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

GB/T 34575-2023

**Railway applications - Converter equipment on board rolling
stock - Auxiliary converters for locomotives and multiple units**

轨道交通 机车车辆变流设备 机车、动车组辅助变流器

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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 replaces GB/T 34575-2017 "Auxiliary Converter for Electric Locomotives": Compared with GB/T 34575-2017, except for structural adjustments In addition to editorial changes, the main technical changes are as follows:

- a) Changed the scope of application (see Chapter 1, Chapter 1 of the:2017 edition);
- b) Changes in terms and definitions (see Chapter 3, Chapter 3 of the:2017 edition);
- c) Changed environmental conditions (see Chapter 4, Chapter 4 of the:2017 edition);
- d) Added product forms (see Chapter 5);
- e) Changed the auxiliary converter division mode according to the input voltage form (see 6:1:1, 5:1:1 of the:2017 version);
- f) Changed the output characteristic parameters (see 6:2, 5:2 of the:2017 version);
- g) The control power supply characteristic parameters have been changed (see 6:3, 5:3 of the:2017 edition);
- h) Changed the general requirements (see 7:1, 6:1 of the:2017 version);
- i) The insulation performance requirements have been changed (see 7:2, 6:2 of the:2017 edition);
- j) Added control method requirements (see 7:3);

- k) Changed the cooling performance requirements (see 7:5, 6:4 of the:2017 version);
- l) Protection requirements have been changed (see 7:6, 6:5 of the:2017 version);
- m) Changed the temperature rise requirements (see 7:8, 6:7 of the:2017 version);

1 Scope

China's national standard for the auxiliary converters carried on electric locomotives, electric multiple units and diesel locomotives. It specifies the environmental conditions, the product forms, the main parameters, the technical requirements, the inspection rules and the marking, packaging, transport and storage. The traction converter drives the train; the auxiliary converter runs everything else. It takes power from the catenary or the diesel alternator and produces the supplies the vehicle needs internally: three-phase for the traction cooling blowers and compressors, single-phase for the air conditioning and the catering equipment, low voltage direct current for the control electronics, and the battery charging that keeps the train alive when the line is dead. That makes it less glamorous than the traction chain and no less critical. A train whose auxiliary converter fails cannot cool its traction equipment, cannot compress air for its brakes and cannot keep its passengers ventilated, so it stops just as surely as one that has lost traction power.

This document specifies the environmental conditions, product forms, main parameters, and technical requirements for auxiliary converters for electric locomotives, electric multiple units, and diesel locomotives: Requirements, inspection rules, marking, packaging, transportation and storage: This document describes the testing of auxiliary converters for electric locomotives, electric multiple units and diesel locomotives: method: This document applies to the design, manufacture, acceptance and use of auxiliary converters installed on electric locomotives, electric multiple units and diesel locomotives: The auxiliary converters of other locomotives or EMUs shall be implemented accordingly:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 1402 Rail transit traction power supply system voltage

GB/T 2423:1-2008 Environmental testing of electrical and electronic products Part 2: Test methods Test A: Low temperature

GB/T 2423:2-2008 Environmental testing of electrical and electronic products Part 2: Test methods Test B: High temperature

GB/T 2423:4-2008 Environmental testing of electrical and electronic products Part 2: Test methods Test Db: Alternating damp heat (12h 12h cycle) GB/T 2423:

17 Environmental testing of electrical and electronic products Part 2: Test methods Test Ka: Salt spray GB/T 2900:

32 Electrical terminology power semiconductor devices GB/T 2900:

33 Electrical Terminology Power Electronics Technology

GB/T 4208-2017 Shell protection level (IP code)

GB/T 21413:1-2018 Electrical equipment for rail transit rolling stock Part 1: General conditions of use and general rules

GB/T 21414-2021 Regulations on the protection of electrical hazards in rail transit rolling stock

GB/T 21563-2018 Impact and vibration test of rail transit rolling stock equipment GB/T 24338:

3 Terms and definitions

GB/T 2900:32, GB/T 2900:33, GB/T 32350:1 and GB/T 25122:1-2018 as well as the following terms and definitions

4 Rail transit electromagnetic compatibility Part 3-2: Rolling stock equipment

GB/T 25119-2021 Electronic devices for rail transit rolling stock

GB/T 25122:1-2018 Power converters for rail transit rolling stock Part 1: Characteristics and test methods GB/T 25122:

3 Power converters for rail transit rolling stock Part 3: Locomotive traction converters GB/T 25122:

4 Power converters for rail transit rolling stock Part 4: Traction converters for electric multiple units

GB/T 32347:1-2015 Environmental conditions for rail transit equipment Part 1: Locomotive and rolling stock equipment GB/T 32350:

1 Rail transit insulation coordination Part 1: Basic requirements for electrical clearance and creepage of electrical and electronic equipment distance

GB/T 34571 Rail transit rolling stock wiring rules