

Visokonapetostne stikalne naprave – 105. del: Stikala z varovalko za izmenični tok (IEC 62271-105:2002)

High-voltage switchgear and controlgear - Part 105: Alternating current switch-fuse combinations (IEC 62271-105:2002)

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EUROPEAN STANDARD

EN 62271-105

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2003

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English version

High-voltage switchgear and controlgear
Part 105: Alternating current switch-fuse combinations
(IEC 62271-105:2002)

Appareillage à haute tension
Partie 105: Combinés
interrupteurs-fusibles
pour courant alternatif
(CEI 62271-105:2002)

Hochspannungs-Schaltgeräte
und -Schaltanlagen
Teil 105: Hochspannungs-Lastschalter-
Sicherungs-Kombinationen
(IEC 62271-105:2002)

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This European Standard was approved by CENELEC on 2002-10-01. 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, 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/633/FDIS, future edition 1 of IEC 62271-105, 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 62271-105 on 2002-10-01.

This European Standard supersedes EN 60420:1993.

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) 2003-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-10-01

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 B and ZA are normative and annex A is informative.

Annex ZA has been added by CENELEC.

The numbering of the standards falling under the responsibility of IEC/SC 17A and IEC/SC 17C 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.

The following table provides an overview of the relationship between the old and the new numbering of standards falling under the responsibility of CLC/TC 17A and CLC/TC 17C.

IEC 62271/ EN 62271	High-voltage switchgear and controlgear –	Number of previous standard, if any	
		IEC	EN/HD
Part	Original title		
1	Common specifications	60694; 60517	EN 60694; EN 60517
100	High-voltage alternating circuit-breakers	60056	HD 348, mod.
101	Synthetic testing of high-voltage alternating current circuit-breakers	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	High-voltage switches for rated voltages of 52 kV and above	60265-2	EN 60265-2
105	High-voltage alternating current switch-fuse combinations	60420	EN 60420
106	High-voltage alternating current contactors and contactor-based motor-starters	60470	EN 60470
107	High-voltage alternating current switchgear-fuse combinations	New	--
108	Switchgear having combined functions	New	--
109	Alternating current series capacitor by-pass switches	New	--
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	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	EN 61330
203	Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above	60517; 61259	EN 60517; EN 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	EN 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	--
306	Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above	61639	--
307	High-voltage switchgear and controlgear - The use of electronic and associated technologies in auxiliary equipment of switchgear and controlgear	62063	--
308	High-voltage alternating current circuit-breakers - Guide for asymmetrical short-circuit breaking test duty T100a	62215	--

Endorsement notice

The text of the International Standard IEC 62271-105:2002 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 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 60282-1	2002	High-voltage fuses Part 1: Current-limiting fuses	EN 60282-1	2002
IEC 60694	1996	Common specifications for high-voltage switchgear and controlgear standards	EN 60694 + corr. May	1996 1999
IEC 60787	1983	Application guide for the selection of fuse-links of high-voltage fuses for transformer circuit applications	-	-
IEC 62271-100	2001	High-voltage switchgear and controlgear Part 100: High-voltage alternating- current circuit-breakers	EN 62271-100	2001
IEC 62271-102 + corr. April	2001 2002	Part 102: High-voltage alternating current disconnectors and earthing switches	EN 62271-102	2002

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Appareillage à haute tension –

Partie 105:
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pour courant alternatif

iTeh STANDARD PREVIEW

High-voltage switchgear and controlgear –

Part 105: SIST EN 62271-105:2003

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Alternating current switch-fuse
combinations

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International Electrotechnical Commission
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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 105: Alternating current switch-fuse combinations**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, 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 organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 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 62271-105 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 second edition of IEC 60420, published in 1990, and constitutes a technical revision. A reference table to explain the new numbering in this series is provided at the end of this foreword.

The text of this standard is based the following documents:

FDIS	Report on voting
17A/633/FDIS	17A/640/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.

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. Amendments to these clauses and subclauses are given under the same numbering, whilst additional subclauses are numbered from 101.

Annex A is for information only.

Annex B forms an integral part of this standard.

The committee has decided that the contents of this publication will remain unchanged until 2013. At this date, the publication will be

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

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.

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

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**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
001	Common specifications for high-voltage switchgear and controlgear standards	60694
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	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
109	Alternating-current series capacitor by-pass switches	
200	AC metal enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	60298
201	AC 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
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
306	Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above	61639
307	High-voltage switchgear and controlgear – 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
* The table is subject to change pending the transfer of technical reports to standards.		

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 105: Alternating current switch-fuse combinations

1 General

1.1 Scope

This part of IEC 62271 applies to three-pole units for public and industrial distribution systems which are functional assemblies of switches including switch-disconnectors and current-limiting fuses designed so as to be capable of

- breaking, at the rated recovery voltage, any current up to and including the rated short-circuit breaking current,
- making, at the rated voltage, circuits to which the rated short-circuit breaking current applies.

It does not apply to fuse-circuit-breakers, fuse-contactors, combinations for motor-circuits or to combinations incorporating single capacitor bank switches.

In this standard, the word “combination” is used for combination in which the components constitute a functional assembly. Each association of a given type of switch and a given type of fuse defines one type of combination.

In practice, different types of fuses may be combined with one type of switch, which gives several combinations with different characteristics, in particular concerning the rated currents. Moreover, for maintenance purposes, the user should know the types of fuses that can be associated to a given switch without impairing compliance to the standard, and the corresponding characteristics of the so-made combination.

A switch-fuse combination is then defined by its type designation and a list of selected fuses is defined by the manufacturer, the so-called “reference list of fuses”. Compliance with this standard of a given combination means that every combination using one of the selected fuses is proven to be in compliance with this standard.

The fuses are incorporated in order to extend the short-circuit breaking rating of the combination beyond that of the switch alone. They are fitted with strikers in order both to open automatically all three poles of the switch on the operation of a fuse and to achieve a correct operation at values of fault current above the minimum melting current but below the minimum breaking current of the fuses. In addition to the fuse strikers, the combination may be fitted with either an over-current release or a shunt release.

NOTE In this standard the term “fuse” is used to designate either the fuse or the fuse-link where the general meaning of the text does not result in ambiguity.

This standard applies to combinations designed with rated voltages above 1 kV up to and including 52 kV for use on three-phase alternating current systems of either 50 Hz or 60 Hz.

Fuses are covered by IEC 60282-1.