SLOVENSKI STANDARD
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Železniške naprave - Stabilne naprave električne vleke - Posebne zahteve za stikalne naprave za izmenični tok - 3-2. del: Merilne, krmilne in zaščitne naprave za izključno uporabo v izmeničnih vlečnih sistemih - Tokovni transformatorji

Railway applications - Fixed installations - Particular requirements for a.c. switchgear - Part 3-2: Measurement, control and protection devices for specific use in a.c. traction systems - Current transformers

Bahnanwendungen - Ortsfeste Anlagen - Besondere Anforderungen an Wechselstrom-Schalteinrichtungen - Teil 3-2: Meß-, Steuerungs- und Schutzeinrichtungen für Wechselstrom-Bahnanlagen - Einphasen-Stromwandler

Applications ferroviaires - Installations fixes - Exigences particulières pour appareillage à courant alternatif - Partie 3-2: Dispositifs de mesure, de commande et de protection pour usage spécifique dans les systèmes de traction à courant alternatif - Transformateurs de courant monophasés

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ICS:

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29.280	Električna vlečna oprema	Electric traction equipment

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English Version

Railway applications - Fixed installations - Particular requirements for a.c. switchgear - Part 3-2: Measurement, control and protection devices for specific use in a.c. traction systems - Current transformers

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Bahnanwendungen - Ortsfeste Anlagen - Besondere Anforderungen an Wechselstrom-Schalteinrichtungen - Teil 3-2: Mess-, Steuerungs- und Schutzeinrichtungen für Wechselstrom-Bahnanlagen - Stromwandler

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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50152-3-2:2016) has been prepared by 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”.

The following dates are fixed:

- latest date by which the existence of this document has to be announced at national level (doa) 2016-10-25
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-04-25
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2019-04-25

This document supersedes EN 50152-3-2:2001.

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.

This standard was revised to reflect the latest versions of standards referenced and to remove text already included in the EN 61869 Series. The structure of the document was adapted to that of EN 50152-1 and EN 50152-2. Ratings have been added to provide designations in line with other railway standards e.g. EN 50124. Tests requirements have been detailed to meet operating conditions of railway applications. Partial discharge voltages have been specified in Table 2.

This standard has to be read in conjunction with EN 61869-1:2009 and EN 61869-2:2012.

Where a particular clause/subclause of EN 61869-2 is not mentioned in this standard, that clause/subclause 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 61869-2 is to be adapted accordingly.

The numbering of clauses in EN 61869 Series is similar to that in the EN 50152 Series.

Where terms defined in EN 61869-1 and EN 61869-2 conflict with definitions of the same terms as given in IEC 60050-811:1991 or of the other railway applications documents listed in the normative references, the definitions in EN 61869-1 and EN 61869-2 are to be used.

NOTE The suffix N which appears in this standard for rated values is not present in EN 61869–1 and EN 61869–2.

References in subclauses of EN 61869-1 and EN 61869-2 have to be replaced by references to applicable subclauses in this standard as far as reasonably possible.

EN 50152-3-2:2016

EN 50152 Series under the generic title "*Railway applications - Fixed installations - Particular requirements for a.c. 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 – Devices;

— Part 3-2: Measurement, control and protection devices for specific use in a.c. traction systems – Current transformers;

— Part 3-3: Measurement, control and protection devices for specific use in a.c. traction systems – Voltage transformers.

1 Scope

This EN 50152-3-2 is applicable to new current transformers which are:

— intended for use in 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 typically connected to earth and included in the return current path, all phase to earth voltages are subject to the limits as given in EN 50163. Nevertheless conductor to conductor voltages are some times higher e.g. in autotransformer systems.

Current transformers are mainly used with:

— measuring instruments,

— protective devices.

This EN 50152-3-2 also applies to current transformers other than inductive types as far as reasonably possible. Requirements of this EN 50152-3-2 have priority.

NOTE 3 Combined current and voltage transformers are typically not used in fixed installations in traction systems.

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 50121-5:2006, *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 50125-2:2002, *Railway applications - Environmental conditions for equipment - Part 2: Fixed electrical installations*

EN 50152 Series, *Railway applications - Fixed installations - Particular requirements for a.c. switchgear*

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

EN 61869-1:2009, *Instrument transformers - Part 1: General requirements (IEC 61869-1:2007, mod.)*

EN 61869-2:2012, *Instrument transformers - Part 2: Additional requirements for current transformers (IEC 61869-2:2012)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 61869-1:2009 and EN 61869-2:2012 except of 3.2.1 to 3.2.9 and the following apply.

NOTE Terms 3.2.1 to 3.2.3 of EN 61869–1:2009 address voltage definitions which are differently defined in railway systems. Terms 3.2.4 to 3.2.9 of EN 61869–1:2009 address aspects specific to three-phase systems.

3.1.1
nominal voltage
U_n
suitable approximate voltage value used to designate or identify a given supply system

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

Note 2 to entry: An autotransformer 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 contact line system.

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

3.1.2
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

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.

Note 2 to entry: The abbreviation U_r is not used for current transformers used in railway systems.

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

3.1.3
overvoltage category
OV
numeral defining a transient overvoltage condition

Note 1 to entry: This definition uses different wording as in other parts of EN 50152.

[SOURCE: IEC 60050-581:2008, 581-21-02 modified: note 1 to entry added]

3.1.4
pollution degree
PD
numeral characterizing the expected pollution of the micro-environment

Note 1 to entry: This definition uses different wording as in other parts of EN 50152.

[SOURCE: IEC 60050-581:2008, 581-21-07 modified: note 1 to entry added]

3.2 Abbreviations

For the purposes of this document, the abbreviations given in EN 61869-2:2012, 3.7 apply but are amended by the following index.

OV	Overvoltage category
PD	Pollution Degree
U_n	nominal voltage
U_{Ne}	rated voltage

4 Service conditions

Clause 4 of EN 61869-1:2009 is applicable with the following modifications:

— the minimum ambient air temperature under normal service conditions for indoor current transformers shall be −5°C;

— subclause 4.4 does not apply;

NOTE 1 This subclause specifies possible scenarios of three-phase system's star-point earthing.

— for special service conditions, agreement shall be made between purchaser and supplier. EN 50125-2 should be taken as guidance for the selection of appropriate classifications.

NOTE 2 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

5.1 General

Clause 5 of EN 61869-2:2012 is applicable except as noted in 5.2 to 5.6 below:

NOTE References in this standard typically name EN 61869–2:2012 only. Nevertheless clauses of EN 61869–2:2012 normally reference to EN 61869–1:2009 and specify the deviations to it.

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})

Subclause 5.2 of EN 61869-1:2009 is not applicable.

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

The value of U_{Ne} shall be used whenever EN 61869-1 or EN 61869-2 make reference to U_m 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.

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 Over Voltage 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.

5.4.2 Rated insulation level

Subclause 5.3 of EN 61869-1:2009 is replaced by the following: