BS EN 61869-6:2016

BSI Standards Publication

Instrument transformers

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

bsi.

This British Standard is the UK implementation of EN 61869-6:2016. It is identical to IEC 61869-6:2016. It supersedes BS EN 60044-7:2000, which will be withdrawn on 23 December 2019 and, together with BS EN 61869-9 (in preparation), it supersedes BS EN 60044-8:2002, which will be withdrawn upon the publication of BS EN 61869-9.

The UK participation in its preparation was entrusted to Technical Committee PEL/38, Instrument transformers.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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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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European Committee for Electrotechnical Standardization
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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• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-12-23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.

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

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

Publication	Year	Title	EN/HD	Year
-	-	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 [1)]	Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series	EN 61000-4-1	2007 [2)]
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

[1)] Superseded by IEC/TR 61000-4-1:2016.

[2)] Withdrawn publication.

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 [3)]
+A1	2000		+A1	2001 [3)]
IEC 61000-4-10	1993 [4)]	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

[3)] Superseded by EN 61000-4-9:2016 (IEC 61000-4-9:2016): DOW = 2019-08-17.

[4)] Superseded by IEC 61000-4-10:2016.

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 [5)]
+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 + corr. September	2007 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

[5)] Superseded by EN 61000-4-16:2016 (IEC 61000-4-16:2015): DOW = 2019-01-13.

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	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSTRUMENT TRANSFORMERS –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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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[1].

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1 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.

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

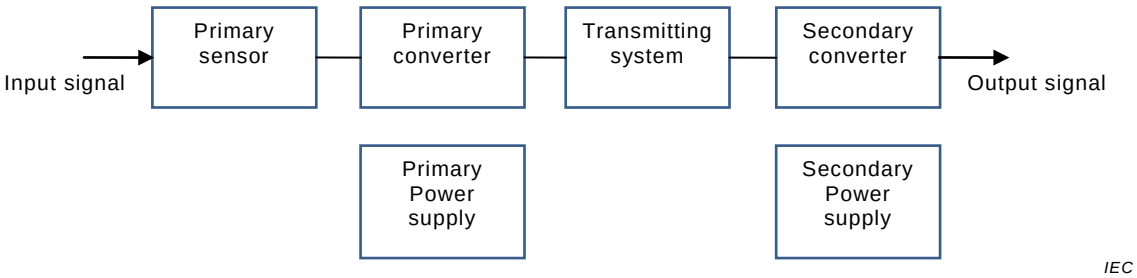

Figure 601 – General block diagram of a single-phase LPIT

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.