

SEMI E38.1-95 (Withdrawn 0307) COMMUNICATIONS ENVIRONMENT HSMS/SECS-II FOR CLUSTER TOOL MODULE COMMUNICATIONS

This standard was technically approved by the global Information & Control Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on November 21, 2006. It was available at www.semi.org in March 2007. Originally published in 1995.

NOTICE: This document was balloted and approved for withdrawal in 2007.

1 Purpose

1.1 The purpose of this standard is to specify the communication environment for communication with and among modules in a cluster tool.

2 Scope

2.1 The scope of this standard is communication within a cluster tool as defined in the standard Cluster Tool Module Communication Standard (CTMC, SEMI E38). This standard specifies the transmission of SECS-II messages by HSMS (SEMI E37), HSMS-GS (SEMI E37.2), and Ethernet. Other methods of message communication are possible but beyond the scope of this standard.

2.2 This standard is intended to be one of possibly several supplements to the CTMC SEMI E38.

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 Referenced Standards and Documents

3.1 SEMI Standards

The following SEMI standards are related to the Communications Environment standard:

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

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

SEMI E37.2 — High-Speed SECS Message Services General Session (HSMS-GS)

3.2 IEEE Standards¹

The following IEEE standard is related to the Communications Environment standard:

IEEE 802.3 — Carrier Sense Multiple Access with Collision Detection

4 Definitions

4.1 The following definitions are arranged in alphabetical order. Some are defined using terms defined elsewhere within this section. No definitions beyond this section and the referenced standards should be necessary for a basic understanding of these terms.

4.1.1 *10 BASE 2* — a common physical medium for the transmission of Ethernet signals.

4.1.2 *AUI (Attachment Unit Interface)* — a specification of the connector, pins, and signals used to interface a computer to a MAU. Defined formally in IEEE 802.3.

4.1.3 *Cluster Tool Environment* — a collection of interconnected modules forming a cluster tool.

4.1.4 *Communications Stack* — a specification of successive layers of interfaces through which communication services are provided.

¹ Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, NY 10017

4.1.5 *Ethernet* — a method of transmitting signals. Ethernet is defined formally by IEEE 802.3

4.1.6 *MAU (Medium Attachment Unit)* — an adaptor from the AUI interface to a physical wire or medium such as 10 BASE 2. Defined formally in IEEE 802.3

4.1.7 *Platform* — a physical computer in a cluster tool that contains the Ethernet Interface or station as defined in IEEE 802.3. In a cluster tool, a platform may have one or more logical modules residing on it.

5 Required Sessions

5.1 In order to support the Services specified in the CTMC standard, there is an associated set of Protocol standards that specify a set of SECS-II messages to support these Services. This standard specifies the transmission of these SECS-II messages using HSMS sessions.

5.2 In order to communicate with a given logical module, a separate HSMS connection (TCP/IP connection) is required per logical module.

5.3 For correct operation of a cluster tool using these facilities, a set of standard sessions, given in Table 1, is required. Other sessions are possible, but are not required. In order to be compliant a module must not require further sessions in order to operate.

Table 1 Required Sessions

<i>Client</i>	<i>Server</i>	<i>Services</i>
Cluster Controller	Transport Module	Object Services, Material Movement, Exception Management, Event Reporting
Cluster Controller	Cassette Module	Object Services, Material Movement, Exception Management, Event Reporting
Cluster Controller	Process Module	Object Services, Processing Management, Recipe Management, Material Movement, Exception Management, Event Reporting
Cassette Module	Transport Module	Object Services, Material Movement
Process Module	Transport Module	Object Services, Material Movement

6 Communication Stack Specification

There are many layers of software required in order to communicate using a facility such as HSMS. In order to interoperate, modules shall have identical or equivalent protocols at each layer on both sides of a physical connection.

HSMS does not specify a particular physical layer. In order to ensure interoperability between modules, of possibly different origin, a complete interoperable communication stack is required.

6.1 *SECS-II Messages* — The Cluster Tool Module Communications (CTMC) standard specifies a set of messaging services from applicable standards for use by a cluster tool module. Each service standard has a supplemental protocol standard which defines the SECS-II message support. This standard specifies a method for transporting these SECS-II messages. In order to be compliant with this standard, these SECS-II messages must be used. The detail of the SECS-II messages is found in SEMI E5. SECS-II message definitions refer to messages communicating between a host and equipment. With reference to implementing CTMC, the host is the service-user or cluster-controlling entity, and the equipment is the service-provider or cluster module entity.

6.2 *HSMS Messaging* — For the purposes of communication of SECS-II messages within the cluster tool communication environment, SEMI High-Speed SECS Message Service (HSMS) shall be used. [SEMI E37]