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GB/T 14048.10–2008/IEC 60947-5-2: 2004

Replace GB/T 14048.10–1999

Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices and switching element - Proximtiy switches

压开关设备和控制设备

第 5-2 部分：控制电路电器和开关元件 接近开关

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Standardization Administration of the People's Republic of China

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This is Part 10 of *Low-voltage switchgear and controlgear.*

This Part is identical to use IEC 60947-5-2: 2004 (Edition 2.2) *LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR - Part 5-2: Control circuit devices and switching elements - Proximity switches* (English Version)

For the purpose of this part, the following changes have been made in the light of specific conditions of China.

— deletion of the introduction to the international standard IEC and addition of the introduction to the national standard of the People's Republic of China (GB).

— deletion of the contents of the definitions in an alphabetical order contained in IEC 60947 – 5 – 2: 2004, Clause 2.

— in subclause B.7.3 of Annex B, it is required to select the values specified in the Table H.1 or H.2 of IEC 60947 – 1, Annex H for the test voltage of the dielectric performance. At present, the Table H.2 has been deleted from IEC 60947 – 1: 2001 and deletion has been made from GB 14048.1 accordingly. Therefore, the texts of the Table H.2 have been deleted from this part.

— This part is arranged and organized identical with IEC 60947 – 5 – 2: 2004 and with reference to GB/T 1.1 – 2000, Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standards, with respect to its drafting format.

This part replaces GB 14048.10 – 1999, Low-voltage switchgear and controlgear — Control circuit devices and switching element — Section 2: Proximity switches.

In addition to partial improvements of texts, the following main technical changes have been made with respect to GB 14048.10 – 1999.

— addition of provisions related to non-mechanical magnetic-type proximity switch including its definition (subcluase 2.1.1.5), the definition of its reference axis，(subcluase 2.2.2.1)，the definition of its inductive surface (subcluase 2.2.11.4)，action (subcluase 4.1.4), the ambient temperature (subcluase 6.1.1.1)，sensitivity and distance of action (subcluase 7.2.1.3.6)， vibration (subcluase 7.4.2), target (subcluase 8.3.2.1.4), and tests (subclauses 8.4.1 and 8.5.1a);

— addition of the definition of range of action (r0) (subcluase2.3.1.8); Sd changed to r0 in Figures 1a) and b), along with addition of “4.2.3.2 Range of action (r0)

— in subclause 2.1, addition of definitions for Type D proximity switch (subclause 2.1.1.4.1), Type R proximity switch (subclause 2.1.1.4.2),Type T proximity switch (subclause 2.1.1.4.3),direct - action proximity switch (subclause 2.1.1.6)，indirect - action proximity switch (subclause 2.1.1.7) and medium – density filter (subclause 2.1.1.8)；

— in subclause 7.2.6 Electromagnetic compatibility (EMC), addition of Tables 7and 8，addition of surging (subclause 7.2.6.2.5)， conducted disturbances included by radio-frequency fields (subclause 7.2.6.2.6), power frequency magnetic field (subclause 7.2.6.2.7), and voltage temporary drop and interruption (subclause 7.2.6.2.8)，power supply harmonic wave (subclause 7.2.6.2.9)，the limit of high frequency (subclause 7.2.6.3.2) and the limit of low frequency (subclause 7.2.6.3.3)；

— addition of determination of the value of gain ratio (subclause 8.4.2.1)；

— in subclause 8.4.2.4, “The light receiver moves toward the light transmitter” is changed to “The light receiver axially moves toward the light transmitter”.

— addition of the method for measurement of the operating frequency of a photoelectric proximity switch (at present, the “photoelectric proximity switch” is referred to as “photoelectric switch” in many production enterprises customarily (subclause 8.5.3) ;

— in subclause 8.6, addition of conducted disturbances included by radio-frequency fields (subclause 8.6.2.4)， power frequency magnetic field (subclause 8.6.2.5)，voltage temporary drop and interruption (subclause 8.6.2.6)，power supply harmonic wave (subclause 8.6.2.6)，transmitting (subclause 8.6.3)；

— in Annex D, addition of the integrated tie-in of M12φ4 pinned AC proximity switch (figure D.5), the integrated tie-in of M12φ5pinned AC proximity switch (figure D.6), and the integrated tie-in M12φ6 pinned AC proximity switch (figure D.7);

— addition of Annex F (informative), Symbols of proximity switches.

In this part, Annexes A, B, C, D, and E are normative and Annex F is informative.

This part was proposed by China Electrical Equipment Industrial Association.

This part is under the jurisdiction of National Technical Committee on Low-voltage Apparatus of Standardization Administration of China (SAC/TC 189).

The responsible drafting organization of this part is Shanghai Electrical Apparatus Research Institute (Group) Co., Ltd

The participating drafting organizations include Omron (China) Co., Ltd and China Quality Certification Center.

The chief drafting staff of this part includes Ji Huiyu, Huang Jingye, and Chen Xiaodong.

The participating drafting staff of this part includes Han Lu, Zhang Yong.

This part replaces the following historical editions issued: GB/T 14048.10 – 1999.

Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices and switching element - Proximtiy switches

1 Scope

The provisions of GB 14048.1-2006 *Low-voltage switchgear and controlgear—Part 1: General rules* are applicable to this standard, where specifically called for. General Rules clauses and subclauses thus applicable, as well as tables, figures and appendices, are identified by references to this Part, e.g. subclause 7.1.9.3 of GB 14048.1-2006 or annex C of GB 14048.1-2006.

Clauses 1 to 8 contain the general requirements. Specific requirements for the various types of proximity switches are given in annex A.

1.1 Scope and object

This part applies to inductive and capacitive proximity switches that sense the presence of metallic and/or non-metallic objects, ultrasonic proximity switches that sense the presence of sound reflecting objects, photoelectric proximity switches that sense the presence of objects and non-mechanical magnetic proximity switches that sense the presence of objects with a magnetic field. These proximity switches are self-contained, have semiconductor switching elements(s) and are intended to be connected to circuits, the rated voltage of which does not exceed 250 V (50 Hz/60 Hz) a.c. or 300 V d.c.

This Part is not intended to cover proximity switches with analogue outputs.

The object of this standard is to state for proximity switches:

– definitions;

– classification;

– characteristics;

– product information;

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