Raudteealased rakendused. Kohtkindlad paigaldised. Elektriohutus, maandamine ja tagasivooluahel. Osa 1: Kaitsemeetmed elektrilöögi eest

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

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50122-1:2011 sisaldab Euroopa standardi EN 50122-1:2011 ingliskeelset teksti.	This Estonian standard EVS-EN 50122-1:2011 consists of the English text of the European standard EN 50122-1:2011.
Standard on kinnitatud Eesti Standardikeskuse 28.02.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 14.01.2011.	Date of Availability of the European standard text 14.01.2011.
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EUROPEAN STANDARD

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English version

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

Applications ferroviaires - Installations fixes - Sécurité électrique, mise à la terre et circuit de retour - Partie 1: Mesures de protection contre les chocs électriques

Bahnanwendungen - Ortsfeste Anlagen - Elektrische Sicherheit, Erdung und Rückleitung - Teil 1: Schutzmaßnahmen gegen elektrischen Schlag

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CENELEC

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

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Foreword

This European Standard was prepared by SC 9XC, Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations), of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways. It was submitted to the formal vote and was approved by CENELEC as EN 50122-1 on 2010-11-16.

This document supersedes EN 50122-1:1997.

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

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2011-11-16
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2013-11-16

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directives 96/48/EC (HSR), 2001/16/EC (CONRAIL) and 2008/57/EC (RAIL). See Annex ZZ.

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1 Scope

This European Standard specifies requirements for the protective provisions relating to electrical safety in fixed installations associated with a.c. and/or d.c. traction systems and to any installations that can be endangered by the traction power supply system.

It also applies to all aspects of fixed installations that are necessary to ensure electrical safety during maintenance work within electric traction systems.

This European Standard applies to all new lines and to all major revisions to existing lines for the following electric traction systems:

a) railways;

b) guided mass transport systems such as

   1) tramways,

   2) elevated and underground railways,

   3) mountain railways,

   4) trolleybus systems, and

   5) magnetically levitated systems, which use a contact line system,

c) material transportation systems.

This European Standard does not apply to:

d) mine traction systems in underground mines;

e) cranes, transportable platforms and similar transportation equipment on rails, temporary structures (e.g. exhibition structures) in so far as these are not supplied directly or via transformers from the contact line system and are not endangered by the traction power supply system;

f) suspended cable cars;

g) funicular railways.

This European Standard does not specify working rules for maintenance.

2 Normative references

The following referenced documents are indispensable for the application 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 50119:2009, *Railway applications – Fixed installations – Electric traction overhead contact lines*

EN 50122-2, *Railway applications – Fixed installations – Part 2: Protective provisions against the effects of stray currents caused by d.c. traction systems*

EN 50124-1:2001 + A1:2003 + A2:2005, *Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment*

EN 50153:2002, *Railway applications – Rolling stock – Protective provisions relating to electrical hazards*

EN 50163, *Railway applications – Supply voltages of traction systems*

EN 60529:1991 + A1:2000, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989 + A1:1999)*

EN 60898-1:2003 + A11:2005, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation (IEC 60898-1:2002, mod.)*

EN 61140:2002 + A1:2006, *Protection against electric shock – Common aspects for installation and equipment (IEC 61140:2001 + A1:2004, mod.)*

HD 60364-4-41:2007, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock (IEC 60364-4-41:2005, mod.)*

HD 637 S1:1999, *Power installations exceeding 1 kV a.c.*

IEC 60050-101, *International Electrotechnical Vocabulary – Chapter 101: Mathematics*

IEC 60050-111, *International Electrotechnical Vocabulary – Chapter 111: Physics and chemistry*

IEC 60050-191, *International Electrotechnical Vocabulary – Chapter 191: Dependability and quality of service*

IEC 60050-195, *International Electrotechnical Vocabulary – Chapter 195: Earthing and protection against electric shock*

IEC 60050-442, *International Electrotechnical Vocabulary – Chapter 442: Electrical accessories*

IEC 60050-811, *International Electrotechnical Vocabulary – Chapter 811: Electric traction*

IEC 60050-821, *International Electrotechnical Vocabulary – Chapter 821: Signalling and security apparatus for railways*

IEC 60050-826, *International Electrotechnical Vocabulary – Chapter 826: Electrical installations*

IEC/TS 60479-1:2005, *Effects of current on human beings and livestock – Part 1: General aspects*

ISO 3864-1:2002, *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas*

ISO 7010:2003 + A1:2006, *Graphical symbols – Safety colours and safety signs – Safety signs used in workplaces and public areas*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Electrical safety and hazards

3.1.1
electrical safety
freedom from unacceptable risk of harm caused by electrical systems

3.1.2
electric shock
pathophysiological effect resulting from an electric current passing through a human or animal body

[IEC 60050-826-12-01]

3.1.3
(effective) touch voltage (U_{te})
voltage between conductive parts when touched simultaneously by a person or an animal

NOTE 1 The value of the effective touch voltage can be appreciably influenced by the impedance of the person or the animal in electric contact with these conductive parts

[IEC 60050-195-05-11]

NOTE 2 The conductive path through the body is conventionally from hand to both feet (horizontal distance of 1 m) or from hand to hand.