

# INTERNATIONAL STANDARD



**Mechanical structures for electrical and electronic equipment – Tests for  
IEC 60917 and IEC 60297 series –  
Part 6: Security aspects for indoor cabinets**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, 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 either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

#### IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [www.iec.ch/glossary](http://www.iec.ch/glossary)

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).

# INTERNATIONAL STANDARD



---

**Mechanical structures for electrical and electronic equipment – Tests for  
IEC 60917 and IEC 60297 series –  
Part 6: Security aspects for indoor cabinets**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 31.240

ISBN 978-2-8322-4303-9

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Security aspects for indoor cabinets .....	8
4.1 General.....	8
4.2 Access security level of the cabinet .....	9
5 Security performance levels of cabinets.....	9
5.1 General.....	9
5.2 Security performance levels of cabinet mechanical components .....	10
5.2.1 Handle and associated mechanical lock.....	10
5.2.2 Key.....	12
5.2.3 Cabinet floor anchoring.....	13
Annex A (normative) Mechanical performance and test methods for handles .....	14
A.1 Mechanical strengths of levers of handles.....	14
A.1.1 General .....	14
A.1.2 Static loading test, push/pull performance .....	14
A.1.3 Static loading test, turn performance .....	15
Bibliography.....	16
Figure 1 – Typical mechanical components for security provision of the cabinet .....	8
Figure 2 – Concept of access protection within buildings or premises .....	9
Figure 3 – Static loading test for handle and associated mechanical lock.....	11
Figure A.1 – Lever handles push/pull performance.....	14
Figure A.2 – Lever handles turn performance.....	15
Table 1 – Access security level of indoor cabinet installation sites .....	9
Table 2 – Security performance levels of cabinets .....	10
Table 3 – Security performance levels of handle and associated mechanical lock.....	10
Table 4 – Test procedures for operation of handle and mechanical lock.....	12
Table 5 – Security performance levels of key.....	12
Table 6 – Security performance level of cabinet floor anchoring.....	13

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS FOR IEC 60917 AND IEC 60297 SERIES –

### Part 6: Security aspects for indoor cabinets

#### 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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, accept IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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 61587-6 has been prepared by subcommittee 48D:Mechanical structures for electrical and electronic equipment, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
48D/634/FDIS	48D/641/RVD

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

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

A list of all parts in the IEC 61587 series, published under the general title *Mechanical structures for electrical and electronic equipment – Tests for IEC 60917 and IEC 60297 series*, can be found on the IEC website.

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

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

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION

The security of electrical and electronic equipment or systems, which nowadays is being applied in many electronic equipment or systems in the fields of ICT (information and communication technology) and of industrial/infrastructure control systems, is becoming a critical issue.

In general, security is achieved by restrictions and protections against improper or unauthorized accesses from both hardware and software sides of the systems.

Considering the security of the hardware of electronic equipment or systems, which are built up in the mechanical structures such as cabinets based on IEC 60297 series and IEC 60917 series, it depends on conditions of their installation sites, on the security level of systems, hardware which provides access protection at the installation sites, and on the robustness of the mechanical structures and of their mechanical locks both at the access gates/doors of the installation sites and of the mechanical structures.

Therefore, a classification of the installation conditions and of the levels of security measures for hardware is very important for design and practices of various electronic equipment or systems, which are used in the field of ICT, industrial control, transportation and others.

From this point of view, this document intends to clarify the relationship between the installation conditions and the security requirements for indoor cabinets, and to provide the required performances and test methods on mechanical components related with security provisions for indoor cabinets which are in accordance with IEC 60297 series and IEC 60917 series.

Vandalism protection aspect is applied by user-specific requirements in general. Therefore, this document has no definition of vandalism.

# MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS FOR IEC 60917 AND IEC 60297 SERIES –

## Part 6: Security aspects for indoor cabinets

### 1 Scope

This part of IEC 61587 specifies security aspects and security performance levels of indoor cabinets in accordance with IEC 60917 and IEC 60297.

### 2 Normative references

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.

IEC 60297 (all parts), *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60917 (all parts), *Modular order for the development of mechanical structures for electronic equipment practices*

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

IEC 61587-1, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 series – Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation*

IEC 61587-2, *Mechanical structures for electronic equipment – Tests for IEC 60917 and 60297 series – Part 2: Seismic tests for cabinets and racks*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60917-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1 handle

mechanical component to open or close the door of a cabinet, equipped on the door of a cabinet