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*Degrees of Protection Provided by Enclosures (IP Code)
(identical national adoption)*

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INTRODUCTION

This standard describes a system for classifying the degrees of protection provided by enclosures of electrical equipment for two conditions: 1) the protection of persons against access to hazardous parts and protection of equipment against the ingress of solid foreign objects and 2) the ingress of water. The degree of protection against these two conditions is designated by an IP Code.

Enclosures as used in this standard are as defined in the standard. This includes not only traditional metallic or polymeric enclosures but any enclosing part of electrical equipment that provides a degree of protection as defined in the scope. As such the use of this system allows specific ratings to be applied to different parts of the equipment. For example a component with an IP20 rating indicating only a degree of protection against contact with live parts within that component could be used within an overall enclosure with an IP43 rating that provides a degree of protection against probes and solid foreign objects as well as splashing water.

While the IP Code system is suitable for most types of electrical equipment, it must be noted that this standard is a horizontal standard and not a product standard. The product standards for different equipment may include other requirements for enclosures Types. The determination of the acceptability of the IP Code system as well as the applicability and use of these requirements is a subject for the end product standard. This system is only acceptable when adopted by the end product standard and as specified in the end product standard.

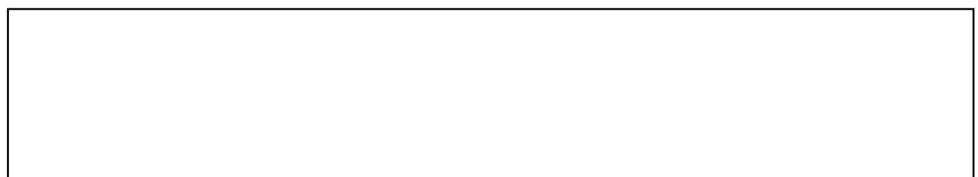
INTERNATIONAL STANDARD

IEC 60529

Edition 2.1
2001-02

Edition 2:1989 consolidated with amendment 1:1999

Degrees of protection provided by enclosures (IP Code)



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CONTENTS

	Page
FOREWORD.....	6
INTRODUCTION.....	7
Clause	
1 Scope and object.....	8
2 Normative references	9
3 Definitions	9
4 Designations	11
4.1 Arrangement of the IP Code.....	11
4.2 Elements of the IP Code and their meanings	12
4.3 Examples for the use of letters in the IP Code	13
5 Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral.....	13
5.1 Protection against access to hazardous parts.....	13
5.2 Protection against solid foreign objects	14
6 Degrees of protection against ingress of water indicated by the second characteristic numeral	15
7 Degrees of protection against access to hazardous parts indicated by the additional letter	17
8 Supplementary letters.....	18
9 Examples of designations with the IP Code	18
9.1 IP Code not using optional letters:	18
9.2 IP Code using optional letters:	19
10 Marking.....	19
11 General requirements for tests.....	20
11.1 Atmospheric conditions for water or dust tests.....	20
11.2 Test samples	20
11.3 Application of test requirements and interpretation of test results.....	20
11.4 Combination of test conditions for the first characteristic numeral	20
11.5 Empty enclosures	21
12 Tests for protection against access to hazardous parts indicated by the first characteristic numeral	21
12.1 Access probes.....	21
12.2 Test conditions	21
12.3 Acceptance conditions	23
12.3.1 For low-voltage equipment (rated voltages not exceeding 1 000 V a.c. and 1 500 V d.c.).....	23
12.3.2 For high-voltage equipment (rated voltages exceeding 1 000 V a.c. and 1 500 V d.c.)	23
12.3.3 For equipment with hazardous mechanical parts.....	23

Clause	Page
13 Tests for protection against solid foreign objects indicated by the first characteristic numeral	24
13.1 Test means	24
13.2 Test conditions for first characteristic numerals 1, 2, 3, 4.....	24
13.3 Acceptance conditions for first characteristic numerals 1, 2, 3, 4.....	24
13.4 Dust test for first characteristic numerals 5 and 6	24
13.5 Special conditions for first characteristic numeral 5	26
13.5.1 Test conditions for first characteristic numeral 5	26
13.5.2 Acceptance conditions for first characteristic numeral 5	26
13.6 Special conditions for first characteristic numeral 6	26
13.6.1 Test conditions for first characteristic numeral 6	26
13.6.2 Acceptance conditions for first characteristic numeral 6	26
14 Tests for protection against water indicated by the second characteristic numeral.....	26
14.1 Test means	26
14.2 Test conditions	27
14.2.1 Test for second characteristic numeral 1 with the drip box	28
14.2.2 Test for second characteristic numeral 2 with the drip box	28
14.2.3 Test for second characteristic numeral 3 with oscillating tube or spray nozzle	28
14.2.4 Test for second characteristic numeral 4 with oscillating tube or spray nozzle	29
14.2.5 Test for second characteristic numeral 5 with the 6,3 mm nozzle.....	30
14.2.6 Test for second characteristic numeral 6 with the 12,5 mm nozzle.....	30
14.2.7 Test for second characteristic numeral 7: temporary immersion between 0,15 m and 1 m.....	30
14.2.8 Test for second characteristic numeral 8: continuous immersion subject to agreement.....	31
14.3 Acceptance conditions	31
15 Tests for protection against access to hazardous parts indicated by the additional letter	31
15.1 Access probes	31
15.2 Test conditions	31
15.3 Acceptance conditions	32
Annex A (informative) Examples of IP coding for the verification of protection of low-voltage equipment against access to hazardous parts	39
Annex B (informative) Summary of responsibilities of relevant technical committees.....	45
Bibliography	47

	Page
Figure 1 – Jointed test finger.....	33
Figure 2 – Test device to verify protection against dust (dust chamber).....	34
Figure 3 – Test device to verify protection against vertically falling water drops (drip box)	35
Figure 4 – Test device to verify protection against spraying and splashing water; second characteristic numerals 3 and 4 (oscillating tube).....	36
Figure 5 – Hand-held device to verify protection against spraying and splashing water; second characteristic numerals 3 and 4 (spray nozzle)	37
Figure 6 – Test device to verify protection against water jets (hose nozzle).....	38
Table 1 – Degrees of protection against access to hazardous parts indicated by the first characteristic numeral.....	14
Table 2 – Degrees of protection against solid foreign objects indicated by the first characteristic numeral.....	15
Table 3 – Degrees of protection against water indicated by the second characteristic numeral.....	16
Table 4 – Degrees of protection against access to hazardous parts indicated by the additional letter.....	17
Table 5 – Test conditions for degrees of protection indicated by the first characteristic numeral.....	21
Table 6 – Access probes for the tests for protection of persons against access to hazardous parts.....	22
Table 7 – Test means for the tests for protection against solid foreign objects.....	24
Table 8 – Test means and main test conditions for the tests for protection against water	27
Table 9 – Total water flow rate q_V under IPX3 and IPX4 test conditions – Mean flow rate per hole $q_{Vl} = 0,07$ l/min	29
IP Codes of examples in annex A.....	44

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code)

FOREWORD

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

This second edition cancels and replaces the first edition published in 1976 and constitutes a technical revision.

This consolidated version of IEC 60529 is based on the second edition (1989) [documents 70(CO)13 + 70(CO)16 and 70(CO)15 + 70(CO)17], and its amendment 1 (1999) [documents 70/91/FDIS and 70/92/RVD].

It bears the edition number 2.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

Annexes A and B are for information only.

The contents of the corrigendum of January 2003 have been included in this copy.

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.

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.

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.