



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

GB/T 21413.2-2021

**Railway applications - Electric equipment for rolling stock - Part
2: Electrotechnical components - General rules**

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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 of Standardization Documents"

drafted:

This document is part 2 of GB/T 21413 "Electrical Equipment for Rail Transit Rolling Stocks": GB/T 21413 has been published with

Lower part:

- Part 1: General Conditions of Use and General Rules;
- Part 2: General rules for electrical devices;
- Part 3: Rules for DC circuit breakers for electrical devices;
- Part 4: Rules for AC circuit breakers for electrical devices;
- Part 5: Rules for high-voltage fuses for electrical devices;

This document replaces GB/T 21413:2-2008 "Electrical equipment of rolling stock for railway applications - Part 2: General regulations for electrical devices

Compared with GB/T 21413:2-2008, in addition to structural adjustment and editorial changes, the main technical changes are as follows:

- a) Changed the scope of application of the document (see Chapter 1, Chapter 1 of the:2008 edition);
 - b) Added the term "mechanical switchgear" and its definition (see 3:1:8);
 - c) Deleted the terms "sequence of operation", "surge arrester" and "applied voltage" and their definitions (see 3:3:3, 3:1:11 and:2008 edition)
- 3:3:17);
- d) Added abbreviations (see Chapter 4);

- e) Changed the symbol of rated voltage, the symbol of rated current and the definition of conventional thermal current, the symbol of time constant (see Chapter 6, Chapter 5 of the:2008 edition);
- f) Changed the notation of parameters (see Chapter 7, Chapter 6 of the:2008 edition);
- g) Changed the title "shield ground terminal" to "protective ground terminal", and changed the note to the main text (see 9:1:3, 8:1:2 of the:2008 edition);
- h) Changed the ambient temperature requirements (see 9:2:1, 8:2:1 of the:2008 edition);
- i) Changed "temperature rise" to "temperature limit" (see 9:2:2, 8:2:2 of the:2008 edition);
- j) Changed "Ta" to "Tr" (see Table 2, Table 2 of the:2008 edition);
- k) Changed "dielectric characteristics" to "clearance" (see 9:2:6, 8:2:6 of the:2008 edition);
- l) The requirements for creepage distances are added (see 9:2:7);
- m) Changed "switching overvoltage" to "operating overvoltage" and changed the peak arc voltage requirement (see 9:2:8, :2008 edition)
- 8:2:7);
- n) Changed the requirements for short-time withstand current capability (see 9:2:11, 8:2:10 of the:2008 edition);
- o) Modified the contents of "Test Sequence" and "Test Item" in the Test Sequence List and added "Corresponding Clause" (see Table 7, :2008):
edition of Table 7);
- p) deleted I_{2t} (see Table 8 of the:2008 edition);
- q) The requirements for the measurement of circuit resistance are added (see 10:3:3:3);
- r) Added test sequence II: rated making and breaking capacity (see 10:3:4);
- s) Changed the test requirements (see 10:3:5, 10:3:6 and 10:3:8, 9:3:4, 9:3:5 and 9:3:7 of the:2008 edition);
- t) Changed the climatic condition test (see 10:3:7, 9:3:6 of the:2008 edition);
- u) Changed the general requirements for factory inspection (see 10:4:1, 9:4:1 of the:2008 edition);
- v) Changed the title "Mechanical Properties" to "Functional Test", and revised the description of the relevant content (see 10:4:2, 9:4:2 of the:2008 edition);
- w) Changed the relationship between auxiliary contacts and switchgear steady state (see Appendix A, Appendix A of the:2008 edition):

This document uses the redrafted method to modify and adopt IEC 60077-2:2017
"Electrical equipment of rail transit rolling stock Part 2: Electrical

General Rules for Industrial Devices:

Compared with IEC 60077-2:2017, this document has made the following structural adjustments:

- Delete 3:1:2 and then adjust the terms and item numbers in sequence;
- Chapter 4 corresponds to 3:4 in IEC 60077-2:2017;
- Chapter 5 corresponds to Chapter 4 in IEC 60077-2:2017, and subsequent chapters are adjusted in order;
- Deleted 6:1:2:1 in IEC 60077-2:2017;
- 7:1:2:1 corresponds to 6:1:2:2 in IEC 60077-2:2017;
- 7:1:2:2 corresponds to 6:1:2:3 in IEC 60077-2:2017:

This document has many technical differences compared with IEC 60077-2:2017:

A straight single line (I) is marked: These technical differences and their reasons are as follows:

--- Regarding normative reference documents, this document has made adjustments with technical differences to adapt to the technical conditions of our country and the circumstances of the adjustment:

The situation is reflected in Chapter 2 "Normative References", and the specific adjustments are as follows:

- * Replace IEC 60068-2-1 (see 10:3:7) with GB/T 2423:1 equivalent to international standards;
- * Replace IEC 60068-2-2 with GB/T 2423:2 which is equivalent to adopting international standards (see 10:3:7);
- * Replace IEC 60068-2-78 (see 10:3:7) with GB/T 2423:3 equivalent to international standards;
- * Replace IEC 60068-2-30 (see 10:3:7) with GB/T 2423:4 which is equivalent to the international standard;
- * Replace IEC 60068-2-52 (see 10:3:7) with GB/T 2423:18 which is equivalent to the international standard;
- * Replacing IEC 60529 with GB/T 4208 modified to adopt international standards (see Chapter 5, 7:1:2:2);

* Replace IEC 60417 with GB/T 5465:2-2008 which is equivalent to adopting international standards (see 7:2);

* Replace IEC 60077-1:2017 with GB/T 21413:1-2018 modified to adopt international standards (see Chapter 3, 6:3:2,

6:6:3, 6:6, 6:7, 7:1:2:2, 7:3, Chapter 8, 9:1:1, 9:1:3, 9:2, 10:1, 10:2, 10:3:3:2, 10:3:3:4, 10:3:3:5,

10:3:3:7, 10:3:3:8, 10:3:5:2, 10:3:5:3, 10:3:7, 10:3:8:2, 10:3:8:3, 10:8:3:3, 10:4:2, 10:4:3,

10:4:4, 10:4:5, 10:4:6);

* Replace IEC /T R60943 with GB/T 25840 equivalent to international standards (see 9:1:2, 9:2:2);

* Added references to GB/T 2900:18 and GB/T 2900:36-2021 (see Chapter 3):

--- Changed the test sequence list, added the measurement item of circuit resistance in sequence I, and changed the mechanical performance verification of sequence III as a function

can be verified to conform to my country's national conditions (see Table 7):

--- Changed the general requirements for factory inspection to conform to my country's national conditions (see 10:4:1):

The following editorial changes have been made to this document:

--- Changed the description format of paragraphs 1 and 2 of the scope of Chapter 1 to comply with the provisions of GB/T 1:1-2020;

--- Deleted the contents of ISO and IEC databases (see Chapter 3);

--- Changed the content of the term "active electrical device" Note (see 3:1:1);

--- Delete Note 2 of the term "contactor", Note 1 of "(Mechanical switchgear) disconnection position" and "(Mechanical switchgear) disconnection

Time" Note 2 (see 3:1:11, 3:3:5, 3:3:18);

--- Deleted the note on "frequency of work" (see 5:4);

--- Deleted Note 2 of the "Device Category" chapter (see 5:5);

--- Added a reference to Appendix A in the text (see 6:9);

--- Changed the description of work performance, and changed Note 1 and Note 2 in Table 3 to Table 6 to the text (see 9:2:9);

--- Delete the note in Table 8;

--- Changed references: