

Mõõtetrafod. Osa 1: Üldnõuded

Instrument transformers -- Part 1: General requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61869-1:2009 sisaldab Euroopa standardi EN 61869-1:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.10.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 04.09.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 61869-1:2009 consists of the English text of the European standard EN 61869-1:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.10.2009 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 04.09.2009.

The standard is available from Estonian standardisation organisation.

ICS 17.220.20

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**Instrument transformers -
Part 1: General requirements
(IEC 61869-1:2007, modified)**

Transformateurs de mesure -
Partie 1: Exigences générales
(CEI 61869-1:2007, modifiée)

Messwandler -
Teil 1: Allgemeine Anforderungen
(IEC 61869-1:2007, modifiziert)

This European Standard was approved by CENELEC on 2009-07-01. 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.

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CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 38/360/FDIS, future edition 1 of IEC 61869-1, prepared by IEC TC 38, Instrument transformers, was submitted to the IEC-CENELEC parallel vote and, together with a number of editorial modifications drafted by the Technical Committee CENELEC TC 38X, Instrument transformers, to answer the EMC Consultant's remarks, it was approved by CENELEC as EN 61869-1 on 2009-07-01.

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) 2010-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-07-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2004/108/EC. See Annex ZZ.

IEC TC 38 decided to restructure the whole set of stand-alone standards in the IEC 60044 series and transform it into a new set of standards composed of general requirements documents and specific requirements documents.

This standard is the first issue of this new series and can be regarded as a Product Family standard. It contains the general requirements for instrument transformers and shall be read in conjunction with the relevant specific requirements standard for the instrument transformer concerned.

An overview of the planned set of standards is given below:

PRODUCT FAMILY STANDARDS	PRODUCT STANDARD	PRODUCTS	OLD STANDARD
61869-1 GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS	61869-2	CURRENT TRANSFORMERS	60044-1
	61869-3	INDUCTIVE VOLTAGE TRANSFORMERS	60044-2
	61869-4	COMBINED TRANSFORMERS	60044-3
	61869-5	CAPACITIVE VOLTAGE TRANSFORMERS	60044-5
	61869-6	CURRENT TRANSFORMERS FOR TRANSIENT PERFORMANCE	60044-6
	61869-7	ELECTRONIC VOLTAGE TRANSFORMERS	60044-7
	61869-8	ELECTRONIC CURRENT TRANSFORMERS	60044-8
	61869-10	LOW-POWER STAND- ALONE CURRENT SENSORS	

This standard covers all general requirements formerly found in the stand-alone standards of the EN 60044 series. Additionally, it introduces some technical innovations:

- requirements for gas-insulated instrument transformers,
- additional special tests,
- requirements for internal arc fault protection,
- requirements for degrees of protection by enclosure,
- requirements for resistance to corrosion,
- requirements for safety and environmental concerns.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61869-1:2007 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

6 Design and construction

6.11.1 **Replace** the second paragraph by:

For instrument transformers the following EMC requirements and tests are specified:

- requirements for emission, Radio Interference Voltage (RIV) included for high voltage parts of the equipment.;
- requirements for immunity, only applicable to electronic parts of the equipment;
- requirements for transmitted overvoltages.

6.11.2 **Delete** the note.

6.11.3 **Replace** the second paragraph by:

Refer to specific product standards for details.

7 Tests

7.2.5.2 **Replace** the text of this subclause by:

Refer to specific product standards for details.

Bibliography

Add the following notes for the standards indicated:

IEC 60038	NOTE Harmonized as HD 472 S2:1989 (modified), with the following title " <i>Nominal voltages for low-voltage public electricity supply systems</i> "
IEC 60068-2	NOTE Harmonized in EN 60068-2 series (not modified).
IEC 60071-2	NOTE Harmonized as EN 60071-2:1997 (not modified).
IEC 60255-22-1	NOTE Harmonized as EN 60255-22-1:2008 (not modified).
IEC 60565	NOTE Harmonized as EN 60565:2007 (not modified).
IEC 60599	NOTE Harmonized as EN 60599:1999 (not modified).
IEC 60660	NOTE Harmonized as EN 60660:1999 (not modified).
IEC 60664-1	NOTE Harmonized as EN 60664-1:2007 (not modified).
IEC 60869	NOTE Harmonized in EN 60869 series (not modified).
IEC 61000	NOTE Harmonized in EN 61000 series (modified).
IEC 61109	NOTE Harmonized as EN 61109:2008 (not modified).
IEC 61161	NOTE Harmonized as EN 61161:2007 (not modified).
IEC 61181	NOTE Harmonized as EN 61181:2007 (not modified).
IEC 62271-100	NOTE Harmonized as EN 62271-100:2009 (not modified).
CISPR 11	NOTE Harmonized as EN 55011:2007 (modified).
CISPR 16-1-1	NOTE Harmonized as EN 55016-1-1:2007 (not modified).
ISO 9001	NOTE Harmonized as EN ISO 9001:2008 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60060-1	- ¹⁾	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1	1991 ²⁾
IEC 60068-2-11	- ¹⁾	Environmental testing - Part 2: Tests - Test Ka: Salt mist	EN 60068-2-11	1999 ²⁾
IEC 60068-2-17	- ¹⁾	Environmental testing - Part 2: Tests - Test Q: Sealing	EN 60068-2-17	1994 ²⁾
IEC 60068-2-75	- ¹⁾	Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	1997 ²⁾
IEC 60071-1	- ¹⁾	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	2006 ²⁾
IEC 60085	- ¹⁾	Electrical insulation - Thermal evaluation and designation	EN 60085	2008 ²⁾
IEC 60270	- ¹⁾	High-voltage test techniques - Partial discharge measurements	EN 60270	2001 ²⁾
IEC 60296	- ¹⁾	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear	EN 60296 + corr. September	2004 ²⁾ 2004
IEC 60376	- ¹⁾	Specification of technical grade sulfur hexafluoride (SF ₆) for use in electrical equipment	EN 60376	2005 ²⁾
IEC 60417	Data- base	Graphical symbols for use on equipment	-	-
IEC 60455	Series	Resin based reactive compounds used for electrical insulation	EN 60455	Series
IEC 60480	- ¹⁾	Guidelines for the checking and treatment of sulphur hexafluoride (SF ₆) taken from electrical equipment and specification for its re-use	EN 60480	2004 ²⁾
IEC 60529	- ¹⁾	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 ²⁾ 1993
IEC 60567	- ¹⁾	Oil-filled electrical equipment - Sampling of gases and of oil for analysis of free and dissolved gases - Guidance	EN 60567	2005 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60694	- ¹⁾	Common specifications for high-voltage switchgear and controlgear standards	EN 60694 + corr. May	1996 ³⁾ 1999
IEC 60695-1-1	- ¹⁾	Fire hazard testing - Part 1-1: Guidance for assessing the fire hazard of electrotechnical products - General guidelines	EN 60695-1-1	2000 ²⁾
IEC 60695-1-30	- ¹⁾	Fire hazard testing - Part 1-30: Guidance for assessing the fire hazard of electrotechnical products - Preselection testing process - General guidelines	EN 60695-1-30	2008 ²⁾
IEC 60695-7-1	- ¹⁾	Fire hazard testing - Part 7-1: Toxicity of fire effluent - General guidance	EN 60695-7-1	2004 ²⁾
IEC 60721-3-3	- ¹⁾	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations	EN 60721-3-3	1995 ²⁾
IEC/TR 60815	- ¹⁾	Guide for the selection of insulators in respect of polluted conditions	-	-
IEC 60867	- ¹⁾	Insulating liquids - Specifications for unused liquids based on synthetic aromatic hydrocarbons	EN 60867	1994 ²⁾
IEC 61462	- ¹⁾	Composite hollow insulators - Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V - Definitions, test methods, acceptance criteria and design recommendations	EN 61462	2007 ²⁾
IEC/TR 61634	- ⁴⁾	High-voltage switchgear and controlgear - Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear	-	-
IEC 62155 (mod)	- ¹⁾	Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V	EN 62155	2003 ²⁾
IEC 62262	- ¹⁾	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	2002 ²⁾
IEC 62271-2	- ¹⁾	High-voltage switchgear and controlgear - Part 2: Seismic qualification for rated voltages of 72,5 kV and above	EN 62271-2	2003 ⁵⁾
IEC 62271-203	- ¹⁾	High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	EN 62271-203	2004 ²⁾

³⁾ EN 60694:1996 is superseded by EN 62271-1:2008, which is based on IEC 62271-1:2007.

⁴⁾ IEC/TR 61643 is superseded by IEC/TR 62271-303:2008, which is harmonized as CLC/TR 62271-303:2009.

⁵⁾ EN 62271-2:2003 is superseded by EN 62271-207:2007, which is based on IEC 62271-207:2007.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 18-2	- ¹⁾	Radio interference characteristics of overhead power lines and high-voltage equipment - Part 2: Methods of measurement and procedure for determining limits	-	-
IEC Guide 109	- ¹⁾	Environmental aspects - Inclusion in electrotechnical product standards	-	-
ISO 3231	- ¹⁾	Paints and varnishes - Determination of resistance to humid atmospheres containing sulphur dioxide	-	-

Annex ZZ (informative)

Coverage of Essential Requirements of EC Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Article 1 of Annex I of the EC Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directives concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

NOTE EN 61869-1:2009 does not give presumption of conformity without another part of the standard.

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INSTRUMENT TRANSFORMERS –

Part 1: General requirements

1 Scope

This International Standard is applicable to newly manufactured instrument transformers with analogue or digital output for use with electrical measuring instruments or electrical protective devices having rated frequencies from 15 Hz to 100 Hz.

This standard is a product family standard and covers general requirements only. For each kind of instrument transformer the product standard is composed by this standard and the relevant specific standard.

2 Normative references

The following referenced documents are essential for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60060-1: *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-2-11: *Basic environmental testing procedures – Part 2: Tests – Test Ka: Salt mist*

IEC 60068-2-17: *Basic environmental testing procedures – Part 2: Tests - Test Q: Sealing*

IEC 60068-2-75: *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests.*

IEC 60071-1: *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60085: *Electrical insulation – Thermal classification*

IEC 60270: *High-voltage test techniques – Partial discharge measurements*

IEC 60296: *Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear*

IEC 60376: *Specification of technical grade sulfur hexafluoride (SF₆) for use in electrical equipment*

IEC 60417: *Graphical symbols for use on equipment*

IEC 60455 (all parts): *Resin based reactive compounds used for electrical insulation*

IEC 60480: *Guidelines for the checking and treatment of sulphur hexafluoride (SF₆) taken from electrical equipment and specification for its re-use*

IEC 60529: *Degrees of protection provided by enclosures (IP code)*

IEC 60567: *Oil-filled electrical equipment – Sampling of gases and of oil for analysis of free and dissolved gases – Guidance*

IEC 60694: *Common specifications for high-voltage switchgear and controlgear standards*

IEC 60695-1-1: *Fire hazard testing – Part 1-1: Guidance for assessing the fire hazard of electrotechnical products - General guidelines*

IEC 60695-1-30: *Fire hazard testing – Part 1-30: Guidance for assessing the fire hazard of electrotechnical products – Use of preselection testing procedures*

IEC 60695-7-1: *Fire hazard testing – Part 7-1: Toxicity of fire effluent - General guidance*

IEC 60721-3-3: *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use of weatherprotected locations*

IEC 60721-3-4: *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 4: Stationary use at non-weatherprotected locations*

IEC 60815: *Guide for the selection of insulators in respect of polluted conditions*

IEC 60867: *Insulating liquids – Specifications for unused liquids based on synthetic aromatic hydrocarbons*

IEC 61462: *Composite hollow insulators – Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods and acceptance criteria and design recommendations*

IEC 61634: *High-voltage switchgear and controlgear – Use and handling of sulphur hexafluoride (SF₆) in high-voltage switchgear and controlgear*

IEC 62155: *Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V*

IEC 62262: *Degree of protection IK code*

IEC 62271-2: *High-voltage switchgear and controlgear – Part 2: Seismic qualification for rated voltages of 72,5 kV and above.*

IEC 62271-203: *High-voltage switchgear and controlgear – Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

CISPR 18-2: *Radio interference characteristics of overhead power lines and high-voltage equipment – Part 2: Methods of measurement and procedure for determining limits*

IEC Guide 109: *Environmental aspects – Inclusion in electrotechnical product standards*

ISO 3231: *Paints and varnishes – Determination of resistance to humid atmospheres containing sulphur dioxide*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.