

IEEE Standard for Mechanical Rear Plug-in Unites Specifications for Microcomputers Using IEEE 1101.1 and IEEE 1101.10 Equipment Practice

Sponsor

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Abstract: Additional dimensions that will ensure mechanical interchangeability of subracks and plug-in units based on IEEE P1101.1 (D1.0, 1997), IEEE Std 1101.10-1996, and environmental requirements of IEC 61587-1 (May 1998-Draft) are specified.

Keywords: backplane, compatibility, connector, inline configuration, inspection dimension, plug-in unit, printed board, shroud, subrack

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Introduction

(This introduction is not part of IEEE Std 1101.11-1998, IEEE Standard for Mechanical Rear Plug-in Units Specifications for Microcomputers Using IEEE 1101.1 and IEEE 1101.10 Equipment Practice.)

Despite the push for metrification, the “Euroboard” (19 in based) continues to be the leading choice for the industrial mechanical equipment practice, and is accepted throughout the world for all kinds of electronics applications. Among these are all major bus architectures, such as VME, CompactPCI[®], etc.

This is why the Computer Society’s Technical Committee on Microcomputers and Microprocessors found it appropriate to create an IEEE standard which further expands upon IEEE P1101.1 (D1.0, 1997) and the IEC 60297-... series of standards, “Dimensions of Mechanical Structures of the 482.6 mm (19 in) Series,” [IEC 60297-3 (1984-01) and IEC 60297-4 (1995-03)] for rear plug-in units.

This standard is an extension of IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996 (submitted to the IEC) and defines the mechanical rear plug-in unit sizes and interface details.

At the time this standard was completed, the P1101.11 Working Group had the following membership:

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The final conditions for approval of this standard were met on 21 May 1998. This standard was conditionally approved by the IEEE-SA Standards Board on 19 March 1998, with the following membership:

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IEEE Standard for Mechanical Rear Plug-in Units Specifications for Microcomputers Using IEEE 1101.1 and IEEE 1101.10 Equipment Practice

1. Overview

1.1 Scope

This standard may be applied in all fields of electronics where equipment and installations are required to conform to the 482.6 mm (19 in) equipment practice [based on IEEE P1101.1 (D1.0, 1997),¹ IEEE Std 1101.10-1996, IEC 60297-3 (1984-01) [B4]², and IEC 60297-4 (1995-03) [B5]] for mounting in equipment according to ANSI/EIA 310-D-1992 [B1] and IEC 60297-1 (1986-01) [B3] (see Figure 1). This standard covers subracks equipped with front mounted plug-in units in accordance with IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996, and provides for additional rear mounted plug-in units in the same subrack.

This standard permits other suitable IEC connector-related dimensions to be added (see Annex A).

1.1.1 Dimensions of printed boards

This standard covers an additional range of printed board (PB) sizes suitable for subrack rear mounted plug-in units [based on IEEE P1101.1 (D1.0, 1997), IEEE Std 1101.10-1996, IEC 60297-3 (1984-01) [B4], and IEC 60297-4 (1995-03) [B5]] for mounting in equipment according to ANSI/EIA 310-D-1992 [B1] and IEC 60297-1 (1986-09) [B3].

1.1.2 Dimensions of subracks

This standard covers additional dimensions, according to IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996, for subracks with rear mounted plug-in units.

1.1.3 Dimensions of backplanes

This standard covers limits of backplane thickness, according to IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996, when installed in subracks with rear mounted plug-in units.

¹Information on references can be found in Clause 2.

²The numbers in brackets preceded by the letter B correspond to those of the bibliography in Annex B.

1.1.4 Choice of connectors

This standard refers only to connectors in accordance with IEC 60603-2 (1995-09) [B6] and as referenced in IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996. Other IEC connectors may be used by themselves or mixed with IEC 60603-2 connectors. This standard defines inspection dimensions required for IEC 60603-2 and IEC 61076-4-1xx connectors. Inspection dimensions for the IEC 61076-4-101 series of connectors may be found in Annex A. This standard also defines the difference between a front plug-in unit connector and a rear plug-in unit connector (see Figure 6).

1.1.5 Rear connector shrouds

This standard defines the dimensions of compatible connector shrouds.

1.1.6 Front and rear plug-in unit front panel protective ground

This standard defines mechanical interface and electrical test requirements for input/output (I/O) plug-in unit protective ground protection with reference to IEC 60950 (1991-10) [B8].

1.2 Purpose

The purpose of this standard is to specify additional dimensions that, when followed, will ensure mechanical interchangeability of subracks and plug-in units based on IEEE Std 1101.10-1996 and the environmental requirements of IEC 61587-1 (May 1998-Draft) and IEC 61587-3 (May 1998-Draft).

NOTE—IEEE P1101.1 (D1.0, 1997), IEC 60297-3 (1984-01), and IEC 60297-4 (1995-03) subrack systems not complying with these additional standard requirements have limited compatibility.

2. References

This standard shall be used in conjunction with the following publications. When they are superseded by an approved revision, the revision shall apply.

The users of this standard are required to be familiar with IEEE P1101.1 (D1.0, 1997) and IEEE Std 1101.10-1996.

IEC 61587-1 (May 1998-Draft), Climatic, mechanical tests and safety aspects for racks, subracks for the IEC 60917-...and IEC 60297-... Series.³

IEC 61587-3 (May 1998-Draft), Electromagnetic shielding performance tests for cabinets, racks and subracks for the IEC 60917-... and 60297-...Series.

IEEE P1101.1 (D1.0, 1997), DRAFT Standard for Mechanical Core Specification for Microcomputers Using IEC (60)603.2 Connectors.⁴

IEEE Std 1101.10-1996, IEEE Standard for Additional Mechanical Specifications for Microcomputers Using the IEEE 1101.1-1991 Equipment Practice.⁵

³IEC publications are available from IEC Sales Department, Case Postale 131, 3, rue de Varembe, CH-1211, Genève 20, Switzerland/Suisse. IEC publications are also available in the United States from the Sales Department, American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036, USA.

⁴This IEEE standards project was not approved by the IEEE Standards Board at the time this publication went to press. For information about obtaining a draft, contact the IEEE.

⁵IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA.

3. Terminology

3.1 Abbreviations and acronyms

Da	dimension between front panel mounting hole and connector mounting hole
Db	printed board depth dimension
Dc	inspection dimension for subrack front mounted PiUs
Dg	dimension between front panel mounting hole and rear end solder side cover mounting holes
DT 2	inspection dimension of plug-in unit assembly
EMC	electromagnetic compatibility
FSC	fixed subrack connector
HP	horizontal pitch of 5.08 mm
I/O	input/output
PB	printed board
PFC	plug-in unit free connector
PiU	plug-in unit
RDc	inspection dimension for subrack rear mounted PiUs
RDx	inspection dimension for shroud positioning
RFC	rear free connector
RSC	rear subrack connector (backplane mounted)
U	subrack height measured in units of 44.45 mm (1.75 in)

3.2 Special word usage

may: A keyword indicating flexibility of choice with no implied preference.

shall: A keyword indicating a mandatory requirement.

should: A keyword indicating flexibility of choice with a strongly preferred implementation.

complementary: A keyword indicating that there is no standard as yet defined; however, the product is in design or is available. Although the product relates to the referred standard, it may differ or expand mechanically and/or electrically in certain areas of the standard.