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**NATIONAL STANDARD OF THE  
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**GB/T 30038-2013**

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**Road vehicles -- Degrees of electrical equipment protection  
(IP-Code)**

**(English Translation)**

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### Foreword

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

This Standard uses the redrafting method to modify and use ISO 20653.2006

"Road vehicle - Degree of protection (IP-Code) - Protection of electrical equipment against foreign objects, water and access".

Technical differences between this Standard and ISO 20653.2006 and the reasons are as follows.

- IEC 60529 (identical to GB 4208), which is referenced in ISO 20653.2006, is deleted in this Standard, because it is not used in the text, but only indicates the source of the definition in the term.
- The header of Table 2, Table 3, Table 4 is adjusted;
- In 8.4.1 of ISO 20653.2006, Figures 3-7 is the error of the original text, which is modified to Figures 3-6 in this Standard [Translator note. this standard still uses Figures 3-7 in 8.4.1].
- In 9.3 of ISO 20653.2006, Figure 7 is the error of the original text, which is modified to Figure 7 and Figure 8 in this Standard; the three items in the original text and the note of Figure 7 are repeated and not exactly the same,

so the three items are deleted in this Standard to facilitate understanding.

- In the "9K" column of Table 7 of ISO 20653.2006, Figure 8 is the error of the original text, which is modified to Figure 9 in this Standard [Translator **note:** this standard still uses Figure 8].

- There are several errors in Table 5 and Table 6 of ISO 20653.2006, which are corrected in this standard basing on the context and the understanding of the standard.

- In the "4K" column of Table 7 of ISO 20653.2006, 0.4 mm is the error of the original text, which is modified to 0.8 mm in this Standard [Translator note. this standard still uses 0.4mm], to be consistent with Figure 4.

- It does not give a note for "a" in Figure 4 of ISO 20653.2006, so a note "a - maximum 200" is added in this Standard with reference to GB 4208.

The editorial modifications are as follows. This Standard is used in conjunction with GB/T 28046 series of standards, so the "electrical equipment" in the original heading and scope is modified to "electrical and electronic equipment", to correspond to the text.

This Standard is proposed by Ministry of Industry and Information Technology of the People's Republic of China.

This Standard shall be under the jurisdiction of N National Technical Committee of Auto Standardization (SAC/TC 114).

Drafting organizations of this Standard. China Automotive Technology Research Center, Shanghai Institute of Quality Inspection and Technical Research, Shaanxi Heavy Duty Automobile Co., Ltd., Shenzhen Hangsheng Electronics Co., Ltd., Dongfeng Trucks Technology Center, Changsha Automobile Electric Institute, Jinan Power Co., Ltd. of China National Heavy-Duty Truck Group.

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Road vehicles - Degrees of  
electrical equipment protection (IP-Code)

## **1 Scope**

This Standard specifies degrees of protection (IP-Code) provided by enclosures of the electrical equipment of road vehicles, and requirements and tests for each degree of protection.

## **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.

GB/T 2423.37 Environmental testing for electric and electronic products - Part 2. Test methods - Test L. Dust and sand (GB/T 2423.37-2006, IEC 60068-2-68.1994, IDT)

## **3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.  
Protection provided by an enclosure against access, foreign objects and water and verified by standardized test methods.

## **4 Structure and significance of IP-code**

Where no characteristic numeral is required, the letter "X" shall be substituted (or "XX", if none of the two code elements have been indicated). Additional, supplementary letters may be omitted without substitute.

The following examples explain the use and arrangements of letters in the IP-Code.

## **5 Degrees of protection against foreign objects and against access**

Tables 2 and 3 give brief descriptions of the degrees of protection against foreign objects and against access with the relevant requirements.

## **6 Degrees of protection against water**

Table 4 gives brief descriptions of the degrees of protection against water with the relevant requirements.

## **7 Designation examples**

The designation IP2X is the degree of protection for the complete enclosure, and IP5KX is the degree of protection for the cover of a part inside the complete enclosure.

## **8 Requirements and testing**

Probes for determining the degrees of protection against foreign objects and access are shown in Table 5. When carrying out the tests with the ball, it shall avoid the influence of probe handle and guard on the tests.

## **9 Notes on the assignment of degrees of protection**

The decisive criterion of degrees of protection is the type of design of the enclosure and the impact of foreign bodies to be expected during operation of the relevant vehicle at the mounting or attachment position.

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