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GB/T 4208-2017 / IEC 60529:2013

Replacing GB/T 4208-2008

Degrees of protection provided by enclosures (IP code)

外壳防护等级（IP 代码）

(IEC 60529:2013, IDT)

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;

Standardization Administration of the People's Republic of China.

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Foreword

This Standard was drafted in accordance with the rules given GB/T 1.1-2009.

This Standard replaces GB/T 4208-2008 “Degrees of protection provided by enclosures (IP code)”. Compared with GB/T 4208-2008 “Degrees of protection provided by enclosures (IP code)”, the main technical changes except for editorial modifications are as follows:

- 4.1, add second characteristic numeral 9 in the arrangement of the IP code;
- 4.2, add the meaning of second characteristic numeral 9;
- 4.3, add the example of 3 markings, i.e. IPX5/IPX7/IPX9, on the enclosure;
- Clause 6, revise the range of application when second characteristic numeral is higher than 6;
- Table 8, add test means and main test conditions for the test for protection against water of second characteristic numeral 9;
- 14.2.9, add test for second characteristic numeral 9: water jetting;
- ADD Figure 7 -- Dimensions of sector nozzle;
- ADD Figure 8 -- Dimensions of sector nozzle hole for test;
- ADD Figure 9 -- Example of sector nozzle with different surface smoothness;
- ADD Figure 10 -- Device to measure impact force of water jets and protection against IPX9 high-temperature/high-pressure water jets;
- ADD Figure 11 -- Distribution of impact force;
- ADD Figure 12 -- Test to verify IPX9 degree of protection provided by small enclosures against high-temperature/high-pressure water jets;
- ADD B.25 in Annex B.

This Standard uses the translation method to be identical with IEC 60529:2013 “Degrees of protection provided by enclosures (IP code)” (English version).

The documents of China that are consistent with the corresponding international documents that are normative references in this Standard are as follows:

- GB/T 311.2-2013 Insulation co-ordination - Part 2: Application guide (IEC 60071-2:1996, MOD)

- GB/T 2900.71-2008 Electrotechnical terminology - Electrical installations (IEC 60050-826:2004, IDT)

- GB/T 2900.73-2008 Electrotechnical terminology - Earthing and protection against electric shock (IEC 60050-195:1998, MOD)

This Standard is proposed and shall be under the jurisdiction of National Technical Committee on Electrical Safety of Standardization Administration of China (SAC/TC 25).

Main drafting organizations of this Standard: Machinery Industry Beijing Electrotechnical Institute of Economic Research, Hangzhou Zhijiang Switch Co., Ltd., Shanghai Electric Tool Research Institute, Vkan Certification &Testing Co., Ltd., Suzhou Electrical Equipment Testing Institute Co., Ltd., Shanghai Testing Institute of Electrical Equipment, Guangdong Product Quality Supervision and Inspection Institute, Dongguan Guang'an Electric Testing Center Co., Ltd., Zhejiang Chint Electric Co., Ltd., Dongguan Kexiang Test Equipment Co., Ltd., Tianshui 213 Electrical Apparatus Co., Ltd., Beijing ABB Low Voltage Electrical Apparatus Co., Ltd., Nanjing Mennekes Electric Co., Ltd., Schneider Electric (Shanghai) Co., Ltd., Beijing Top Electric Co., Ltd.

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The historical versions of the standard replaced by this Standard are as follows:

- GB 4208-1984, GB 4208-1993, GB/T 4208-2008.

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. This Standard 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 this revision, only the degrees of protection of the second characteristic numeral 9 is added, and the protection grade that has been specified in GB/T 4208-2008 is not modified. Therefore, the existing test methods are not modified.

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

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 product standard 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 product standard 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 dated edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

GB/T 2421.1-2008 Environmental testing - Part 1: General and guidance (IEC 60068-1:1988, IDT)

GB/T 2423.37-2006 Environmental testing - Part 2: Tests - Test L: Dust and sand (IEC 60068-2-68:1994, IDT)

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 60071-2:1996 Insulation co-ordination - Part 2: Application guide

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1

enclosure

A part providing protection of equipment against certain external influences and,

Bibliography

[1] GB/T 16842-2008 Protection of persons and equipment by enclosures - Probes for verification (IEC 61032:1997, IDT)

[2] GB/T 17045 Protection against electric shock - Common aspects for installation and equipment (IEC 61140:2001, IDT)

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