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

GB/T 25122.4-2018

**Railway applications - Power converters installed on board
rolling stock - Part 4: Traction converters for electric multiple
units**

轨道交通 机车车辆用电力变流器 第4部分：电动车组牵引变流器

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Conditions of use	2
5 System Composition 2 6 main parameters	3
7 Technical requirements	4
8 Test method	7
9 Inspection rules	8
10 Marking, packaging, transport and storage	10

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 fourth part of GB/T 25122.

This part is drafted in accordance with the rules given in GB/T 1.1-2009. Please note that some of the contents of this document may involve patents. The issuing organization of this document is not responsible for identifying these patents. This part is proposed by the National Railway Administration. This part is under the jurisdiction of the National Traction Electrical Equipment and Systems Standardization Technical Committee (SAC/TC278). This section is responsible for drafting the unit. CRRC Zhuzhou Electric Locomotive Research Institute Co., Ltd. Participated in the drafting of this section. China Railway Research Institute Locomotive and Rolling Stock Institute, CRRC Yongji Motor Co., Ltd., CRRC Qingdao IV Fangqi Research Institute Co., Ltd., CRRC Qingdao Sifang Locomotive & Rolling Stock Co., Ltd. The main drafters of this section. Feng Jianghua, Liu Da. Participated in the drafting of this section. Wu Qiang, Song Shuquan, Guan Junqing, Cao Hu, Wu Donghua. Power converter for rail transit vehicles Part 4. Electric vehicle traction converter

1 Scope

China's national standard for the traction converters fitted to electric multiple units. It is Part 4 of GB/T 25122 and specifies the service conditions, the technical requirements, the type tests and the routine tests for EMU traction converters. An electric multiple unit distributes its traction across the train instead of concentrating it in a locomotive, and that single architectural difference changes what the converter has to be. Because several vehicles are powered, each converter is smaller than a locomotive's - but there are several of them, they must share the load without fighting each other, and the train must continue to run with one isolated, which makes the redundancy behaviour a requirement rather than a bonus. Because the traction is spread over more axles, the available adhesion is far greater, which is what lets a high-speed EMU accelerate as it does and is the reason the architecture won. Because the converters sit under passenger vehicles rather than in a locomotive body, the space and weight are constrained, the noise limits are those of a vehicle people sit in, and the cooling air path has to work without drawing debris from the track at speed. And because a high-speed unit runs at three hundred kilometres an hour, the mechanical environment, the aerodynamic effects on cooling and the electromagnetic compatibility with lineside signalling are all more severe than for a locomotive. So this part specifies the electrical ratings and supply variation, the output characteristics and the control including the coordination between multiple converters, the protection, the insulation coordination, the cooling, the electromagnetic compatibility, the environmental conditions of an underfloor installation, and the test programme. Issued on 28 December 2018 and in force since 1 July 2019.

This part of GB/T 25122 specifies the operating conditions, system components, main parameters and technical requirements of the traction converter for electric vehicle sets. Inspection methods, inspection rules, marking, packaging, transportation and storage. This section applies to electric vehicle traction transducers (hereinafter referred to as converters), other similar uses of traction converters can be implemented. This section does not apply to traction converters for urban rail vehicles.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 1402-2010 rail traffic traction power supply system voltage

GB/T 2423.1-2008 Environmental testing of electric 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 heat (12h) 12h cycle)

GB/T 2423.17 Environmental testing of electric and electronic products - Part 2. Test method test Ka. salt spray

GB/T 2900.32 Electrotechnical terminology power semiconductor device

GB/T 2900.33 Electrotechnical terminology power electronics technology

GB/T 4208-2017 enclosure protection grade (IP code)

GB/T 21413.1-2008 Railway applications -- Electrical equipment for rolling stock -- Part 1 . General conditions and general rules

GB/T 21414 Regulations for the protection of electrical hazards in railway applications

GB/T 21563-2018 Impact and vibration test of rail transit locomotive equipment

GB/T 24338.4-2018 Electromagnetic compatibility of rail transit - Part 3-2. Equipment for rolling stock

GB/T 25119-2010 rail transit rolling stock electronic device

3 Terms and definitions

The following terms and definitions as defined in GB/T 2900.32, GB/T 2900.33, GB/T 25122.1-2018 apply to this document.