

**Mechanical structures for electronic equipment -
Dimensions of mechanical structures of the 482,6
mm (19 in) series Part 3-101: Subracks and
associated plug-in units**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60297-3-101:2004 sisaldab Euroopa standardi EN 60297-3-101:2004 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 16.11.2004 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 17.09.2004.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60297-3-101:2004 consists of the English text of the European standard EN 60297-3-101:2004.

This standard is ratified with the order of Estonian Centre for Standardisation dated 16.11.2004 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 17.09.2004.

The standard is available from Estonian standardisation organisation.

ICS 31.240

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

EUROPEAN STANDARD

EN 60297-3-101

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2004

ICS 31.240

Supersedes HD 493.3 S2:1993, EN 60297-4:1995 + A1:1999, EN 60297-5-100:2001,
EN 60297-5-102:2001, EN 60297-5-103:2001 & EN 60297-5-107:2001

English version

**Mechanical structures for electronic equipment -
Dimensions of mechanical structures of the 482,6 mm (19 in) series
Part 3-101: Subracks and associated plug-in units
(IEC 60297-3-101:2004)**

Structures mécaniques
pour équipement électronique -
Dimensions des structures mécaniques
de la série de 482,6 mm (19 in)
Partie 3-101: Bacs et blocs enfichables
associés
(CEI 60297-3-101:2004)

Bauweisen für elektronische
Einrichtungen -
Maße der 482,6-mm-(19-in-)Bauweise
Teil 3-101: Baugruppenträger
und Baugruppen
(IEC 60297-3-101:2004)

This European Standard was approved by CENELEC on 2004-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 48D/299/FDIS, future edition 1 of IEC 60297-3-101, prepared by SC 48D, Mechanical structures for electronic equipment, of IEC TC 48, Electromechanical components and mechanical structures for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60297-3-101 on 2004-09-01.

This European Standard supersedes HD 493.3 S2:1993, EN 60297-4:1995 + A1:1999, EN 60297-5-100:2001, EN 60297-5-102:2001 + corrigendum July 2001, EN 60297-5-103:2001 and EN 60297-5-107:2001.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60297-3-101:2004 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60249-2-1	- ¹⁾	Base materials for printed circuits Part 2: Specifications - Specification No. 1: Phenolic cellulose paper copper-clad laminated sheet, high electrical quality	EN 60249-2-1	1994 ²⁾
IEC 60297-1	1986	Dimensions of mechanical structures of the 482,6 mm (19 in) series Part 1: Panels and racks	HD 493.1 S1	1988
IEC 60297-2	1982	Part 2: Cabinets and pitches of rack structures	HD 493.2 S1	1988
IEC 60603-2	1995	Connectors for frequencies below 3 MHz for use with printed boards Part 2: Detail specification for two-part connectors with assessed quality, for printed boards, for basic grid of 2,54 mm (0,1 in) with common mounting features	EN 60603-2	1998
IEC 60917-1	1998	Modular order for the development of mechanical structures for electronic equipment practices Part 1: Generic standard	EN 60917-1	1998
IEC 61076-4-101	2001	Connectors for electronic equipment Part 4-101: Printed board connectors with assessed quality - Detail specification for two-part connector modules, having a basic grid of 2,0 mm for printed boards and backplanes in accordance with IEC 60917	EN 61076-4-101	2001
IEC 61076-4-113	2002	Part 4-113: Detail specification for two-part connectors having 5 rows with a grid of 2,54 mm for printed boards and backplanes in bus applications	EN 61076-4-113	2003

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61587-1	1999	Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 Part 1: Climatic, mechanical tests and safety aspects for cabinets, racks, subracks and chassis	EN 61587-1	1999
IEC 61587-3	1999	Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks	-	-

This document is a preview generated by EVS

INTERNATIONAL
STANDARD

IEC
60297-3-101

First edition
2004-08

**Mechanical structures for electronic equipment –
Dimensions of mechanical structures
of the 482,6 mm (19 in) series –**

**Part 3-101:
Subracks and associated plug-in units**



Reference number
IEC 60297-3-101:2004(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

IEC 60297-3-101

First edition
2004-08

Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series –

Part 3-101: Subracks and associated plug-in units

© IEC 2004 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

S

For price, see current catalogue

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope and object.....	6
2 Normative references	6
3 Terms and definitions	7
4 Arrangement overview	7
5 Subrack dimensions, front mounting area.....	8
6 Subrack dimensions, rear mounting area.....	11
7 Printed board type plug-in units, front mounted	13
8 Box type plug-in units, front mounted	15
9 Printed board type plug-in units, rear mounted	17
10 Subrack and plug-in units with electromagnetic shielding provisions	18
11 Plug-in units electrostatic discharge provisions	20
12 Dimensions used in the figures	22
Figure 1 – Relationship between the new IEC 60297-3 series and the old IEC 60297 series ...	5
Figure 2 – Arrangement overview	7
Figure 3 – Subrack dimensions, front mounting area – Part 1.....	8
Figure 4 – Subrack dimensions, front mounting area – Part 2.....	9
Figure 5 – Subrack dimensions, front mounting area – Part 3.....	10
Figure 6 – Subrack dimensions, rear mounting area	11
Figure 7 – Printed board type plug-in unit, 3U.....	13
Figure 8 – Printed board type plug-in unit, 6U.....	14
Figure 9 – Printed board type plug-in unit, 9U.....	14
Figure 10 – Box type plug-in unit, 3U.....	15
Figure 11 – Box type plug-in unit, 6U.....	16
Figure 12 – Box type plug-in unit, 9U.....	16
Figure 13 – Printed board type plug-in units, rear mounting dimensions	17
Figure 14 – Subrack shielding interface dimensions.....	18
Figure 15 – Plug-in unit and filler panels shielding interface dimensions.....	19
Figure 16 – ESD contact interface dimensions.....	20
Figure 17 – ESD strip interface dimensions	20
Table 1 – RD1 dimensions	11
Table 2 – Depth dimensions RD3, RD4	17
Table 3 – Height dimensions	21
Table 4 – Depth dimensions.....	21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT –
DIMENSIONS OF MECHANICAL STRUCTURES OF THE
482,6 mm (19 in) SERIES –**

Part 3-101: Subracks and associated plug-in units

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60297-3-101 has been prepared by subcommittee 48D: Mechanical structures for electronic equipment, of IEC technical committee 48: Electro-mechanical components and mechanical structures for electronic equipment.

This standard cancels and replaces IEC 60297-3, IEC 60297-4, IEC 60297-5-100, IEC 60297-5-102, IEC 60297-5-103, IEC 60297-5-107.

The text of this standard is based on following documents:

FDIS	Report on voting
48D/299/FDIS	48D/306/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The IEC 60297-3 series consists of the following parts, under the general title *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series*

Part 3-101: Subracks and associated plug-in units

Part 3-102: Injector/extractor handle

Part 3-103: Keying and alignment pin

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual edition of this standard may be issued at a later date.

Document is a preview generated by EVS

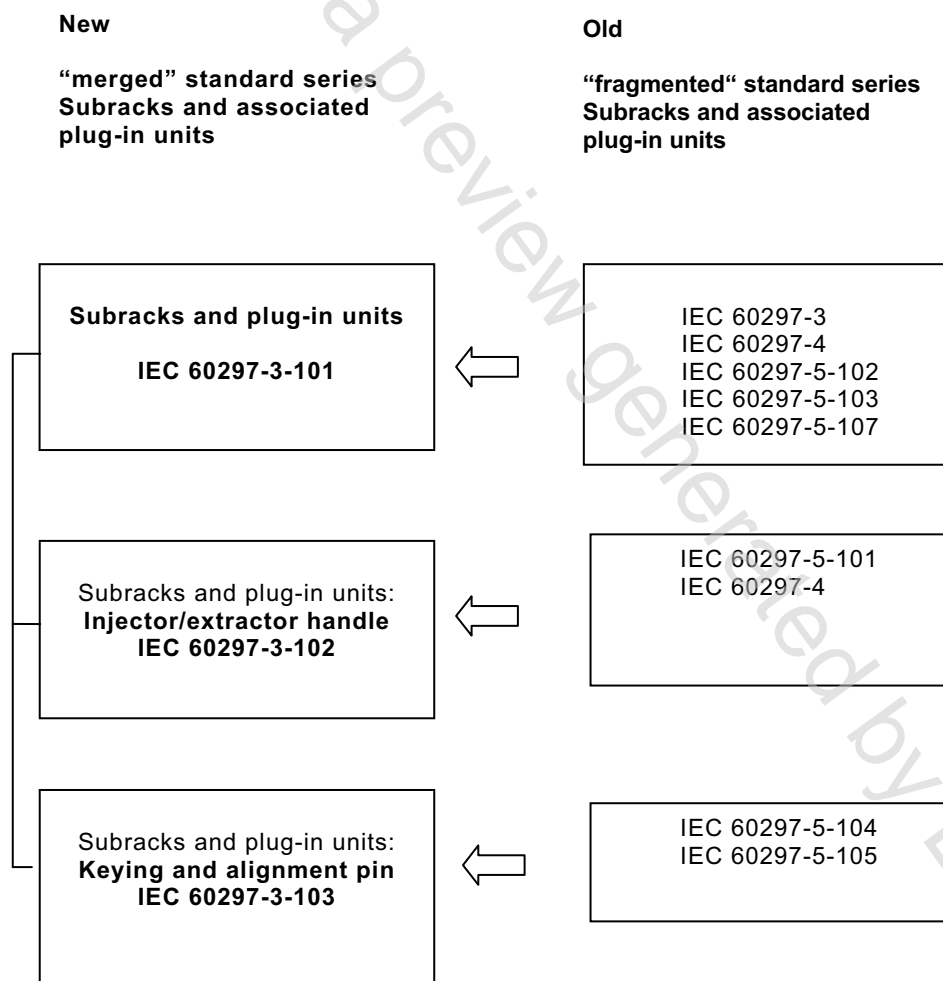
INTRODUCTION

The “Dimensions of mechanical structures of the 482,6 mm (19 in) standards are defined in IEC 60297. To the original IEC 60297-3:1988 publication was added Amendment 1:1995. The additional requirements were published in IEC 60297-4:1995 with Amendment 1:1999.

The extended requirements were published in the IEC 60297-5-1XX series (2001). Responding to market requirements and for more clarity it became necessary to merge and technically enhance these standard “parts” into 3 “new” standards for subracks and associated plug-in units. This “merged” standard series now defined as IEC 60297-3-101, IEC 60297-3-102 and IEC 60297-3-103 explains its relationship to the previous “fragmented” IEC 60297-X standards, see Figure 1.

The nomenclature of these new standards has been revised. The relationship to IEC 60297-1 (Part 1: Panels and Racks) has been maintained. The relationship to IEC 60297-2 (Part 2: Cabinets and pitches of rack structures) has been maintained. The relationship to IEC 61587-1 (Part 1: Climatic, mechanical tests and safety aspects for cabinets, racks, subracks and chassis) and IEC TS 61587-3 (Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks) has been added.

The IEC 60297-3-101 standard defines the interfaces of the basic 482,6 mm (19 in) subrack and associated plug-in units.



IEC 1089/04

Figure 1 – Relationship between the new IEC 60297-3 series and the old IEC 60297 series

MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT – DIMENSIONS OF MECHANICAL STRUCTURES OF THE 482,6 mm (19 in) SERIES –

Part 3-101: Subracks and associated plug-in units

1 Scope and object

This part of IEC 60297 covers the basic dimensional relationship of a modular range of subracks and associated plug-in units in compliance with the IEC 60297 series.

The purpose of this standard is to specify dimensions which will ensure dimensional interchangeability of subracks and associated plug-in units. Connector related dimensions are limited to “inspection dimensions” only.

For mechanical and climatic tests refer to IEC 61587-1.

For electromagnetic shielding performance tests, refer to IEC 61587-3.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60249-2-1, *Base materials for printed circuits – Part 2: Specifications. Specification No. 1: Phenolic cellulose paper copper-clad laminated sheet, high electrical quality*

IEC 60297-1:1986, *Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 1: Panels and racks*

IEC 60297-2:1982, *Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 2: Cabinets and pitches of rack structures*

IEC 60603-2:1995, *Connectors for frequencies below 3 MHz for use with printed boards – Part 2: Detail specification for two-part connectors with assessed quality, for printed boards, for basic grid of 2,54 mm (0,1 in) with common mounting features*

IEC 60917-1:1998, *Modular order for the development of mechanical structures for electronic equipment practices – Part 1: Generic standard*

IEC 61076-4-101:2001, *Connectors for electronic equipment – Part 4-101: Printed board connectors with assessed quality – Detail specification for two-part connector modules, having a basic grid of 2,0 mm for printed boards and backplanes in accordance with IEC 60917*

IEC 61076-4-113:2002, *Connectors for electronic equipment – Printed board connectors – Part 4-113: Detail specification for two-part connectors having 5 rows with a grid of 2,54 mm for printed boards and backplanes in bus applications*

IEC 61587-1:1999, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 1: Climatic, mechanical tests and safety aspects for cabinets, racks, subracks and chassis*