IEC 60529

Edition 2.2 2013-08
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Degrees of protection provided by enclosures (IP Code)

Degrés de protection procurés par les enveloppes (Code IP)

IEC 60529:1989-11+AMD1:1999-11+AMD2:2013-08 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code)

FOREWORD

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IEC 60529 edition 2.2 contains the second edition (1989) [documents 70(CO)13 + 70(CO)15 and 70(CO)16 + 70(CO)17], its corrigendum 1 (2003), its corrigendum 2 (2007), its corrigendum 3 (2009), its amendment 1 (1999) [documents 70/91/FDIS and 70/92/RVD] and its amendment 2 [documents 70/122/FDIS and 70/123/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60529 has been prepared by technical committee 70: Degrees of protection by enclosures.

Annexes A and B are for information only.

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

The committee has decided that the contents of the base publication and its amendments 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- withdrawn,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.

The contents of the corrigenda of October 2013, May 2015 and January 2019 have been included in this copy.

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 publication using a colour printer.

INTRODUCTION

This standard describes a system for classifying the degrees of protection provided by the enclosures of electrical equipment. Whilst this system is suitable for use with most types of electrical equipment, it should not be assumed that all the listed degrees of protection are applicable to a particular type of equipment. The manufacturer of the equipment should be consulted to determine the degrees of protection available and the parts of equipment to which the stated degree of protection applies.

The adoption of this classification system, wherever possible, Will promote uniformity in methods of describing the protection provided by the enclosure and in the tests to prove the various degrees of protection. It should also reduce the number of types of test devices necessary to test a wide range. of products.

This second edition of IEC 60529 takes account of experiences with the first edition, and clarifies the requirements. It provides for an optional extension of the IP Code by an additional letter A, B, C, or D if the actual protection of persons against access to hazardous parts is higher than that indicated by the first characteristic numeral.

In general, enclosures with an IP coding to the first edition would be eligible for the same code according to this edition.

INTRODUCTION TO AMENDMENT 2

This Amendment 2 introduces a new degree of protection IP X9 whereas no modifications of the existing degrees of protection are made.

Thus neither additional tests nor modifications of the existing certificates should be requested in case of enclosures providing a different IP code.

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code)

1 Scope and object

This standard applies to the classification of degrees of protection provided by enclosures for electrical equipment with a rated voltage not exceeding 72,5 kV.

~~2 Object~~

The object of this standard is to give:

a) *Definitions* for degrees of protection provided by enclosures of electrical equipment as regards:

   1) protection of persons against access to hazardous parts inside the enclosure;

   2) protection of the equipment inside the enclosure against ingress of solid foreign objects;

   3) protection of the equipment inside the enclosure against harmful effects due to the ingress of water.

b) *Designations* for these degrees of protection.

c) *Requirements* for each designation.

d) *Tests* to be performed to verify that the enclosure meets the requirements of this standard.

It will remain the responsibility of individual technical committees to decide on the extent and manner in which, the classification is used in their standards and to define “enclosure” as it applies to their equipment. However, it is recommended that for a given classification the tests do not differ from those specified in this standard. If necessary, complementary requirements may be included in the relevant product standard. A guide for the details to be specified in relevant product standards is given in annex B.

For a particular type of equipment, a technical committee may specify different requirements provided that at least the same level of safety is ensured.

This standard deals only with enclosures that are in all other respects suitable for their intended use as specified in the relevant product standard and which from the point of view of materials and workmanship ensure that the claimed degrees of protection are maintained under the normal conditions of use.

This standard is also applicable to empty enclosures provided that the general test requirements are met and that the selected degree of protection is suitable for the type of equipment to be protected.

Measures to protect both the enclosure and the equipment inside the enclosure against external influences or conditions such as

– mechanical impacts
– corrosion
– corrosive solvents (for example, cutting liquids)
– fungus
– vermin
– solar radiation
– icing
– moisture (for example, produced by condensation)
– explosive atmospheres

and the protection against contact with hazardous moving parts external to the enclosure (such as fans), are matters for the relevant product standard to be protected.

Barriers external to the enclosure and not attached to it and obstacles which have been provided solely for the safety of personnel are not considered as a part of the enclosure and are not dealt with in this standard.

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 60050-195:1998, *International Electrotechnical Vocabulary (IEV) – Part 195: Earthing and protection against electric shock*

IEC 60050(826):1982, *International Electrotechnical Vocabulary (IEV) – Chapter 826: Electrical installations of buildings*

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-68:1994, *Environmental testing – Part 2: Tests – Test L: Dust and sand*

IEC 60071-2:1996, *Insulation co-ordination – Part 2: Application guide*

3 Definitions

For the purpose of this standard, the following definitions apply:

3.1
enclosure
a part providing protection of equipment against certain external influences and, in any direction, protection against direct contact [IEV 826-03-12]*.

NOTE This definition taken from the existing International Electrotechnical Vocabulary (IEV) needs the following explanations under the scope of this standard:

1) Enclosures provide protection of persons or livestock against access to hazardous parts.
2) Barriers, shapes of openings or any other means – whether attached to the enclosure or formed by the enclosed equipment – suitable to prevent or limit the penetration of the specified test probes are considered as a part of the enclosure, except when they can be removed without the use of a key or tool.

3.2
direct contact
contact of persons or livestock with live parts [IEV 826-03-05]

NOTE This IEV definition is given for information. In this standard “direct contact” is replaced by “access to hazardous parts”.

3.3
degree of protection
the extent of protection provided by an enclosure against access to hazardous parts, against. ingress of solid foreign objects and/or against ingress of water and verified by standardized test methods

* IEC 60050(826).