

ICS 45.060
CCS S 35



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

GB/T 46532-2025

**Energy measurement devices on board urban rail transit
vehicles**

城市轨道交通车载电能计量装置

Issued on: October 31, 2025

Implemented on: May 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1.Scope	1
2 Normative References	1
3.Terms and Definitions	1
4.Usage conditions	2
4.1 Environmental Conditions	2
4.2 Power Requirements	3
5.Device Composition and Requirements	3
5.1 Device Composition	3
5.2 Equipment Requirements	3
6.Technical Requirements	4
7.1 Inspection of appearance and installation dimensions	7
7.2 Performance Tests	7
7.3 Power Supply Overvoltage Test	7
7.4 Power and Power Supply Efficiency Test	7
7.5 Low Temperature Test	7
7.6 High Temperature Test	7
7.7 Alternating Damp Heat Test	7
7.8 Salt spray test	7
7.9 Fire resistance performance test	7
7.10 Electromagnetic Compatibility Test	8
7.11 Insulation Test	8
7.12 Shock and vibration tests	8
7.13 Protection Level Test	8
7.14 No-load condition test	8
7.15 Start-up Condition Test	8
7.16 Clock timing error test	9
7.17 Sensor Response Time Test	9
7.18 Positioning Error Test	9
7.19 Communication Experiment	9
7.20 Accuracy Test	9
7.21 Low-temperature storage test	11
8.Inspection Rule	11

8.1 Inspection Classification	11
8.2 Type Testing.....	11
8.3 Factory Inspection	11
8.4 Inspection Item	12
9. Marking, Packaging, Transportation and Storage	13
9.1 Mark	13
9.2 Packaging	13
17 References	24

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. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the Ministry of Housing and Urban-Rural Development of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee on Standardization of Urban Rail Transit (SAC/TC290). This document was drafted by: Shanghai Shentong Metro Group Co., Ltd., CRRC Zhuzhou Times Electric Co., Ltd., and Suzhou Wansong Electric Co., Ltd. Limited Liability Company, Shenzhen Metro Group Co., Ltd., Changsha Tianheng Measurement & Control Co., Ltd., Beijing Transportation Development Research Institute, CRRC Changchun Railway Vehicles Co., Ltd. Bus Co., Ltd., Beijing Subway Operation Co., Ltd., Fuzhou Rail Transit Electrification Technology Co., Ltd., China National Institute of Metrology Beijing Jiaotong University. The main drafters of this document are: Wang Shenghua, Zhou Qiaolian, Deng Qi, Zhang Yi, Zhou Yuan, Chen Jia, Zheng Xiaobin, Jin Biyun, Zhou Jiong, Ding Yaqi, and Wu Zhengchen. Liu Yongjiang, Chen Jielian, Hong Zhenhai, Xing Endong, Jia Guangqing, Xiao Zihong, Li Xi, Chen Wenzhi, Shao Haiming, Shu Ziqi, Yu Chaoran, Zhao Peng, Cheng Ying He Weinan, Xiao Fangying, Bai Yun, Huo Miaomiao, Xun Jing, Zhang Xin, Wang Jiafu. Urban rail transit vehicle on-board power metering device

1 Scope

GB/T 46532-2025 is the Chinese national standard covering metering the electricity a train draws and returns - the accuracy class on a DC supply with a badly distorted current, the regenerative energy fed back that has to be counted separately, and the data recording that settles the traction bill. First edition, under the Ministry of Housing and Urban-Rural Development. In force from 1 May 2026. Issued on 31 October 2025, it has been in force

since 1 May 2026.

This document specifies the usage conditions, device composition and requirements, technical requirements, and testing methods for onboard energy metering devices in urban rail transit vehicles. Laws, inspection rules, marking, packaging, transportation and storage. This document applies to the design, manufacture, and inspection of onboard power metering devices for urban rail transit vehicles with DC power supply systems.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 191 Pictorial Symbols for Packaging and Storage

GB/T 1402 Voltage of Traction Power Supply System for Rail Transit

GB/T 4208-2017 Degrees of protection provided by enclosures (IP code)

GB/T 13384 General Technical Requirements for Packaging of Mechanical and Electrical Products

GB/T 21413.1 Electrical equipment for rail transit locomotives and rolling stock - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Traction input energy The train traction system obtains electrical energy from the overhead contact line or contact rail.

4 Ethernet Assembly Network (ECN)

GB/T 32347.1 Environmental conditions for rail transit equipment - Part