

SEMI E87.1-0619^E

SPECIFICATION FOR SECS-II PROTOCOL FOR CARRIER MANAGEMENT (CMS)

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^E This Standard was editorially modified in February 2020 to correct an error. A change was made to Table 5.

1 Purpose

1.1 This Document maps the services and data of SEMI E87 to SECS-II streams and functions, and data definitions.

2 Scope

2.1 This Specification covers equipment supporting automated access to load ports from the host point-of-view.

2.2 This Document applies to all implementations of SEMI E87 that use the SECS-II message protocol [SEMI E5]. Compliance to this Standard requires compliance to both SEMI E87 and SEMI E5.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 This Specification applies to semiconductor equipment with SEMI E15.1 compliant load ports. It may also be applied to other manufacturing equipment that supports automated carrier transfer and or contains an internal buffer.

4 Referenced Standards and Documents

4.1 SEMI Standards and Safety Guidelines

SEMI E5 — Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)

SEMI 15.1 — Specification for 300 mm Tool Load Port

SEMI E39.1 — Specification for SECS-II Protocol for Object Services Standard (OSS)

SEMI E87 — Specification for Carrier Management (CMS)

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

5 Services Mapping

5.1 This section shows the specific SECS-II streams and functions that shall be used for SECS-II implementation of the services defined in SEMI E87, as well as the parameter mapping for data attached to services.

5.2 Services Message Mapping

5.2.1 Table 1 defines the relationships between SEMI E87 services and SECS-II messages.

Table 1 Services Message Mapping Table

<i>Service Name</i>	<i>Stream,Function</i>	<i>SECS-II Message Name</i>
Bind	S3,F17/18	Carrier Action Request/Acknowledge
CancelBind	S3,F17/18	Carrier Action Request/Acknowledge
CancelAllCarrierOut	S3,F19/20	Cancel All Carrier Out Request/Acknowledge
CancelCarrier	S3,F17/18	Carrier Action Request/Acknowledge
CancelCarrierAtPort	S3,F17/18	Carrier Action Request/Acknowledge
CancelCarrierNotification	S3,F17/18	Carrier Action Request/Acknowledge
CancelCarrierOut	S3,F17/18	Carrier Action Request/Acknowledge
CancelReservationAtPort	S3,F25/26	Port Action Request/Acknowledge
CarrierIn	S3,F17/18	Carrier Action Request/Acknowledge
CarrierNotification	S3,F17/18	Carrier Action Request/Acknowledge
CarrierOut	S3,F17/18	Carrier Action Request/Acknowledge
CarrierReCreate	S3,F17/18	Carrier Action Request/Acknowledge
CarrierRelease	S3,F17/18	Carrier Action Request/Acknowledge
CarrierTagReadData	S3,F29/30	Carrier Tag Read Data Request/Acknowledge
CarrierTagWriteData	S3,F31/32	Carrier Tag Write Data Request/Acknowledge
ChangeAccess	S3,F27/28	ChangeAccess
ChangeServiceStatus	S3,F25/26	Port Action Request/Acknowledge
ProceedWithCarrier	S3,F17/18	Carrier Action Request/Acknowledge
ReserveAtPort	S3,F25/26	Port Action Request/Acknowledge

5.3 Services Parameter Mapping

5.3.1 Table 2 maps the SEMI E87 service parameters to SECS-II Data Items.

NOTE 1: Use of parameters not specified for a given message in SEMI E87 is prohibited. SECS-II data items not used for a given message shall be sent as zero-length items.

Table 2 Service Parameters to SECS-II Data Items Mapping

<i>Parameter Name</i>	<i>Range</i>	<i>SECS-II Data Item</i>
AccessMode	Enumerated: MANUAL, AUTO	ACCESSMODE
AttributeData	Any	CATTRDATA
AttributeID	Text format restrictions per SEMI E39.1, § 6.	CATTRID
CarrierID	1 to 80 characters	CARRIERID
CMAcknowledge	Enumerated	CAACK
CMStatus	Structure	L,2 1. <CAACK> 2. Status
Data	ASCII (Format Code 20)	DATA
DataLength	Integer (Format Code 30–34 or 50–54)	DATALength
DataSeg	ASCII (Format Code 20)	DATASEG
ErrorCode	Enumerated	ERRCODE
ErrorText	1 to 80 characters	ERRTEXT
LocationID	ASCII (Format Code 20)	LOCID

<i>Parameter Name</i>	<i>Range</i>	<i>SECS-II Data Item</i>
PropertiesList	Non-identifier properties n = number of attributes	L,n 1. L,2 1. <CATTRID _i > 2. <CATTRDATA _i > ... n. L,2 1. <CATTRID _n > 2. <CATTRDATA _n >
PortID	Format Code 51 (1–255)	PTN
ServiceStatus	Enumerated: IN SERVICE, OUT OF SERVICE	Format Code 51 0 = OUT OF SERVICE 1 = IN SERVICE
Status	n = number of errors	L,n 1. L,2 1. <ERRCODE _i > 2. <ERRTEXT _i > ... n. 1. <ERRCODE _n > 2. <ERRTEXT _n >

5.4 SECS-II Data Items Without Corresponding SEMI E87 Parameters

5.4.1 Table 3 contains the SECS-II data items that do not correspond to SEMI E87's service parameter.

Table 3 Additional Data Item Requirements Table

<i>Function</i>	<i>SECS-II Data Item</i>
Used by S3,F17 to differentiate between Bind, CancelCarrierOut, CancelCarrierAtPort, CancelBind, CarrierIn, ProceedWithCarrier, CancelCarrierNotification, CarrierReCreate, CancelCarrier, CarrierOut and CarrierRelease services.	CARRIERACTION
Used to satisfy SECS-II conventions for linking a multi-block inquiry with a subsequent multi-block message. Neither required nor specified by CMS.	DATAID
Used to inform receiver of total message length size for SECS-II multi-block conventions. May also be used to indicate the length of a section of data being transmitted to or from a carrier tag.	DATALength
Used to satisfy SECS-II multi-block requirements. Neither required nor specified by SEMI E87.	GRANT
Used by S3,F25 to differentiate between port related, CancelReservationAtPort, and ReserveAtPort services.	PORTACTION
Used by S3,F27 to specify desired Port Access Mode.	ACCESSMODE

6 Variable Data Item Mapping

6.1 This section shows the specific SECS-II data classes, and formats needed for SECS-II implementations of SEMI E87 variable data items.