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

GB/T 25122.1-2018

Replacing GB/T 25122.1-2010

**Railway applications -- Power converters installed on board
rolling stock -- Part 1: Characteristics and test methods**

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Foreword

GB/T 25122 "Power converter for rail transit vehicles" is divided into five parts.

- Part 1. Characteristics and test methods;
- Part 2. Supplementary technical information;
- Part 3. Locomotive traction converters;
- Part 4. Electric vehicle unit traction converter;
- Part 5. Urban rail vehicle traction converter.

This part is the first part of GB/T 25122.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 25122.1-2010 "Power converters for rail transit vehicles - Part 1. Characteristics and test methods

law". Compared with GB/T 25122.1-2010, the main technical changes are as follows.

- Revised the scope of application (see Chapter 1, Chapter 1 of the.2010 edition);
 - Modified normative references, such as GB/T 311.1, GB/T 25123.4, GB/T 32347.1 and GB/T 32350.1, deleted GB/T 19001-2000 (see Chapter 2, Chapter 2 of the.2010 edition);
 - Modified terms and definitions. Add 5 terms and definitions, delete 21 terms and definitions, and carry out the remaining terms and definitions.
- Corresponding adjustments (see Chapter 3, Chapter 3 of the.2010 edition);
- Revised the requirements for nameplate information (see 4.1.2.1, 4.1.2.1 of the.2010 edition);
 - Removed the reliability calculation method and the agreed service life of the converter at the time of bidding (see 4.1.4.1 of the.2010 edition, 4.1.5);

- Revised the requirements for use conditions (see 4.2, version 4.2 of.2010);
- Removed restrictions on parking in the library (see version 4.2.3.2 of.2010);
- Modified the requirements of the main characteristics of DC network voltage (see 4.2.7.3.1, 4.2.7.3.1 of.2010 edition);
- Modified the compatibility of converters, rolling stock and power supply systems (see 4.2.8,.2010 version 4.2.8);
- Revised the detailed requirements of the rail transit operation department for signal system interference (see 4.2.8.4,.2010 edition 4.2.8.4);
- Increased the requirement for a noise test distance of 1 m (see 4.2.10.1);
- Modified the main body of the noise level of the converter when loading (see 4.2.10.1,.2010 edition of 4.2.10.1);
- Revised the quality system requirements (see 4.3.1.2, 4.3.1.2 of the.2010 edition);
- Modified converter test items. if increased visual inspection, marking inspection, leakage test, dielectric strength test, insulation resistance test

Inspection and light load test as type inspection items; removal of air filter effectiveness inspection items and methods; partial discharge test

The quantity test was moved to the component test and the content of 60Hz was added; the network voltage jump test and the short-term power supply interruption test were modified.

Selection test; (see Table 3, 4.5.3.20, 4.5.3.21, 4.5.2.2.2,.2010 edition of Table 3, 4.5.3.5.4, 4.5.3.17, 4.5.3.21

4.5.3.22);

- Removed all test items from the test site requirements (see Table 3 to Table 6 of the.2010 edition); power loss measurement method, clear

Converters not suitable for this method (see 4.5.3.14, 4.5.3.12 of.2010 edition);

- Modified the short-term interruption test method of power supply, which can be replaced by calculation (see 4.5.3.21, 4.5.3.22 of.2010 edition);

- Revised the dielectric strength test, insulation resistance test content (see 4.5.3.7, 4.5.3.8, 4.5.3.16, 4.5.3.15 of the.2010 edition);

- Modified the temperature rise test method, such as adding indirect temperature measurement, and enumerating the typical way of direct measurement (see 4.5.3.13,

4.5.3.11 of the.2010 edition);

- Modified motor and converter interface requirements (see 5.1.2, 5.1.1 of the.2010

edition);

--- Added light load test as a requirement for DC motor chopper type inspection items (see Table 5);

--- Revised the characteristics of the multiphase converter (inverter) for AC motors (see 5.3.2.1, 5.3.1 of 2010 edition);

--- Modified the auxiliary converter output characteristics requirements (see 7.2.3, 2010 version 7.1.3);

--- Removed Appendix C ~ Appendix G (see Appendix C ~ Appendix G of the 2010 edition);

--- Revised guidelines for magnetic field and induced voltage requirements (see Appendix C, Appendix H of the 2010 edition).

This section uses the redrafting method to modify the use of IEC 61287-1:2014 "rail power locomotive power converters for the first part

Points. Characteristics and Test Methods.

There are technical differences between this part and IEC 61287-1:2014. The terms involved in these differences have been passed on the outside margins.

The vertical single line (-) of the position is marked. The technical differences between this part and IEC 61287-1:2014 and their reasons are as follows.

--- Normative references are replaced by Chinese standards using international standards;

--- In IEC 61287-1:2014, when the dielectric test is repeated, the test voltage is 80% of the initial test voltage value, due to

The basic standard GB/T 21413.1-2008 is 85%, as the product standard requirements should at least be equal to the basic requirements, so

This standard was changed to 85%;

--- Because the test site and the choice of the test project are not necessarily related, can be determined by the user and the manufacturer, so delete the table 3~

Table 6 requirements for test sites;

--- Considering the comprehensiveness of the type test and the authority of the type test report, visual inspection, mark inspection, and venting are added in Table 3.

Dew test, dielectric strength test, insulation resistance test, light load test as type inspection items; light load test is added in Table 5

For type inspection projects;

--- Insulation resistance test is changed to factory inspection, and is not determined by both

parties.

---IEC 61287-1.2014 cited in Tables A.9 and A.10 of IEC 62497-1.2013 due to

GB/T 32350.1-2015 does not exist, so directly quoted the specified altitude correction coefficient GB/T 16935.1-2008

Table A.2 and Appendix B of GB/T 311.1-2012;

--- Delete all the contents of 8.1 of IEC 61287-1.2014 which are not applicable in China, and adjust the numbers of other chapters in Chapter 8 accordingly.

The numbering methods of 8.4.1, 8.4.2 and 8.4.3 in IEC 61287-1.2014 are not used.

For ease of use, the following editorial changes have been made in this section.

--- Added a note to the railway authorities in charge of the approval of the city rail operator in 3.1.3;

--- Removed the words "at the time of bidding" in 4.1.4.1 (reliability calculation method) and 4.1.5 (lifetime) of IEC 61287-1.2014

To avoid involving business;

--- For IEC 61287-1.2014, the description of the relevant test requirements after the acceptance criteria are adjusted before the acceptance criteria;

--- Removed the description of the independent line in the IEC standard that a test is type inspection and/or factory inspection, reflected in Table 3~

In Table 6, the corresponding chapter number is adjusted;

--- Removed IEC 60050-702.1992 from the reference.

1 Scope

This part of GB/T 25122 specifies the terms and definitions, conditions of use, general characteristics and inspection of power converters for rolling stock.

method.

This section applies to the power supply for the traction circuits and auxiliary circuits (power vehicles, buses and trailers) of rail vehicles.

Streamer.

This section can also be applied to power converters of other traction vehicles (such as trolley buses, etc.).

This section applies to complete converter units and their configuration, including.

---Semiconductor device components;