



Standard Guide for Hardware Implementation for Computerized Systems¹

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1. Scope

1.1 This guide provides assistance in the choice of computing hardware resources for ship and marine environments and describes:

1.1.1 The core characteristics of interoperable systems that can be incorporated into accepted concepts such as the Open System Interconnection (OSI) model;

1.1.2 Process-based models, such as the Technical Reference Model (TRM), that rely on interoperable computing hardware resources to provide the connection between the operator, network, application, and information; and,

1.1.3 The integrated architecture that can be used to meet minimum information processing requirements for ship and marine environments.

1.2 The use of models such as OSI and TRM provide a structured method for design and implementation of practical shipboard information processing systems and provides planners and architects with a roadmap that can be easily understood and conveyed to implementers. The use of such models permit functional capabilities to be embodied within concrete systems and equipment.

1.3 The information provided in this guide is understood to represent a set of concepts and technologies that have, over time, evolved into accepted standards that are proven in various functional applications. However, the one universal notion that still remains from the earliest days of information processing is that technological change is inevitable. Accordingly, the user of this guide must understand that such progress may rapidly invalidate or supersede the information contained herein. Nonetheless, the concept of implementing ship and marine computing systems based on these functional principles allows for logical and rational development and provides a sound process for eventual upgrade and improvement.

2. Referenced Documents

2.1 ASTM Standards:

E 1013 Terminology Relating to Computerized Systems²

F 1757 Guide for Digital Communications Protocols for

Computerized Systems³

2.2 ANSI Standards:⁴

X3.131 Information Systems—Small Computer Systems Interface-2 (SCSI-2)

X3.172 American National Standard Dictionary for Information Systems

X3.230 Information Systems—Fibre Channel—Physical and Signaling Interface (FC-PH)

X3.232 Information Technology—SCSI-2 Common Access Method Transport and SCSI Interface Module

X3.253 Information Systems—SCSI-3 Parallel Interface (SPI)

X3.269 Information Technology—Fibre Channel Protocol for SCSI

X3.270 Information Technology—SCSI-3 Architecture Model (SAM)

X3.276 Information Technology—SCSI-3 Controller Commands (SCC)

X3.277 Information Technology—SCSI-3 Fast-20

X3.292 Information Technology—SCSI-3 Interlocked Protocol (SIP)

X3.294 Information Technology—Serial Storage Architecture—SCSI-2 Protocol (SSA-S2P)

X3.297 Information Systems—Fibre Channel—Physical and Signaling Interface-2 (FC-PH2)

X3.301 Information Technology—SCSI-3 Primary Commands (SPC)

X3.304 Information Technology—SCSI-3 Multimedia Commands (MMC)

MS58 Information Technology—Standard Recommended Practice for Implementation of Small Computer Systems Interface (SCSI-2), (X3.131.1994) for Scanners

NCITS 306 Information Technology—Serial Storage Architecture—SCSI-3 Protocol (SSA-S3P)

NCITS 309 Information Technology—SCSI-3 Block Commands (SBC)

2.3 IEEE Standards:⁵

100 Standard Dictionary for Electrical and Electronic Terms

488 Digital Interface for Programmable Instrumentation

¹ This guide is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.05 on Computer Applications.

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² Discontinued 2000. See 1999 *Annual Book of ASTM Standards*, Vol 14.01.

³ *Annual Book of ASTM Standards*, Vol 01.07.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁵ Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331.