SLOVENSKI STANDARD
SIST EN 50152-2:2013

01-januar-2013

Nadomešča:
SIST EN 50152-2:2008

Železniške naprave - Stabilne naprave električne vleke - Posebne zahteve za stikalne naprave za izmenični tok - 2. del: Odklopniki, ozemljilna stikala in stikala za nazivno napetost nad 1 kV

Railway applications - Fixed installations - Particular requirements for alternating current switchgear - Part 2: Disconnectors, earthing switches and switches with nominal voltage above 1 kV

Bahnanwendungen - Ortsfeste Anlagen - Besondere Anforderungen an Wechselstrom-Schaltanlagen - Teil 2: Trennschalter, Erdungsschalter und Lastschalter mit einer Nennspannung größer als 1 kV

Applications ferroviaires - Installations fixes - Spécifications particulières pour appareillage à courant alternatif - Partie 2: Sectionneurs, sectionneurs de terre et interrupteurs de tension nominale supérieure à 1 kV

Ta slovenski standard je istoveten z: **EN 50152-2:2012**

ICS:

29.130.99	Druge stikalne in krmilne naprave	Other switchgear and controlgear
29.280	Električna vlečna oprema	Electric traction equipment

SIST EN 50152-2:2013 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50152-2

November 2012

ICS 29.120.40; 29.280

Supersedes EN 50152-2:2007

English version

Railway applications - Fixed installations - Particular requirements for alternating current switchgear - Part 2: Disconnectors, earthing switches and switches with nominal voltage above 1 kV

Applications ferroviaires - Installations fixes - Spécifications particulières pour appareillage à courant alternatif - Partie 2: Sectionneurs, sectionneurs de terre et interrupteurs de tension nominale supérieure à 1 kV

Bahnanwendungen – Ortsfeste Anlagen - Besondere Anforderungen an Wechselstrom-Schalteinrichtungen – Teil 2: Trennschalter, Erdungsschalter und Lastschalter mit einer Nennspannung größer als 1 kV

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CENELEC

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

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Ref. No. EN 50152-2:2012 E

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Foreword

This document (EN 50152-2:2012) has been prepared by CLC/SC 9XC "Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations)".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-10-15
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2015-10-15

This document supersedes EN 50152-2:2007.

EN 50152-2:2012 includes the following significant technical changes with respect to EN 50152-2:2007:

This standard was revised to reflect the latest versions of standards referenced and to remove text already included in the EN 62271 series. The scope was extended to include single-phase and two-phase devices. Definitions were added to provide the necessary precision and to meet the needs of railway applications. Table 1 was reworked according to the changes of EN 50124-1:2001, Table A.2 and Table B.1. Table 2 'Coordination table of rated values for devices' of the previous version was removed. Ratings previously given under the clause 'type tests' were moved to the new Table 2 'Mechanical endurance classes and recommended use'.

EN 50152 series under the generic title *Railway applications — Fixed installations — Particular requirements for alternating current switchgear* is divided as follows:

- *Part 1: Circuit-breakers with nominal voltage above 1 kV*;

- *Part 2: Disconnectors, earthing switches and switches with nominal voltage above 1 kV*;

- *Part 3-1: Measurement, control and protection devices for specific use in a.c. traction systems — Application guide*;

- *Part 3-2: Measurement, control and protection devices for specific use in a.c. traction systems — Single-phase current transformers*;

- *Part 3-3: Measurement, control and protection devices for specific use in a.c. traction systems — Single-phase inductive voltage transformers*.

Introduction

This standard needs to be read in conjunction with EN 62271-1:2008, EN 62271-102:2002 and/or EN 62271-103:2011, depending on the equipment involved.

References in subclauses in EN 62271-102 need to be to EN 62271-1 instead of EN 60694.

Where a particular clause of EN 62271-1, EN 62271-102 or EN 62271-103 is not mentioned in this standard, that clause applies as far as reasonable. Where requirements relate exclusively to three-phase systems or to voltages outside those in use in traction systems, they are not applicable. Where this standard states "addition" or "replacement", the relevant text of EN 62271-1, EN 62271-102 and EN 62271-103 needs to be adapted accordingly. When a clause is named applicable to both EN 62271-102 or EN 62271-103, then reference needs to be made only to the standard appropriate for the respective switching device.

The numbering of clauses in EN 62271 series is not used in this European Standard. The numbering in square brackets refers to the numbering of clauses in EN 62271 series. References specific to numbering of clauses in EN 62271-102 have the prefix ‘102.' and specific to EN 62271-103 have the prefix ‘103.'.

Where terms defined in EN 62271 series conflict with definitions of same terms as given in IEC 60050-811:1991, or the other railway applications documents listed in the normative references, the definitions in EN 62271-1, EN 62271-102 and EN 62271-103 need to be used.

NOTE 1 The clause numbering in EN 62271-102 and EN 62271-103 is the same as in EN 62271-1. Additional requirements specific to the type of switching device start with subclause numbers from 100.

NOTE 2 The suffix N which appears in this standard for rated values is not used in EN 62271 series.

1 Scope

This European Standard is applicable to single-pole and two-pole alternating current (a.c.) disconnectors, earthing switches and switches which are:

— designed for indoor or outdoor fixed installations in tractions systems, and

— operated with an a.c. line voltage and frequency as specified in EN 50163.

NOTE 1 EN 50163 specifies the a.c. traction systems 15 kV 16,7 Hz and 25 kV 50 Hz.

NOTE 2 As rails of a.c. traction systems are connected to earth and included in the return current path all phase to earth voltages will be within the tolerances as specified in EN 50163. Nevertheless phase to phase voltages are sometimes higher, e.g. in autotransformer systems.

NOTE 3 The two poles of a switch can be connected in series to provide secure isolation (i.e. two breaks in series).

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

EN 50124-1:2001, *Railway applications — Insulation coordination — Part 1: Basic requirements — Clearances and creepage distances for all electrical and electronic equipment*

EN 50152-1:2012, *Railway applications — Fixed installations — Particular requirements for alternating current switchgear — Part 1: Circuit breakers with nominal voltage above 1 kV*

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

EN 62271-1:2008, *High-voltage switchgear and controlgear — Part 1: Common specifications (IEC 62271-1:2007)*

EN 62271-102:2002, *High-voltage switchgear and controlgear — Part 102: Alternating current disconnectors and earthing switches (IEC 62271-102:2001 + corrigendum Apr. 2002 + corrigendum May 2003)*

EN 62271-103:2011, *High voltage switchgear and controlgear — Part 103: Switches for rated voltages above 1 kV up to and including 52 kV (IEC 62271-103:2011)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 62271-1:2008, EN 62271-102:2002, EN 62271-103:2011 and the following apply.

3.1
switching device
general term covering disconnectors, earthing switches and switches

Note 1 to entry: This definition of ‘switching device’ is limited to this standard. There may be different or more comprising use in other parts of the EN 50152 and EN 62271 series (e.g. in EN 62271-1:2008, 3.1.1).

3.2
single-pole switching device
switching device with one electrically separated conducting path for the main circuit suitable for use in a single-phase circuit

3.3
two-pole switching device
switching device with two independent electrically separated conducting paths for the main circuit

Note 1 to entry: The two paths may be connected in series for use in a single-phase circuit where the establishment of the two paths is simultaneous.

Note 2 to entry: This device may be used to interrupt or establish simultaneously a single-phase circuit in two different points.

3.4
combined switching device
switching device where the main circuit of the switching device, the operating link and operating drive may be used in combination with those from different manufacturers

Note 1 to entry: This is common practice in some countries especially for mast switches.

3.5
nominal voltage (U_n)
suitable approximate voltage value used to designate or identify a given supply system

[SOURCE: EN 50124-1:2001, 1.3.2.1]

Note 1 to entry: This value is also assigned to the switching device to show its usability in the supply system.

Note 2 to entry: An AT-System which is supplied with 2 phases, having a phase shift of 180° between them, is commonly named 2 x U_n according to the U_n supplied to the catenary system.

3.6
rated voltage
U_{Ne}
value of voltage assigned by the manufacturer to the equipment or part of it and to which operating and performance characteristics are referred

[SOURCE: EN 50124-1:2001, 1.3.2.3, modified]

Note 1 to entry: This value is also used to determine its dielectric characteristics and will be used instead of the rated insulation voltage (U_{Nm}) as defined and used in EN 50124-1:2001.

Note 2 to entry: The abbreviation U_r is not used for railway switching devices.

3.7
Over Voltage category
OV
classification of the circuit protection against internal and external overvoltages

3.8
Pollution Degree
PD
classification of the pollution to be considered due to the micro climate

3.9
line
general term covering the catenary and bare feeder conductors in fixed installations

Note 1 to entry: This definition is added as line is understood in most cases as HV transmission line.

3.10
index of definitions
same as in 3.8 of EN 62271-103:2011, but amended according to the definitions above and those of EN 62271-102:2002, Clause 3.

4 Normal and special service conditions [2]

Clause 2 of EN 62271-1:2008 is applicable except as follows:

The minimum ambient air temperature under normal service conditions for indoor switching devices shall be -5 °C.

For special service conditions, agreement shall be made between purchaser and supplier. EN 50125-2 should be taken as a guidance to select appropriate classifications.

NOTE The altitude reference of EN 50124-1 (up to 2 000 m) applies to insulation coordination only and is not considered in this standard.

5 Rating [4]

5.1 General

Clause 4 of EN 62271-102:2002 and EN 62271-103:2011 is applicable except as noted in 5.2-5.8 below.

5.2 Nominal voltage (U_n)

The standard values of nominal voltage U_n are 15 kV and 25 kV as listed in Table 1 of EN 50163:2004.

5.3 Rated voltage (U_{Ne}) [4.1]

Subclause 4.1 of EN 62271-1:2008 is replaced by the following:

The rated voltage U_{Ne} shall be chosen taking into consideration the maximum voltage level suitable to be permanently applied to the switching device (i.e. highest permanent voltage U_{max1} as defined in EN 50163:2004).

The value of U_{Ne} shall be used whenever EN 62271-1, EN 62271-102 or EN 62271-103 reference to U_r unless another value is named explicitly.

NOTE 1 The insulation characteristics determined by applying U_{max1} are expected to be suitable to allow the highest non-permanent voltage U_{max2} taken from EN 50163:2004.

NOTE 2 The rated voltage for fixed installations in railway applications is a phase to earth value.

5.4 Insulation coordination

5.4.1 General

Insulation coordination shall be conducted according to EN 50124-1 e.g. selection of values for overvoltage category (OV) and pollution degree (PD).

The rated voltage U_{Ne} shall be used when EN 50124-1 refers to the rated insulation voltage U_{Nm}.

The definition of the four overvoltage categories shall be as in EN 50124-1:2001, 2.2.2.1.

The definition of the seven pollution degrees shall be as in EN 50124-1:2001, 2.5 and Table A.4.