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

GB/T 32350.2-2025

Replacing GB/T 32350.2-2015

**Railway applications - Insulation coordination - Part 2:
Overvoltages and related protection**

轨道交通 绝缘配合 第2部分：过电压及相关防护

(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 2 of GB/T 32350 "Insulation Coordination for Rail Transit". GB/T 32350 has already published the following parts.

---Part 1: Basic Requirements for Electrical Clearances and Creepage Distances in Electrical and Electronic Equipment;

---Part 2: Overvoltage and related protection.

This document replaces GB/T 32350.2-2015 "Insulation Coordination for Rail Transit - Part 2: Overvoltage and Related Protection", and is consistent with...

Compared with GB/T 32350.2-2015, apart from structural adjustments and editorial changes, the main technical changes are as follows.

a) The terms "overhead contact network" and "train power supply network" and their definitions have been added (see 3.3 and 3.4);

- b) The simulation requirements and object descriptions have been added (see 4.2.1);
- c) Added simulation of operational overvoltage (see 4.2.2.1);
- d) Added long pulse simulation waveform diagram (see 4.2.2.2);
- e) An onboard power supply network was added (see 5.2);
- f) The equipment requirements for protection by metal oxide-free surge arresters have been changed.

This document is modified to adopt IEC 62497-2:2010 "Railway traffic insulation coordination - Part 2: Overvoltage and related protection".

Compared with IEC 62497-2:2010, this document has undergone the following structural adjustments.

---Added versions 3.3, 3.4, and 5.2;

---5.1.1 corresponds to 5.1 in IEC 62497-2:2010, and 5.1.2 corresponds to 5.2 in IEC 62497-2:2010.

This document differs significantly from IEC 62497-2:2010 in several technical aspects. The relevant clauses are indicated in vertical margins.

The straight line (|) is indicated. These technical differences and their reasons are as follows.

---IEC 60099-4 has been replaced with the normatively referenced GB/T 11032 (see 4.2.3);

---The terms "overhead contact network" and "train power supply network" and their definitions have been added (see 3.3 and 3.4);

---The simulation requirements and object descriptions have been added, enhancing executability (see 4.2.1);

---Added operational overvoltage simulation, enhancing executability (see 4.2.2.1);

---Added long pulse simulation waveform diagrams to enhance executability (see 4.2.2.2);

---UIC550 has been replaced with the normatively referenced GB/T 32350.1 to conform to my country's national conditions (see Chapter 5);

--- An onboard power supply network has been added to the train to meet my country's national conditions (see 5.2).

The following editorial changes have been made to this document.

---The phrase "traction system as defined in IEC 60850" has been removed (see Chapter 1);

---The definition has been changed to align with GB/T 32350.1 (see Chapter 3);

---The title of Chapter 4 has been changed to "Ground Equipment, Locomotive and Rolling Stock Equipment Connected to the Overhead Contact System" (see Chapter 4);

---The note in Chapter 4 has been deleted (see Chapter 4);

---IEC 60099-1 has been removed (see Table 1);

---Footnote a in Table 1 has been modified, replacing the reference to IEC 60850 with a textual description (see 4.2.1);

---Change "Pulse voltage, reference voltage UP value" to "Pulse voltage UP, its reference voltage value", and change "reference voltage UP" in Table 1.

This is the "UP reference voltage" (see 4.2.1);

---IEC 61992-5 has been replaced with GB/T 43022.1 (see Table 1) for informational purposes;

---The title of Chapter 5 has been changed to "Rollercraft Equipment Connected to the Train Power Supply Network" (see Chapter 5);

---The phrases "with the consent of the buyer and manufacturer" and "if the supplier deems it preferable" have been removed (see Chapter 6);

---The note above Figure A.1 has been deleted (see Appendix A).

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 Electrical Equipment and Systems (SAC/TC278).

Introduction

Insulation coordination refers to selecting the electrical insulation characteristics of equipment based on its use and surrounding environment. Only designs based on the desired...

Equipment can only achieve insulating fit when subjected to stresses (such as voltage) during its lifespan. Insulating fit is the process between equipment and between components within equipment.

The selection, dimensional determination, and interrelationships of insulation between components are considered. When determining insulation dimensions, electrical stress and environmental conditions are taken into account, even under the most severe conditions.

The following requirements must be met. First, ensure that the insulation performance is not damaged; second, avoid unnecessarily excessive insulation dimensions. GB/T 32350

"Insulation Distribution for Rail Transit" the "Insulation Coordination" aims to specify insulation coordination under specific conditions for rail transit applications and is proposed to consist of two parts.

---Part 1: Basic Requirements for Electrical Clearances and Creepage Distances in Electrical and Electronic Equipment. The purpose is to determine clearances and creepage distances for applications in rail transit.

Insulation coordination.

---Part 2: Overvoltage and Related Protection. The purpose is to determine the simulation and testing of transient overvoltage protection for power supply-related equipment.

Require.

Rail transit insulation coordination Part 2: Overvoltage and Related Protection

1 Scope

This document specifies the simulation and testing requirements for transient overvoltage protection of power supply-related equipment.

This document applies to.

---Ground equipment (connected to the secondary side of the substation transformer) and rolling stock equipment connected to the overhead contact line;

---Roller and rolling stock equipment connected to the train's power grid.

This document does not apply to long-duration overvoltage.

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 1402-2010 Voltage of Traction Power Supply System for Rail Transit (IEC 60850:2007, MOD) Note. There are no technical differences between the content referenced in GB/T 1402-2010 and the content referenced in IEC 60850:2007.

GB/T 11032 AC gapless metal oxide surge arresters (GB/T 11032-2020, IEC 60099-4:2014, MOD) GB/T 32350.1 Railway Transportation - Insulation Coordination - Part 1: Basic Requirements - Clearances and Creepage of Electrical and Electronic Equipment distance