SVENSK STANDARD

SS-EN IEC 62271-105, utg 3:2024

2024-04-24

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REDLINE VERSION

Kopplingsapparater för spänning över 1 kV – Del 105: Kombinationer av lastbrytare och säkring för växelström, med märkspänning över 1 kV men högst 52 kV

High-voltage switchgear and controlgear –
Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

En så kallad ”Redline version” (RLV) innehåller både standarden som fastställts som SS och en ändringsmarkerad IEC-standard. Alla tillägg och borttagningar sedan den tidigare utgåvan av IEC-standarden är markerade med färg. Med en RLV sparar du mycket tid när du ska identifiera och bedöma aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut RLV i de fall den finns tillgänglig från IEC.

IEC 62271-105

Edition 3.0 2021-06
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

High-voltage switchgear and controlgear – Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.130.10

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

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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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62271-105:2012. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 62271-105 has been prepared by subcommittee 17A: Switching devices, of IEC technical committee 17: High-voltage switchgear and controlgear. It is an International Standard.

This third edition cancels and replaces the second edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the document has been updated to be in alignment with the second edition of IEC 62271-1:2017;
b) rated TRV has been removed (TRV is only a test parameter), as in the latest revision of IEC 62271-100;
c) differentiation has been introduced between requirements expressed for fulfilling the function expected from a switch-fuse combination, from requirements only relevant when the function is performed by a stand-alone device. The goal is to avoid duplication or conflicts of requirements with a standard dealing with assemblies, when the function is implemented within such an assembly.

The text of this International Standard is based the following documents:

FDIS	Report on voting
17A/1300/FDIS	17A/1306/RVD

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This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

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- amended.

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

~~1 General~~

1 Scope

~~Subclause 1.1 of IEC 62271-1:2007 is not applicable, and is replaced as follows:.~~

This part of IEC 62271 applies to three-pole units for public and industrial distribution systems which are functional assemblies of switches ~~including~~ composed of switches or 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.~~

It does not apply to combinations of fuses with circuit-breakers, contactors or circuit switchers, nor for combinations for motor-circuits nor to combinations incorporating single capacitor bank switches.

This document 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.

In this document, the word "combination" is used for a 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 switch-fuse combination. ~~In practice,~~ Different types of fuses ~~may~~ can be combined with one type of switch, which give several combinations with different characteristics, in particular concerning the rated continuous currents. ~~Moreover, for maintenance purposes, the user should know the types of fuses that can be combined 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~~ therefore defined by its type designation and a list of selected fuses defined by the manufacturer, the so-called "reference list of fuses". Compliance with this document of a given combination means that every combination using one of the selected fuses is proven to be in compliance with this document.

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~~ can be fitted with either an over-current release or a shunt release.

NOTE In this document 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~~ in accordance with IEC 60282-1:2020.

Devices that require dependent manual operation are not covered by this document.

Switches, including their specific mechanism, ~~shall be~~ are in accordance with IEC 62271-103 except for the short-time current and short-circuit making requirements where the current-limiting effects of the fuses are taken into account.

Earthing switches forming an integral part of a combination are covered by IEC 62271-102.

In addition, switches which include other functions (not covered by IEC 62271-103) are covered by their relevant standards (e.g. IEC 62271-102 for disconnectors and earthing switches).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

~~Subclause 1.2 of IEC 62271-1:2007 is applicable with the following additions:~~

Clause 2 of IEC 62271-1:2017 applies with the following additions:

IEC 60050-441, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and fuses* (available at http://www.electropedia.org)

IEC 60282-1:~~2009~~2020*, High-voltage fuses – Part 1: Current-limiting fuses*

~~IEC/TR 60787:2007, *Application guide for the selection of high-voltage current-limiting fuse-links for transformer circuits*~~

IEC 62271-1:~~2007~~2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

IEC 62271-100:~~2008~~2021*, High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-102:~~2001~~2018, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-103:~~2011~~2021, *High-voltage switchgear and controlgear – Part 103: Switches for rated voltages above 1 kV up to and including 52 kV*

SVENSK STANDARD

SS-EN IEC 62271-105, utg 3:2024

Fastställd	Sida	Ansvarig kommitté
2024-04-24	1 (56)	SEK TK 17AC

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Kopplingsapparater för spänning över 1 kV – Del 105: Kombinationer av lastbrytare och säkring för växelström, med märkspänning över 1 kV men högst 52 kV

High-voltage switchgear and controlgear – Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

Som svensk standard gäller europastandarden EN IEC 62271-105:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62271-105:2023.

Nationellt förord

Europastandarden EN IEC 62271-105:2023

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62271-105, Third edition, 2021 - High-voltage switchgear and controlgear – Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN 62271-1, utg 2:2018.

Tidigare fastställd svensk standard SS-EN 62271-105, utg 2:2013 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-11-10.

ICS 29.130.10

Denna standard är fastställd av SEK Svensk Elstandard,
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62271-105

November 2023

ICS 29.130.10

Supersedes EN 62271-105:2012

English Version

High-voltage switchgear and controlgear - Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV (IEC 62271-105:2021)

Appareillage à haute tension - Partie 105: Combinés interrupteurs-fusibles pour courant alternatif de tensions assignées supérieures à 1 kV et jusqu'à 52 kV inclus (IEC 62271-105:2021)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 105: Wechselstrom-Lastschalter-Sicherungs-Kombinationen für Bemessungsspannungen über 1 kV bis einschließlich 52 kV (IEC 62271-105:2021)

This European Standard was approved by CENELEC on 2021-07-20. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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Ref. No. EN IEC 62271-105:2023 E

SEK Svensk Elstandard

SS-EN IEC 62271-105, utg 3:2024

European foreword

The text of document 17A/1300/FDIS, future edition 3 of IEC 62271-105, prepared by SC 17A "Switching devices" of IEC/TC 17 "High-voltage switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62271-105:2023.

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)	2024-05-10
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2026-11-10

This document supersedes EN 62271-105:2012 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62271-105:2021 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 62271-202 NOTE Harmonized as EN 62271-202

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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NOTE 1 Where 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.cencenelec.eu.

Clause 2 of EN 62271-1:2017 applies with the following additions:

Publication	Year	Title	EN/HD	Year
IEC 60050-441	-	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses	-	-
IEC 60282-1	2020	High-voltage fuses - Part 1: Current-limiting fuses	EN IEC 60282-1	2020
IEC 62271-1	2017	High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear	EN 62271-1	2017
IEC 62271-100	2021	High-voltage switchgear and controlgear - Part 100: Alternating-current circuit-breakers	EN IEC 62271-100	2021
IEC 62271-102	2018	High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches	EN IEC 62271-102	2018
IEC 62271-103	2021	High-voltage switchgear and controlgear - Part 103: Alternating current switches for rated voltages above 1 kV up to and including 52 kV	EN IEC 62271-103	2023

Annex ZB
(informative)

A-deviations

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN and/or CENELEC member.

This European Standard does not fall under any Directive/Regulation of the EU.

In the relevant CEN and/or CENELEC countries, these A-deviations are valid instead of the respective provisions of the European Standard until the national situation causing the A-deviation has changed

Clause	Deviation
General	**Italy**
	CAPITOLO VSR 8.B D.M. 1 DICEMBRE 1980 e succ. Modifiche
	Disciplina dei contenitori a pressione di gas con membrature miste di materiale isolante e di materiale metallico, contenenti parti attive di apparecchiature elettriche.
	Gas filled compartments having a design pressure exceeding 0,5 bar (gauge) or a volume exceeding 2 m^3 shall be designed according to the Italian pressure vessel code for electrical switchgear.

IEC 62271-105

Edition 3.0 2021-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

High-voltage switchgear and controlgear – Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV

1 Scope

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– breaking, at the rated 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 combinations of fuses with circuit-breakers, contactors or circuit switchers, nor for combinations for motor-circuits nor to combinations incorporating single capacitor bank switches.

This document 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.

In this document, the word "combination" is used for a 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 switch-fuse combination. Different types of fuses can be combined with one type of switch, which give several combinations with different characteristics, in particular concerning the rated continuous currents.

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

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 can be fitted with either an over-current release or a shunt release.

NOTE In this document 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.

Fuses are in accordance with IEC 60282-1:2020.

Devices that require dependent manual operation are not covered by this document.

Switches, including their specific mechanism, are in accordance with IEC 62271-103 except for the short-time current and short-circuit making requirements where the current-limiting effects of the fuses are taken into account.

Earthing switches forming an integral part of a combination are covered by IEC 62271-102.

In addition, switches which include other functions (not covered by IEC 62271-103) are covered by their relevant standards (e.g. IEC 62271-102 for disconnectors and earthing switches).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

Clause 2 of IEC 62271-1:2017 applies with the following additions:

IEC 60050-441, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and fuses* (available at http://www.electropedia.org)

IEC 60282-1:2020*, High-voltage fuses – Part 1: Current-limiting fuses*

IEC 62271-1:2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

IEC 62271-100:2021*, High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-102:2018, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-103:2021, *High-voltage switchgear and controlgear – Part 103: Switches for rated voltages above 1 kV up to and including 52 kV*