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

GB/T 44639.3-2024

**Railway applications - Energy measurement system on board
trains - Part 3: Data handling
(English Translation)**

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Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms, definitions and abbreviations
3.1 Terms and Definitions
3.2 Abbreviations
4 Requirement
4.1 General
4.2 Time Data
4.3 Power data
4.4 Location Data
4.5 Other received or generated data
4.6 Energy measurement point identification code
4.7 Generation of CEMD
4.8 DHS Data Storage
4.9 CEMD Transmission from DHS to DCS
4.10 Marking and basic information
4.11 Event Log
4.12 DCS
5 Conformance Test
5.1 Program Framework
5.2 Testing Framework
5.3 Design Review
5.4 Type inspection
5.5 Factory Inspection
Reference

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.

This document is part 3 of GB/T 44639 "Electric Energy Measurement System for Rail Transit Trains".

Lower part.

- Part 1: General;
- Part 2: Electrical energy measurement;
- Part 3: Data processing;
- Part 4: Communications;
- Part 5: Conformance test;
- Part 6: Requirements other than billing.

This document is modified to adopt IEC 62888-3:2018 "Rail transit train electric energy measurement system Part 3: Data processing".

The technical differences between this document and IEC 62888-3:2018 and their reasons are as follows.

- Changed the internal time reference source from "UTC time (UTC 0)" to "Beijing time (UTC 8)" (see 4.2.2, 5.4.8.5.2, 4.2.2 and 5.4.8.5.2 of IEC 62888-3:2018) to meet the national conditions of my country;
- Replace IEC 62888-5 (see 5.1.3.1) with the normative reference GB/T 44639.5 to adapt to my country's technical conditions, and add Operability;
- Replace IEC 60529 (see 5.4.3.2) with the normative reference GB/T 4208 to adapt to my country's technical conditions and increase operability Sexuality;
- Changed the functional random vibration test requirements to vibration test requirements (see 5.4.4.2, 5.4.4.2 of IEC 62888-3:2018) to Consistent with GB/T 25119-2021 requirements.

The following editorial changes were made to this document.

- Changed the reference clause of CEMD data quality mark from 4.3.5 to 4.3.6 (see 4.7.8, IEC 62888-3:2018 4.7.8) because the original standard cited it incorrectly;
- Deleted the description of the security guide for European national legal metrology service organizations (see Note 4.9.5 of IEC 62888-3:2018).

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 formulated.

The main contents include the definition and boundary of energy efficiency, influencing factors, test methods, etc. GB/T 44639 "Electric Vehicles for Rail Transit" the Energy Measurement System is designed to standardize the process of acquiring train power data and ensure the reliability of the data. It consists of 6 parts.

--- Part 1: General. The purpose is to specify the system-level requirements of the energy measurement system 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 Requirements for the voltage measurement function, current measurement function and energy calculation function that make up the 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, and between data Handles exchanges between the system and ground servers.

--- Part 5: Conformance test. The purpose is to specify the consistency 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 benchmark testing, 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 power measurement system are shown in Figure 1.

Figure 1 Schematic diagram of EMS functional structure and data flow

Rail transit train power measurement system Part 3: Data processing

1 Scope

This document specifies the requirements for the Data Handling System (DHS) in the train power measurement system, the basic Requirements and conformance testing requirements for data handling systems (DHS).

Special requirements for level 2 and level 3 energy measurement systems are specified in GB/T 44639.6.

2 Normative references

The contents of the following documents constitute the essential terms of this article through normative references in this article.

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 4208 Degrees of protection provided by enclosures (IP code) (GB/T 4208-2017, IEC 60529:2013, IDT) GB/T 21563-2018 Shock and vibration test for rail transit rolling stock equipment (IEC 61373:2010, MOD) Note. There is no technical difference between the referenced content of GB/T 21563-2018 and the referenced content of IEC 61373:2010.

GB/T 24338.4-2018 Rail Transit Electromagnetic Compatibility Part 3-2.Rolling Stock Equipment (IEC 62236-3-2.

2008,MOD)

Note: There is no technical difference between the referenced content of GB/T 24338.4-2018 and the referenced content of IEC 62236-3-2:2008.

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 referenced content of GB/T 44639.1-2024 and the referenced content of IEC 62888-1:2018.

GB/T 44639.5 Rail transit train power measurement system Part 5: Conformity test (GB/T 44639.5-2024, IEC 62888-5:2018,MOD)

3.1 Terms and Definitions

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