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Irish Standard  
I.S. EN 61869-5:2011

# Instrument transformers -- Part 5: Additional requirements for capacitor voltage transformers (IEC 61869-5:2011 (EQV))

## I.S. EN 61869-5:2011

*Incorporating amendments/corrigenda issued since publication:*

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SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

|  |  |   |
|--|--|---|
| <i>This document replaces:</i><br>EN 60044-5:2004  | <i>This document is based on:</i><br>EN 61869-5:2011<br>EN 60044-5:2004        | <i>Published:</i><br>21 October, 2011<br>21 June, 2004                    |
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**EN 61869-5**

October 2011

ICS 17.220.20

Supersedes EN 60044-5:2004

English version

**Instrument transformers -  
Part 5: Additional requirements for capacitor voltage transformers  
(IEC 61869-5:2011)**

Transformateurs de mesure -  
Partie 5: Exigences supplémentaires  
concernant les transformateurs  
condensateurs de tension  
(CEI 61869-5:2011)

Messwandler -  
Teil 5: Zusätzliche Anforderungen für  
kapazitive Spannungswandler  
(IEC 61869-5:2011)

This European Standard was approved by CENELEC on 2011-08-17. 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 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

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

**I.S. EN 61869-5:2011**

EN 61869-5:2011

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## **Foreword**

The text of document 38/411/FDIS, future edition 1 of IEC 61869-5, prepared by IEC/TC 38, "Instrument transformers", was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61869-5:2011.

The following dates are 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) 2012-05-17
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2014-08-17

This European Standard supersedes EN 60044-5:2004 regarding capacitor voltage transformers.

EN 61869-5:2011 shall be read in conjunction with, and is based on, EN 61869-1:2009, Instrument transformers - General Requirements.

This Part 5 follows the structure of EN 61869-1 and supplements or modifies its corresponding clauses.

When a particular clause/subclause of Part 1 is not mentioned in this Part 5, that clause/subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 shall 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 501 are additional to those in Part 1;
- additional annexes are lettered 5A, 5B, etc.

Annex ZZ of EN 61869-1 is not applicable for this part of the series.

An overview of the planned set of standards at the date of publication of this document is given below. The updated list of standards prepared by IEC TC38 is available at the website: [www.iec.ch](http://www.iec.ch).

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| PRODUCT FAMILY STANDARDS   |   | PRODUCT STANDARD | PRODUCTS   | OLD STANDARD |
|--|---|------------------|--|--------------|
| <b>61869-1</b><br>GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS |   | <b>61869-2</b>   | ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS   | 60044-1      |
|  |   | <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 CAPACITIVE VOLTAGE TRANSFORMERS  | 60044-5      |
|  | <b>61869-6</b><br>ADDITIONAL GENERAL REQUIREMENT FOR ELECTRONIC INSTRUMENT TRANSFORMERS AND LOW POWER STAND ALONE SENSORS | <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 STAND-ALONE CURRENT SENSORS                                      |              |
|  |   | <b>61869-11</b>  | ADDITIONAL REQUIREMENTS FOR LOW POWER STAND ALONE VOLTAGE SENSOR                                       | 60044-7      |
|  |   | <b>61869-12</b>  | ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMER OR COMBINED STAND ALONE SENSORS |              |
|  |   | <b>61869-13</b>  | STAND ALONE MERGING UNIT   |              |

### Endorsement notice

The text of the International Standard IEC 61869-5:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60422

NOTE Harmonized as EN 60422.

## 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.

*Annex ZA of EN 61869-1:2009 applies with the following additions:*

| <u>Publication</u> | <u>Year</u> | <u>Title</u>   | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|--------------|-------------|
| IEC 60038 (mod)    | 2009        | IEC standard voltages  | EN 60038     | 2011        |
| IEC 60050-436      | -           | International Electrotechnical Vocabulary (IEV) -<br>Chapter 436: Power capacitors   | -            | -           |
| IEC 60050-601      | -           | International Electrotechnical Vocabulary (IEV) -<br>Chapter 601: Generation, transmission and distribution of electricity - General   | -            | -           |
| IEC 60050-604      | -           | International Electrotechnical Vocabulary (IEV) -<br>Chapter 604: Generation, transmission and distribution of electricity - Operation | -            | -           |
| IEC 60060-1        | -           | High-voltage test techniques -<br>Part 1: General definitions and test requirements  | EN 60060-1   | -           |
| IEC 60358          | -           | Coupling capacitors and capacitor dividers   | HD 597 S1    | -           |
| IEC 60481          | -           | Coupling devices for power line carrier systems  | -            | -           |
| IEC 61869-1 (mod)  | 2007        | Instrument transformers -<br>Part 1: General requirements  | EN 61869-1   | 2009        |

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **INSTRUMENT TRANSFORMERS –**

#### **Part 5: Additional requirements for capacitor voltage 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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This International Standard IEC 61869-5 specific clauses for capacitor voltage transformers has been prepared by IEC technical committee 38: Instrument transformers.

This standard replaces IEC 60044-5 regarding capacitor voltage transformers as well as IEC-PAS 60044-5 for capacitor voltage transformers.

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

|             |                  |
|-------------|------------------|
| FDIS        | Report on voting |
| 38/411/FDIS | 38/414/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.

This standard is Part 5 of IEC 61869, published under the general title *Instrument transformers*.

This part 5 is to be read in conjunction with, and is based on, IEC 61869-1, *General Requirements* – first edition (2007) – however the reader is encouraged to use its most recent edition.

This Part 5 follows the structure of IEC 61869-1 and supplements or modifies its corresponding clauses.

When a particular clause/subclause of Part 1 is not mentioned in this Part 5, 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 note, the following numbering system is used:

- clauses, subclauses, tables and figures and notes that are numbered starting from 501 are additional to those in Part 1;
- additional annexes are lettered 5A, 5B, 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 TC38 is available at the website: [www.iec.ch](http://www.iec.ch).

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| PRODUCT FAMILY STANDARDS   |   | PRODUCT STANDARD | PRODUCTS   | OLD STANDARD       |
|--|---|------------------|--|--------------------|
| <b>61869-1</b><br><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 CAPACITIVE VOLTAGE TRANSFORMERS  | 60044-5            |
|  | <b>61869-6</b><br><br>ADDITIONAL GENERAL REQUIREMENT FOR ELECTRONIC INSTRUMENT TRANSFORMERS AND LOW POWER STAND ALONE SENSORS | <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 STAND-ALONE CURRENT SENSORS                                      |                    |
|  |   | <b>61869-11</b>  | ADDITIONAL REQUIREMENTS FOR LOW POWER STAND ALONE VOLTAGE SENSOR                                       | 60044-7            |
|  |   | <b>61869-12</b>  | ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMER OR COMBINED STAND ALONE SENSORS |                    |
|  |   | <b>61869-13</b>  | STAND ALONE MERGING UNIT   |                    |

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.

## INSTRUMENT TRANSFORMERS –

### Part 5: Additional requirements for capacitor voltage transformers

#### 1 Scope

This part of IEC 61869 applies to new single-phase capacitor voltage transformers connected between line and ground for system voltages  $U_m \geq 72,5$  kV at power frequencies from 15 Hz to 100 Hz. They are intended to supply a low voltage for measurement, control and protective functions.

The capacitor voltage transformer can be equipped with or without carrier-frequency accessories for power line carrier-frequency (PLC) application at carrier frequencies from 30 kHz to 500 kHz.

The base requirements for coupling capacitors and capacitors dividers are defined in IEC 60358. The transmission requirements for coupling devices for power line carrier (PLC) system are defined in IEC 60481.

The measurement application includes both indication measuring and revenue measuring.

NOTE 501 Diagrams of capacitor voltage transformer to which this standard applies are given in Figures 5A.1 and 5A.2.

#### 2 Normative references

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

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

IEC 60038 ed7.0 (2009-06) – *IEC standard voltages*

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

IEC 60050-436, *International Electrotechnical Vocabulary (IEV) – Chapter 436: Power capacitors*

IEC 60050-601, *International Electrotechnical Vocabulary (IEV) – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 60050-604, *International Electrotechnical Vocabulary (IEV) – Chapter 604: Generation, transmission and distribution of electricity – Operation*

IEC 60358, *Coupling capacitors and capacitor dividers*

IEC 60481, *Coupling devices for power line carrier systems*

#### 3 Terms and Definitions

For the purpose of this document, the terms and definitions of IEC 61869-1 apply with the following additions:

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