

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 1: General

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English Version

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 1: General (IEC 60871-1:2014)

Condensateurs shunt pour réseaux à courant alternatif de tension assignée supérieure à 1 000 V -
Partie 1: Généralités
(CEI 60871-1:2014)

Parallelkondensatoren für Wechselspannungs-Starkstromanlagen mit einer Nennspannung über 1 kV -
Teil 1: Allgemeines
(IEC 60871-1:2014)

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

Foreword

The text of document 33/559/FDIS, future edition 4 of IEC 60871-1, prepared by IEC/TC 33 "Power capacitors and their applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60871-1:2014.

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) 2015-03-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-06-26

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Endorsement notice

The text of the International Standard IEC 60871-1:2014 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 60038:2009	NOTE	Harmonized as EN 60038:2011 (modified).
IEC 60071-2:1996	NOTE	Harmonized as EN 60071-2:1997 (not modified).
IEC 60099 Series	NOTE	Harmonized as EN 60099 Series (partly modified).
IEC 60110-1	NOTE	Harmonized as EN 60110-1.
IEC 60143 Series	NOTE	Harmonized as EN 60143 Series (not modified).
IEC 60252 Series	NOTE	Harmonized as EN 60252 Series (not modified).
IEC 60358 Series	NOTE	Harmonized as EN 60358 Series (not modified).
IEC 60831 Series	NOTE	Harmonized as EN 60831 Series (not modified).
IEC 60931 Series	NOTE	Harmonized as EN 60931 Series (not modified).
IEC 61048	NOTE	Harmonized as EN 61048.
IEC 61049	NOTE	Harmonized as EN 61049.
IEC 61071	NOTE	Harmonized as EN 61071.
IEC 61270-1	NOTE	Harmonized as EN 61270-1.
IEC 61642	NOTE	Harmonized as EN 61642.

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SHUNT CAPACITORS FOR AC POWER SYSTEMS HAVING A RATED VOLTAGE ABOVE 1 000 V –

Part 1: General

1 Scope

This part of IEC 60871 is applicable to both capacitor units and capacitor banks intended to be used, particularly, for power-factor correction of a.c. power systems having a rated voltage above 1 000 V and frequencies of 15 Hz to 60 Hz.

This part of IEC 60871 also applies to capacitors intended for use in power filter circuits. Additional definitions, requirements and tests for filter capacitors are given in Annex B.

Additional requirements for capacitors protected by internal fuses as well as requirements for the internal fuses are given in IEC 60871-4.

Requirements for capacitors to be protected by external fuses, as well as requirements for the same, are given in Annex C.

This standard does not apply to capacitors of the self-healing metallized dielectric type.

The following capacitors are excluded from this part of IEC 60871:

- capacitors for inductive heat-generating plants operating at frequencies between 40 Hz and 24 000 Hz (IEC 60110-1);
- series capacitors for power systems (see the IEC 60143 series);
- capacitors for motor applications and the like (see the IEC 60252 series);
- coupling capacitors and capacitor dividers (IEC 60358);
- shunt capacitors for a.c. power systems having rated voltage up to and including 1 000 V (see the IEC 60831 and IEC 60931 series);
- small a.c. capacitors to be used for fluorescent and discharge lamps (IEC 61048 and IEC 61049);
- capacitors to be used in power electronic circuits (IEC 61071);
- capacitors for microwave ovens (IEC 61270-1);
- capacitors for suppression of radio interference;
- capacitors intended for use with a.c. voltage superimposed on d.c. voltage.

Accessories such as insulators, switches, instrument transformers, external fuses, etc. are in accordance with the relevant IEC standards.

The object of this part of IEC 60871 is as follows:

- a) to formulate uniform rules regarding the performance and rating of units and banks, and the testing of units;
- b) to formulate specific safety rules;
- c) to provide a guide for installation and operation.

2 Normative references

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.

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

IEC 60071-1:2006, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60549, *High-voltage fuses for the external protection of shunt capacitors*

IEC 60815 (all parts), *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions*

IEC 60871-4:1996, *Shunt capacitors for AC power systems having a rated voltage above 1 000 V – Part 4: Internal fuses*

3 Terms and definitions

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

3.1

capacitor element

element

device consisting essentially of two electrodes separated by a dielectric

[SOURCE: IEC 60050-436:1990, 436-01-03]

3.2

capacitor unit

assembly of one or more capacitor elements in the same container with terminals brought out

[SOURCE: IEC 60050-436:1990, 436-01-04]

3.3

capacitor bank

bank

number of capacitor units connected so as to act together

[SOURCE: IEC 60050-436:1990, 436-01-06]

3.4

capacitor

two-terminal device characterized essentially by its capacitance

Note 1 to entry: The term "capacitor" is used when it is not necessary to specify whether a capacitor unit or capacitor bank is meant.

[SOURCE: IEC 60050-151:2001, 151-13-28]

3.5

capacitor installation

one or more capacitor banks and their accessories