SVENSK STANDARD

SS-EN IEC 60384-14, utg 3:2023

| Fastställd | Sida | Ansvarig kommitté |
|---|---|---|
| 2023-10-18 | 1 (91) | SEK TK 40 |

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# Elektronikkomponenter – Fasta kondensatorer – Del 14: Gruppspecifikation för fasta kondensatorer för avstörning och nätanslutning

*Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

Som svensk standard gäller europastandarden EN IEC 60384-14:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60384-14:2023.

## Nationellt förord

Europastandarden EN IEC 60384-14:2023

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60384-14, Fifth edition, 2023 - Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60384-14, utg 2:2013 med eventuella tillägg, ändringar och rättelser, gäller ej fr o m 2026-03-01.

ICS 31.060.10

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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E-post: sek@elstandard.se. Internet: www.elstandard.se

## *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

## *SEK är Sveriges röst i standardiseringsarbetet inom elområdet*

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

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Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN IEC 60384-14

March 2023

ICS 31.060.10

Supersedes EN 60384-14:2013;
EN 60384-14:2013/A1:2016;
EN 60384-14:2013/AC:2016-04

English Version

# Fixed capacitors for use in electronic equipment - Part 14: Sectional specification - Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (IEC 60384-14:2023)

Condensateurs fixes utilisés dans les équipements électroniques - Partie 14: Spécification intermédiaire - Condensateurs fixes pour la suppression des interférences électromagnétiques et la connexion au réseau d'alimentation
(IEC 60384-14:2023)

Festkondensatoren zur Verwendung in Geräten der Elektronik - Teil 14: Rahmenspezifikation - Festkondensatoren zur Unterdrückung elektromagnetischer Störungen, geeignet für Netzbetrieb
(IEC 60384-14:2023)

This European Standard was approved by CENELEC on 2023-03-01. 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

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

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Ref. No. EN IEC 60384-14:2023 E

# European foreword

The text of document 40/2985/FDIS, future edition 5 of IEC 60384-14, prepared by IEC/TC 40 "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60384-14:2023.

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) | 2023-12-01 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2026-03-01 |

This document supersedes EN 60384-14:2013 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## Endorsement notice

The text of the International Standard IEC 60384-14:2023 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 standard indicated:

| | |
|---|---|
| IEC 60335-1 | NOTE Approved as EN 60335-1 |
| IEC 60384-14-1 | NOTE Approved as EN 60384-14-1 |
| IEC 60939-3:2015 | NOTE Approved as EN 60939-3:2015 (not modified) |
| IEC 60940 | NOTE Approved as EN 60940 |
| IEC 61140 | NOTE Approved as EN 61140 |
| IEC 62368-1:2018 | NOTE Approved as EN IEC 62368-1:2020 (not modified) +A11:2020 |

# 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60060-1 | 2010 | High-voltage test techniques - Part 1: General definitions and test requirements | EN 60060-1 | 2010 |
| IEC 60063 | - | Preferred number series for resistors and capacitors | EN 60063 | - |
| IEC 60068-1 | 2013 | Environmental testing - Part 1: General and guidance | EN 60068-1 | 2014 |
| IEC 60068-2-17 | - | Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing | EN 60068-2-17 | - |
| IEC 60384-1 | 2021 | Fixed capacitors for use in electronic equipment - Part 1: Generic specification | EN IEC 60384-1 | 2021 |
| IEC 60664-1 | - | Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests | EN IEC 60664-1 | - |
| IEC 60695-11-10 | - | Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods | EN 60695-11-10 | - |
| IEC 61193-2 | 2007 | Quality assessment systems - Part 2: Selection and use of sampling plans for inspection of electronic components and packages | EN 61193-2 | 2007 |
| IEC 61210 | - | Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements | EN 61210 | - |
| ISO 7000 | - | Graphical symbols for use on equipment - Registered symbols | - | - |
| CISPR 17 | - | Methods of measurement of the suppression characteristics of passive EMC filtering devices | EN 55017 | - |

# IEC 60384-14

Edition 5.0 2023-01

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

colour inside

## Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains

## Condensateurs fixes utilisés dans les équipements électroniques – Partie 14: Spécification intermédiaire – Condensateurs fixes pour la suppression des interférences électromagnétiques et la connexion au réseau d'alimentation

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

## Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains

## 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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9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60384-14 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2013 and Amendment 1:2016. This edition constitutes a technical revision.

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

a) in damp heat steady state test, all capacitor types are tested both with and without rated voltage; the number of test pieces has been increased;
b) tangent of loss angle is added In Group 0 tests, in safety tests only;
c) qualification approval based on safety and performance tests has been removed from the main text to a normative annex;
d) the range of rated voltages is given instead of exact rated voltage values;

e) normative annex for description of capacitor styles and of creepage/clearance distance measurement has been added;

f) the importance of mechanical failures (cracks) in component encapsulation as a safety feature is highlighted in handling instructions and requirements after all relevant tests.

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

| Draft | Report on voting |
|---|---|
| 40/2985/FDIS | 40/3022/RVD |

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

A list of all the parts of the IEC 60384 series, published under the general title *Fixed capacitors for use in electronic equipment,* can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document 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.

**IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

# Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains

## 1 Scope

This part of IEC 60384 applies to capacitors and resistor-capacitor combinations intended to be connected to AC mains or other supply with a nominal voltage not exceeding 1 000 V AC (RMS), and with a nominal frequency not exceeding 100 Hz. This document includes also additional specific conditions and requirements for the connection to DC supplies with a rated voltage not exceeding 1 500 V DC.

The principal object of this part of IEC 60384 is to prescribe preferred ratings and characteristics and to select, from IEC 60384-1, the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of capacitor. Test severities and requirements prescribed in detail specifications referring to this sectional specification are of equal or higher performance level; lower performance levels are not permitted.

This document also provides a schedule of safety tests to be used by national testing stations in countries where approval by such stations is required.

The overvoltage categories in combination with the AC mains voltages for the capacitors classified in this document are to be taken from IEC 60664-1.

## 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.

IEC 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60063, *Preferred number series for resistors and capacitors*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-17, *Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing*

IEC 60384-1:2021, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements, and tests*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 61193-2:2007, *Quality assessment systems – Part 2: Selection and use of sampling plans for inspection of electronic components and packages*

IEC 61210, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

CISPR 17, *Methods of measurement of the suppression characteristics of passive EMC filtering devices*

ISO 7000*, Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)