

**Raudteealased rakendused. Kohtkindlad  
paigaldised. Osa 1: Kaitsemeetmed elektriohutuse  
tagamiseks ja maandamisel**

Railway applications - Fixed installations - Part 1:  
Protective provisions relating to electrical safety and  
earthing

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50122-1:2005 sisaldab Euroopa standardi EN 50122-1:1997 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 10.09.2002 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 11.06.1997.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 50122-1:2005 consists of the English text of the European standard EN 50122-1:1997.

This standard is ratified with the order of Estonian Centre for Standardisation dated 10.09.2002 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 11.06.1997.

The standard is available from Estonian standardisation organisation.

ICS 29.120.50, 45.020

**Võtmesõnad:** maandamine, ohutus, paigaldised

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

Descriptors: Railway fixed equipment, safety, accident prevention, earthing, safety measures, safety devices, protection against live parts, protection against electric shocks

English version

**Railway applications - Fixed installations**  
**Part 1: Protective provisions relating to electrical safety and earthing**

Applications ferroviaires  
Installations fixes  
Partie 1: Mesures de protection  
relatives à la sécurité électrique  
et à la mise à la terre

Bahnanwendungen - Ortsfeste Anlagen  
Teil 1: Schutzmaßnahmen in Bezug auf  
elektrische Sicherheit und Erdung

This European Standard was approved by CENELEC on 1996-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

## Foreword

This European Standard was prepared by SC 9XC, Electrical supply and earthing systems the Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50122-1 on 1996-10-01.

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) 1997-12-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1997-12-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes B, E and G are normative and annexes A, C, D, F and H are informative.

---

## Contents

	Page
1 Scope	4
2 Normative references	5
3 Definitions	6
4 Protective provisions against electric shock in installations for nominal voltages up to and including 1 kV a.c./1,5 kV d.c.	16
5 Protective provisions against electric shock in installations for nominal voltages in excess of 1 kV a.c. / 1,5 kV d.c. up to 25 kV a.c. or d.c. to earth	32
6 Additional protective provisions	44
7 Protection against the danger of rail potential	61
8 Substations and switching stations	65
9 Return current circuits and earthing conductors	66
10 Means of achieving safe isolation	67
11 Removing of decommissioned overhead contact lines	67

## Annexes

A (informative)	Typical obstacles	68
B (normative)	Warning sign	70
C (informative)	Guide values for specific rail potential	71
D (informative)	Touch/accessible voltage and body current	75
E (normative)	Measurement methods for touch/accessible voltages	81
F (informative)	Bibliography	82
G (normative)	Special national conditions	83
H (informative)	A-deviations	84

## 1 Scope

This standard specifies requirements for the protective provisions relating to electrical safety in fixed installations associated with a.c.- and d.c.-traction systems and to any installations that may be endangered by the traction power supply system.

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

Note: Other provisions may be required to protect work sites for maintenance purposes which are not included in this standard.

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

- railways;
- guided mass transport systems such as:  
Tramways, elevated and underground railways, mountain railways, trolleybus systems and magnetic levitated systems;
- material transportation systems.

This standard does not apply to:

- mine traction systems in underground mines;
- 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;
- suspended cable cars;
- funicular railways;
- maintenance work.

## 2 Normative references

This European Standard incorporates by dated and undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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*)	Railway applications - Insulation co- ordination -- Part 1: Basic requirements - Clearances and creepage distances
EN 50153	Railway applications - Rolling stock - Protective provisions relating to electrical hazards
EN 50163	Railway applications - Supply voltages of traction systems
EN 50179*)	Power installations exceeding 1 kV a.c.
EN 60529	Degrees of protection provided by enclosures (IP Code) (IEC 529)
HD 384.4.41	Electrical installations of buildings -- Part 4: Protection for safety Chapter 41: Protection against electric shock (IEC 364-4-41, modified)
HD 384.4.47	Electrical installations of buildings -- Part 4: Protection for safety Chapter 47: Application of protective measures for safety Section 471: Measures of protection against electric shock (IEC 364-4-47, modified)
HD 366	Classification of electrical and electronic equipment with regard to protection against electric shock
IEC 479-1	Effects of current passing through the human body Part 1: General aspects
ISO 3864	Safety colours and safety signs

---

\*) In preparation