

Modular order for the development of mechanical structures for electronic equipment practices —

Part 1: Generic standard

The European Standard EN 60917-1:1998 with the incorporation of amendment A1:2000 has the status of a British Standard

ICS 31.240

National foreword

This British Standard is the English language version of EN 60917:1998, including amendment A1:2000. It is identical with IEC 60917-1:1998, including amendment 1:2000. It supersedes BS 7728:1994, BS EN 60917:1992 and BS EN 60917-0:1992 which will be withdrawn on 2001-07-01.

The UK participation in its preparation was entrusted by Technical Committee EPL/48, Electromechanical components for electronic equipment, to Subcommittee EPL/48/4, Mechanical structures for electronic equipment, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 26, an inside back cover and a back cover.

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English version

Modular order for the development of mechanical structures for electronic equipment practices — Part 1: Generic standard

(includes amendment A1:2000)

(IEC 60917-1:1998 +A1:2000)

Ordre modulaire pour le développement
des structures mécaniques pour les
infrastructures électroniques —
Partie 1: Norme générique
(inclut l'amendement A1:2000)
(CEI 60917-1:1998 +A1:2000)

Modulordnung für die Entwicklung von
Bauweisen für elektronische
Einrichtungen —
Teil 1: Fachgrundnorm
(enthält Änderung A1:2000)
(IEC 60917-1:1998 +A1:2000)

This European Standard was approved by CENELEC on 1998-10-01. Amendment A1 was approved by CENELEC on 2000-06-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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/159/FDIS, future edition 1 of IEC 60917-1, 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 60917-1 on 1998-10-01.

This European Standard supersedes HD 550 S1:1989, EN 60917:1990 and its amendment A1:1994 and EN 60917-0:1992.

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) 1999-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-07-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60917-1:1998 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 48D/222/FDIS, future amendment 1 to IEC 60917-1:1998, 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 amendment A1 to EN 60917-1:1998 on 2000-06-01.

The following dates were fixed:

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- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2003-06-01

Endorsement notice

The text of amendment 1:2000 to the International Standard IEC 60917-1:1998 was approved by CENELEC as an amendment to the European Standard without any modification.

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Introduction

The trend towards constantly increasing functional integration and ever smaller volume and space requirements for electronic components and integrated circuits, as well as the advent of new manufacturing methods, automatic manufacturing and testing equipment and the use of Computer Aided Engineering (CAE) systems offer users considerable technical and economic advantages.

In order to ensure that, when using newly developed components, manufacturing methods and CAE systems, the advantages can be fully exploited during planning, design, manufacture and testing, it is necessary for equipment practices to meet the following requirements (see *IEC Guide 103*):

- arrangement of products with a minimum loss of area and space;
- dimensional interchangeability of products, e.g. regarding overall dimensions, mounting dimensions (fixing holes, cut-outs, etc.);
- dimensional compatibility and determination of interface dimensions of products which:
 - are combined with other products, e.g. instruments, racks, panels and cabinets, etc.;
 - are used in buildings that have been built in accordance with a modular system, e.g. column spacing, room height, door height, etc.

An obstacle arises from the use of two systems of dimensioning (inch — metre) that are not compatible with each other. The use of an interface between both dimensioning systems represents one way around this obstacle. The recommendation is:

- to use only one dimensioning system and to use SI units.

The dimensions given in 5.3 of this standard have been taken from system I of *IEC Guide 103* in consideration with other documents on dimensional co-ordination.

1 Scope and object

This International Standard relates to equipment practices. The modular order is applicable to the main structural dimensions of electronic equipment mounted in various installations where dimensional interfaces have to be considered.

It refers to basic design parameters and is not intended to be used for manufacturing tolerances or clearances.

In addition, information on interfaces to other technical fields, on technology and advanced design aspects is included.

This standard also covers standard terms for parts and assemblies of mechanical structures for electronic equipment.

This generic standard gives the definitions of a modular order for mechanical structures of electronic equipment and provides for dimensional compatibility at mechanical interfaces with related engineering applications, e.g. printed boards, components, instrumentation, furniture, rooms, buildings, etc.

Furthermore, it supports the introduction and application of the modular order rules considering that:

- compatibility of interface dimensions is aimed at the electronic field on the basis of the SI unit metre;
- technical and economic advantages can be achieved when using the rules.

The terms in this standard should be used in all standards for mechanical structures of electronic equipment and in related technical documents.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(581):1978, *International Electrotechnical Vocabulary (IEV) — Chapter 581: Electromechanical components for electronic equipment*

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 60297-3:1984, *Dimensions of mechanical structures of the 482,6 mm (19 in) series — Part 3: Subracks and associated plug-in units*

IEC 60297-4:1995, *Dimensions of mechanical structures of the 482,6 mm (19 in) series — Part 4: Subracks and associated plug-in units — Additional dimensions*

IEC 60473:1974, *Dimensions for panel-mounted indicating and recording electrical measuring instruments*

IEC 60629:1978, *Standard sheets for a modular system (for installation accessories for use in domestic and similar installations)*

IEC 60668:1980, *Dimensions of panel areas and cut-outs for panel and rack-mounted industrial-process measurement and control instruments*

IEC 60917-2:1992, *Modular order for the development of mechanical structures for electronic equipment practices — Part 2: Sectional specification — Interface co-ordination dimensions for the 25 mm equipment practice*

IEC 60917-2-1:1993, *Modular order for the development of mechanical structures for electronic equipment practices — Part 2: Sectional specification — Interface co-ordination dimensions for the 25 mm equipment practice — Section 1: Detail specification — Dimensions for cabinets and racks*

IEC 60917-2-2:1994, *Modular order for the development of mechanical structures for electronic equipment practices — Part 2: Sectional specification — Interface co-ordination dimensions for the 25 mm equipment practice — Section 2: Detail specification — Dimensions for subracks, chassis, backplanes, front panels and plug-in units*

IEC Guide 103:1980, *Guide on dimensional co-ordination*

ISO 31:1992, *Quantities and units*

ISO 1000:1992, *SI units and recommendations for the use of their multiples and of certain other units*

ISO 1006:1983, *Building construction — Modular coordination — Basic module*

ISO 1040:1983, *Building construction — Modular coordination — Multimodules for horizontal coordinating dimensions*

ISO 3827-1:1977, *Shipbuilding — Coordination of dimensions in ships' accommodation — Part 1: Principles of dimensional coordination*

3 Terms, terminology and definitions

For the purpose of this International Standard, the terminology used is in accordance with the terminology in IEC 60050(581) and the following additional terms and definitions apply.

3.1

equipment practice

mechanical structure involved in housing and mounting of electronic and electromechanical systems. It provides for compatibility between mechanical parts, electrical interconnections and electronic components

3.2

modular order

set of rules which establishes a relationship between co-ordination dimensions and the base pitch, multiple pitches and mounting pitches to be used in equipment practice

3.3

co-ordination dimension

reference dimension used to co-ordinate mechanical interfaces. This is not a manufacturing dimension with a tolerance

NOTE An actual outside dimension of a mechanical structure related to a co-ordination dimension can only decrease.