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

GB/T 44639.5-2024

**Railway applications - Energy measurement on board trains -
Part 5: Conformance test
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document is part 5 of GB/T 44639 "Electric Energy Measurement System for Rail Transit Trains". GB/T 44639 has been published in Lower part.

--Part 1: General;

--Part 2: Electrical energy measurement;

--Part 3: Data processing;

--Part 4: Communications;

--Part 5: Conformance testing;

--Part 6: Requirements other than billing.

This document is modified to adopt IEC 62888-5:2018 "Rail transit train power measurement system Part 5: Conformance test".

The technical differences between this document and IEC 62888-5:2018 and their reasons are as follows.

--Changed the test method requirements for visual inspection (see 5.3.3.2, 5.5.4.2 and 5.6.3.2, IEC 62888-5:2018 5.3.3.2, 5.5.4.2 and 5.6.3.2) to adapt to my country's technical conditions;

--Changed the power-off test method for integrated type inspection (see 5.3.3.4, 5.3.3.4 of IEC 62888-5:2018), added "power-off the test requirement of "power on again after a period of time" is implemented to adapt to my country's technical conditions.

Introduction

Energy efficiency is essential to meet the challenges of supporting energy policies, protecting the environment and conserving natural resources.

Energy efficiency, especially the standardization of overall energy efficiency of rail transit vehicles, has attracted great attention from the rail transit industry, and relevant standards are being gradually the main contents include the definition and boundary of energy efficiency, influencing factors, test methods, etc. GB/T 44639 "Electric Power Efficiency of Rail Transit Trains" the Energy Measurement System is designed to standardize the process of acquiring train power data and ensure the reliability of the data. It is planned to consist of six parts.

--Part 1: General. The purpose is to specify the system-level requirements for energy measurement systems and to implement one or more General requirements for equipment with multiple functions.

-- Part 2: Electric energy measurement. The purpose is to specify the requirements for electric energy measurement functions for measuring the electric energy consumed and regenerated by traction units.

And the requirements for the voltage measurement function, current measurement function and electric energy calculation function that constitute the electric energy measurement function.

--Part 3: Data processing. The purpose is to specify the data processing system and ground data collection service in the electric energy measurement system requirements.

--Part 4: Communications. The purpose is to specify the requirements for on-board data communication services and vehicle-to-ground communication services of the energy measurement system.

These communication services enable data to be transferred between functions within the energy measurement system, between the energy measurement system and other on-board units, Exchange between the data processing system and the ground server.

--Part 5: Conformance test. The purpose is to specify the conformance test of new energy measurement systems installed on traction units.

Arrangements, and conformance testing procedures for replacement of equipment and auxiliary components.

-- Part 6: Requirements other than billing. The purpose is to clarify the requirements for energy consumption benchmarking, daily energy consumption monitoring, and technology research and development.

Able to measure the specific requirements of the system.

The functional structure, main sub-functions and data flow of the train energy measurement system (EMS) are shown in Figure 1.

Figure 1 Schematic diagram of EMS functional structure and data flow

Rail transit train power measurement system Part 5: Conformance testing

1 Scope

This document specifies the conformance tests for newly built Energy Measurement Systems (EMS) installed on traction units, including integrated conformance tests.

and installation conformity testing; also specifies equipment and auxiliary component replacement (e.g. due to damage in service) and periodic inspections to verify the EMS Conformance testing is still valid for the conformance testing procedure.

This document applies to Class 1 electrical energy measurement systems.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 25119-2021 Rail transit rolling stock electronic devices (IEC 60571:2012, MOD) Note.

There is no technical difference between the referenced content of GB/T 25119-2021 and the referenced content of IEC 60571:2012.

GB/T 44639.1-2024 Rail transit train power measurement system Part 1: General (IEC 62888-1.:2018, MOD) Note. There is no technical difference between the content cited in GB/T 44639.1-2024 and the content cited in IEC 62888-1:2018.

GB/T 44639.2-2024 Rail transit train power measurement system Part 2: Power measurement (IEC 62888-2.:2018, MOD) Note. There is no technical difference between the content cited in GB/T 44639.2-2024 and the content cited in IEC 62888-2:2018.

GB/T 44639.3-2024 Rail transit train power measurement system Part 3: Data processing (IEC 62888-3:2018, MOD) Note. There is no technical difference between the content cited in GB/T 44639.3-2024 and the content cited in IEC 62888-3:2018.

GB/T 44639.4-2024 Rail transit train power measurement system Part 4: Communication (IEC 62888-4:2018, MOD) Note. There is no technical difference between the content cited in GB/T 44639.4-2024 and the content cited in IEC 62888-4:2018.

GB/T 44639.6-2024 Rail transit train energy measurement system Part 6: Requirements other than billing (IEC 62888-6.

2018, MOD)

Note: There is no technical difference between the content cited in GB/T 44639.6-2024 and the content cited in IEC 62888-6:2018.

3.1 Terms and Definitions

The terms and definitions defined in GB/T 44639.1-2024 and the following apply to this document.

3.1.1

Conformance test

Verification that specified requirements are met.