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colour inside

Shunt capacitors for AC power systems having a rated voltage above 1 000 V – Part 3: Protection of shunt capacitors and shunt capacitor banks



IEC TS 60871-3:2015-06+AMD1:2023-08 CSV(en)



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

Part 3: Protection of shunt capacitors and shunt capacitor banks

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC TS 60871-3 edition 2.1 contains the second edition (2015-06) [documents 33/545/DTS and 33/563/RVC] and its amendment 1 (2023-08) [documents 33/688/DTS and 33/691/RVDTS].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

International Standard IEC 60871-3, which is a technical specification, has been prepared by IEC technical committee 33: Power capacitors and their applications.

This second edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Clearer writing of formulas on energy limitation for expulsion fuses;
b) Updated normative references and bibliography;
c) A new clause for synchronized switching has been added.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60871, published under the general title *Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

Part 3: Protection of shunt capacitors and shunt capacitor banks

1 Scope

This part of IEC 60871, which is a technical specification, gives guidance on the protection of shunt capacitors and shunt capacitor banks. it applies to capacitors according to IEC 60871-1.

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

IEC 60871-1, *Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V – Part 1: General*

IEC 60871-4, *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 terms and definitions given in IEC 60549, IEC 60871-1 and IEC 60871-4 apply.

4 Internal fuses

4.1 General

Internal fuses for shunt capacitors are selective current-limiting fuses arranged inside a capacitor. As defined in IEC 60871-4, they are designed to isolate faulted capacitor elements or capacitor unit, to allow operation of the remaining parts of that capacitor unit and the bank in which the capacitor unit is connected.

The operation of an internal fuse is initiated by the breakdown of a capacitor element. The affected element is instantaneously disconnected by the operation of the element fuse without interruption in the operation of the capacitor.

The number of externally parallel connected capacitors and the available short-circuit current of the supply system should not affect the current-limiting of internal fuses.

It should be noted that internal fuses do not provide protection against a short circuit between internal connections or a short circuit between active parts and casing, both of which may lead to case rupture.