ICS 29.280, 35.240.50 PREDBEŽNÁ SLOVENSKÁ TECHNICKÁ NORMA August 2025

STN P	**Dráhové aplikácie Pevné inštalácie a koľajové vozidlá Požiadavky na rozhranie medzi nabíjacou infraštruktúrou s vyhradenými úsekmi trolejového vedenia a elektrickými hnacími vozidlami s palubnými zásobníkmi elektrickej trakčnej energie a zberačmi prúdu**	**STN P CLC/TS 50729** 34 1580

Railway applications - Fixed installations and rolling stock - Interface requirements between charging infrastructure with dedicated contact line sections and electric traction units with onboard electric traction energy storages and current collectors

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

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English Version

Railway applications - Fixed installations and rolling stock - Interface requirements between charging infrastructure with dedicated contact line sections and electric traction units with onboard electric traction energy storages and current collectors

Applications ferroviaires - Installations fixes - Exigences relatives aux infrastructures de charge pour les unités de traction électrique à accumulateur basées sur des sections de ligne de contact

Bahnanwendungen - Ortsfeste Anlagen und Fahrzeuge - Schnittstellenanforderungen zwischen Ladeinfrastruktur mit dedizierten Fahrleitungsabschnitten und elektrischen Triebfahrzeugen mit bordeigenen elektrischen Traktionsenergiespeichern und Stromabnehmern

This Technical Specification was approved by CENELEC on 2025-04-16.

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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 50729:2025) has been prepared by CLC/SC 9XC “Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations)” of CLC/TC 9X “Electrical and electronic applications for railways”.

It is also relevant to the scope and expertise of CLC/SC 9XB, “Electromechanical material on board of rolling stock”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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

Climate change requires the use of railway vehicles that have a climate-neutral energy balance and avoid fossil fuels.

Electric traction units with onboard electric traction energy storages are one of these solutions. They can be charged by current collectors from a contact line system and connected substation(s).

In addition to the use of the known electric traction power supply systems, the document is intended to allow new, technically feasible supply systems for charging on dedicated contact line sections.

By approving such systems, a contribution to a climate-neutral system can be made quickly. Additionally, there are economical solutions for such charging infrastructure.

1 Scope

This document specifies interface requirements between charging infrastructure with dedicated contact line sections and electric traction units with onboard electric traction energy storages and current collectors.

The dedicated contact line section can be

— separated from other contact line systems of electrified railway lines and fed separately, or

— connected electrically and/or mechanically with contact line systems of electrified railway lines.

The charging infrastructure can be used for charging the traction units with onboard electric traction energy storages at a standstill and/or when moving.

This document covers the following aspects:

— supply voltages and frequencies,

— compatibility (e.g. avoidance of (unacceptable) unbalances) with the feeding grid (national 3 AC grid),

— interaction between the vehicle traction/charging system and the electric traction charging power supply system,

— transmitting required information towards driver and/or electric traction unit,

— contact line system,

— maximum load current,

— contact line protection principles,

— electrical safety,

— stray current protection (in case of DC electric traction power supply systems),

— protection against influence on signalling systems, and

— energy measurement and settlement.

This document applies to new charging infrastructure and/or new electric traction units with onboard electric traction energy storage.

Although this document is primarily applicable to railways it can also be partially applied to guided mass transport systems such as:

1) tramways, and

2) elevated and underground railways.

This document does not apply to charging with a plug or connector solution or inverted current collectors mounted on the infrastructure side.

This document does not apply to electric road systems with overhead contact line systems.

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 50121-3-1:2017, *Railway applications - Electromagnetic compatibility - Part 3-1: Rolling stock - Train and complete vehicle*

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

EN 50122-1:2022, *Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 1: Protective provisions against electric shock*

EN 50122-2:2022, *Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 2: Provisions against the effects of stray currents caused by DC traction systems*

EN 50122-3:2022, *Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 3: Mutual Interaction of AC and DC traction systems*

EN 50124-1:2017, *Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment*

EN 50160:2010,[1] Voltage characteristics of electricity supplied by public electricity networks

EN 50163:2004,[2] Railway applications - Supply voltages of traction systems

EN 50238-1:2019, *Railway applications - Compatibility between rolling stock and train detection systems - Part 1: General*

CLC/TS 50238-2:2020, *Railway applications - Compatibility between rolling stock and train detection systems - Part 2: Compatibility with track circuits*

CLC/TS 50238-3:2022, *Railway applications - Compatibility between rolling stock and train detection systems - Part 3: Compatibility with axle counters*

EN 50367:2020,[3] *Railway applications - Fixed installations and rolling stock - Criteria to achieve technical compatibility between pantographs and overhead contact line*

EN 50388-1:2022, *Railway Applications - Fixed installations and rolling stock - Technical criteria for the coordination between electric traction power supply systems and rolling stock to achieve interoperability - Part 1: General*

EN 50388-2:2025, *Fixed installations and rolling stock for railway applications - Technical criteria for the coordination between electric traction power supply systems and rolling stock to achieve interoperability - Part 2: Stability and harmonics*

EN 50463-1:2017, *Railway applications - Energy measurement on board trains - Part 1: General*

EN 50463-2:2017, *Railway applications - Energy measurement on board trains - Part 2: Energy measuring*

EN 50463-3:2017, *Railway applications - Energy measurement on board trains - Part 3: Data handling*

[1] As impacted by EN 50160:2010/corrigendum Dec. 2010, EN 50160:2010/A1:2015, EN 50160:2010/A2:2019 and EN 50160:2010/A3:2019.
[2] As impacted by EN 50163:2004/A1:2007, EN 50163:2004/corrigendum May 2010, EN 50163:2004/AC:2013, EN 50163:2004/A2:2020 and EN 50163:2004/A3:2022.
[3] As impacted by EN 50367:2020/A1:2022 and EN 50367:2020/A2:2025.

EN 50463-4:2017, *Railway applications - Energy measurement on board trains - Part 4: Communication*

EN 50463-5:2017, *Railway applications - Energy measurement on board trains - Part 5: Conformity assessment*

EN 50488:2021, *Railway applications - Fixed installations - Electrical protective measures for working on or near an overhead contact line system and/or its associated return circuit*

EN 50617-1:2015, *Railway applications - Technical parameters of train detection systems for the interoperability of the trans-European railway system - Part 1: Track circuits*

EN 50617-2:2015, *Railway Applications - Technical parameters of train detection systems for the interoperability of the trans-European railway system - Part 2: Axle counters*

EN 50562:2018, *Railway applications - Fixed installations - Process, protective measures and demonstration of safety for electric traction systems*

EN 50633:2016, *Railway applications - Fixed installations - Protection principles for AC and DC electric traction systems*

EN 50702:2021, *Railway applications - Rolling stock - Conductor rail current collectors (shoegear): Characteristics and tests*

IEC 60050-811:2017, *International Electrotechnical Vocabulary (IEV) - Part 811: Electric traction*

EN 61000-1-2:2016, *Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena*

EN IEC 61000-2 (all parts), *Electromagnetic compatibility (EMC) - Part 2: Environment compatibility levels*

EN IEC 61000-3 (all parts), *Electromagnetic compatibility (EMC) - Part 3: Limits*

EN IEC 61000-4 (all parts), *Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques*

EN 61000-5 (all parts), *Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines*

EN IEC 61000-6 (all parts), *Electromagnetic compatibility (EMC) - Part 6: Generic standards Immunity*