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## **Mättransformatorer – Del 10: Tilläggsfordringar för passiva strömtransformator med låg uteffekt**

*Instrument transformers –*

*Part 10: Additional requirements for low-power passive current transformers*

Som svensk standard gäller europastandarden EN IEC 61869-10:2018. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61869-10:2018.

### **Nationellt förord**

Europastandarden EN IEC 61869-10:2018

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61869-10, First edition, 2017 - Instrument transformers - Part 10: Additional requirements for low-power passive current transformers**

utarbetad inom International Electrotechnical Commission, IEC.

EN från CENELEC som är identiska med motsvarande IEC-standarder och som görs tillgängliga för nationalkommittéerna efter den 1 januari 2018 får en beteckning som inleds med EN IEC istället för som tidigare bara EN.

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English Version

**Instrument transformers - Part 10: Additional requirements for  
low-power passive current transformers  
(IEC 61869-10:2017)**

Transformateurs de mesure - Partie 10: Exigences  
supplémentaires concernant les transformateurs de courant  
passifs de faible puissance  
(IEC 61869-10:2017)

Messwandler - Teil 10: Zusätzliche Anforderungen für  
Kleinsignal-Stromwandler  
(IEC 61869-10:2017)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## **European foreword**

The text of document 38/550/FDIS, future edition 1 of IEC 61869-10, prepared by IEC/TC 38 "Instrument transformers" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61869-10:2018.

The following dates are fixed:

- latest date by which the document has to be (dop) 2018-10-17  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2021-01-17  
standards conflicting with the  
document have to be withdrawn

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## **Endorsement notice**

The text of the International Standard IEC 61869-10:2017 was approved by CENELEC as a European Standard without any modification.

**Annex ZA**  
(normative)**Normative references to international publications  
with their corresponding European publications**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where 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).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60059	-	IEC standard current ratings	EN 60059	-
IEC 61869-6	2016	Instruments transformers -- Part 6: Additional general requirements for Low Power Instrument Transformers	EN 61869-6	2016

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references .....	9
3 Terms and definitions .....	10
3.1 General definitions.....	10
3.4 Definitions related to accuracy .....	10
3.7 Index of abbreviations.....	13
5 Ratings.....	13
5.3 Rated insulation levels and voltages .....	13
5.5 Rated output .....	14
5.6 Rated accuracy class.....	14
5.1001 Standard values for rated primary current ( $I_{pr}$ ).....	16
5.1002 standard values for rated extended primary current factor ( $K_{pcr}$ ) .....	16
5.1003 Standard value of rated continuous thermal current ( $I_{cth}$ ) .....	16
5.1004 Standard values of rated secondary voltage ( $U_{sr}$ ) .....	17
5.1005 Short-time current ratings .....	17
5.1006 Rated phase offset ( $\phi_{or}$ ) .....	17
6 Design and construction .....	17
6.11 Electromagnetic compatibility (EMC).....	17
6.13 Markings.....	17
6.601 Requirements for optical transmitting system and optical output link .....	19
6.602 Requirements for electrical transmitting system and electrical wires for output link.....	19
6.603 Signal-to-noise ratio.....	19
6.604 Failure detection and maintenance announcement.....	19
6.605 Operability .....	19
6.606 Reliability and dependability .....	19
6.607 Vibrations .....	20
7 Tests .....	20
7.1 General.....	20
7.2 Type tests.....	21
7.4 Special tests .....	25
601 Information to be given with enquiries, tenders and orders .....	25
601.1 Designation.....	25
601.2 Dependability.....	26
Annex 10A (informative) Designation of accuracy class when using the corrected transformation ratio and ratio correction factor .....	27
10A.1 General.....	27
10A.2 Designation of accuracy class based on rated transformation ratio .....	28
10A.3 Designation of accuracy class based on individual ratio correction factor.....	28
10A.4 Example of application .....	28
Annex 10B (informative) Principle of operation of Rogowski coils.....	32
10B.1 General.....	32
10B.2 Principle of operation .....	32
10B.3 Designs .....	33

10B.4 Accuracy.....	33
10B.5 Frequency dependence and response.....	35
Annex 10C (informative) Principle of operation of low-power iron core current transformers (proportional LPCT).....	37
10C.1 General.....	37
10C.2 Principle .....	37
10C.3 Accuracy.....	38
Annex 10D (normative) Test for accuracy with respect to the positioning of the primary conductor.....	39
10D.1 General.....	39
10D.2 Designation of accuracy class extension .....	39
10D.3 Test procedure.....	40
Bibliography.....	42

Figure 1001 – General block diagram of a single-phase low-power passive current transformer .....	8
Figure 1002 – Marking of terminals .....	18
Figure 1003 – Test set up for impact of magnetic field from other phases .....	24
Figure 10A.1 – Accuracy class designation improved based on individual ratio correction factor $CF_I$ .....	28
Figure 10A.2 – Accuracy test of passive LPCT.....	29
Figure 10A.3 – Accuracy class of 1 % designated based on rated transformation ratio.....	30
Figure 10A.4 – Accuracy class of 0,1 % designated based on using the ratio correction factor and corrected transformation ratio.....	31
Figure 10B.1 – Rogowski coil Equivalent Circuits.....	35
Figure 10B.2 – Integrated and non-integrated Rogowski coil output signals .....	35
Figure 10B.3 – Rogowski coil frequency dependence test .....	36
Figure 10C.1 – Principle of iron core current transformer .....	37
Figure 10C.2 – Equivalent circuit of the iron core current transformer with voltage output .....	38
Figure 10D.1 – Definition of the angle between the primary conductor and the LPCT.....	39
$d_{min} = d_{max}$ .....	40
Figure 10D.2 – Illustration of the primary conductor position according to the position factor .....	40
Figure 10D.3 – Accuracy measurement test set up .....	41
Table 1001 – Limits of ratio error and phase error for measuring passive LPCT .....	15
Table 1002 – Limits of errors .....	16
Table 1003 – Pin assignment for RJ45 connectors used in passive LPCT .....	19
Table 10 – List of tests.....	20
Table 1004 – Designation of a passive LPCT .....	26
Table 10A.1 – Ratio, ratio error based on mean value, and corresponding primary current .....	29
Table 10A.2 – Measured ratio error, correction factor and ratio error based on ratio correction factor for five passive LPCT .....	30
Table 10D.1 – Limits for the position of the primary conductor with respect to the passive LPCT .....	39

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSTRUMENT TRANSFORMERS –**Part 10: Additional requirements  
for low-power passive current transformers**

## FOREWORD

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International Standard IEC 61869-10 has been prepared IEC technical committee 38: Instrument transformers.

This first edition of IEC 61869-10, together with IEC 61869-1, IEC 61869-6, IEC 61869-8 and IEC 61869-9, cancels and replaces the first edition of IEC 60044-8, published in 2002<sup>1</sup>. This edition constitutes a technical revision.

The technical changes concern IEC TC 38's decision 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.

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<sup>1</sup> IEC 60044-8 will eventually be replaced by the IEC 61869 series, but until all the relevant parts of the IEC 61869 series will be published, this standard is still in force.



The text of this International Standard is based on the following documents:

FDIS	Report on voting
38/550/FDIS	38/551/RVD

Full information on the voting for the approval of this part of IEC 61869 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.

This standard is Part 10 of IEC 61869, published under the general title *Instrument transformers*.

This Part 10 is to be read in conjunction with, and is based on, IEC 61869-1:2007, *General requirements* and IEC 61869-6:2016, *Additional general requirements for low-power instrument transformers* – however, the reader is encouraged to use the most recent edition of these documents.

This Part 10 follows the structure of IEC 61869-1:2007 and IEC 61869-6:2016 and supplements or modifies the corresponding clauses.

When a particular subclause of Part 1 or part 6 is not mentioned in this Part 10, that subclause applies. When this part of IEC 61869 states “addition”, “modification” or “replacement”, the relevant text in part 1 or part 6 is to be adapted accordingly.

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

- clauses, subclauses, tables, figures and notes that are numbered starting from 1001 are additional to those in Part 1 and Part 6;
- additional annexes are lettered 10A, 10B, 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 on the IEC website.

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

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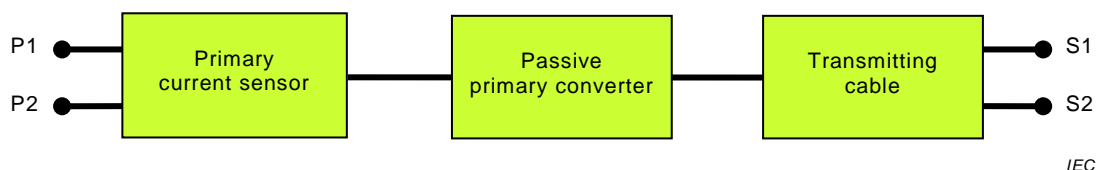
## INTRODUCTION

Low-power passive current transformers (LPCT) are based on passive technologies without any active electronic components. They can have an output signal proportional to the primary current, for example iron core coils with integrated shunt as a current to voltage converter (primary converter) or they can have an output signal proportional to the derivative of the primary current, for example air-core coils (Rogowski coils). This part of IEC 61869 does not cover the air-core coils with active integrator.

According to a general block diagram given in Figure 601 of IEC 61869-6:2016, the low-power passive current transformers do not use an active primary converter (i.e. without any active electronic component); therefore, there is no need for primary power supply. Additionally, neither the secondary converter nor the secondary power supply is used.

The general block diagram of a low-power passive current transformer is given in Figure 1001.

The applied technology decides which part is necessary for the realization of a low-power passive current transformer, i.e. it is not absolutely necessary that the transmitting cable or primary converter described in Figure 1001 be included in the low-power passive current transformer. The derivative LPCT solution considers only the air-core coil as the primary sensor and the transmission cable as the transmitting system. In this technology, the primary converter is not considered. In case of a proportional LPCT solution, the ferromagnetic-core coil is considered as the primary sensor, a burden resistance connected directly to the coil outputs works as a primary converter and the transmission cable is a transmitting system.



**Figure 1001 – General block diagram of a single-phase low-power passive current transformer**

## INSTRUMENT TRANSFORMERS –

### Part 10: Additional requirements for low-power passive current transformers

#### 1 Scope

This part of IEC 61869 is a product standard and covers only additional requirements for low-power passive current transformers. The product standard for low-power passive current transformers comprises IEC 61869-1, together with IEC 61869-6 and this document with specific requirements.

This document is applicable to newly manufactured low-power passive current transformers with analogue output for use with electrical measuring instruments or electrical protective devices having a rated frequency from 15 Hz to 100 Hz.

This document covers low-power passive current transformers used for measurement or protection and multi-purpose low-power passive current transformers used for both measurement and protection.

Subclause 5.6.1001 covers the accuracy requirements that are necessary for low-power passive current transformers for use with electrical measuring instruments.

Subclause 5.6.1002 covers the accuracy requirements that are necessary for low-power passive current transformers for use with electrical protective relays, and particularly for forms of protection in which the prime requirement is to maintain the accuracy up to several times the rated current. If required, the transient accuracy of low-power passive current transformers during fault is also given in 5.6.1002.

Low-power passive current transformers have analogue voltage output only (for digital output or for technology using any kind of active electronic components refer to IEC 61869-8<sup>2</sup>). Such low-power passive current transformers can include the secondary signal cable (transmitting cable). The principle of operation of derivative low-power passive current transformers using air-core coils (Rogowski coils) is given in Annex 10B and the principle of operation of proportional low-power passive current transformers using iron-core coils with integrated shunt is given in Annex 10C.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

Clause 2 of IEC 61869-6:2016 is applicable with the following additions:

IEC 60059, *IEC standard current ratings*

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

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<sup>2</sup> Under preparation.