and canceling the association of CarrierID with the load port is requested. This is enabled only when PortTransferState of the target load port is '2: READY TO LOAD.'
CancelCarrier ^{*1}	S3F17	Carrier Action Request ( Page 277 S3F17: CancelCarrier)	Canceling the operation of the specified carrier and enabling unloading is requested.
CancelCarrierAtPort ^{*1}	S3F17	Carrier Action Request ( Page 283 S3F17: CancelCarrierAtPort)	Canceling the operation of a carrier on the specified load port and enabling unloading is requested.
CancelCarrierNotification ^{*1}	S3F17	Carrier Action Request ( Page 285 S3F17: CancelCarrierNotification)	Canceling the 'CarrierNotification' service is requested.
CancelCarrierOut ^{*1}	S3F17	Carrier Action Request ( Page 287 S3F17: CancelCarrierOut)	Deleting a specific 'CarrierOut' service from the queue for the 'CarrierOut' service is requested. ^{*2}
CarrierIn ^{*1}	S3F17	Carrier Action Request ( Page 288 S3F17: CarrierIn)	Moving a carrier moved from the internal buffer to a load port by using the 'CarrierOut' service back to the internal buffer is requested.
CarrierNotification ^{*1}	S3F17	Carrier Action Request ( Page 290 S3F17: CarrierNotification)	Registering a carrier load schedule in advance without reserving a load port is requested.
CarrierOut ^{*1}	S3F17	Carrier Action Request ( Page 293 S3F17: CarrierOut)	Moving a carrier from the internal buffer to a load port is requested. ^{*2}
CarrierReCreate ^{*1}	S3F17	Carrier Action Request ( Page 295 S3F17: CarrierReCreate)	Reinstantiating a carrier is requested.
CarrierRelease ^{*1}	S3F17	Carrier Action Request ( Page 294 S3F17: CarrierRelease)	Releasing a carrier from the hold state is requested.
ChangeServiceStatus	S3F25	Port Action Request ( Page 313 S3F25: Port Action Request)	Switching the service status of the specified load port is requested. • PORTACTION: ChangeServiceStatus
ProceedWithCarrier ^{*1}	S3F17	Carrier Action Request ( Page 300 S3F17: ProceedWithCarrier)	Advancing the specified carrier to the next state is requested.

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

^{*2} SECS/GEM communication software does not queue the 'CarrierOut' service.

STS service message list

Service name	Target primary message	Name	Description
register substrate ^{*1}	S14F9	Create Object Request ( Page 331 S14F9 : Create Object Request)	Creating the specified object and setting the specified attribute value is requested.
remove substrate ^{*1}	S14F11	Delete Object Request ( Page 335 S14F11: Delete Object Request)	Deleting the specified object is requested.

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

Stream 3 Material Status details

The following shows the details on the service messages.

S3F17: Carrier Action Request

Message format

S3F17

- 1. L[5]
 - 1. U(1,2,4)[0..1] // DATAID
 - 2. A[1..80] // CARRIERACTION
 - 3. A[0..80] // CarrierID (ObjID)
 - 4. U1[0..1] // PortID (PTN)
 - 5. L[0..256] // PropertiesList
 - 1. L[2]
 - 1. A[1..80] // AttrID
 - 2. any // AttrData
- :

Processing during automatic response

Refer to each carrier action.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	A supported carrier action ^{*1}	Yes	12: Unknown
CarrierID (ObjID)	—	○	Refer to each carrier action.		
PortID (PTN)	—	○	Refer to each carrier action.		
PropertiesList	—	○	Refer to each carrier action.		

^{*1} Note that characters are case-sensitive.

■S3F17: Bind

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[4] // CARRIERACTION "Bind"
3. A[1..80] // CarrierID (ObjID)
4. U1[1] // PortID (PTN)
5. L[0..256] // PropertiesList
 1. L[2]
 1. A[1..80] // AttrID
 2. any // AttrData

⋮

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this carrier action.

2. When all of the following conditions are satisfied, a carrier object is created.

- The maximum number of carrier objects that can be created has not been reached.
- PortID and CarrierID are provided.
- A carrier can be loaded to the specified load port.
- There is no error in parameters and attributes.

3. The following relevant state transitions are performed.

Refer to 'State transition examples' for this carrier action.

- Carrier State Model state transition No.(1), (2), (12), and (17)
- Load Port Reservation State Model state transition No.(2)
- Load Port/Carrier Association State Model state transition No.(2)

4. 'S3F18: Carrier Action Acknowledge' is sent to the host.

5. When CAACK is '0', '10087-00901: Bind service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"Bind"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length) • 11: ID duplication • 12: Invalid value • 17: Creation limit exceeded
PortID (PTN)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length) • 48: Out of applicable range • Refer to 'Other error judgment' and 'Combinations of load port statuses.'
PropertiesList	—	○	An attribute of a carrier object to be set for the created instance. Can be omitted (zero length).	Yes (if provided)	<ul style="list-style-type: none"> • 4: Attribute name unknown • Refer to 'Attribute setting.'


Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	—	Not required. Ignored even if provided.	None	—	"Carrier"
ObjID	—	—	—	Not required. Ignored even if provided.	None	—	—
Capacity	—	○	—	—	Yes	7: Out of applicable range	25
SubstrateCount	—	○	—	Values within the range of 'Capacity' are valid.	Yes	7: Out of applicable range	0
ContentMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
SlotMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
Usage	—	○	—	—	Yes	7: Other than ASCII*1	(Null character)
CarrierIDStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: ID NOT READ
CarrierAccessingStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: NOT ACCESSED
SlotMapStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: SLOT MAP NOT READ
LocationID	—	—	—	Not required. Ignored even if provided.	None	—	(Null character)
Reason	—	—	—	Not required. Ignored even if provided.	None	—	0: VERIFICATION NEEDED

*1 Excluding the control characters.

For the attributes of a carrier object, refer to the following:

 Page 38 Carrier Objects



No attributes are required to be provided by the 'Bind' service.

Other error judgment

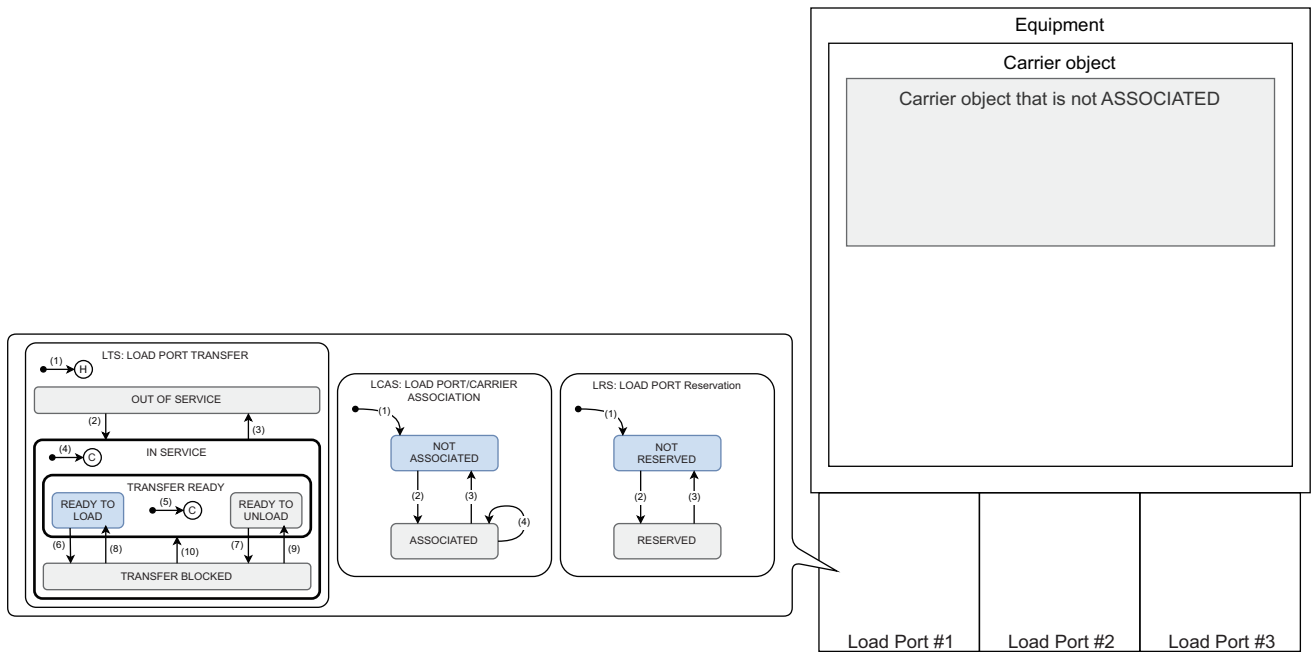
Combinations of load port statuses

Load Port Transfer StateModel	Load Port/Carrier Association State Model	Load Port Reservation StateModel	Judgment result	Error code
0: OUT OF SERVICE	Not concerned	Not concerned	NG	17
1: TRANSFER BLOCKED	Not concerned	Not concerned	NG	49
2: READY TO LOAD	0: NOT ASSOCIATED	0: NOT RESERVE	OK	—
		1: RESERVED	NG	49
	1: ASSOCIATED	0: NOT RESERVE	NG	49
		1: RESERVED	NG	49
3: READY TO UNLOAD	Not concerned	Not concerned	NG	49

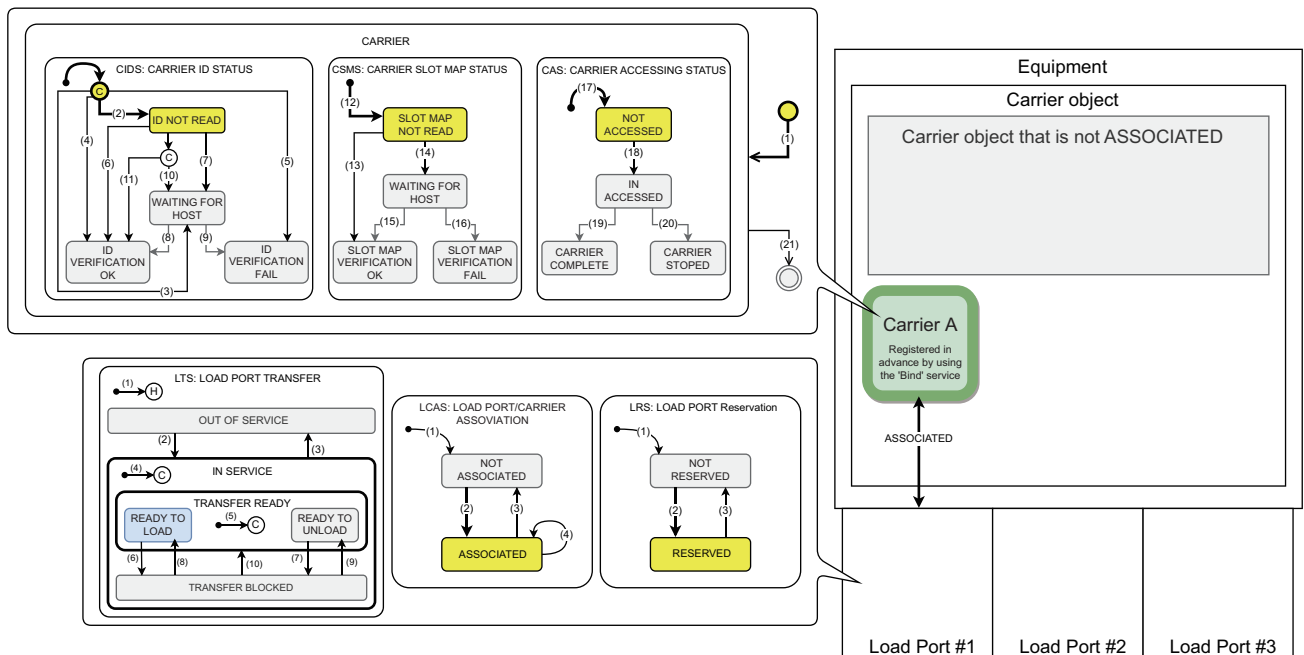
State transition examples

Example: When Load Port#1 is reserved and associated with carrier A

- Before transition



- After transition



A

■S3F17: CancelBind

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[10] // CARRIERACTION "CancelBind"
3. A[0..80] // CarrierID (ObjID)
4. U1[0..1] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. The following relevant state transitions are performed.

Refer to 'State transition examples' for this carrier action.

- Carrier State Model state transition No.(21)
- Load Port Reservation State Model state transition No.(3)
- Load Port/Carrier Association State Model state transition No.(3)

3. 'S3F18: Carrier Action Acknowledge' is sent to the host.

4. When CAACK is '0', '10087-00903: CancelBind service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CancelBind"	Yes	12: Unknown
CarrierID (ObjID)	—	○	Can be omitted (zero length) if PortID (PTN) is provided.	Yes (if provided)	• 3: Unknown (N/A) • Refer to 'Combinations of Conditional parameters 'CarrierID (ObjID)' and 'PortID (PTN)' in 'Other error judgment' and 'Combinations of load port statuses.'
PortID (PTN)	—	○	• Can be omitted (zero length) if CarrierID (ObjID) is provided. • Ignored if both CarrierID (ObjID) and PortID (PTN) are provided.	Yes (if only PortID (PTN) is provided)	• 48: Out of applicable range • Refer to 'Combinations of Conditional parameters 'CarrierID (ObjID)' and 'PortID (PTN)' in 'Other error judgment' and 'Combinations of load port statuses.'
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

- Combinations of Conditional parameters 'CarrierID (ObjID)' and 'PortID (PTN)'

○: Provided, —: Not provided

CarrierID (ObjID)	PortID (PTN)	Error judgment target parameter
○	—	CarrierID (ObjID)
—	○	PortID (PTN)
○	○	CarrierID (ObjID) (PortID (PTN) is ignored.)
—	—	Error code: 13 (Due to no target parameters)

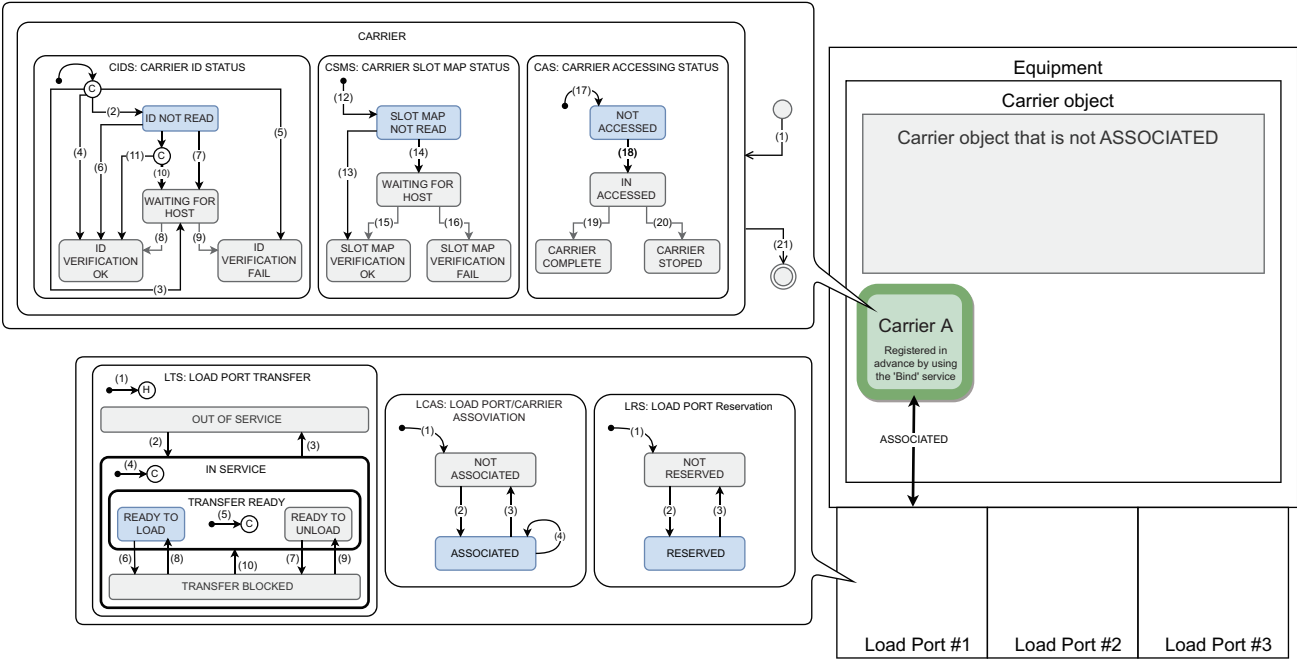
- Combinations of load port statuses

Load Port/Carrier Association State Model	Load Port Reservation StateModel	Load Port Transfer StateModel	Judgment result	Error code
0: NOT ASSOCIATED	Not concerned	Not concerned	NG	17
1: ASSOCIATED	0: NOT RESERVED	Not concerned	NG	17
	1: RESERVED	0: OUT OF SERVICE	NG	17
		1: TRANSFER BLOCKED	NG	49
		2: READY TO LOAD	OK	—
		3: READY TO UNLOAD	NG	49

State transition examples

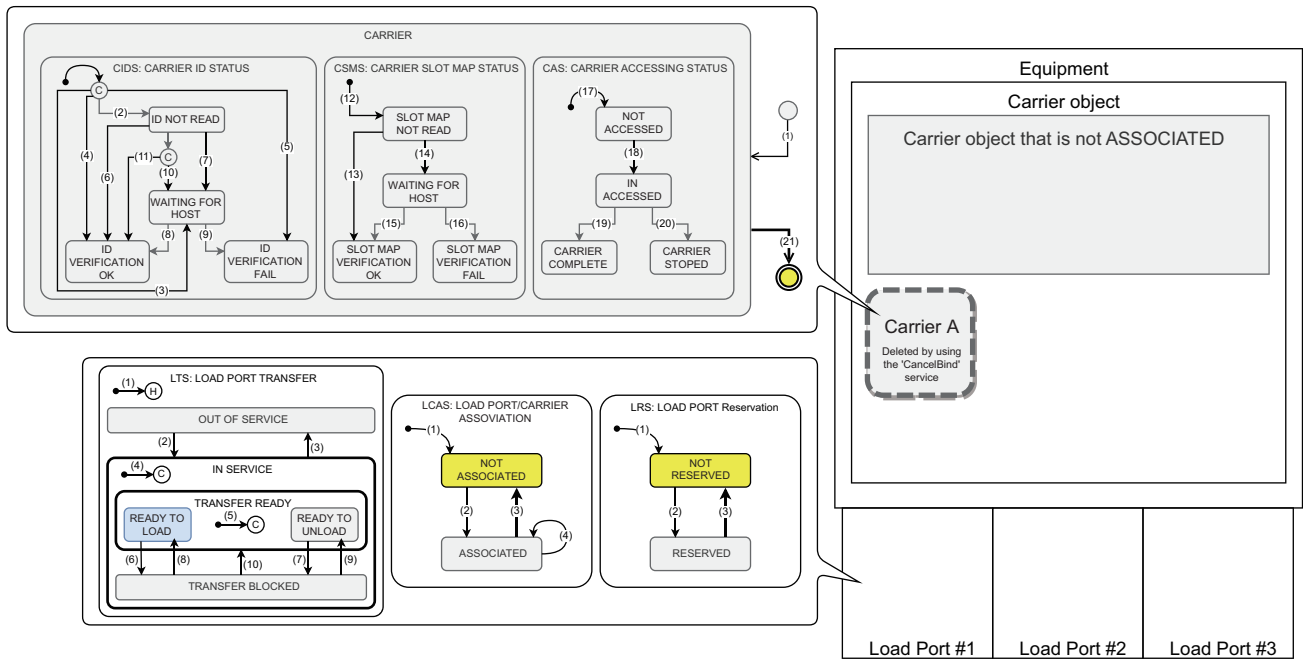
Example: When the reservation of Load Port#1 is canceled and the association of Load Port#1 with a carrier is canceled

- Before transition



A

- After transition



■S3F17: CancelCarrier

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[13] // CARRIERACTION "CancelCarrier"
3. A[1..80] // CarrierID (ObjID)
4. U1[0..1] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. The following relevant state transitions are performed.

Refer to 'State transition examples' for this carrier action.

- When the host instructs cancellation by using the 'CancelCarrier' service (S3F17) in response to an 'ID NOT READ to WAITING FOR HOST' event report (S6F11) or 'NO STATE to WAITING FOR HOST' event report (S6F11) from equipment
 - Carrier State Model state transition No.(9)

Refer to 'Example (1)' in 'State transition examples' for this carrier action.

- When the host instructs cancellation by using the 'CancelCarrier' service (S3F17) in response to a 'CarrierID read fail event report (S6F11)' or 'Unknown CarrierID event report (S6F11)' from equipment
 - Carrier State Model state transition No.(1), (5), (12), (17)
 - Load Port/Carrier Association State Model state transition No.(2)

Refer to 'Example (2)' and 'Example (3)' in 'State transition examples' for this carrier action.

- When the host instructs cancellation by using the 'CancelCarrier' service (S3F17) in response to a 'SLOT MAP NOT READ to WAITING FOR HOST' event report (S6F11) from equipment
 - Carrier State Model state transition No.(16)

Refer to 'Example (4)' in 'State transition examples' for this carrier action.

3. 'S3F18: Carrier Action Acknowledge' is sent to the host.

Point

The 'CancelCarrier' service is a deferred completion event target service.

If no error occurs in error judgment by using the 'CancelCarrier' service, SECS/GEM communication software notifies CM-Acknowledge (CAACK) '4: Acknowledge, request will be performed with completion signaled later by an event.'

('0: Acknowledge, command has been performed.' is not notified.)

4. When CAACK is '4,' '10087-00904: CancelCarrier service notification' is sent to a control CPU.

Point

Execute the scenario to unload a carrier in response to '10087-00904: CancelCarrier service notification' in the control CPU.

For this scenario, refer to the following:

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A

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CancelCarrier"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	<ul style="list-style-type: none">• 13: Omitted (zero length)• 3: Unknown (N/A)• 11: ID duplication• 17: Creation limit exceeded
PortID (PTN)	—	○	<ul style="list-style-type: none">• Can be omitted (zero length) when the host instructs cancellation in response to events including 'to WAITING FOR HOST' from equipment. Ignored even if provided.• Required when the host instructs cancellation in response to 'CarrierID read fail event' and 'Unknown CarrierID event' from equipment.	Yes (if required)	<ul style="list-style-type: none">• 13: Omitted (zero length)• 48: Out of applicable range• Refer to 'Combinations of load port statuses' in 'Other error judgment.'
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

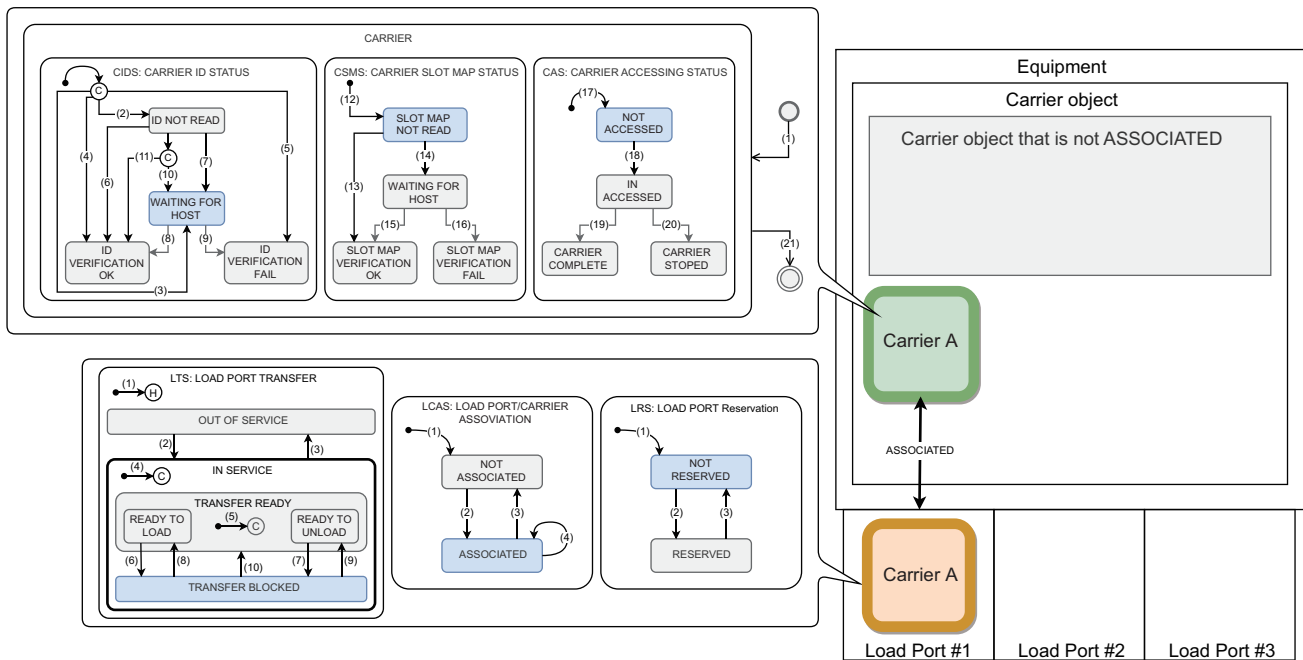
Combinations of load port statuses

Load Port Transfer StateModel	Load Port/Carrier Association State Model	Load Port Reservation StateModel	Judgment result	Error code
0: OUT OF SERVICE	Not concerned	Not concerned	NG	17
1: TRANSFER BLOCKED	0: NOT ASSOCIATED	0: NOT RESERVED	OK	—
		1: RESERVED	NG	49
	1: ASSOCIATED	Not concerned	NG	49
2: READY TO LOAD	Not concerned	Not concerned	NG	17
3: READY TO UNLOAD	Not concerned	Not concerned	NG	17

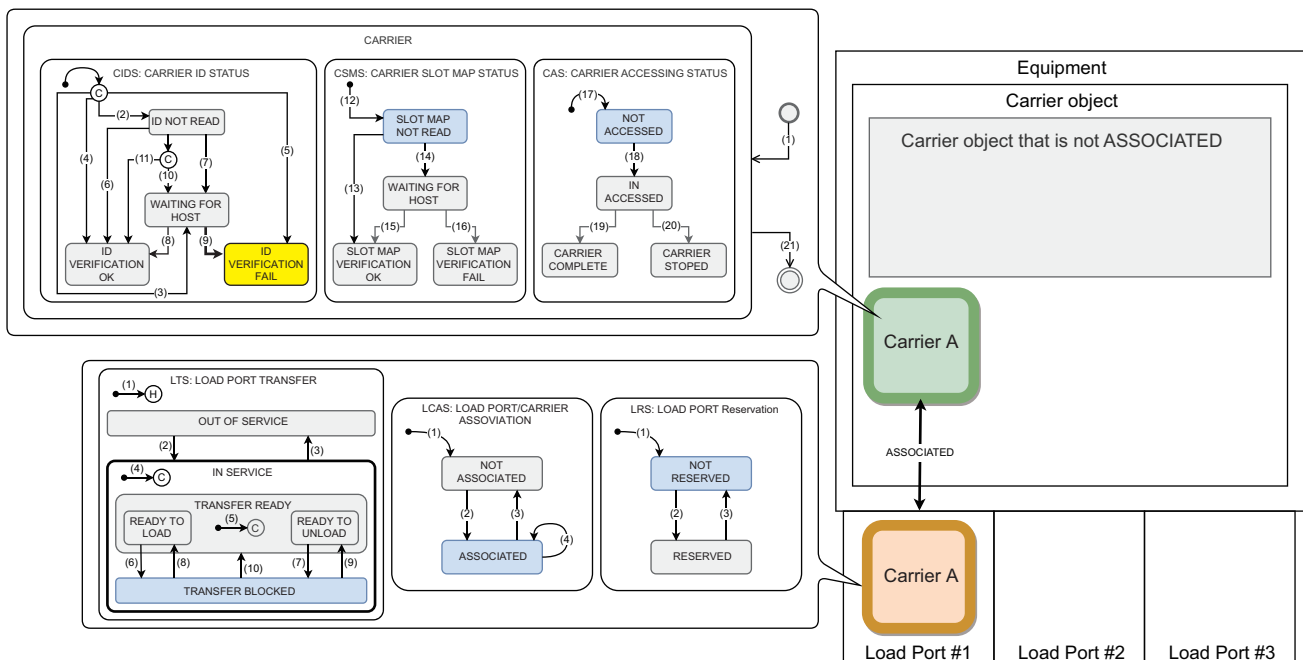
State transition examples

Example (1): When the host instructs cancellation by using the 'CancelCarrier' service (S3F17) in response to an 'ID NOT READ' to WAITING FOR HOST event report (S6F11) or 'NO STATE to WAITING FOR HOST event report (S6F11)' for the registered carrier A from equipment

• Before transition



• After transition

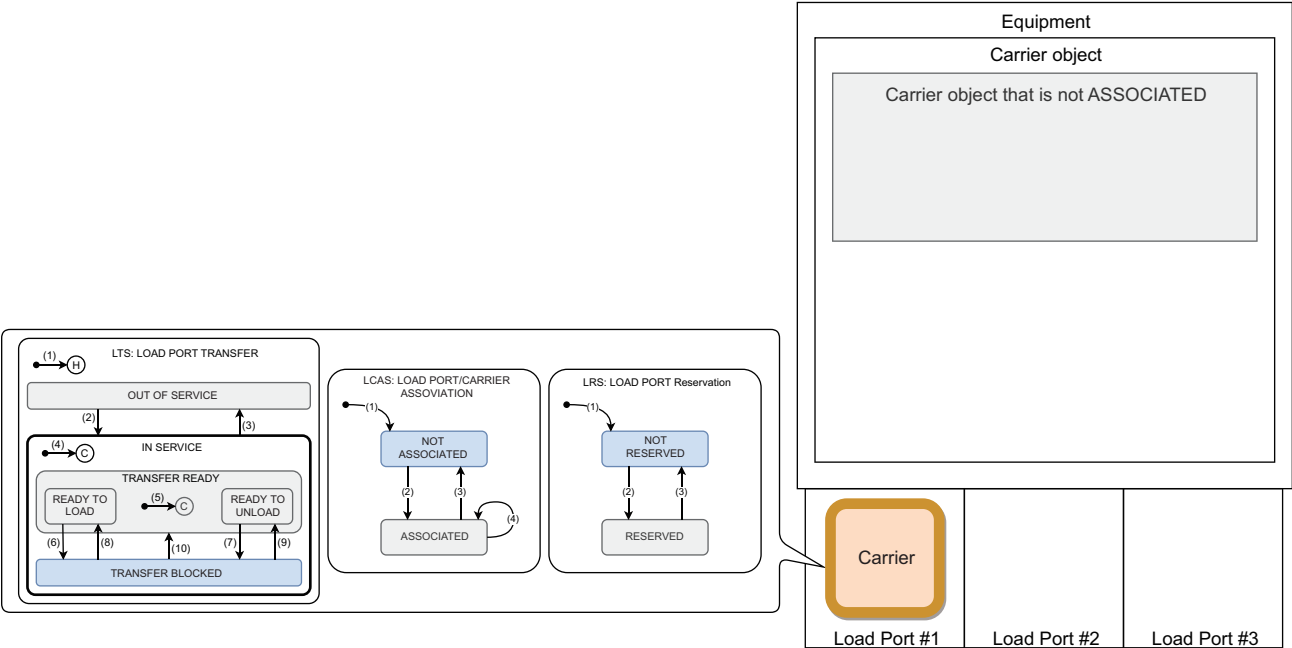


A

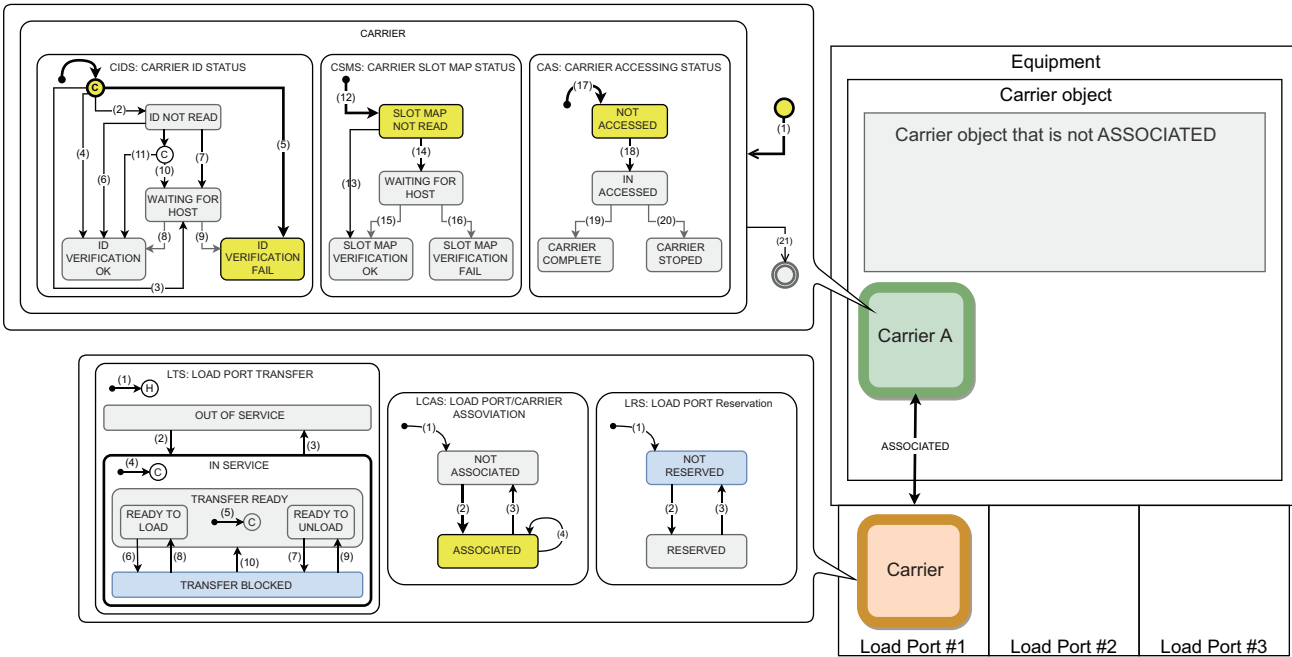
Example (2): When the host instructs cancellation of the unregistered carrier A by using the 'CancelCarrier' service (S3F17) in response to a 'CarrierID read fail event report (S6F11)' or 'UnKnown CarrierID event report (S6F11)' for a carrier with the carrier ID unknown from equipment

The parameters 'CarrierID (ObjID)' and 'PortID (PTN)' are required to be provided from the host.

- Before transition

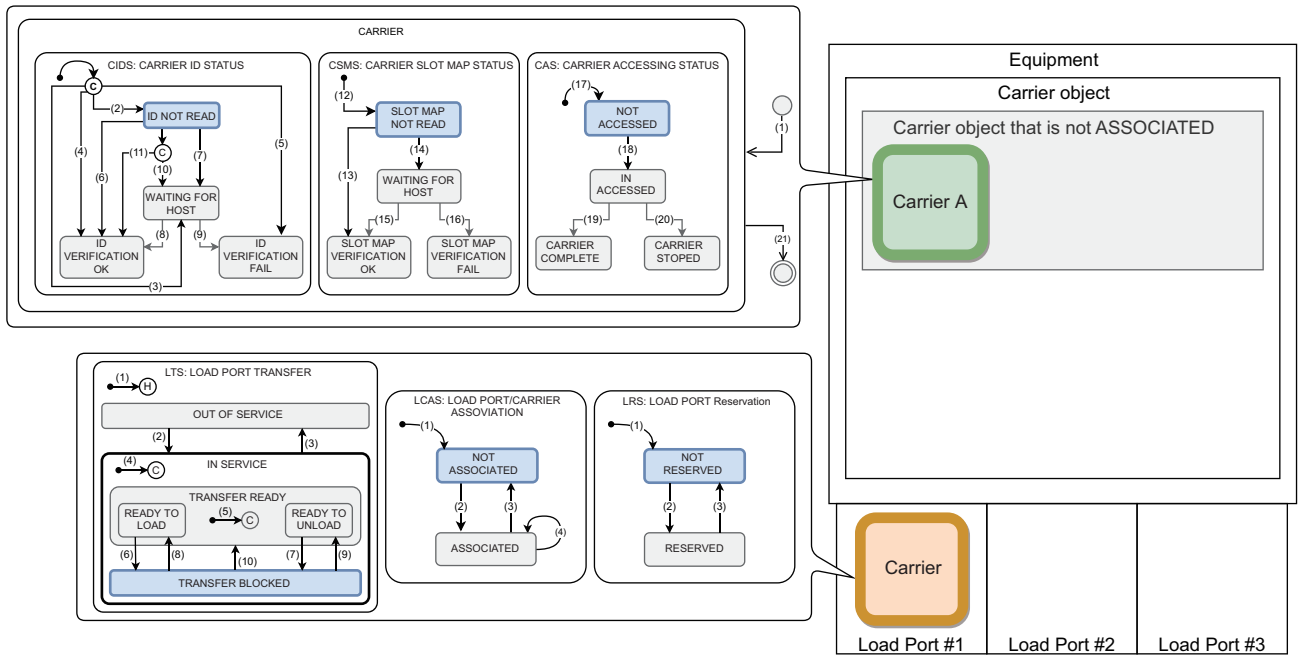


- After transition



Example (3): When the host instructs cancellation of the registered carrier A by using the 'CancelCarrier' service (S3F17)' in response to a 'CarrierID read fail event report (S6F11)' or 'UnKnown CarrierID event report (S6F11)' for a carrier with the carrier ID unknown from equipment

- Before transition



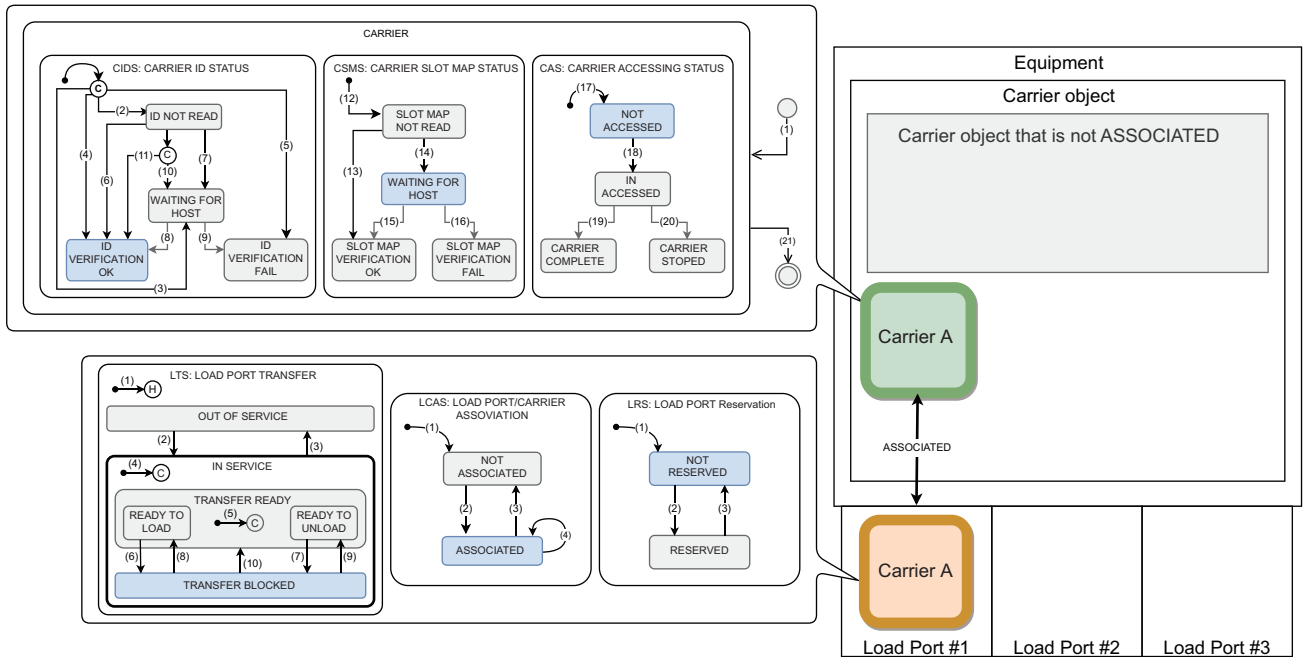
- After transition

The request is denied, and error code 11 is returned.

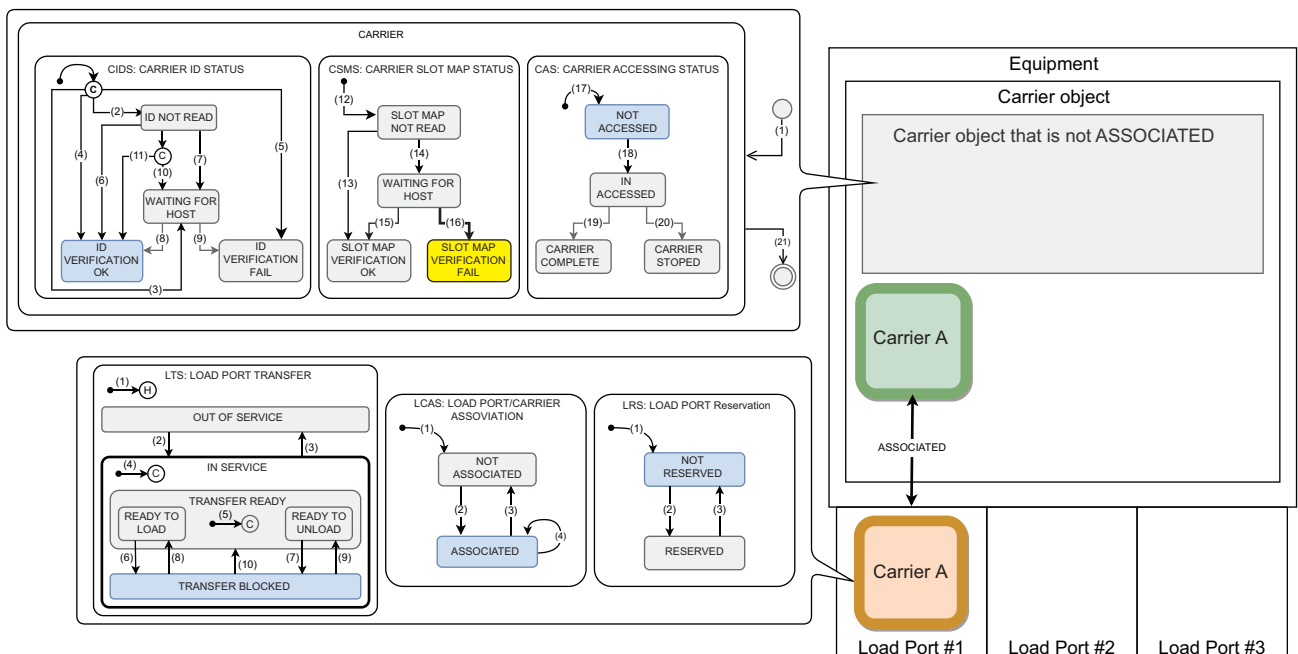
The host must delete an existing instance of carrier A by using the 'CancelCarrierNotification' service, then create a new instance of carrier A by using the 'CancelCarrier' service.

Example (4): When the host instructs cancellation by using the 'CancelCarrier' service (S3F17) in response to a 'SLOT MAP NOT READ to WAITING FOR HOST event report (S6F11)' for carrier A from equipment

- Before transition



- After transition



■S3F17: CancelCarrierAtPort

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[19] // CARRIERACTION "CancelCarrierAtPort"
3. A[0] // CarrierID (ObjID)
4. U1[1] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.
Refer to 'Parameters' for this carrier action.
2. 'S3F18: Carrier Action Acknowledge' is sent to the host.

Point

The 'CancelCarrierAtPort' service is a deferred completion event target service.

If no error occurs in error judgment by using the 'CancelCarrierAtPort' service, SECS/GEM communication software notifies CM-Acknowledge (CAACK) '4: Acknowledge, request will be performed with completion signaled later by an event.'

('0: Acknowledge, command has been performed.' is not notified.)

3. When CAACK is '4,' '10087-00905: CancelCarrierAtPort service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CancelCarrierAtPort"	Yes	12: Unknown
CarrierID (ObjID)	—	—	Not required (zero length). Ignored even if provided.	None	—
PortID (PTN)	○	—	—	Yes	<ul style="list-style-type: none">• 13: Omitted (zero length)• 48: Out of applicable range• Refer to 'Combinations of load port statuses and carrier statuses' in 'Other error judgment.'
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

A

Other error judgment

Combinations of load port statuses and carrier statuses

Load Port Transfer StateModel	Load Port/Carrier Association State Model	Load Port Reservation StateModel	Carrier Accessing Status of a carrier ASSOCIATED with a load port	Judgment result	Error code
0: OUT OF SERVICE	Not concerned	Not concerned	Not concerned	NG	17
1: TRANSFER BLOCKED	0: NOT ASSOCIATED	Not concerned	Not concerned	NG	50
	1: ASSOCIATED	0: NOT RESERVE	0: NOT ACCESSED	OK	—
			1: IN ACCESS	NG	17
			2: CARRIER COMPLETE	OK	—
			3: CARRIER STOPED	OK	—
		1: RESERVED	Not concerned	NG	17
2: READY TO LOAD	Not concerned	Not concerned	Not concerned	NG	50
3: READY TO UNLOAD	Not concerned	Not concerned	Not concerned	NG	17

■S3F17: CancelCarrierNotification

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[25] // CARRIERACTION "CancelCarrierNotification"
3. A[1..80] // CarrierID (ObjID)
4. U1[0] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. The following relevant state transition is performed.

Refer to 'State transition examples' for this carrier action.

- Carrier State Model state transition No.(21)

3. 'S3F18: Carrier Action Acknowledge' is sent to the host.

4. When CAACK is '0', '10087-00906: CancelCarrierNotification service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CancelCarrierNotification"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	• 13: Omitted (zero length) • 3: Unknown (N/A) • 17: Associated with a load port
PortID (PTN)	—	—	Not required (zero length). Ignored even if provided.	None	—
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

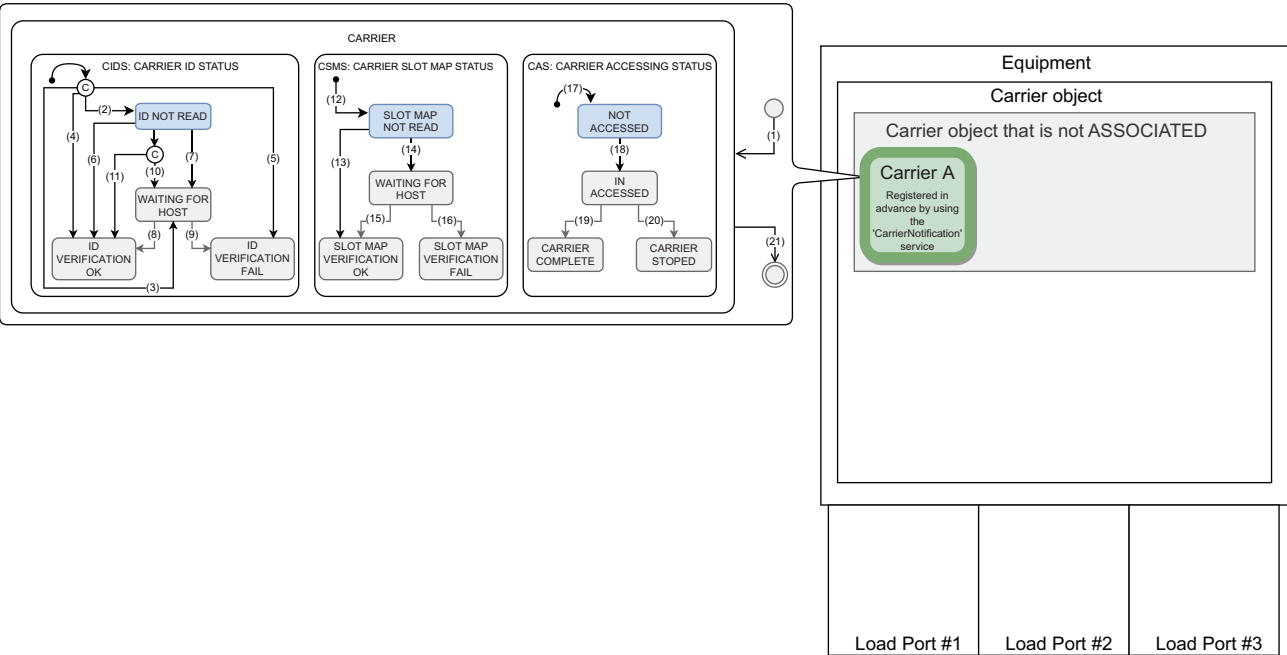
Other error judgment

None

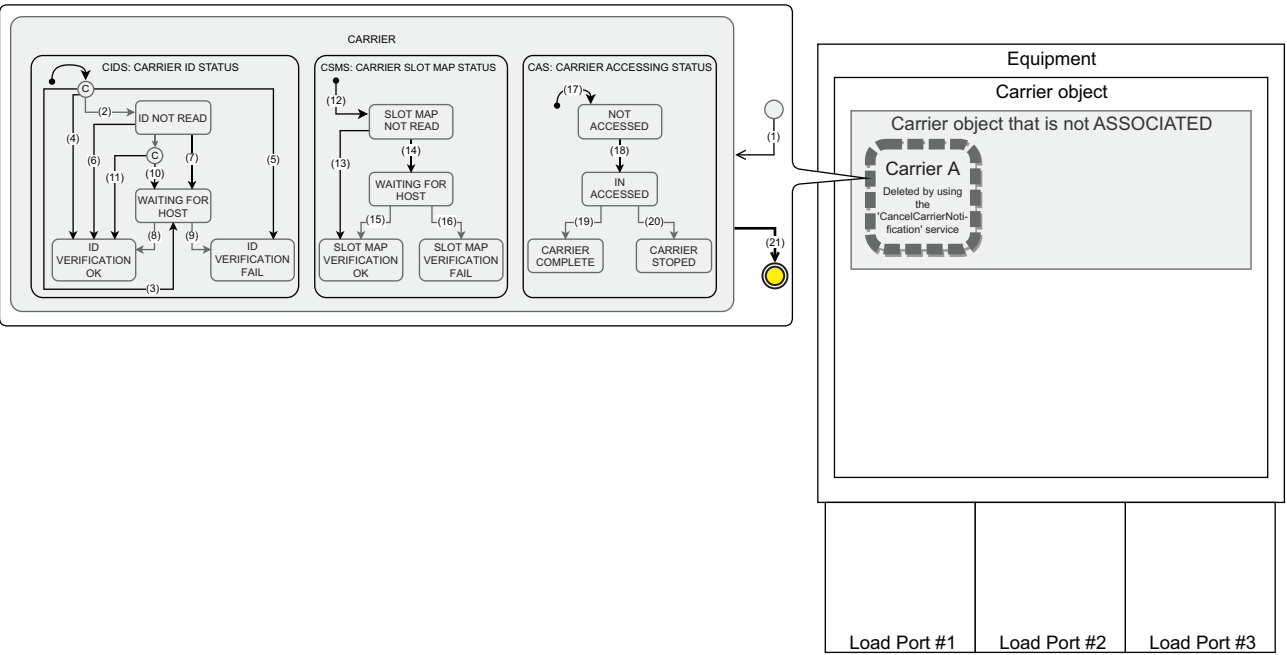
State transition examples

Example: When deleting carrier A, which is registered in advance by using the 'CarrierNotification' service, by using the 'CancelCarrierNotification' service

- Before transition



- After transition



■S3F17: CancelCarrierOut

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[16] // CARRIERACTION "CancelCarrierOut"
3. A[1..80] // CarrierID (ObjID)
4. U1[0] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. 'S3F18: Carrier Action Acknowledge' is sent to the host.

Point

SECS/GEM communication software does not queue the 'CarrierOut' service. Therefore, if no parameter error occurs, the software notifies CM-Acknowledge (CAACK) '0: Acknowledge, command has been performed.'

3. When CAACK is '0', '10087-00907: CancelCarrierOut service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CancelCarrierOut"	Yes	• 12: Unknown • 17: Fixed buffer equipment
CarrierID (ObjID)	○	—	—	Yes	• 13: Omitted (zero length) • 3: Unknown (N/A)
PortID (PTN)	—	—	Not required (zero length). Ignored even if provided.	None	—
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

None

A

■S3F17: CarrierIn

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[9] // CARRIERACTION "CarrierIn"
3. A[1..80] // CarrierID (ObjID)
4. U1[0] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.
Refer to 'Parameters' for this carrier action.
2. 'S3F18: Carrier Action Acknowledge' is sent to the host.

Point

The 'CarrierIn' service is a deferred completion event target service.

If no error occurs in error judgment by using the 'CarrierIn' service, SECS/GEM communication software notifies CM-Acknowledge (CAACK) '4: Acknowledge, request will be performed with completion signaled later by an event.'

('0: Acknowledge, command has been performed.' is not notified.)

3. When CAACK is '4,' '10087-00909: CarrierIn service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CarrierIn"	Yes	• 12: Unknown • 17: Fixed buffer equipment
CarrierID (ObjID)	○	—	—	Yes	• 13: Omitted (zero length) • 3: Unknown (N/A) • Refer to 'Combinations of carrier and load port statuses' in 'Other error judgment.'
PortID (PTN)	—	—	Not required (zero length). Ignored even if provided.	None	—
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

Combinations of carrier and load port statuses

Presence of a load port ASSOCIATED with the specified carrier	Load Port Transfer StateModel	Load Port Reservation StateModel	Whether to move the specified carrier by using the 'CarrierOut' service	Judgment result	Error code
None	Not concerned	Not concerned	Not concerned	NG	17
Yes	0: OUT OF SERVICE	Not concerned	Not concerned	NG	17
	1: TRANSFER BLOCKED	Not concerned	Not concerned	NG	17
	2: READY TO LOAD	Not concerned	Not concerned	NG	17
	3: READY TO UNLOAD	0: NOT RESERVE	Yes (moved)	OK	—
			None (not moved)	NG	17
		1: RESERVED	Not concerned	NG	17

Point

When moving a carrier, notify '00087-00414: Carrier move completed to Load Port notification.' This allows the carrier to be recognized as one moved by using the 'CarrierOut' service.

■S3F17: CarrierNotification

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[19] // CARRIERACTION "CarrierNotification"
3. A[1..80] // CarrierID (ObjID)
4. U1[0] // PortID (PTN)
5. L[0..256] // PropertiesList
 1. L[2]
 1. A[1..80] // AttrID
 2. any // AttrData
 - ⋮

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this carrier action.

2. When all of the following conditions are satisfied, a carrier object is created.

- The maximum number of carrier objects that can be created has not been reached.
- CarrierID is provided.
- There is no error in parameters and attributes.

3. The following state transition is performed.

Refer to 'State transition examples' for this carrier action.

- Carrier State Model state transition No.(1), (2), (12), and (17)

4. 'S3F18: Carrier Action Acknowledge' is sent to the host.

5. When CAACK is '0', '10087-00910: CarrierNotification service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CarrierNotification"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length) • 11: ID duplication • 12: Invalid value • 17: Creation limit exceeded
PortID (PTN)	—	—	Not required (zero length). Ignored even if provided.	None	—
PropertiesList	—	○	An attribute of a carrier object to be set for the created instance. Can be omitted (zero length).	Yes (if provided)	<ul style="list-style-type: none"> • 4: Attribute name unknown • Refer to 'Attribute setting.'


Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	—	Not required. Ignored even if provided.	None	—	"Carrier"
ObjID	—	—	—	Not required. Ignored even if provided.	None	—	—
Capacity	—	○	—	—	Yes	7: Out of applicable range	25
SubstrateCount	—	○	—	Values within the range of 'Capacity' are valid.	Yes	7: Out of applicable range	0
ContentMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
SlotMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
Usage	—	○	—	—	Yes	7: Other than ASCII*1	(Null character)
CarrierIDStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: ID NOT READ
CarrierAccessingStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: NOT ACCESSED
SlotMapStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: SLOT MAP NOT READ
LocationID	—	—	—	Not required. Ignored even if provided.	None	—	(Null character)
Reason	—	—	—	Not required. Ignored even if provided.	None	—	0: VERIFICATION NEEDED

*1 Excluding the control characters.

For the attributes of a carrier object, refer to the following:

 Page 38 Carrier Objects

A



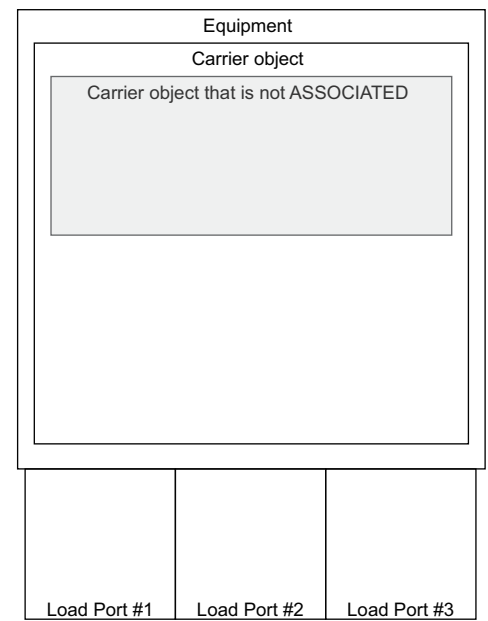
No attributes are required to be provided by the 'CarrierNotification' service.

Other error judgment

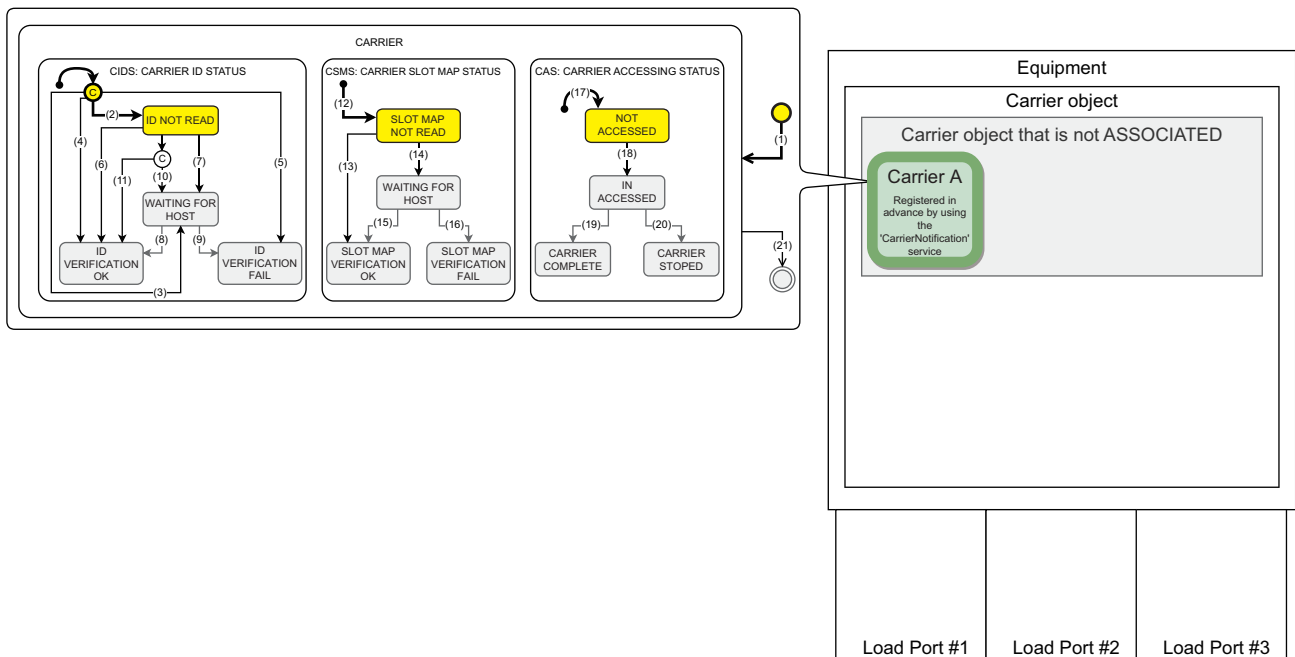
None

Example: When registering carrier A in advance by using the 'CarrierNotification' service

- Before transition



- After transition



■S3F17: CarrierOut

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[10] // CARRIERACTION "CarrierOut"
3. A[1..80] // CarrierID (ObjID)
4. U1[0..1] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. 'S3F18: Carrier Action Acknowledge' is sent to the host.

Point

The 'CarrierOut' service is a deferred completion event target service.

If no error occurs in error judgment by using the 'CarrierOut' service, SECS/GEM communication software notifies CM-Acknowledge (CAACK) '4: Acknowledge, request will be performed with completion signaled later by an event.'

('0: Acknowledge, command has been performed.' is not notified.)

3. When CAACK is '4,' '10087-00911: CarrierOut service notification' is sent to a control CPU.

Point

SECS/GEM communication software does not queue the 'CarrierOut' service.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CarrierOut"	Yes	• 12: Unknown • 17: Fixed buffer equipment
CarrierID (ObjID)	○	—	—	Yes	• 13: Omitted (zero length) • 3: Unknown (N/A)
PortID (PTN)	—	○	—	Yes (if provided)	• 48: Out of applicable range • Refer to 'Combinations of load port statuses' in 'Other error judgment.'
PropertiesList	—	—	Not required (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

Combinations of carrier and load port statuses

Load Port Transfer StateModel	Load Port/Carrier Association State Model	Load Port Reservation StateModel	Judgment result	Error code
0: OUT OF SERVICE	Not concerned	Not concerned	NG	17
1: TRANSFER BLOCKED	Not concerned	Not concerned	OK	—
2: READY TO LOAD	Not concerned	Not concerned	OK	—
3: READY TO UNLOAD	Not concerned	Not concerned	OK	—

■S3F17: CarrierRelease

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[14] // CARRIERACTION "CarrierRelease"
3. A[0..80] // CarrierID (ObjID)
4. U1[0..1] // PortID (PTN)
5. L[0] // PropertiesList

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this carrier action.

2. 'S3F18: Carrier Action Acknowledge' is sent to the host.

3. When CAACK is '0', '10087-00913: CarrierRelease service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CarrierRelease"	Yes	12: Unknown
CarrierID (ObjID)	—	○	Can be omitted (zero length) if only PortID (PTN) is provided.	Yes (if provided)	• 3: Unknown (N/A) • Refer to 'Combinations of CarrierID and PortID' in 'Other error judgment.'
PortID (PTN)	—	○	Can be omitted (zero length) if only CarrierID (ObjID) is provided.	Yes (if provided)	• 48: Out of applicable range • Refer to 'Combinations of CarrierID and PortID' in 'Other error judgment.'
PropertiesList	—	—	Not required. Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

Combinations of CarrierID and PortID

○: Provided (no parameter error), —: Not provided

CarrierID	PortID	Association between the specified CarrierID and PortID	Judgment result	Error code
○	—	Not concerned	OK	—
—	○	Not concerned	OK	—
○	○	ASSOCIATED	OK	—
○	○	NOT ASSOCIATED	NG	17
—	—	Not concerned	NG	13



SECS/GEM communication software is not aware of whether a carrier exists in a location where a tag is read or written.

■S3F17: CarrierReCreate

Message format

S3F17

1. L[5]

1. U(1,2,4)[0..1] // DATAID
2. A[15] // CARRIERACTION "CarrierReCreate"
3. A[1..80] // CarrierID (ObjID)
4. U1[0] // PortID (PTN)
5. L[0..256] // PropertiesList
 1. L[2]
 1. A[1..80] // AttrID
 2. any // AttrData

:

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters,' 'Attribute setting,' and 'Other error judgment' for this carrier action.

2. When all of the following conditions are satisfied, a carrier object is created.

- The maximum number of carrier objects that can be created has not been reached.
- CarrierID is provided.
- The transfer status of a load port ASSOCIATED with the provided CarrierID is 'READY TO UNLOAD.'
- There is no error in parameters and attributes.

3. The following state transitions are performed.

Refer to 'State transition examples' for this carrier action.

- When PropertiesList is provided
 - Carrier State Model state transition No.(21)&(1), (2), (12), and (17)
 - Load Port Transfer State Model state transition No.(7)
 - Load Port/Carrier Association State Model state transition No.(4)
- When PropertiesList is not provided
 - Carrier State Model state transition No.(21)
 - Load Port Transfer State Model state transition No.(7)
 - Load Port/Carrier Association State Model state transition No.(3)

4. 'S3F18: Carrier Action Acknowledge' is sent to the host.

5. When CAACK is '0', '10087-00912: CarrierReCreate service notification' is sent to a control CPU.

Point

Execute the carrier ID verification scenario by using any of the following in response to '10087-00912: CarrierReCreate service notification' in the control CPU.

- 00087-00501: CarrierID read successful notification
- 00087-00502: CarrierID read fail notification
- 00087-00503: Unknown CarrierID notification

For carrier ID verification, refer to the following:

☞ Page 64 Carrier ID Verification

A

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"CarrierReCreate"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length) • 3: Unknown (N/A)
PortID (PTN)	—	—	Not required (zero length). Ignored even if provided.	None	—
PropertiesList	—	○	An attribute of a carrier object to be set for the recreated instance. Can be omitted (zero length).	Yes (if provided)	<ul style="list-style-type: none"> • 4: Attribute name unknown • Refer to 'Attribute setting.'


Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	—	Not required. Ignored even if provided.	None	—	"Carrier"
ObjID	—	—	—	Not required. Ignored even if provided.	None	—	—
Capacity	—	○	—	—	Yes	7: Out of applicable range	25
SubstrateCount	—	○	—	Values within the range of 'Capacity' are valid.	Yes	7: Out of applicable range	0
ContentMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
SlotMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
Usage	—	○	—	—	Yes	7: Other than ASCII*1	(Null character)
CarrierIDStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: ID NOT READ
CarrierAccessingStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: NOT ACCESSED
SlotMapStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: SLOT MAP NOT READ
LocationID	—	—	—	Not required. Ignored even if provided.	None	—	(Null character)
Reason	—	—	—	Not required. Ignored even if provided.	None	—	0: VERIFICATION NEEDED

*1 Excluding the control characters.

For the attributes of a carrier object, refer to the following:

 Page 38 Carrier Objects



No attributes are required to be provided by the 'CarrierReCreate' service.

Other error judgment

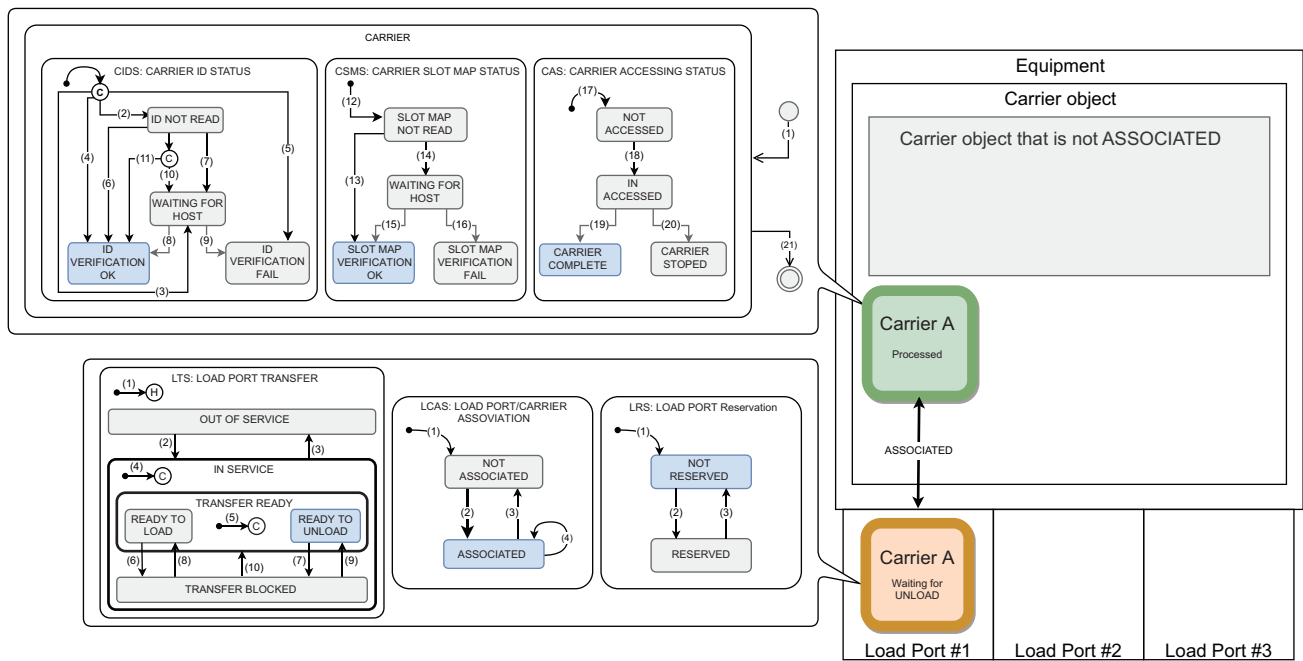
Combinations of load port statuses

Presence of a load port ASSOCIATED with the specified carrier	Load Port Transfer StateModel	Load Port Reservation StateModel	Judgment result	Error code
None	Not concerned	Not concerned	NG	17
Yes	0: OUT OF SERVICE	Not concerned	NG	17
	1: TRANSFER BLOCKED	Not concerned	NG	49
	2: READY TO LOAD	Not concerned	NG	49
	3: READY TO UNLOAD	0: NOT RESERVE	OK	—
		1: RESERVED	NG	49

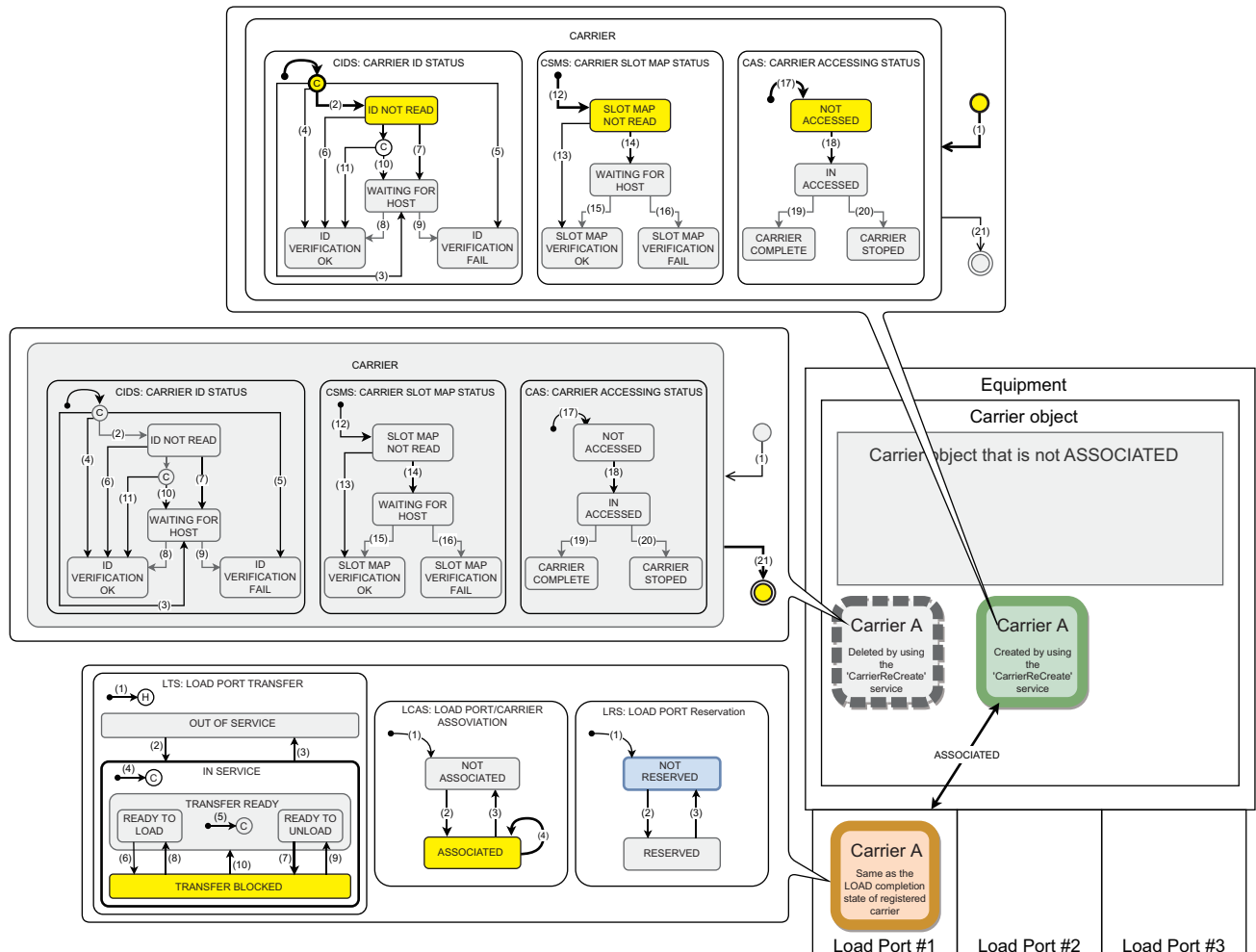
State transition examples

Example: When reinstantiating carrier A that is waiting for UNLOAD in Load Port#1 by using the 'CarrierReCreate' service

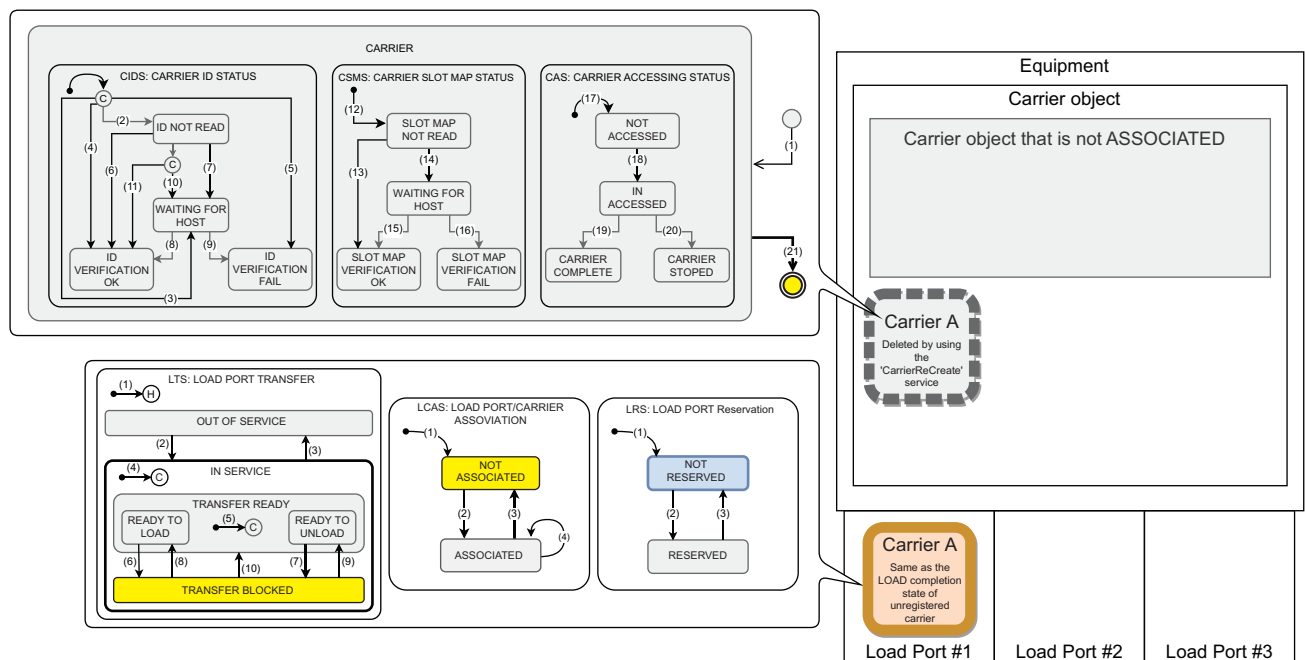
- Before transition



- After transition (when PropertiesList is provided)



- After transition (when PropertiesList is not provided)



■S3F17: ProceedWithCarrier

Message format

S3F17

1. L[5]
 1. U(1,2,4)[0..1] // DATAID
 2. A[18] // CARRIERACTION "ProceedWithCarrier"
 3. A[1..80] // CarrierID (ObjID)
 4. U1[0..1] // PortID (PTN)
 5. L[0..256] // PropertiesList
 1. L[2]
 1. A[1..80] // AttrID
 2. any // AttrData
- :

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this carrier action.

2. The following state transitions are performed.

- When the host instructs continuation by using the 'ProceedWithCarrier' service (S3F17) in response to an 'ID NOT READ to WAITING FOR HOST' event report (S6F11) or 'NO STATE to WAITING FOR HOST' event report (S6F11) from equipment
 - Carrier State Model state transition No.(8)

Refer to 'Example (1)' in 'State transition examples' for this carrier action.

- When the host instructs continuation by using the 'ProceedWithCarrier' service (S3F17) in response to a 'CarrierID read fail' event report (S6F11) or 'Unknown CarrierID' event report (S6F11) from equipment
 - Carrier State Model state transition No.(1), (4), (12), and (17)
 - Load Port/Carrier Association State Model state transition No.(2)

Refer to 'Example (2)' and 'Example (3)' in 'State transition examples' for this carrier action.

- When the host instructs continuation by using the 'ProceedWithCarrier' service (S3F17) in response to 'SLOT MAP NOT READ to WAITING FOR HOST' event report (S6F11) from equipment
 - Carrier State Model state transition No.(15)

Refer to 'Example (4)' in 'State transition examples' for this carrier action.

3. 'S3F18: Carrier Action Acknowledge' is sent to the host.

4. When CAACK is '0', '10087-00918: ProceedWithCarrier service notification' is sent to a control CPU.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
DATAID	—	—	Not required. Ignored even if provided.	None	—
CARRIERACTION	○	—	"ProceedWithCarrier"	Yes	12: Unknown
CarrierID (ObjID)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted • 3: Unknown (N/A) • 11: ID duplication • 17: Creation limit exceeded
PortID (PTN)	—	○	<ul style="list-style-type: none"> • Can be omitted (zero length) when the host instructs continuation in response to events including 'to WAITING FOR HOST' from equipment. Ignored even if provided. • Required when the host instructs continuation in response to 'CarrierID read fail event' and 'UnKnown CarrierID event' from equipment. 	Yes (if required)	<ul style="list-style-type: none"> • 13: Omitted • 48: Out of applicable range • Refer to 'Combinations of load port statuses' in 'Other error judgment.'
PropertiesList	—	○	An attribute of a carrier object to be set for the instance already created or created by a user. Can be omitted (zero length).	Yes (if provided)	<ul style="list-style-type: none"> • 4: Attribute name unknown • Refer to 'Attribute setting.'

Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	—	Not required. Ignored even if provided.	None	—	"Carrier"
ObjID	—	—	—	Not required. Ignored even if provided.	None	—	—
Capacity	—	○	—	—	Yes	7: Out of applicable range	25
SubstrateCount	—	○	—	Values within the range of 'Capacity' are valid.	Yes	7: Out of applicable range	0
ContentMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
SlotMap	—	○	—	The same number as 'Capacity' is valid.	Yes	7: Out of applicable range	LIST [Capacity]
Usage	—	○	—	—	Yes	7: Other than ASCII ^{*1}	(Null character)
CarrierIDStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: ID NOT READ
CarrierAccessingStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: NOT ACCESSED

A

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
SlotMapStatus	—	—	—	Not required. Ignored even if provided.	None	—	0: SLOT MAP NOT READ
LocationID	—	—	—	Not required. Ignored even if provided.	None	—	(Null character)
Reason	—	—	—	Not required. Ignored even if provided.	None	—	0: VERIFICATION NEEDED

*1 Excluding the control characters.

For the attributes of a carrier object, refer to the following:

 Page 38 Carrier Objects

Point

No attributes are required to be provided by the 'ProceedWithCarrier' service.

Other error judgment

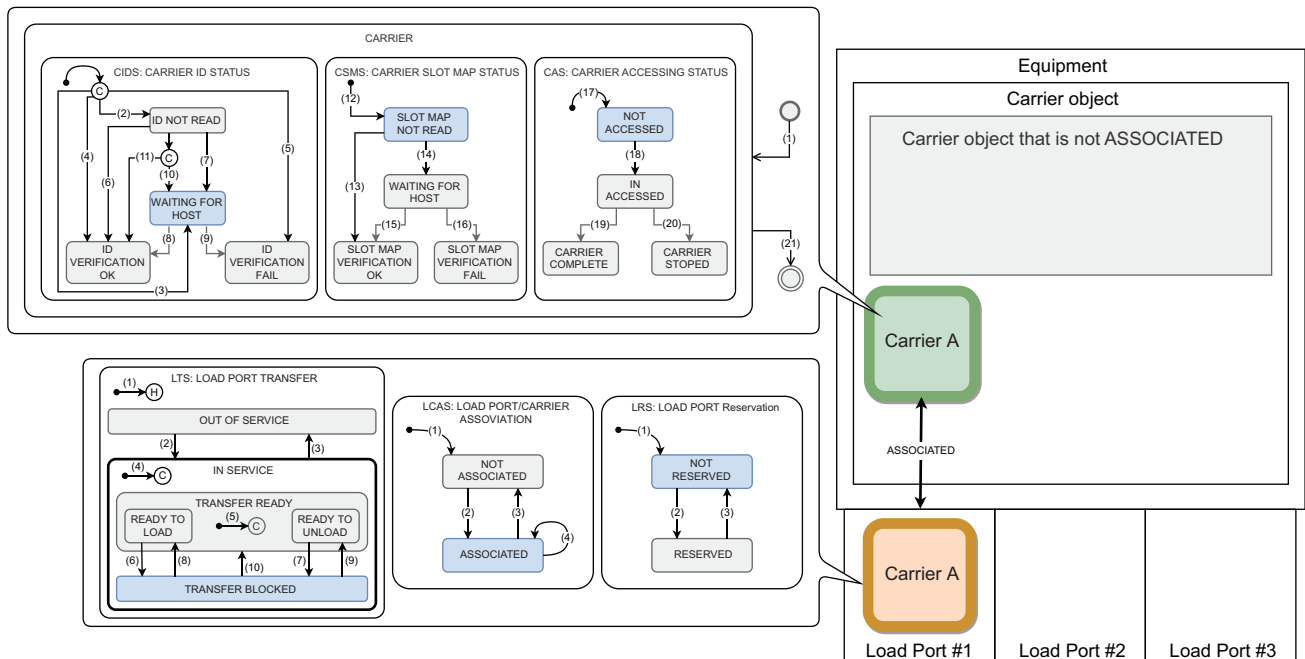
Combinations of load port statuses

Load Port Transfer StateModel	Load Port/Carrier Association State Model	Load Port Reservation StateModel	Judgment result	Error code
0: OUT OF SERVICE	Not concerned	Not concerned	NG	17
1: TRANSFER BLOCKED	0: NOT ASSOCIATED	0: NOT RESERVE	OK	—
		1: RESERVED	NG	49
	1: ASSOCIATED	Not concerned	NG	49
2: READY TO LOAD	Not concerned	Not concerned	NG	17
3: READY TO UNLOAD	Not concerned	Not concerned	NG	17

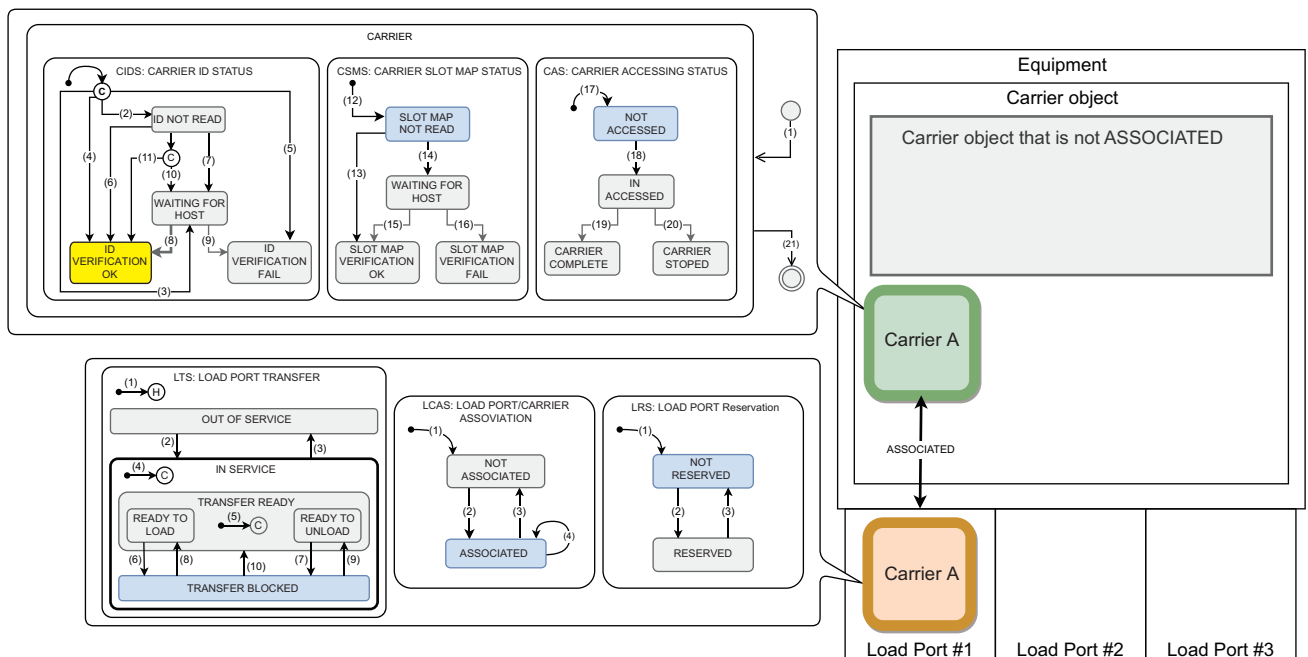
State transition examples

Example (1): When the host instructs continuation by using the 'ProceedWithCarrier' service (S3F17) in response to an 'ID NOT READ' to WAITING FOR HOST event report (S6F11)' or 'NO STATE to WAITING FOR HOST event report (S6F11)' for the registered carrier A from equipment

• Before transition



• After transition



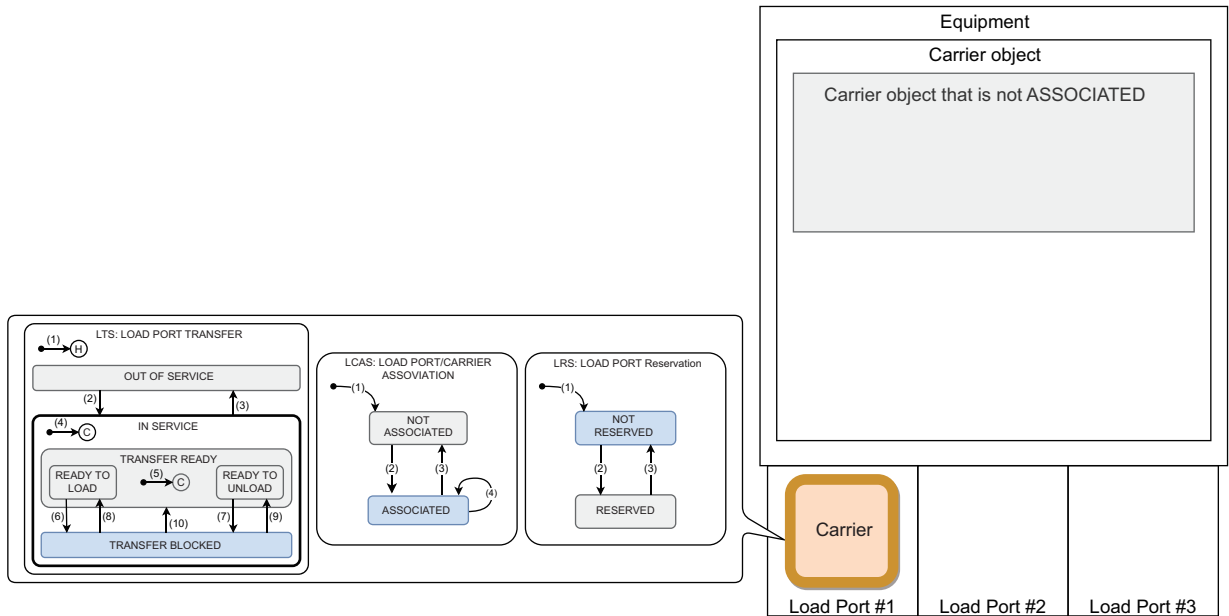
A

Example (2): When the host instructs continuation of the unregistered carrier A by using the 'ProceedWithCarrier' service (S3F17) in response to a 'CarrierID read fail event report (S6F11)' or 'UnKnown CarrierID event report (S6F11)' for a carrier with the carrier ID unknown from equipment

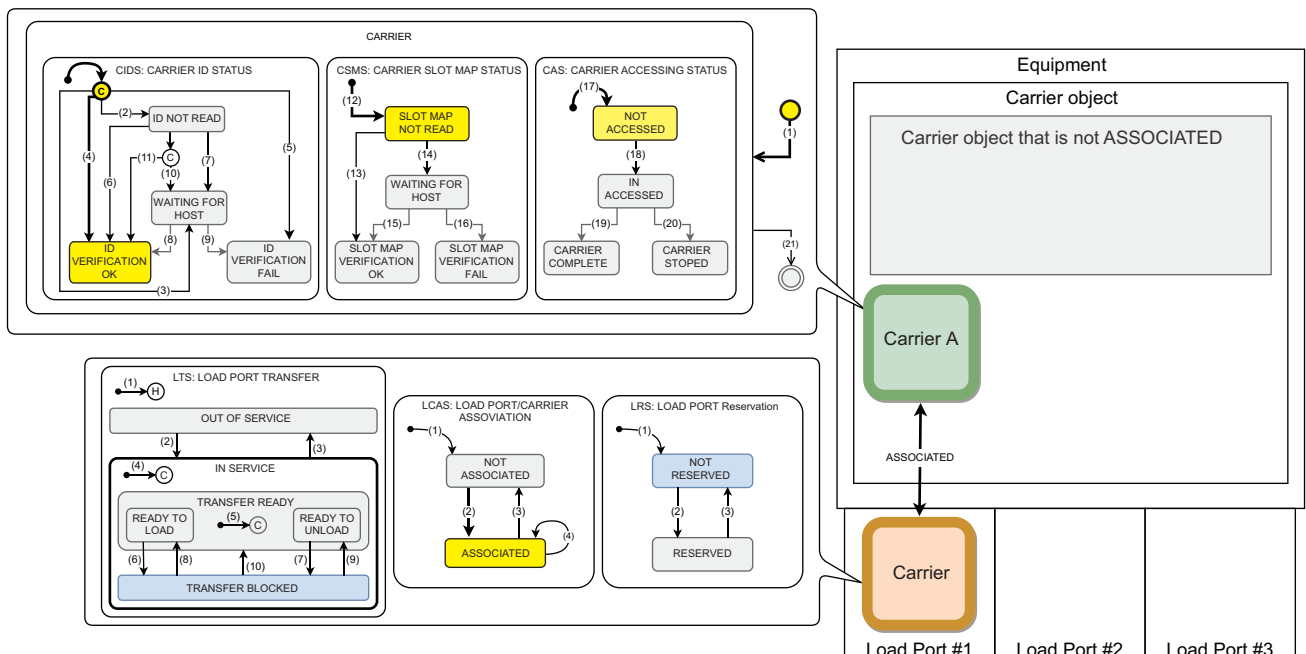


The parameters 'CarrierID (ObjID),' 'PortID (PTN),' and 'PropertiesList' are required to be provided from the host.

- Before transition

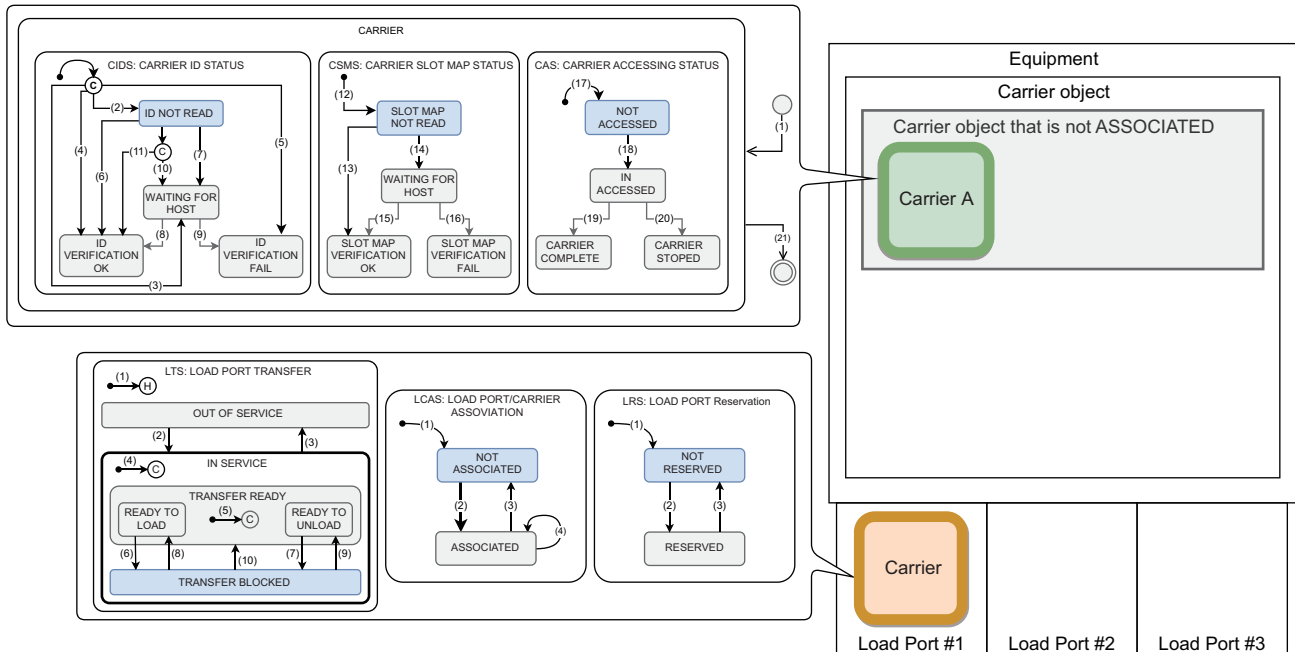


- After transition



Example (3): When the host instructs continuation of the registered carrier A by using the 'ProceedWithCarrier' service (S3F17) in response to a 'CarrierID read fail event report (S6F11)' or 'UnKnown CarrierID event report (S6F11)' for a carrier with the carrier ID unknown from equipment

- Before transition



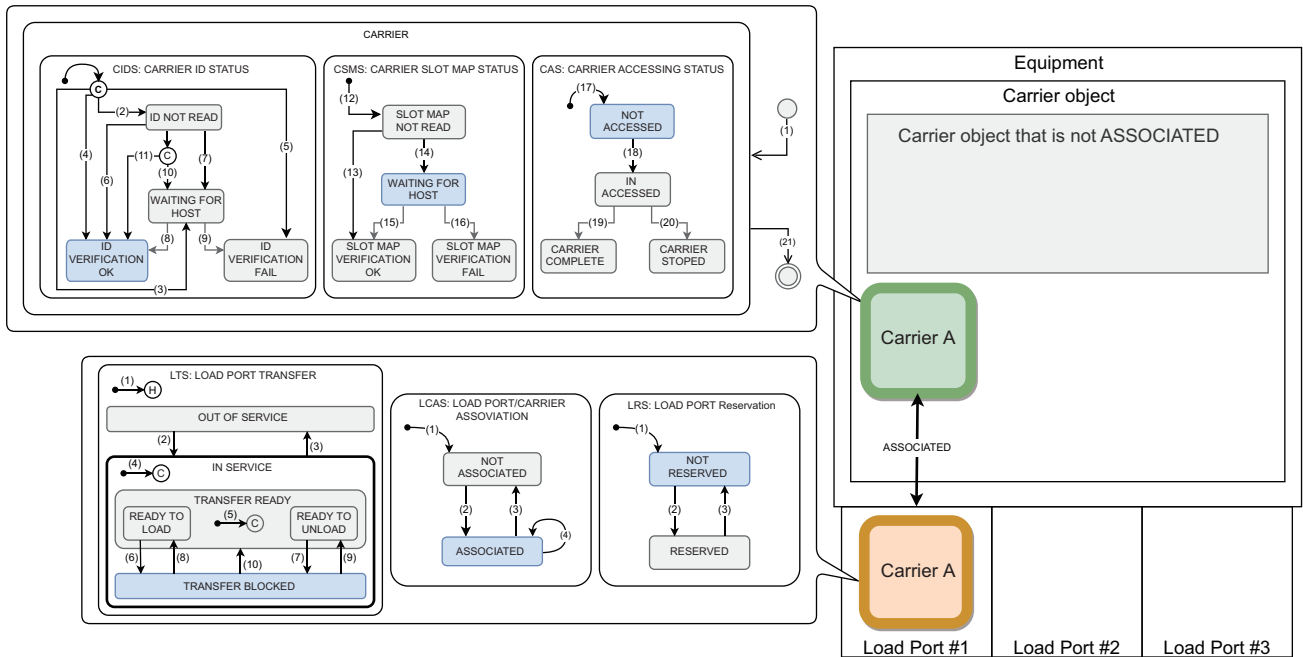
- After transition

The request is denied, and error code 11 is returned.

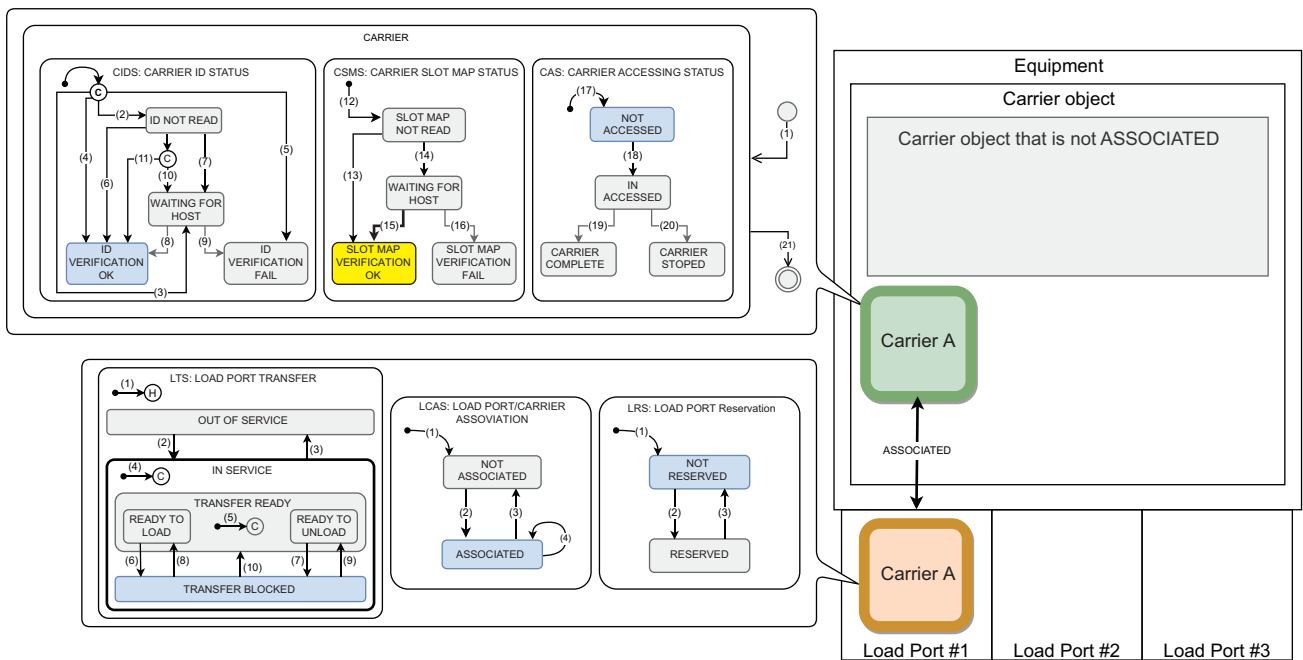
The host must delete an existing instance of carrier A by using the 'CancelCarrierNotification' service, then create a new instance of carrier A by using the 'ProceedWithCarrier' service.

Example (4): When the host instructs continuation by using the 'ProceedWithCarrier' service (S3F17) in response to a 'SLOT MAP NOT READ to WAITING FOR HOST' event report (S6F11)' for carrier A from equipment

- Before transition



- After transition



S3F18: Carrier Action Acknowledge

Message format

S3F18

```
1. L[2]          // CMStatus
   1. U1[1]      // CAACK
   2. L[0..256]  // Status
       1. L[2]
           1. U2[1] // ErrorCode
           2. A[1..120] // ErrorText
       :
```

Processing during automatic response

'S3F18: Carrier Action Acknowledge' is sent to the host.

Parameter

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
CMStatus	○	—	Refer to 'Combinations of CMStatus.'

Combinations of CMStatus

Point

- Only one CAACK can be notified; therefore, the smallest number is notified.
- If an error with the same ErrorCode occurs multiple times, it is reported only once.

• Bind

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	4	Unknown attribute name	The attribute name is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	11	Object identifier in use	The object identifier is in use.
	48	Load port does not exist	The load port does not exist.
	49	Load port already in use	The load port is already in use.
	32770	Action failed due to errors	The action failed due to errors.

• CancelBind

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	48	Load port does not exist	The load port does not exist.
	49	Load port already in use	The load port is already in use.
	32770	Action failed due to errors	The action failed due to errors.

- CancelCarrier

CAACK	ErrorCode	ErrorText	Remarks
4: Acknowledge, request will be performed with completion signaled later by an event.	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	11	Object identifier in use	The object identifier is in use.
	48	Load port does not exist	The load port does not exist.
	49	Load port already in use	The load port is already in use.
	32770	Action failed due to errors	The action failed due to errors.

- CancelCarrierAtPort

CAACK	ErrorCode	ErrorText	Remarks
4: Acknowledge, request will be performed with completion signaled later by an event.	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	48	Load port does not exist	The load port does not exist.
	50	Missing Carrier	The carrier is unknown.
	32770	Action failed due to errors	The action failed due to errors.

- CancelCarrierNotification

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	32770	Action failed due to errors	The action failed due to errors.

- CancelCarrierOut

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	32770	Action failed due to errors	The action failed due to errors.

• CarrierIn

CAACK	ErrorCode	ErrorText	Remarks
4: Acknowledge, request will be performed with completion signaled later by an event.	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	32770	Action failed due to errors	The action failed due to errors.

• CarrierNotification

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	4	Unknown attribute name	The attribute name is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	11	Object identifier in use	The object identifier is in use.
	32770	Action failed due to errors	The action failed due to errors.

• CarrierOut

CAACK	ErrorCode	ErrorText	Remarks
4: Acknowledge, request will be performed with completion signaled later by an event.	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	48	Load port does not exist	The load port does not exist.
	32770	Action failed due to errors	The action failed due to errors.

• CarrierRelease

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	48	Load port does not exist	The load port does not exist.
	32770	Action failed due to errors	The action failed due to errors.

- CarrierReCreate

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	3	Unknown object instance	The object instance is unknown.
	4	Unknown attribute name	The attribute name is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	49	Load port already in use	The load port is already in use.
	32770	Action failed due to errors	The action failed due to errors.

- ProceedWithCarrier

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	4	Unknown attribute name	The attribute name is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	11	Object identifier in use	The object identifier is in use.
	48	Load port does not exist	The load port does not exist.
	49	Load port already in use	The load port is already in use.
	32770	Action failed due to errors	The action failed due to errors.

S3F19: CancelAllCarrierOut

Message format

S3F19

(Header only)

Processing during automatic response

1. 'S3F20: Cancel All Carrier Out Acknowledge' is sent to the host.

Point

SECS/GEM communication software does not queue the 'CarrierOut' service. Therefore, the software notifies CM-Acknowledge (CAACK) '0: Acknowledge, command has been performed.'

2. '10087-00902: CancelAllCarrierOut service notification' is sent to a control CPU.

Parameters

None

Attribute setting

None

Other error judgment

None

S3F20: Cancel All Carrier Out Acknowledge

Message format

S3F20

- 1. L[2] // CMStatus
 - 1. U1[1] // CAACK
 - 2. L[0..256] // Status
 - 1. L[2]
 - 1. U2[1] // ErrorCode
 - 2. A[1..120] // ErrorText
- ⋮

Processing during automatic response

'S3F20: Cancel All Carrier Out Acknowledge' is sent to the host.

Parameter

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
CMStatus	○	—	Refer to 'Combinations of CMStatus.'

Combinations of CMStatus



- Only one CAACK can be notified; therefore, the smallest number is notified.
- If an error with the same ErrorCode occurs multiple times, it is reported only once.

CAACK	ErrorCode	ErrorText	Remarks
0: Execution completed	—	—	—
2: Cannot perform now.	17	Command not valid for current state	<ul style="list-style-type: none">• The command is invalid for the current status.• For fixed buffer equipment
5: Rejected. Invalid state.	32770	Action failed due to errors	The action failed due to errors.

S3F25: Port Action Request

Message format

S3F25

1. L[3]

1. A[1..80] // PORTACTION
2. U1[0..1] // PortID (PTN)
3. L[0..256] // ParametersList
 1. L[2]
 1. A[1..80] // ParameterName
 2. any // ParameterValue

:

Processing during automatic response

Refer to each port action.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
PORTACTION	○	—	A supported port action ^{*1}	Yes	12: Unknown
PortID (PTN)	—	○	Refer to each port action.		
PropertiesList	—	○	Refer to each port action.		

^{*1} Note that characters are case-sensitive.

■S3F25: ChangeServiceStatus

Message format

S3F25

1. L[3]

1. A[19] // PORTACTION "ChangeServiceStatus"
2. U1[1] // PortID (PTN)
3. L[1] // ParametersList
 1. L[2]
 1. A[13] // ParameterName "ServiceStatus"
 2. U1[1] // ParameterValue "0" or "1"

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this port action.

2. 'S3F26: Port Action Acknowledge' is sent to the host.



The 'ChangeServiceStatus' service is a deferred completion event target service.

If no error occurs in error judgment by using the 'ChangeServiceStatus' service, SECS/GEM communication software notifies CM-Acknowledge (CAACK) '4: Acknowledge, request will be performed with completion signaled later by an event.'


('0: Acknowledge, command has been performed.' is not notified.)

3. '10087-00917: ChangeServiceStatus service notification' is sent to a control CPU.

A

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
PORTACTION	○	—	"ChangeServiceStatus"	Yes	12: Unknown
PortID (PTN)	○	—	—	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length) • 48: Out of applicable range
ServiceStatus (ParametersList)	○	—	ParameterName: "ServiceStatus" ParameterValue: 0 (OUT OF SERVICE) or 1 (IN SERVICE) ( Page 33 Load port object)	Yes	<ul style="list-style-type: none"> • 13: Omitted (zero length list) • 13: ServiceStatus not provided • 12: Parameter name unknown • 12: Out of applicable range

S3F26: Port Action Acknowledge

Message format

S3F26

- 1. L[2] // CMStatus
 - 1. U1[1] // CAACK
- 2. L[0..256] // Status
 - 1. L[2]
 - 1. U2[1] // ErrorCode
 - 2. A[1..120] // ErrorText
- ⋮

Processing during automatic response

'S3F26: Port Action Acknowledge' is sent to the host.

Parameter

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
CMStatus	○	—	Refer to 'Combinations of CMStatus.'

Combinations of CMStatus

Point

- Only one CAACK can be notified; therefore, the smallest number is notified.
- If an error with the same ErrorCode occurs multiple times, it is reported only once.

- CancelCarrierAtPort

CAACK	ErrorCode	ErrorText	Remarks
4: Acknowledge, request will be performed with completion signaled later by an event.	—	—	—
2: Cannot perform now.	17	Command not valid for current state	The command is invalid for the current status.
3: Invalid data or argument.	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
5: Rejected. Invalid state.	48	Load port does not exist	The load port does not exist.
	32770	Action failed due to errors	The action failed due to errors.

A

Stream 14 Object Service

The following shows the details on the service messages.

S14F1: GetAttr Request

Message format

S14F1

1. L[5]

1. A[0..80] // OBJSPEC

2. A[1..80] // ObjType

3. L[0..1024] // ObjID list

1. A[1..80] // ObjID

⋮

4. L[0] // AttrFilter is not supported.

5. L[0..256] // AttrID list

1. A[1..80] // AttrID

⋮

Processing during automatic response

1. Errors in parameters are determined.

Refer to 'Parameters' for this object service.

2. 'S14F2: GetAttr Data' is sent to the host.



A control CPU is not notified of anything.

Parameters

○: Applicable, —: Not applicable

Name	Mandator y (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	—	○	Can be omitted (zero length). Ignored even if provided.	None	—
ObjType	○	—	ObjType of the target object* ¹ <ul style="list-style-type: none">• "Carrier"• "LoadPort"• "Location"• "InternalBuffer"• "Substrate"• "SubstLoc"• "BatchLoc" For the target GEM300-related objects, refer to the following: Page 32 GEM300-Related Object List	Yes	6: Unknown (When omitted, 'S9F7: Illegal Data' is returned.)
ObjID list	—	○	Up to 1024 ObjIDs can be specified. When specifying '0', all objects of the target ObjType are targeted.	Yes	3: Unknown
AttrFilter	—	○	Not supported by SECS/GEM communication software. Ignored even if provided.	None	—
AttrID list	—	○	Up to 256 AttrIDs can be specified. When specifying '0', all attributes of the target object are targeted.	Yes	4: Attribute name unknown

*1 Note that characters are case-sensitive.

For AttrID (attribute name), refer to the following:

- ☞ Page 33 Load port object
- ☞ Page 35 Location object
- ☞ Page 36 Internal buffer object
- ☞ Page 38 Carrier Objects
- ☞ Page 82 Substrate Objects
- ☞ Page 85 Substrate Location Objects
- ☞ Page 86 Batch Location Objects

Attribute setting

None

Other error judgment

None

S14F2: GetAttr Data

Message format

S14F2

1. L[2]

1. L[0..1024] // ObjSetting list

1. L[2]

1. A[1..80] // ObjID

2. L[0..256] // AttrID list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

:

:

:

2. L[2] // ObjStatus

1. U1[1] // OBJACK

2. L[0..256] // Status

1. L[2]

1. U2[1] // ErrorCode

2. A[1..120] // ErrorText

:

Processing during automatic response

'S14F2: GetAttr Data' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
ObjSetting	○	—	An attribute of an object acquired by using GetAttr Request (When nothing can be acquired: LIST[0])
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Refer to the following:

☞ Page 33 Load port object

☞ Page 35 Location object

☞ Page 36 Internal buffer object

☞ Page 38 Carrier Objects

☞ Page 82 Substrate Objects

☞ Page 85 Substrate Location Objects

☞ Page 86 Batch Location Objects

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	3	Unknown object instance	The object instance is unknown.
	4	Unknown attribute name	The attribute name is unknown.
	6	Unknown object type	The object type is unknown.
	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.



If an error with the same ErrorCode occurs multiple times, it is reported only once.

Example when errors (ErrorCode 3 and 4) occur

S14F1

1. L[5]
 1. <OBJSPEC>
 2. <OBJTYPE> "SubstLoc"
 3. L[3]
 1. <OBJID> "SubstLoc_1"
 2. <OBJID> "SubstLoc_2"
 3. <OBJID> "Carrier_01" ←Specification error: ObjID that does not exist in "SubstLoc"
 4. L[0]
 5. L[3]
 1. <ATTRID> "DisableEvents"
 2. <ATTRID> "SubstLocState"
 3. <ATTRID> "Usage" ←Specification error: AttrID that does not exist in "SubstLoc"
-

S14F2

1. L[2]
 1. L[2] ←L[2] instead of L[3] because a non-existent ObjID is discarded
 1. L[2]
 1. <OBJID> "SubstLoc_1"
 2. L[2] ←L[2] instead of L[3] because a non-existent AttrID is discarded
 1. L[2]
 1. <ATTRID> "DisableEvents"
 2. <ATTRDATA> false
 2. L[2]
 1. <ATTRID> "SubstLocState"
 2. <ATTRDATA> 0--- Non-existent AttrID "Usage" is discarded. ---
 2. L[2]
 1. <OBJID> "SubstLoc_2"
 2. L[2] ←L[2] instead of L[3] because a non-existent AttrID is discarded
 1. L[2]
 1. <ATTRID> "DisableEvents"
 2. <ATTRDATA> false
 2. L[2]
 1. <ATTRID> "SubstLocState"
 2. <ATTRDATA> 0--- Non-existent AttrID "Usage" is discarded. ---
--- Non-existent ObjID "Carrier_01" is discarded. ---
 2. L[2]
 1. <OBJACK> 1 (error)
 2. L[2]
 1. L[2]
 1. <ERRCODE> 3 ←Error for a non-existent ObjID
 2. <ERRTEXT> "Unknown object instance"
 2. L[2]
 1. <ERRCODE> 4 ←Error for a non-existent AttrID
 2. <ERRTEXT> "Unknown attribute name"

S14F3: SetAttr Request

Message format

S14F3

1. L[4]

1. A[0..80] // OBJSPEC

2. A[1..80] // ObjType

3. L[0..1024] // ObjID list

1. A[1..80] // ObjID

⋮

4. L[0..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

⋮

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this object service.

2. 'S14F4: SetAttr Data' is sent to the host.


3. When changing the attribute value of the target object, a control CPU is notified of the change.

- Substrate object: '10090-01003: SetAttr service (Substrate) notification'
- Substrate location object: '10090-01013: SetAttr service (SubstLoc) notification'
- Batch location object: '10090-01023: SetAttr service (BatchLoc) notification'

Other objects do not have attributes that can be changed by the host; therefore, the control CPU is not notified of anything.

Parameters








○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	—	○	Can be omitted (zero length). Ignored even if provided.	None	—
ObjType	○	—	ObjType of the target object*1 <ul style="list-style-type: none"> • "Carrier" • "LoadPort" • "Location" • "InternalBuffer" • "Substrate" • "SubstLoc" • "BatchLoc" For the target GEM300-related objects, refer to the following:  Page 32 GEM300-Related Object List	Yes	6: Unknown (When omitted, 'S9F7: Illegal Data' is returned.)
ObjID list	—	○	Up to 1024 ObjIDs can be specified. When specifying '0', all objects of the target ObjType are targeted.	Yes	3: Unknown
AttrSetting list	○	—	An attribute of the target object. It can be changed when the access from host is the 'Read Write' attribute.	Yes	<ul style="list-style-type: none"> • 13: Omitted • 4: Attribute name unknown • 5: Read only • 7: Invalid value

*1 Note that characters are case-sensitive.

Attribute setting

Refer to the following:

-  Page 33 Load port object
-  Page 35 Location object
-  Page 36 Internal buffer object
-  Page 38 Carrier Objects
-  Page 82 Substrate Objects
-  Page 85 Substrate Location Objects
-  Page 86 Batch Location Objects

Other error judgment

None

S14F4: SetAttr Data

Message format

S14F4

- 1. L[2]
 - 1. L[0..1024] // ObjSetting list
 - 1. L[2]
 - 1. A[1..80] // ObjID
 - 2. L[1..256] // AttrID list
 - 1. L[2]
 - 1. A[1..80] // AttrID
 - 2. any // AttrData
 - ⋮
 - ⋮
 - ⋮
 - 2. L[2] // ObjStatus
 - 1. U1[1] // OBJACK
 - 2. L[0..256] // Status
 - 1. L[2]
 - 1. U2[1] // ErrorCode
 - 2. A[1..120] // ErrorText
 - ⋮

Processing during automatic response

'S14F4: SetAttr Data' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandator y (Required)	Conditional (Required under specific conditions)	Supplement
ObjSetting	○	—	An attribute of an object set by using SetAttr Request (When nothing can be acquired: LIST[0])
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Refer to the following:

- 📖 Page 33 Load port object
- 📖 Page 35 Location object
- 📖 Page 36 Internal buffer object
- 📖 Page 38 Carrier Objects
- 📖 Page 82 Substrate Objects
- 📖 Page 85 Substrate Location Objects
- 📖 Page 86 Batch Location Objects

A

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	3	Unknown object instance	The object instance is unknown.
	4	Unknown attribute name	The attribute name is unknown.
	5	Read-only attribute - access denied	The attribute is read-only, and access is denied.
	6	Unknown object type	The object type is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.

Point

If an error with the same ErrorCode occurs multiple times, it is reported only once.

Example when errors (ErrorCode 3, 4, and 5) occur

S14F3

1. L[4]

1. <OBJSPEC>

2. <OBJTYPE> "SubstLoc"

3. L[3]

1. <OBJID> "SubstLoc_1"

2. <OBJID> "SubstLoc_2"

3. <OBJID> "Carrier_01" ← Specification error: ObjID that does not exist in "SubstLoc"

4. L[3]

1. L[2]

1. <ATTRID> "DisableEvents"

2. <ATTRDATA> true

2. L[2]

1. <ATTRID> "SubstLocState" ← Specification error: Read Only attribute

2. <ATTRDATA> 1

3. L[2]

1. <ATTRID> "Usage" ← Specification error: AttrID that does not exist in "SubstLoc"

2. <ATTRDATA> "TEST"

S14F4

1. L[2]

1. L[3]

1. L[3]

1. <OBJID> "SubstLoc_1"

2. L[2] ←L[2] instead of L[3] because a non-existent AttrID is discarded

1. L[2]

1. <ATTRID> "DisableEvents"

2. <ATTRDATA> true

2. L[2]

1. <ATTRID> "SubstLocState" ←Read Only attribute

2. <ATTRDATA> 0 ←Current value because the change is unavailable

--- Non-existent AttrID "Usage" is discarded. ---

2. L[2]

1. <OBJID> "SubstLoc_2"

2. L[2] ←L[2] instead of L[3] because a non-existent AttrID is discarded

1. L[2]

1. <ATTRID> "DisableEvents"

2. <ATTRDATA> true

2. L[2]

1. <ATTRID> "SubstLocState" ←Read Only attribute

2. <ATTRDATA> 0 ←Current value because the change is unavailable

--- Non-existent AttrID "Usage" is discarded. ---

3. L[2]

1. <OBJID> "Carrier_01" ←OBJID that does not exist in "SubstLoc"

2. L[0] ←L[0] because "Carrier_01" is not found

2. L[2]

1. <OBJACK> 1 (error)

2. L[2]

1. L[2]

1. <ERRCODE> 5 ←Error for a Read Only attribute

2. <ERRTEXT> "Read-only attribute - access denied"

2. L[2]

1. <ERRCODE> 4 ←Error for a non-existent AttrID

2. <ERRTEXT> "Unknown attribute name"

3. L[2]

1. <ERRCODE> 3 ←Error for a non-existent ObjID

2. <ERRTEXT> "Unknown object Instance"

A

S14F5: GetType Request

Message format

S14F5

1. A[0..80] // OBJSPEC

Processing during automatic response

- 1. Errors in parameters are determined.
Refer to 'Parameter' for this object service.
- 2. 'S14F6: GetType Data' is sent to the host.

Parameter

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	—	○	Can be omitted (zero length). Ignored even if provided.	None	—

Attribute setting

None

Other error judgment

None

S14F6: GetType Data

Message format

S14F6

- 1. L[2]
 - 1. L[0..16] // ObjType list
 - 1. A[1..80] // ObjType
 - :
 - 2. L[2] // ObjStatus
 - 1. U1[1] // ObjAck
 - 2. L[0..256] // Status
 - 1. L[2]
 - 1. U2[1] // ErrorCode
 - 2. A[1..120] // ErrorText
 - :

Processing during automatic response

'S14F6: GetType Data' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
ObjType list	○	—	ObjTypes of objects owned by SECS/GEM communication software
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.



If an error with the same ErrorCode occurs multiple times, it is reported only once.

A

S14F7: GetAttrName Request

Message format

S14F7

- 1. L[2]
 - 1. A[0..80] // OBJSPEC
 - 2. L[0..16] // ObjType list
 - 1. A[1..80] // ObjType
 - ⋮

Processing during automatic response

- 1.** Errors in parameters are determined.
Refer to 'Parameters' for this object service.
- 2.** 'S14F8: GetAttrName Data' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandator y (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	—	○	Can be omitted (zero length). Ignored even if provided.	None	—
ObjType list	○	—	Can be omitted (zero list). If it is omitted, all ObjTypes are targeted.	Yes	6: Unknown (N/A)

Attribute setting

None

Other error judgment

None

S14F8: GetAttrName Data

Message format

S14F8

1. L[2]

1. L[0..16] // ObjType list

1. L[2]

1. A[1..80] // ObjType

2. L[0..256] // AttrName list

1. A[1..80] // AttrName

:

:

2. L[2] // ObjStatus

1. U1[1] // ObjAck

2. L[0..256] // Status

1. L[2]

1. U2[1] // ErrorCode

2. A[1..120] // ErrorText

:

Processing during automatic response

'S14F8: GetAttrName Data' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
AttrName list	○	—	AttrName for each target object
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	6	Unknown object type	The object type is unknown.
	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.



If an error with the same ErrorCode occurs multiple times, it is reported only once.

A

Example when an error (ErrorCode 6) occurs

S14F7

1. L[2]
 1. <OBJSPEC>
2. L[3]
 1. <OBJTYPE> "SubstLoc"
 2. <OBJTYPE> "BatchLoc"
 3. <OBJTYPE> "Dummy" ←Specification error: "Dummy" is a non-existent ObjType.

S14F8

1. L[2]
 1. L[3]
 1. L[2]
 1. <OBJTYPE> "SubstLoc"
 2. L[5]
 1. <ATTRID> "ObjType"
 2. <ATTRID> "ObjID"
 3. <ATTRID> "SubstID"
 4. <ATTRID> "SubstLocState"
 5. <ATTRID> "DisableEvents"
 2. L[2]
 1. <OBJTYPE> "BatchLoc"
 2. L[5]
 1. <ATTRID> "ObjType"
 2. <ATTRID> "ObjID"
 3. <ATTRID> "BatchSubstIDMap"
 4. <ATTRID> "BatchLocState"
 5. <ATTRID> "DisableEvents"
 3. L[2]
 1. <OBJTYPE> "Dummy"
 2. L[0] ←L[0] because it is a non-existent ObjType
 2. L[2]
 1. <OBJACK> 1 (error)
 2. L[1]
 1. L[2]
 1. <ERRCODE> 6 ←Error for a non-existent ObjType
 2. <ERRTEXT> "Unknown object type"

S14F9 : Create Object Request

Message format

S14F9

1. L[3]

1. A[0..80] // OBJSPEC

2. A[1..80] // ObjType

3. L[0..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

:

■Substrate object (register substrate)

Message format

S14F9

1. L[3]

1. A[0..80] // OBJSPEC

2. A[9] // ObjType "Substrate"

3. L[1..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

:

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this object service.

2. When all of the following conditions are satisfied, a substrate object is created.

- The maximum number of substrate objects that can be created has not been reached.

- ObjType and ObjID are provided.

- SubstLocID, or BatchLocID and SubstPosInBatch are provided.

(Refer to 'Other error judgment'.)

- There is no error in parameters and attributes.

3. 'S14F10: Create Object Acknowledge' is sent to the host.

4. When a substrate object is created, '10090-01001: Create service (Register substrate service) notification' is sent to a control CPU.

A

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	○	—	Can be omitted (zero length). Ignored even if provided.	None	—
ObjType	○	—	"Substrate"*1	Yes	<ul style="list-style-type: none"> • 6: Unknown • 14: Not targeted for Create • 17: Creation limit exceeded (When omitted, 'S9F7: Illegal Data' is returned.)
AttrSetting list	—	○	An attribute of a substrate object	Yes	<ul style="list-style-type: none"> • 13: Omitted • 4: Attribute name unknown • Refer to 'Attribute setting.'

*1 Note that characters are case-sensitive.

Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	—	Not required. Ignored even if provided.	None	—	"Substrate"
ObjID	○	—	—	ObjID is treated as a parameter because it is required.	Yes	<ul style="list-style-type: none"> • 13: Omitted • 11: ID duplication • 12: Other than ASCII*1 	—
SubstState	—	○	—	—	Yes	7: Out of applicable range	0: AT SOURCE
SubstProcState	—	○	—	—	Yes	7: Out of applicable range	0: NEEDS PROCESSING
SubstLocID	—	—	○	Required when instantiating a substrate object on a substrate location.	Yes	<ul style="list-style-type: none"> • 7: Other than ASCII*1 • Refer to 'Other error judgment.' 	(Null character)
SubstSource	—	○	—	—	Yes	7: Other than ASCII*1	(Null character)
SubstDestination	—	○	—	—	Yes	7: Other than ASCII*1	(Null character)
SubstHistory	—	○	—	Timeln and TimeOut are ignored even if provided.	Yes	7: Non-ASCII*1 History ID	LIST[0]
BatchLocID	—	—	○	Required when instantiating a substrate object on a batch location.	Yes	<ul style="list-style-type: none"> • 7: Other than ASCII*1 • Refer to 'Other error judgment.' 	(Null character)
SubstPosInBatch	—	—	○	Required when instantiating a substrate object on a batch location.	Yes	<ul style="list-style-type: none"> • 7: Other than ASCII*1 • Refer to 'Other error judgment.' 	(Null character)

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
SubstIDStatus	—	—	—	—	Yes	7: Out of applicable range	0: NOT CONFIRMED
AcquiredID	—	—	—	—	Yes	7: Other than ASCII* ¹	(Null character)
LotID	—	○	—	—	Yes	7: Other than ASCII* ¹	(Null character)
MaterialStatus	—	○	—	—	None	—	0
SubstType	—	○	—	—	None	—	0: WAFER
SubstUsage	—	○	—	—	None	—	0: PRODUCT

*¹ Excluding the control characters.

For the attributes of a substrate object, refer to the following:

 Page 82 Substrate Objects

Other error judgment

Combinations of Conditional attributes: SubstLocID, BatchLocID, and SubstPosInBatch

○: Provided, —: Not provided

SubstLocID	BatchLocID	SubstPosInBatch	Judgment result	Error code
○	—	—	OK	—
○	○	○	NG	12
○	○	—	NG	12
○	—	○	NG	12
—	○	○	OK	—
—	○	—	NG	13
—	—	○	NG	13
—	—	—	NG	13

S14F10: Create Object Acknowledge

Message format

S14F10

1. L[3]

1. A[0..80] // OBJSPEC

2. L[0..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

:

3. L[2] // ObjStatus

1. U1[1] // ObjAck

2. L[0..256] // Status

1. L[2]

1. U2[1] // ErrorCode

2. A[1..120] // ErrorText

:

Processing during automatic response

'S14F10: Create Object Acknowledge' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
OBJSPEC	○	—	ObjID of the Created object is returned. (If Create fails, it will be a zero-length item.)
AttrSetting list	—	○	All attributes of the Created object (If Create fails, it will be LIST[0].)
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	4	Unknown attribute name	The attribute name is unknown.
	6	Unknown object type	The object type is unknown.
	7	Invalid attribute value	The attribute value is invalid.
	11	Object identifier in use	The object identifier is in use.
	12	Parameters improperly specified	Parameters are not properly specified.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
	14	Unsupported option requested	The requested option is not supported.
	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.



If an error with the same ErrorCode occurs multiple times, it is reported only once.

S14F11: Delete Object Request

Message format

S14F11

1. L[2]

1. A[0..80] // OBJSPEC

2. L[0..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

⋮

Processing during automatic response

1. Errors in parameters and attributes are determined.

Refer to 'Parameters' and 'Attribute setting' for this carrier action.

2. An object that matches the provided ObjType and ObjID is deleted.

The format that can be provided is as follows:

Example) When ObjType is "Substrate" and ObjID is "SubstID_001"

- Format 1: ObjType and ObjID are provided in the AttrSetting list.

S14F11

1. L[2]

1. A[0] *Not specified

2. L[2]

1. L[2]

1. A[7] "ObjType"

2. A[9] "Substrate"

2. L,2

1. A[5] "ObjID"

2. A[11] "SubstID_001"

- Format 2: Only ObjID is provided in the AttrSetting list.

S14F11

1. L[2]

1. A[0] *Not specified

2. L[1]

1. L[2]

1. A[5] "ObjID"

2. A[11] "SubstID_001"

For format 2, ObjID must be unique in all ObjTypes to be Deleted.

Point

Only one object can be deleted per request.

When multiple ObjTypes and ObjIDs are provided, each one of them that appears first is targeted and those that appear later are ignored.

3. 'S14F12: Delete Object Acknowledge' is sent to the host.

4. When an object is deleted, the deletion notification is sent to a control CPU.

When a substrate object is deleted, '10090-01002: Delete service (Remove substrate service) notification' is sent to the control CPU.

A

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition
OBJSPEC	○	—	Can be omitted (zero length). Ignored even if provided.	None	—
AttrSetting list	—	○	Ignored if it is not ObjType or ObjID.	Yes	• 4: Attribute name unknown • Refer to 'Attribute setting.'

Attribute setting

○: Applicable, —: Not applicable

Attribute	Mandatory (Required)	Optional (Depending on equipment)	Conditional (Required under specific conditions)	Supplement	Error judgment presence	Error code and error judgment condition	Initial value
ObjType	—	—	○	Can be omitted.	Yes	• 6: Unknown • 14: Not targeted for Delete	—
ObjID	○	—	—	—	Yes	• 13: Omitted • 14: Not targeted for Delete • 3: Unknown • 6: Multiple ObjIDs (ObjType cannot be identified.)	—

Other error judgment

None

S14F12: Delete Object Acknowledge

Message format

S14F12

1. L[2]

1. L[0..256] // AttrSetting list

1. L[2]

1. A[1..80] // AttrID

2. any // AttrData

:

2. L[2] // ObjStatus

1. U1[1] // ObjAck

2. L[0..256] // Status

1. L[2]

1. U2[1] // ErrorCode

2. A[1..120] // ErrorText

:

Processing during automatic response

'S14F12: Delete Object Acknowledge' is sent to the host.

Parameters

○: Applicable, —: Not applicable

Name	Mandatory (Required)	Conditional (Required under specific conditions)	Supplement
AttrSetting list	—	○	All attributes of the Deleted object (If Delete fails: LIST[0])
ObjStatus	○	—	Refer to 'Combinations of ObjStatus.'

Combinations of ObjStatus

ObjAck	ErrorCode	ErrorText	Supplement
0: Execution completed	—	—	—
1: Error	3	Unknown object instance	The object instance is unknown.
	4	Unknown attribute name	The attribute name is unknown.
	6	Unknown object type	The object type is unknown.
	13	Insufficient parameters specified	Not all parameters that need to be specified are specified.
	14	Unsupported option requested	The requested option is not supported.
	17	Command not valid for current state	The command is invalid for the current status.
	32770	Action failed due to errors	The action failed due to errors.



If an error with the same ErrorCode occurs multiple times, it is reported only once.

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Appendix 5 CMS Reports

This section shows the CMS report list.

RPTID	Report name	Used variable
300	CMS_CarrierIDStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30047: CarrierIDStatus
301	CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
302	CMS_SlotMapStatusChange_1	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30013: CarrierAccessingStatus • VID 30123: SlotMapStatus
303	CMS_SlotMapStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30122: SlotMap (When the variable is enabled) • VID 30121: Reason • VID 30123: SlotMapStatus
304	CMS_SlotMapStatusChange_3	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30123: SlotMapStatus
305	CMS_CarrierAccessingStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30013: CarrierAccessingStatus
306	CMS_CarrierAccessingStatusChange_2	VID 30014: CarrierID
310	CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
311	CMS_PortTransferStateChange_2	VID 30098: PortID
312	CMS_PortTransferStateChange_3	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30113: PortTransferState
313	CMS_LoadPortReservationStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30082: LoadPortReservationState • VID 30014: CarrierID
314	CMS_LoadPortReservationStateChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30082: LoadPortReservationState
315	CMS_PortAssociationStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30090: PortAssociationState
316	CMS_PortAssociationStateChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30090: PortAssociationState
317	CMS_BufferCapacityChanged	VID 30158: BufferPartitionInfo
318	CMS_Carrier_Open_Close_Clampe_Unclamepe	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30049: LocationID • VID 30098: PortID (When the variable is enabled)
319	CMS_CarrierLocationChange	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30049: LocationID • VID 30048: CarrierLocationMatrix
320	CMS_PortAccessModeChange	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30000: AccessMode

Appendix 6 CMS Events

This section shows the CMS event list.

'Carrier State Model' state transition events

CEID	Event name	Trigger	Linked report	Used variable
30000	NO STATE to ID NOT READ	Carrier State Model state transition No.(2)	RPTID 300: CMS_CarrierIDStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30001	NO STATE to WAITING FOR HOST	Carrier State Model state transition No.(3)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30002	NO STATE to ID VERIFICATION OK	Carrier State Model state transition No.(4)* ¹	RPTID 300: CMS_CarrierIDStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30003	NO STATE to ID VERIFICATION FAIL	Carrier State Model state transition No.(5)* ¹	RPTID 300: CMS_CarrierIDStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30004	ID NOT READ to ID VERIFICATION OK	Carrier State Model state transition No.(6)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30005	ID NOT READ to WAITING FOR HOST	Carrier State Model state transition No.(7)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30006	WAITING FOR HOST to ID VERIFICATION OK	Carrier State Model state transition No.(8)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30007	WAITING FOR HOST to ID VERIFICATION FAIL	Carrier State Model state transition No.(9)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30008	ID NOT READ to WAITING FOR HOST	Carrier State Model state transition No.(10)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30009	ID NOT READ to ID VERIFICATION OK	Carrier State Model state transition No.(11)* ¹	RPTID 301: CMS_CarrierIDStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30047: CarrierIDStatus
30010	SLOT MAP NOT READ to SLOT MAP VERIFICATION OK	Carrier State Model state transition No.(13)* ¹	RPTID 302: CMS_SlotMapStatusChange_1	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30013: CarrierAccessingStatus • VID 30123: SlotMapStatus
30011	SLOT MAP NOT READ to WAITING FOR HOST	Carrier State Model state transition No.(14)* ¹	RPTID 303: CMS_SlotMapStatusChange_2	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30122: SlotMap (When the variable is enabled) • VID 30121: Reason • VID 30123: SlotMapStatus
30012	WAITING FOR HOST to SLOT MAP VERIFICATION OK	Carrier State Model state transition No.(15)* ¹	RPTID 304: CMS_SlotMapStatusChange_3	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30123: SlotMapStatus
30013	WAITING FOR HOST to SLOT MAP VERIFICATION FAIL	Carrier State Model state transition No.(16)* ¹	RPTID 302: CMS_SlotMapStatusChange_1	<ul style="list-style-type: none"> • VID 30098: PortID (When the variable is enabled) • VID 30014: CarrierID • VID 30049: LocationID • VID 30013: CarrierAccessingStatus • VID 30123: SlotMapStatus
30014	NOT ACCESSED to IN ACCESS	Carrier State Model state transition No.(18)* ¹	RPTID 305: CMS_CarrierAccessingStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30013: CarrierAccessingStatus

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CEID	Event name	Trigger	Linked report	Used variable
30015	IN ACCESS to CARRIER COMPLETE	Carrier State Model state transition No.(19)*1	RPTID 305: CMS_CarrierAccessingStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30013: CarrierAccessingStatus
30016	IN ACCESS to CARRIER STOPPED	Carrier State Model state transition No.(20)*1	RPTID 305: CMS_CarrierAccessingStatusChange_1	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30013: CarrierAccessingStatus
30017	CARRIER to NO STATE	Carrier State Model state transition No.(21)	RPTID 306: CMS_CarrierAccessingStatusChange_2	VID 30014: CarrierID

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

'Load Port Transfer State Model' state transition events

CEID	Event name	Trigger	Linked report	Used variable
30025	NO STATE to OUT OF SERVICE	Load Port Transfer State Model state transition No.(1)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30026	NO STATE to IN SERVICE	Load Port Transfer State Model state transition No.(1)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30027	OUT OF SERVICE to IN SERVICE	Load Port Transfer State Model state transition No.(2)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30028	IN SERVICE to OUT OF SERVICE	Load Port Transfer State Model state transition No.(3)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30029	IN SERVICE to TRANSFER READY	Load Port Transfer State Model state transition No.(4)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30030	IN SERVICE to TRANSFER BLOCKED	Load Port Transfer State Model state transition No.(4)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30031	TRANSFER READY to READY TO LOAD	Load Port Transfer State Model state transition No.(5)	RPTID 311: CMS_PortTransferStateChange_2	VID 30098: PortID
30032	TRANSFER READY to READY TO UNLOAD	Load Port Transfer State Model state transition No.(5)	RPTID 312: CMS_PortTransferStateChange_3	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30113: PortTransferState
30033	READY TO LOAD to TRANSFER BLOCKED	Load Port Transfer State Model state transition No.(6)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30034	READY TO UNLOAD to TRANSFER BLOCKED	Load Port Transfer State Model state transition No.(7)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30035	TRANSFER BLOCKED to READY TO LOAD	Load Port Transfer State Model state transition No.(8)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState
30036	TRANSFER BLOCKED to READY TO UNLOAD	Load Port Transfer State Model state transition No.(9)	RPTID 312: CMS_PortTransferStateChange_3	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30113: PortTransferState
30037	TRANSFER BLOCKED to TRANSFER READY	Load Port Transfer State Model state transition No.(10)	RPTID 310: CMS_PortTransferStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30113: PortTransferState

'Load Port Reservation State Model (internal buffer equipment/ fixed buffer equipment)' state transition events

CEID	Event name	Trigger	Linked report	Used variable
30038	NOT RESERVED to RESERVED	Load Port Reservation State Model state transition No.(2)	RPTID 313: CMS_LoadPortReservationStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30082: LoadPortReservationState • VID 30014: CarrierID
30039	RESERVED to NOT RESERVED	Load Port Reservation State Model state transition No.(3)	RPTID 314: CMS_LoadPortReservationStateChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30082: LoadPortReservationState

'Load Port/Carrier Association State Model' state transition events

CEID	Event name	Trigger	Linked report	Used variable
30040	NOT ASSOCIATED to ASSOCIATED	Load Port/Carrier Association State Model state transition No.(2)	RPTID 315: CMS_PortAssociationStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30090: PortAssociationState
30041	ASSOCIATED to NOT ASSOCIATED	Load Port/Carrier Association State Model state transition No.(3)	RPTID 316: CMS_PortAssociationStateChange_2	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30090: PortAssociationState
30042	ASSOCIATED to ASSOCIATED	Load Port/Carrier Association State Model state transition No.(4)* ¹	RPTID 315: CMS_PortAssociationStateChange_1	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30014: CarrierID • VID 30090: PortAssociationState

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

'Access Mode State Model' state transition events

CEID	Event name	Trigger	Linked report	Used variable
30043	NO STATE to MANUAL	Access Mode State Model state transition No.(1)* ¹	RPTID 320: CMS_PortAccessModeChange	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30000: AccessMode
30044	NO STATE to AUTO	Access Mode State Model state transition No.(1)	RPTID 320: CMS_PortAccessModeChange	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30000: AccessMode
30045	MANUAL to AUTO	Access Mode State Model state transition No.(2)* ¹	RPTID 320: CMS_PortAccessModeChange	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30000: AccessMode
30046	AUTO to MANUAL	Access Mode State Model state transition No.(3)* ¹	RPTID 320: CMS_PortAccessModeChange	<ul style="list-style-type: none"> • VID 30098: PortID • VID 30000: AccessMode

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

Additional events

CEID	Event name	Trigger	Linked report	Used variable	Description
30047	Buffer Capacity Changed Event	'00087-00404: Buffer Capacity changed notification' is received from a control CPU.	RPTID 317: CMS_BufferCapacityChanged	VID 30158: BufferPartitionInfo	An event in which equipment reports that 'the buffer capacity has changed'

CEID	Event name	Trigger	Linked report	Used variable	Description
30048	Carrier Approaching Complete Event	'00087-00312: Carrier approaching complete notification' is received from a control CPU.	RPTID 306: CMS_CarrierAccessingStatusChange_2	VID 30014: CarrierID	An event in which equipment reports that 'the completion of accessing a carrier is approaching'
30049	Carrier Clamped Event	'00087-00307: Carrier clamped notification' is received from a control CPU.	RPTID 318: CMS_Carrier_Open_Close_Clamped_Unclamped	<ul style="list-style-type: none"> • VID 30014: CarrierID (When the variable is enabled) • VID 30049: LocationID • VID 30098: PortID 	An event in which equipment reports that 'a carrier has been clamped'
30050	Carrier Closed Event	'00087-00310: Carrier closed notification' is received from a control CPU.	RPTID 318: CMS_Carrier_Open_Close_Clamped_Unclamped	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30049: LocationID • VID 30098: PortID (When the variable is enabled) 	An event in which equipment reports that 'the door of a carrier has been closed'
30051	Carrier Location Change Event	'00087-00403: Carrier Location change notification' is received from a control CPU.	RPTID 319: CMS_CarrierLocationChange	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30049: LocationID • VID 30048: CarrierLocationMatrix 	An event in which equipment reports that 'the location of a carrier has changed'
30052	Carrier Opened Event	'00087-00309: Carrier opened notification' is received from a control CPU.	RPTID 318: CMS_Carrier_Open_Close_Clamped_Unclamped	<ul style="list-style-type: none"> • VID 30014: CarrierID • VID 30049: LocationID • VID 30098: PortID (When the variable is enabled) 	An event in which equipment reports that 'the door of a carrier has been opened'
30053	Carrier Unclamped Event	'00087-00308: Carrier unclamped notification' is received from a control CPU.	RPTID 318: CMS_Carrier_Open_Close_Clamped_Unclamped	<ul style="list-style-type: none"> • VID 30014: CarrierID (When the variable is enabled) • VID 30049: LocationID • VID 30098: PortID 	An event in which equipment reports that 'a carrier has been unclamped'
30054	CarrierID Read FailEvent	'00087-00502: CarrierID read fail notification' is received from a control CPU.	RPTID 311: CMS_PortTransferStateChange_2	VID 30098: PortID	An event in which equipment reports that 'CarrierID reading has failed for a carrier in a load port in the NOT ASSOCIATED STATE'
30055	ID Reader Available Event	'00087-00203: ID READER available notification' is received from a control CPU.	RPTID 311: CMS_PortTransferStateChange_2	VID 30098: PortID	An event in which equipment reports that 'the preparation of a carrier ID reader has been completed'
30056	ID Reader Unavailable Event	'00087-00204: ID READER unavailable notification' is received from a control CPU.	RPTID 311: CMS_PortTransferStateChange_2	VID 30098: PortID	An event in which equipment reports that 'a carrier ID reader can no longer be used'

CEID	Event name	Trigger	Linked report	Used variable	Description
30057	UnknownCarrierID Event	'00087-00503: Unknown CarrierID notification' is received from a control CPU.	RPTID 311: CMS_PortTransferStateChange_2	VID 30098: PortID	An event in which equipment reports that 'a carrier has arrived at a load port in the NOT ASSOCIATED state for which a carrier ID reader is not available'
30058	Duplicate CarrierID In Process Event	'00087-00504: Duplicate CarrierID in process notification' is received from a control CPU.	RPTID 306: CMS_CarrierAccessingStatusChange_2	VID 30014: CarrierID	An event in which equipment reports that 'CarrierID of a received carrier is the same as CarrierID of another carrier for which processing has started'

Appendix 7 STS Reports

This section shows the STS report list.

RPTID	Report name	Used variable
321	STS_SubstrateStateChange	<ul style="list-style-type: none">• VID 31000: AcquiredID• VID 31001: SubstID• VID 31002: SubstIDStatus• VID 31003: SubstBatchLocID• VID 31004: SubstDestination• VID 31005: SubstHistory• VID 31006: SubstSubstLocID• VID 31007: SubstLotID• VID 31008: SubstMtrlStatus• VID 31009: SubstPosInBatch• VID 31010: SubstProcState• VID 31011: SubstSource• VID 31012: SubstState• VID 31013: SubstType• VID 31014: SubstUsage
322	STS_SubstrateLocationStateChange	<ul style="list-style-type: none">• VID 31031: SubstLocID• VID 31032: SubstLocState• VID 31033: SubstLocSubstID
323	STS_BatchLocationStateChange	<ul style="list-style-type: none">• VID 31034: BatchLocID• VID 31035: BatchLocState• VID 31036: BatchSubstIDMap

Appendix 8 STS Events

This section shows the STS event list.

CEID	Event name	Trigger	Linked report	Used variable
30059	NO STATE to AT SOURCE	Relay request	RPTID 321: STS_SubstrateStateChange	<ul style="list-style-type: none"> • VID 31000: AcquiredID • VID 31001: SubstID • VID 31002: SubstIDStatus • VID 31003: SubstBatchLocID • VID 31004: SubstDestination • VID 31005: SubstHistory • VID 31006: SubstSubstLocID • VID 31007: SubstLotID • VID 31008: SubstMtrlStatus • VID 31009: SubstPosInBatch • VID 31010: SubstProcState • VID 31011: SubstSource • VID 31012: SubstState • VID 31013: SubstType • VID 31014: SubstUsage
30060	AT SOURCE to AT WORK			
30061	AT WORK to AT SOURCE			
30062	AT WORK to AT WORK			
30063	AT WORK to AT DESTINATION			
30064	AT DESTINATION to AT WORK			
30065	AT DESTINATION to NO STATE			
30066	AT DESTINATION to AT SOURCE			
30067	SUBSTRATE to NO STATE			
30068	NO STATE to NEEDS PROCESSING			
30069	NEEDS PROCESSING to IN PROCESS			
30070	IN PROCESS to PROCESSED			
30071	IN PROCESS to ABORTED			
30072	IN PROCESS to STOPPED			
30073	IN PROCESS to REJECTED			
30074	IN PROCESS to LOST			
30075	IN PROCESS to SKIPPED			
30076	IN PROCESS to NEEDS PROCESSING			
30077	NEEDS PROCESSING to LOST			
30078	NEEDS PROCESSING to SKIPPED			
30079	NO STATE to NOT CONFIRMED			
30080	NOT CONFIRMED to CONFIRMED			
30081	NOT CONFIRMED to WAITING FOR HOST			
30082	NOT CONFIRMED to WAITING FOR HOST			
30083	WAITING FOR HOST to CONFIRMED			
30084	WAITING FOR HOST to CONFIRMATION FAILED			
30085	UNOCCUPIED to OCCUPIED		RPTID 322: STS_SubstrateLocationStateChange	<ul style="list-style-type: none"> • VID 31031: SubstLocID • VID 31032: SubstLocState • VID 31033: SubstLocSubstID
30086	OCCUPIED to UNOCCUPIED		RPTID 323: STS_BatchLocationStateChange	<ul style="list-style-type: none"> • VID 31034: BatchLocID • VID 31035: BatchLocState • VID 31036: BatchSubstIDMap
30087	UNOCCUPIED to OCCUPIED			
30088	OCCUPIED to UNOCCUPIED		None	None
30089	SubstrateIDReaderAvailable			
30090	SubstrateIDReaderUnavailable			

Appendix 9 Sample Library

By using a structure label in the control CPU interface, data can be managed easily with a GEM300 standard support function. In this product, labels used for for GEM300 standard support functions are provided as a sample library.

The sample library is stored in the following folder of installation destination of this product.

- Storage folder: (SECS/GEM communication software installation folder)\SAMPLE\RD55UP12-V\LABEL\RD55UP12-V_GEM300.mslm

Sample library information

Item	Description
File name	RD55UP12-V_GEM300.mslm
Target module	RD55UP12-V-BZ15 (GEM300)
Target engineering tool	GX Works3
Type	Sample
Latest version	00A

Procedure to use the library

1. Register a library in GX Works3.
2. Utilize elements from a library to projects.

Registering user libraries in the library list

Register a library containing elements to be utilized in the list.

Operating procedure

■Registering a library to be referenced

1. Select [Project] ⇒ [Library Operation] ⇒ [Register to Library List] ⇒ [Library].
2. Select a file in the "Register Library to Library List" screen, then click the [Open] button.

■Deleting a library

1. Select the [Library] tab in the element selection window.
2. Select the library to be deleted, then select [Project] ⇒ [Library Operation] ⇒ [Delete from Library List].

Utilizing an element

Library elements registered in the element selection window can be utilized in other projects.

Operating procedure

1. Select an element (global label) in the [Library] tab in the element selection window.
 2. Drag and drop the selected element (global label) onto an element (global label) in the navigation window.
- An element can be dropped onto the place in which data of the same type as the element to be pasted can be created.

Labels

The following shows labels used in a sample library.

Global label list

The following table shows the global labels used in the control CPU interface.

■M+GEM300_BufferMemory



The buffer memory of RD55UP12-V (the start I/O number is '000h') is assigned to each global label.

Label name	Data type	Class	Comment	Assignment (device/label)
G_bCIMREADY	Bit	VAR_GLOBAL	[CA-SECS status]-[CIM control READY]	U0\G16384.0
G_bCONNECT	Bit	VAR_GLOBAL	[CA-SECS status]-[HSMS line communication status]	U0\G16384.1
G_bCONNECT_RETRY	Bit	VAR_GLOBAL	[CA-SECS status]-[HSMS reconnection retry]	U0\G16384.2
G_bCommunication	Bit	VAR_GLOBAL	[CA-SECS status]-[GEM communication establishment status]	U0\G16384.3
G_bONLINE	Bit	VAR_GLOBAL	[CA-SECS status]-[GEM online status]	U0\G16384.4
G_bGEM300	Bit	VAR_GLOBAL	[CA-SECS status]-[GEM300 status]	U0\G16384.5
G_bQUEUE_FULL_1	Bit	VAR_GLOBAL	[CA-SECS status]-[Transaction queue full for PLC Transmission]	U0\G16384.6
G_bQUEUE_FULL_2	Bit	VAR_GLOBAL	[CA-SECS status]-[Queue full of control CPU interfaces for CPU to CITL]	U0\G16384.7
G_bQUEUE_FULL_3	Bit	VAR_GLOBAL	[CA-SECS status]-[Queue full of control CPU interfaces for CITL to CPU]	U0\G16384.8
G_bSDcard_ERROR	Bit	VAR_GLOBAL	[CA-SECS error-detected information]-[SD memory card file access error detection]	U0\G16385.1
G_bGEM300IF_W_ERRO R_1	Bit	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Information type error detection]	U0\G20432.0
G_bGEM300IF_W_ERRO R_2	Bit	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Detail type error detection]	U0\G20432.1
G_bGEM300IF_W_ERRO R_3	Bit	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Data size error detection]	U0\G20432.2
G_wGEM300IF_W_ERRO R_INFO	Word [Signed]	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Information type with error]	U0\G20433
G_wGEM300IF_W_ERRO R_DETAIL	Word [Signed]	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Detail type with error]	U0\G20434
G_udGEM300IF_W_ERR OR_SIZE	Double Word [Unsigned]/Bit String [32-bit]	VAR_GLOBAL	[CPU to CITL I/F error-detected information]-[Data size with error]	U0\G20435
G_bGEM300IF_R_HS_CI TL_USE	Bit	VAR_GLOBAL	[CITL to CPU I/F: Write status flag]-[In-use flag]	U0\G20448.0
G_bGEM300IF_R_HS_CI TL_WROTE	Bit	VAR_GLOBAL	[CITL to CPU I/F: Write status flag]-[Write completion flag]	U0\G20448.1
G_bGEM300IF_R_HS_CP U_USE	Bit	VAR_GLOBAL	[CITL to CPU I/F: Read status flag]-[In-use flag]	U0\G20449.0
G_bGEM300IF_R_HS_CP U_READ	Bit	VAR_GLOBAL	[CITL to CPU I/F: Read status flag]-[Read completion flag]	U0\G20449.1
G_wGEM300IF_R_INFO	Word [Signed]	VAR_GLOBAL	[CITL to CPU I/F: Information type]-[Information type]	U0\G20450
G_wGEM300IF_R_DETAI L	Word [Signed]	VAR_GLOBAL	[CITL to CPU I/F: Detail type]-[Detail type]	U0\G20451
G_udGEM300IF_R_DATA	Double Word [Unsigned]/Bit String [32-bit]	VAR_GLOBAL	[CITL to CPU I/F: Start address of data area]-[Start address]	U0\G20452
G_dGEM300IF_R_SIZE	Double Word [Unsigned]	VAR_GLOBAL	[CITL to CPU I/F: Data size of data area]-[Data size]	U0\G20454
G_bGEM300IF_W_HS_C PU_USE	Bit	VAR_GLOBAL	[CPU to CITL I/F: Write status flag]-[In-use flag]	U0\G20464.0

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Label name	Data type	Class	Comment	Assignment (device/label)
G_bGEM300IF_W_HS_C PU_WROTE	Bit	VAR_GLOBAL	[CPU to CITL I/F: Write status flag]-[Write completion flag]	U0\G20464.1
G_bGEM300IF_W_HS_CI TL_USE	Bit	VAR_GLOBAL	[CPU to CITL I/F: Read status flag]-[In-use flag]	U0\G20465.0
G_bGEM300IF_W_HS_CI TL_READ	Bit	VAR_GLOBAL	[CPU to CITL I/F: Read status flag]-[Read completion flag]	U0\G20465.1
G_wGEM300IF_W_INFO	Word [Signed]	VAR_GLOBAL	[CPU to CITL I/F: Information type]-[Information type]	U0\G20466
G_wGEM300IF_W_DETAL	Word [Signed]	VAR_GLOBAL	[CPU to CITL I/F: Detail type]-[Detail type]	U0\G20467
G_udGEM300IF_W_DATA	Double Word [Unsigned]/Bit String [32-bit]	VAR_GLOBAL	[CPU to CITL I/F: Start address of data area]-[Start address]	U0\G20468
G_dGEM300IF_W_SIZE	Double Word [Unsigned]	VAR_GLOBAL	[CPU to CITL I/F: Data size of data area]-[Data size]	U0\G20470
G_bLP1_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)1]	U0\G24576.0
G_bLP2_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)2]	U0\G24576.1
G_bLP3_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)3]	U0\G24576.2
G_bLP4_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)4]	U0\G24576.3
G_bLP5_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)5]	U0\G24576.4
G_bLP6_AMS	Bit	VAR_GLOBAL	[Load port status: Port access mode]-[AccessMode of PortID (PTN)6]	U0\G24576.5
G_wLP1_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)1]	U0\G24577
G_wLP2_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)2]	U0\G24578
G_wLP3_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)3]	U0\G24579
G_wLP4_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)4]	U0\G24580
G_wLP5_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)5]	U0\G24581
G_wLP6_LTS	Word [Signed]	VAR_GLOBAL	[Load port status: Port transfer state]-[PortTransferState of PortID (PTN)6]	U0\G24582
G_bLP1_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)1]	U0\G24593.0
G_bLP2_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)2]	U0\G24593.1
G_bLP3_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)3]	U0\G24593.2
G_bLP4_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)4]	U0\G24593.3
G_bLP5_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)5]	U0\G24593.4
G_bLP6_LTS_SS	Bit	VAR_GLOBAL	[Load port status: Service status]-[ServiceStatus of PortID (PTN)6]	U0\G24593.5
G_bLP1_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]-[InServiceStatus of PortID (PTN)1]	U0\G24594.0
G_bLP2_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]-[InServiceStatus of PortID (PTN)2]	U0\G24594.1
G_bLP3_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]-[InServiceStatus of PortID (PTN)3]	U0\G24594.2
G_bLP4_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]-[InServiceStatus of PortID (PTN)4]	U0\G24594.3
G_bLP5_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]-[InServiceStatus of PortID (PTN)5]	U0\G24594.4

Label name	Data type	Class	Comment	Assignment (device/label)
G_bLP6_LTS_ISS	Bit	VAR_GLOBAL	[Load port status: In service status]- [InServiceStatus of PortID (PTN)6]	U0\G24594.5
G_bLP1_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)1]	U0\G24595.0
G_bLP2_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)2]	U0\G24595.1
G_bLP3_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)3]	U0\G24595.2
G_bLP4_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)4]	U0\G24595.3
G_bLP5_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)5]	U0\G24595.4
G_bLP6_LTS_TRS	Bit	VAR_GLOBAL	[Load port status: Transfer ready status]- [TransferReadyStatus of PortID (PTN)6]	U0\G24595.5
G_bLP1_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)1]	U0\G24596.0
G_bLP2_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)2]	U0\G24596.1
G_bLP3_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)3]	U0\G24596.2
G_bLP4_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)4]	U0\G24596.3
G_bLP5_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)5]	U0\G24596.4
G_bLP6_LCAS	Bit	VAR_GLOBAL	[Load port status: Port association state]- [PortAssociationState of PortID (PTN)6]	U0\G24596.5
G_bLP1_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)1]	U0\G24597.0
G_bLP2_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)2]	U0\G24597.1
G_bLP3_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)3]	U0\G24597.2
G_bLP4_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)4]	U0\G24597.3
G_bLP5_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)5]	U0\G24597.4
G_bLP6_LRS	Bit	VAR_GLOBAL	[Load port status: Port reservation state]- [LoadPortReservationState of PortID (PTN)6]	U0\G24597.5
G_wNUM_CARRIER	Word [Signed]	VAR_GLOBAL	[Carrier: Carrier object count]-[Carrier object count]	U0\G24598
G_bLP1_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)1]	U0\G24599.0
G_bLP2_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)2]	U0\G24599.1
G_bLP3_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)3]	U0\G24599.2
G_bLP4_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)4]	U0\G24599.3
G_bLP5_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)5]	U0\G24599.4
G_bLP6_IDRS	Bit	VAR_GLOBAL	[Carrier ID reader status]-[Carrier ID reader status of PortID (PTN)6]	U0\G24599.5
G_wLP1_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)1]	U0\G24832
G_wLP2_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)2]	U0\G24872
G_wLP3_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)3]	U0\G24912
G_wLP4_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)4]	U0\G24952

Label name	Data type	Class	Comment	Assignment (device/label)
G_wLP5_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)5]	U0\G24992
G_wLP6_A_CARRIERID	Word [Signed] (0..39)	VAR_GLOBAL	[Load port/carrier association state]-[CarrierID associated with PortID (PTN)6]	U0\G25032
G_wNUM_SUBST	Word [Signed]	VAR_GLOBAL	[Substrate object]-[Substrate object count]	U0\G36864
G_wNUM_SUBSTLOC	Word [Signed]	VAR_GLOBAL	[Substrate location object]-[Carrier substrate location count]	U0\G36865
G_wGEM300IF_R_AREA	Word [Signed] (0..262143)	VAR_GLOBAL	[CITL to CPU I/F: Data reading area]-[Data reading area]	U0\G1572864
G_wGEM300IF_W_AREA	Word [Signed] (0..262143)	VAR_GLOBAL	[CPU to CITL I/F: Data writing area]-[Data writing area]	U0\G1835008
G_st00000_00002	M+GEM300_00000-00002	VAR_GLOBAL	LoadPort initial request	U0\G1835008
G_st00039_00006	M+GEM300_00039-00006	VAR_GLOBAL	Get AttrName List request	U0\G1835008
G_st00039_00103	M+GEM300_00039-00103	VAR_GLOBAL	LoadPortObject SetAttr request	U0\G1835008
G_st00039_00104	M+GEM300_00039-00104	VAR_GLOBAL	LoadPortObject GetAttr request	U0\G1835008
G_st00039_00203	M+GEM300_00039-00203	VAR_GLOBAL	LocationObject SetAttr request	U0\G1835008
G_st00039_00204	M+GEM300_00039-00204	VAR_GLOBAL	LocationObject GetAttr request	U0\G1835008
G_st00039_00303	M+GEM300_00039-00303	VAR_GLOBAL	InternalBufferObject SetAttr request	U0\G1835008
G_st00039_00304	M+GEM300_00039-00304	VAR_GLOBAL	InternalBufferObject GetAttr request	U0\G1835008
G_st00087_00001	M+GEM300_00087-00001	VAR_GLOBAL	CarrierObject create request	U0\G1835008
G_st00087_00002	M+GEM300_00087-00002	VAR_GLOBAL	CarrierObject delete request	U0\G1835008
G_st00087_00003	M+GEM300_00087-00003	VAR_GLOBAL	CarrierObject SetAttr request	U0\G1835008
G_st00087_00004	M+GEM300_00087-00004	VAR_GLOBAL	CarrierObject GetAttr request	U0\G1835008
G_st00087_00101	M+GEM300_00087-00101	VAR_GLOBAL	AccessMode AUTO request	U0\G1835008
G_st00087_00102	M+GEM300_00087-00102	VAR_GLOBAL	AccessMode MANUAL request	U0\G1835008
G_st00087_00111	M+GEM300_00087-00111	VAR_GLOBAL	Load Port reservation request	U0\G1835008
G_st00087_00112	M+GEM300_00087-00112	VAR_GLOBAL	Load Port cancel reservation request	U0\G1835008
G_st00087_00201	M+GEM300_00087-00201	VAR_GLOBAL	IN SERVICE request	U0\G1835008
G_st00087_00202	M+GEM300_00087-00202	VAR_GLOBAL	OUT OF SERVICE request	U0\G1835008
G_st00087_00203	M+GEM300_00087-00203	VAR_GLOBAL	ID READER available notification	U0\G1835008
G_st00087_00204	M+GEM300_00087-00204	VAR_GLOBAL	ID READER unavailable notification	U0\G1835008
G_st00087_00301	M+GEM300_00087-00301	VAR_GLOBAL	LOAD started notification	U0\G1835008
G_st00087_00302	M+GEM300_00087-00302	VAR_GLOBAL	LOAD completed notification	U0\G1835008
G_st00087_00303	M+GEM300_00087-00303	VAR_GLOBAL	UNLOAD available notification	U0\G1835008
G_st00087_00304	M+GEM300_00087-00304	VAR_GLOBAL	UNLOAD started notification	U0\G1835008
G_st00087_00305	M+GEM300_00087-00305	VAR_GLOBAL	UNLOAD completed notification	U0\G1835008
G_st00087_00306	M+GEM300_00087-00306	VAR_GLOBAL	TRANSFER failed notification	U0\G1835008
G_st00087_00307	M+GEM300_00087-00307	VAR_GLOBAL	Carrier clamped notification	U0\G1835008
G_st00087_00308	M+GEM300_00087-00308	VAR_GLOBAL	Carrier unclamped notification	U0\G1835008
G_st00087_00309	M+GEM300_00087-00309	VAR_GLOBAL	Carrier opened notification	U0\G1835008
G_st00087_00310	M+GEM300_00087-00310	VAR_GLOBAL	Carrier closed notification	U0\G1835008
G_st00087_00311	M+GEM300_00087-00311	VAR_GLOBAL	Carrier accessing started notification	U0\G1835008
G_st00087_00312	M+GEM300_00087-00312	VAR_GLOBAL	Carrier approaching complete notification	U0\G1835008
G_st00087_00313	M+GEM300_00087-00313	VAR_GLOBAL	Carrier accessing normally finished notification	U0\G1835008
G_st00087_00314	M+GEM300_00087-00314	VAR_GLOBAL	Carrier accessing abnormally finished notification	U0\G1835008
G_st00087_00401	M+GEM300_00087-00401	VAR_GLOBAL	Load Port Carrier association request	U0\G1835008
G_st00087_00402	M+GEM300_00087-00402	VAR_GLOBAL	Load Port Carrier cancel association request	U0\G1835008
G_st00087_00403	M+GEM300_00087-00403	VAR_GLOBAL	Carrier Location change notification	U0\G1835008
G_st00087_00404	M+GEM300_00087-00404	VAR_GLOBAL	Buffer Capacity changed notification	U0\G1835008
G_st00087_00411	M+GEM300_00087-00411	VAR_GLOBAL	Carrier move started to Internal Buffer notification	U0\G1835008
G_st00087_00412	M+GEM300_00087-00412	VAR_GLOBAL	Carrier move completed to Internal Buffer notification	U0\G1835008
G_st00087_00413	M+GEM300_00087-00413	VAR_GLOBAL	Carrier move started to Load Port notification	U0\G1835008
G_st00087_00414	M+GEM300_00087-00414	VAR_GLOBAL	Carrier move completed to Load Port notification	U0\G1835008

Label name	Data type	Class	Comment	Assignment (device/label)
G_st00087_00415	M+GEM300_00087-00415	VAR_GLOBAL	UNLOAD completed and Carrier move started to Load Port notification	U0\G1835008
G_st00087_00501	M+GEM300_00087-00501	VAR_GLOBAL	CarrierID read successful notification	U0\G1835008
G_st00087_00502	M+GEM300_00087-00502	VAR_GLOBAL	CarrierID read fail notification	U0\G1835008
G_st00087_00503	M+GEM300_00087-00503	VAR_GLOBAL	Unknown CarrierID notification	U0\G1835008
G_st00087_00504	M+GEM300_00087-00504	VAR_GLOBAL	Duplicate CarrierID in process notification	U0\G1835008
G_st00087_00601	M+GEM300_00087-00601	VAR_GLOBAL	SlotMap verification ok notification	U0\G1835008
G_st00087_00602	M+GEM300_00087-00602	VAR_GLOBAL	SlotMap waiting for host verification notification	U0\G1835008
G_st00087_00603	M+GEM300_00087-00603	VAR_GLOBAL	SlotMap verification fail notification	U0\G1835008
G_st00087_00604	M+GEM300_00087-00604	VAR_GLOBAL	SlotMap read fail notification	U0\G1835008
G_st00087_00605	M+GEM300_00087-00605	VAR_GLOBAL	SlotMap abnormal substrate position notification	U0\G1835008
G_st00090_00001	M+GEM300_00090-00001	VAR_GLOBAL	SubstrateObject create request	U0\G1835008
G_st00090_00002	M+GEM300_00090-00002	VAR_GLOBAL	SubstrateObject delete request	U0\G1835008
G_st00090_00003	M+GEM300_00090-00003	VAR_GLOBAL	SubstrateObject SetAttr request	U0\G1835008
G_st00090_00004	M+GEM300_00090-00004	VAR_GLOBAL	SubstrateObject GetAttr request	U0\G1835008
G_st00090_00011	M+GEM300_00090-00011	VAR_GLOBAL	CarrierSubstLocObject create request	U0\G1835008
G_st00090_00012	M+GEM300_00090-00012	VAR_GLOBAL	CarrierSubstLocObject delete request	U0\G1835008
G_st00090_00013	M+GEM300_00090-00013	VAR_GLOBAL	SubstLocObject SetAttr request	U0\G1835008
G_st00090_00014	M+GEM300_00090-00014	VAR_GLOBAL	SubstLocObject GetAttr request	U0\G1835008
G_st00090_00023	M+GEM300_00090-00023	VAR_GLOBAL	BatchLocObject SetAttr request	U0\G1835008
G_st00090_00024	M+GEM300_00090-00024	VAR_GLOBAL	BatchLocObject GetAttr request	U0\G1835008
G_st10000_00001	M+GEM300_10000-00001	VAR_GLOBAL	GEM300 Initial acknowledge	U0\G1572864
G_st10000_00002	M+GEM300_10000-00002	VAR_GLOBAL	LoadPort initial acknowledge	U0\G1572864
G_st10039_00006	M+GEM300_10039-00006	VAR_GLOBAL	Get AttrName List acknowledge	U0\G1572864
G_st10039_00103	M+GEM300_10039-00103	VAR_GLOBAL	LoadPortObject SetAttr acknowledge	U0\G1572864
G_st10039_00104	M+GEM300_10039-00104	VAR_GLOBAL	LoadPortObject GetAttr acknowledge	U0\G1572864
G_st10039_00203	M+GEM300_10039-00203	VAR_GLOBAL	LocationObject SetAttr acknowledge	U0\G1572864
G_st10039_00204	M+GEM300_10039-00204	VAR_GLOBAL	LocationObject GetAttr acknowledge	U0\G1572864
G_st10039_00303	M+GEM300_10039-00303	VAR_GLOBAL	InternalBufferObject SetAttr acknowledge	U0\G1572864
G_st10039_00304	M+GEM300_10039-00304	VAR_GLOBAL	InternalBufferObject GetAttr acknowledge	U0\G1572864
G_st10087_00001	M+GEM300_10087-00001	VAR_GLOBAL	CarrierObject create acknowledge	U0\G1572864
G_st10087_00002	M+GEM300_10087-00002	VAR_GLOBAL	CarrierObject delete acknowledge	U0\G1572864
G_st10087_00003	M+GEM300_10087-00003	VAR_GLOBAL	CarrierObject SetAttr acknowledge	U0\G1572864
G_st10087_00004	M+GEM300_10087-00004	VAR_GLOBAL	CarrierObject GetAttr acknowledge	U0\G1572864
G_st10087_00101	M+GEM300_10087-00101	VAR_GLOBAL	AccessMode AUTO acknowledge	U0\G1572864
G_st10087_00102	M+GEM300_10087-00102	VAR_GLOBAL	AccessMode MANUAL acknowledge	U0\G1572864
G_st10087_00111	M+GEM300_10087-00111	VAR_GLOBAL	Load Port reservation acknowledge	U0\G1572864
G_st10087_00112	M+GEM300_10087-00112	VAR_GLOBAL	Load Port cancel reservation acknowledge	U0\G1572864
G_st10087_00201	M+GEM300_10087-00201	VAR_GLOBAL	IN SERVICE acknowledge	U0\G1572864
G_st10087_00202	M+GEM300_10087-00202	VAR_GLOBAL	OUT OF SERVICE acknowledge	U0\G1572864
G_st10087_00203	M+GEM300_10087-00203	VAR_GLOBAL	ID READER available response	U0\G1572864
G_st10087_00204	M+GEM300_10087-00204	VAR_GLOBAL	ID READER unavailable response	U0\G1572864
G_st10087_00301	M+GEM300_10087-00301	VAR_GLOBAL	LOAD started response	U0\G1572864
G_st10087_00302	M+GEM300_10087-00302	VAR_GLOBAL	LOAD completed response	U0\G1572864
G_st10087_00303	M+GEM300_10087-00303	VAR_GLOBAL	UNLOAD available response	U0\G1572864
G_st10087_00304	M+GEM300_10087-00304	VAR_GLOBAL	UNLOAD started response	U0\G1572864
G_st10087_00305	M+GEM300_10087-00305	VAR_GLOBAL	UNLOAD completed response	U0\G1572864
G_st10087_00306	M+GEM300_10087-00306	VAR_GLOBAL	TRANSFER failed response	U0\G1572864
G_st10087_00307	M+GEM300_10087-00307	VAR_GLOBAL	Carrier clamped response	U0\G1572864
G_st10087_00308	M+GEM300_10087-00308	VAR_GLOBAL	Carrier unclamped response	U0\G1572864
G_st10087_00309	M+GEM300_10087-00309	VAR_GLOBAL	Carrier opened response	U0\G1572864
G_st10087_00310	M+GEM300_10087-00310	VAR_GLOBAL	Carrier closed response	U0\G1572864

Label name	Data type	Class	Comment	Assignment (device/label)
G_st10087_00311	M+GEM300_10087-00311	VAR_GLOBAL	Carrier accessing started response	U0\G1572864
G_st10087_00312	M+GEM300_10087-00312	VAR_GLOBAL	Carrier approaching complete response	U0\G1572864
G_st10087_00313	M+GEM300_10087-00313	VAR_GLOBAL	Carrier accessing normally finished response	U0\G1572864
G_st10087_00314	M+GEM300_10087-00314	VAR_GLOBAL	Carrier accessing abnormally finished response	U0\G1572864
G_st10087_00401	M+GEM300_10087-00401	VAR_GLOBAL	Load Port Carrier association acknowledge	U0\G1572864
G_st10087_00402	M+GEM300_10087-00402	VAR_GLOBAL	Load Port Carrier cancel association acknowledge	U0\G1572864
G_st10087_00403	M+GEM300_10087-00403	VAR_GLOBAL	Carrier Location change response	U0\G1572864
G_st10087_00404	M+GEM300_10087-00404	VAR_GLOBAL	Buffer Capacity changed response	U0\G1572864
G_st10087_00411	M+GEM300_10087-00411	VAR_GLOBAL	Carrier move started to Internal Buffer response	U0\G1572864
G_st10087_00412	M+GEM300_10087-00412	VAR_GLOBAL	Carrier move completed to Internal Buffer response	U0\G1572864
G_st10087_00413	M+GEM300_10087-00413	VAR_GLOBAL	Carrier move started to Load Port response	U0\G1572864
G_st10087_00414	M+GEM300_10087-00414	VAR_GLOBAL	Carrier move completed to Load Port response	U0\G1572864
G_st10087_00415	M+GEM300_10087-00415	VAR_GLOBAL	UNLOAD completed and Carrier move started to Load Port response	U0\G1572864
G_st10087_00501	M+GEM300_10087-00501	VAR_GLOBAL	CarrierID read successful response	U0\G1572864
G_st10087_00502	M+GEM300_10087-00502	VAR_GLOBAL	CarrierID read fail response	U0\G1572864
G_st10087_00503	M+GEM300_10087-00503	VAR_GLOBAL	Unknown CarrierID response	U0\G1572864
G_st10087_00504	M+GEM300_10087-00504	VAR_GLOBAL	Duplicate CarrierID in process response	U0\G1572864
G_st10087_00601	M+GEM300_10087-00601	VAR_GLOBAL	SlotMap verification ok response	U0\G1572864
G_st10087_00602	M+GEM300_10087-00602	VAR_GLOBAL	SlotMap waiting for host verification response	U0\G1572864
G_st10087_00603	M+GEM300_10087-00603	VAR_GLOBAL	SlotMap verification fail response	U0\G1572864
G_st10087_00604	M+GEM300_10087-00604	VAR_GLOBAL	SlotMap read fail response	U0\G1572864
G_st10087_00605	M+GEM300_10087-00605	VAR_GLOBAL	SlotMap abnormal substrate position response	U0\G1572864
G_st10087_00901	M+GEM300_10087-00901	VAR_GLOBAL	Bind service notification	U0\G1572864
G_st10087_00902	M+GEM300_10087-00902	VAR_GLOBAL	CancelAllCarrierOut service notification	U0\G1572864
G_st10087_00903	M+GEM300_10087-00903	VAR_GLOBAL	CancelBind service notification	U0\G1572864
G_st10087_00904	M+GEM300_10087-00904	VAR_GLOBAL	CancelCarrier service notification	U0\G1572864
G_st10087_00905	M+GEM300_10087-00905	VAR_GLOBAL	CancelCarrierAtPort service notification	U0\G1572864
G_st10087_00906	M+GEM300_10087-00906	VAR_GLOBAL	CancelCarrierNotification service notification	U0\G1572864
G_st10087_00907	M+GEM300_10087-00907	VAR_GLOBAL	CancelCarrierOut service notification	U0\G1572864
G_st10087_00909	M+GEM300_10087-00909	VAR_GLOBAL	CarrierIn service notification	U0\G1572864
G_st10087_00910	M+GEM300_10087-00910	VAR_GLOBAL	CarrierNotification service notification	U0\G1572864
G_st10087_00911	M+GEM300_10087-00911	VAR_GLOBAL	CarrierOut service notification	U0\G1572864
G_st10087_00912	M+GEM300_10087-00912	VAR_GLOBAL	CarrierReCreate service notification	U0\G1572864
G_st10087_00913	M+GEM300_10087-00913	VAR_GLOBAL	CarrierRelease service notification	U0\G1572864
G_st10087_00917	M+GEM300_10087-00917	VAR_GLOBAL	ChangeServiceStatus service notification	U0\G1572864
G_st10087_00918	M+GEM300_10087-00918	VAR_GLOBAL	ProceedWithCarrier service notification	U0\G1572864
G_st10087_01001	M+GEM300_10087-01001	VAR_GLOBAL	Create service (Carrier) notification	U0\G1572864
G_st10087_01002	M+GEM300_10087-01002	VAR_GLOBAL	Delete service (Carrier) notification	U0\G1572864
G_st10090_00001	M+GEM300_10090-00001	VAR_GLOBAL	SubstrateObject create acknowledge	U0\G1572864
G_st10090_00002	M+GEM300_10090-00002	VAR_GLOBAL	SubstrateObject delete acknowledge	U0\G1572864
G_st10090_00003	M+GEM300_10090-00003	VAR_GLOBAL	SubstrateObject SetAttr acknowledge	U0\G1572864
G_st10090_00004	M+GEM300_10090-00004	VAR_GLOBAL	SubstrateObject GetAttr acknowledge	U0\G1572864
G_st10090_00011	M+GEM300_10090-00011	VAR_GLOBAL	CarrierSubstLocObject create acknowledge	U0\G1572864
G_st10090_00012	M+GEM300_10090-00012	VAR_GLOBAL	CarrierSubstLocObject delete acknowledge	U0\G1572864
G_st10090_00013	M+GEM300_10090-00013	VAR_GLOBAL	SubstLocObject SetAttr acknowledge	U0\G1572864
G_st10090_00014	M+GEM300_10090-00014	VAR_GLOBAL	SubstLocObject GetAttr acknowledge	U0\G1572864
G_st10090_00023	M+GEM300_10090-00023	VAR_GLOBAL	BatchLocObject SetAttr acknowledge	U0\G1572864
G_st10090_00024	M+GEM300_10090-00024	VAR_GLOBAL	BatchLocObject GetAttr acknowledge	U0\G1572864
G_st10090_01001	M+GEM300_10090-01001	VAR_GLOBAL	Create service (Register substrate service) notification	U0\G1572864
G_st10090_01002	M+GEM300_10090-01002	VAR_GLOBAL	Delete service (Remove substrate service) notification	U0\G1572864

Label name	Data type	Class	Comment	Assignment (device/label)
G_st10090_01003	M+GEM300_10090-01003	VAR_GLOBAL	SetAttr service (Substrate) notification	U0\G1572864
G_st10090_01011	M+GEM300_10090-01011	VAR_GLOBAL	Create service (SubstLoc) notification	U0\G1572864
G_st10090_01012	M+GEM300_10090-01012	VAR_GLOBAL	Delete service (SubstLoc) notification	U0\G1572864
G_st10090_01013	M+GEM300_10090-01013	VAR_GLOBAL	SetAttr service (SubstLoc) notification	U0\G1572864
G_st10090_01021	M+GEM300_10090-01021	VAR_GLOBAL	Create service (BatchLoc) notification	U0\G1572864
G_st10090_01022	M+GEM300_10090-01022	VAR_GLOBAL	Delete service (BatchLoc) notification	U0\G1572864
G_st10090_01023	M+GEM300_10090-01023	VAR_GLOBAL	SetAttr service (BatchLoc) notification	U0\G1572864

Structure label list

The following table shows the structure labels used in the control CPU interfaces.

Precautions

When using a structure label, make sure to use it for a global label. Otherwise, the order of members is no longer as defined due to the memory allocation in a packing block; therefore, data exchange with SECS/GEM communication software may not be performed correctly.

Structure label data name	Data structure
M+GEM300_00000-00002	☞ Page 103 00002 : LoadPort initial request
M+GEM300_00039-00006	☞ Page 107 00006: Get AttrName List request
M+GEM300_00039-00103	☞ Page 108 00103: LoadPortObject SetAttr request
M+GEM300_00039-00104	☞ Page 110 00104: LoadPortObject GetAttr request
M+GEM300_00039-00203	☞ Page 111 00203: LocationObject SetAttr request
M+GEM300_00039-00204	☞ Page 112 00204: LocationObject GetAttr request
M+GEM300_00039-00303	☞ Page 113 00303: InternalBufferObject SetAttr request
M+GEM300_00039-00304	☞ Page 115 00304: InternalBufferObject GetAttr request
M+GEM300_00087-00001	☞ Page 123 00001: CarrierObject create request
M+GEM300_00087-00002	☞ Page 125 00002: CarrierObject delete request
M+GEM300_00087-00003	☞ Page 126 00003: CarrierObject SetAttr request
M+GEM300_00087-00004	☞ Page 128 00004: CarrierObject GetAttr request
M+GEM300_00087-00101	☞ Page 129 00101: AccessMode AUTO request
M+GEM300_00087-00102	☞ Page 130 00102: AccessMode MANUAL request
M+GEM300_00087-00111	☞ Page 131 00111: Load Port reservation request
M+GEM300_00087-00112	☞ Page 132 00112: Load Port cancel reservation request
M+GEM300_00087-00201	☞ Page 133 00201: IN SERVICE request
M+GEM300_00087-00202	☞ Page 134 00202: OUT OF SERVICE request
M+GEM300_00087-00203	☞ Page 135 00203: ID READER available notification
M+GEM300_00087-00204	☞ Page 136 00204: ID READER unavailable notification
M+GEM300_00087-00301	☞ Page 137 00301: LOAD started notification
M+GEM300_00087-00302	☞ Page 138 00302: LOAD completed notification
M+GEM300_00087-00303	☞ Page 139 00303: UNLOAD available notification
M+GEM300_00087-00304	☞ Page 140 00304: UNLOAD started notification
M+GEM300_00087-00305	☞ Page 141 00305: UNLOAD completed notification
M+GEM300_00087-00306	☞ Page 142 00306: TRANSFER failed notification
M+GEM300_00087-00307	☞ Page 143 00307: Carrier clamped notification
M+GEM300_00087-00308	☞ Page 144 00308: Carrier unclamped notification
M+GEM300_00087-00309	☞ Page 145 00309: Carrier opened notification
M+GEM300_00087-00310	☞ Page 146 00310: Carrier closed notification
M+GEM300_00087-00311	☞ Page 147 00311: Carrier accessing started notification
M+GEM300_00087-00312	☞ Page 148 00312: Carrier approaching complete notification
M+GEM300_00087-00313	☞ Page 149 00313: Carrier accessing normally finished notification
M+GEM300_00087-00314	☞ Page 150 00314: Carrier accessing abnormally finished notification
M+GEM300_00087-00401	☞ Page 151 00401: Load Port Carrier association request
M+GEM300_00087-00402	☞ Page 152 00402: Load Port Carrier cancel association request
M+GEM300_00087-00403	☞ Page 153 00403: Carrier Location change notification
M+GEM300_00087-00404	☞ Page 154 00404: Buffer Capacity changed notification
M+GEM300_00087-00411	☞ Page 155 00411: Carrier move started to Internal Buffer notification
M+GEM300_00087-00412	☞ Page 156 00412: Carrier move completed to Internal Buffer notification
M+GEM300_00087-00413	☞ Page 157 00413: Carrier move started to Load Port notification
M+GEM300_00087-00414	☞ Page 158 00414: Carrier move completed to Load Port notification
M+GEM300_00087-00415	☞ Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification
M+GEM300_00087-00501	☞ Page 160 00501: CarrierID read successful notification

Structure label data name	Data structure
M+GEM300_00087-00502	☞ Page 161 00502: CarrierID read fail notification
M+GEM300_00087-00503	☞ Page 162 00503: Unknown CarrierID notification
M+GEM300_00087-00504	☞ Page 163 00504: Duplicate CarrierID in process notification
M+GEM300_00087-00601	☞ Page 164 00601: SlotMap verification ok notification
M+GEM300_00087-00602	☞ Page 165 00602: SlotMap waiting for host verification notification
M+GEM300_00087-00603	☞ Page 166 00603: SlotMap verification fail notification
M+GEM300_00087-00604	☞ Page 167 00604: SlotMap read fail notification
M+GEM300_00087-00605	☞ Page 168 00605: SlotMap abnormal substrate position notification
M+GEM300_00090-00001	☞ Page 229 00001: SubstrateObject create request
M+GEM300_00090-00002	☞ Page 231 00002: SubstrateObject delete request
M+GEM300_00090-00003	☞ Page 232 00003: SubstrateObject SetAttr request
M+GEM300_00090-00004	☞ Page 234 00004: SubstrateObject GetAttr request
M+GEM300_00090-00011	☞ Page 235 00011: CarrierSubstLocObject create request
M+GEM300_00090-00012	☞ Page 236 00012: CarrierSubstLocObject delete request
M+GEM300_00090-00013	☞ Page 237 00013: SubstLocObject SetAttr request
M+GEM300_00090-00014	☞ Page 239 00014: SubstLocObject GetAttr request
M+GEM300_00090-00023	☞ Page 240 00023: BatchLocObject SetAttr request
M+GEM300_00090-00024	☞ Page 241 00024: BatchLocObject GetAttr request
M+GEM300_10000-00001	☞ Page 104 00001: GEM300 Initial acknowledge
M+GEM300_10000-00002	☞ Page 105 00002 : LoadPort initial acknowledge
M+GEM300_10039-00006	☞ Page 116 00006: Get AttrName List acknowledge
M+GEM300_10039-00103	☞ Page 117 00103: LoadPortObject SetAttr acknowledge
M+GEM300_10039-00104	☞ Page 118 00104: LoadPortObject GetAttr acknowledge
M+GEM300_10039-00203	☞ Page 119 00203: LocationObject SetAttr acknowledge
M+GEM300_10039-00204	☞ Page 120 00204: LocationObject GetAttr acknowledge
M+GEM300_10039-00303	☞ Page 121 00303: InternalBufferObject SetAttr acknowledge
M+GEM300_10039-00304	☞ Page 122 00304: InternalBufferObject GetAttr acknowledge
M+GEM300_10087-00001	☞ Page 169 00001: CarrierObject create acknowledge
M+GEM300_10087-00002	☞ Page 170 00002: CarrierObject delete acknowledge
M+GEM300_10087-00003	☞ Page 171 00003: CarrierObject SetAttr acknowledge
M+GEM300_10087-00004	☞ Page 172 00004: CarrierObject GetAttr acknowledge
M+GEM300_10087-00101	☞ Page 173 00101: AccessMode AUTO acknowledge
M+GEM300_10087-00102	☞ Page 174 00102: AccessMode MANUAL acknowledge
M+GEM300_10087-00111	☞ Page 175 00111: Load Port reservation acknowledge
M+GEM300_10087-00112	☞ Page 176 00112: Load Port cancel reservation acknowledge
M+GEM300_10087-00201	☞ Page 177 00201: IN SERVICE acknowledge
M+GEM300_10087-00202	☞ Page 178 00202: OUT OF SERVICE acknowledge
M+GEM300_10087-00203	☞ Page 179 00203: ID READER available response
M+GEM300_10087-00204	☞ Page 180 00204: ID READER unavailable response
M+GEM300_10087-00301	☞ Page 181 00301: LOAD started response
M+GEM300_10087-00302	☞ Page 182 00302: LOAD completed response
M+GEM300_10087-00303	☞ Page 183 00303: UNLOAD available response
M+GEM300_10087-00304	☞ Page 184 00304: UNLOAD started response
M+GEM300_10087-00305	☞ Page 185 00305: UNLOAD completed response
M+GEM300_10087-00306	☞ Page 186 00306: TRANSFER failed response
M+GEM300_10087-00307	☞ Page 187 00307: Carrier clamped response
M+GEM300_10087-00308	☞ Page 188 00308: Carrier unclamped response
M+GEM300_10087-00309	☞ Page 189 00309: Carrier opened response
M+GEM300_10087-00310	☞ Page 190 00310: Carrier closed response
M+GEM300_10087-00311	☞ Page 191 00311: Carrier accessing started response
M+GEM300_10087-00312	☞ Page 192 00312: Carrier approaching complete response
M+GEM300_10087-00313	☞ Page 193 00313: Carrier accessing normally finished response
M+GEM300_10087-00314	☞ Page 194 00314: Carrier accessing abnormally finished response

Structure label data name	Data structure
M+GEM300_10087-00401	☞ Page 195 00401: Load Port Carrier association acknowledge
M+GEM300_10087-00402	☞ Page 196 00402: Load Port Carrier cancel association acknowledge
M+GEM300_10087-00403	☞ Page 197 00403: Carrier Location change response
M+GEM300_10087-00404	☞ Page 198 00404: Buffer Capacity changed response
M+GEM300_10087-00411	☞ Page 199 00411: Carrier move started to Internal Buffer response
M+GEM300_10087-00412	☞ Page 200 00412: Carrier move completed to Internal Buffer response
M+GEM300_10087-00413	☞ Page 201 00413: Carrier move started to Load Port response
M+GEM300_10087-00414	☞ Page 202 00414: Carrier move completed to Load Port response
M+GEM300_10087-00415	☞ Page 203 00415: UNLOAD completed and Carrier move started to Load Port response
M+GEM300_10087-00501	☞ Page 204 00501: CarrierID read successful response
M+GEM300_10087-00502	☞ Page 206 00502: CarrierID read fail response
M+GEM300_10087-00503	☞ Page 207 00503: Unknown CarrierID response
M+GEM300_10087-00504	☞ Page 208 00504: Duplicate CarrierID in process response
M+GEM300_10087-00601	☞ Page 209 00601: SlotMap verification ok response
M+GEM300_10087-00602	☞ Page 210 00602: SlotMap waiting for host verification response
M+GEM300_10087-00603	☞ Page 211 00603: SlotMap verification fail response
M+GEM300_10087-00604	☞ Page 212 00604: SlotMap read fail response
M+GEM300_10087-00605	☞ Page 213 00605: SlotMap abnormal substrate position response
M+GEM300_10087-00901	☞ Page 214 00901: Bind service notification
M+GEM300_10087-00902	☞ Page 215 00902: CancelAllCarrierOut service notification
M+GEM300_10087-00903	☞ Page 216 00903: CancelBind service notification
M+GEM300_10087-00904	☞ Page 217 00904: CancelCarrier service notification
M+GEM300_10087-00905	☞ Page 218 00905: CancelCarrierAtPort service notification
M+GEM300_10087-00906	☞ Page 219 00906: CancelCarrierNotification service notification
M+GEM300_10087-00907	☞ Page 220 00907: CancelCarrierOut service notification
M+GEM300_10087-00909	☞ Page 221 00909: CarrierIn service notification
M+GEM300_10087-00910	☞ Page 222 00910: CarrierNotification service notification
M+GEM300_10087-00911	☞ Page 223 00911: CarrierOut service notification
M+GEM300_10087-00912	☞ Page 224 00912: CarrierReCreate service notification
M+GEM300_10087-00913	☞ Page 226 00913: CarrierRelease service notification
M+GEM300_10087-00917	☞ Page 227 00917: ChangeServiceStatus service notification
M+GEM300_10087-00918	☞ Page 228 00918: ProceedWithCarrier service notification
M+GEM300_10090-00001	☞ Page 242 00001: SubstrateObject create acknowledge
M+GEM300_10090-00002	☞ Page 243 00002: SubstrateObject delete acknowledge
M+GEM300_10090-00003	☞ Page 244 00003: SubstrateObject SetAttr acknowledge
M+GEM300_10090-00004	☞ Page 245 00004: SubstrateObject GetAttr acknowledge
M+GEM300_10090-00011	☞ Page 246 00011 : CarrierSubstLocObject create acknowledge
M+GEM300_10090-00012	☞ Page 247 00012: CarrierSubstLocObject delete acknowledge
M+GEM300_10090-00013	☞ Page 248 00013: SubstLocObject SetAttr acknowledge
M+GEM300_10090-00014	☞ Page 249 00014: SubstLocObject GetAttr acknowledge
M+GEM300_10090-00023	☞ Page 250 00023: BatchLocObject SetAttr acknowledge
M+GEM300_10090-00024	☞ Page 251 00024: BatchLocObject GetAttr acknowledge
M+GEM300_10090-01001	☞ Page 252 01001: Create service (Register substrate service) notification
M+GEM300_10090-01002	☞ Page 253 01002: Delete service (Remove substrate service) notification
M+GEM300_10090-01003	☞ Page 254 01003: SetAttr service (Substrate) notification
M+GEM300_10090-01013	☞ Page 255 01013: SetAttr service (SubstLoc) notification
M+GEM300_10090-01023	☞ Page 257 01023: SetAttr service (BatchLoc) notification
M+GEM300_AttrIDList	☞ Page 107 00006: Get AttrName List request
M+GEM300_BatchLocObject	☞ Page 86 M+GEM300_BatchLocObject
M+GEM300_BatchSubstIDMap	☞ Page 86 M+GEM300_BatchSubstIDMap
M+GEM300_CarrierLocation	☞ Page 35 M+GEM300_CarrierLocation
M+GEM300_CarrierObject	☞ Page 40 M+GEM300_CarrierObject
M+GEM300_ContentMap	☞ Page 40 M+GEM300_ContentMap

Structure label data name	Data structure
M+GEM300_InternalBufferObject	☞ Page 36 M+GEM300_InternalBufferObject
M+GEM300_LoadPortObject	☞ Page 34 M+GEM300_LoadPortObject
M+GEM300_LocationObject	☞ Page 35 M+GEM300_LocationObject
M+GEM300_ObjIDList	☞ Page 254 01003: SetAttr service (Substrate) notification ☞ Page 255 01013: SetAttr service (SubstLoc) notification ☞ Page 257 01023: SetAttr service (BatchLoc) notification
M+GEM300_SlotMap	☞ Page 40 M+GEM300_SlotMap
M+GEM300_SubstHistory	☞ Page 84 M+GEM300_SubstHistory
M+GEM300_SubstLocObject	☞ Page 85 M+GEM300_SubstLocObject
M+GEM300_SubstrateObject	☞ Page 83 M+GEM300_SubstrateObject

Appendix 10 Use Cases

This section shows usage examples (state transition) when creating a user program that is compliant with GEM300 standards.

Guide for referencing use cases





The following shows the guide for referencing use cases.

Precautions

- CEID of the event report (S6F11) varies depending on user settings. In this use case, the default CEID is described.
- The description of Event Report Acknowledge (S6F12) is omitted.
- This use case varies depending on equipment and specifications. The actual processing and processing order need to be adjusted according to the environment.

State notation

The following table shows the notation for state models and states.

State model name	State name
LTS: Load Port Transfer State Model ( Page 48 Load Port Transfer State Model)	OS: OUT OF SERVICE IS: IN SERVICE RTL: READY TO LOAD RTU: READY TO UNLOAD TB: TRANSFER BLOCKED
LRS: Load Port Reservation State Model ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	NR: NOT RESERVED R: RESERVED
LCAS: Load Port/Carrier Association State Model ( Page 55 Load Port/Carrier Association State Model)	NA: NOT ASSOCIATED A: ASSOCIATED
CIDS: Carrier ID Status	INR: ID NOT READ IVF: ID VERIFICATION FAILED IVO: ID VERIFICATION OK WFH: WAITING FOR HOST
CSMS: Carrier Slot Map Status	SNR: SLOT MAP NOT READ SVF: SLOT MAP VERIFICATION FAILED SVO: SLOT MAP VERIFICATION OK WFH: WAITING FOR HOST
CAS: Carrier Accessing Status	NA: NOT ACCESSED IA: IN ACCESS CC: CARRIER COMPLETE CS: CARRIER STOPPED
AMS: Access Mode State Model ( Page 58 Access Mode State Model)	M: MANUAL A: AUTO
STL: Substrate Location Status	UOC: UNOCCUPIED OC: OCCUPIED
STT: Substrate Transport Status	AS: AT SOURCE AW: AT WORK AD: AT DESTINATION
STP: Substrate Processing Status	NP: NEEDS PROCESSING IP: IN PROCESS PC: PROCESSED

E87-CMS compliance

The following table shows the E87-CMS compliant use cases.

These use cases refer to the use cases described in "R1-2 Scenarios" of SEMI E87-0619.

Titles of references (E87-0619) to which each use case refers are as follows:

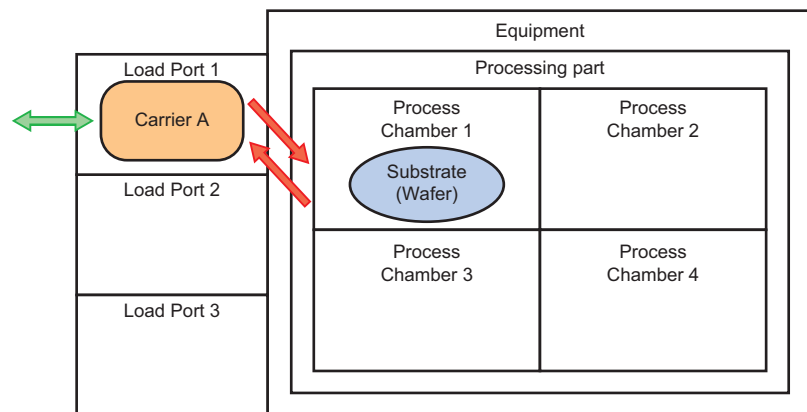
Title	Corresponding SEMI standard	Reference
Load Port Initialization	—	☞ Page 361 Load port initialization
Load Port Reservation from Equipment	—	☞ Page 363 Load port reservation from equipment
Normal Roundtrip 1	Table R1-2	☞ Page 364 Normal roundtrip 1
Normal Roundtrip 2	Table R1-3	☞ Page 368 Normal roundtrip 2
Normal Roundtrip 3	Table R1-4	☞ Page 372 Normal roundtrip 3
Normal Roundtrip 4	Table R1-5	☞ Page 378 Normal roundtrip 4
Normal Roundtrip 5	Table R1-6	☞ Page 384 Normal roundtrip 5
Normal Roundtrip 6	Table R1-7	☞ Page 388 Normal roundtrip 6
Abnormal CarrierID Verification 1	Table R1-10	☞ Page 394 Abnormal CarrierID verification 1
Abnormal CarrierID Verification 2	Table R1-11	☞ Page 397 Abnormal CarrierID verification 2
Abnormal CarrierID Verification 3	Table R1-12	☞ Page 400 Abnormal CarrierID verification 3
Abnormal Slot Map Verification 1	Table R1-13	☞ Page 403 Abnormal slot map verification 1
Abnormal Slot Map Verification 2	Table R1-14	☞ Page 406 Abnormal slot map verification 2
Carrier-Out Queuing	Table R1-15	☞ Page 410 Carrier-out queuing
Carrier-Out Dequeuing (Cancellation)	Table R1-16	☞ Page 414 Carrier-out dequeuing (cancellation)
Carrier Association Cancellation	Table R1-17	☞ Page 417 Carrier association cancellation
Access Mode Change (MANUAL to AUTO)	—	☞ Page 419 Access mode change (MANUAL to AUTO)
Access Mode Change (AUTO to MANUAL)	—	☞ Page 420 Access mode change (AUTO to MANUAL)
Load Port Service Status Change	Table R1-19	☞ Page 421 Load port service status change
Correct Carrier Delivery to Wrong Port Scenario 1	Table R1-20	☞ Page 422 Correct carrier delivery to wrong port scenario 1
Correct Carrier Delivery to Wrong Port Scenario 2	Table R1-21	☞ Page 425 Correct carrier delivery to wrong port scenario 2
CarrierID Read Fail Scenario 1	Table R1-22	☞ Page 429 CarrierID read fail scenario 1
CarrierID Read Fail Scenario 2	Table R1-23	☞ Page 432 CarrierID read fail scenario 2
CarrierID Read Fail Scenario 3	Table R1-24	☞ Page 435 CarrierID read fail scenario 3
CarrierID Read Fail Scenario 4	Table R1-25	☞ Page 438 CarrierID read fail scenario 4
CarrierID Read Fail Scenario 5	Table R1-26	☞ Page 441 CarrierID read fail scenario 5

Configuration examples

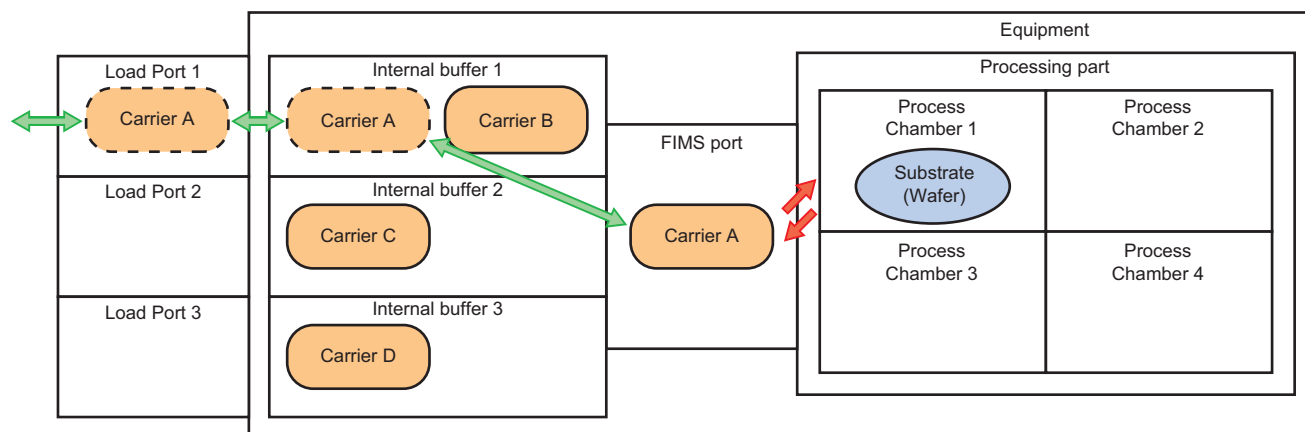
The following shows configuration examples of manufacturing equipment for the E87-CMS compliant use case. Each use case is explained with reference to the following configuration examples of semiconductor manufacturing equipment.

→ : Moving of carriers, → : Moving of wafers

- Fixed buffer manufacturing equipment




- Internal buffer manufacturing equipment




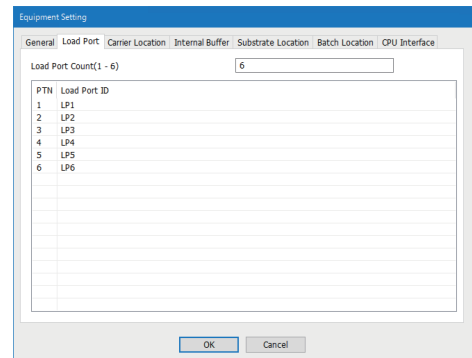
Load port initialization

The following table shows the state transition satisfying the following conditions:

- Load port set (configured in a setting tool with the data transferred to a module)
- GEM300 standard support functions started and initialized ( Page 16 PROCEDURE BEFORE OPERATION)

■Equipment load port setting example

 Page 24 Load port




PTN	Load Port ID
1	LP1
2	LP2
3	LP3
4	LP4
5	LP5
6	LP6

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 362 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name			
					AMS 1 to 6	LTS 1 to 6	LRS 1 to 6	LCAS 1 to 6
0	—	Initial condition.	—	—	NoState	NoState	NoState	NoState
1	1 to 8	Load port status is initialized.	H←E	<div>• AMS 1 to 6: NO STATE to AUTO</div> <div>• LTS 1 to 6: NO STATE to IN SERVICE</div> <div>• LTS 1 to 6: IN SERVICE to TRANSFER READY</div> <div>• LTS 1 to 6: TRANSFER READY to READY TO LOAD</div>	A	RTL	NR	NA

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		—	←	Requests the initialization of all load ports. 00000-00002: LoadPort initial request(📖 Page 103 00002 : LoadPort initial request) • AccessModeHistory: 15(0Fh) • PortTransferHistory: [2, 2, 2, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
2	—*1	←	Reports the state transition load port 1. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
3	—*1	←	Reports the state transition load port 2. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
4	—*1	←	Reports the state transition load port 3. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
5	—*1	←	Reports the state transition load port 4. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
6	—*1	←	Reports the state transition load port 5. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
7	—*1	←	Reports the state transition load port 6. • S6F11: NO STATE to AUTO (CEID 30044) • S6F11: NO STATE to IN SERVICE (CEID 30026) • S6F11: IN SERVICE to TRANSFER READY (CEID 30029) • S6F11: TRANSFER READY to READY TO LOAD (CEID 30031)		—
8	—		10000-00002: LoadPort initial acknowledge(📖 Page 105 00002 : LoadPort initial acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Load port reservation from equipment

The following table shows the state transition satisfying the following conditions:


- Load port initialized ( Page 361 Load port initialization)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 363 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation




#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipme nt	Message	State model name
					LRS 1 to 6
0	—	Initial condition.	—	—	NR
1	1 to 3	Load port is reserved.	H←E	NotReserved to Reserved	R

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:


 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Reservation State Model state transition No.(2) ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Requests the reservation of a load port. 00087-00111: Load Port reservation request ( Page 131 00111: Load Port reservation request)
2	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
3	—		10087-00111: Load Port reservation acknowledge ( Page 175 00111: Load Port reservation acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Normal roundtrip 1

The following table shows the state transition satisfying the following conditions:


- Fixed buffer manufacturing equipment
- FOUP used
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 365 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corres pondi ng No. *1	Comment	Communi cation direction H: HOST E: Equipme nt	Message	State model name							
					LTS	LRS	LCA S	CIDS	CSM S	CAS		
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State		
1	1 to 3	Loading transfer starts.	H←E	TransferBlocked	TB						NR	
2	4 to 6	Loading transfer completes.	—	—		A	WFH	SNR	NA			
3	7 to 16	CarrierID is read.	H←E	WaitingForHost								
4	—	CarrierID is verified by host, and result is OK.	—	—								
5	17 to 20	Host commands to proceed.	H→E	ProceedWithCarrier						IVO		
6	21 to 22	Carrier is docked.	—	—								
7	23 to 26	Slot map is read.	H←E	WaitingForHost								WFH
8	—	Slot map is verified by host, and result is OK.	—	—								
9	27 to 30	Host commands to proceed.	H→E	ProceedWithCarrier								
10	31 to 36	Process starts.	—	—						IA		
11	37 to 39	Process completes.	—	—								CC
12	40 to 45	Carrier is undocked.	H←E	ReadyToUnload	RTU					TB		
13	46 to 48	Unloading transfer starts.	H←E	TransferBlocked	RTL	NA	No State	No State	No State			
14	49 to 56	Unloading transfer completes.	H←E	ReadyToLoad								

*1 The corresponding number of usage examples of control CPU interfaces





















■Usage examples of control CPU interfaces












For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
10	—		Generates an instance of carrier object of the read carrier ID. • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
11	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
12	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)		—
13	—		10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
14	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
15	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
16	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
17	Determines the continuation of processing. S3F17: ProceedWithCarrier (📖 Page 300 S3F17: ProceedWithCarrier)	→	Carrier ID host verification has succeeded. Carrier State Model state transition No.(8) (📖 Page 42 Carrier State Model)		—
18	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
19	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
20	—		10087-00918: ProceedWithCarrier service notification (📖 Page 228 00918: ProceedWithCarrier service notification)	→	—
21	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification (📖 Page 145 00309: Carrier opened notification)
22	—*1	←	S6F11: Carrier Opened (CEID 30052)		—

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
23	—		10087-00309: Carrier opened response ( Page 189 00309: Carrier opened response)	→	—
24	—		Passes the read information to HOST, and requests the verification. Carrier State Model state transition No.(14) ( Page 42 Carrier State Model)	←	Reading of a slot map has succeeded. 00087-00602: SlotMap waiting for host verification notification ( Page 165 00602: SlotMap waiting for host verification notification)
25	—*1	←	S6F11: SLOT MAP NOT READ to WAITING FOR HOST (CEID 30011)		—
26	—		10087-00602: SlotMap waiting for host verification response ( Page 210 00602: SlotMap waiting for host verification response)	→	—
27	Succeeds in the slot map verification. S3F17: ProceedWithCarrier ( Page 300 S3F17: ProceedWithCarrier)	→	Slot map host verification has succeeded. Carrier State Model state transition No.(15) ( Page 42 Carrier State Model)		—
28	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—
29	—*1	←	S6F11: WAITING FOR HOST to SLOT MAP VERIFICATION OK (CEID 30012)		—
30	—		10087-00918: ProceedWithCarrier service notification ( Page 228 00918: ProceedWithCarrier service notification)	→	—
31	—		Carrier State Model state transition No.(18) ( Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification ( Page 147 00311: Carrier accessing started notification)
32	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
33	—		10087-00311: Carrier accessing started response ( Page 191 00311: Carrier accessing started response)	→	—
34	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification ( Page 148 00312: Carrier approaching complete notification)
35	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
36	—		10087-00312: Carrier approaching complete response ( Page 192 00312: Carrier approaching complete response)	→	—
37	—		Carrier State Model state transition No.(19) ( Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification ( Page 149 00313: Carrier accessing normally finished notification)
38	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
39	—		10087-00313: Carrier accessing normally finished response ( Page 193 00313: Carrier accessing normally finished response)	→	—
40	—		—	←	Closes the door. 00087-00310: Carrier closed notification ( Page 146 00310: Carrier closed notification)
41	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
42	—		10087-00310: Carrier closed response ( Page 190 00310: Carrier closed response)	→	—
43	—		Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that a carrier is undocked and it can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
44	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
45	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—
46	—		Load Port Transfer State Model state transition No.(7) ( Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification ( Page 140 00304: UNLOAD started notification)
47	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
48	—		10087-00304: UNLOAD started response ( Page 184 00304: UNLOAD started response)	→	—
49	—		Deletes an instance of carrier object of the unloaded carrier. • Carrier State Model state transition No.(21) ( Page 42 Carrier State Model) • Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model)	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification ( Page 141 00305: UNLOAD completed notification)
50	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
51	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
52	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
53	—		10087-00305: UNLOAD completed response ( Page 185 00305: UNLOAD completed response)	→	—
54	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
55	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
56	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Normal roundtrip 2

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 369 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 6	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind		R	A	INR	SNR	NA
2	7 to 9	Loading transfer starts.	H←E	TransferBlocked	TB	NR				
3	10 to 12	Loading transfer completes.	—	—						
4	13 to 21	CarrierID is read.	—	—						
5		CarrierID is verified by production equipment, and result is OK.	H←E	IDVerificationOK						
6	22 to 27	Carrier is docked.	—	—						
7		Slot map is read.	—	—						
8		Slot map is verified by production equipment, and result is OK.	H←E	SlotMapVerificationOK						
9	28 to 30	Process starts.	—	—						
10	31 to 36	Process completes.	—	—						
11	37 to 42	Carrier is undocked.	H←E	ReadyToUnload						
12	43 to 45	Unloading transfer starts.	H←E	TransferBlocked	TB					
13	46 to 53	Unloading transfer completes.	H←E	ReadyToLoad	RTL		NA	No State	No State	No State

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object, reserves a load port, and associates the load port with the carrier ID. • Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	→	—
7	—	←	Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
8	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
9	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
10	—	←	Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
11	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
12	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
13	—	←	—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
14	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
15	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
16	—	←	Carrier ID equipment verification has succeeded. Carrier State Model state transition No.(6) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
17	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)	—	—
18	—	→	10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
19	—	←	—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
20	—*1	←	S6F11: Carrier Location Change (CEID 30051)	—	—
21	—	→	10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
22	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification (📄 Page 145 00309: Carrier opened notification)
23	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
24	—		10087-00309: Carrier opened response (📄 Page 189 00309: Carrier opened response)	→	—
25	—		Carrier State Model state transition No.(13) (📄 Page 42 Carrier State Model)	←	Slot map reading and equipment verification have succeeded. 00087-00601: SlotMap verification ok notification (📄 Page 164 00601: SlotMap verification ok notification)
26	—*1	←	S6F11: SLOT MAP NOT READ to SLOT MAP VERIFICATION OK (CEID 30010)		—
27	—		10087-00601: SlotMap verification ok response (📄 Page 209 00601: SlotMap verification ok response)	→	—
28	—		Carrier State Model state transition No.(18) (📄 Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification (📄 Page 147 00311: Carrier accessing started notification)
29	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
30	—		10087-00311: Carrier accessing started response (📄 Page 191 00311: Carrier accessing started response)	→	—
31	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification (📄 Page 148 00312: Carrier approaching complete notification)
32	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
33	—		10087-00312: Carrier approaching complete response (📄 Page 192 00312: Carrier approaching complete response)	→	—
34	—		Carrier State Model state transition No.(19) (📄 Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification (📄 Page 149 00313: Carrier accessing normally finished notification)
35	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
36	—		10087-00313: Carrier accessing normally finished response (📄 Page 193 00313: Carrier accessing normally finished response)	→	—
37	—		—	←	Closes the door. 00087-00310: Carrier closed notification (📄 Page 146 00310: Carrier closed notification)
38	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
39	—		10087-00310: Carrier closed response (📄 Page 190 00310: Carrier closed response)	→	—
40	—		Load Port Transfer State Model state transition No.(9) (📄 Page 48 Load Port Transfer State Model)	←	Notifies that a carrier is undocked and it can be unloaded. 00087-00303: UNLOAD available notification (📄 Page 139 00303: UNLOAD available notification)
41	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
42	—		10087-00303: UNLOAD available response (📄 Page 183 00303: UNLOAD available response)	→	—
43	—		Load Port Transfer State Model state transition No.(7) (📄 Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification (📄 Page 140 00304: UNLOAD started notification)


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
44	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
45	—		10087-00304: UNLOAD started response (📄 Page 184 00304: UNLOAD started response)	→	—
46	—		Deletes an instance of carrier object of the unloaded carrier. • Carrier State Model state transition No.(21) (📄 Page 42 Carrier State Model) • Load Port Transfer State Model state transition No.(8) (📄 Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) (📄 Page 55 Load Port/Carrier Association State Model)	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (📄 Page 141 00305: UNLOAD completed notification)
47	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
48	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
49	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
50	—		10087-00305: UNLOAD completed response (📄 Page 185 00305: UNLOAD completed response)	→	—
51	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (📄 Page 153 00403: Carrier Location change notification)
52	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
53	—		10087-00403: Carrier Location change response (📄 Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Normal roundtrip 3

The following table shows the state transition satisfying the following conditions:


- Internal buffer manufacturing equipment
- FOUP used
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 373 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State
1	1 to 3	Loading transfer starts.	H←E	TransferBlocked	TB	NR	A	WFH	SNR	NA
2	4 to 6	Loading transfer completes.	—	—						
3	7 to 16	CarrierID is read.	H←E	WaitingForHost						
4	—	CarrierID is verified by host, and result is OK.	—	—						
5	17 to 20	Host commands to proceed.	H→E	ProceedWithCarrier						
6	21 to 28	Carrier-in starts.	H←E	BufferCapacityChange	RTL	NR	NA	IVO	WFH	SVO
7	29 to 35	Carrier-in completes.	—	—						
8	—	Process starts.	—	—						
9	36 to 41	Slot map is read at FIMS port.	H←E	WaitingForHost						
10	—	Slot map is verified by host, and result is OK.	—	—						
11	42 to 48	Host commands to proceed.	H→E	ProceedWithCarrier	TB	NR	A	IVO	SVO	IA
12	49 to 51	Process completes.	—	—						
13	52 to 57	Carrier completes.	H←E	CarrierComplete						
14	58 to 60	Host commands to carrier-out.	H→E	CarrierOut						
15	61 to 68	Carrier-out starts.	H←E	TransferBlocked						
16	69 to 77	Carrier-out completes.	H←E	ReadyToUnload	RTU	NR	A	IVO	SVO	IA
			H←E	BufferCapacityChange						
17	78 to 80	Unloading transfer starts.	H←E	TransferBlocked	TB	NR	A	IVO	SVO	IA
18	81 to 88	Unloading transfer completes.	H←E	ReadyToLoad	RTL					
							NA	No State	No State	No State

*1 The corresponding number of usage examples of control CPU interfaces




















■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events



No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
10	—		Generates an instance of carrier object of the read carrier ID. • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
11	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
12	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)		—
13	—		10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
14	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
15	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
16	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
17	Determines the continuation of processing. S3F17: ProceedWithCarrier (📖 Page 300 S3F17: ProceedWithCarrier)	→	Carrier ID host verification has succeeded. Carrier State Model state transition No.(8) (📖 Page 42 Carrier State Model)		—
18	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
19	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
20	—		10087-00918: ProceedWithCarrier service notification (📖 Page 228 00918: ProceedWithCarrier service notification)	→	—
21	—		—	←	A carrier has been unclamped. 00087-00308: Carrier unclamped notification (📖 Page 144 00308: Carrier unclamped notification)

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
22	—*1	←	S6F11: Carrier Unclamped (CEID 30053)		—
23	—		10087-00308: Carrier unclamped response ( Page 188 00308: Carrier unclamped response)	→	—
24	—		—	←	Moving of a carrier to an FIMS port has started. 00087-00411: Carrier move started to Internal Buffer notification ( Page 155 00411: Carrier move started to Internal Buffer notification)
25	—		10087-00411: Carrier move started to Internal Buffer response ( Page 199 00411: Carrier move started to Internal Buffer response)	→	—
26	—		—	←	Notifies that the remaining amount of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
27	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
28	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
29	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to an FIMS port has completed. 00087-00412: Carrier move completed to Internal Buffer notification ( Page 156 00412: Carrier move completed to Internal Buffer notification)
30	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
31	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
32	—		10087-00412: Carrier move completed to Internal Buffer response ( Page 200 00412: Carrier move completed to Internal Buffer response)	→	—
33	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
34	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
35	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
36	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification ( Page 145 00309: Carrier opened notification)
37	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
38	—		10087-00309: Carrier opened response ( Page 189 00309: Carrier opened response)	→	—
39	—		Carrier State Model state transition No.(14) ( Page 42 Carrier State Model)	←	Reading of a slot map in an FIMS port has succeeded. 00087-00602: SlotMap waiting for host verification notification ( Page 165 00602: SlotMap waiting for host verification notification)
40	—*1	←	S6F11: SLOT MAP NOT READ to WAITING FOR HOST (CEID 30011)		—
41	—		10087-00602: SlotMap waiting for host verification response ( Page 210 00602: SlotMap waiting for host verification response)	→	—
42	Succeeds in the slot map verification. S3F17: ProceedWithCarrier ( Page 300 S3F17: ProceedWithCarrier)	→	Carrier State Model state transition No.(15) ( Page 42 Carrier State Model)		—
43	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
44	—*1	←	S6F11: WAITING FOR HOST to SLOT MAP VERIFICATION OK (CEID 30012)		—
45	—		10087-00918: ProceedWithCarrier service notification (📄 Page 228 00918: ProceedWithCarrier service notification)	→	—
46	—		Carrier State Model state transition No.(18) (📄 Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification (📄 Page 147 00311: Carrier accessing started notification)
47	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
48	—		10087-00311: Carrier accessing started response (📄 Page 191 00311: Carrier accessing started response)	→	—
49	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification (📄 Page 148 00312: Carrier approaching complete notification)
50	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
51	—		10087-00312: Carrier approaching complete response (📄 Page 192 00312: Carrier approaching complete response)	→	—
52	—		Carrier State Model state transition No.(19) (📄 Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification (📄 Page 149 00313: Carrier accessing normally finished notification)
53	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
54	—		10087-00313: Carrier accessing normally finished response (📄 Page 193 00313: Carrier accessing normally finished response)	→	—
55	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification (📄 Page 146 00310: Carrier closed notification)
56	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
57	—		10087-00310: Carrier closed response (📄 Page 190 00310: Carrier closed response)	→	—
58	Instructs the carrier-out. S3F17: CarrierOut (📄 Page 293 S3F17: CarrierOut)	→	—		—
59	—	←	S3F18: Carrier Action Acknowledge (📄 Page 307 S3F18: Carrier Action Acknowledge)		—
60	—		10087-00911: CarrierOut service notification (📄 Page 223 00911: CarrierOut service notification)	→	—
61	—		<ul style="list-style-type: none"> • Load Port Transfer State Model state transition No.(6) (📄 Page 48 Load Port Transfer State Model) • Load Port Reservation State Model state transition No.(2) (📄 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(2) (📄 Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to a load port has started. 00087-00413: Carrier move started to Load Port notification (📄 Page 157 00413: Carrier move started to Load Port notification)
62	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
63	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
64	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
65	—		10087-00413: Carrier move started to Load Port response (📄 Page 201 00413: Carrier move started to Load Port response)	→	—
66	—		—	←	Notifies that the remaining amount of internal buffer capacity has decreased. 00087-00404 : Buffer Capacity changed notification (📄 Page 154 00404: Buffer Capacity changed notification)
67	—	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
68	—		10087-00404 : Buffer Capacity changed response (📄 Page 198 00404: Buffer Capacity changed response)	→	—
69	—		Load Port Reservation State Model state transition No.(3) (📄 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Moving of a carrier to a load port has completed. 00087-00414: Carrier move completed to Load Port notification (📄 Page 158 00414: Carrier move completed to Load Port notification)
70	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
71	—		10087-00414: Carrier move completed to Load Port response (📄 Page 202 00414: Carrier move completed to Load Port response)	→	—
72	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification (📄 Page 154 00404: Buffer Capacity changed notification)
73	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
74	—		10087-00404: Buffer Capacity changed response (📄 Page 198 00404: Buffer Capacity changed response)	→	—
75	—		Load Port Transfer State Model state transition No.(9) (📄 Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification (📄 Page 139 00303: UNLOAD available notification)
76	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
77	—		10087-00303: UNLOAD available response (📄 Page 183 00303: UNLOAD available response)	→	—
78	—		Load Port Transfer State Model state transition No.(7) (📄 Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification (📄 Page 140 00304: UNLOAD started notification)
79	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
80	—		10087-00304: UNLOAD started response (📄 Page 184 00304: UNLOAD started response)	→	—
81	—		Deletes an instance of carrier object of the unloaded carrier. • Carrier State Model state transition No.(21) (📄 Page 42 Carrier State Model) • Load Port Transfer State Model state transition No.(8) (📄 Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) (📄 Page 55 Load Port/Carrier Association State Model)	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (📄 Page 141 00305: UNLOAD completed notification)
82	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
83	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
84	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
85	—		10087-00305: UNLOAD completed response (📄 Page 185 00305: UNLOAD completed response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
86	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
87	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
88	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Normal roundtrip 4

The following table shows the state transition satisfying the following conditions:

- Internal buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 373 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 9	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind		R	A	INR	SNR	NA
2	10 to 12	Loading transfer starts.	H←E	TransferBlocked	TB	NR	NA	IVO	SVO	IA
3	13 to 15	Loading transfer completes.	—	—						
4	16 to 24	CarrierID is read.	—	—						
5		CarrierID is verified by equipment, and result is OK.	H←E	IDVerificationOK						
6	25 to 32	Carrier-in starts.	H←E	BufferCapacityChange						
7	33 to 42	Carrier-in completes.	—	—	RTL	NR	NA	SVO	IA	
8	—	Process starts.	—	—						
9	43 to 48	Slot map is read at FIMS port.	—	—						
10	49 to 54	Slot map is verified by equipment, and result is OK.	H←E	SlotMapVerificationOK						
11		Process completes.	—	—						
12	55 to 60	Carrier completes.	H←E	CarrierComplete	TB	R	A	SVO	IA	
13	61 to 63	Host commands to carrier-out.	H→E	CarrierOut						
14	64 to 71	Carrier-out starts.	H←E	TransferBlocked						
15	72 to 83	Carrier-out completes.	H←E	ReadyToUnload						
			H←E	BufferCapacityChange						
16	84 to 86	Unloading transfer starts.	H←E	TransferBlocked	TB	NR	NA	No State	No State	No State
17	87 to 94	Unloading transfer completes.	H←E	ReadyToLoad	RTL					















*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object, reserves a load port, and associates the load port with the carrier ID. • Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	→	—
7	—	—	—	←	Notifies that the remaining amount (unassigned space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification (📖 Page 154 00404: Buffer Capacity changed notification)
8	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)	—	—
9	—	→	10087-00404: Buffer Capacity changed response (📖 Page 198 00404: Buffer Capacity changed response)	→	—
10	—	←	Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
11	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
12	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
13	—	←	Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
14	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
15	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
16	—	←	—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
17	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
18	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
19	—	←	Carrier ID equipment verification has succeeded. Carrier State Model state transition No.(6) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
20	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)	—	—
21	—	→	10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
22	—		—	←	Notifies that the location of a carrier has changed. ^{*2} 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
23	— ^{*1}	←	S6F11: Carrier Location Change (CEID 30051)		—
24	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
25	—		—	←	A carrier has been unclamped. 00087-00308: Carrier unclamped notification ( Page 144 00308: Carrier unclamped notification)
26	— ^{*1}	←	S6F11: Carrier Unclamped (CEID 30053)		—
27	—		10087-00308: Carrier unclamped response ( Page 188 00308: Carrier unclamped response)	→	—
28	—		—	←	Moving of a carrier to an FIMS port has started. 00087-00411: Carrier move started to Internal Buffer notification ( Page 155 00411: Carrier move started to Internal Buffer notification)
29	—		10087-00411: Carrier move started to Internal Buffer response ( Page 199 00411: Carrier move started to Internal Buffer response)	→	—
30	—		—	←	Notifies that the remaining amount (free space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
31	— ^{*1}	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
32	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
33	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to an FIMS port has completed. 00087-00412: Carrier move completed to Internal Buffer notification ( Page 156 00412: Carrier move completed to Internal Buffer notification)
34	— ^{*1}	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
35	— ^{*1}	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
36	—		10087-00412: Carrier move completed to Internal Buffer response ( Page 200 00412: Carrier move completed to Internal Buffer response)	→	—
37	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
38	— ^{*1}	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
39	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
40	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
41	— ^{*1}	←	S6F11: Carrier Location Change (CEID 30051)		—
42	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
43	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification ( Page 145 00309: Carrier opened notification)

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
44	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
45	—		10087-00309: Carrier opened response (📄 Page 189 00309: Carrier opened response)	→	—
46	—		Carrier State Model state transition No.(13) (📄 Page 42 Carrier State Model)	←	The equipment verification has succeeded after reading of a slot map in an FIMS port. 00087-00601: SlotMap verification ok notification (📄 Page 164 00601: SlotMap verification ok notification)
47	—*1	←	S6F11: SLOT MAP NOT READ to SLOT MAP VERIFICATION OK (CEID 30010)		—
48	—		10087-00601: SlotMap verification ok response (📄 Page 209 00601: SlotMap verification ok response)	→	—
49	—		Carrier State Model state transition No.(18) (📄 Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification (📄 Page 147 00311: Carrier accessing started notification)
50	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
51	—		10087-00311: Carrier accessing started response (📄 Page 191 00311: Carrier accessing started response)	→	—
52	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification (📄 Page 148 00312: Carrier approaching complete notification)
53	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
54	—		10087-00312: Carrier approaching complete response (📄 Page 192 00312: Carrier approaching complete response)	→	—
55	—		Carrier State Model state transition No.(19) (📄 Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification (📄 Page 149 00313: Carrier accessing normally finished notification)
56	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
57	—		10087-00313: Carrier accessing normally finished response (📄 Page 193 00313: Carrier accessing normally finished response)	→	—
58	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification (📄 Page 146 00310: Carrier closed notification)
59	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
60	—		10087-00310: Carrier closed response (📄 Page 190 00310: Carrier closed response)	→	—
61	Instructs the carrier-out. S3F17: CarrierOut (📄 Page 293 S3F17: CarrierOut)	→	—		—
62	—	←	S3F18: Carrier Action Acknowledge (📄 Page 307 S3F18: Carrier Action Acknowledge)		—
63	—		10087-00911: CarrierOut service notification (📄 Page 223 00911: CarrierOut service notification)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
64	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(6) (📄 Page 48 Load Port Transfer State Model) Load Port Reservation State Model state transition No.(2) (📄 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) Load Port/Carrier Association State Model state transition No.(2) (📄 Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to a load port has started. 00087-00413: Carrier move started to Load Port notification (📄 Page 157 00413: Carrier move started to Load Port notification)
65	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
66	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
67	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
68	—		10087-00413: Carrier move started to Load Port response (📄 Page 201 00413: Carrier move started to Load Port response)	→	—
69	—		—	←	Notifies that the remaining amount of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification (📄 Page 154 00404: Buffer Capacity changed notification)
70	—	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
71	—		10087-00404: Buffer Capacity changed response (📄 Page 198 00404: Buffer Capacity changed response)	→	—
72	—		Load Port Reservation State Model state transition No.(3) (📄 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Moving of a carrier to a load port has completed. 00087-00414: Carrier move completed to Load Port notification (📄 Page 158 00414: Carrier move completed to Load Port notification)
73	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
74	—		10087-00414: Carrier move completed to Load Port response (📄 Page 202 00414: Carrier move completed to Load Port response)	→	—
75	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification (📄 Page 154 00404: Buffer Capacity changed notification)
76	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
77	—		10087-00404: Buffer Capacity changed response (📄 Page 198 00404: Buffer Capacity changed response)	→	—
78	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (📄 Page 153 00403: Carrier Location change notification)
79	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
80	—		10087-00403: Carrier Location change response (📄 Page 197 00403: Carrier Location change response)	→	—
81	—		Load Port Transfer State Model state transition No.(9) (📄 Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification (📄 Page 139 00303: UNLOAD available notification)
82	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
83	—		10087-00303: UNLOAD available response (📄 Page 183 00303: UNLOAD available response)	→	—
84	—		Load Port Transfer State Model state transition No.(7) (📄 Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification (📄 Page 140 00304: UNLOAD started notification)


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
85	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
86	—		10087-00304: UNLOAD started response (📄 Page 184 00304: UNLOAD started response)	→	—
87	—		Deletes an instance of carrier object of the unloaded carrier. <ul style="list-style-type: none"> Carrier State Model state transition No.(21) (📄 Page 42 Carrier State Model) Load Port Transfer State Model state transition No.(8) (📄 Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) (📄 Page 55 Load Port/Carrier Association State Model) 	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (📄 Page 141 00305: UNLOAD completed notification)
88	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
89	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
90	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
91	—		10087-00305: UNLOAD completed response (📄 Page 185 00305: UNLOAD completed response)	→	—
92	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (📄 Page 153 00403: Carrier Location change notification)
93	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
94	—		10087-00403: Carrier Location change response (📄 Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Normal roundtrip 5

The following table shows the state transition satisfying the following conditions:


- Fixed buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'CarrierNotification' service accepted
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 385 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State
1	1 to 4	Equipment is notified of future Carrier arrival.	H→E	CarrierNotification	TB	NA	A	INR	SNR	NA
2	5 to 7	Loading transfer starts.	H←E	TransferBlocked				IVO	SVO	IA
3	8 to 10	Loading transfer completes.	—	—						
4	11 to 20	CarrierID is read.	—	—						
5	20	CarrierID is verified by equipment, and result is OK.	H←E	IDVerificationOK						
6	21 to 23	Carrier is docked.	—	—						
7	24 to 26	Slot map is read.	—	—						
8	26	Slot map is verified by equipment, and result is OK.	H←E	SlotMapVerificationOK						
9	27 to 32	Process starts.	—	—						
10	33 to 35	Process completes.	—	—						
11	36 to 41	Carrier is undocked.	H←E	ReadyToUnload	RTU	NA	No State	No State	No State	No State
12	42 to 44	Unloading transfer starts.	H←E	TransferBlocked	TB					
13	45 to 52	Unloading transfer completes.	H←E	ReadyToLoad	RTL					

*1 The corresponding number of usage examples of control CPU interfaces




















■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: CarrierNotification (☞ Page 290 S3F17: CarrierNotification)	→	Generates an instance of carrier object. Carrier State Model state transition No.(2) (☞ Page 42 Carrier State Model)		—
2	—	←	S3F18: Carrier Action Acknowledge (☞ Page 307 S3F18: Carrier Action Acknowledge)		—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)		—
4	—		10087-00910: CarrierNotification service notification (☞ Page 222 00910: CarrierNotification service notification)	→	—
5	—		Load Port Transfer State Model state transition No.(6) (☞ Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (☞ Page 137 00301: LOAD started notification)
6	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
7	—		10087-00301: LOAD started response (☞ Page 181 00301: LOAD started response)	→	—
8	—		Load Port Reservation State Model state transition No.(3) (☞ Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (☞ Page 138 00302: LOAD completed notification)
9	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
10	—		10087-00302: LOAD completed response (☞ Page 182 00302: LOAD completed response)	→	—
11	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (☞ Page 143 00307: Carrier clamped notification)
12	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
13	—		10087-00307: Carrier clamped response (☞ Page 187 00307: Carrier clamped response)	→	—
14	—		Carrier ID equipment verification has succeeded. • Load Port/Carrier Association State Model state transition No.(2) (☞ Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(6) (☞ Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (☞ Page 160 00501: CarrierID read successful notification)
15	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
16	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)		—
17	—		10087-00501: CarrierID read successful response (☞ Page 204 00501: CarrierID read successful response)	→	—
18	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
19	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
20	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
21	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification (☞ Page 145 00309: Carrier opened notification)
22	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
23	—		10087-00309: Carrier opened response (☞ Page 189 00309: Carrier opened response)	→	—

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
24	—		Carrier State Model state transition No.(13) ( Page 42 Carrier State Model)	←	Slot map reading and equipment verification have succeeded. 00087-00601: SlotMap verification ok notification ( Page 164 00601: SlotMap verification ok notification)
25	—*1	←	S6F11: SLOT MAP NOT READ to SLOT MAP VERIFICATION OK (CEID 30010)		—
26	—		10087-00601: SlotMap verification ok response ( Page 209 00601: SlotMap verification ok response)	→	—
27	—		Carrier State Model state transition No.(18) ( Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification ( Page 147 00311: Carrier accessing started notification)
28	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
29	—		10087-00311: Carrier accessing started response ( Page 191 00311: Carrier accessing started response)	→	—
30	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification ( Page 148 00312: Carrier approaching complete notification)
31	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
32	—		10087-00312: Carrier approaching complete response ( Page 192 00312: Carrier approaching complete response)	→	—
33	—		Carrier State Model state transition No.(19) ( Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification ( Page 149 00313: Carrier accessing normally finished notification)
34	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
35	—		10087-00313: Carrier accessing normally finished response ( Page 193 00313: Carrier accessing normally finished response)	→	—
36	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification ( Page 146 00310: Carrier closed notification)
37	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
38	—		10087-00310: Carrier closed response ( Page 190 00310: Carrier closed response)	→	—
39	—		Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
40	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
41	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—
42	—		Load Port Transfer State Model state transition No.(7) ( Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification ( Page 140 00304: UNLOAD started notification)
43	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
44	—		10087-00304: UNLOAD started response ( Page 184 00304: UNLOAD started response)	→	—


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
45	—		Deletes an instance of carrier object of the unloaded carrier. • Carrier State Model state transition No.(21) (Page 42 Carrier State Model) • Load Port Transfer State Model state transition No.(8) (Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) (Page 55 Load Port/Carrier Association State Model)	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (Page 141 00305: UNLOAD completed notification)
46	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
47	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
48	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
49	—		10087-00305: UNLOAD completed response (Page 185 00305: UNLOAD completed response)	→	—
50	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (Page 153 00403: Carrier Location change notification)
51	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
52	—		10087-00403: Carrier Location change response (Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Normal roundtrip 6

The following table shows the state transition satisfying the following conditions:


- Internal buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'CarrierNotification' service accepted
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 389 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State
1	1 to 7	Equipment is notified of future Carrier arrival.	H→E	CarrierNotification				INR	SNR	NA
2	8 to 10	Loading transfer starts.	H←E	TransferBlocked	TB	NR	A	IVO	SVO	IA
3	11 to 13	Loading transfer completes.	—	—						
4	14 to 23	CarrierID is read.	—	—						
5		CarrierID is verified by equipment, and result is OK.	H←E	IDVerificationOK						
6	24 to 31	Carrier-in starts.	H←E	BufferCapacityChange						
7	32 to 41	Carrier-in completes.	—	—		RTL	NA			
8	—	Process starts.	—	—	RTL	R	A	No State	No State	No State
9	42 to 47	Slot map is read at FIMS port.	—	—						
10		Slot map is verified by equipment, and result is OK.	H←E	SlotMapVerificationOK						
11	48 to 53	Process completes.	—	—						
12	54 to 59	Carrier completes.	H←E	CarrierComplete						
13	60 to 62	Host commands to carrier-out.	H→E	CarrierOut						
14	63 to 70	Carrier-out starts.	H←E	TransferBlocked	TB	R	A	No State	No State	No State
15	71 to 82	Carrier-out completes.	H←E	ReadyToUnload	RTU	NR				
			H←E	BufferCapacityChange						
16	83 to 85	Unloading transfer starts.	H←E	TransferBlocked	TB					
17	86 to 93	Unloading transfer completes.	H←E	ReadyToLoad	RTL		NA	No State	No State	No State

*1 The corresponding number of usage examples of control CPU interfaces


















■Usage examples of control CPU interfaces





















For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: CarrierNotification (📖 Page 290 S3F17: CarrierNotification)	→	Generates an instance of carrier object. Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model)		—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)		—
4	—		10087-00910: CarrierNotification service notification (📖 Page 222 00910: CarrierNotification service notification)	→	—
5	—		—	←	Notifies that the remaining amount (unassigned space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification (📖 Page 154 00404: Buffer Capacity changed notification)
6	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
7	—		10087-00404: Buffer Capacity changed response (📖 Page 198 00404: Buffer Capacity changed response)	→	—
8	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
9	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
10	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
11	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
12	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
13	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
14	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
15	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
16	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
17	—		Carrier ID equipment verification has succeeded. • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(6) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
18	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
19	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)		—
20	—		10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
21	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
22	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
23	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
24	—		—	←	A carrier has been unclamped. 00087-00308: Carrier unclamped notification ( Page 144 00308: Carrier unclamped notification)
25	—*1	←	S6F11: Carrier Unclamped (CEID 30053)		—
26	—		10087-00308: Carrier unclamped response ( Page 188 00308: Carrier unclamped response)	→	—
27	—		—	←	Moving of a carrier to an FIMS port has started. 00087-00411: Carrier move started to Internal Buffer notification ( Page 155 00411: Carrier move started to Internal Buffer notification)
28	—		10087-00411: Carrier move started to Internal Buffer response ( Page 199 00411: Carrier move started to Internal Buffer response)	→	—
29	—		—	←	Notifies that the remaining amount (free space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
30	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
31	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
32	—		<ul style="list-style-type: none"> • Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to an FIMS port has completed. 00087-00412: Carrier move completed to Internal Buffer notification ( Page 156 00412: Carrier move completed to Internal Buffer notification)
33	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
34	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
35	—		10087-00412: Carrier move completed to Internal Buffer response ( Page 200 00412: Carrier move completed to Internal Buffer response)	→	—
36	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
37	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
38	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
39	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
40	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
41	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
42	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification ( Page 145 00309: Carrier opened notification)
43	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
44	—		10087-00309: Carrier opened response ( Page 189 00309: Carrier opened response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
45	—		Carrier State Model state transition No.(13) ( Page 42 Carrier State Model)	←	Slot map reading and equipment verification have succeeded. 00087-00601: SlotMap verification ok notification ( Page 164 00601: SlotMap verification ok notification)
46	—*1	←	S6F11: SLOT MAP NOT READ to SLOT MAP VERIFICATION OK (CEID 30010)		—
47	—		10087-00601: SlotMap verification ok response ( Page 209 00601: SlotMap verification ok response)	→	—
48	—		Carrier State Model state transition No.(18) ( Page 42 Carrier State Model)	←	Access to a carrier has started. 00087-00311: Carrier accessing started notification ( Page 147 00311: Carrier accessing started notification)
49	—*1	←	S6F11: NOT ACCESSED to IN ACCESS (CEID 30014)		—
50	—		10087-00311: Carrier accessing started response ( Page 191 00311: Carrier accessing started response)	→	—
51	—		—	←	The completion of accessing a carrier has approached. 00087-00312: Carrier approaching complete notification ( Page 148 00312: Carrier approaching complete notification)
52	—*1	←	S6F11: Carrier Approaching Complete (CEID 30048)		—
53	—		10087-00312: Carrier approaching complete response ( Page 192 00312: Carrier approaching complete response)	→	—
54	—		Carrier State Model state transition No.(19) ( Page 42 Carrier State Model)	←	Access to a carrier has completed. (Carrier Complete) 00087-00313: Carrier accessing normally finished notification ( Page 149 00313: Carrier accessing normally finished notification)
55	—*1	←	S6F11: IN ACCESS to CARRIER COMPLETE (CEID 30015)		—
56	—		10087-00313: Carrier accessing normally finished response ( Page 193 00313: Carrier accessing normally finished response)	→	—
57	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification ( Page 146 00310: Carrier closed notification)
58	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
59	—		10087-00310: Carrier closed response ( Page 190 00310: Carrier closed response)	→	—
60	Instructs the carrier-out. S3F17: CarrierOut ( Page 293 S3F17: CarrierOut)	→	—		—
61	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—
62	—		10087-00911: CarrierOut service notification ( Page 223 00911: CarrierOut service notification)	→	—
63	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(6) ( Page 48 Load Port Transfer State Model) Load Port Reservation State Model state transition No.(2) ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) Load Port/Carrier Association State Model state transition No.(2) ( Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to a load port has started. 00087-00413: Carrier move started to Load Port notification ( Page 157 00413: Carrier move started to Load Port notification)

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
64	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
65	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
66	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
67	—		10087-00413: Carrier move started to Load Port response (☞ Page 201 00413: Carrier move started to Load Port response)	→	—
68	—		—	←	Notifies that the remaining amount of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification (☞ Page 154 00404: Buffer Capacity changed notification)
69	—	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
70	—		10087-00404: Buffer Capacity changed response (☞ Page 198 00404: Buffer Capacity changed response)	→	—
71	—		Load Port Reservation State Model state transition No.(3) (☞ Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Moving of a carrier to a load port has completed. 00087-00414: Carrier move completed to Load Port notification (☞ Page 158 00414: Carrier move completed to Load Port notification)
72	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
73	—		10087-00414: Carrier move completed to Load Port response (☞ Page 202 00414: Carrier move completed to Load Port response)	→	—
74	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification (☞ Page 154 00404: Buffer Capacity changed notification)
75	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
76	—		10087-00404: Buffer Capacity changed response (☞ Page 198 00404: Buffer Capacity changed response)	→	—
77	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
78	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
79	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
80	—		Load Port Transfer State Model state transition No.(9) (☞ Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification (☞ Page 139 00303: UNLOAD available notification)
81	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
82	—		10087-00303: UNLOAD available response (☞ Page 183 00303: UNLOAD available response)	→	—
83	—		Load Port Transfer State Model state transition No.(7) (☞ Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification (☞ Page 140 00304: UNLOAD started notification)
84	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
85	—		10087-00304: UNLOAD started response (☞ Page 184 00304: UNLOAD started response)	→	—


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
86	—		Deletes an instance of carrier object of the unloaded carrier. • Carrier State Model state transition No.(21) (Page 42 Carrier State Model) • Load Port Transfer State Model state transition No.(8) (Page 48 Load Port Transfer State Model) • Load Port/Carrier Association State Model state transition No.(3) (Page 55 Load Port/Carrier Association State Model)	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (Page 141 00305: UNLOAD completed notification)
87	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
88	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
89	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
90	—		10087-00305: UNLOAD completed response (Page 185 00305: UNLOAD completed response)	→	—
91	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (Page 153 00403: Carrier Location change notification)
92	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
93	—		10087-00403: Carrier Location change response (Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Abnormal CarrierID verification 1

The following table shows the state transition satisfying the following conditions:


- Fixed buffer manufacturing equipment
- FOUP used
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted
- Carrier returned by using the 'CancelCarrier' service
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 395 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State
1	1 to 3	Loading transfer starts.	H←E	TransferBlocked	TB	NR	A	WFH	SNR	NA
2	4 to 6	Loading transfer completes.	—	—						
3	7 to 16	CarrierID is read.	H←E	WaitingForHost						
4	—	CarrierID is verified by host, and result is Failed.	—	—						
5	17 to 20	Host commands to return.	H→E	CancelCarrier	RTU			IVF		
6	21 to 23	Carrier is made ready to unload.	H←E	ReadyToUnload						

*1 The corresponding number of usage examples of control CPU interfaces


■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
10	—		Generates an instance of carrier object of the read carrier ID. • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
11	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
12	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)		—
13	—		10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
14	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
15	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
16	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
17	Determines the interruption of processing. S3F17: CancelCarrier (📖 Page 277 S3F17: CancelCarrier)	→	Carrier ID host verification has failed. Carrier State Model state transition No.(9) (📖 Page 42 Carrier State Model)		—
18	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
19	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION FAIL (CEID 30007)		—
20	—		10087-00904: CancelCarrier service notification (📖 Page 217 00904: CancelCarrier service notification)	→	—
21	—		Load Port Transfer State Model state transition No.(9) (📖 Page 48 Load Port Transfer State Model)	←	Notifies that a carrier is undocked and it can be unloaded. 00087-00303: UNLOAD available notification (📖 Page 139 00303: UNLOAD available notification)

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No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
22	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
23	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Abnormal CarrierID verification 2

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- Carrier returned by using the 'CancelCarrier' service
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 398 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name						
					LTS	LR S	LCA S	CIDS (A) CSMS (A) CAS (A)	CID S (B)	CSM S (B)	CAS (B)
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State	No State
1	1 to 6	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind		R	A	CIDA: INR CSMS: SNR CAS: NA			
2	7 to 9	Loading transfer starts.	H←E	TransferBlocked	TB	NR	A	CIDA: INR CSMS: SNR CAS: NA	No State	No State	No State
3	10 to 12	Loading transfer completes.	—	—							
4	13 to 23	CarrierID is read.	—	—							
5		CarrierID is verified by production equipment, and result is Failed. The carrier object created by the Bind service is destroyed. A carrier object with the id determined by read is created.	H←E	WaitingForHost							
6	24 to 27	Host commands to return.	H→E	CancelCarrier							
7	28 to 30	Carrier is made ready to unload.	H←E	ReadyToUnload	RTU						











*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation (Carrier A, LoadPort1) S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object of carrier A, reserves the load port 1, and associates the load port 1 with carrier A. • Carrier A: Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • LoadPort1: Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	—	—
7	—	←	LoadPort1: Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	Carrier B has arrived at the load port 1, and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
8	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
9	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	—	—
10	—	←	LoadPort1: Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of carrier B has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
11	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
12	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	—	—
13	—	←	—	←	Carrier B has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
14	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
15	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	—	—
16	—	←	Carrier ID equipment verification has failed. A carrier object (carrier A) associated with the load port 1 is deleted. In addition, a carrier object (carrier B) is generated with the read carrier ID, and the carrier B is associated with the load port 1. • Carrier A: Carrier State Model state transition No.(21) (📖 Page 42 Carrier State Model) • Carrier B: Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port/Carrier Association State Model state transition No.(4) (📖 Page 55 Load Port/Carrier Association State Model)	←	Reading of a carrier ID in the load port 1 has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
17	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)	—	—
18	—*1	←	S6F11: ASSOCIATED to ASSOCIATED (CEID 30042)	—	—
19	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)	—	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
20	—		10087-00501: CarrierID read successful response ( Page 204 00501: CarrierID read successful response)	→	—
21	—*1		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
22	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
23	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
24	Determines the cancellation of processing. S3F17: CancelCarrier ( Page 277 S3F17: CancelCarrier)	→	Carrier B: Carrier State Model state transition No.(9) ( Page 42 Carrier State Model)		—
25	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—
26	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION FAIL (CEID 30007)		—
27	—		10087-00904: CancelCarrier service notification ( Page 217 00904: CancelCarrier service notification)	→	—
28	—		LoadPort1: Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
29	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
30	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Abnormal CarrierID verification 3

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- Processing of a carrier continued by using the 'ProceedWithCarrier' service
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 401 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name						
					LTS	LRS	LCA S	CIDS (A) CSMS (A) CAS (A)	CIDS (B)	CSMS (B)	CAS (B)
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State	No State
1	1 to 6	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind	TB	R	A	CIDS: INRCSMS: SNR CAS: NA	No State	No State	No State
2	7 to 9	Loading transfer starts.	H←E	TransferBlocked							
3	10 to 12	Loading transfer completes.	—	—							
4	13 to 23	CarrierID is read.	—	—							
5	24 to 27	CarrierID is verified by production equipment, and result is Failed.	H←E	WaitingForHost		NR		No State	WFH	SNR	NA
6		Host commands to proceed.	H→E	ProceedWithCarrier							
7	—	Go to next step.	—	—							

*1 The corresponding number of usage examples of control CPU interfaces








■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation (Carrier A, LoadPort1) S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object of carrier A, reserves the load port 1, and associates the load port 1 with carrier A. • Carrier A: Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • LoadPort1: Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	—	—
7	—	←	LoadPort1: Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	Carrier B has arrived at the load port 1, and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
8	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
9	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	—	—
10	—	←	LoadPort1: Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of carrier B has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
11	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
12	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	—	—
13	—	←	—	←	Carrier B has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
14	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
15	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	—	—
16	—	←	Carrier ID equipment verification has failed. A carrier object (carrier A) associated with the load port 1 is deleted. In addition, a carrier object (carrier B) is generated with the read carrier ID, and the carrier B is associated with the load port 1. • Carrier A: Carrier State Model state transition No.(21) (📖 Page 42 Carrier State Model) • Carrier B: Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port/Carrier Association State Model state transition No.(4) (📖 Page 55 Load Port/Carrier Association State Model)	←	Reading of a carrier ID in the load port 1 has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
17	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)	—	—
18	—*1	←	S6F11: ASSOCIATED to ASSOCIATED (CEID 30042)	—	—
19	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)	—	—

A


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
20	—		10087-00501: CarrierID read successful response ( Page 204 00501: CarrierID read successful response)	→	—
21	—		—	←	Notifies that the location of a carrier has changed.* ² 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
22	—* ¹	←	S6F11: Carrier Location Change (CEID 30051)		—
23	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
24	Determines the continuation of processing. S3F17: ProceedWithCarrier ( Page 300 S3F17: ProceedWithCarrier)	→	The continuation of processing of a carrier has been instructed by HOST. Carrier B: Carrier State Model state transition No.(8) ( Page 42 Carrier State Model)		—
25	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—
26	—* ¹	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
27	—		10087-00918: ProceedWithCarrier service notification ( Page 228 00918: ProceedWithCarrier service notification)	→	—
—	—		(Proceeding to slot map verification)		(Proceeding to slot map verification)

*¹ The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*² Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Abnormal slot map verification 1

The following table shows the state transition satisfying the following conditions:


- Fixed buffer manufacturing equipment
- FOUP used
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted
- Carrier returned by using the 'CancelCarrier' service
- Load port reserved from equipment ( Page 363 Load port reservation from equipment)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 404 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	NA	No State	No State	No State
1	1 to 3	Loading transfer starts.	H←E	TransferBlocked	TB	NR	A	WFH	SNR	NA
2	4 to 6	Loading transfer completes.	—	—						
3	7 to 16	CarrierID is read.	H←E	WaitingForHost						
4	—	CarrierID is verified by host, and result is OK.	—	—						
5	17 to 20	Host commands to proceed.	H→E	ProceedWithCarrier						
6	21 to 26	Carrier is docked.	—	—						
7	—	Slot map is read.	H←E	WaitingForHost						
8	—	Slot map is verified by host, and result is Failed.	—	—						
9	27 to 30	Host commands to return.	H→E	CancelCarrier	RTU			IVO	SVF	
10	31 to 36	Carrier is made ready to unload.	H←E	ReadyToUnload						














*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
10	—		Generates an instance of carrier object of the read carrier ID, and associates it with a load port. • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) • Carrier State Model state transition No.(3) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
11	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
12	—*1	←	S6F11: NO STATE to WAITING FOR HOST (CEID 30001)		—
13	—		10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—
14	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
15	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
16	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
17	Determines the continuation of processing. S3F17: ProceedWithCarrier (📖 Page 300 S3F17: ProceedWithCarrier)	→	Carrier ID host verification has succeeded. Carrier State Model state transition No.(8) (📖 Page 42 Carrier State Model)		—
18	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
19	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
20	—		10087-00918: ProceedWithCarrier service notification (📖 Page 228 00918: ProceedWithCarrier service notification)	→	—
21	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification (📖 Page 145 00309: Carrier opened notification)
22	—*1	←	S6F11: Carrier Opened (CEID 30052)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
23	—		10087-00309: Carrier opened response ( Page 189 00309: Carrier opened response)	→	—
24	—		Carrier State Model state transition No.(14) ( Page 42 Carrier State Model)	←	Reading of a slot map has succeeded. 00087-00602: SlotMap waiting for host verification notification ( Page 165 00602: SlotMap waiting for host verification notification)
25	—*1	←	S6F11: SLOT MAP NOT READ to WAITING FOR HOST (CEID 30011)		—
26	—		10087-00602: SlotMap waiting for host verification response ( Page 210 00602: SlotMap waiting for host verification response)	→	—
27	Fails in the slot map verification, and determines the cancellation of processing. S3F17: CancelCarrier ( Page 277 S3F17: CancelCarrier)	→	Carrier State Model state transition No.(16) ( Page 42 Carrier State Model)		—
28	—	←	S3F18: Carrier Action Acknowledge ( Page 307 S3F18: Carrier Action Acknowledge)		—
29	—*1	←	S6F11: WAITING FOR HOST to SLOT MAP VERIFICATION FAIL (CEID 30013)		—
30	—		10087-00904: CancelCarrier service notification ( Page 217 00904: CancelCarrier service notification)	→	—
31	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification ( Page 146 00310: Carrier closed notification)
32	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
33	—		10087-00310: Carrier closed response ( Page 190 00310: Carrier closed response)	→	—
34	—		Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
35	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
36	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Abnormal slot map verification 2

The following table shows the state transition satisfying the following conditions:

- Internal buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- Carrier returned by using the 'CancelCarrier' service
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 407 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 9	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind		R	A	INR	SNR	NA
2	10 to 12	Loading transfer starts.	H←E	TransferBlocked	TB	NR		IVO		
3	13 to 15	Loading transfer completes.	—	—						
4	16 to 24	CarrierID is read.	—	—						
5		CarrierID is verified by equipment, and result is OK.	H←E	IDVerificationOK						
6	25 to 32	Carrier-in starts.	H←E	BufferCapacityChange						
7	33 to 42	Carrier-in completes.	—	—	RTL		NA			
8	—	Process starts.	—	—						
9	43 to 48	Slot map is read at FIMS port.	—	—						
10		Slot map is verified by production equipment, and result is Failed.	H←E	WaitingForHost						
11	49 to 52	Host commands to return.	H→E	CancelCarrier						
12	53 to 55	Carrier returns to internal buffer.	—	—						















*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object, reserves a load port, and associates the load port with the carrier ID. • Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	→	—
7	—	—	—	←	Notifies that the remaining amount (unassigned space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification (📖 Page 154 00404: Buffer Capacity changed notification)
8	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)	—	—
9	—	→	10087-00404: Buffer Capacity changed response (📖 Page 198 00404: Buffer Capacity changed response)	→	—
10	—	←	Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
11	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
12	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
13	—	←	Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
14	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
15	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
16	—	←	—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
17	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
18	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
19	—	←	Carrier ID equipment verification has succeeded. Carrier State Model state transition No.(6) (📖 Page 42 Carrier State Model)	←	Reading of a carrier ID has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)
20	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)	—	—
21	—	→	10087-00501: CarrierID read successful response (📖 Page 204 00501: CarrierID read successful response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
22	—		—	←	Notifies that the location of a carrier has changed. ^{*2} 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
23	— ^{*1}	←	S6F11: Carrier Location Change (CEID 30051)		—
24	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
25	—		—	←	A carrier has been unclamped. 00087-00308: Carrier unclamped notification ( Page 144 00308: Carrier unclamped notification)
26	— ^{*1}	←	S6F11: Carrier Unclamped (CEID 30053)		—
27	—		10087-00308: Carrier unclamped response ( Page 188 00308: Carrier unclamped response)	→	—
28	—		—	←	Moving of a carrier to an FIMS port has started. 00087-00411: Carrier move started to Internal Buffer notification ( Page 155 00411: Carrier move started to Internal Buffer notification)
29	—		10087-00411: Carrier move started to Internal Buffer response ( Page 199 00411: Carrier move started to Internal Buffer response)	→	—
30	—		—	←	Notifies that the remaining amount (free space) of internal buffer capacity has decreased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
31	— ^{*1}	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
32	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
33	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model) 	←	Moving of a carrier to an FIMS port has completed. 00087-00412: Carrier move completed to Internal Buffer notification ( Page 156 00412: Carrier move completed to Internal Buffer notification)
34	— ^{*1}	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
35	— ^{*1}	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
36	—		10087-00412: Carrier move completed to Internal Buffer response ( Page 200 00412: Carrier move completed to Internal Buffer response)	→	—
37	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
38	— ^{*1}	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
39	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
40	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
41	— ^{*1}	←	S6F11: Carrier Location Change (CEID 30051)		—
42	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
43	—		—	←	Docks a carrier and opens the door. 00087-00309: Carrier opened notification ( Page 145 00309: Carrier opened notification)

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
44	—*1	←	S6F11: Carrier Opened (CEID 30052)		—
45	—		10087-00309: Carrier opened response (Page 189 00309: Carrier opened response)	→	—
46	—		Carrier State Model state transition No.(14) (Page 42 Carrier State Model)	←	The equipment verification has failed after reading of a slot map in an FIMS port. 00087-00603: SlotMap verification fail notification (Page 166 00603: SlotMap verification fail notification)
47	—*1	←	S6F11: SLOT MAP NOT READ to WAITING FOR HOST (CEID 30011)		—
48	—		10087-00603: SlotMap verification fail response (Page 211 00603: SlotMap verification fail response)	→	—
49	Determines the cancellation of processing. S3F17: CancelCarrier (Page 277 S3F17: CancelCarrier)	→	Carrier State Model state transition No.(16) (Page 42 Carrier State Model)		—
50	—	←	S3F18: Carrier Action Acknowledge (Page 307 S3F18: Carrier Action Acknowledge)		—
51	—*1	←	S6F11: WAITING FOR HOST to SLOT MAP VERIFICATION FAIL (CEID 30013)		—
52	—		10087-00904: CancelCarrier service notification (Page 217 00904: CancelCarrier service notification)	→	—
53	—		—	←	The door is closed, and a carrier has been undocked. 00087-00310: Carrier closed notification (Page 146 00310: Carrier closed notification)
54	—*1	←	S6F11: Carrier Closed (CEID 30050)		—
55	—		10087-00310: Carrier closed response (Page 190 00310: Carrier closed response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Carrier-out queuing

The following table shows the state transition satisfying the following conditions:

- Internal buffer manufacturing equipment
- One load port available
- Initial condition: Two or more carriers are in the manufacturing equipment.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 411 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name				
					LTS	LRS	LCAS	CIDS (1) CSMS (1) CAS (1)	CIDS (2) CSMS (2) CAS (2)
0	—	Initial condition.	—	—	RTL	NR	NA	CIDS: IVO CSMS: SVO CAS: CC	CIDS: IVO CSMS: SVO CAS: CC
1	1 to 3	Host commands to carrier-out.	H→E	CarrierOut	TB	R	A		
2	4 to 8	Carrier-out #1 starts.	H←E	TransferBlocked					
3	9 to 11	Host commands to carrier-out #2 (Queued).	H→E	CarrierOut					
4	12 to 23	Carrier-out #1 completes.	H←E	ReadyToUnload	RTU	NR			
			H←E	BufferCapacityChange					
5	24 to 26	Unloading transfer #1 starts.	H←E	TransferBlocked	TB				
6	27 to 34	Unloading transfer #1 completes.	—	—	TB	R		No State	
7		Carrier-out #2 starts.	—	—					
8	35 to 46	Carrier-out #2 completes.	H←E	ReadyToUnload	RTU	NR			
			H←E	BufferCapacityChange					
9	47 to 49	Unloading transfer #2 starts.	H←E	TransferBlocked	TB				
10	50 to 57	Unloading transfer #2 completes.	H←E	ReadyToLoad	RTL		NA		No State

*1 The corresponding number of usage examples of control CPU interfaces



















■Usage examples of control CPU interfaces

















For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Instructs the carrier-out 1. (Carrier 1) S3F17: CarrierOut (📖 Page 293 S3F17: CarrierOut)	→	—		—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
3	—		10087-00911: CarrierOut service notification (📖 Page 223 00911: CarrierOut service notification)	→	—
4	—		<ul style="list-style-type: none"> Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model) Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model) 	←	Moving of the carrier 1 to a load port has started. (Carrier-out 1 starts.) 00087-00413: Carrier move started to Load Port notification (📖 Page 157 00413: Carrier move started to Load Port notification)
5	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
6	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
7	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
8	—		10087-00413: Carrier move started to Load Port response (📖 Page 201 00413: Carrier move started to Load Port response)	→	—
9	Instructs the carrier-out 2. (Carrier 2) S3F17: CarrierOut (📖 Page 293 S3F17: CarrierOut)	→	—		—
10	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
11	—		10087-00911: CarrierOut service notification (📖 Page 223 00911: CarrierOut service notification)	→	Carrier-out 2 is queued. (Carrier 2)
12	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Moving of the carrier 1 to a load port has completed. (Carrier-out 1 completes.) 00087-00414: Carrier move completed to Load Port notification (📖 Page 158 00414: Carrier move completed to Load Port notification)
13	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
14	—		10087-00414: Carrier move completed to Load Port response (📖 Page 202 00414: Carrier move completed to Load Port response)	→	—
15	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. (Carrier-out 1) 00087-00404: Buffer Capacity changed notification (📖 Page 154 00404: Buffer Capacity changed notification)
16	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
17	—		10087-00404: Buffer Capacity changed response (📖 Page 198 00404: Buffer Capacity changed response)	→	—
18	—		—	←	Notifies that the location of the carrier 1 has changed. 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)

A


No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
19	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
20	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
21	—		Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that the carrier 1 can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
22	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
23	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—
24	—		Load Port Transfer State Model state transition No.(7) ( Page 48 Load Port Transfer State Model)	←	Unloading of the carrier 1 has started. 00087-00304: UNLOAD started notification ( Page 140 00304: UNLOAD started notification)
25	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
26	—		10087-00304: UNLOAD started response ( Page 184 00304: UNLOAD started response)	→	—
27	—		<ul style="list-style-type: none"> Carrier State Model state transition No.(21) ( Page 42 Carrier State Model) Load Port Reservation State Model state transition No.(2) ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) Load Port/Carrier Association State Model state transition No.(4) ( Page 55 Load Port/Carrier Association State Model) 	←	Unloading of the carrier 1 has completed, and moving of the carrier 2 to a load port has started. (Carrier-out 2 starts.) 00087-00415: UNLOAD completed and Carrier move started to Load Port notification ( Page 159 00415: UNLOAD completed and Carrier move started to Load Port notification)
28	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
29	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
30	—*1	←	S6F11: ASSOCIATED to ASSOCIATED (CEID 30042)		—
31	—		10087-00415: UNLOAD completed and Carrier move started to Load Port response ( Page 203 00415: UNLOAD completed and Carrier move started to Load Port response)	→	—
32	—		—	←	Notifies that the location of the carrier 1 has changed. (Unloading completes.) 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
33	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
34	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
35	—		Load Port Reservation State Model state transition No.(3) ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Moving of the carrier 2 to a load port has completed. (Carrier-out 2 completes.) 00087-00414: Carrier move completed to Load Port notification ( Page 158 00414: Carrier move completed to Load Port notification)
36	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
37	—		10087-00414: Carrier move completed to Load Port response ( Page 202 00414: Carrier move completed to Load Port response)	→	—
38	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. (Carrier-out 2) 00087-00404: Buffer Capacity changed notification ( Page 154 00404: Buffer Capacity changed notification)
39	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
40	—		10087-00404: Buffer Capacity changed response ( Page 198 00404: Buffer Capacity changed response)	→	—
41	—		—	←	Notifies that the location of the carrier 2 has changed. 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
42	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
43	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—
44	—		Load Port Transfer State Model state transition No.(9) ( Page 48 Load Port Transfer State Model)	←	Notifies that the carrier 2 can be unloaded. 00087-00303: UNLOAD available notification ( Page 139 00303: UNLOAD available notification)
45	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
46	—		10087-00303: UNLOAD available response ( Page 183 00303: UNLOAD available response)	→	—
47	—		Load Port Transfer State Model state transition No.(7) ( Page 48 Load Port Transfer State Model)	←	Unloading of the carrier 2 has started. 00087-00304: UNLOAD started notification ( Page 140 00304: UNLOAD started notification)
48	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
49	—		10087-00304: UNLOAD started response ( Page 184 00304: UNLOAD started response)	→	—
50	—		<ul style="list-style-type: none"> Carrier State Model state transition No.(21) ( Page 42 Carrier State Model) Load Port Transfer State Model state transition No.(8) ( Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) ( Page 55 Load Port/Carrier Association State Model) 	←	Unloading of the carrier 2 has completed. 00087-00305: UNLOAD completed notification ( Page 141 00305: UNLOAD completed notification)
51	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
52	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
53	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
54	—		10087-00305: UNLOAD completed response ( Page 185 00305: UNLOAD completed response)	→	—
55	—		—	←	Notifies that the location of the carrier 2 has changed. (Unloading completes.) 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
56	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
57	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Carrier-out dequeuing (cancellation)

The following table shows the state transition satisfying the following conditions:


- Internal buffer manufacturing equipment
- Initial condition:
 - Two or more carriers are in the manufacturing equipment.
 - There is a carrier moving to a load from the inside of equipment. (Moving of a carrier has been notified by '00087-00413: Carrier move started to Load Port notification.' ( Page 157 00413: Carrier move started to Load Port notification))
 - One or more carrier-out services are being queued.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

 Page 415 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSMS	CAS
0	—	Initial condition.	—	—	TB	R	A	IVO	SVO	CC
1	1 to 2	Host commands to cancel all carrier-out services from queue.	H→E	CancelAllCarrierOut						
2	3	All carrier-out services are canceled from queue.	—	—						
3	4 to 15	Current carrier-out service completes.	H←E H←E	ReadyToUnload BufferCapacityChange	RTU	NR				
4	16 to 18	Unloading transfer starts.	H←E	TransferBlocked	TB					
5	19 to 26	Unloading transfer completes.	H←E	ReadyToLoad	RTL		NA	No State	No State	No State

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Instructs the cancellation of all queued carrier-out services. S3F19: CancelAllCarrierOut (📖 Page 311 S3F19: CancelAllCarrierOut)	→	—		—
2	—	←	S3F20: Cancel All Carrier Out Acknowledge (📖 Page 312 S3F20: Cancel All Carrier Out Acknowledge)		—
3	—		10087-00902: CancelAllCarrierOut service notification (📖 Page 215 00902: CancelAllCarrierOut service notification)	→	Cancels all the queued carrier-out services.
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fix buffer equipment))	←	Moving of a carrier to a load port, which was being processed, has completed. 00087-00414: Carrier move completed to Load Port notification (📖 Page 158 00414: Carrier move completed to Load Port notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00414: Carrier move completed to Load Port response (📖 Page 202 00414: Carrier move completed to Load Port response)	→	—
7	—		—	←	Notifies that the remaining amount of internal buffer capacity has increased. 00087-00404: Buffer Capacity changed notification (📖 Page 154 00404: Buffer Capacity changed notification)
8	—*1	←	S6F11: Buffer Capacity Changed (CEID 30047)		—
9	—		10087-00404: Buffer Capacity changed response (📖 Page 198 00404: Buffer Capacity changed response)	→	—
10	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
11	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
12	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
13	—		Load Port Transfer State Model state transition No.(9) (📖 Page 48 Load Port Transfer State Model)	←	Notifies that a carrier can be unloaded. 00087-00303: UNLOAD available notification (📖 Page 139 00303: UNLOAD available notification)
14	—*1	←	S6F11: TRANSFER BLOCKED to READY TO UNLOAD (CEID 30036)		—
15	—		10087-00303: UNLOAD available response (📖 Page 183 00303: UNLOAD available response)	→	—
16	—		Load Port Transfer State Model state transition No.(7) (📖 Page 48 Load Port Transfer State Model)	←	Unloading of a carrier has started. 00087-00304: UNLOAD started notification (📖 Page 140 00304: UNLOAD started notification)
17	—*1	←	S6F11: READY TO UNLOAD to TRANSFER BLOCKED (CEID 30034)		—
18	—		10087-00304: UNLOAD started response (📖 Page 184 00304: UNLOAD started response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
19	—		<ul style="list-style-type: none"> Carrier State Model state transition No.(21) (☞ Page 42 Carrier State Model) Load Port Transfer State Model state transition No.(8) (☞ Page 48 Load Port Transfer State Model) Load Port/Carrier Association State Model state transition No.(3) (☞ Page 55 Load Port/Carrier Association State Model) 	←	Unloading of a carrier has completed. 00087-00305: UNLOAD completed notification (☞ Page 141 00305: UNLOAD completed notification)
20	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
21	—*1	←	S6F11: TRANSFER BLOCKED to READY TO LOAD (CEID 30035)		—
22	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
23	—		10087-00305: UNLOAD completed response (☞ Page 185 00305: UNLOAD completed response)	→	—
24	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
25	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
26	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Carrier association cancellation

The following table shows the state transition satisfying the following condition:

- Fixed buffer manufacturing equipment
- FOUP used
- Verification with manufacturing equipment
- 'Bind' service accepted
- No load ports reserved

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 418 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCAS	CIDS	CSMS	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 6	Load port is associated with specified CarrierID, and reserved for loading.	H→E	Bind		R	A	INR	SNR	NA
			H←E	Associated						
2	—	Host decides to cancel current carrier delivery.	—	—		NR	NA	No State	No State	No State
3	7 to 12	Host commands to cancel association.	H→E	CancelBind						
			H←E	NotAssociated						

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object, reserves a load port, and associates the load port with the carrier ID. • Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	—	—
7	Determines the cancellation of carrier delivery being processed, and instructs the cancellation of association. S3F17: CancelBind (📖 Page 274 S3F17: CancelBind)	→	Deletes an instance of carrier object, cancels the association of carrier ID and load port, and cancels the reservation of load port. • Carrier State Model state transition No.(21) (📖 Page 42 Carrier State Model) • Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • Load Port/Carrier Association State Model state transition No.(3) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
8	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
9	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)	—	—
10	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)	—	—
11	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)	—	—
12	—	→	10087-00903: CancelBind service notification (📖 Page 216 00903: CancelBind service notification)	—	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Access mode change (MANUAL to AUTO)

The following table shows the state transition satisfying the following condition:

- Initial condition: Access mode = MANUAL

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

☞ Page 419 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

☞ Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name
					AMS
0	—	Initial condition.	—	—	M
1	1 to 3	Access mode is changed to AUTO.	H←E	Auto	A

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Access Mode State Model state transition No.(2) (☞ Page 58 Access Mode State Model)	←	Changes the access mode to 'AUTO.' 00087-00101: AccessMode AUTO request (☞ Page 129 00101: AccessMode AUTO request)
2	—*1	←	S6F11: MANUAL to AUTO (CEID 30045)		—
3	—		10087-00101: AccessMode AUTO acknowledge (☞ Page 173 00101: AccessMode AUTO acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

A

Access mode change (AUTO to MANUAL)

The following table shows the state transition satisfying the following condition:

- Initial condition: Access mode = AUTO

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

☞ Page 420 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

☞ Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name
					AMS
0	—	Initial condition.	—	—	A
1	1 to 3	Access mode is changed to MANUAL.	H←E	Manual	M

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Access Mode State Model state transition No.(3) (☞ Page 58 Access Mode State Model)	←	Changes the access mode to 'MANUAL.' 00087-00102: AccessMode MANUAL request (☞ Page 130 00102: AccessMode MANUAL request)
2	—*1	←	S6F11: AUTO to MANUAL (CEID 30046)		—
3	—		10087-00102: AccessMode MANUAL acknowledge (☞ Page 174 00102: AccessMode MANUAL acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Load port service status change

The following table shows the state transition satisfying the following condition:

- Initial condition: Load port service status is IN SERVICE.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

☞ Page 421 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

☞ Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name
					LTS
0	—	Initial condition.	—	—	IS
1	1 to 4	Host commands to change service status to OUT OF SERVICE.	H→E	ChangeServiceStatus	OS
2	5 to 6	Service status is changed to OUT OF SERVICE.	H←E	OutofService	

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Instructs to change the load port service status to 'OUT OF SERVICE.' S3F25: ChangeServiceStatus (☞ Page 313 S3F25: ChangeServiceStatus)	→	—		—
2	—	←	S3F26: Port Action Acknowledge (CAACK=4) (☞ Page 315 S3F26: Port Action Acknowledge)		—
3	—		10087-00917: ChangeServiceStatus service notification (☞ Page 227 00917: ChangeServiceStatus service notification)	→	—
4	—		Load Port Transfer State Model state transition No.(3) (☞ Page 48 Load Port Transfer State Model)	←	Changes the load port service status to 'OUT OF SERVICE.' 00087-00202: OUT OF SERVICE request (☞ Page 134 00202: OUT OF SERVICE request)
5	—*1	←	S6F11: IN SERVICE to OUT OF SERVICE (CEID 30028)		—
6	—		10087-00202: OUT OF SERVICE acknowledge (☞ Page 178 00202: OUT OF SERVICE acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Correct carrier delivery to wrong port scenario 1

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Verification with equipment
- Case in which a carrier associated with the load port 1 for reservation by using the 'Bind' service has been loaded to the load port 3
- The load port 3 is not reserved, and not associated with any carriers.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 423 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name							
					LTS (LP1)	LRS (LP1) LCAS (LP1)	LTS (LP3)	LRS (LP3)	LCA S (LP3)	CID S	CSMS CAS	
0	—	Initial condition.	—	—	RTL	LRS: NR LCAS: NA	RTL	NR	NA	No State	No State	
1	1 to 6	Load port 1 is associated with specified CarrierID, and reserved for loading.	H→E	Bind (LP1)		LRS: R LCAS: A			TB	A		IVO
2	7 to 9		H←E	LP3 TRANSFER BLOCKED								
3	10 to 11	Transfer Completes at load port 3.	H←E	Transfer Complete								
4	12 to 23	CarrierID read at load port 3. Equipment based verification indicates the carrier is at the correct equipment.	H←E	LP1 Not Associated		LRS: NR LCAS: NA						
			H←E	LP3 Associated								
			H←E	IVO								

^{*1} The corresponding number of usage examples of control CPU interfaces




■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Advance carrier object reservation (Carrier A, LoadPort1) S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object of carrier A, reserves the load port 1, and associates the load port 1 with carrier A. • Carrier A: Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • LoadPort1: Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)	—	—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)	—	—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)	—	—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)	—	—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)	—	—
6	—	→	10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	—	—
7	—	←	LoadPort3: Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	Carrier A has arrived at the load port 3, and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
8	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)	—	—
9	—	→	10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	—	—
10	—	←	—	←	Loading of carrier A has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
11	—	→	10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	—	—
12	—	←	—	←	Carrier A has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
13	—*1	←	S6F11: Carrier Clamped (CEID 30049)	—	—
14	—	→	10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	—	—
15	—	←	Carrier ID equipment verification has succeeded; therefore, the following procedure is performed. ❶ Canceling the association for reservation of the load port 1 by using the 'Bind' service ❷ Associating ID of carrier A, which is successfully read, with the load port 3 ❸ Transitioning CIDS (CARRIER ID STATUS) of carrier A to 'ID VERIFICATION OK' • LoadPort1: Load Port Reservation State Model state transition No.(3) • LoadPort1: Load Port/Carrier Association State Model state transition No.(3) • LoadPort3: Load Port/Carrier Association State Model state transition No.(2) • Carrier A: Carrier State Model state transition No.(6) For details on this carrier ID equipment verification, refer to the following: 📖 Page 67 Case in which a carrier registered by using the 'Bind' service is delivered to an available load port	←	Reading of a carrier ID in the load port 3 has succeeded. 00087-00501: CarrierID read successful notification (📖 Page 160 00501: CarrierID read successful notification)

A

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
16	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
17	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
18	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
19	—*1	←	S6F11: ID NOT READ to ID VERIFICATION OK (CEID 30004)		—
20	—		10087-00501: CarrierID read successful response ( Page 204 00501: CarrierID read successful response)	→	—
21	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification ( Page 153 00403: Carrier Location change notification)
22	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
23	—		10087-00403: Carrier Location change response ( Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

Correct carrier delivery to wrong port scenario 2

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Verification with equipment
- ❶ The load port 1 is reserved, and the load port 1 and carrier A are associated by using the 'Bind' service.
- ❷ The load port 2 is reserved, and the load port 2 and carrier B are associated by using the 'Bind' service.
- The carrier A has been loaded to the load port 2 in the states of ❶ and ❷.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 426 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name							
					LTS (LP1)	LRS (LP1) LCAS (LP1)	LTS (LP2)	LRS (LP2)	LCA S (LP2)	CID S (A)	CSMS (A) CAS (A)	CIDS (B) CSMS (B) CAS (B)
0	—	Initial condition.	—	—	RTL	LRS: NR LCAS: NA	RTL	NR	NA	No State	No State	No State
1	1 to 6	Load port 1 is associated with specified CarrierID A, and reserved for loading.	H→E H←E	Bind (CarrierA, LP1) LP1 Associated		LRS: R LCAS: A				INR	CSMS: SNR CAS: NA	
2	7 to 12	Load port 2 is associated with specified CarrierID B, and reserved for loading.	H→E H←E	Bind (CarrierB, LP2) LP2 Associated				R	A			CIDS: INR CSMS: SNR CAS: NA
3	13 to 15	Carrier A Transfer starts at load port 2.	H←E	LP2 TRANSFER BLOCKED			TB					
4	16 to 18	Transfer Completes at load port2.	H←E	Transfer Complete				NR				
5	19 to 31	CarrierID read at load port 2, Equipment based verification indicates that a correct carrier was delivered to the wrong load port.	H←E H←E	LP1 Not Associated Carrier B object destroyed	RTL	LRS: NR LCAS: NA	TB	NR	A	WFH	CSMS: SNRCAS: NA	No State
6	32 to 35	Host oks processing.	H→E	ProceedWithCarrier						IVO		










*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Carrier object reserved in advance by using the 'Bind' service (Carrier A, LoadPort1) S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object of carrier A, reserves the load port 1, and associates the load port 1 with carrier A. • Carrier A: Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • LoadPort1: Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • LoadPort1: Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)		—
2	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
3	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)		—
4	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
5	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
6	—		10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	→	—
7	Carrier object reserved in advance by using the 'Bind' service (Carrier B, LoadPort2) S3F17: Bind (📖 Page 271 S3F17: Bind)	→	Generates an instance of carrier object of carrier B, reserves the load port 2, and associates the load port 2 with carrier B. • Carrier B: Carrier State Model state transition No.(2) (📖 Page 42 Carrier State Model) • LoadPort2: Load Port Reservation State Model state transition No.(2) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment)) • LoadPort2: Load Port/Carrier Association State Model state transition No.(2) (📖 Page 55 Load Port/Carrier Association State Model)		—
8	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
9	—*1	←	S6F11: NO STATE to ID NOT READ (CEID 30000)		—
10	—*1	←	S6F11: NOT RESERVED to RESERVED (CEID 30038)		—
11	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
12	—		10087-00901: Bind service notification (📖 Page 214 00901: Bind service notification)	→	—
13	—		LoadPort2: Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	Carrier A has arrived at the load port 2, and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
14	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
15	—		10087-00301: LOAD started response ( Page 181 00301: LOAD started response)	→	—
16	—		LoadPort2: Load Port Reservation State Model state transition No.(3) ( Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of carrier A in the load port 2 has completed. 00087-00302: LOAD completed notification ( Page 138 00302: LOAD completed notification)
17	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
18	—		10087-00302: LOAD completed response ( Page 182 00302: LOAD completed response)	→	—
19	—		—	←	Carrier A has been clamped. 00087-00307: Carrier clamped notification ( Page 143 00307: Carrier clamped notification)
20	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
21	—		10087-00307: Carrier clamped response ( Page 187 00307: Carrier clamped response)	→	—
22	—		Carrier ID equipment verification has succeeded; therefore, the following procedure is performed. ❶ Canceling the association for reservation of the load port 1 by using the 'Bind' service ❷ Deleting an instance of carrier B ❸ Associating an instance of carrier A with the load port 2 ❹ Transitioning CIDS (CARRIER ID STATUS) of carrier A from 'ID NOT READ' to 'WAITING FOR HOST' • LoadPort1: Load Port Reservation State Model state transition No.(3) • LoadPort1: Load Port/Carrier Association State Model state transition No.(3) • Carrier B: Carrier State Model state transition No.(21) • LoadPort2: Load Port/Carrier Association State Model state transition No.(4) • Carrier A: Carrier State Model state transition No.(7) For details on this carrier ID equipment verification, refer to the following:  Page 68 Case in which a carrier registered by using the 'Bind' service is delivered to another load port for which the 'Bind' service is used	←	Reading of a carrier ID in the load port 2 has succeeded. 00087-00501: CarrierID read successful notification ( Page 160 00501: CarrierID read successful notification)
23	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
24	—*1	←	S6F11: ASSOCIATED to NOT ASSOCIATED (CEID 30041)		—
25	—*1	←	S6F11: CARRIER to NO STATE (CEID 30017)		—
26	—*1	←	S6F11: ASSOCIATED to ASSOCIATED (CEID 30042)		—
27	—*1	←	S6F11: ID NOT READ to WAITING FOR HOST (CEID 30005)		—
28	—		10087-00501: CarrierID read successful response ( Page 204 00501: CarrierID read successful response)	→	—

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
29	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (Page 153 00403: Carrier Location change notification)
30	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
31	—		10087-00403: Carrier Location change response (Page 197 00403: Carrier Location change response)	→	—
32	Determines the continuation of processing. S3F17: ProceedWithCarrier (Page 300 S3F17: ProceedWithCarrier)	→	Carrier A: Carrier State Model state transition No.(8) (Page 42 Carrier State Model)		—
33	—	←	S3F18: Carrier Action Acknowledge (Page 307 S3F18: Carrier Action Acknowledge)		—
34	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
35	—		10087-00918: ProceedWithCarrier service notification (Page 228 00918: ProceedWithCarrier service notification)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 Carrier ID is known at the timing of carrier ID reading; therefore, the carrier location is changed after the carrier ID reading in this case.

CarrierID read fail scenario 1

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Verification with equipment
- By using the 'Bind' service, a carrier object of carrier A is generated, the load port 1 is reserved, and the carrier A and load port 1 are associated.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 430 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	A	INR	SNR	NA
1	1 to 6	Carrier Arrives.	H←E	Transfer Blocked	TB	NR				
2	7 to 15	ID read attempt fails.	H←E	State change to Waiting For Host				WFH		
3	—	Decision to continue is made.	—	—						
4	16 to 22	Host sends ProceedWithCarrier service.	H→E H←E	ProceedWithCarrier State change to ID Verification OK				IVO		

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (📖 Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (📖 Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (📖 Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (📖 Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (📖 Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (📖 Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (📖 Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (📖 Page 187 00307: Carrier clamped response)	→	—
10	—		Carrier State Model state transition No.(7) (📖 Page 75 Case in which carrier ID reading fails for a carrier delivered to a load port reserved by using the 'Bind' service)	←	Carrier ID reading has failed. 00087-00502: CarrierID read fail notification (📖 Page 160 00501: CarrierID read successful notification)
11	—*1	←	S6F11: ID NOT READ to WAITING FOR HOST (CEID 30005)		—
12	—		10087-00502: CarrierID read fail response (📖 Page 206 00502: CarrierID read fail response)	→	—
13	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
14	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
15	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—
16	Determines the continuation of processing. S3F17: ProceedWithCarrier (📖 Page 300 S3F17: ProceedWithCarrier)	→	Carrier State Model state transition No.(8) For details, refer to 'Example (1)' of 'State transition examples' in 'S3F17: ProceedWithCarrier.' (📖 Page 300 S3F17: ProceedWithCarrier)		—
17	—	←	S3F18: Carrier Action Acknowledge (📖 Page 307 S3F18: Carrier Action Acknowledge)		—
18	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION OK (CEID 30006)		—
19	—		10087-00918: ProceedWithCarrier service notification (📖 Page 228 00918: ProceedWithCarrier service notification)	→	—
20	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (📖 Page 153 00403: Carrier Location change notification)
21	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
22	—		10087-00403: Carrier Location change response (📖 Page 197 00403: Carrier Location change response)	→	—

- *1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.
- *2 "UNKNOWN" is specified for the carrier ID value and the carrier location is changed due to the failure of carrier ID reading.

CarrierID read fail scenario 2

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Verification with equipment
- By using the 'Bind' service, a carrier object of carrier A is generated, the load port 1 is reserved, and the carrier A and load port 1 are associated.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 433 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	R	A	INR	SNR	NA
1	1 to 6	Carrier Arrives.	H←E	Transfer Blocked	TB	NR				
2	7 to 15	ID read attempt fails.	H←E	State change to Waiting For Host				WFH		
3	—	Decision to stop is made.	—	—						
4	16 to 22	Host sends CancelCarrier service.	H→E	CancelCarrier				IVF		
			H←E	State change to ID Verification Failed						

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (☞ Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (☞ Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (☞ Page 181 00301: LOAD started response)	→	—
4	—		Load Port Reservation State Model state transition No.(3) (☞ Page 52 Load Port Reservation State Model (internal buffer equipment/fixed buffer equipment))	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (☞ Page 138 00302: LOAD completed notification)
5	—*1	←	S6F11: RESERVED to NOT RESERVED (CEID 30039)		—
6	—		10087-00302: LOAD completed response (☞ Page 182 00302: LOAD completed response)	→	—
7	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (☞ Page 143 00307: Carrier clamped notification)
8	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
9	—		10087-00307: Carrier clamped response (☞ Page 187 00307: Carrier clamped response)	→	—
10	—		Carrier State Model state transition No.(7) (☞ Page 75 Case in which carrier ID reading fails for a carrier delivered to a load port reserved by using the 'Bind' service)	←	Carrier ID reading has failed. 00087-00502: CarrierID read fail notification (☞ Page 161 00502: CarrierID read fail notification)
11	—*1	←	S6F11: ID NOT READ to WAITING FOR HOST (CEID 30005)		—
12	—		10087-00502: CarrierID read fail response (☞ Page 206 00502: CarrierID read fail response)	→	—
13	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
14	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
15	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
16	Determines the interruption of processing. S3F17: CancelCarrier (☞ Page 277 S3F17: CancelCarrier)	→	Carrier State Model state transition No.(9) For details, refer to 'Example (1)' of 'State transition examples' in 'S3F17: CancelCarrier.' (☞ Page 277 S3F17: CancelCarrier)		—
17	—	←	S3F18: Carrier Action Acknowledge (☞ Page 307 S3F18: Carrier Action Acknowledge)		—
18	—*1	←	S6F11: WAITING FOR HOST to ID VERIFICATION FAIL (CEID 30007)		—
19	—		10087-00904: CancelCarrier service notification (☞ Page 217 00904: CancelCarrier service notification)	→	—
20	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
21	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
22	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—

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- *1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.
- *2 "UNKNOWN" is specified for the carrier ID value and the carrier location is changed due to the failure of carrier ID reading.

CarrierID read fail scenario 3

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 436 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corr espo ndin g No.*1	Comment	Communi cation direction H: HOST E: Equipme nt	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 5	Carrier Arrives.	H←E	Transfer Blocked	TB					
2	6 to 14	ID read attempt fails.	H←E	ID read fail event						
3	—	Decision to continue is made.	—	—						
4	15 to 22	Host sends ProceedWithCarrier service.	H→E	ProceedWithCarrier	A		IVO	SNR	NA	
			H←E	State change to Id Verification OK						
			H←E	State change to Load Port Associated						

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (☞ Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (☞ Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (☞ Page 181 00301: LOAD started response)	→	—
4	—		—	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (☞ Page 138 00302: LOAD completed notification)
5	—		10087-00302: LOAD completed response (☞ Page 182 00302: LOAD completed response)	→	—
6	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (☞ Page 143 00307: Carrier clamped notification)
7	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
8	—		10087-00307: Carrier clamped response (☞ Page 187 00307: Carrier clamped response)	→	—
9	—		For details, refer to the following: ☞ Page 76 Case in which carrier ID reading fails for a carrier delivered to an available load port	←	Carrier ID reading has failed. 00087-00502: CarrierID read fail notification (☞ Page 161 00502: CarrierID read fail notification)
10	—*1	←	S6F11: CarrierID Read Fail (CEID 30054)		—
11	—		10087-00502: CarrierID read fail response (☞ Page 206 00502: CarrierID read fail response)	→	—
12	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
13	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
14	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
15	Determines the continuation of processing. S3F17: ProceedWithCarrier (☞ Page 300 S3F17: ProceedWithCarrier)	→	Generates an instance of carrier object of the carrier ID specified by the 'ProceedWithCarrier' service, and associates it with a load port. • Carrier State Model state transition No.(4) • Load Port/Carrier Association State Model state transition No.(2) For details, refer to 'Example (1)' of 'State transition examples' in 'S3F17: ProceedWithCarrier.' (☞ Page 300 S3F17: ProceedWithCarrier)		—
16	—	←	S3F18: Carrier Action Acknowledge (☞ Page 307 S3F18: Carrier Action Acknowledge)		—
17	—*1	←	S6F11: NO STATE to ID VERIFICATION OK (CEID 30002)		—
18	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
19	—		10087-00918: ProceedWithCarrier service notification (☞ Page 228 00918: ProceedWithCarrier service notification)	→	—
20	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
21	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
22	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—

- *1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.
- *2 "UNKNOWN" is specified for the carrier ID value and the carrier location is changed due to the failure of carrier ID reading.

CarrierID read fail scenario 4

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 439 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCAS	CIDS	CSMS	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 5	Carrier Arrives.	H←E	Transfer Blocked	TB					
2	6 to 14	ID read attempt fails.	H←E	ID read fail event						
3	—	Decision to stop is made.	—	—						
4	15 to 22	Host sends CancelCarrier.	H→E	CancelCarrier			A	IVF	SNR	NA
			H←E	State change to Id Verification Failed						
			H←E	State change to Load Port Associated						

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (☞ Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (☞ Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (☞ Page 181 00301: LOAD started response)	→	—
4	—		—	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (☞ Page 138 00302: LOAD completed notification)
5	—		10087-00302: LOAD completed response (☞ Page 182 00302: LOAD completed response)	→	—
6	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (☞ Page 143 00307: Carrier clamped notification)
7	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
8	—		10087-00307: Carrier clamped response (☞ Page 187 00307: Carrier clamped response)	→	—
9	—		For details, refer to the following: ☞ Page 76 Case in which carrier ID reading fails for a carrier delivered to an available load port	←	Carrier ID reading has failed. 00087-00502: CarrierID read fail notification (☞ Page 161 00502: CarrierID read fail notification)
10	—*1	←	S6F11: CarrierID Read Fail (CEID 30054)		—
11	—		10087-00502: CarrierID read fail response (☞ Page 206 00502: CarrierID read fail response)	→	—
12	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
13	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
14	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
15	Determines the interruption of processing. S3F17: CancelCarrier (☞ Page 277 S3F17: CancelCarrier)	→	Generates an instance of carrier object of the carrier ID specified by the 'CancelCarrier' service, and associates it with a load port. • Carrier State Model state transition No.(5) • Load Port/Carrier Association State Model state transition No.(2) For details, refer to 'Example (2)' of 'State transition examples' in 'S3F17: CancelCarrier.' (☞ Page 277 S3F17: CancelCarrier)		—
16	—	←	S3F18: Carrier Action Acknowledge (☞ Page 307 S3F18: Carrier Action Acknowledge)		—
17	—*1	←	S6F11: NO STATE to ID VERIFICATION FAIL (CEID 30003)		—
18	—*1	←	S6F11: NOT ASSOCIATED to ASSOCIATED (CEID 30040)		—
19	—		10087-00904: CancelCarrier service notification (☞ Page 217 00904: CancelCarrier service notification)	→	—
20	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
21	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
22	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—

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- *1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.
- *2 "UNKNOWN" is specified for the carrier ID value and the carrier location is changed due to the failure of carrier ID reading.

CarrierID read fail scenario 5

The following table shows the state transition satisfying the following conditions:

- Fixed buffer manufacturing equipment
- Host verification
- 'Bind' and 'CarrierNotification' services not accepted

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 442 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name					
					LTS	LRS	LCA S	CIDS	CSM S	CAS
0	—	Initial condition.	—	—	RTL	NR	NA	No State	No State	No State
1	1 to 5	Carrier Arrives.	H←E	Transfer Blocked	TB					
2	6 to 14	ID read attempt fails.	H←E	ID read fail event						
3	—	Decision to stop is made.	—	—						
4	15 to 20	Host sends CancelCarrierAtPort.	H→E	CancelCarrierAtPort						

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 338 CMS Reports, Page 339 CMS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Load Port Transfer State Model state transition No.(6) (☞ Page 48 Load Port Transfer State Model)	←	A carrier has arrived and the loading has started. 00087-00301: LOAD started notification (☞ Page 137 00301: LOAD started notification)
2	—*1	←	S6F11: READY TO LOAD to TRANSFER BLOCKED (CEID 30033)		—
3	—		10087-00301: LOAD started response (☞ Page 181 00301: LOAD started response)	→	—
4	—		—	←	Loading of a carrier has completed. 00087-00302: LOAD completed notification (☞ Page 138 00302: LOAD completed notification)
5	—		10087-00302: LOAD completed response (☞ Page 182 00302: LOAD completed response)	→	—
6	—		—	←	A carrier has been clamped. 00087-00307: Carrier clamped notification (☞ Page 143 00307: Carrier clamped notification)
7	—*1	←	S6F11: Carrier Clamped (CEID 30049)		—
8	—		10087-00307: Carrier clamped response (☞ Page 187 00307: Carrier clamped response)	→	—
9	—		For details, refer to the following: ☞ Page 76 Case in which carrier ID reading fails for a carrier delivered to an available load port	←	Carrier ID reading has failed. 00087-00502: CarrierID read fail notification (☞ Page 161 00502: CarrierID read fail notification)
10	—*1	←	S6F11: CarrierID Read Fail (CEID 30054)		—
11	—		10087-00502: CarrierID read fail response (☞ Page 206 00502: CarrierID read fail response)	→	—
12	—		—	←	Notifies that the location of a carrier has changed.*2 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
13	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
14	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—
15	Determines the interruption of processing. S3F17: CancelCarrierAtPort (☞ Page 283 S3F17: CancelCarrierAtPort)	→	—		—
16	—	←	S3F18: Carrier Action Acknowledge (☞ Page 307 S3F18: Carrier Action Acknowledge)		—
17	—		10087-00905: CancelCarrierAtPort service notification (☞ Page 218 00905: CancelCarrierAtPort service notification)	→	—
18	—		—	←	Notifies that the location of a carrier has changed. 00087-00403: Carrier Location change notification (☞ Page 153 00403: Carrier Location change notification)
19	—*1	←	S6F11: Carrier Location Change (CEID 30051)		—
20	—		10087-00403: Carrier Location change response (☞ Page 197 00403: Carrier Location change response)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 "UNKNOWN" is specified for the carrier ID value and the carrier location is changed due to the failure of carrier ID reading.

E90-STS compliance

The following table shows the E90-STS compliant use cases.
These use cases refer to the use cases described in "R1-2 Example of Substrate Object State Model for Simple Equipment" of SEMI E90-0312.

Title	Reference
Equipment Substrate Location Object and Batch Location Object Generation	☞ Page 444 Equipment substrate location object and batch location object generation
Normal Roundtrip 1 (Single Wafer Processing Equipment)	☞ Page 445 Normal roundtrip 1 (single wafer processing equipment)
Normal Roundtrip 1 (Batch Processing Equipment)	☞ Page 452 Normal roundtrip 1 (batch processing equipment)
Host-Initiated Substrate Object Generation	☞ Page 460 Host-initiated substrate object generation
Host-Initiated Substrate Object Deletion	☞ Page 462 Host-initiated substrate object deletion
Disable Substrate Location State Transition Event Report by Host	☞ Page 464 Disable substrate location state transition event report by host

Equipment substrate location object and batch location object generation

The following table shows the state transition satisfying the following conditions:

- Equipment substrate location setting: Set (Configure the setting in a setting tool, and transfer the data to a module.)
- Batch location setting: Set (Configure the setting in a setting tool, and transfer the data to a module.)

■ Equipment substrate location setting example

☞ Page 27 Substrate location

■ Batch location setting example

☞ Page 28 Batch location

In addition, the substrate locations (STL) are as follows:

- #1: Equipment substrate location (such as the location in which a transfer arm is installed)
- #2: Batch location (such as the processing part)

■ Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

☞ Page 444 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

☞ Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name	
					STL#1	STL#2
0	—	Initial condition.	—	—	No State	No State
1	1 to 2	Equipment substrate location object has been created.	—	—	UOC	UOC
		Batch location object has been created.	—	—		

*1 The corresponding number of usage examples of control CPU interfaces

■ Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

☞ Page 344 STS Reports, Page 345 STS Events

No.	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Creates new instances of substrate location object specific to equipment and batch location object, and updates each 'DVVAL.'	←	Instructs the initialization of GEM300 standard support functions. 00000-00001: GEM300 Initial request (☞ Page 102 00001: GEM300 Initial request)
2	—		10000-00001: GEM300 Initial acknowledge (☞ Page 104 00001: GEM300 Initial acknowledge)	→	—

Normal roundtrip 1 (single wafer processing equipment)

The following table shows the state transition satisfying the following conditions:

- Carrier ID verification: completed
- Slot map reader: Available
- Slot map verification by equipment: Success
- Substrate object generation: Not completed (Generation is completed by equipment in this scenario.)
(Example) ObjID = "Subst_1" to "Subst_25" (SubstID specified by the host)
- Carrier substrate location object 'STL#1' generation: Not completed (Generation is completed by equipment in this scenario.)
(Example) ObjID = "CarrierA.01" to "CarrierA.25"
- Equipment substrate location object 'STL#2' generation: Completed (by equipment)
(Example) ObjID = "ProcessChamber"
- 'DisableEvents' of each substrate location: false (= notifying events)

In addition, the substrate locations (STL) are as follows:

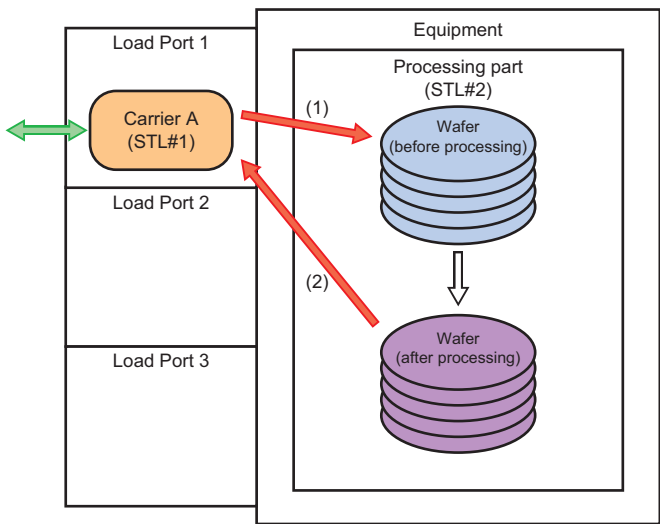
- #1: Carrier slot (carrier substrate location)^{*1}
- #2: Processing part (equipment substrate location)

^{*1} Exists per slot in each carrier

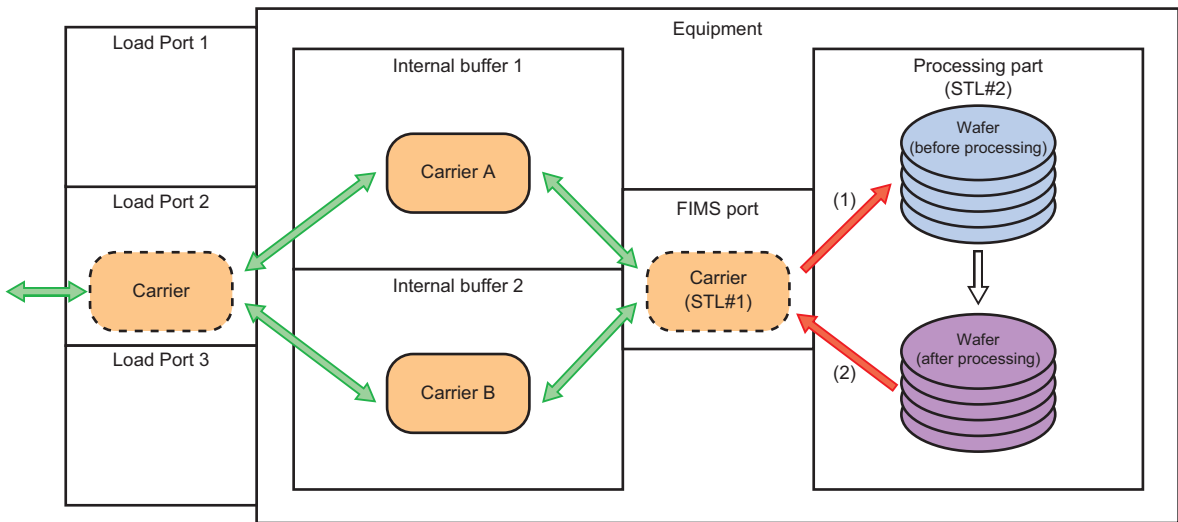
The following configuration examples of semiconductor manufacturing equipment are referred to in this use case.

➡: Moving of carriers, ➡: Moving of wafers

- Fixed buffer manufacturing equipment



- Internal buffer manufacturing equipment



■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 447 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name			
					STL#1	STL#2	STT	STP
0	—	Initial condition.	—	—	No State	UOC	No State	No State
1	1 to 2 repeated	Carrier substrate location object (STL#1) per carrier slot is created.	—	—	UOC			
2	3 to 15 repeated	Substrate object is created for each wafer in carrier.	H←E	AT SOURCE	OC		AS	NP
			H←E	NEEDS PROCESSING				
			H←E	OCCUPIED				
3	16 to 32	Wafer to be processed is collected from carrier slot (STL#1) into processing part (STL#2).	H←E	UNOCCUPIED (STL#1)	UOC	OC	AW	
			H←E	AT WORK				
			H←E	OCCUPIED (STL#2)				
4	33 to 37	Wafer processing has started.	H←E	IN PROCESS				IP
5	38 to 42	Wafer processing has completed.	H←E	PROCESSED				PC
6	43 to 59	Wafer for which processing has completed is collected from processing part (STL#2) into carrier slot (STL#1).	H←E	UNOCCUPIED (STL#2)	OC	UOC	AD	
			H←E	OCCUPIED (STL#1)				
			H←E	AT DESTINATION				
7	16 to 59 repeated	All wafer processing has completed.	—	—				
8	—	Carrier has been unloaded.	—	—				
9	60 to 64 repeated	Substrate object of each wafer in carrier is deleted.	H←E	NO STATE			No State	No State
10	65 to 66 repeated	Carrier substrate location object (STL#1) per carrier slot is deleted.	—	—	No State			

*1 The corresponding number of usage examples of control CPU interfaces

■ Usage examples of control CPU interfaces








For details on the event report (S6F11), refer to the following:





☞ Page 344 STS Reports, Page 345 STS Events

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Creates a new instance of substrate location object in a carrier, and updates 'DVVAL.'	←	Specifies the initial state of carrier slot (substrate location object in a carrier) STL#1. 00090-00011: CarrierSubstLocObject create request (☞ Page 235 00011: CarrierSubstLocObject create request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "CarrierA.■"*2 • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
2	—		10090-00011: CarrierSubstLocObject create acknowledge (☞ Page 246 00011 : CarrierSubstLocObject create acknowledge)	→	—
3	—		Generates an instance of substrate object, and updates 'DVVAL.'	←	Specifies the initial state of a substrate object. 00090-00001: SubstrateObject create request (☞ Page 229 00001: SubstrateObject create request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 0 = AT SOURCE • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "CarrierA.■"*2 • SubstHistory: Arrival (existence confirmation) time at "CarrierA.■"*2 added
4	—		10090-00001: SubstrateObject create acknowledge (☞ Page 242 00001: SubstrateObject create acknowledge)	→	—
5	—		—	←	CEID 30059 event report sending request relay: ON
6	—*1	←	S6F11: NO STATE to AT SOURCE (CEID 30059)		—
7	—		CEID 30059 event report sending request relay: OFF	→	—
8	—		—	←	CEID 30068 event report sending request relay: ON
9	—*1	←	S6F11: NO STATE to NEEDS PROCESSING (CEID 30068)		—
10	—		CEID 30068 event report sending request relay: OFF	→	—
11	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request (☞ Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "CarrierA.■"*2 • SubstID: "Subst_■" • SubstLocState: 1 = OCCUPIED • DisableEvents: 0 = false
12	—		10090-00013: SubstLocObject SetAttr acknowledge (☞ Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
13	—		—	←	CEID 30085 event report sending request relay: ON
14	—*1	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#1)		—
15	—		CEID 30085 event report sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
16	—		Updates 'DVVAL.'	←	Empties 'SubstID' of the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'UNOCCUPIED.' 00090-00013: SubstLocObject SetAttr request (🔗 Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "CarrierA.■"*2 • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
17	—		10090-00013: SubstLocObject SetAttr acknowledge (🔗 Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
18	—		—	←	CEID 30086 event sending request relay: ON
19	—*1	←	S6F11: OCCUPIED to UNOCCUPIED (CEID 30086) (STL#1)		—
20	—		CEID 30086 event sending request relay: OFF	→	—
21	—		Updates 'DVVAL.'	←	Registers a history of the departure from STL#1 to 'SubstHistory' of a substrate object, and changes the substrate transport status (STT) to 'AT WORK.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "CarrierA.■"*2 • SubstHistory: Departure time from "CarrierA.■"*2 added
22	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
23	—		—	←	CEID 30060 event sending request relay: ON
24	—*1	←	S6F11: AT SOURCE to AT WORK (CEID 30060)		—
25	—		CEID 30060 event sending request relay: OFF	→	—
26	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the processing part (equipment substrate location object) STL#2, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request (🔗 Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "ProcessChamber"*3 • SubstID: "Subst_■" • SubstLocState: 1 = OCCUPIED • DisableEvents: 0 = false
27	—		10090-00013: SubstLocObject SetAttr acknowledge (🔗 Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
28	—		—	←	CEID 30085 event report sending request relay: ON
29	—*1	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#2)		—
30	—		CEID 30085 event report sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
31	—		Updates 'DVVAL.'	←	Changes 'SubstLocID' of a substrate object to 'STL#2,' and registers a history of the arrival at STL#2 to 'SubstHistory.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "ProcessChamber" ³ • SubstHistory: Arrival time at "ProcessChamber" ³ added
32	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
33	—		Updates 'DVVAL.'	←	Changes the substrate processing status (STP) of a substrate object to 'IN PROCESS.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 1 = IN PROCESS • SubstLocID: "ProcessChamber" ³ • SubstHistory: No addition
34	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
35	—		—	←	CEID 30069 event sending request relay: ON
36	— ^{*1}	←	S6F11: NEEDS PROCESSING to IN PROCESS (CEID 30069)		—
37	—		CEID 30069 event sending request relay: OFF	→	—
38	—		Updates 'DVVAL.'	←	Changes the substrate processing status (STP) of a substrate object to 'PROCESSED.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 2 = PROCESSED • SubstLocID: "ProcessChamber" ³ • SubstHistory: No addition
39	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
40	—		—	←	CEID 30070 event sending request relay: ON
41	— ^{*1}	←	S6F11: IN PROCESS to PROCESSED (CEID 30070)		—
42	—		CEID 30070 event sending request relay: OFF	→	—
43	—		Updates 'DVVAL.'	←	Empties 'SubstID' of the processing part (equipment substrate location object) STL#2, and changes 'SubstLocState' to 'UNOCCUPIED.' 00090-00013: SubstLocObject SetAttr request (🔗 Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "ProcessChamber" ³ • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
44	—		10090-00013: SubstLocObject SetAttr acknowledge ( Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
45	—		—	←	CEID 30086 event sending request relay: ON
46	—*1	←	S6F11: OCCUPIED to UNOCCUPIED (CEID 30086) (STL#2)		—
47	—		CEID 30086 event sending request relay: OFF	→	—
48	—		Updates 'DVVAL.'	←	Registers a history of the departure from STL#2 to 'SubstHistory' of a substrate object. 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 2 = PROCESSED • SubstLocID: "ProcessChamber"*3 • SubstHistory: Departure time from "ProcessChamber"*3 added
49	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
50	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request ( Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "CarrierA.■"*2 • SubstID: "Subst_■" • SubstLocState: 1 = OCCUPIED • DisableEvents: 0 = false
51	—		10090-00013: SubstLocObject SetAttr acknowledge ( Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
52	—		—	←	CEID 30085 event sending request relay: ON
53	—*1	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#1)		—
54	—		CEID 30085 event sending request relay: OFF	→	—
55	—		Updates 'DVVAL.'	←	Changes 'SubstLocID' of a substrate object to STL#1, registers a history of the arrival at STL#1 to 'SubstHistory,' and changes the substrate transport status (STT) to 'AT DESTINATION.' 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 2 = AT DESTINATION • SubstProcState: 2 = PROCESSED • SubstLocID: "CarrierA.■"*2 • SubstHistory: Arrival time at "CarrierA.■"*2 added
56	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
57	—		—	←	CEID 30063 event sending request relay: ON
58	—*1	←	S6F11: AT WORK to AT DESTINATION (CEID 30063)		—
59	—		CEID 30063 event sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
60	—		Deletes an instance of substrate object, and updates 'DVVAL.'	←	Deletes a substrate object. 00090-00002: SubstrateObject delete request ( Page 231 00002: SubstrateObject delete request) ■Parameter example • ObjID: "Subst_■"
61	—		10090-00002: SubstrateObject delete acknowledge ( Page 243 00002: SubstrateObject delete acknowledge)	→	—
62	—		—	←	CEID 30065 event sending request relay: ON
63	— ^{*1}	←	S6F11: AT DESTINATION to NO STATE (CEID 30065)		—
64	—		CEID 30065 event sending request relay: OFF	→	—
65	—		Deletes an instance of substrate location object in a carrier, and updates 'DVVAL.'	←	Deletes a substrate location object in a carrier. 00090-00012: CarrierSubstLocObject delete request ( Page 236 00012: CarrierSubstLocObject delete request) ■Parameter example • ObjID: "CarrierA.■" ^{*2}
66	—		10090-00012: CarrierSubstLocObject delete acknowledge ( Page 247 00012: CarrierSubstLocObject delete acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

*2 STL#1

*3 STL#2

Normal roundtrip 1 (batch processing equipment)

The following table shows the state transition satisfying the following conditions:

- Carrier ID verification: completed
- Slot map reader: Available
- Slot map verification by equipment: Success
- Substrate object generation: Not completed (Generation is completed by equipment in this scenario.)
(Example) ObjID = "Subst_1" to "Subst_50" (SubstID specified by the host)
- Carrier substrate location object 'STL#1' generation: Not completed (Generation is completed by equipment in this scenario.)
(Example) ObjID = "CarrierA.01" to "CarrierA.25," "CarrierB.01" to "CarrierB.25"
- Batch location object 'STL#2' generation: Completed (by equipment)
(Example) ObjID = "BatchC"
- 'DisableEvents' of each substrate location and batch location: false (= notifying events)

In addition, the substrate locations (STL) are as follows:

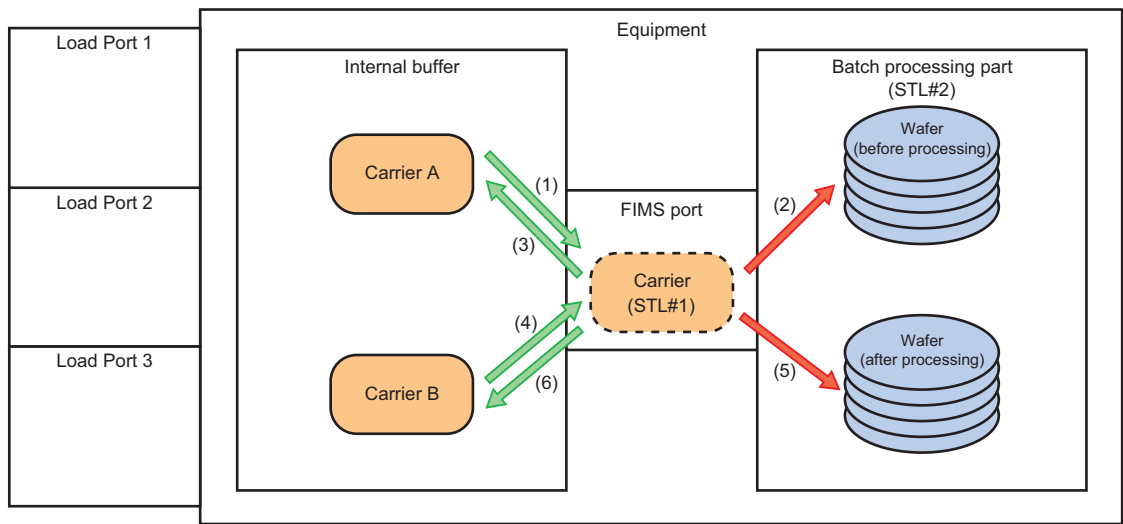
- #1: Carrier slot (carrier substrate location)*1
- #2: Processing part (batch location)

*1 Exists per slot in each carrier

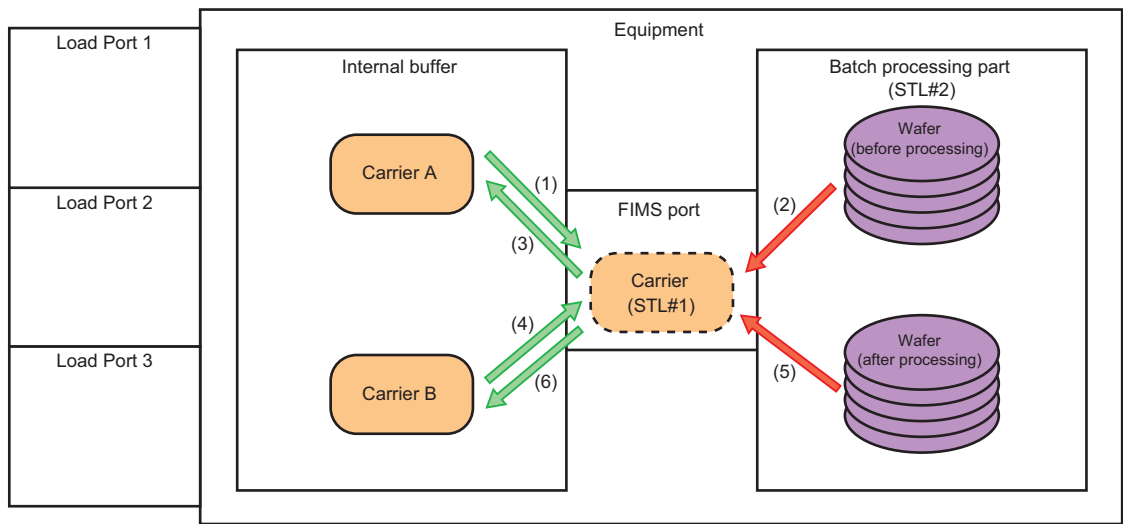
The following configuration examples of semiconductor manufacturing equipment are referred to in this use case.

➡: Moving of carriers, ➡: Moving of wafers

- Before batch processing (Import of wafers into the batch processing part)



- After batch processing (Collection of wafers into carriers)



■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 454 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name			
					STL#1	STL#2	STT	STP
0	—	Initial condition.	—	—	No State	UOC	No State	No State
1	1 to 2 repeated	Carrier substrate location object (STL#1) per carrier slot is created.	—	—	UOC			
2	3 to 15 repeated	Substrate object is created for each wafer in carrier.	H←E	AT SOURCE	OC			AS
			H←E	NEEDS PROCESSING				
			H←E	OCCPIED (STL#1)				
3	16 to 29 repeated	Wafer has been collected from carrier slot (STL#1) into batch processing part (STL#2).	H←E	UNOCCPIED (STL#1)	UOC		AW	
			H←E	AT WORK				
4	1 to 29 repeated	No.1 to 3 are repeated per carrier that comprises batch.	—	—				
5	30 to 34	Moving of all wafers that comprise batch has completed.	H←E	OCCUPIED (STL#2)		OC		
6	35 to 39 repeated	Batch processing has started.	H←E	OCCUPIED (STL#2)				IP
7	40 to 44 repeated	Batch processing has completed.	H←E	PROCESSED				PC
8	45 to 56 repeated	Wafer for which processing has completed is collected from processing part (STL#2) into carrier slot (STL#1).	H←E	OCCUPIED (STL#1)	OC		AD	
			H←E	AT DESTINATION				
9	57 to 61	Moving of all wafers that comprise batch has completed.	H←E	UNOCCUPIED (STL#2)		UOC		
10	—	Carrier has been unloaded.	—	—				
11	62 to 66	Substrate object of each wafer in carrier is deleted.	H←E	NO STATE			No State	No State
12	67 to 68	Carrier substrate location object (STL#1) per carrier slot is deleted.	—	—	No State			
13	62 to 68 repeated	No.10 to 12 are repeated per carrier that comprises batch.	—	—				

*1 The corresponding number of usage examples of control CPU interfaces

■ Usage examples of control CPU interfaces







For details on the event report (S6F11), refer to the following:

☞ Page 344 STS Reports, Page 345 STS Events

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	—		Creates a new instance of substrate location object in a carrier, and updates 'DVVAL.'	←	Specifies the initial state of carrier slot (substrate location object in a carrier) STL#1. 00090-00011: CarrierSubstLocObject create request (☞ Page 235 00011: CarrierSubstLocObject create request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "Carrier■.■"² • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
2	—		10090-00011: CarrierSubstLocObject create acknowledge (☞ Page 246 00011 : CarrierSubstLocObject create acknowledge)	→	—
3	—		Generates an instance of substrate object, and updates 'DVVAL.'	←	Specifies the initial state of a substrate object. 00090-00001: SubstrateObject create request (☞ Page 229 00001: SubstrateObject create request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 0 = AT SOURCE • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "Carrier■.■"² • BatchLocID: Blank³ • SubstPosInBatch: Blank³ • SubstHistory: Arrival (existence confirmation) time at "Carrier■.■"² added
4	—		10090-00001: SubstrateObject create acknowledge (☞ Page 242 00001: SubstrateObject create acknowledge)	→	—
5	—		—	←	CEID 30059 event report sending request relay: ON
6	—*¹	←	S6F11: NO STATE to AT SOURCE (CEID 30059)		—
7	—		CEID 30059 event report sending request relay: OFF	→	—
8	—		—	←	CEID 30068 event report sending request relay: ON
9	—*¹	←	S6F11: NO STATE to NEEDS PROCESSING (CEID 30068)		—
10	—		CEID 30068 event report sending request relay: OFF	→	—
11	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request (☞ Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "Carrier■.■"² • SubstID: "Subst_■" • SubstLocState: 1 = OCCUPIED • DisableEvents: 0 = false
12	—		10090-00013: SubstLocObject SetAttr acknowledge (☞ Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
13	—		—	←	CEID 30085 event report sending request relay: ON
14	—*¹	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#1)		—
15	—		CEID 30085 event report sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
16	—		Updates 'DVVAL.'	←	Empties 'SubstID' of the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'UNOCCUPIED.' 00090-00013: SubstLocObject SetAttr request (🔗 Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "Carrier■.■" ² • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
17	—		10090-00013: SubstLocObject SetAttr acknowledge (🔗 Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
18	—		—	←	CEID 30086 event sending request relay: ON
19	— ^{*1}	←	S6F11: OCCUPIED to UNOCCUPIED (CEID 30086) (STL#1)		—
20	—		CEID 30086 event sending request relay: OFF	→	—
21	—		Updates 'DVVAL.'	←	Registers a history of the departure from STL#1 to 'SubstHistory' of a substrate object and changes the substrate transport status (STT) to 'AT WORK.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "Carrier■.■" ² • BatchLocID: Blank ³ • SubstPosInBatch: Blank ³ • SubstHistory: Departure time from "Carrier■.■" ² added
22	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
23	—		—	←	CEID 30060 event sending request relay: ON
24	— ^{*1}	←	S6F11: AT SOURCE to AT WORK (CEID 30060)		—
25	—		CEID 30060 event sending request relay: OFF	→	—
26	—		Updates 'DVVAL.'	←	Registers a wafer that has arrived at 'BatchSubstIDMap' of the batch processing part (batch location object) STL#2. 00090-00023: BatchLocObject SetAttr request (🔗 Page 240 00023: BatchLocObject SetAttr request) ■Parameter examples • ObjType: "BatchLoc" • ObjID: "BatchC" ³ • BatchSubstIDMap[■].SubstID: "Subst_■" • BatchLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
27	—		10090-00023: BatchLocObject SetAttr acknowledge (🔗 Page 250 00023: BatchLocObject SetAttr acknowledge)	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
28	—		Updates 'DVVAL.'	←	Changes 'SubstLocID' of a substrate object, and registers a history of the arrival at STL#2 to 'SubstHistory.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: Blank ^{*2} • BatchLocID: "BatchC" ^{*3} • SubstPosInBatch: "■" ^{*3} • SubstHistory: Arrival time at "BatchC.■" ^{*3} added
29	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
30	—		Updates 'DVVAL.'	←	Changes 'BatchLocState' of the batch processing part (batch location object) STL#2 to 'OCCUPIED.' 00090-00023: BatchLocObject SetAttr request (🔗 Page 240 00023: BatchLocObject SetAttr request) ■Parameter examples • ObjType: "BatchLoc" • ObjID: "BatchC" ^{*3} • BatchSubstIDMap[■].SubstID: "Subst_■" • BatchLocState: 1 = OCCUPIED • DisableEvents: 0 = false
31	—		10090-00023: BatchLocObject SetAttr acknowledge (🔗 Page 250 00023: BatchLocObject SetAttr acknowledge)	→	—
32	—		—	←	CEID 30085 event report sending request relay: ON
33	— ^{*1}	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#2)		—
34	—		CEID 30085 event report sending request relay: OFF	→	—
35	—		Updates 'DVVAL.'	←	Changes the substrate processing status (STP) of a substrate object to 'IN PROCESS.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 1 = IN PROCESS • SubstLocID: Blank ^{*2} • BatchLocID: "BatchC" ^{*3} • SubstPosInBatch: "■" ^{*3} • SubstHistory: No addition
36	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
37	—		—	←	CEID 30069 event sending request relay: ON
38	— ^{*1}	←	S6F11: NEEDS PROCESSING to IN PROCESS (CEID 30069)		—
39	—		CEID 30069 event sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
40	—		Updates 'DVVAL.'	←	Changes the substrate processing status (STP) of a substrate object to 'PROCESSED.' 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 2 = PROCESSED • SubstLocID: Blank* ² • BatchLocID: "BatchC"* ³ • SubstPosInBatch: "■"* ³ • SubstHistory: No addition
41	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
42	—		—	←	CEID 30070 event sending request relay: ON
43	—* ¹	←	S6F11: IN PROCESS to PROCESSED (CEID 30070)		—
44	—		CEID 30070 event sending request relay: OFF	→	—
45	—		Updates 'DVVAL.'	←	Registers a history of the departure from STL#2 to 'SubstHistory' of a substrate object. 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 1 = AT WORK • SubstProcState: 2 = PROCESSED • SubstLocID: Blank* ² • BatchLocID: "BatchC"* ³ • SubstPosInBatch: "■"* ³ • SubstHistory: Departure time from "BatchC.■"* ³ added
46	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
47	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request ( Page 237 00013: SubstLocObject SetAttr request) ■Parameter examples • ObjType: "SubstLoc" • ObjID: "Carrier■.■"* ² • SubstID: "Subst_■" • SubstLocState: 1 = OCCUPIED • DisableEvents: 0 = false
48	—		10090-00013: SubstLocObject SetAttr acknowledge ( Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
49	—		—	←	CEID 30085 event sending request relay: ON
50	—* ¹	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#1)		—
51	—		CEID 30085 event sending request relay: OFF	→	—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
52	—		Updates 'DVVAL.'	←	Changes 'SubstLocID' of a substrate object, registers a history of the arrival at STL#1 to 'SubstHistory,' and changes the substrate transport status (STT) to 'AT DESTINATION.' 00090-00003: SubstrateObject SetAttr request (🔗 Page 232 00003: SubstrateObject SetAttr request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 2 = AT DESTINATION • SubstProcState: 2 = PROCESSED • SubstLocID: "Carrier■.■"² • BatchLocID: Blank³ • SubstPosInBatch: Blank³ • SubstHistory: Arrival time at "Carrier■.■"² added
53	—		10090-00003: SubstrateObject SetAttr acknowledge (🔗 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
54	—		—	←	CEID 30063 event sending request relay: ON
55	—¹	←	S6F11: AT WORK to AT DESTINATION (CEID 30063)		—
56	—		CEID 30063 event sending request relay: ON	→	—
57	—		Updates 'DVVAL.'	←	Empties 'BatchSubstIDMap' of the batch processing part (batch location object) STL#2, and changes 'BatchLocState' to 'UNOCCUPIED.' 00090-00023: BatchLocObject SetAttr request (🔗 Page 240 00023: BatchLocObject SetAttr request) ■Parameter examples • ObjType: "BatchLoc" • ObjID: "BatchC"³ • BatchSubstIDMap: Blank • BatchLocState: 0 = UNOCCUPIED • DisableEvents: 0 = false
58	—		10090-00023: BatchLocObject SetAttr acknowledge (🔗 Page 250 00023: BatchLocObject SetAttr acknowledge)	→	—
59	—		—	←	CEID 30086 event sending request relay: ON
60	—¹	←	S6F11: OCCUPIED to UNOCCUPIED (CEID 30086) (STL#2)		—
61	—		CEID 30086 event sending request relay: OFF	→	—
62	—		Deletes an instance of substrate object, and updates 'DVVAL.'	←	Deletes a substrate object. 00090-00002: SubstrateObject delete request (🔗 Page 231 00002: SubstrateObject delete request) ■Parameter example • ObjID: "Subst_■"
63	—		10090-00002: SubstrateObject delete acknowledge (🔗 Page 243 00002: SubstrateObject delete acknowledge)	→	—
64	—		—	←	CEID 30065 event sending request relay: ON
65	—¹	←	S6F11: AT DESTINATION to NO STATE (CEID 30065)		—
66	—		CEID 30065 event sending request relay: OFF	→	—
67	—		Deletes an instance of substrate location object in a carrier, and updates 'DVVAL.'	←	Deletes a substrate location object in a carrier. 00090-00012: CarrierSubstLocObject delete request (🔗 Page 236 00012: CarrierSubstLocObject delete request) ■Parameter example • ObjID: "Carrier■.■"²
68	—		10090-00012: CarrierSubstLocObject delete acknowledge (🔗 Page 247 00012: CarrierSubstLocObject delete acknowledge)	→	—

- *1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.
- *2 STL#1
- *3 STL#2

Host-initiated substrate object generation

The following table shows the state transition.

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 454 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No.*1	Comment	Communication direction H: HOST E: Equipment	Message	State model name	
					STT	STP
0	—	Initial condition.	—	—	No State	No State
1	1 to 11	Substrate object generation is commanded.	H→E	register substrate	AS	NP
			H←E	AT SOURCE		
			H←E	NEEDS PROCESSING		

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 344 STS Reports, Page 345 STS Events

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Specifies the initial state of a substrate object. S14F9: Create Object Request (register substrate) (📖 Page 331 S14F9 : Create Object Request) ■Parameter examples • ObjType: "Substrate" • ObjID: "Subst_■" • SubstState: 0 = AT SOURCE • SubstProcState: 0 = NEEDS PROCESSING • SubstLocID: "ProcessChamber"*1 • SubstIDStatus: 0 = NOT CONFIRMED	→	Generates an instance of substrate object. ('DVVAL' is not updated.)		—
2	—	←	S14F10: Create Object Acknowledge (📖 Page 334 S14F10: Create Object Acknowledge)		—
3	—		10090-01001: Create service (Register substrate service) notification (📖 Page 252 01001: Create service (Register substrate service) notification) • A new substrate object created	→	—
4	—		Updates 'DVVAL.'	←	When sending the event report (S6F11), the attribute value of a substrate object is set to update 'DVVAL.' 00090-00003: SubstrateObject SetAttr request (📖 Page 232 00003: SubstrateObject SetAttr request) • A substrate object received by '10090-01001: Create service (Register substrate service) notification'
5	—		10090-00003: SubstrateObject SetAttr acknowledge (📖 Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
6	—		—	←	CEID 30059 event report sending request relay: ON
7	—*2	←	S6F11: NO STATE to AT SOURCE (CEID 30059)		—

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
8	—		CEID 30059 event report sending request relay: OFF	→	—
9	—		—	←	CEID 30068 event report sending request relay: ON
10	—*2	←	S6F11: NO STATE to NEEDS PROCESSING (CEID 30068)		—
11	—		CEID 30068 event report sending request relay: OFF	→	—

*1 STL#2

*2 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Point

When a substrate object is generated by the host (host-initiated), the event report (S6F11) is not sent by SECS/GEM communication software.

To send the event report (S6F11), the states No.4, No.6, and No.9 need to be controlled in the control CPU.

Host-initiated substrate object deletion

The following table shows the state transition satisfying the following conditions:

- Substrate object created (state not concerned)

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 462 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. *1	Comment	Communication direction H: HOST E: Equipment	Message	State model name	
					STT	STP
0	—	Initial condition.	—	—	Not concerned	Not concerned
1	1 to 10	Substrate object deletion is commanded.	H→E	remove substrate	No State	No State
			H←E	NO STATE		

*1 The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 344 STS Reports, Page 345 STS Events

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Instructs the deletion of a substrate object. S14F11: Delete Object Request (📖 Page 335 S14F11: Delete Object Request) • A target object to be deleted is specified in 'OBJSPEC' or 'AttrSetting.'	→	Deletes an instance of substrate object. ('DVVAL' is not updated.)		—
2	—	←	S14F12: Delete Object Acknowledge (📖 Page 337 S14F12: Delete Object Acknowledge)		—
3	—		10090-01002: Delete service (Remove substrate service) notification (📖 Page 253 01002: Delete service (Remove substrate service) notification)	→	—
4	—		Generates an instance of substrate object, and updates 'DVVAL.'	←	When sending the event report (S6F11), a substrate object is created to update 'DVVAL.' 00090-00001: SubstrateObject create request (📖 Page 229 00001: SubstrateObject create request) • A substrate object received by '10090-01002: Delete service (Remove substrate service) notification'
5	—		10090-00001: SubstrateObject create acknowledge (📖 Page 242 00001: SubstrateObject create acknowledge)	→	—
6	—		Deletes an instance of substrate object, and updates 'DVVAL.'	←	Deletes a substrate object. 00090-00002: SubstrateObject delete request (📖 Page 231 00002: SubstrateObject delete request) • ObjID of a substrate object received by '10090-01002: Delete service (Remove substrate service) notification'
7	—		10090-00002: SubstrateObject delete acknowledge (📖 Page 243 00002: SubstrateObject delete acknowledge)	→	—
8	—		—	←	CEID 30067 event report sending request relay: ON

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
9	—*1	←	S6F11: SUBSTRATE to NO STATE (CEID 30067)		—
10	—		CEID 30067 event report sending request relay: OFF	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

Point

When a substrate object is deleted by the host (host-initiated), the event report (S6F11) is not sent by SECS/GEM communication software.

To send the event report (S6F11), the states No.4, No.6, and No.8 need to be controlled in the control CPU.

Disable substrate location state transition event report by host

The following table shows the state transition satisfying the following conditions:

- Substrate location objects (STL#1, #2) created
- Slot map verified
- Substrate object created
- DisableEvents of STL#1 and STL#2 are false (events enabled)

In addition, the substrate locations (STL) are as follows:

- #1: Carrier A slot (carrier substrate location)^{*1}
- #2: Process part (equipment substrate location)

^{*1} Exists per slot in each carrier

■Communication scenario with HOST

For usage examples of control CPU interfaces to implement this scenario, refer to the following:

📖 Page 464 Usage examples of control CPU interfaces

For details on the state name, refer to the following:

📖 Page 358 State notation

#	Corresponding No. ^{*1}	Comment	Communication direction H: HOST E: Equipment	Message	State model name			
					STL#1	STL#2	STT	STP
0	—	Initial condition.	—	—	OC	UOC	AS	NP
1	1 to 3	Disables events of STL#1. (DisableEvents=true)	H→E	SetAttr				
2	4 to 17	Wafer to be processed is collected from carrier slot (STL#1) into processing part (STL#2).	H←E	AT WORK	UOC	OC	AW	
			H←E	OCCPIED (STL#2)				








^{*1} The corresponding number of usage examples of control CPU interfaces

■Usage examples of control CPU interfaces

For details on the event report (S6F11), refer to the following:

📖 Page 344 STS Reports, Page 345 STS Events

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
1	Disables events of STL#1. (DisableEvents=true) S14F3: SetAttr Request (STL#1) (📖 Page 321 S14F3: SetAttr Request) • ObjType: SubstLoc • ObjID: STL#1 • ATTRID: DisableEvents • ATTRDATA: true (= 1 or more)	→	Changes the attribute value of STL#1 'DisableEvents'. ('DVVAL' is not updated.)		—
2	—	←	S14F4: SetAttr Data (📖 Page 323 S14F4: SetAttr Data)		—
3	—		10090-01013: SetAttr service (SubstLoc) notification (📖 Page 255 01013: SetAttr service (SubstLoc) notification) • ObjIDList: STL#1 • AttrIDList: DisableEvents • SubstLocObject: Changed attribute value (= 1)	→	—
4	—		Updates 'DVVAL.'	←	Empties 'SubstID' of the carrier slot (substrate location object in a carrier) STL#1, and changes 'SubstLocState' to 'UNOCCUPIED.' 00090-00013: SubstLocObject SetAttr request (📖 Page 237 00013: SubstLocObject SetAttr request) • ObjID: STL#1 • SubstID: Blank • SubstLocState: 0 = UNOCCUPIED

No	HOST	↔	SECS/GEM communication software	↔	Control CPU (controlled by user program)
5	—		10090-00013: SubstLocObject SetAttr acknowledge ( Page 248 00013: SubstLocObject SetAttr acknowledge)	→	'SubstLocState' of STL#1 is changed from 'OCCUPIED' to 'UNOCCUPIED,' however, 'DisableEvents' is 'true'; therefore, sending an event report is not requested.
6	—		Updates 'DVVAL.'	←	Registers a history of the departure from STL#1 to 'SubstHistory' of a substrate object and changes the substrate transport status (STT) to 'AT WORK.' 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) • SubstState: 1 = AT WORK • SubstHistory: History of the departure from STL#1
7	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—
8	—		—	←	CEID 30060 event sending request relay: ON
9	—*1	←	S6F11: AT SOURCE to AT WORK (CEID 30060)		—
10	—		CEID 30060 event sending request relay: OFF	→	—
11	—		Updates 'DVVAL.'	←	Registers 'SubstID' to the processing part (equipment substrate location object) STL#2, and changes 'SubstLocState' to 'OCCUPIED.' 00090-00013: SubstLocObject SetAttr request ( Page 237 00013: SubstLocObject SetAttr request) • ObjID: STL#2 • SubstID: A wafer that has arrived • SubstLocState: 1 = OCCUPIED
12	—		10090-00013: SubstLocObject SetAttr acknowledge ( Page 248 00013: SubstLocObject SetAttr acknowledge)	→	—
13	—		—	←	'SubstLocState' of STL#2 is changed from 'UNOCCUPIED' to 'OCCUPIED' and 'DisableEvents' is 'false'; therefore, sending an event report is requested. CEID 30085 event report sending request relay: ON
14	—*1	←	S6F11: UNOCCUPIED to OCCUPIED (CEID 30085) (STL#2)		—
15	—		CEID 30085 event report sending request relay: OFF	→	—
16	—		Updates 'DVVAL.'	←	Changes 'SubstLocID' of a substrate object to 'STL#2,' and registers a history of the arrival at STL#2 to 'SubstHistory.' 00090-00003: SubstrateObject SetAttr request ( Page 232 00003: SubstrateObject SetAttr request) • SubstLocID: STL#2 • SubstHistory: History of the arrival at STL#2
17	—		10090-00003: SubstrateObject SetAttr acknowledge ( Page 244 00003: SubstrateObject SetAttr acknowledge)	→	—

*1 The acknowledge operation of S6F12 varies depending on specifications of HOST; therefore, the description of S6F12 is omitted in this manual.

REVISIONS

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

Revision date	*Manual number	Description
May 2023	SH(NA)-082616ENG-A	First edition
September 2024	SH(NA)-082616ENG-B	■Added or modified parts Section 2.1, Section 2.2, Section 2.3, Chapter3, Section 3.1, Chapter 4, Section 5.1, Section 5.2, Section 6.1, Section 6.3, Section 6.4, Section 6.5, Section 6.6, Section 7.1, Section 7.2, Section 7.4, Section 7.5, Section 7.6, Section 7.8, Chapter 8, Section 9.1, Section 9.2, Section 9.3, Appendix 1, Appendix 2, Appendix 3, Appendix 4, Appendix 5, Appendix 6, Appendix 7, Appendix 8, Appendix 9, Appendix 10

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[Gratis Warranty Term]

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For the open source software used in this product, refer to the following:

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

SH(NA)-082616ENG-B(2409)
MODEL:MODEL:SECSGEM-300-R-E

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