



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

GB 14048.9-2008

**Low-voltage switchgear and controlgear - Part 6-2: Multiple
function equipment - Control and protective switching devices
(or equipment) (CPS)
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 6-2 of GB/T 14048 "Low Voltage Switchgear and Controlgear". GB/T 14048 has been published as follows.

Lower part.

- Part 1: General;
- Part 2: Circuit breakers;
- Part 3: Switches, isolators, disconnectors 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 devices and switching elements Electromechanical control circuit devices;
- Part 5-2. Control circuit electrical appliances and switching elements proximity switches;
- Part 5-3. Proximity switches (PDDb) with defined functions under fault conditions for control circuit appliances and switching elements Require;
- Part 5-4. Performance evaluation methods for small capacity contacts of control circuit devices and switching elements Special tests;
- Part 5-5. Electrical emergency brake devices with mechanical latching function for control circuit appliances and switching elements;
- Part 5-6. DC interfaces for control circuits, electrical and switching elements, proximity sensors and switching amplifiers (NAMUR);
- Part 5-7. Requirements for control circuit devices and switching elements for proximity devices with analog outputs;
- Part 5-8. Control circuit devices and switching elements Three-position enabling switch;
- Part 5-9. Control circuit appliances and switch elements flow switches;
- Part 6-1. Multifunctional electrical switchgear;
- Part 6-2. Multifunctional electrical control and protection switchgear (equipment) (CPS);
- Part 7-1. Terminal blocks for copper conductors of auxiliary devices;
- Part 7-2. Protective conductor terminal blocks for copper conductors of auxiliary devices;
- Part 7-3. Safety requirements for auxiliary device fuse terminal blocks;
- Part 7-4. PCB terminal blocks for copper conductors of auxiliary devices;

- Part 7-5. Terminal blocks for aluminium conductors of auxiliary devices;
- Part 8: Built-in thermal protection (PTC) control units for rotating electrical machines;
- Part 9-1. Arc extinguishing devices for active arc fault suppression systems.

This document replaces GB/T 14048.9-2008 "Low-voltage switchgear and controlgear Part 6-2. Multifunctional electrical appliances (equipment) control Compared with GB/T 14048.9-2008, in addition to structural adjustments and editorial changes, the main technical the technical changes are as follows.

- Added provisions not applicable to this document in the scope (see Chapter 1).
- Updated terms and definitions (see Chapter 3, Chapter 3 of the 2008 edition).
- To be consistent with the latest content of IEC 60947-1:2020, the following content has been added or changed.
 - Flag ("s", "sol", "r" or "f") (see 6.1.2);
 - Environmental information (see 6.4);
 - Structural requirements, including material requirements (see 8.1, 8.1 of the 2008 edition);
 - Requirements for screwless terminals (see 9.2.2, 9.2.3);
 - Method for measuring polar impedance (see 8.2.6, 9.3.3.8);
 - EMC requirements and tests (see 8.3, 9.4, 8.3, 9.3.5 of the 2008 edition);
 - Assessment procedures for electromechanical CPS used in safety locations (see Appendix K).
- To coordinate with IEC 60947-2:2016, the following contents are added or changed.
 - Operation test of undervoltage relay and shunt release (see 9.3.3.2.2);
 - CPS for IT systems (see Appendix G, Appendix G of the 2008 edition);
 - Coordinate with other short-circuit protection devices (see 8.2.9, Appendix F of the 2008 edition).
- To be consistent with the latest content of IEC 60947-4-1:2018, the following content is added.
 - Short-circuit test is coordinated with North American requirements (see Table 13);
 - Add the requirements for limited energy (see 8.1.14, 9.2.4);
 - Reliability data for functional safety applications (see Appendix K) - Additional requirements for protective isolation (see Appendix N);
 - Adapt to the applicable conditions of motors with higher energy efficiency levels and add

relevant provisions for high rotor locked current (see Table 8, Table 10, Table 11);

- Requirements for special wiring accessories (see 8.1.1);
- Definition and measurement method of control circuit power consumption during holding and closing (see 9.3.3.9).
- Changed the requirements for auxiliary contacts connected to the power contacts (mirror contacts) (see Appendix F, Appendix F of the 2008 edition).
- Deleted the extended functions of electronic overload relays and releases (see Appendix H of the 2008 edition).

This document is equivalent to IEC 60947-6-2:2020 "Low-voltage switchgear and controlgear Part 6-2. Multi-function electrical control and protective switching electrical appliances (equipment) (CPS)".

The following minimal editorial changes were made to this document.

- Change the examples of control methods in 5.2.4 to automatic and non-automatic to avoid ambiguity in the description in brackets of item 1;
- Add a note to Table 6 to indicate that the given temperature rise limits apply to ambient air temperatures of -5°C to 40°C;
- Added the title "9.5.3.2.1 General requirements", and then the format was extended to avoid hanging paragraphs;
- Deleted the examples in the titles of 9.5.3.2.2, 9.5.3.2.3, 9.5.3.3.2 and 9.5.3.3.3 to avoid misunderstanding.

Introduction

Low voltage switchgear and control equipment are large in quantity and wide in scope, and the products include. circuit breakers, isolators, isolating switch and fuse combination appliances, Contactors and starters are widely used in various fields such as machinery, electricity, and electronics, involving many aspects such as the control and distribution of electric energy.

GB/T 14048 "Low-voltage switchgear and controlgear" is an important series of standards guiding my country's low-voltage switchgear and controlgear related products.

It is planned to consist of 25 parts.

- Part 1: General. The purpose is to specify the overall requirements for low-voltage switchgear and controlgear.
- Part 2: Circuit breakers. The purpose is to specify product-related requirements such as