



SLOVENSKI STANDARD SIST EN 62271-104:2009

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High-voltage switchgear and controlgear - Part 104: Alternating current switches for rated voltages of 52 kV and above (IEC 62271-104:2009)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 104: Hochspannungs-Lastschalter für Bemessungsspannungen ab 52 kV und darüber (IEC 62271-104:2009)

Appareillages à haute tension - Partie 104: Interrupteurs à courant alternatif pour tensions assignées égales ou supérieures à 52 kV (CEI 62271-104:2009)

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Ta slovenski standard je istoveten z: EN 62271-104:2009

ICS:

29.130.10	Visokonapetostne stikalne in krmilne naprave	High voltage switchgear and controlgear
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62271-104

July 2009

ICS 29.130.10; 29.130.99

Supersedes EN 60265-2:1993 + A1:1995 + A2:1998

English version

**High-voltage switchgear and controlgear -
Part 104: Alternating current switches
for rated voltages of 52 kV and above
(IEC 62271-104:2009)**

Appareillage à haute tension -
Partie 104: Interrupteurs à courant
alternatif pour tensions assignées
égales ou supérieures à 52 kV
(CEI 62271-104:2009)

Hochspannungs-Schaltgeräte
und -Schaltanlagen -
Teil 104: Wechselstrom-Lastschalter
für Bemessungsspannungen über 52 kV
(IEC 62271-104:2009)

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This European Standard was approved by CENELEC on 2009-06-01. 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.

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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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 17A/857/FDIS, future edition 1 of IEC 62271-104, prepared by SC 17A, High-voltage switchgear and controlgear, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62271-104 on 2009-06-01.

This European Standard supersedes EN 60265-2:1993 + A1:1995 + A2:1998.

The main changes with respect to EN 60265-2 are as follows:

- alignment with EN 62271-1 and EN 62271-100;
- requirements for capacitive current switching aligned with those in EN 62271-100: classes C1 and C2 are introduced.

This standard is to be read in conjunction with EN 62271-1:2008, EN 62271-100, EN 62271-102:2002 and EN 62271-110:2005. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in EN 62271-1. Modifications to these clauses and subclauses are given under the same numbering, whilst additional subclauses are numbered from 101.

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) 2010-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-06-01

Annex ZA has been added by CENELEC.

[SIST EN 62271-104:2009](https://standards.iteh.ai/catalog/standards/sist/58c32d20-9401-4f54-96bc-218cfd8c564/sist-en-62271-104-2009)
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Endorsement notice

The text of the International Standard IEC 62271-104:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60137 NOTE Harmonized as EN 60137:2008 (not 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-441	1984	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60059	- ¹⁾	IEC standard current ratings	EN 60059	1999 ²⁾
IEC 60071	Series	Insulation co-ordination	EN 60071	Series
IEC 60071-1	- ¹⁾	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	2006 ²⁾
IEC 60270	- ¹⁾	High-voltage test techniques - Partial discharge measurements	EN 60270	2001 ²⁾
IEC 62271-1	2007	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	2008
IEC 62271-100	- ¹⁾	High-voltage switchgear and controlgear - Part 100: Alternating current circuit-breakers	EN 62271-100	2009 ²⁾
IEC 62271-101	- ¹⁾	High-voltage switchgear and controlgear - Part 101: Synthetic testing	EN 62271-101	2006 ²⁾
IEC 62271-102 + corr. April + corr. May	2001 2002 2003	High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches	EN 62271-102 + corr. March	2002 2005
IEC 62271-110	2005	High-voltage switchgear and controlgear - Part 110: Inductive load switching	EN 62271-110	2005

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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Edition 1.0 2009-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

High-voltage switchgear and controlgear –
Part 104: Alternating current switches for rated voltages of 52 kV and above

Appareillage à haute tension –
Partie 104: Interrupteurs à courant alternatif pour tensions assignées égales ou supérieures à 52 kV

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

**Part 104: Alternating current switches
for rated voltages of 52 kV and above**

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.

International Standard IEC 62271-104 has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This standard cancels and replaces IEC 60265-2 (1988).

The main changes with respect to IEC 60265-2 are as follows:

- alignment with IEC 62271-1 and IEC 62271-100;
- requirements for capacitive current switching aligned with those in IEC 62271-100: classes C1 and C2 are introduced.

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

FDIS	Report on voting
17A/857/FDIS	17A/865/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.

This standard is to be read in conjunction with IEC 62271-1 (2007), IEC 62271-100, IEC 62271-102 (2001) and IEC 62271-110 (2005). In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in IEC 62271-1. Modifications to these clauses and subclauses are given under the same numbering, whilst additional subclauses are numbered from 101.

A list of all the parts in the IEC 62271, under the general title *High-voltage switchgear and controlgear*, can be found on the IEC website.

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

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

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 104: Alternating current switches for rated voltages of 52 kV and above

1 General

1.1 Scope

This part of IEC 62271 is applicable to three-pole alternating current switches for rated voltages 52 kV and above, having making and breaking current ratings, for indoor and outdoor installations, and for rated frequencies up to and including 60 Hz.

This standard is also applicable to the operating devices of these switches and to their auxiliary equipment.

NOTE 1 Switches for gas insulated switchgear are covered by this standard.

NOTE 2 Switches having a disconnecting function and called switch-disconnectors are also covered by IEC 62271-102.

NOTE 3 Earthing switches are not covered by this standard. Earthing switches forming an integral part of a switch are covered by IEC 62271-102.

The main object of this standard is to establish requirements for switches used in transmission and distribution systems. General-purpose switches for this application are designed to comply with the following service applications:

- carrying rated normal current continuously;
- carrying short-circuit currents for a specified time;
- switching of mainly active loads;
- switching of no-load transformers;
- switching of the charging current of unloaded cables, overhead lines or busbars;
- switching of closed-loop circuits;
- making short-circuit currents.

A further object of this standard is to establish requirements for limited-purpose and special-purpose switches used in transmission and distribution systems.

Limited-purpose switches shall comply with one or more of the service applications indicated above.

Special-purpose switches may comply with one or more of the service applications indicated above and, in addition, shall be suitable for one or more of the following applications:

- switching single capacitor banks;
- switching back-to-back capacitor banks;
- switching shunt reactors including secondary or tertiary reactors switched from the primary side of the transformer;
- applications requiring an increased number of operating cycles;
- switching under earth fault conditions in non-effectively earthed neutral systems.

1.2 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.

IEC 60050-441:1984, *International Electrotechnical Vocabulary – Chapter 441: Switchgear, controlgear and fuses*

IEC 60059, *IEC standard current ratings*

IEC 60071 (all parts), *Insulation co-ordination*

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

IEC 60270, *High-voltage test techniques – Partial discharge measurements*

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

IEC 62271-100: *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-101: *High-voltage switchgear and controlgear – Part 101: Synthetic testing*

IEC 62271-102:2001, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-110:2005, *High-voltage switchgear and controlgear – Part 110: Inductive load switching*

2 Normal and special service conditions

Clause 2 of IEC 62271-1 is applicable.

3 Terms and definitions

For the purposes of this document, definitions of general terms are based on IEC 60050-441 and IEC 60071-1.

Additional terms and definitions are based solely on IEC 60050-441.

3.1 General terms

No particular definitions.

3.2 Assemblies

No particular definitions.

3.3 Parts of assemblies

No particular definitions.

3.4 Switching devices

3.4.101

switch

switching device capable of making, carrying and breaking currents under normal circuit conditions, which may include specified operating overload conditions and also carrying for a specified time currents under specified abnormal circuit conditions, such as those of short-circuit

[IEV 441-14-10]

3.4.102

switch-disconnector

switch which, in the open position, satisfies the isolating requirements specified for a disconnector

[IEV 441-14-12]

3.4.103

general-purpose switch

switch capable of performing, with currents up to its rated breaking currents, all making and breaking operations which may normally occur; capable of carrying and making short-circuit currents

NOTE Refer to 4.108 for specific ratings of a general-purpose switch.

3.4.104

limited-purpose switch

switch which complies with one or more, but not with all, service applications of a general-purpose switch

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3.4.105

special-purpose switch

switch suitable for switching requirements other than those specified for a general-purpose switch

NOTE Examples of such requirements are capacitor bank switching, shunt reactor switching, switching under earth fault conditions, and a capability of an increased number of operating cycles.

3.4.106

class C1 switch

special-purpose switch with low probability of restriking during capacitive current breaking as demonstrated by specific type tests

3.4.107

class C2 switch

special-purpose switch with very low probability of restriking during capacitive current breaking as demonstrated by specific type tests

3.4.108

single capacitor bank switch

special-purpose switch intended for switching of a single capacitor bank with charging currents up to its rated single capacitor bank breaking current

3.4.109

back-to-back capacitor bank switch

special-purpose switch intended for breaking capacitor bank-charging currents, with one or more capacitor banks connected to the bus or supply side of the switch, up to its rated back-to-back capacitor bank breaking current. The switch shall be capable of making the associated inrush current, up to its rated capacitor bank inrush making current