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| STN | Sériovo zapojené kondenzátory pre výkonové elektrické siete. Časť 1: Všeobecne. | STN EN 60143-1 35 8201 |
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Series capacitors for power systems - Part 1: General

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/16

Obsahuje: EN 60143-1:2015, IEC 60143-1:2015

Oznámením tejto normy sa od 30.07.2018 ruší
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EUROPEAN STANDARD

EN 60143-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2015

ICS 31.060.70

Supersedes EN 60143-1:2004

English Version

**Series capacitors for power systems - Part 1: General
(IEC 60143-1:2015)**

Condensateurs série destinés à être installés sur des
réseaux - Partie 1: Généralités
(IEC 60143-1:2015)

Reihenkondensatoren für Starkstromanlagen - Teil 1:
Allgemeines
(IEC 60143-1:2015)

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

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

European foreword

The text of document 33/578/FDIS, future edition 5 of IEC 60143-1, prepared by IEC/TC 33 "Power capacitors and their applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60143-1:2015.

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) 2016-04-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-07-30

This document supersedes EN 60143-1:2004.

The main change with respect to EN is that the endurance test has been replaced by an ageing test because voltage cycling is already performed in the cold duty test. The guide section has been expanded regarding long line correction and altitude correction. In addition the insulation tables and references to other standards have been updated.

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

| | | |
|------------------|------|--------------------------------|
| IEC 60060-2:2010 | NOTE | Harmonized as EN 60060-2:2011. |
| IEC 60110-1:1998 | NOTE | Harmonized as EN 60110-1:1998. |
| IEC 60252-1:2010 | NOTE | Harmonized as EN 60252-1:2011. |
| IEC 61048:2006 | NOTE | Harmonized as EN 61048:2006. |
| IEC 61049:1991 | NOTE | Harmonized as EN 61049:1993. |
| IEC 61071 | NOTE | Harmonized as EN 61071. |
| IEC 60270:2000 | NOTE | Harmonized as EN 60270:2001. |
| IEC 60909-0:2001 | NOTE | Harmonized as EN 60909-0:2001. |

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When 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.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|--------------|-------------|
| IEC 60050 | series | International Electrotechnical Vocabulary | - | series |
| IEC 60060-1 | 2010 | High-voltage test techniques -- Part 1: General definitions and test requirements | EN 60060-1 | 2010 |
| IEC 60071-1 | 2006 | Insulation co-ordination -- Part 1: Definitions, principles and rules | EN 60071-1 | 2006 |
| IEC 60071-2 | 1996 | Insulation co-ordination -- Part 2: Application guide | EN 60071-2 | 1997 |
| IEC 60143-2 | 2012 | Series capacitors for power systems -- Part 2: Protective equipment for series capacitor banks | EN 60143-2 | 2013 |
| IEC 60143-3 | 1998 | Series capacitors for power systems -- Part 3: Internal fuses | EN 60143-3 | 1998 |
| IEC 60143-4 | 2010 | Series capacitors for power systems -- Part 4: Thyristor controlled series capacitors | EN 60143-4 | 2010 |
| IEC 60549 | 2013 | High-voltage fuses for the external protection of shunt capacitors | EN 60549 | 2013 |
| IEC 60871-1 | 2014 | Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 1: General | EN 60871-1 | 2014 |
| IEC 62271-1 | 2007 | High-voltage switchgear and controlgear -- Part 1: Common specifications | EN 62271-1 | 2008 |
| IEEE Std 693 | - | IEEE Recommended Practice for Seismic Design of Substations | - | - |



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Series capacitors for power systems –
Part 1: General**

**Condensateurs série destinés à être installés sur des réseaux –
Partie 1: Généralités**





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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Series capacitors for power systems –
Part 1: General**

**Condensateurs série destinés à être installés sur des réseaux –
Partie 1: Généralités**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONALE

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INTERNATIONAL ÉLECTROTECHNICAL COMMISSION

SERIES CAPACITORS FOR POWER SYSTEMS –**Part 1: General****FOREWORD**

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International Standard IEC 60143-1 has been prepared by IEC technical committee 33: Power capacitors and their applications.

This fifth edition cancels and replaces the fourth edition, published in 2004. This edition constitutes a technical revision.

The main change with respect to the previous edition is that the endurance test has been replaced by an ageing test because voltage cycling is already performed in the cold duty test. The guide section has been expanded regarding long line correction and altitude correction. In addition the insulation tables and references to other standards have been updated.

The text of this standard is based on the following documents:

| | |
|-------------|------------------|
| FDIS | Report on voting |
| 33/578/FDIS | 33/580/RVD |

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

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

A list of all parts in the IEC 60143 series, published under the general title *Series capacitors for power systems*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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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 (all parts));
- capacitors to be used in power electronics circuits (IEC 61071);
- capacitors for discharge lamps (IEC 61048 and IEC 61049).

For standard types of accessories such as insulators, switches, instrument transformers, external fuses, etc. see 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. See also Annex C.

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 and Annex C.

NOTE 3 A separate standard for series capacitor accessories (spark-gaps, varistors, discharge reactors, current-limiting damping reactors, damping resistors, circuit-breakers, etc.), IEC 60143-2, has been revised and was completed in 2012. A separate standard for internal fuses for series capacitors, IEC 60143-3 has been revised and was completed in 2013.

NOTE 4 Some information regarding fuseless capacitor units and fuseless capacitor banks is found in Annex C.

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 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.

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

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IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at www.electropedia.org)

IEC 60060-1:2010, *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 60071-2:1996, *Insulation co-ordination – Part 2: Application guide*

IEC 60143-2:2012, *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 60143-4: 2010 *Series capacitors for power systems – Part 4: Thyristor controlled series capacitors*

IEC 60549:2013, *High-voltage fuses for the external protection of shunt capacitors*

IEC 60871-1: 2014 *Shunt capacitors for a.c power systems having a rated voltage above 1000V – Part 1: General*

IEC 62271-1:2007, *High-voltage switchgear and controlgear – Part 1: Common specifications*

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