



SEMI E173-0415^E SPECIFICATION FOR XML SECS-II MESSAGE NOTATION (SMN)

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^E This Standard was editorially modified in October 2018 to correct an error. A change was made to § 7.2.

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1 Purpose

1.1 The content of SECS-II messages are defined in SEMI Standard E5, SEMI Equipment Communication Standards 2 Message Content (SECS-II). SECS-II messages can be transmitted to and from equipment using either the protocol defined in SEMI E4, Equipment Communication Standards1 Messages Transfer (SECS-I) or the protocol defined in SEMI E37 High Speed Message Transfer (HSMS) Generic Services.

1.2 The purpose of this Specification is to define a standardized notation to represent the content of SECS-II messages or the total message when SECS-II messages are sent or received using the SECS-I or HSMS protocol. SECS-II Message Notation (SMN) is intended for use when documenting and logging SECS-II messages. The notation is intended to be used when documenting the purpose, structure and sequence of SECS-II messages. The notation is also intended to be used when logging SECS-II message communication traffic.

2 Scope

2.1 SMN as described in this Specification standardizes an XML notation that can be used for both the logging and documentation of SECS-II messages. The rules of this notation are primarily specified using an XML schema. Any logging and documentation that comply with SMN are created in an XML format that passes SMN schema validation.

2.2 When SECS-II message transactions are logged using SMN, the XML represents the content, structure, order and additional transaction details of sent and received messages. Logging might include only the SECS-II message content. Logging might also include the protocol message header.

2.3 When documenting SECS-II messages, the XML represents the content, structure and description of the SECS-II messages. Message scenarios can also be documented to indicate the order and content of messages in a sequence. Typically, SECS-II documentation includes only the SECS-II message content. Some of the elements and attributes in the schema file are exclusively for documenting SECS-II messages.

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 The SMN schema is not intended to be used to implement a communication protocol for sending or receiving SECS-II messages.

4 Referenced Standards and Documents

4.1 SEMI Standards and Safety Guidelines

SEMI E4 — Specification for SEMI Equipment Communication Standard 1 Message Transfer (SECS-I)

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

SEMI E37 — High-Speed SECS Message Services (HSMS) Generic Services

4.2 W3C Standards¹

Extensible Markup Language (XML) 1.1 (Second Edition) — W3C Recommendation 16 August 2006;
<http://www.w3.org/TR/xml11/>

XML Schema Definition Language (XSD) 1.1 Part 1: Structures — W3C Recommendation 5 April 2012

XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes — W3C Recommendation 5 April 2012

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

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5 Terminology

5.1 Abbreviations and Acronyms

- 5.1.1 *SMN* — SECS-II Message Notation
- 5.1.2 *W3C* — Worldwide Web Consortium
- 5.1.3 *XML* — eXtensible Markup Language
- 5.1.4 *XSD* — XML Schema Definition

5.2 Definitions

- 5.2.1 *SECS-II Message Notation (SMN)* — XML notation that complies with the requirements in this Specification including the requirements in the Complementary File.
- 5.2.2 *eXtensible Markup Language (XML)* — a markup language used for representing data rich with context and content in documents and in communications. XML is an extension of SGML, a document-oriented markup language. It was created by W3C for use on the Internet. XML can represent object-oriented structures.
- 5.2.3 *XML Schema Definition (XSD)* — a schema that describes the structure of an XML document. A schema file has an XSD file extension.

6 Conventions

6.1 Requirements Identification

6.1.1 The following notation specifies the structure of requirement identifiers.

6.1.1.1 The following requirements prefix format is used at the beginning of requirement text. See Table 1 for the format notation of the requirements prefix.

- [Esss.ss-RQ-nnnnn-nn]

6.1.1.2 To mark the end of the requirement text the following suffix format is used.

- [/RQ]

6.1.1.3 Requirements in the body text are highlighted with a border and light green background (may appear gray in black and white printouts).

[Esss.ss-RQ-nnnnn-nn] Requirement text. [/RQ]

Table 1 Requirement Identifiers

Format Notation	Purpose
Esss.ss	SEMI Standards Specification identifier. Examples: E087.00, E087.01, E134.00.
RQ	Indicates this is a requirement identifier.
nnnnn	Unique five-digit number within this Specification. 90000–99999 are reserved for use by SEMI.
.nn	Two-digit number that indicates version level of the requirement (.00 is used for the first version of a requirement).
/RQ	Indicates the end of a requirement.

6.1.2 Requirements in tables are delimited in one of two ways.

6.1.2.1 Where the requirement occupies an entire row in the table, the requirement ID is placed in column 1. No '[/RQ]' is used to mark the end of the requirements text in this case. The table may also contain rows that are not requirements. In this case, the column 1 cell is left blank.

6.1.2.2 Nonrequirements text related to a requirements row may be included in an adjacent row. The relationship between the rows is indicated by a broken line separating the two.



6.1.2.3 Where the requirement occupies only one cell, the text in the cell includes the requirement ID prefix and suffix similar to requirements in the body text.

6.1.2.4 No cell in a table will contain both requirement and nonrequirement text.

6.1.2.5 Cells that contain requirements are shaded light green.

6.1.2.6 Table 2 provides an example of requirements in a table. Note that in this example, the same requirement is presented in two alternative formats. In practice, mixing the two approaches in the same table is not typically done.

Table 2 Example Table with Requirements

RequirementID	Statement	Additional Detail
Esss.ss-RQ-nnnnnn-nn	The light shall be blue.	There shall be no similar color in the light panel.
	The blue light is typically placed at the leftmost position in the light panel.	
	[Esss.ss-RQ-nnnnnn-nn] The light shall be blue. There shall be no similar color in the light panel. [/RQ]	The blue light is typically placed at the leftmost position in the light panel.

6.1.3 Only text marked with the requirement identifier is a requirement of this Specification.

6.1.3.1 Clarification, examples, and related recommendations may be provided near a requirement, but are not part of the requirement.

6.1.3.2 Note that the word ‘should’ is used in some nonrequirements text and it denotes a recommendation or a best practice, not a requirement.

6.1.4 Parent-child relationships of requirements are noted in the tables in Appendix 1. Where a parent requirement includes conditions or selection criteria, these are passed to their children. For example, if a parent requirement is stated to apply only to photolithography equipment, any child requirements also apply only to such equipment. The condition need not be restated for each child requirement.

6.2 Schema Diagrams

6.2.1 The schema diagrams in this specification use graphical representations of XML schemas created by Altova GmbH.²

Table 3 Schema Diagram

Diagram Feature	Description
	Denotes a required ordered sequence of the right hand elements. (sequence)
	Denotes an element that contains other elements or attributes. Cardinality may be shown at the bottom right. (element)
	Denotes the existence of XML constraints such as Unique or KeyRef elements. (constraints)

7 Requirements

7.1 The usage of SECS-II Message Notation is described in this section.

7.2 Most requirements for SECS-II notation are defined within an XML schema designated as a Complementary File to this Specification. The Complementary File is part of this Specification.

² The images in Figures 1, 2, 3, 4, 5 and 6 were created using Altova XMLSpy®. Copyright 2007-2011 Altova GmbH.



[E173.00-RQ-00001-00] SMN text and files shall comply with all of the requirements in this Specification including the requirements specified within the Complementary File, E173-0415-SECSIMessageNotation-Schema.xsd. [/RQ]

7.2.1 Not all requirements can be validated by an XML schema alone. Additional requirements appear in the schema as xs:annotation elements.

[E173.00-RQ-00002-00] The SMN implementer shall follow all textual instructions and requirements embedded within the XML schema. [/RQ]

7.2.2 Most requirements for using SMN are defined by the XML schema itself. The process of checking to see whether an XML document conforms to an XML schema is called validation. Implementers should validate the use of SMN using the XML Schema. There are numerous tools available for validating XML against a schema to check that the XML is well-formed.

[E173.00-RQ-00003-00] SMN text and files shall successfully validate against the SMN schema file. [/RQ]

7.2.3 The tables below in the next section indicate whether an element or attribute is intended to be used when logging SECS-II messages and when documenting SECS-II messages. Most elements and attributes are optional so that users can pick and choose which items are useful for a particular application.

7.2.4 XML files can use different character sets. The character set is specified in the first line using the encoding attribute, like this: <?xml version="1.0" encoding="UTF-8"?>

[E173.00-RQ-00004-00] XML data using SMN shall be encoded in the UTF-8 character set. [/RQ]

7.2.5 When logging messages in SMN, implementers generate the XML from the SECS-II messages. It is also possible for implementers to create applications that convert SMN into SECS-II messages.

7.3 XML Schema Overview

7.3.1 The tables and figures in this section list the various elements and attributes defined by the XML schema. The documentation for each element and attribute is contained within the XML schema. These appear in the schema as xs:annotation elements.

7.3.2 SECSMessageScenario

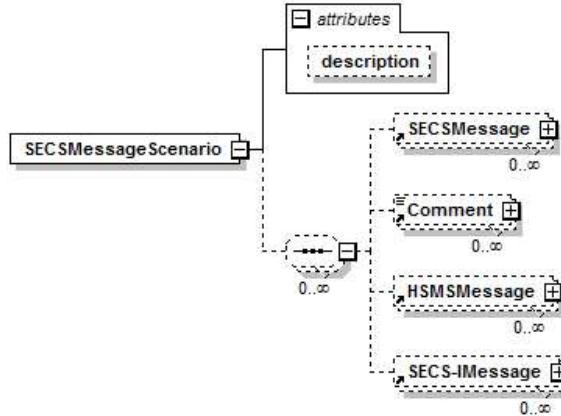


Figure 1
Element SECSMessageScenario

7.3.2.1 The SECSMessageScenario element encapsulates a sequence of SECS-II Messages using element SECSMessage; whether creating a SECS-II message log file or creating documentation on how to implement a specific message scenario. The SECSMessageScenario element also allows comments. A SECSMessageScenario can also include protocol level messages.



7.3.2.2 Either HSMS or SECS-I protocol level messages can be embedded anywhere within a sequence by using the HSMSMessage and SECS-IMessage elements. HSMSMessage and SECS-IMessage elements can be used to log the entire message header and message data in its original format as sent or received. It is unlikely that elements SECS-IMessage and HSMSMessage would be used in the same sequence.

7.3.2.3 Elements SECSIIMessage and HSMSMessage can be used in the same sequence.

[E173.00-RQ-00005-00] When both a SECSMessage and HSMSMessage entries are used in a sequence for the same message, the HSMSMessage entry shall be placed before the corresponding SECSMessage entry. [/RQ]

7.3.2.4 Elements SECSIIMessage and SECS-IMessage can be used in the same sequence.

[E173.00-RQ-00005-00] When both a SECSMessage and SECS-IMessage entries are used in a sequence for the same message, the SECS-IMessage entry shall be placed before the corresponding SECSMessage entry. [/RQ]

7.3.2.5 The table below indicates which SECSMessageScenario elements and attributes are intended for logging purposes and which are intended for documentation purposes.

Table 4 SECSMessageScenario

<i>Element/Attribute</i>	<i>Logging</i>	<i>Documentation</i>
description	Yes	Yes
SECSMessage	Yes	Yes
Comment	Yes	Yes
HSMSMessage	Yes	Yes
SECS-IMessage	Yes	Yes





7.3.3 SECSMessage

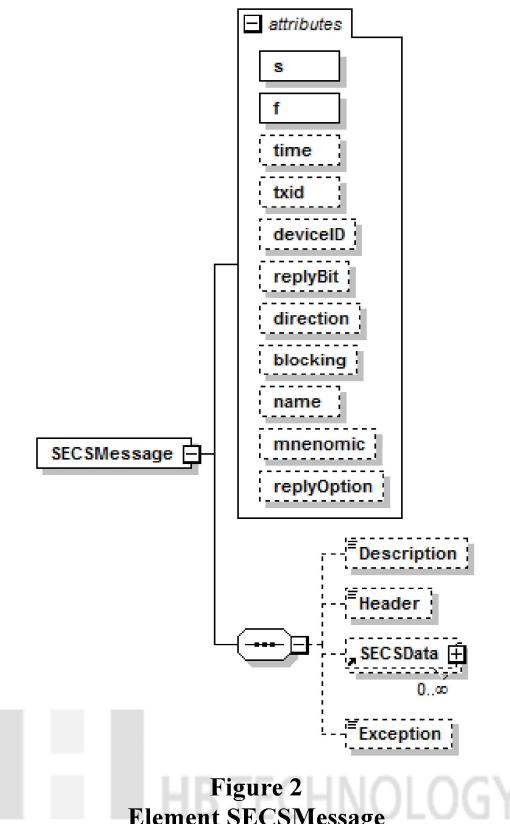


Figure 2
Element SECSMessage

7.3.3.1 The SECSMessage element is an item used within SECSMessageScenario, or by itself to document or log a single SECS-II message. One SECSMessage element can have more than one SECSData instance, but additional instances are only for documentation purposes when a message defines more than one message structure.

7.3.3.2 The tables below indicate which SECSMessage elements and attributes are intended for logging purposes and which are intended for documentation purposes.

[E173.00-RQ-00006-00] SECSMessage elements s, f, time, txid and direction shall be used in all SMN logging applications when the SECSMessage element is included. [RQ]

Table 5 SECSMessage Attributes

Element/Attribute	Logging	Documentation
s	Yes	Yes
f	Yes	Yes
time	Yes	No
txid	Yes	No
deviceID	Yes	No
replyBit	Yes	Yes
direction	Yes	Yes
blocking	Yes	Yes
name	Yes	Yes



<i>Element/Attribute</i>	<i>Logging</i>	<i>Documentation</i>
mnemonic	Yes	Yes
replyOption	No	Yes

Table 6 SECSMessage Elements

<i>Element/Attribute</i>	<i>Logging</i>	<i>Documentation</i>
Description	Yes	Yes
Exception	No	Yes
Header	Yes	No
SECSData	Yes	Yes

7.3.4 *SECSData*

7.3.4.1 The SECSData element describes the content of a SECS-II message or item within a SECS-II message. All of the SECSII Data items are intended for use when creating documentation. In the XML schema, all of the SECSData elements are type DataItem, except LST which is type LST.

7.3.4.2 When reporting multiple values for an element that is not LST, ASC, JIS, or MBC, use a single space delimiter between each value.

7.3.4.3 The tables below indicate which SECSData elements and attributes are intended for logging purposes and which are intended for documentation purposes.

[E173.00-RQ-00007-00] SECSData elements ANY, SET, SIA, UIA, INT, FPA, ENU and BIT shall not be used in SMN logging applications when the SECSData element is included. [/RQ]



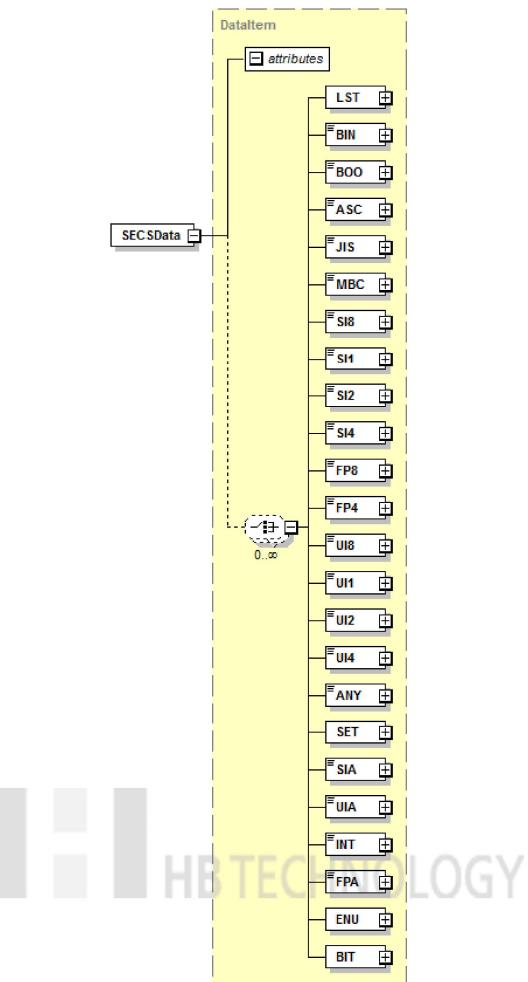


Figure 3
Element SECSData

Table 7 SECSData Elements

Element	Logging	Format Code (Octal)	Meaning
LST	Yes	00	LIST (length in elements)
BIN	Yes	10	Binary
BOO	Yes	11	Boolean
ASC	Yes	20	ASCII
JIS	Yes	21	JIS-8
MBC	Yes	22	2 byte character
SI8	Yes	30	8 byte integer (signed)
SI1	Yes	31	1 byte integer (signed)
SI2	Yes	32	2 byte integer (signed)
SI4	Yes	34	4 byte integer (signed)
FP8	Yes	40	8 byte floating point
FP4	Yes	44	4 byte floating point
UI8	Yes	50	8 byte integer (unsigned)



Element	Logging	Format Code (Octal)	Meaning
UI1	Yes	51	1 byte integer (unsigned)
UI2	Yes	52	2 byte integer (unsigned)
UI4	Yes	54	4 byte integer (unsigned)
ANY	No	Any	Any
SET	No	As specified	The list of allowable format codes is specified.
SIA	No	30, 31, 32 or 34	Any signed integer format code.
UIA	No	50, 51, 52 or 54	Any unsigned integer format code.
INT	No	30, 31, 32, 34, 50, 51, 52, or 54	Any integer format code.
FPA	No	40 or 44	Any floating point format code.
ENU	No	10, 20, 21, 22, 30, 31, 32, 34, 50, 51, 52, 54	An item that can be enumerated.
BIT	No	10, 30, 31, 32, 34, 50, 51, 52, 54	An item where specific bits in the value have meaning.

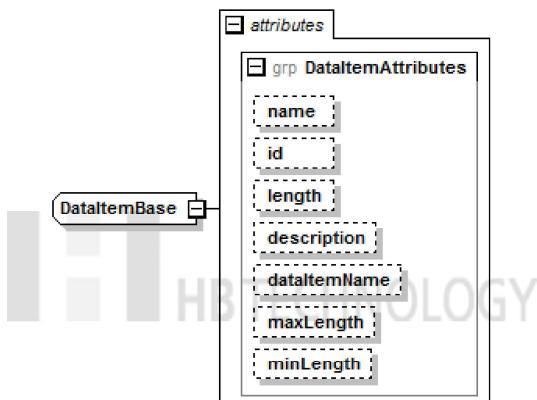


Figure 4
Attributes of SECSData and the Elements within SECSData

Table 8 SECSData Attributes

Element	Logging	Documentation
name	Yes	No
id	Yes	No
length	Yes	Yes
description	Yes	Yes
dataItemName	Yes	Yes
maxLength	No	Yes
minLength	No	Yes

7.3.5 HSMSMessage

7.3.5.1 Use the HSMSMessage element to log or document HSMS messages. Logging can include just the header, or the entire message including the message data. Both header and data are in hexadecimal format so that the exact, entire message can be logged in an efficient format.

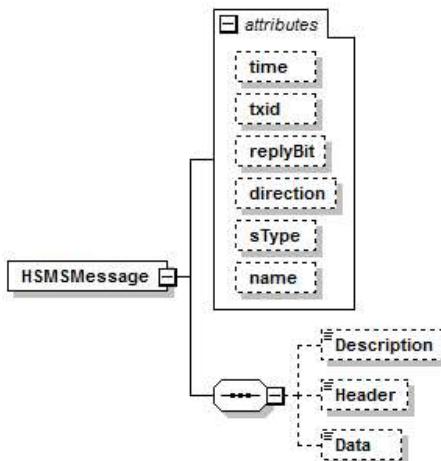


Figure 5
Element HSMSMessage

7.3.5.2 The table below indicates which HSMSMessage elements and attributes are intended for logging purposes and which are intended for documentation purposes.

[E173.00-RQ-00008-00] HSMSMessage element time and direction shall be used in all SMN logging applications when the HSMSMessage element is included. [/RQ]

Table 9 HSMSMessage

Element/Attribute	Logging	Documentation
time	Yes	No
txid	Yes	No
replyBit	Yes	Yes
direction	Yes	Yes
sType	Yes	Yes
name	Yes	Yes
Description	Yes	Yes
Header	Yes	No
Data	Yes	No

7.3.6 SECS-IMessage

7.3.6.1 Use the SECS-IMessage element to log or document SECS-I messages. Logging can include just the header, or the entire message including the message data. Both header and data are in hexadecimal format so that the exact, entire message can be logged in an efficient format.

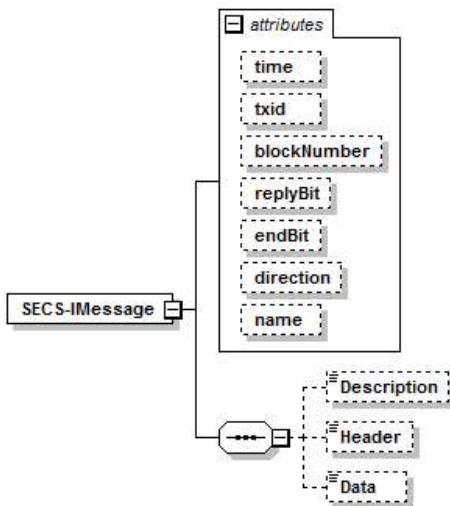


Figure 6
Element SECS-IMessage

7.3.6.2 The table below indicates which SECS-IMessage elements and attributes are intended for logging purposes and which are intended for documentation purposes.

[E173.00-RQ-00009-00] SECS-IMessage element time and direction shall be used in all SMN logging applications when the SECS-IMessage element is included. [/RQ]

Table 10 SECS-IMessage

Element/Attribute	Logging	Documentation
time	Yes	No
txid	Yes	No
blockNumber	Yes	Yes
replyBit	Yes	Yes
endBit	Yes	Yes
direction	Yes	Yes
name	Yes	Yes
Description	Yes	Yes
Header	Yes	No
Data	Yes	No

8 Test Methods

8.1 No test methods are defined for this Specification.



APPENDIX 1

STATEMENT OF COMPLIANCE

NOTICE: The material in this Appendix is an official part of SEMI E173 and was approved by full letter ballot procedures on January 5, 2015.

A1-1 Statement of Compliance

[E173.00-RQ-90001-01] Each implementer of the capabilities defined in this Specification shall complete a Capability Requirements compliance table per Table A1-1 when reporting on compliance to E173.00. [/RQ]

A1-2 Compliance Table: Capability Requirements

[E173.00-RQ-90002-01] Each implementer the capabilities defined in this Specification shall document compliance to E173.00 capability requirements per Table A1-1 with the following compliance codes: C – comply, NC – not comply, WC – will comply, NA – not applicable. [/RQ]

[E173.00-RQ-90003-01] The NA compliance code shall be used only in the case where a requirement is conditional and the condition evaluates to render the requirement not applicable for the current implementation. [/RQ]

A1-2.1 Child requirements inherit the conditional status of the parent requirement. Where a parent requirement is marked NA, the child requirements also should be marked NA.

[E173.00-RQ-90004-00] An explanation for NC shall be provided by the implementer. [/RQ]

A1-2.2 If WC is assigned, the implementer should provide a date for implementation.

A1-2.3 Items included in the Condition/Selection Criteria column of Table A1-1 are defined in Table A1-2.

[E173.00-RQ-90006-00] Each implementer of this Specification shall include in the completed Capability Requirements compliance table a value as specified in Table A1-2 for all defined conditions or selection criteria included in Table A1-1. [/RQ]

**Table A1-1 E173.00 Capability Requirements**

<i>Section</i>	<i>RequirementID</i>	<i>Parent RequirementID</i>	<i>Condition/Selection Criteria</i>	<i>Compliance Codes (C/NC/WC/NA)</i>
Capability: A1-1 Statement of Compliance				
A1-1	E173.00-RQ-90001-00	E173.00-RQ-00002-00	<none>	
A1-2	E173.00-RQ-90002-00	E173.00-RQ-90001-00	<none>	
A1-2	E173.00-RQ-90003-00	E173.00-RQ-90002-00	<none>	
A1-2	E173.00-RQ-90004-00	E173.00-RQ-90002-00	<none>	
A1-2	E173.00-RQ-90006-00	E173.00-RQ-90002-00	<none>	
A1-3	E173.00-RQ-90005-00	E173.00-RQ-90002-00	<none>	
Capability: 7 SECS-II Message Notation (SMN)				
7	E173.00-RQ-00001-00	<none>	<none>	
7.2.1	E173.00-RQ-00002-00	<none>	<none>	
7.2.2	E173.00-RQ-00003-00	<none>	<none>	
7.2.4	E173.00-RQ-00004-00	<none>	<none>	
7.3.2.2	E173.00-RQ-00005-00	<none>	<none>	
7.3.3.2	E173.00-RQ-00006-00	<none>	<none>	
7.3.4.3	E173.00-RQ-00007-00	<none>	<none>	
7.3.5.2	E173.00-RQ-00008-00	<none>	<none>	
7.3.6.2	E173.00-RQ-00009-00	<none>	<none>	

A1-3 Compliance Table: Equipment Conditional Criteria

[E173.00-RQ-90005-01] Each implementer shall document E173.00-specific conditional criteria per Table A1-2. [RQ]

A1-3.1 Conditional criteria are used to identify when conditional requirements are to be implemented.

Table A1-2 Conditional Criteria

<i>Name</i>	<i>Values</i>	<i>Description</i>	<i>Section</i>
<none>		There are no conditional criteria related to the requirements in this Specification.	



RELATED INFORMATION 1

SMN DOCUMENTATION AND LOGGING EXAMPLES

NOTICE: This Related Information is not an official part of SEMI E173 and was derived from the work of the Information & Control Global Technical Committee. This Related Information was approved for publication by full letter ballot procedures on January 5, 2015.

R1-1 SECS-II Message Notation Documentation Examples

R1-1.1 The following examples demonstrate usage of the SECS-II Message Notation. Usage of SMN is not limited to these examples.

R1-1.2 SI,F13

```
<SECSMessage xmlns="urn:semi-org:xsd.SMN" s="1" f="13"
name="Establish Communications Request" mnemonic="CR"
blocking="S" direction="Both" replyBit="true" >
    <Description>
        The purpose of this message is to provide a formal means of initializing
        communications at a logical application level both on power-up and following a break
        in communications. It should be the following any period where host and Equipment SECS
        applications are unable to communicate. An attempt to send an Establish Communications
        Request (S1,F13) should be repeated at programmable intervals until an Establish
        Communications Acknowledge (S1,F14) is received within the transaction timeout period
        with an acknowledgement code accepting the establishment.
    </Description>
    <SECSData>
        <LST length="2">
            <ASC dataItemName="MDLN" length="20"/>
            <ASC dataItemName="SOFTREV" length="20"/>
        </LST>
    </SECSData>
    <Exception>
        The host sends a zero-length list to the equipment.
    </Exception>
</SECSMessage>
```

R1-1.3 SI,F3

```
<SECSMessage xmlns="urn:semi-org:xsd.SMN" s="1" f="3"
name="Selected Equipment Status Request" mnemonic="SSR"
blocking="S" direction="H to E" replyBit="true" >
    <Description>
        A request to the equipment to report selected values of its status.
    </Description>
    <SECSData description="structure 1, preferred">
        <LST length="n">
            <INT dataItemName="SVID"/>
        </LST>
    </SECSData>
    <SECSData description="structure 2, for compatibility with previous
implementations">
        <INT dataItemName="SVID" description="array of SVID"/>
    </SECSData>
    <Exception>
        A zero-length list (structure 1) or item (structure 2) means report all SVIDs.
    </Exception>
</SECSMessage>
```



R1-1.4 SI,F4

```
<SECSMessage xmlns="urn:semi-org:xsd.SMN" s="1" f="4"
name="Selected Equipment Status Data" mnemonic="SSD"
blocking="M" direction="E to H" replyBit="false" >
<Description>
The equipment reports the value of each SVID requested in the order requested. The
host remembers the names of values requested.
</Description>
<SECSData description="structure 1, preferred">
<LST length="n">
<ANY dataItemName="SV"/>
</LST>
</SECSData>
<Exception>
A zero-length list item for SVi means that SVIDi does not exist.
</Exception>
</SECSMessage>
```

R1-1.5 Host Attempts to Establish Communications with HSMS-SS

```
<SECSMessageScenario xmlns="urn:semi-org:xsd.SMN">

<HSMSMessage sType="Select.req" direction="H to E"></HSMSMessage>

<HSMSMessage sType="Select.rsp" direction="E to H"></HSMSMessage>

<Comment>Communications state is Enabled (any substate)</Comment>

<SECSMessage s="1" f="13" direction="H to E" replyBit="true" >
<SECSData>
<LST length="0"/>
</SECSData>
</SECSMessage>

<SECSMessage s="1" f="14" direction="E to H" replyBit="false" >
<SECSData>
<LST length="2">
<BIN dataItemName="COMMACK">0</BIN>
<LST length="2">
<ASC dataItemName="MDLN"/>
<ASC dataItemName="SOFTREV"/>
</LST>
</LST>
</SECSData>
</SECSMessage>

<Comment>Communication state = COMMUNICATING</Comment>
</SECSMessageScenario>
```



R1-1.6 S2,F37

```
<SECSMessage xmlns="urn:semi-org:xsd.SMN" s="2" f="37"
name="Enable/Disable Event Report" mnemonic="EDER"
blocking="M" direction="H to E" replyBit="true" >
    <Description>
        The purpose of this message is for the host to enable or disable reporting for a group
        of events (CEIDs).
        When n is not zero, this message enables or disables reporting for the listed (CEIDs).
        The reporting for unlisted (CEIDs) is not affected.
    </Description>
    <SECSData description="structure 1, preferred">
        <LST length="2">
            <BOO dataItemName="CEED"/>
            <LST length="n">
                <SET dataItemName="CEID">
                    <Format><UI4/></Format>
                    <Format><ASC/></Format>
                </SET>
            </LST>
        </LST>
    </SECSData>
    <Exception>
        A list of zero length following &lt;CEED&gt; means all CEIDs.
    </Exception>
</SECSMessage>
```





R1-2 SECS-II Message Notation Logging Examples

R1-2.1 Minimal Decoration

```
<SECSMessageScenario xmlns="urn:semi-org:xsd.SMN">

<SECSMessage s="1" f="3" direction="H to E" replyBit="true"
txid="1001" time="2014-02-27T14:21:15.055Z">
  <SECSDATA>
    <LST>
      <UI4>7081</UI4>
      <UI4>7083</UI4>
      <UI4>7084</UI4>
      <UI4>8111</UI4>
    </LST>
  </SECSDATA>
</SECSMessage>

<SECSMessage s="1" f="4" direction="E to H" replyBit="false"
txid="1001" time="2014-02-27T14:21:15.101Z" >
  <SECSDATA>
    <LST>
      <FP4>10.43</FP4>
      <FP4>2.3334</FP4>
      <FP4>241.1</FP4>
      <FP8>1.16 23.45 0.0 0.0</FP8>
    </LST>
  </SECSDATA>
</SECSMessage>

<SECSMessage s="6" f="11" direction="E to H" replyBit="true"
txid="4321" time="2014-02-27T14:21:16.233Z">
  <SECSDATA>
    <LST>
      <UI4>1</UI4>
      <UI4>1114</UI4>
    <LST>
      <LST>
        <UI4>101</UI4>
        <LST>
          <ASC>CARRIER0001</ASC>
          <ASC>LoadPort1Docked</ASC>
          <UI4>1</UI4>
        </LST>
      </LST>
    </LST>
  </SECSDATA>
</SECSMessage>

<SECSMessage s="6" f="12" direction="H to E" replyBit="false"
txid="4321" time="2014-02-27T14:21:16.243Z">
  <SECSDATA>
    <BIN>0</BIN>
  </SECSDATA>
</SECSMessage>

</SECSMessageScenario>
```



R1-2.2 Extensive Decoration (same messages as the previous example)

```

<SECSMessageScenario xmlns="urn:semi-org:xsd.SMN">

<SECSMessage s="1" f="3" direction="H to E" replyBit="true"
txid="1001" time="2014-02-27T14:21:15.055Z">
    <SECSDATA>
        <LST length="4">
            <UI4 name="HotPlate_MFC300_FlowRate">7081</UI4>
            <UI4 name="HotPlate_TC300_RampRate">7083</UI4>
            <UI4 name="HotPlate_TC300_Temperature">7084</UI4>
            <UI4 name="HotPlate_TC300_Coordinates">8111</UI4>
        </LST>
    </SECSDATA>
</SECSMessage>

<SECSMessage s="1" f="4" direction="E to H" replyBit="false"
txid="1001" time="2014-02-27T14:21:15.101Z" >
    <SECSDATA>
        <LST length="4">
            <FP4 name="HotPlate_MFC300_FlowRate" id="7081">10.43</FP4>
            <FP4 name="HotPlate_TC300_RampRate" id="7083">2.3334</FP4>
            <FP4 name="HotPlate_TC300_Temperature" id="7084">241.1</FP4>
            <FP8 name="HotPlate_TC300_Coordinates" id="8111">1.16 23.45 0.0 0.0</FP8>
        </LST>
    </SECSDATA>
</SECSMessage>

<SECSMessage s="6" f="11" direction="E to H" replyBit="true"
txid="4321" time="2014-02-27T14:21:16.233Z">
    <SECSDATA>
        <LST length="3">
            <UI4 dataItemName="DATAID">1</UI4>
            <UI4 name="CarrierClamped" dataItemName="CEID">1114</UI4>
            <LST length="1">
                <LST length="2">
                    <UI4 dataItemName="RPTID">101</UI4>
                    <LST length="3">
                        <ASC name="CarrierID" id="7030" dataItemName="VID">CARRIER0001</ASC>
                        <ASC name="LocationID" id="7144" dataItemName="VID">LoadPort1Docked</ASC>
                        <UI4 name="PortID" id="7142" dataItemName="VID">1</UI4>
                    </LST>
                </LST>
            </LST>
        </SECSDATA>
</SECSMessage>

<SECSMessage s="6" f="12" direction="H to E" replyBit="false"
txid="4321" time="2014-02-27T14:21:16.243Z">
    <SECSDATA>
        <BIN dataItemName="ACKC6" description="0=Accepted >0=Error, not accepted">0</BIN>
    </SECSDATA>
</SECSMessage>

</SECSMessageScenario>

```



R1-2.3 *HSMS Messages with Data and SECS Messages* (Both HSMSMessage and SECSMessage are included, yet each can be used without the other.)

```
<SECSMessageScenario xmlns="urn:semi-org:xsd.SMN">

<HSMSMessage time="2014-08-09T14:21:15.055Z" >
  <Header> 7FFF810D000000002B69</Header>
  <Data>010241054D4F44454C410530302E3031</Data>
</HSMSMessage>

<SECSMessage s="1" f="13" direction="E to H" replyBit="true"
txid="11113" time="2014-08-09T14:21:15.055Z">
  <SECSData>
    <LST length="2">
      <ASC>MODEL</ASC>
      <ASC>1.01</ASC>
    </LST>
  </SECSData>
</SECSMessage>

<HSMSMessage time="2014-08-09T14:21:15.084Z" >
  <Header> 7FFF010E000000002B69</Header>
  <Data>01022101000100</Data>
</HSMSMessage>

<SECSMessage s="1" f="4" direction="H to E" replyBit="false"
txid="11113" time="2014-08-09T14:21:15.084Z" >
  <SECSData>
    <LST length="2">
      <BIN>0</BIN>
      <LST/>
    </LST>
  </SECSData>
</SECSMessage>

</SECSMessageScenario>
```



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