



**NSAI**  
Standards

Irish Standard  
I.S. EN 50153:2014&A1:2017&A2:2020

# Railway applications - Rolling stock - Protective provisions relating to electrical hazards

**I.S. EN 50153:2014&A1:2017&A2:2020**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

EN 50153:2014/A1:2017  
EN 50153:2014/A2:2020

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## National Foreword

I.S. EN 50153:2014&A1:2017&A2:2020 is the adopted Irish version of the European Document EN 50153:2014, Railway applications - Rolling stock - Protective provisions relating to electrical hazards

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EUROPEAN STANDARD

**EN 50153:2014/A2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2020

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English Version

## Railway applications - Rolling stock - Protective provisions relating to electrical hazards

Applications ferroviaires - Matériel roulant - Mesures de  
protection vis-à-vis des dangers d'origine électrique

Bahnanwendungen - Fahrzeuge - Schutzmaßnahmen in  
Bezug auf elektrische Gefahren

This amendment A2 modifies the European Standard ; it was approved by CENELEC on 2019-07-23. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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## **EN 50153:2014/A2:2020 (E)**

### **European foreword**

This document (EN 50153:2014/A2:2020) has been prepared by CLC/SC 9XA "Communication, signalling and processing systems".

The following dates are fixed:

- latest date by which this document (dop) 2020-08-07  
has to be implemented at national  
level by publication of an identical  
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standards conflicting with this  
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For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

# 1 Replacement of the Annex ZZ

## Annex ZZ (informative)

### Relationship between this European standard and the essential requirements of EU Directive 2016/797/EU [2016 OJ L138] aimed to be covered

This European Standard has been prepared under a Commission’s standardization request relating to harmonized standards in the field of the Interoperability of the rail system within the European Union, M/483, to provide one voluntary means of conforming to essential requirements of Directive 2016/797/EU of the European Parliament and of the Council of 11 May 2016 on the harmonization of the laws of the Member States relating to the interoperability of the rail system within the European Union [2016 OJ L138].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 for “Locomotives and Passenger Rolling Stock” confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

**Table ZZ.1 - Correspondence between this European Standard, the TSI “Locomotives and Passenger Rolling Stock” (REGULATION (EU) No 1302/2014 of 18 November 2014 and Directive 2016/797/EU**

Essential Requirements of Directive 2016/797/EU	Chapter / § / points / of LOC&PAS TSI	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1. General Requirements 1.1 Safety 1.5 Technical compatibility 2. Requirements specific to each sub-subsystem 2.4 Rolling stock 2.4.1 Safety 2.4.3. Technical compatibility	4.2.8.2.10 Electrical protection of the train  4.2.8.4. Protection against electrical hazards ( <i>direct reference</i> )  6.2.3.5. Conformity assessment for safety requirements	Clauses of the standard that are in direct relationship to the requirement expressed in the clause of the TSI:  the whole standard is applicable.	Annex A includes specific cases for France and Great Britain, due to special national conditions.

**EN 50153:2014/A2:2020 (E)**

**WARNING 1** — Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

**WARNING 2** — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.



EUROPEAN STANDARD

**EN 50153:2014/A1**

NORME EUROPÉENNE

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## Railway applications - Rolling stock - Protective provisions relating to electrical hazards

Applications ferroviaires - Matériel roulant - Mesures de  
protection vis-à-vis des dangers d'origine électrique

Bahnanwendungen - Fahrzeuge - Schutzmaßnahmen in  
Bezug auf elektrische Gefahren

This amendment A1 modifies the European Standard EN 50153:2014; it was approved by CENELEC on 2017-05-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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## **European foreword**

This document (EN 50153:2014/A1:2017) has been prepared by CLC/SC 9XB "Electrical, electronic and electromechanical material on board rolling stock, including associated software", from CLC/TC 9X "Electrical and electronic applications for railways".

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For relationship with EU Directive(s), see informative Annex ZZ, which is an integral part of this document.

## EN 50153:2014/A1:2017 (E)

### 1 Modifications to Clause 3, Terms, definitions and abbreviations

Add the following new definition 3.1.2.10 after 3.1.2.9:

"

#### 3.1.2.10

**extra-low voltage**

**ELV**

voltage not exceeding the relevant voltage limit of band I specified in this standard"

Renumber the following definitions.

In 3.2, Abbreviations, add after "DC Direct Current" the following new abbreviation:

"ELV Extra Low Voltage"

### 2 Modification to 5.4, Protection by the use of band I

Delete the existing text and replace it with the following:

"

#### 5.4 Protection by the use of band I (ELV)

##### 5.4.1 Requirements for circuits of band I (SELV and PELV)

- the sources for SELV and PELV shall meet the requirements of 414.3, sources for SELV and PELV, of HD 60364-4-41:2007;
- the circuit shall meet the requirements of 414.4, requirements for SELV and PELV circuits, of HD 60364-4-41:2007;
- the circuit shall meet the requirements of Clause 8 of this European Standard.

##### 5.4.2 Additional requirements for SELV

A SELV circuit shall not be connected to the protective bonding circuit (vehicle body). For SELV circuits at a voltage in band I no further protective provision is required provided that the circuit meets the requirements of 5.4.1.

##### 5.4.3 Additional requirements for PELV

One pole of the PELV circuit or one pole of the source of the supply of that PELV circuit shall be connected to the protective bonding circuit. No further protective provision is required provided that the nominal voltage does not exceed 6 V AC or 15 V DC and the circuit meets the requirements of 5.4.1.

If the voltage exceeds 6 V AC or 15 V DC and ordinary persons have access, protection in accordance with 411.7.2 of HD 60364-4-41:2007 is required."

### 3 Modification to 6.4.4, Impedance

Replace twice

"EN 50122-1:2011, Clause 6"

EUROPEAN STANDARD

**EN 50153**

NORME EUROPÉENNE

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May 2014

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English Version

## Railway applications - Rolling stock - Protective provisions relating to electrical hazards

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## Foreword

This document (EN 50153:2014) has been prepared by CLC/SC 9XB "Electromechanical material on board rolling stock" from CLC/TC 9X "Electrical and electronic applications for railways".

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- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-03-10

This document supersedes EN 50153:2002.

EN 50153:2013 includes the following significant technical changes with respect to EN 50153:2002:

- the document now takes into account EN 50122-1:2011 and UIC leaflet 533:2011;
- other normative references and some definitions have been updated;
- Annex D has been added, Annex C has been changed.

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## **Introduction**

It is generally accepted that safety depends on human factors, based on the normal behaviour of the operators involved, as well as upon technical factors.

For these reasons, this European Standard, in several instances, leaves a choice to the contracting parties between two alternatives. These alternatives consist of either the provision of operating rules, regulations and procedures, or in the application of technical measures such as mechanical or electrical interlocking devices.

A list of the cases for which the contracting parties (e.g. user and manufacturer) should reach agreement before signing the contract is included in Annex B.

## 1 Scope

This European Standard defines requirements to be applied in the design and manufacture of electrical installations and equipment to be used on rolling stock to protect persons from electric shocks.

This European Standard is applicable to rolling stock of rail transport systems, road transport systems, if they are powered by an external supply (e.g. trolley buses), magnetically levitated transport systems and to the electrical equipment installed in these systems.

This European Standard does not apply to:

- mine railways in mines,
- crane installations, moving platforms and similar transport systems on rails,
- funicular railways,
- temporary constructions.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50122-1:2011<sup>1)</sup>, *Railway applications — Fixed installations — Electrical safety, earthing and the return circuit — Part 1: Protective provisions against electric shock*

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

EN 50388, *Railway applications — Power supply and rolling stock — Technical criteria for the coordination between power supply (substation) and rolling stock to achieve interoperability*

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

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 61140, *Protection against electric shock — Common aspects for installation and equipment (IEC 61140)*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1)*

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

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1) This document is currently impacted by the amendment EN 50122-1:2011/A1:2011.

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