

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –**

**Part 24: Particular requirements for enclosures for housing protective devices and other power dissipating electrical equipment**

**Boîtes et enveloppes pour appareillage électrique pour installations électriques fixes pour usages domestiques et analogues –**

**Partie 24: Exigences particulières pour enveloppes pour appareillages de protection et autres appareillages électriques ayant une puissance dissipée**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2011 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.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland  
Email: [inmail@iec.ch](mailto:inmail@iec.ch)  
Web: [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.

- Catalogue of IEC publications: [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

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 It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

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

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

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

- Customer Service Centre: [www.iec.ch/webstore/custserv](http://www.iec.ch/webstore/custserv)

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00

### A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

- Catalogue des publications de la CEI: [www.iec.ch/searchpub/cur\\_fut-f.htm](http://www.iec.ch/searchpub/cur_fut-f.htm)

Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,...). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.

- Just Published CEI: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.

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

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.

- Service Clients: [www.iec.ch/webstore/custserv/custserv\\_entry-f.htm](http://www.iec.ch/webstore/custserv/custserv_entry-f.htm)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tél.: +41 22 919 02 11  
Fax: +41 22 919 03 00



IEC 60670-24

Edition 2.0 2011-03

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –**

**Part 24: Particular requirements for enclosures for housing protective devices and other power dissipating electrical equipment**

**Boîtes et enveloppes pour appareillage électrique pour installations électriques fixes pour usages domestiques et analogues –**

**Partie 24: Exigences particulières pour enveloppes pour appareillages de protection et autres appareillages électriques ayant une puissance dissipée**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX



ICS 29.120.10

ISBN 978-2-88912-391-9

## CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references.....	6
3 Definitions .....	7
4 General requirements .....	8
5 General notes on tests.....	8
6 Ratings.....	8
7 Classification .....	8
8 Marking .....	8
9 Dimensions.....	10
10 Protection against electric shock.....	10
11 Provisions for earthing.....	11
12 Construction .....	11
13 Resistance to ageing, protection against ingress of solid foreign objects and against harmful ingress of water .....	12
14 Insulation resistance and electric strength .....	12
15 Mechanical strength.....	12
16 Resistance to heat.....	12
17 Creepage distances, clearances and distances through sealing compound.....	12
18 Resistance of insulating material to abnormal heat and to fire.....	13
19 Resistance to tracking .....	13
20 Resistance to corrosion .....	14
21 Electromagnetic compatibility .....	14
101 Verification of the maximum capability to dissipate power ( $P_{de}$ ).....	14
102 Verification of temperature rise .....	15
Annex AA (normative) Instructions to be given by the manufacturer of the GP enclosure to the installer how to integrate accessories, and example of calculation .....	22
Annex BB (normative) Instructions to be given by the manufacturer of the PD enclosure to the installer how to integrate accessories .....	30
Bibliography.....	32
Figure 101 – Arrangement for the verification of the maximum capability to dissipate power ( $P_{de}$ ) and for verification of temperature rise of surface type enclosures.....	17
Figure 102 – Heating resistor for the verification of the maximum capability to dissipate power ( $P_{de}$ ).....	18
Figure 103 – Position of the resistor for enclosures designed or intended to be fitted with rail mounting modular accessories and electrical equipment.....	19
Figure 104 – Position of the resistor(s) for enclosures other than those designed or intended to be fitted with rail mounting accessories and electrical equipment .....	20
Figure 105 – Position of the resistor(s) for enclosures other than those designed or intended to be fitted with rail mounting accessories and electrical equipment and allowing the mounting of several accessories and electrical equipment in different positions .....	21

Table 1 – Classification of boxes and enclosures .....	8
Table 101 – Creepage distances, clearances and distances through sealing compound .....	13
Table 102 – Diversity factor .....	16
Table 103 – Temperatures of accessible surfaces .....	17
Table AA.1 – Diversity factor .....	24
Table AA.2 – Tests and verifications .....	25
Table AA.3 – Calculation of $P_{dp}$ .....	28
Table AA.4 – Calculation of $P_{au}$ .....	29

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

### **BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –**

#### **Part 24: Particular requirements for enclosures for housing protective devices and other power dissipating electrical equipment**

#### 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, access to 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 60670-24 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 2005 and constitutes a technical revision.

The following major changes from the first edition are introduced:

- new definition for basic, general purpose enclosures (GP enclosure) and enclosures for pre-determined equipment (PD enclosure);
- new classification and marking for general purpose enclosure (GP enclosure) and enclosure for pre-determined equipment (PD enclosure);
- required data for instruction sheet and/or documentation according to the type of enclosure;

- adequate space to allow mounting and connection of the accessories (fully equipped) as declared by the manufacturer;
- requirements for general purpose enclosure (GP enclosure) as in Clause 101;
- requirements for enclosure for pre-determined equipment (PD enclosure) as in Clause 102;
- instructions to be given by the manufacturer of the GP enclosure to the installer how to integrate accessories and example of calculation given in Annex AA;
- instructions to be given by the manufacturer of the PD enclosure to the installer how to integrate accessories given in Annex BB.

The text of this standard is based on the following documents:

FDIS	Report on voting
23B/982/FDIS	23B/992/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.

This standard shall be used in conjunction with IEC 60670-1. It lists the changes necessary to convert that standard into a specific standard for housing protective devices and other power dissipating electrical equipment.

Where this Part 24 states "addition", "modification" or "replacement", the relevant requirement, test specifications or explanatory matter in Part 1 shall be adapted accordingly.

Clauses and subclauses, notes, figures or tables which are additional to those in Part 1 are numbered starting from 101.

Additional annexes to Part 1 are numbered AA, BB, etc.

In this publication the following print types are used:

- requirements proper: in roman type.
- *test specifications: in italic type.*
- notes: in smaller roman type.

A list of all the parts in the IEC 60670 series, under the general title *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.