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# GB

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**Mechanical Magnetic Proximity Switches**

**for Household and Similar Use**

**家用和类似用途机械式磁性接近开关**

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## Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative References .....	4
3 Terms and Definitions .....	5
4 Model Naming and Classification.....	5
5 Technical Requirements.....	6
6 Test Methods.....	8
7 Inspection Rules .....	11
8 Marking, Packaging, Transportation and Storage .....	13
Appendix A (normative appendix) .....	15

# Mechanical Magnetic Proximity Switches

## for Household and Similar Use

### 1 Scope

This Standard specifies the terms, definitions, model naming, classification, technical requirements, test methods, inspection rules, marking, packaging, transportation and storage of mechanical magnetic proximity switches (hereinafter referred to as proximity switches) for household and similar use.

This Standard is applicable to proximity switches that bear magnetic sensors and implement switching-on/off under the driving force of magnetic field (rated voltage AC < 380 V, or rated voltage DC < 300 V, rated current < 16 A).

### 2 Normative References

The following documents are indispensable to the application of this Standard. In terms of references with a specified date, only versions with a specified date are applicable to this Standard. The latest version (including all the modifications) of references without a specified date is also applicable to this Standard.

GB/T 191 Packaging - Pictorial Marking for Handling of Goods

GB/T 2423.1 Environmental Testing for Electric and Electronic Products - Part 2: Test Methods - Test A: Cold

GB/T 2423.2 Environmental Testing for Electric and Electronic Products - Part 2: Test Methods - Test B: Dry Heat

GB/T 2423.5 Environmental Testing for Electric and Electronic Products - Part 2: Test Methods - Test Ea and Guidance: Shock

GB/T 2423.10 Environmental Testing for Electric and Electronic Products - Part 2: Test Methods - Test Fc and Guidance: Vibration (Sinusoidal)

GB/T 2828.1-2012 Sampling Procedures for Inspection by Attribute - Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL) for Lot-by-lot Inspection

GB 4706.1 Safety of Household and Similar Electrical Appliances - Part 1: General Requirements

GB/T 14048.10 Low-voltage Switchgear and Control-gear - Part 5-2: Control Circuit Devices and Switching Element - Proximity Switches

### 5.4.3 Contact resistance

At room temperature, resistance value shall be  $< 50 \text{ M}\Omega$  (contact resistance does not include lead resistance).

## 5.5 Environmental Adaptability

### 5.5.1 Heat and humidity resistance

After heat and humidity resistance test (relative humidity: 95%), product shall comply with requirements in 5.3 and 5.4.1.

### 5.5.2 Low temperature resistance

After low temperature resistance test (at  $-25 \text{ }^\circ\text{C}$ ), product shall comply with requirements in 5.3 and 5.4.1.

### 5.5.3 High temperature resistance

After high temperature resistance test (under highest ambient temperature), product shall comply with requirements in 5.3 and 5.4.1.

### 5.5.4 High and low temperature impact

After high and low temperature impact test (at  $-25 \text{ }^\circ\text{C}$  and  $120 \text{ }^\circ\text{C}$ ), product shall comply with requirements in 5.3 and 5.4.1.

## 5.6 Heat, Flame and Tracking Resistance

Proximity switch shall be able to endure:

- a) Heat resistance: non-metallic materials that support electrical parts in proximity switch shall be able to endure ball pressure test (at  $125 \text{ }^\circ\text{C}$ ). Other parts (for example, external shell) shall be able to endure ball pressure test (at  $40 \text{ }^\circ\text{C}$  higher than the highest ambient temperature);
- b) Flame resistance: proximity switch shall be able to endure glow-wire test (at  $650 \text{ }^\circ\text{C}$ , 2 s);
- c) Tracking resistance: no breakage or combustion shall be triggered in four grades of test: 175 V, 250 V, 400 V, 600 V (determined in accordance with illustration or instruction for use).

## 5.7 Free Fall

After free fall test, product shall comply with requirements in 5.3 and 5.4.3.

## 5.8 Vibration Resistance

resistance;

- d) Division value of dielectric voltage withstand testing meter  $\geq$  Level 1.5;
- e) Division value of length measurement  $\geq$  0.02 mm;
- f) Division value of timer: 0.1 s.

## 6.2 External Structure and Dimension

Examine in accordance with drawings; the method of visual inspection shall be adopted in external structure; shape and dimension shall be measured directly with corresponding measurer.

## 6.3 Action Distance

In accordance with the requirements of technical specification negotiated by the demand side and the supply side, link up this product with DC resistance meter at room temperature. Proximity switch and magnet trigger relative displacement; record action distance when the resistance meter displays a numerical value.

## 6.4 Electrical Performance

### 6.4.1 Insulation resistance

Link up outgoing line with test electrode, link up the external shell with another side of test electrode; impose 500 V DC voltage for 30 s, then, record the insulation resistance.

### 6.4.2 Electrical strength

Link up outgoing line with test electrode, link up the external shell with another side of test electrode; conduct the test in accordance with stipulations in GB/T 14536.1.

### 6.4.3 Contact resistance

Link up outgoing line with resistance meter, maintain the switching-on state, record the resistance value.

## 6.5 Environmental Adaptability

### 6.5.1 Heat and humidity resistance

In terms of general purposes, maintain 100 h in a thermostat (temperature: 55 °C ~ 65 °C, relative humidity: 90% ~ 100 %); place 2 h at room temperature. Conduct the test; assess if it satisfies the requirement in 5.4.1. As to heat and humidity resistance test of proximity switch used under the occasion of steam pressure, test shall be conducted in accordance with Appendix A.

### 6.5.2 Low temperature resistance

- c) Rated voltage and current;
- d) Batch number.

**8.1.2** There shall be a distinct mark on the package, which includes:

- a) Name or trademark, address of manufacturer;
- b) Production date or batch number;
- c) Model and product name;
- d) Rated voltage and current;
- e) Executive standard number, etc.;
- f) Weight, volume and quantity;
- g) Packaging storage and transportation mark stipulated in GB/T 191.

## **8.2 Packaging**

Product packaging shall comply with requirements in GB/T 22685.

## **8.3 Transportation**

Proximity switch with intact packaging can be transported with regular means of transportation: sea, land and air; direct attack of rain or snow shall be avoided. Proximity switch shall also be protected from humidity.

## **8.4 Storage**

Packaged proximity switch shall be stored in a warehouse (ambient temperature: - 10 °C ~ + 60 °C, relative humidity ≤ 95%); there shall be no acid or alkaline gas, or other harmful gas.

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