

Institut luxembourgeois de la normalisation de l'accréditation, de la sécurité et qualité des produits et services

**ILNAS-EN IEC 60917-1:2019** 

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

Ordre modulaire pour le développement des structures mécaniques pour les infrastructures électriques et électroniques - Partie 1: Norme

Modulordnung für die Entwicklung von Bauweisen für elektrische und elektronische Einrichtungen - Teil 1: Fachgrundnorm

01011010010 0011010010110100101010101111

#### **National Foreword**

This European Standard EN IEC 60917-1:2019 was adopted as Luxembourgish Standard ILNAS-EN IEC 60917-1:2019.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html

#### THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

## EUROPEAN STANDARD LINAS-EN IEC 60917-1:2010 IEC 60917-1

## NORME EUROPÉENNE

## **EUROPÄISCHE NORM**

November 2019

ICS 31.240

Supersedes EN 60917-1:1998 and all of its amendments and corrigenda (if any)

#### **English Version**

# Modular order for the development of mechanical structures for electrical and electronic equipment practices - Part 1: Generic standard (IEC 60917-1:2019)

Ordre modulaire pour le développement des structures mécaniques pour les infrastructures électriques et électroniques - Partie 1: Norme générique (IEC 60917-1:2019) Modulordnung für die Entwicklung von Bauweisen für elektrische und elektronische Einrichtungen - Teil 1: Fachgrundnorm (IEC 60917-1:2019)

This European Standard was approved by CENELEC on 2019-10-18. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

#### **European foreword**

The text of document 48D/703/FDIS, future edition 2 of IEC 60917-1, prepared by SC 48D "Mechanical structures for electrical and electronic equipment" of IEC/TC 48 "Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60917-1:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the document have to be withdrawn

This document supersedes EN 60917-1:1998 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

#### **Endorsement notice**

The text of the International Standard IEC 60917-1:2019 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 documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60050-581	-	International Electrotechnical Vocabulary - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60297	series	Dimensions of mechanical structures of the 482,6 mm (19 in) series	-	-
IEC 60297-3-100	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-100: Basic dimensions of front panels, subracks, chassis, racks and cabinets	EN 60297-3-100	-
IEC 60297-3-101	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-101: Subracks and associated plugin units	EN 60297-3-101	-
IEC 60297-3-102	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-102: Injector/extractor handle	EN 60297-3-102	-
IEC 60297-3-103	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-103: Keying and alignment pin	EN 60297-3-103	-
IEC 60297-3-104	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-104: Connector dependent interface dimensions of subracks and plugin units	EN 60297-3-104	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60297-3-105	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-105: Dimensions and design aspects for 1U high chassis	EN 60297-3-105	-
IEC 60297-3-106	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-106: Adaptation dimensions for subracks and chassis applicable with metric cabinets or racks in accordance with IEC 60917-2-1	EN 60297-3-106	-
IEC 60297-3-107	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-107: Dimensions of subracks and plug-in units, small form factor	EN 60297-3-107	-
IEC 60297-3-108	-	Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-108: Dimensions of R-type subracks and plug-in units	EN 60297-3-108	-
IEC 60297-3-109	-	Mechanical structures for electrical and electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 3-109: Dimensions of chassis for embedded computing devices	EN 60297-3-109	-
IEC 60297-3-110	-	Mechanical structures for electrical and electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series - Part 3-110: Residential racks and cabinets for smart houses	EN IEC 60297-3-110	-
IEC/TR 60668	-	Dimensions of panel areas and cut-outs for panel and rack-mounted industrial-process measurement and control instruments	-	-
IEC 60917-2	-	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	EN 60917-2	-
IEC 60917-2-1	-	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	EN 60917-2-1	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60917-2-2	-	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	EN 60917-2-2	-
IEC 60917-2-3	-	Modular order for the development of mechanical structures for electronic equipment practices - Part 2-3: Sectional specification - Interface co-ordination dimensions for the 25 mm equipment practice - Extended detail specification - Dimensions for subracks, chassis, backplanes, front panels and plug-in units	EN 60917-2-3	-
IEC 60917-2-4	-	Modular order for the development of mechanical structures for electronic equipment practices - Part 2-4: Sectional specification - Interface co-ordination dimensions for the 25 mm equipment practice - Adaptation dimensions for subracks or chassis applicable in cabinets or racks in accordance with IEC 60297-3-100 (19 in)	EN 60917-2-4	-
IEC 60917-2-5	-	Modular order for the development of mechanical structures for electronic equipment practices - Part 2-5: Sectional specification - Interface co-ordination dimensions for the 25 mm equipment practice - Cabinet interface dimensions for miscellaneous equipment	EN 60917-2-5	-
IEC 61554	-	Panel mounted equipment - Electrical measuring instruments - Dimensions for panel mounting	-	-
IEC 61587	series	Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 series	EN 61587	series
IEC 61969-1	-	Mechanical structures for electronic equipment - Outdoor enclosures - Part 1: Design guidelines	EN 61969-1	-
IEC 61969-2	-	Mechanical structures for electronic equipment - Outdoor enclosures - Part 2: Coordination dimensions	EN 61969-2	-
IEC 61969-3	-	Mechanical structures for electronic equipment - Outdoor enclosures - Part 3: Environmental requirements, tests and safety aspects	EN 61969-3	-
IEC 62194	-	Method of evaluating the thermal performance of enclosures	EN 62194	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC/TS 62454	-	Mechanical structures for electronic equipment - Design guide: Interface dimensions and provisions for water cooling of electronic equipment within cabinets of the IEC 60297 and IEC 60917 series	-	-
IEC 62610	series	Mechanical structures for electrical and electronic equipment – Thermal management for cabinets in accordance with IEC 60297 and IEC 60917 series	EN 62610	series
IEC Guide 103	1980	Guide on dimensional co-ordination	-	-
ISO 1006	-	Building construction; Modular coordination; Basic module	-	-
ISO 1040	-	Building construction - Modular coordination - Multimodules for horizontal coordinating dimensions	-	-
ISO 1791	-	Building construction - Modular co- ordination - Vocabulary	-	-
ISO 2848	-	Building construction - Modular coordination - Principles and rules	-	-
ISO 3394	-	Dimensions of rigid rectangular packages; Transport packages	-	-
ISO 3676	-		-	-
ISO 6514	-	Building construction - Modular coordination - Sub-modular increments	-	-
ISO 80000-1	2009	Quantities and units Part 1: General	EN ISO 80000-1	2013
ISO 80000-3	2006	Quantities and units Part 3: Space and time	EN ISO 80000-3	2013



IEC 60917-1

Edition 2.0 2019-09

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Modular order for the development of mechanical structures for electrical and electronic equipment practices –

Part 1: Generic standard

Ordre modulaire pour le développement des structures mécaniques pour les infrastructures électriques et électroniques –

Partie 1: Norme générique



## CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	9
4 Fundamentals and background information	19
4.1 General	19
4.2 Structures of electrical and electronic equipment practices	20
4.3 Dimensional co-ordination with adjacent technical fields	
4.4 Preparation of standards for new equipment practices	
5 Modular order details	
5.1 Modular grid	
5.2 Pitches	
5.2.1 Base and multiple pitches for equipment practice	
5.3 Co-ordination dimensions	
5.4 Illustration of the modular order	
Figure 1 – Pitch	10
Figure 2 – Grid	11
Figure 3 – Rack	12
Figure 4 – Cabinet	12
Figure 5 – Case	13
Figure 6 – Swing frame	13
Figure 7 – Subrack	14
Figure 8 – Chassis	14
Figure 9 – Plug-in unit	15
Figure 10 – Console	
Figure 11 – Plug-in unit guide	15
Figure 12 – Slides	
Figure 13 – Telescopic slides	
Figure 14 – Mounting frame	
Figure 15 – Mounting plate	
Figure 16 – Front panel	
Figure 17 – Backplane	
Figure 18 – Cabinet panel	
Figure 19 – Door	
Figure 20 – Mounting section	
Figure 21 – Structures of electrical and electronic equipment practices	
Figure 22 – Structure of equipment practice standards	
Figure 23 – Modular grid	
Figure 24 – Partitioning of co-ordination dimensions $C_0$ with the same mounting pitch $mp$	
Figure 24 – Farmouning of co-ordination uniforms constitute same mounting pitch $mp$	∠0

## ILNAS-EN IEC 60917-1:2019

IEC 60917-1:2019 © IEC 2019	- 3 -	
Figure 25 – Examples of the application of	the modular order	.28
Table 1 – Publications containing standardi documents	zed modular dimensions and/or related	.21
Table 2 – Co-ordination dimensions $C_i$		.26