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

GB/T 46713.4-2025

**Railway applications - Rolling stock - Batteries for auxiliary
power supply systems - Part 4: Nickel-metal hydride batteries**

轨道交通 机车车辆 辅助供电系统蓄电池 第4部分：镍氢蓄电池

(English Translation)

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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.

This document is Part 4 of GB/T 46713 "Batteries for Auxiliary Power Supply Systems of Rail Transit Locomotives and Rolling Stock". GB/T 46713 has been...

The following sections have been published.

---Part 1: General Requirements;

---Part 2: Nickel-Cadmium Batteries;

---Part 3: Lead-acid batteries;

---Part 4: Nickel-Metal Hydrate Batteries;

---Part 5: Lithium-ion Batteries.

This document is modified to adopt IEC 62973-4:2021 "Batteries for auxiliary power supply systems of rail transport locomotives and rolling stock - Part 4: Sealed" Nickel-metal hydride batteries.

This document has undergone the following structural adjustments compared to IEC 62973-4:2021.

---Sections 3.1.2 and 3.1.4 to 3.1.11 in IEC 62973-4:2021 have been deleted, and subsequent section numbers have been adjusted accordingly, with the addition of section 3.1.3;

---Added versions 4.2.5, 4.2.6, 4.4.6, and 4.4.7;

---Sections 9.3.2, 9.3.3, and 9.3.4 have been added before the original 9.3.2. The original 9.3.2 has been changed to 9.3.5, and subsequent section numbers have been adjusted accordingly. 9.4.4 corresponds to IEC 9.4.4.1 to 9.4.4.3 in 62973-4:2021;

---Appendix B of IEC 62973-4:2021 has been deleted.

The technical differences between this document and IEC 62973-4:2021, and the reasons therefor, are as follows.

Technical conditions;

---Added relevant content on vented nickel-metal hydride batteries (see 3.1.3, 4.2.1, 4.2.6, 4.4.2~4.4.5, 4.5.1, 4.5.2, 4.6,...).

(4.7, Chapter 5, 7.2.2, 8.2, Chapter 9), to adapt to my country's technological conditions;

---The operating temperature range of the battery module has been changed (see 4.3.2) to suit domestic conditions;

---The requirements for temperature compensation have been changed (see Table 1), making temperature compensation a mandatory function to suit domestic conditions;

---The requirements for charge retention have been modified (see 4.4.4) to suit domestic conditions;

---The battery option parameter providers (see Table 3) have been removed to reflect domestic practices;

---Requirements for open-circuit voltage and battery internal resistance have been added (see 4.4.6 and 4.4.7) to clarify the test requirements;

---The type test items have been changed, adding visual inspection, open-circuit voltage test, and internal resistance measurement (see 9.3.2, 9.3.3, and 9.3.4) to...

It aligns with the domestic situation.

The following editorial changes have been made to this document.

To align with existing standards, the standard title has been changed to "Batteries for Auxiliary Power Supply Systems of Rail Transit Locomotives and Rolling Stock - Part 4: Nickel".

Hydrogen batteries;

---IEC 60077-1:2017 has been replaced by GB/T 21413.1-2018 (see Table 1 and Table A.1).

---The typical test statement for the range of battery models in Annex B (informative) of IEC 62973-4:2021 has been deleted.

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 National Railway Administration.

This document is under the jurisdiction of the National Technical Committee on Standardization of Rail Transit Electrical Equipment and Systems (SAC/TC278).

Introduction

With the rapid development of my country's rail transit industry, battery products for auxiliary power supply systems are constantly being innovated, and the technology is becoming increasingly mature.

To adapt to market demands, maintain the international standards for battery technology in my country's rail transit auxiliary power supply system, and improve the auxiliary power supply system for rail transit.

The standard system for electric vehicle batteries is based on the international standard IEC 62973 and, based on domestic application practices, GB/T 46713 "Rail Transit" is formulated.

The "Locomotive and Rolling Stock Auxiliary Power Supply System Battery" is proposed to consist of five parts.

---Part 1: General Requirements. The aim is to standardize the electrical interfaces of battery systems by considering various types of batteries.

Based on specific load curves, the required capacity for various types of battery systems is calculated.

---Part 2: Nickel-Cadmium Batteries. The purpose is to specify the general requirements for nickel-cadmium batteries in auxiliary power supply systems of rail transit locomotives and rolling stock.

Requirements, mechanical requirements, electrical interfaces, markings, transportation, storage, and testing, while also specifying the use of individual/integrated nickel-cadmium batteries in rail transit.

Requirements for use on locomotives and rolling stock.

---Part 3: Lead-acid Batteries. The purpose is to specify the general requirements for lead-acid batteries in auxiliary power supply systems of rail transit locomotives and rolling stock.

Requirements, mechanical requirements, electrical interfaces, markings, transportation, storage and testing.

---Part 4: Nickel-Metal Hydrate Batteries. The purpose is to specify the general requirements for nickel-metal hydride batteries in auxiliary power supply systems of rail transit locomotives and rolling stock.

Requirements, mechanical requirements, electrical interfaces, markings, transportation, storage and testing.

---Part 5: Lithium-ion Batteries. The purpose is to specify the general requirements for lithium-ion batteries in auxiliary power supply systems of rail transit locomotives and rolling stock.

Requirements, mechanical requirements, electrical interfaces, markings, storage, transportation, and testing.

Auxiliary power supply system for rail transit locomotives and rolling stock Storage Batteries
Part 4: Nickel-Metal Hydrate Batteries

1 Scope

This document specifies the general requirements, mechanical requirements, electrical interfaces, and markings for nickel-metal hydride batteries used in auxiliary power supply systems of rail transit locomotives and rolling stock.

Transportation, storage, and testing.

This document applies to nickel-metal hydride batteries used in auxiliary power supply systems of locomotives and rolling stock.

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 46713.1-2025 Storage batteries for auxiliary power supply systems of rail transit locomotives and rolling stock - Part 1: General requirements (IEC) 62973-1.2018, MOD)
IEC 60623:2017 Secondary batteries and accumulators containing alkaline or other