ICS 29.130.20
CCS K30

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/Z 14048.24-2024

Low-voltage switchgear and controlgear - Part 7-5: Ancillary equipment - Terminal blocks for aluminium conductors

低压开关设备和控制设备 第7-5部分：辅助器件 铝导体的接线端子排

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Table of Contents

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 7-5 of GB/T 14048 "Low-voltage switchgear and controlgear": GB/T 14048 has been published as follows 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;

1 Scope

GB/Z 14048.24-2024 covers terminal blocks made specifically for aluminium conductors, and the reason they need their own document is that aluminium is not copper. It creeps under sustained clamping pressure, so a joint tightened correctly loses contact force over months; it forms a hard insulating oxide the instant a fresh surface meets air, which must be broken through by the clamp rather than merely covered; and it expands and contracts more than copper with temperature, working the joint loose over daily cycles. A terminal designed for copper and used with aluminium produces a connection that passes inspection and heats up years later - one of the more common causes of fire in electrical installations. Aluminium is used anyway, because on large feeders the cost difference is substantial. This part specifies the requirements for terminal blocks with screw-type clamping units, threaded or non-threaded, for mounting on a support and intended for industrial and similar use with aluminium conductors. As a GB/Z it is a guiding technical document. Under ICS 29.130.20 and CCS K30, it is written for terminal and switchgear manufacturers, panel builders and electrical inspectors.

This document specifies threaded or non-threaded type electrical and mechanical connections for mounting on a bracket, primarily for industrial or similar purposes: Requirements for terminal blocks with screw-type clamps: This document can be used for terminal blocks for connecting aluminum conductors or connecting aluminum conductors to copper conductors: This document is applicable to connection cross-sectional areas of 2:5mm2~300mm2 (AWG12kcmil~600kcmil), with or without special Terminal blocks for processed round wires, intended for use with rated voltages not exceeding 1000VAC (not exceeding 1000Hz) or 1500VDC In the circuit: This document can be used as a terminal block for aluminum conductors that do not meet the requirements of GB/T 3956 (e:g: less than 10mm2, flexible or other materials): This document can also be used as a guide for other types of aluminum conductor terminal blocks other than straight-through terminal blocks (e:g: partially insulated terminal block with insulation):

Note 1: AWG is the abbreviation of "American Wire Gauge": kcmil=1000cmil: 1cmil = 1 circular mil = the area of a circle with a diameter of 1 mil: 1mil=1/1000in: This document does not apply to the following clamping elements:

--- Clamping parts specially designed for any other type of switchgear and controlgear;

--- Clamps connected by crimping, brazing, soldering or welding;

--- Clamping parts for digital and signal circuits;

--- Clamping parts for flat quick-connect terminals, insulation piercing connectors and twist-on connectors: The requirements for these clamping parts shall be considered as independent Some are under consideration: NOTE

2 If special types of wire are used that require special processing (e:g: coated wire), this document can be used as a guide: NOTE

3 In some countries, national regulations for installation rules allow different cross-sectional areas: For internal wiring (inside the enclosure), other regulations or product standards apply:

Note 4: IEC 60947-7-1:2009 applies only to the connection of copper conductors:

Note 5: In the United States, UL1059 applies; in Canada, CSAC22:2No:158 applies: When referencing IEC 60947-1:2020, the term "clamp" is used in this document instead of "terminal":

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 2423:1-2008 Environmental testing for electric and electronic products Part 2: Test methods Test A: Low temperature (IEC 60068-2- 1:2007,IDT)

GB/T 2423:2-2008 Environmental testing for electric and electronic products Part 2: Test methods Test B: High temperature (IEC 60068-2- 2:2007,IDT)

GB/T 2423:3-2016 Environmental testing Part 2: Test method Test Cab: Steady state damp heat test (IEC 60068-2-