High-voltage switchgear and controlgear -- Part 100: Alternating-current circuit-breakers

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 62271-100:2009 sisaldab Euroopa standardi EN 62271-100:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 62271-100:2009 consists of the English text of the European standard EN 62271-100:2009.
Standard on kinnitatud Eesti Standardikeskuse 29.05.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 29.05.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 08.04.2009.	Date of Availability of the European standard text 08.04.2009.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 29.130.10

Võtmesõnad: alternating current, circuit breakers, circuit-breakers, circuits, definition, definitions, electrical engineering, high voltage

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 62271-100

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Supersedes EN 62271-100:2001 + A1:2002 + A2:2006

English version

High-voltage switchgear and controlgear - Part 100: Alternating-current circuit-breakers

(IEC 62271-100:2008)

Appareillage à haute tension - Partie 100: Disjoncteurs à courant alternatif (CEI 62271-100:2008)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 100: Wechselstrom-Leistungsschalter (IEC 62271-100:2008)

This European Standard was approved by CENELEC on 2009-03-01. 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, 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

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Foreword

The text of document 17A/815/FDIS, future edition 2 of IEC 62271-100, 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 62271-100 on 2009-03-01.

This European Standard supersedes EN 62271-100:2001 + A1:2002 + A2:2006 + A2:2006/corrigendum November 2006.

The main changes with respect to EN 62271-100:2001 are listed below:

– introduction of harmonised (IEC and IEEE) TRV waveshapes for rated voltages of 100 kV and above (amendment 1 to EN 62271-100:2001);

– introduction of cable and line systems with their associated TRVs for rated voltages below 100 kV (amendment 2 to EN 62271-100:2001);

– inclusion of IEC 61633 and IEC 62271-308.

This standard shall be read in conjunction with EN 62271-1:2008, to which it refers and which is applicable unless otherwise specified in this standard. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in EN 62271-1. Amendments to these clauses and subclauses are given under the same references 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)	2009-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62271-100:2008 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 60044-1	NOTE	Harmonized as EN 60044-1:1999 (modified).
IEC 60044-2	NOTE	Harmonized as EN 60044-2:1999 (modified).
IEC 60077	NOTE	Harmonized in EN 60077 series (modified).
IEC 60099-4	NOTE	Harmonized as EN 60099-4:2004 (modified).
IEC 60143-2	NOTE	Harmonized as EN 60143-2:1994 (not modified).
IEC 62271-109	NOTE	Harmonized as EN 62271-109:2009 (not modified).
IEC 62271-200	NOTE	Harmonized as EN 62271-200:2004 (not modified).
IEC 62271-203	NOTE	Harmonized as EN 62271-203:2004 (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.

Publication	Year	Title	EN/HD	Year
IEC 60050-151	2001	International Electrotechnical Vocabulary (IEV) - Part 151: Electrical and magnetic devices	-	-
IEC 60050-441	1984	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60050-601	1985	International Electrotechnical Vocabulary (IEV) - Chapter 601: Generation, transmission and distribution of electricity - General	-	-
IEC 60050-604	1987	International Electrotechnical Vocabulary (IEV) - Chapter 604: Generation, transmission and distribution of electricity - Operation	-	-
IEC 60059	- [1)]	IEC standard current ratings	EN 60059	1999 [2)]
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60071-2	- [1)]	Insulation co-ordination - Part 2: Application guide	EN 60071-2	1997 [2)]
IEC 60137	- [1)]	Insulated bushings for alternating voltages above 1 000 V	EN 60137	2008 [2)]
IEC 60255-3 (mod)	1989	Electrical relays - - Part 3: Single input energizing quantity measuring relays with dependent or independent time	EN 60255-3 + corr. January	1998 1998
IEC 60296	- [1)]	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear	EN 60296 + corr. September	2004 [2)] 2004
IEC 60376	- [1)]	Specification of technical grade sulfur hexafluoride (SF_6) for use in electrical equipment	EN 60376	2005 [2)]
IEC 60480	- [1)]	Guidelines for the checking and treatment of sulphur hexafluoride (SF_6) taken from electrical equipment and specification for its re-use	EN 60480	2004 [2)]

[1)] Undated reference.

[2)] Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 60529	- [1)]	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 [2)] 1993
IEC/TS 61634	- [1)]	High-voltage switchgear and controlgear - Use and handling of sulphur hexafluoride (SF_6) in high-voltage switchgear and controlgear	-	-
IEC 62271-1	2007	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	2008
IEC 62271-101	2006	High-voltage switchgear and controlgear - Part 101: Synthetic testing	EN 62271-101	2006
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	- [1)]	High-voltage switchgear and controlgear - Part 110: Inductive load switching	EN 62271-110	2005 [2)]

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 100: Alternating-current circuit-breakers

1 General

1.1 Scope

This part of IEC 62271 is applicable to a.c. circuit-breakers designed for indoor or outdoor installation and for operation at frequencies of 50 Hz and 60 Hz on systems having voltages above 1 000 V.

It is only applicable to three-pole circuit-breakers for use in three-phase systems and single-pole circuit-breakers for use in single-phase systems. Two-pole circuit-breakers for use in single-phase systems and application at frequencies lower than 50 Hz are subject to agreement between manufacturer and user.

This standard is also applicable to the operating devices of circuit-breakers and to their auxiliary equipment. However, a circuit-breaker with a closing mechanism for dependent manual operation is not covered by this standard, as a rated short-circuit making-current cannot be specified, and such dependent manual operation may be objectionable because of safety considerations.

Rules for circuit-breakers with an intentional non-simultaneity between the poles are under consideration; circuit-breakers providing single-pole auto-reclosing are within the scope of this standard.

NOTE 1 Circuit-breakers with an intentional non-simu0ltaneity between the poles may, in some instances, be tested in accordance with this standard. For example, mechanically staggered pole designs can be tested according to this standard using three-phase direct tests. For synthetic testing, determining the most appropriate tests, particularly in respect to test current, recovery voltage, and transient recovery voltage, is subject to agreement between manufacturer and user.

This standard does not cover circuit-breakers intended for use on motive power units of electrical traction equipment; these are covered by IEC 60077 [1][1].

Generator circuit-breakers installed between generator and step-up transformer are not within the scope of this standard.

Switching of inductive loads is covered by IEC 62271-110.

This standard does not cover self-tripping circuit-breakers with mechanical tripping devices or devices which cannot be made inoperative.

Circuit-breakers installed as by-pass switches in parallel with line series capacitors and their protective equipment are not within the scope of this standard. These are covered by IEC 62271-109 [2] and IEC 60143-2 [3].

NOTE 2 Tests to prove the performance under abnormal conditions should be subject to agreement between manufacturer and user. Such abnormal conditions are, for instance, cases where the voltage is higher than the rated voltage of the circuit-breaker, conditions which may occur due to sudden loss of load on long lines or cables.

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1 Figures in square brackets refer to the bibliography.

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(151):2001, *International Electrotechnical Vocabulary – Part 151: Electrical and magnetic devices*

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

IEC 60050(601):1985, *International Electrotechnical Vocabulary – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 60050(604):1987, *International Electrotechnical Vocabulary – Chapter 601: Generation, transmission and distribution of electricity – Operation*

IEC 60059, *IEC standard current ratings*

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

IEC 60071-2, *Insulation coordination – Part 2: Application guide*

IEC 60137, *Insulated bushings for alternating voltages above 1 000 kV*

IEC 60255-3:1989, *Electrical relays – Part 3: Single input energizing quantity measuring relays with dependent or independent time*

IEC 60296, *Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear*

IEC 60376, *Specification of technical grade sulphur hexafluoride (SF_6) for use in electrical equipment*

IEC 60480, *Guidelines for the checking and treatment of sulphur hexafluoride (SF_6) taken from electrical equipment and specification for its re-use*

IEC 60529, Degrees of protection provided by enclosures (IP Code)

IEC/TS 61634, *High-voltage switchgear and controlgear – Use and handling of sulphur hexafluoride (SF_6) in high-voltage switchgear and controlgear*

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

IEC 62271-101:2006, *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, *High-voltage switchgear and controlgear – Part 110: Inductive load switching*