

SEMI E109.1-1102

PROVISIONAL SPECIFICATION FOR SECS-II PROTOCOL FOR RETICLE AND POD MANAGEMENT (RPMS)

This specification was technically approved by the Global Information and Control Committee and is the direct responsibility of the North American Information and Control Committee. Current edition approved by the North American Facilities Committee on July 21, 2002 and August 29, 2002. Initially available at www.semi.org October 2002; to be published November 2002. Originally published March 2002.

1 Purpose

1.1 This document maps the services of SEMI E109 to SECS-II streams and functions. This document also maps the data of SEMI E109 to E5 data definitions

2 Scope

2.1 This is a provisional standard that covers host and equipment communication for equipment that handle reticles. This includes equipment that handle reticles both inside and outside of a reticle pod. The provisional status is required because of the immaturity of implementations of integrated equipment with Automated Material Handling Systems (AMHS) or Automated Reticle Handling Systems (ARHS). Additional specifications may be defined to add further functionality. Also, further exception handling and error recovery scenarios need to be defined.

2.2 This document applies to all implementations of SEMI E109 that use SECS-II message protocol (SEMI E5). Compliance to this standard requires compliance to both SEMI E109 and SEMI E5.

2.3 This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

3 Limitations

3.1 This standard applies to semiconductor equipment that handles reticles and reticle carriers. This standard is intended to be used for lithography production, bare reticle storage, and reticle inspection equipment. It may or may not be applied to other types of equipment

4 Referenced Standards

4.1 SEMI Standards

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

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

SEMI E109 — Provisional Specification for Reticle and Pod Management (RPMS)

NOTE 1: As listed or revised, all documents cited shall be the latest publications of the standards.

5 Services Mapping

5.1 This sections shows the specific SECS-II streams and functions that shall be used for SECS-II implementations of the services defined in SEMI E109, 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 E109 services and SECS-II messages.

Table 1 Service Message Mapping

<i>Service Name</i>	<i>Stream/Function</i>	<i>SECS-II Message Name</i>
Bind	S3F17/F18	Carrier Action Request/Acknowledge
CancelAllPodOut	S3F33/F34	Cancel All Pod Out Request/Acknowledge
CancelBind	S3F17/F18	Carrier Action Request/Acknowledge
CancelMoveReticle	S14F19/20	Generic Service Request/Acknowledge
CancelPod	S3F17/F18	Carrier Action Request/Acknowledge
CancelPodAtPort	S3F17/F18	Carrier Action Request/Acknowledge
CancelPodNotification	S3F17/F18	Carrier Action Request/Acknowledge
CancelPodOut	S3F17/F18	Carrier Action Request/Acknowledge
CancelReservationAtPort	S3F25/F26	Port Action Request/Acknowledge
CancelReticleTransferJob	S3F35/F36	Carrier Action Request/Acknowledge
ChangeAccess	S3F27/F28	Change Access/Acknowledge
ChangeServiceStatus	S3F25/F26	Port Action Request/Acknowledge
Clamp	S3F17/F18	Carrier Action Request/Acknowledge
ClosePod	S3F17/F18	Carrier Action Request/Acknowledge
IndexDown	S3F17/F18	Carrier Action Request/Acknowledge
IndexUp	S3F17/F18	Carrier Action Request/Acknowledge
MoveReticle	S14F19/F20	Generic Service Request/Acknowledge
OktoUseReticle	S14F19/F20	Generic Service Request/Acknowledge
PodComplete	S3F17/F18	Carrier Action Request/Acknowledge
PodIn	S3F17/F18	Carrier Action Request/Acknowledge
PodNotification	S3F17/F18	Carrier Action Request/Acknowledge
PodOut	S3F17/F18	Carrier Action Request/Acknowledge
PodRelease	S3F17/F18	Carrier Action Request/Acknowledge
PodTagReadData	S3F29/F30	Carrier Tag Read Data Request/Acknowledge
PodTagWriteData	S3F31/F32	Carrier Tag Write Data Request/Acknowledge
ProceedWithPod	S3F17/F18	Carrier Action Request/Acknowledge
RejectReticle	S14F19/F20	Generic Service Request/Acknowledge
Re-qualifyReticle	S14F19/F20	Generic Service Request/Acknowledge
ReserveAtPort	S3F25/F26	Port Action Request/Acknowledge
ReticleTransferJob	S3F35/F36	Reticle Transfer Job Request/Acknowledge
SetQualificationIntervalTime	S14F3/4	SetAttr Request
Unclamp	S3F17/F18	Carrier Action Request/Acknowledge

5.3 Services Parameter Mapping

5.3.1 Table 2 maps the SEMI E109 service parameters to SECS-II Data Items.

NOTE 2: Use of parameters not specified for a given message in SEMI E109 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 Item Mapping

Parameter Name	Parameter Range	SECS-II Data Item
AccessMode	Enumerated: 0 = MANUAL 1 = AUTO	ACCESSMODE
ArrivingReticleList	List of n structures, where n = capacity Reticle ID ReticleRemovalInstruction ReticlePropertiesList When a slot in a pod contains no reticle, the value for Reticle ID should be null, the ReticleRemovalInstruction _n should be PASS BY, and the ReticlePropertiesList _n should be a zero length list.	L,n 1. L,3 1.<RETICLEID ₁ > 2.<RETREMOVEINSTR ₁ > 3. L,m 1. L,2 1. <ATTRID _{1,1} > 2. <ATTRDATA _{1,1} > : m. L,2 1.<ATTRID _{1,m} > 2.<ATTRDATA _{1,m} > : n. L,3 1.<RETICLEID _n > 2. <RETREMOVEINSTR _n > 3. L,m 1. L,2 1. <ATTRID _{n,1} > 2. <ATTRDATA _{n,1} > : m. L,2 1. <ATTRID _{n,m} > 2. <ATTRDATA _{n,m} >
CMAcknowledge	Enumerated	CAACK
CMStatus	Structure	L,2 1.<CAACK> 2.Status
Data	1–80 characters	DATA
DataSeg	1–80 characters	DATASEG
DataSize	0–65,535 (integer)	DATALLENGTH

Parameter Name	Parameter Range	SECS-II Data Item
DepartingReticleList	List of n structures, where n = capacity Reticle ID ReticlePlacementInstruction When a slot in a pod contains no reticle and will not have a reticle placed, the value for Reticle ID should be null and the ReticlePlacmentInstruction _n should be PASS BY.	L,n 1. L,2 1.<RETICLEID ₁ > 2.<RETPLACEINSTR ₁ > : n. L,2 1.<RETICLEID _n > 2.<RETPLACEINSTR _n >
DestinationLocation	1–80 characters	RPMDESTLOC
ErrorCode	Enumerated	ERRCODE
ErrorText	1–80 characters	ERRTEXT
InputPortID	U1(0, 101–255)	INPTN
OutputPortID	U1(0, 101–255)	OUTPTN
PodAttributeData	Any	ATTRDATA
PodAttributeID	1–40 characters	ATTRID
PodID	1–64 characters	PODID
PodPropertiesList	List of AttributeID and AttributeData	L,n 1.L,2 1.<ATTRID ₁ > 2.<ATTRDATA ₁ > : n.L,2 1.<ATTRID _n > 2.<ATTRDATA _n >
PortID	U1(101–255)	PTN
PortList	List of PortID	L,n 1.<PTN ₁ > : n.<PTN _n >
ReticleAttributeData	Any	ATTRDATA
ReticleAttributeID	1–40 characters	ATTRID
ReticleLocation-AttributeData	Any	ATTRDATA
ReticleLocation-AttributeID	1–40 characters	ATTRID
ReticlePlacement-Instruction	Enumerated: 0 = PLACE 1 = PASS BY 2 = CURRENTLY OCCUPIED	RETPLACEINSTR