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| <b>STN</b> | <b>Prístrojové transformátory. Časť 6: Dopĺňajúce všeobecné požiadavky na nízko výkonové prístrojové transformátory.</b> | <b>STN<br/>EN 61869-6</b><br><br>35 1309 |
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Instrument transformers - Part 6: Additional general requirements for low-power instrument transformers

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/17

Obsahuje: EN 61869-6:2016, IEC 61869-6:2016

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Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2017  
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.



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December 2016

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EN 60044-8:2002 (partially)

English Version

**Instrument transformers - Part 6: Additional general requirements for low-power instrument transformers (IEC 61869-6:2016)**

Transformateurs de mesure - Partie 6: Exigences générales supplémentaires concernant les transformateurs de mesure de faible puissance (IEC 61869-6:2016)

Messwandler - Teil 6: Zusätzliche allgemeine Anforderungen für Kleinsignal-Messwandler (IEC 61869-6:2016)

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## European foreword

The text of document 38/501/FDIS, future edition 1 of IEC 61869-6, prepared by IEC/TC 38 "Instrument transformers" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61869-6:2016.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-06-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-12-23

This document is to be read jointly with, and is based on, EN 61869-1:2009, *General requirements*. However, the reader is encouraged to use the most recent edition of that document.

This document follows the structure of EN 61869 series and supplements or modifies the corresponding clauses in EN 61869-1 Standard.

When a particular clause/subclause of Part 1, is not mentioned in this Part 6, that clause/subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

For additional clauses, subclauses, figures, tables, annexes or notes, the following numbering system is used:

– clauses, subclauses, tables, figures and notes that are numbered starting from 601 are additional to those in Part 1;

– additional annexes are lettered 6A, 6B, etc.

This document, jointly with EN 61869-1:2009, supersedes EN 60044-7:2000 (partially) and EN 60044-8:2002 (partially).

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## Endorsement notice

The text of the International Standard IEC 61869-6:2016 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

|                  |      |   |
|------------------|------|---|
| IEC 60044-7:1999 | NOTE | Harmonized as EN 60044-7:2000 (not modified). |
| IEC 60044-8:2002 | NOTE | Harmonized as EN 60044-8:2002 (not modified)  |
| IEC 61508-1      | NOTE | Harmonized as EN 61508-1.                     |
| IEC 61508-3      | NOTE | Harmonized as EN 61508-3.                     |
| IEC 61850 Series | NOTE | Harmonized as EN 61850 Series.                |
| IEC 61869 Series | NOTE | Harmonized as EN 61869 Series.                |
| IEC 61869-5      | NOTE | Harmonized as EN 61869-5.                     |
| IEC 61869-9      | NOTE | Harmonized as EN 61869-9.                     |
| IEC 61869-10     | NOTE | Harmonized as EN 61869-10.                    |
| IEC 61869-11     | NOTE | Harmonized as EN 61869-11.                    |

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

#### Annex ZA of EN 61869:2009 is applicable with the following additions:

| <u>Publication</u> | <u>Year</u>        | <u>Title</u>  | <u>EN/HD</u> | <u>Year</u>        |
|--------------------|--------------------|---|--------------|--------------------|
| -                  | -                  | Voltage characteristics of electricity supplied by public electricity networks  | EN 50160     | 2010               |
| IEC 60068-2-6      | 2007               | Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)   | EN 60068-2-6 | 2008               |
| IEC 60255-27       | 2013               | Measuring relays and protection equipment - Part 27: Product safety requirements  | EN 60255-27  | 2014               |
| IEC 60603-7-1      | 2011               | Connectors for electronic equipment - Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors                                 | EN 60603-7-1 | 2011               |
| IEC 60794-2        | 2002               | Optical fibre cables - Part 2: Indoor cables - Sectional specification  | EN 60794-2   | 2003               |
| IEC 60794-3        | 2014               | Optical fibre cables - Part 3: Outdoor cables - Sectional specification   | EN 60794-3   | 2015               |
| IEC 60812          | 2006               | Analysis techniques for system reliability - Procedure for failure mode and effects analysis (FMEA)   | EN 60812     | 2006               |
| IEC 61000-4-1      | 2006 <sup>1)</sup> | Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series                                 | EN 61000-4-1 | 2007 <sup>2)</sup> |
| IEC 61000-4-2      | 2008               | Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test                          | EN 61000-4-2 | 2009               |
| IEC 61000-4-3      | 2006               | Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test | EN 61000-4-3 | 2006               |
| +A1                | 2007               |   | +A1          | 2008               |
| +A2                | 2010               |   | +A2          | 2010               |

<sup>1)</sup> Superseded by IEC/TR 61000-4-1:2016.

<sup>2)</sup> Withdrawn publication.

| <u>Publication</u> | <u>Year</u>        | <u>Title</u>  | <u>EN/HD</u>  | <u>Year</u>        |
|--------------------|--------------------|---|---------------|--------------------|
| IEC 61000-4-4      | 2012               | Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test  | EN 61000-4-4  | 2012               |
| IEC 61000-4-5      | 2014               | Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test  | EN 61000-4-5  | 2014               |
| IEC 61000-4-6      | 2013               | Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields  | EN 61000-4-6  | 2014               |
| IEC 61000-4-7      | 2002               | Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto | EN 61000-4-7  | 2002               |
| +A1                | 2008               |   | +A1           | 2009               |
| IEC 61000-4-8      | 2009               | Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test   | EN 61000-4-8  | 2010               |
| IEC 61000-4-9      | 1993               | Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Pulse magnetic field immunity test   | EN 61000-4-9  | 1993 <sup>3)</sup> |
| +A1                | 2000               |   | +A1           | 2001 <sup>3)</sup> |
| IEC 61000-4-10     | 1993 <sup>4)</sup> | Electromagnetic compatibility (EMC) - Part 4-10: Testing and measurement techniques - Damped oscillatory magnetic field immunity test   | EN 61000-4-10 | 1993               |
| +A1                | 2000               |   | +A1           | 2001               |
| IEC 61000-4-11     | 2004               | Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests   | EN 61000-4-11 | 2004               |
| IEC 61000-4-13     | 2002               | Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signaling at a.c. power port, low frequency immunity tests                                 | EN 61000-4-13 | 2002               |
| +A1                | 2009               |   | +A1           | 2009               |

<sup>3)</sup> Superseded by EN 61000-4-9:2016 (IEC 61000-4-9:2016): DOW = 2019-08-17.

<sup>4)</sup> Superseded by IEC 61000-4-10:2016.

| <u>Publication</u> | <u>Year</u> | <u>Title</u>   | <u>EN/HD</u>                       | <u>Year</u>        |
|--------------------|-------------|--|------------------------------------|--------------------|
| IEC 61000-4-16     | 1998        | Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz  | EN 61000-4-16                      | 1998 <sup>5)</sup> |
| +A1                | 2001        |  | +A1                                | 2004               |
| +A2                | 2009        |  | +A2                                | 2011               |
| IEC 61000-4-18     | 2006        | Electromagnetic compatibility (EMC) - Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test  | EN 61000-4-18<br>+ corr. September | 2007<br>2007       |
| +A1                | 2010        |  | +A1                                | 2010               |
| IEC 61000-4-29     | 2000        | Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests | EN 61000-4-29                      | 2000               |
| IEC 61025          | 2006        | Fault Tree Analysis (FTA)  | EN 61025                           | 2007               |
| IEC 61076-2-101    | 2012        | Connectors for electronic equipment - Product requirements - Part 2-101: Circular connectors - Detail specification for M12 connectors with screw-locking                              | EN 61076-2-101                     | 2012               |
| IEC/TS 61850-2     | 2003        | Communication networks and systems in substations - Part 2: Glossary   | -                                  | -                  |
| IEC 61850-7-4      | 2010        | Communication networks and systems for power utility automation - Part 7-4: Basic communication structure - Compatible logical node classes and data object classes                    | EN 61850-7-4                       | 2010               |
| IEC 61869-1 (mod)  | 2007        | Instrument transformers - Part 1: General requirements   | EN 61869-1                         | 2009               |
| IEC 61869-2        | 2012        | Instrument transformers - Part 2: Additional requirements for current transformers   | EN 61869-2                         | 2012               |
| IEC 61869-3        | 2011        | Instrument transformers - Part 3: Additional requirements for inductive voltage transformers   | EN 61869-3                         | 2011               |
| IEC/TR 61869-103   | 2012        | Instrument transformers - The use of instrument transformers for power quality measurement   | -                                  | -                  |
| IEC 62271-100      | 2008        | High-voltage switchgear and controlgear - Part 100: Alternating current circuit-breakers   | EN 62271-100                       | 2009               |
| +A1                | 2012        |  | +A1                                | 2012               |
| CISPR 11 (mod)     | 2015        | Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement   | EN 55011                           | 2016               |

<sup>5)</sup> Superseded by EN 61000-4-16:2016 (IEC 61000-4-16:2015): DOW = 2019-01-13.

| <u>Publication</u>      | <u>Year</u> | <u>Title</u>   | <u>EN/HD</u> | <u>Year</u> |
|-------------------------|-------------|--|--------------|-------------|
| ISO/IEC/IEEE<br>21451-4 | 2010        | Information technology - Smart transducer -<br>interface for sensors and actuators -<br>Part 4: Mixed-mode communication<br>protocols and Transducer Electronic Data<br>Sheet (TEDS) formats |              | -           |





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**Instrument transformers –  
Part 6: Additional general requirements for low-power instrument transformers**





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# INTERNATIONAL STANDARD



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## Instrument transformers – Part 6: Additional general requirements for low-power instrument transformers

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**INSTRUMENT TRANSFORMERS –****Part 6: Additional general requirements  
for low-power instrument transformers**

## FOREWORD

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International Standard IEC 61869-6 has been prepared by IEC technical committee 38: Instrument transformers.

This first edition of IEC 61869-6 cancels and replaces the relevant parts of IEC 60044-7, published in 1999, and of IEC 60044-8, published in 2002<sup>1</sup>.

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<sup>1</sup> IEC 60044-7 and IEC 60044-8 will eventually be replaced by the IEC 61869 series, but until all the relevant parts will be published, these two standards are still in force.



The text of this standard is based on the following documents:

|             |                  |
|-------------|------------------|
| FDIS        | Report on voting |
| 38/501/FDIS | 38/507/RVD       |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61869 series, published under the general title *Instrument transformers*, can be found on the IEC website.

This Part 6 is to be read in conjunction with, and is based on, IEC 61869-1:2007, *General Requirements* – however, the reader is encouraged to use its most recent edition.

This Part 6 follows the structure of IEC 61869-1:2007 and supplements or modifies its corresponding clauses.

When a particular clause/subclause of Part 1 is not mentioned in this Part 6, that clause/subclause applies. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

For additional clauses, subclauses, figures, tables, annexes or notes, the following numbering system is used:

- clauses, subclauses, tables, figures and notes that are numbered starting from 601 are additional to those in Part 1;
- additional annexes are lettered 6A, 6B, etc.

An overview of the planned set of standards at the date of publication of this document is given below. The updated list of standards issued by IEC TC 38 is available at the website: [www.iec.ch](http://www.iec.ch).

| PRODUCT FAMILY STANDARDS   |   | PRODUCT STANDARD IEC | PRODUCTS  | OLD STANDARD IEC   |
|--|---|----------------------|---|--------------------|
| <b>IEC 61869-1</b><br>GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS |   | <b>61869-2</b>       | ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS  | 60044-1<br>60044-6 |
|  |   | <b>61869-3</b>       | ADDITIONAL REQUIREMENTS FOR INDUCTIVE VOLTAGE TRANSFORMERS  | 60044-2            |
|  |   | <b>61869-4</b>       | ADDITIONAL REQUIREMENTS FOR COMBINED TRANSFORMERS   | 60044-3            |
|  |   | <b>61869-5</b>       | ADDITIONAL REQUIREMENTS FOR CAPACITOR VOLTAGE TRANSFORMERS  | 60044-5            |
|  | <b>IEC 61869-6</b><br>ADDITIONAL GENERAL REQUIREMENTS FOR LOW-POWER INSTRUMENT TRANSFORMERS | <b>61869-7</b>       | ADDITIONAL REQUIREMENTS FOR ELECTRONIC VOLTAGE TRANSFORMERS   | 60044-7            |
|  |   | <b>61869-8</b>       | ADDITIONAL REQUIREMENTS FOR ELECTRONIC CURRENT TRANSFORMERS   | 60044-8            |
|  |   | <b>61869-9</b>       | DIGITAL INTERFACE FOR INSTRUMENT TRANSFORMERS   |                    |
|  |   | <b>61869-10</b>      | ADDITIONAL REQUIREMENTS FOR LOW-POWER PASSIVE CURRENT TRANSFORMERS                                      |                    |
|  |   | <b>61869-11</b>      | ADDITIONAL REQUIREMENTS FOR LOW-POWER PASSIVE VOLTAGE TRANSFORMERS                                      | 60044-7            |
|  |   | <b>61869-12</b>      | ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMER OR COMBINED PASSIVE TRANSFORMERS |                    |
|  |   | <b>61869-13</b>      | STAND ALONE MERGING UNIT  |                    |
|  |   | <b>61869-14</b>      | ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS FOR DC APPLICATIONS                                    |                    |
|  |   | <b>61869-15</b>      | ADDITIONAL REQUIREMENTS FOR DC VOLTAGE TRANSFORMERS FOR DC APPLICATIONS                                 |                    |

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INSTRUMENT TRANSFORMERS –

### Part 6: Additional general requirements for low-power instrument transformers

#### 1 Scope

This part of IEC 61869 is a product family standard and covers only additional general requirements for low-power instrument transformers (LPIT) used for a.c. applications having rated frequencies from 15 Hz to 100 Hz covering MV, HV and EHV or used for d.c. applications. This product standard is based on IEC 61869-1:2007, in addition to the relevant product specific standard.

This part of IEC 61869 does not cover the specification for the digital output format of instrument transformers.

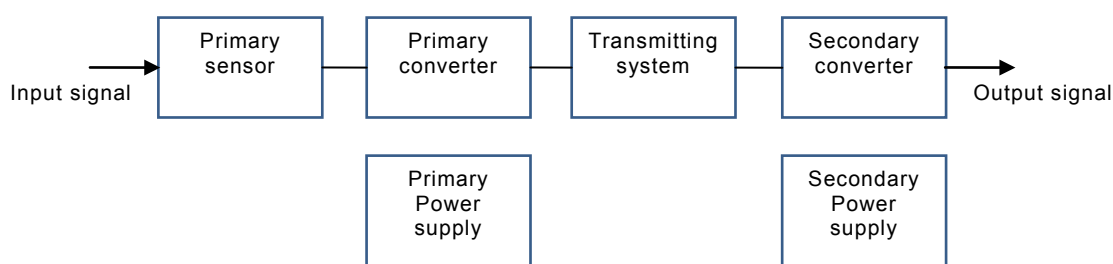
This part of IEC 61869 defines the errors in case of analogue or digital output. The other characteristics of the digital interface for instrument transformers are standardised in IEC 61869-9 as an application of the standards, the IEC 61850 series, which details layered substation communication architecture.

This part of IEC 61869 considers additional requirements concerning bandwidth. The accuracy requirements on harmonics and requirements for the anti-aliasing filter are given in the normative Annex 6A.4.

The general block diagram of single-phase LPITs is given in Figure 601.

According to the technology, it is not absolutely necessary that all parts described in Figure 601 are included in the instrument transformer.

As an example, for low-power passive transformers (LPITs without active electronic components) the blocks are composed only with passive components and there is no power supply.



IEC

Figure 601 – General block diagram of a single-phase LPIT

#### 2 Normative reference

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.

Clause 2 of IEC 61869-1:2007 is applicable with the following additions:

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60255-27:2013, *Measuring relays and protection equipment – Part 27: Product safety requirements*

IEC 60603-7-1:2011, *Connectors for electronic equipment – Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors*

IEC 60794-2:2002, *Optical fibre cables – Part 2: Indoor cables – Sectional specification*

IEC 60794-3:2014, *Optical fibre cables – Part 3: Outdoor cables – Sectional specification*

IEC 60812:2006, *Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA)*

IEC 61000-4-1:2006, *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*  
IEC 61000-4-3:2006/AMD1:2007  
IEC 61000-4-3:2006/AMD2:2010

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*  
IEC 61000-4-7:2002/AMD1:2008

IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-9:1993, *Electromagnetic compatibility (EMC) – Part 4-9: Testing and measurement techniques – Section 9: Pulse magnetic field immunity test*  
IEC 61000-4-9:1993/AMD1:2000

IEC 61000-4-10:1993, *Electromagnetic compatibility (EMC) – Part 4-10: Testing and measurement techniques – Section 10: Damped oscillatory magnetic field immunity test. Basic EMC Publication*  
IEC 61000-4-10:1993/AMD1:2000

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-4-13:2002, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*  
IEC 61000-4-13:2002/AMD1:2009

IEC 61000-4-16:1998, *Electromagnetic compatibility (EMC) – Part 4-16: Testing and measurement techniques – Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz*  
IEC 61000-4-16:1998/AMD1:2001  
IEC 61000-4-16:1998/AMD2:2009

IEC 61000-4-18:2006, *Electromagnetic compatibility (EMC) – Part 4-18: Testing and measurement techniques – Damped oscillatory wave immunity test*  
IEC 61000-4-18:2006/AMD1:2010

IEC 61000-4-29:2000, *Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests*

IEC 61025:2006, *Fault tree analysis (FTA)*

IEC 61076-2-101:2012, *Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking*

IEC TS 61850-2:2003, *Communication networks and systems in substations – Part 2: Glossary*

IEC 61850-7-4:2010, *Communication networks and systems for power utility automation – Part 7-4: Basic communication structure – Compatible logical node classes and data object classes*

IEC 61869-1:2007, *Instrument transformers – Part 1: General requirements*

IEC 61869-2:2012, *Instrument transformers – Part 2: Additional requirements for current transformers*

IEC 61869-3:2011, *Instrument transformers – Part 3: Additional requirements for inductive voltage transformers*

IEC TR 61869-103:2012, *Instrument transformers – Part 103: The use of instrument transformers for power quality measurement*

IEC 62271-100:2008, *High-voltage switchgear and controlgear – Part 100: Alternating current circuit-breakers*  
IEC 62271-100:2008/AMD1:2012

CISPR 11:2015, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*

ISO/IEC/IEEE 21451-4:2010, *Information technology – Smart transducer interface for sensors and actuators – Part 4: Mixed-mode communication protocols and Transducer Electronic Data Sheet (TEDS) formats*

IEC 61869-6:2016 IEC 2016

– 13 –

EN 50160:2010, *Voltage characteristics of electricity supplied by public distribution systems*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**