

# Technical Specification for KSD9700

## Thermal Protector

### 1.Scope of application

This specification manual is applicable to the overheat protectors produced by our company.

### 2. Main function

This manual specifies the detailed specifications of our company's over temperature protector products by setting basic performance, durability, indicating product name, and operating temperature. The product has an advanced structure and features small size, large contact capacity, long service life, and sensitive operation. It is widely used for over temperature protection of various motors, automotive motors, transformers, electric heating appliances, fluorescent rectifiers, power tools, and general electrical equipment.

### 3 .Structure

**3-1 Structure and Materials: Please refer to the drawing (attached separately) for details. Naming: KSD9700.**

Thermal Protection Temperature Control Open.

#### 3-2 Overheating protector automatic temperature control switch

When the temperature reaches the temperature range specified by the user, the temperature sensing Surface senses the change in temperature, and then transmits this temperature change to the bimetallic strip to function as an on or off switch. The temperature control switch is composed of a temperature sensing part, a switch part, a base plate seat part, an operating part, and an electrical connection part. The detailed components are shown in the attached drawings, and each component meets ROHS requirements.

3-2-1 Working temperature: executed according to national certification regulations, reset temperature executed according to national standards, special requirements made according to customer requirements.

3-2-2 Dielectric breakdown strength: The insulation layer and sleeve of the wire can withstand 1500V-AC without breakdown for 1 minute or 1800V-AC without breakdown for 1 second.

3-2-3 insulation resistance : The insulation resistance between the conductor and the sleeve should be greater than 100 M  $\Omega$  when measured with 500V-DC under room temperature and indoor humidity conditions.

3-2-4 contact resistance: Contact resistance should be  $\leq 50$  m  $\Omega$ (excluding wires).

#### 3-3 Electrical performance

3-3-1 Voltage level:110/220VAC.

3-3-2 power level:50/60Hz.

3-3-3 Power deviation: +5% ~ -10%.

3-3-4 Withstanding Voltage: 380V.

3-3-5 Maximum surface temperature: 180 °C.

## **4. environmental competence**

After the following tests 4.1, 4.2, 4.3, 4.4, 4.5. The test sample should meet the following requirements.

- a. The working temperature deviation does not exceed the center temperature 7 °C.
- b. The product shell does not deform.
- c. The insulation layer of the wire has no cracks or damage.

4-1 Thermal stability test: The product is placed at a high temperature of 150 °C for 96 hours.

4-2 Moisture resistance test: Place in an environment of 40 °C and 95% relative humidity for 48 hours.

4-3 Tensile strength test: The lead end of the product should be able to withstand a tensile force greater than or equal to 20N, and the wire should not break or slide out.

4-4 Seismic resistance test: The product can withstand a full width of 1.5mm, frequency variation of 10-55Hz, variation period of 3-5 minutes, and vibration direction X、Y、Z Continuous vibration in each direction for 2 hours.

4-5 Compression test: The product is immersed in a sealed oil tank, subjected to a pressure of 2 MPa and maintained for 24 hours.

## **5 Life test**

Under the conditions of rated power, current, and power factor of 0.8, the product should be operated 10000 times by an external heat source, and the temperature change should be within  $\pm 7$  °C of the initial value.

## **6. Precautions**

### **6-1 Temperature test.**

Place the product in a testing chamber with a constant temperature accuracy of  $\pm 1$  °C for testing. Measuring instruments use thermocouples or thermometers to place them on or as close as possible to the product, and during the experimental heating process, move from below the rated temperature. Starting at a temperature of 10 °C, the temperature change should not exceed 1 °C/min, and the current should not exceed 0.1A when tested through a protector.

A. Use indicator lights to determine whether the product is on or off, where the light on or off indicates continuity.

b. Use the resistance method to determine the continuity of the product. When the product contacts, the product resistance is at the  $m\ \Omega$  level, and when the product contacts are disconnected, the product resistance is at the  $K\ \Omega$  level.

#### **6-2 Usage environment.**

6-2-1 The product cannot be used in high temperature environments above  $200\ ^\circ\text{C}$  for a long time to prevent the failure of product protection temperature and insulation function.

6-2-2 Long term use in strong acid, strong alkali, and other corrosive environments is not allowed.

#### **6-3 Installation connection.**

6-3-1, the product should be in effective close contact with the protected component or directly face the protected area, and it is best to place it in the temperature sensitive area of the protected object.

6-3-2. During the installation process of the product, precautions should be taken to prevent deformation or damage to the outer shell that may cause changes in product performance. Sharp tools or gravity should not be used to press or hammer the product.

6-3-3. When using arc welding to connect products, the welding current must not pass through the product. High current directly passing through the contact points of the product will cause damage.

#### **6-4, Storage Conditions**

The packaging box and products shall not be subjected to rain or snow during transportation and storage, and the relative humidity shall not exceed 90%.

### **7: Testing and Inspection**

7-1 Under normal temperature conditions unless otherwise specified.

7-2 Cannot be used in environments with dust, sulfur, silicon, and other corrosive and oxidizing substances.

7-3. Do not use in excessively humid environments, as it may cause arcing and affect electrical performance.

7-4. If there are any unspecified parts in this specification, the operation principle must be based on the agreement between both parties.

7-5 The storage temperature of the product is  $-10\ ^\circ\text{C}$   $-40\ ^\circ\text{C}$ .

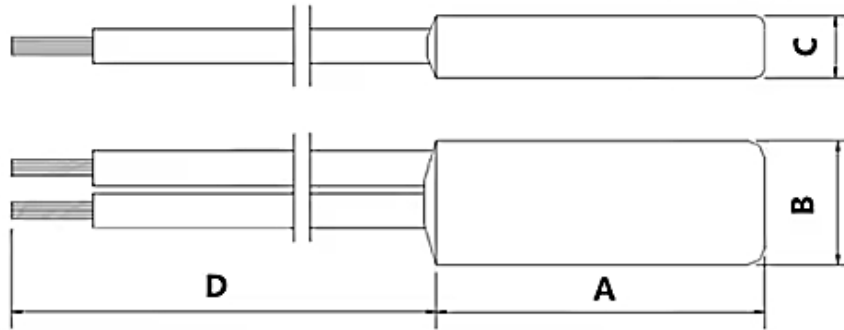
7-6. Please note that our company is not responsible for any consequences arising from the use of this temperature control switch that differs from the methods specified in this specification.

### **8. Other matters:**

8-1. The heating rate for disconnecting temperature detection should be controlled at 1 °C/1min;

8-2. The product cannot withstand strong impact and compression forces during use:

## Appearance and structure:



*Note: Dimension D can be customized according to customer requirements, standard length is 70mm.*

| Model        | Dimensions (mm) |     |     | Remarks         |
|--------------|-----------------|-----|-----|-----------------|
|              | A               | B   | C   |                 |
| 9700A1       | 20.0            | 7.6 | 3.7 | Metal housing   |
| 9700A2       | 16.0            | 6.7 | 3.1 | Metal housing   |
| 9700B        | 20.0            | 8.0 | 4.0 | Plastic housing |
| 9700B1       | 18.5            | 7.0 | 3.5 | Plastic housing |
| 9700B2       | 16.0            | 7.2 | 3.8 | Plastic housing |
| 9700 Ceramic | 20.0            | 8.8 | 5.0 | Ceramir housing |

**PN: A gold tail, B plastic, no tail ceramic**

## Performance

1 Rated current:

DC12V-12A、DC24V-10A、

2 Action temperature: 15 °C~150 °C, reset temperature: the action temperature is reduced by 20 °C~35 °C.

| ON | Operating temperature | Reset temperature | Serial Number | Operating temperature | Reset temperature |
|----|-----------------------|-------------------|---------------|-----------------------|-------------------|
| 1  | 15°C (±5)             | -5°C (±8)         | 15            | 85°C (±5)             | 65°C (±8)         |
| 2  | 20°C (±5)             | 0°C (±8)          | 16            | 90°C (±5)             | 70°C (±8)         |
| 3  | 25°C (±5)             | 5°C (±8)          | 17            | 95°C (±5)             | 70°C (±8)         |
| 4  | 30°C (±5)             | 10°C (±8)         | 18            | 100°C (±5)            | 75°C (±8)         |
| 5  | 35°C (±5)             | 20°C (±8)         | 19            | 105°C (±5)            | 80°C (±8)         |
| 6  | 40°C (±5)             | 20°C (±8)         | 20            | 110°C (±5)            | 85°C (±8)         |
| 7  | 45°C (±5)             | 25°C (±8)         | 21            | 115°C (±5)            | 90°C (±8)         |
| 8  | 50°C (±5)             | 30°C (±8)         | 22            | 120°C (±5)            | 95°C (±8)         |
| 9  | 55°C (±5)             | 35°C (±8)         | 23            | 125°C (±5)            | 100°C (±8)        |
| 10 | 60°C (±5)             | 40°C (±8)         | 24            | 130°C (±5)            | 105°C (±8)        |
| 11 | 65°C (±5)             | 45°C (±8)         | 25            | 135°C (±5)            | 110°C (±10)       |
| 12 | 70°C (±5)             | 50°C (±8)         | 26            | 140°C (±5)            | 110°C (±10)       |
| 13 | 75°C (±5)             | 55°C (±8)         | 27            | 145°C (±5)            | 115°C (±10)       |
| 14 | 80°C (±5)             | 60°C (±8)         | 28            | 150°C (±5)            | 120°C (±10)       |

### 3 External dimensions:

The dimensions are shown in the attached diagram above (the size of the iron shell does not include the insulation sleeve)

### 4 Model specification description:

KSD9700——PRODUCT MODEL

XX°C——rated function temperature

Action temperature: normally closed type: temperature rise, contact disconnection, temperature decrease, contact connection;

Normally open type: temperature rise, contact connection, temperature drop, contact disconnection