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Technical Requirements for Current Collectors for ground-level feeding system on road vehicles in operation

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Technical Requirements for Current Collectors for ground-level feeding system on road vehicles in operation

Exigences techniques relatives aux capteurs de courant pour les systèmes d'alimentation au sol sur les véhicules routiers

Technische Anforderungen an Stromabnehmer für bodennahe Einspeiseanlagen in Straßenfahrzeugen im Betrieb

This Technical Specification was approved by CENELEC on 2022-11-07.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (CLC/TS 50717:2022) has been prepared by CLC/TC 9X/WG 30 “Technical Requirements for Current Collectors for ground-level feeding system on road vehicles in operation”.

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This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

Road traffic borne carbon dioxide and other emissions create a growing challenge that needs to be overcome to achieve commonly agreed climate targets.

This document is limited to current collector devices used in ground-based conductive feeding system by contact. The dynamic electric power supply of a road vehicle is achieved by the collection of current from the metallic segments at road level by means of one or more current collector devices installed underneath the electric vehicle or coupled traction trailers.

As road traffic is highly internationalized and standardized, Electric Road System (ERS) solutions for dynamic supply of vehicles need to be standardized.

The current collector device interoperability objectives are defined between countries and vehicle types, but not between ground-based conductive feeding system technical solutions.

NOTE Annex A presents the architecture for the whole Electric Road System (ERS) for information.

1 Scope

This document specifies the general characteristics which are to be applied to ground level current collector devices, to enable conductive current collection by road vehicles from a feeding track integrated in the roadway.

It defines the interfaces between the current collector device and its environment as well as the electrical safety concept.

It also specifies the necessary tests for the current collector devices and gives recommendations for their maintenance.

This document is applicable to current collector devices on road vehicles for ground-level feeding operation on electrified public roads and highways.

This document is not applicable to motorcycles (including tricycles and quadricycles).

This document is not applicable to vehicles or electric buses with dynamic or static inductive charging systems and related power supplies.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50121-1:2017, *Railway applications — Electromagnetic compatibility — Part 1: general*

EN 50121-2:2017, *Railway applications — Electromagnetic compatibility — Part 2: Emission of the whole railway system to the outside world*

EN 50121-5:2017, *Railway applications — Electromagnetic compatibility — Part 5: Emission and immunity of fixed power supply installations and apparatus*

EN 50125-1:2014, *Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment*

EN 50125-2:2002, [1] *Railway applications — Environmental conditions for equipment — Part 2: Fixed electrical installations*

EN 50126-1:2017, *Railway Applications — The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) – Part 1: Generic RAMS process*

EN 50163:2004, *Railway applications — Supply voltages of traction systems*

EN 60529:1991,[2] *Degrees of Protection Provided by Enclosures (IP Code)*

EN 61373:2010, *Railway applications — Rolling stock equipment — Shock and vibration tests*

IEC 60068-2-64:2008+AMD1:2019, *Environmental testing — Part 2-64: Tests — Test Fh: Vibration, broadband random and guidance*

ISO 4892-2:2013, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenonarc lamps*

ISO 7637-2:2011, *Road vehicles — Electrical disturbances from conduction and coupling*

ISO 9227:2017, *Corrosion tests in artificial atmospheres — Salt spray tests*

[1] As impacted by EN 50125-2:2002/corrigendum Jun. 2010.

[2] As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/AC:2016-12, EN 60529:1991/A2:2013/AC:2019-02.

ISO 10605:2008, *Road vehicles — Test methods for electrical disturbances from electrostatic discharge*

ISO 16750-2:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 2: Electrical loads*

ISO 16750-3:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

ISO 16750-4:2010, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

ISO 16750-5:2010, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads*

ISO 20653:2013, *Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access*