

**High-voltage switchgear and controlgear - Part 102:
Alternating current disconnectors and earthing switches**

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62271-102:2003 sisaldab Euroopa standardi EN 62271-102:2002+AC:2005 ingliskeelset teksti.

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EUROPEAN STANDARD

EN 62271-102

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2002

ICS 29.130.10;29.130.99

Supersedes EN 60129:1994 + A1:1994 + A2:1996;
EN 61129:1994 + A1:1995 and
EN 61259:1994

Incorporates Corrigendum March 2005

English version

High-voltage switchgear and controlgear
Part 102: Alternating current disconnectors and earthing switches
(IEC 62271-102:2001 + corrigenda 2002 & 2003)

Appareillage à haute tension
Partie 102: Sectionneurs et sectionneurs
de terre à courant alternatif
(CEI 62271-102:2001
+ corrigenda 2002 & 2003)

Hochspannungs-Schaltgeräte
Teil 102: Wechselstrom-Trennschalter
und -Erdungsschalter
(IEC 62271-102:2001
+ Corrigenda 2002 & 2003)

This European Standard was approved by CENELEC on 2002-03-05. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

Foreword

The text of document 17A/617/FDIS, future edition 1 of IEC 62271-102, 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 62271-102 on 2002-03-05.

This European Standard supersedes the European Standards EN 60129:1994 + A1:1994 + A2:1996, EN 61129:1994 + A1:1995 and EN 61259:1994.

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) 2003-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-03-01

This European Standard is to be used in conjunction with EN 60694:1996 to which it refers and which is applicable, unless otherwise specified. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in EN 60694. Additional subclauses are numbered from 101.

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, C, E, F and ZA are normative and annex D is informative.

Annex ZA has been added by CENELEC.

The contents of the corrigendum of March 2005 have been included in this copy.

The numbering of the standards falling under the responsibility of IEC/SC 17A and IEC/SC 17B will apply the following principle:

- a) Common standards prepared by SC 17A and SC 17C will start with IEC 62271-001;
- b) Standards of SC 17A will start with IEC 62271-100;
- c) Standards of SC 17C will start with IEC 62271-200;
- d) Publications prepared by SC 17A and SC 17C will start with IEC 62271-300.

The table below relates the new numbers to the old numbers. The parts numbered (xxx) will be given a final number pending the decision to publish the revised publication as standard or technical report.

IEC 62271/ EN 62271	High-voltage switchgear and controlgear –	Number of previous standard, if any	
		IEC	EN/HD
1	Common specifications	60694	EN 60694
2	Seismic qualification for rated voltages of 72,5 kV and above	--	--
100	High-voltage alternating current circuit-breakers	60056	HD 348, mod.
101	Synthetic testing	60427	EN 60427
102	Alternating current disconnectors and earthing switches	60129	EN 60129
103	Switches for rated voltages above 1 kV and less than 52 kV	60265-1	EN 60265-1
104	Switches for rated voltages of 52 kV and above	60265-2	EN 60265-2
105	Alternating current switch-fuse combinations	60420	EN 60420
106	Alternating current contactors and contactor based motor-starters	60470	EN 60470
107	Alternating current switchgear-fuse combinations	--	--
108	Switchgear having combined functions	--	--
109	Series capacitor by-pass switches		
200	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	60298	EN 60298
201	Insulation-enclosed switchgear and controlgear for rated voltages up to and including 52 kV	60466	--
202	High-voltage/low-voltage prefabricated substations	61330	EN 61330
203	Gas-insulated metal enclosed switchgear for rated voltages above 52 kV	60517	EN 60517
204	High-voltage gas-insulated transmission lines for rated voltages of 72,5 kV and above	61640	--
(300)	Guide for seismic qualification of high-voltage alternating current circuit-breakers	61166	EN 61166
(301)	Guide for inductive load switching	61233	--
(302)	Guide for short-circuit and switching test procedures for metal-enclosed and dead tank circuit-breakers	61633	--
(303)	Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear	61634	--
(304)	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	60932	--
(305)	Cable connections for gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	60859	--
(306)	Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	61639	--
(307)	The use of electronic and associated technologies in auxiliary equipment of switchgear and controlgear	62063	--
308	Guide for asymmetrical short-circuit breaking test duty T100a	62215	--
309	TRV parameters for high-voltage switchgear and controlgear for rated voltages above 1 kV and less than 100 kV	--	--
310	Electrical endurance testing for circuit-breakers of rated voltage 72,5 kV and above	--	--

Endorsement notice

The text of the International Standard IEC 62271-102:2001 and its corrigenda April 2002 and May 2003 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60137	1995	Insulated bushings for alternating voltages above 1 kV	EN 60137	1996
IEC 60265-1	1998	High-voltage switches Part 1: Switches for rated voltages above 1 kV and less than 52 kV	EN 60265-1	1998
IEC 60265-2 + corr. February	1988 1990	Part 2: High-voltage switches for rated voltages of 52 kV and above	EN 60265-2	1993
IEC 60298	1990	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN 60298 ¹⁾ + A11	1996 1999
IEC 60466	1987	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV	-	-
IEC 60517	1990	Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above	EN 60517 ²⁾ + A11	1996 1999
IEC 60694	1996	Common specifications for high-voltage switchgear and controlgear standards	EN 60694 + corr. May	1996 1999
IEC 60865-1	1993	Short-circuit currents – Calculation of effects Part 1: Definitions and calculation methods	EN 60865-1	1993
ISO 2768-1	1989	General tolerances Part 1: Tolerances for linear and angular dimensions without individual tolerance indications	EN 22768-1	1993

¹⁾ EN 60298 includes corrigendum April 1995 and A1:1994 to IEC 60298:1990.

²⁾ EN 60517 includes corrigendum April 1995 and A1:1994 to IEC 60517:1990.

INTERNATIONAL STANDARD

IEC
62271-102

First edition
2001-12

High-voltage switchgear and controlgear –

Part 102:

**Alternating current disconnectors
and earthing switches**

Appareillage à haute tension –

Partie 102:

*Sectionneurs et sectionneurs de terre
à courant alternatif*



Reference number
IEC 62271-102:2001(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/catlg-e.htm) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

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INTERNATIONAL STANDARD

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62271-102

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 102: Alternating current disconnectors
and earthing switches**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organisation for standardisation comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardisation in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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 organisations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organisation for Standardisation (ISO) in accordance with conditions determined by agreement between the two organisations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this international standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62271-102 has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This first edition cancels and replaces the third edition of IEC 60129 published in 1984, amendment 1 (1992) and amendment 2 (1996) and constitutes a technical revision. In addition, it replaces IEC 61128, IEC 61129 and IEC 61259, which are hereby withdrawn and cancelled. A reference table is provided at the end of this foreword.

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

FDIS	Report on voting
17A/617/FDIS	17A/619/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 3.

Annexes A, B, C, E and F form an integral part of this standard.

Annex D is for information only.

This standard should be read in conjunction with IEC 60694, second edition, published in 1996, to which it refers and which is applicable, unless otherwise specified. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in IEC 60694. Additional subclauses are numbered from 101.

The committee has decided that this publication remains valid until 2013. At this date, in accordance with the committee's decision, the publication will be

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

The contents of the corrigendum of April 2002 have been included in this copy.

New numbering

In accordance with the decision taken at the joint SC 17A/SC 17C meeting in Frankfurt June 1998 (item 20.7 of 17A/535/RM), a common numbering system will be established of the standards falling under the responsibility of SC 17A and SC 17C. IEC 62271 (with the main title of *High-voltage switchgear and controlgear*) is the basis of the common standard.

The numbering of these standards will apply the following principle:

- a) Common standards prepared by SC 17A and SC 17C will start with IEC 62271-001;
- b) Standards of SC 17A will start with IEC 62271-100;
- c) Standards of SC 17C will start with IEC 62271-200;
- d) Guides prepared by SC 17A and SC 17C will start with IEC 62271-300.

A bilingual version of this publication may be issued at a later date.

The following table provides an overview of the relationship between the old and new numbering:

Common numbering of IEC 62271 standards falling under the responsibility of sub-committees 17A and 17C

IEC 62271 Part	HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR – Original title	Old IEC number, if any
1	Common specifications	60694; 60517
100	High-voltage alternating current circuit-breakers	60056
101	Synthetic testing of high-voltage alternating current circuit-breakers	60427
102	Alternating current disconnectors and earthing switches	60129
103	Switches for rated voltages above 1 kV and less than 52 kV	60265-1
104	High-voltage switches for rated voltages of 52 kV and above	60265-2
105	High-voltage alternating current switch-fuse combinations	60420
106	High-voltage alternating current contactors and contactor-based motor-starters	60470
107	High-voltage alternating current switchgear-fuse combinations	New
108	Switchgear having combined functions	New
200	A.C.-metal enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	60298
201	A.C.-insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV	60466
202	High-voltage/low-voltage prefabricated substations	61330
203	Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above	60517; 61259
204	Rigid high-voltage gas-insulated transmission lines for rated voltages of 72,5 kV and above	61640
300	Guide for seismic qualification of high-voltage alternating current circuit-breakers	61166
301	High-voltage alternating current circuit-breakers - Inductive load switching	61233
302	High-voltage alternating current circuit-breakers - Guide for short-circuit and switching test procedures for metal-enclosed and dead tank circuit-breakers	61633
303	High-voltage switchgear and controlgear - Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear	61634
304	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	60932
305	Cable connections for gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above- Fluid-filled and extruded insulation cables – Fluid-filled and dry type cable-terminations	60859
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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 102: Alternating current disconnectors and earthing switches

1 General

1.1 Scope

This part of IEC 62271 applies to alternating current disconnectors and earthing switches, designed for indoor and outdoor enclosed and open terminal installations for voltages above 1 000 V and for service frequencies up to and including 60 Hz.

It also applies to the operating devices of these disconnectors and earthing switches and their auxiliary equipment.

Additional requirements for disconnectors and earthing switches in enclosed switchgear and controlgear are given in IEC 60298, IEC 60466 and IEC 60517.

NOTE Disconnectors in which the fuse forms an integral part are not covered by this standard.

1.2 Normative references

Subclause 1.2 of IEC 60694 is applicable with the following additions:

IEC 60137:1995, *Insulating bushings for alternating voltages above 1 000 V*

IEC 60265-1:1998, *High-voltage switches – Part 1: Switches for rated voltages above 1 kV and less than 52 kV*

IEC 60265-2:1988, *High-voltage switches – Part 2: High-voltage switches for rated voltages of 52 kV and above*

IEC 60298:1990, *A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 60466:1987, *A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV*

IEC 60517:1990, *Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above*

IEC 60694:1996, *Common specifications for high-voltage switchgear and controlgear standards*

IEC 60865-1:1993, *Short-circuit currents – Calculation of effects – Part 1: Definitions and calculation methods*

ISO 2768-1:1989, *General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*