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

GB/T 21413.3-2023

Replacing GB/T 21413.3-2008

**Railway applications - Electric equipment for rolling stock - Part
3: Electrotechnical components - Rules for DC circuit-breakers**

轨道交通 机车车辆电气设备 第3部分：电工器件 直流断路器规则

(English Translation)

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Table of Contents

Introduction	
1 Scope	
2 Normative references	
3 Terms and Definitions	
3.1 Device	
3.2 Electrical components	
3.3 Operating characteristics	
3.4 Breaking characteristics	
4 Categories	
5 Features	
5.1 Feature List	
5.2 Circuit breaker type	
5.3 Main circuit ratings and limit values	
5.4 Working frequency	
5.5 Electrical control circuit and pneumatic control loop	
5.6 Electrical auxiliary circuit and pneumatic auxiliary circuit	
5.7 Overcurrent release	
5.8 Peak arc voltage	
6 Product Information	
7 General conditions of use	
8 Structural and performance requirements	
8.1 Structural requirements	
8.2 Functional requirements	
8.3 Performance requirements	
9 Inspection	10
9.1 Inspection classification	
9.2 Verification of structural requirements	10
9.3 Type inspection to verify performance requirements	11
9.4 Factory inspection to verify performance requirements	16
Appendix A (informative) Short-circuit making and breaking capability verification	17
Appendix B (normative) Making and breaking capacity test circuit	
Reference	

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 3 of GB/T 21413 "Electrical Equipment for Rail Transit Rolling Stocks": GB/T 21413 has been released 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 equipment:

This document replaces GB/T 21413.3-2008 "Electrical equipment for rolling stock for railway applications - Part 3: DC circuit breaker for electrical devices "Router Rules", compared with GB/T 21413.3-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Changes in terms and definitions (see Chapter 3, Chapter 3 of the:2008 edition);
- b) The classification has been changed (see Chapter 4, Chapter 4 of the:2008 edition);
- c) The general rules for main circuit ratings and limit values have been changed (see 5.3:1, 5:3:1 of the:2008 edition);
- d) The symbol of the rated voltage has been changed (see 5.3:2, 5:3:2 of the:2008 edition);
- e) The regulations on rated current have been changed (see 5.3:3, 5:3:3 of the:2008 edition);
- f) The rated short-circuit making and breaking capabilities have been changed (see 5.3:5, 5:3:5 of the:2008 edition);
- g) Product information has been changed (see Chapter 6, Chapter 6 of the:2008 edition);
- h) Added functional requirements (see 8.2);
- i) In the performance requirements, "temperature rise" is changed to "temperature limit" and "dielectric properties" are changed to "electrical clearance" and "creepage distance" (see 8.3:2, 8:3:7, 8:3:8, 8:2:2, 8:2:6 of the:2008 version);
- j) Changed the work performance requirements (see 8.3:10, 8:2:8 of the:2008 version);
- k) Changed the trip unit current setting value requirements (see 8.3:3, 9:3:3:7, 9:3:4:8, 9:3:5:4, 9:4:3 of the:2008 edition);

- l) Added critical current requirements (see 8.3:4);
- m) The requirements for making and breaking capabilities under short circuit conditions have been changed (see 8.3:12, 8:2:10 of the:2008 edition);
- n) Noise requirements and noise test items are deleted (see 8.2:5, Table 3 and 9:3:8 of the:2008 edition);
- o) The factory inspection items for verification of structural requirements have been changed (see 9.2:3, 9:2:3 of the:2008 version);
- p) Changed the type inspection and factory inspection sequence for performance requirement verification (see 9.3:1, 9:4:1, :2008 version of 9:3:1, 9:4:1);
- q) Changed the test tolerance under short circuit conditions (see Table 4, Table 4 of the:2008 edition);
- r) Changed the test methods for working limits, dielectric properties, and temperature rise verification (see 9.3:3:2, 9:3:3:5, 9:3:3:8, :2008 edition 9:3:3:1, 9:3:3:3, 9:3:3:6);
- s) Added circuit resistance measurement method (see 9.3:3:3, 9:3:4:2, 9:4:3);
- t) Added the requirement that "the di/dt value of the test circuit calibration should be recorded in the test report" (see 9.3:4:3:2);
- u) The impact and vibration test methods have been changed (see 9.3:5, :2008 version of 9:3:5);
- v) The test method for critical current determination has been changed (see 9.3:6, :2008 version of 9:3:6):

This document is modified to adopt IEC 60077-3:2019 "Electrical equipment for rail transit rolling stock - Part 3: DC circuit breaker for electrical devices Router Rules:

Compared with IEC 60077-3:2019, this document has made the following structural adjustments:

---Added functional requirements (8:2), and subsequent chapters will be adjusted accordingly;

---Integrate the requirements for trip unit calibration in IEC 60077-3:2019 9:3:3:9, 9:3:4:10, 9:3:5:5, and 9:4:4 into 8:3:3, later the serial number of the continuation chapter will be adjusted accordingly;

---Replaced the positions of Appendix A and Appendix B in the order they appear in the text:

The technical differences between this document and IEC 60077-3:2019 and their reasons are as follows:

---Replaced IEC 60529 (see Chapter 4) with the normatively cited GB/T 4208, and the degree of consistency between the two documents is equal the same, in order to adapt to my country's technical conditions;

---Deleted abbreviations because they do not appear in the text;

---Change the time constant symbol T to tau (see Table 1, Table 3, 9:3:4:3:5, 9:3:4:4~9:3:4:7, 9:3:6, Figure A:1), and GB/T 21413.2-2021 unified;

--- Added functional requirements (see 8.2) as a criterion for functional verification;

---Replaced IEC 61373 with normative reference GB/T 21563-2018 (see 9:3:5:2, 9:3:5:3), the two documents are consistent the degree of flexibility is modified to adapt to my country's technical conditions;

---Added the test magnitude of the vibration test and the test requirements when the installation method of the tested equipment is unknown (see 9:3:5:2) to meet the needs of our country Practical application requirements;

---Added the test magnitude during the impact test and the test requirements when the installation method of the equipment under test is unknown (see 9:3:5:3) to meet our requirements the actual application needs of the country;

---Added the requirement that the circuit resistance value should be provided in the product information (see 6.1): The circuit resistance value is used to determine the contact status of the main contacts of the circuit breaker:

The key parameters of the state are used as the criterion for circuit resistance measurement;

---Deleted the noise-related requirements (see 8.2:5, 9:3:8, Table 3 of IEC 60077-3:2019), because the noise test is in IEC 60077-3:

It is optional in:2019, and in actual applications in my country, the background noise when the circuit breaker is working is much higher than the circuit breaker itself:

noise:

The following editorial changes have been made to this document:

---Deleted the annotated content in Chapter 1;

---Deleted the explanatory description of circuit breaker classification in Chapter 4;

---Added clauses corresponding to the technical requirements in Table 3;

---References changed:

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