SVENSK STANDARD SS-EN 60143-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2004-05-24	1	1 (1+60)	SEK TK 33

Kraftkondensatorer – Seriekondensatorer för kraftanläggningar – Del 1: Allmänt

Series capacitors for power systems – Part 1: General

Som svensk standard gäller europastandarden EN 60143-1:2004. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60143-1:2004.

Nationellt förord

Europastandarden EN 60143-1:2004*)

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60143-1, Fourth edition, 2004 - Series capacitors for power systems - Part 1: General**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60143, utgåva 1, 1994, gäller ej fr o m 2007-03-01.

*) EN 60143-1:2004 ikraftsattes 2004-05-24 som SS-EN 60143-1 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

ICS 31.060.70

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven 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.

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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.

Stora delar av arbetet sker internationellt

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.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD **EN 60143-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2004

ICS 31.060.70

Supersedes EN 60143-1:1993

English version

Series capacitors for power systems
Part 1: General
(IEC 60143-1:2004)

Condensateurs série destinés
à être installés sur des réseaux
Partie 1: Généralités
(CEI 60143-1:2004)

Reihenkondensatoren
für Starkstromanlagen
Teil 1: Allgemeines
(IEC 60143-1:2004)

This European Standard was approved by CENELEC on 2004-03-01. 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 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60143-1:2004 E

SEK Svensk Elstandard

Foreword

The text of document 33/400/FDIS, future edition 4 of IEC 60143-1, prepared by IEC TC 33, Power capacitors, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60143-1 on 2004-03-01.

This European Standard supersedes EN 60143-1:1993 + corrigendum October 1994.

The main changes with respect to the previous edition regard in particular the old section 3 "Insulation level" that has been deeply modified and the new subclause 6.3 "Air clearances" has been added. In addition, many technical changes have been introduced throughout the text regarding tests and operation.

The following dates were 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) 2004-12-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-03-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60143-1:2004 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 60273	NOTE	Harmonized as HD 578 S1:1992 (not modified).
IEC 60060-2	NOTE	Harmonized as EN 60060-2:1994 (not modified).
IEC 60721-2-6	NOTE	Harmonized as HD 478.2.6 S1:1993 (not modified)
IEC 60110-1	NOTE	Harmonized as EN 60110-1:1998 (not modified).
IEC 60252-1	NOTE	Harmonized as EN 60252-1:2001 (not modified).
IEC 61048	NOTE	Harmonized as EN 61048:1993 (modified).
IEC 61049	NOTE	Harmonized as EN 61049:1993 (modified).
IEC 61071	NOTE	Harmonized in EN 61071 series (partly modified).

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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60071-1	1993	Insulation co-ordination Part 1: Definitions, principles and rules	EN 60071-1	1995
IEC 60071-2	1996	Part 2: Application guide	EN 60071-2	1997
IEC 60143-2	1994	Series capacitors for power systems Part 2: Protective equipment for series capacitor banks	EN 60143-2	1994
IEC 60143-3	1998	Part 3: Internal fuses	EN 60143-3	1998
IEC 60549	1976	High-voltage fuses for the external protection of shunt power capacitors	-	-
IEC 60815	1986	Guide for the selection of insulators in respect of polluted conditions	-	-
IEC 60871-2	1999	Shunt capacitors for a.c. power systems having a rated voltage above 1kV Part 2: Endurance testing	-	-
IEEE Std 693	1997	IEEE Recommended Practice for Seismic Design of Substations	-	-

CONTENTS

SERIES CAPACITORS FOR POWER SYSTEMS –

Part 1: General

1 Scope and object

This part of IEC 60143 applies both to capacitor units and capacitor banks intended to be used connected in series with an a.c. transmission or distribution line or circuit forming part of an a.c. power system having a frequency of 15 Hz to 60 Hz.

The primary focus of this standard is on transmission application.

The series capacitor units and banks are usually intended for high-voltage power systems. This standard is applicable to the complete voltage range.

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

The following capacitors, even if connected in series with a circuit, are excluded from this standard:

– capacitors for inductive heat-generating plants (IEC 60110-1);
– capacitors for motor applications and the like (IEC 60252-1);
– capacitors to be used in power electronics circuits (IEC 61071);
– capacitors for discharge lamps (IEC 61048 and IEC 61049).

Standard types of accessories such as insulators, switches, instrument transformers, external fuses, etc. should comply with the pertinent IEC standard.

NOTE 1 Additional requirements for capacitors to be protected by internal fuses, as well as the requirements for internal fuses, are found in IEC 60143-3.

NOTE 2 Additional requirements for capacitors to be protected by external fuses, as well as the requirements for external fuses, are found in Annex A.

NOTE 3 A separate standard for series capacitor accessories (spark-gaps, non-linear resistors, discharge reactors, current-limiting damping reactors, damping resistors, circuit-breakers, etc.), IEC 60143-2, was completed in 1994. A separate standard for internal fuses for series capacitors, IEC 60143-3 (formerly IEC 60595), has been revised and was completed in 1998.

The object of this standard is:

– to formulate uniform rules regarding performance, testing and rating;
– to formulate specific safety rules;
– to serve as a guide for installation and operation.

2 Normative references

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 If there is a conflict between this standard and a standard listed below, the test of IEC 60143-1 prevails.

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60071-1:1993, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60071-2:1996, *Insulation co-ordination – Part 2: Application guide*

IEC 60143-2:1994, *Series capacitors for power systems – Part 2: Protective equipment for series capacitor banks*

IEC 60143-3:1998, *Series capacitors for power systems – Part 3: Internal fuses*

IEC 60549:1976, *High-voltage fuses for the external protection of shunt power capacitors*

IEC 60815:1986, *Guide for the selection of insulators in respect of polluted conditions*

IEC 60871-2:1999, *Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V – Part 2: Endurance testing*

IEEE Std. 693:1997, *IEEE Recommended Practice for Seismic Design of Substations*