

Shunt power capacitors of the non-self-healing type for a.c. systems having a rated voltage up to and including 1000 V —

**Part 1: General — Performance, testing
and rating — Safety requirements —
Guide for installation and operation**

The European Standard EN 60931-1:1993 has the status of a
British Standard

UDC 621.319.4:621.3.027:266.6:620.1:614.8

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

Austria	Italy
Belgium	Luxembourg
Denmark	Netherlands
Finland	Norway
France	Portugal
Germany	Spain
Greece	Sweden
Iceland	Switzerland
Ireland	United Kingdom

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Contents

	Page
Cooperating organizations	Inside front cover
National foreword	ii
Foreword	2
Text of EN 60931-1	5
National annex NA (informative) Committees responsible	Inside back cover
National annex NB (informative) Cross-references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee and is the English language version of EN 60931-1:1993 *Shunt power capacitors of the non-self-healing type for a.c. systems having a rated voltage up to and including 1 000 V — Part 1: General — Performance, testing and rating — Safety requirements — Guide for installation and operation*, published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived from IEC 931-1:1989 including Amendment 1:1991 published by the International Electrotechnical Commission (IEC). It also includes common modifications agreed by CENELEC.

The CENELEC common modifications, which are quoted on page 2, have been implemented at the appropriate place in the text and are indicated by a side line in the margin.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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Descriptors: Power capacitors, shunt capacitors, non-self-healing capacitors, performance characteristics, safety requirements, installation, markings, service conditions

English version

Shunt power capacitors of the non-self-healing type for a.c. systems having a rated voltage up to and including 1 000 V

Part 1: General

Performance, testing and rating — Safety requirements
Guide for installation and operation

(IEC 931-1:1989 + A1:1991, modified)

Condensateurs shunt de puissance non autorégénérateurs destinés à être utilisés sur des réseaux à courant alternatif de tension assignée inférieure ou égale à 1 000 V
Première partie: Généralités Caractéristiques fonctionnelles, essais et valeurs assignées
Règles de sécurité Guide d'installation et d'exploitation
(CEI 931-1:1989 + A1:1991, modifiées)

Nichtselbstheilende Leistungs-Parallelkondensatoren für Wechselstromanlagen mit einer Nennspannung bis 1 000 V
Teil 1: Allgemeines Leistungsanforderungen, Prüfung und Bemessung
Sicherheitsanforderungen Anleitung für Errichtung und Betrieb
(IEC 931-1:1989 + A1:1991, modifiziert)

This European Standard was approved by CENELEC on 1993-09-22. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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Foreword

At the request of the 73rd Technical Board, the International Standard IEC 931-1:1989 and its amendment 1:1991, together with some common modifications prepared by CENELEC Reporting Secretariat SR 33, were submitted to the CENELEC Unique Acceptance Procedure (UAP) in December 1992 for acceptance as a European Standard.

The text of the draft was approved by CENELEC as EN 60931-1 on 22 September 1993.

The following dates were fixed:

- latest date of publication
of an identical national
standard (dop) 1994-09-01
- latest date of withdrawal
of conflicting national
standards (dow) 1994-09-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA and Annex ZB are normative.

Common modifications

7 Capacitance measurement and output calculation

7.2 Replace the second and third line by:

- 5 % to + 10 % for units and banks up to 100 kvar;
- 5 % to + 5 % for units and banks above 100 kvar.

Contents

		Page
Foreword	2	
Section 1. General		
1 Scope	5	
2 Object	5	
3 Definitions	5	
4 Service conditions	6	
Section 2. Quality requirements and tests		
5 Test requirements	7	
6 Classification of tests	7	
7 Capacitance measurement and output calculation	8	
8 Measurement of the tangent of the loss angle ($\tan \delta$) of the capacitor	8	
9 Voltage test between terminals	9	
10 Voltage tests between terminals and container	9	
11 Test of internal discharge device	9	
12 Sealing test	9	
13 Thermal stability test	10	
14 Measurement of the tangent of the loss angle ($\tan \delta$) of the capacitor at elevated temperature	10	
15 Lightning impulse voltage test between terminals and container	11	
16 Discharge test	11	
17 Ageing test	11	
18 Self-healing test	11	
19 Destruction test	11	
Section 3. Overloads		
20 Maximum permissible voltage	11	
21 Maximum permissible current	12	
Section 4. Safety requirements		
22 Discharge device	12	
23 Container connections	12	
24 Protection of the environment	12	
25 Other safety requirements	12	
Section 5. Markings		
26 Marking of the unit	13	
27 Marking of the bank	13	
Section 6. Guide for installation and operation		
28 General	14	
29 Choice of the rated voltage	14	
30 Operating temperature	14	
31 Special service conditions	15	
	32	Overvoltages
	33	Overload currents
	34	Switching and protective devices and connections
	35	Choice of creepage distance
	36	Capacitors connected to systems with audiofrequency remote control
		Appendix A Formulae for capacitors and installations
		Appendix B Additional definitions, requirements and tests for power filter capacitors
		Annex ZA (normative) Other international publications quoted in this standard with the references of the relevant European publications
		Annex ZB (normative) Special national conditions
		Figure 1 — k values depending on the method of connection of the resistors with the capacitor units
		Table I
		Table II
		Table III

Section 1. General

1 Scope

This standard 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 up to and including 1 000 V and frequency 15 Hz to 60 Hz.

NOTE 1 This standard also applies to capacitors intended for use in power filter circuits. Additional definitions, requirements and tests for filter capacitors are given in Appendix B.

NOTE 2 Additional requirements for capacitors protected by internal element fuses and internal overpressure disconnectors, as well as requirements for the same, are given in IEC Publication 593.

NOTE 3 The following capacitors are excluded from this standard:

- Shunt power capacitors of the self-healing type for a.c. systems having a rated voltage up to and including 1 000 V (IEC Publication 831).
- Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V (IEC Publication 871).
- Capacitors for induction heat-generating plants, operating at frequencies between 40 Hz and 24 000 Hz (IEC Publication 110).
- Series capacitors (IEC Publication 143).
- Capacitors for motor applications and the like (IEC Publication 252).
- Coupling capacitors and capacitor dividers (IEC Publication 358).
- Capacitors to be used in power electronic circuits [IEC Publication XXX (under consideration)].
- Small a.c. capacitors to be used for fluorescent and discharge lamps (IEC Publication 566).
- Capacitors for suppression of radio interference [IEC Publication XXX (under consideration)].
- Capacitors intended to be used in various types of electrical equipment and thus considered as components.
- Capacitors intended for use with d.c. voltage superimposed on the a.c. voltage.

NOTE 4 Accessories such as insulators, switches, instrument transformers, fuses, etc., shall be in accordance with the relevant IEC standards.

2 Object

The object of this standard is:

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

3 Definitions

3.1

capacitor element (or element)

a device consisting essentially of two electrodes separated by a dielectric

3.2

capacitor unit (or unit)

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

3.3

non-self-healing capacitor

a capacitor in which the dielectric, after local breakdown, is not restored

3.4

capacitor bank (or bank)

a number of capacitor units connected so as to act together

3.5

capacitor

in this standard, the word “capacitor” is used when it is not necessary to lay particular stress upon the different meanings of the words “capacitor unit” or “capacitor bank”

3.6

capacitor installation

a capacitor bank and its accessories

3.7

discharge device of a capacitor

a device which may be incorporated in a capacitor, capable of reducing the voltage between the terminals practically to zero, within a given time, after the capacitor has been disconnected from a network

3.8

internal fuse of a capacitor

a fuse connected inside a capacitor unit, in series with an element or group of elements

3.9

overpressure disconnector for a capacitor

a disconnecting device designed to interrupt the current path in the case of abnormal increase of the internal pressure

3.10

overtemperature disconnector for a capacitor

a disconnecting device designated to interrupt the current path in the case of abnormal increase of the internal temperature

3.11

line terminals

terminals to be connected to the lines

NOTE In polyphase capacitors, a terminal intended to be connected to the neutral conductor is not considered to be a line terminal.