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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 14048.16-2025

Replacing GB/T 14048.16-2016

**Low-voltage switchgear and controlgear - Part 8: Control units
for built-in thermal protection (PTC) for rotating electrical
machines**

低压开关设备和控制设备 第8部分：旋转电机用装入式热保护（PTC）控制单元
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 8 of GB/T 14048 "Low-voltage switchgear and controlgear". GB/T 14048 has published the following...

part.

---Part 1: General Provisions;

---Part 2: Circuit Breakers;

---Part 3: Switches, Isolators, Disconnecting Switches and Fuse Combinations;

---Part 4-1. Contactors and Motor Starters Electromechanical contactors and motor starters (including motor protectors);

---Part 4-2. Contactors and Motor Starters. Semiconductor Controllers and Starters (including Soft Starters) for AC Motors;

---Part 4-3. Contactors and Motor Starters. AC Semiconductor Controllers and Contactors for Non-Motor Loads;

---Part 5-1. Control Circuit Appliances and Switching Elements - Electromechanical Control Circuit Appliances;

---Part 5-2. Control Circuits, Electrical Appliances, and Switching Elements (Proximity Switches);

---Part 5-3. Control Circuitry and Switching Elements. Proximity Switches (PDDBs) with Defined Functionality under Fault Conditions Require;

- Part 5-4.Special Tests for Performance Evaluation of Small-Capacity Contacts in Control Circuits and Switching Elements;
- Part 5-5.Electrical emergency braking devices with mechanical latching function, including control circuitry and switching elements;
- Parts 5-6.Control Circuit Electrical Appliances and Switching Elements DC Interface for Proximity Sensors and Switching Amplifiers (NAMUR);
- Parts 5-7.Requirements for control circuit electrical appliances and switching elements for proximity devices with analog outputs;
- Parts 5-8.Control Circuit Electrical Appliances and Switching Elements - Three-position Enable Switch;
- Parts 5-9.Control Circuits, Electrical Appliances, and Switching Elements; Flow Switches;
- Part 6-1.Multifunctional Electrical Transfer Switches;
- Part 6-2.Multifunctional Electrical Appliances (Equipment) Control and Protection Switchgear (Equipment) (CPS);
- Part 7-1.Terminal blocks for copper conductors of auxiliary devices;
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- Part 7-3.Safety requirements for auxiliary device fuse terminal blocks;
- Part 7-4.PCB terminal blocks for copper conductors of auxiliary components;
- Part 7-5.Terminal blocks for aluminum conductors in auxiliary components;
- Part 8: Built-in thermal protection (PTC) control unit for rotating electrical machines;
- Part 9-1.Arc-extinguishing devices for active arc fault suppression systems;
- Part 9-2.Active Arc Fault Suppression System. Internal Arc Detection and Suppression Device Based on Optical Signals.

This document replaces GB/T 14048.16-2016 "Low-voltage switchgear and controlgear - Part 8: In-line thermal insulation for rotating electrical machines".

Compared with GB/T 14048.16-2016, the main technical changes in the "PTC Control Unit" are as follows, except for structural adjustments and editorial modifications.

- Added requirements for energy-constrained circuits (see 8.1.14);
- The requirement for a disconnection detection function has been added (see 8.2.12);
- The appendix "Special Tests" is changed to "Additional Requirements and Tests for Electrical Appliances with Protective Isolation" (see Appendix B, 2016 edition).

Appendix B).

This document is modified to adopt IEC 60947-8:2021 "Low-voltage switchgear and controlgear - Part 8: In-situ thermal insulation for rotating electrical machines".

Protection (PTC) control unit.

The technical differences between this document and IEC 60947-8:2021, and the reasons therefor, are as follows.

---The IEC 60417 Database (see 8.1.1) has been replaced with the normatively referenced GB/T 5465.2 to adapt to my country's national conditions;

---IEC 60068-2-27 (see 8.2.10.1) has been replaced with the normatively referenced GB/T 2423.5 to adapt to my country's national conditions;

---IEC 60068-2-6 (see 8.2.10.2 and 9.3.3.14.3) has been replaced with the normatively referenced GB/T 2423.10 to adapt to my country's national standards.

National conditions;

---CISPR11.2015 and CISPR11.2015/AMD1.2016 have been replaced with the normatively referenced GB 4824-2025 (see GB 4824-2025).

(9.4.3.2, 9.4.3.3), to adapt to my country's national conditions.

The following editorial changes have been made to this document.

---In section 3.1.8, TNF is listed as a separate symbol on a separate line;

---In version 3.1.9, TFS is listed as a separate symbol on a separate line;

---In section 5.4.2, referring to the wording of IEC 60738-1:2022, "RNF" is changed to "R-TNF", that is, it is changed to "---resistance under TNF".

R-TNF (see Figure 2 of IEC 60738-1:2022, if applicable);

---In section 9.1.2, the number j) is missing between i) and k). Change k) to j), and adjust the subsequent numbers accordingly;

---In section 9.3.3.10, the last paragraph is item d), which should be changed to "The tests specified in d), b), and c) should be performed at the terminals where the PTC thermistor is pre-connected".

After connecting a 0.2 μ F capacitor between the terminals, the test is repeated. The resistance value at the disconnection point of the control unit is compared with the resistance value at the disconnection point of the previous test.

The resistance difference should not exceed 5%;

---The main text of the last paragraph in A.1 should be the content of Note 3. That is, change it to "Note 3. When the applied voltage is 2.5V and below..." (Except for the TNF 15K point, where the applied voltage is allowed to reach 7.5V), the above resistance values