High-voltage switchgear and controlgear - Part 106: Alternating current contactors, contactor-based controllers and motor-starters

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 62271-106:2021 sisaldab Euroopa standardi EN IEC 62271-106:2021 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 62271-106:2021 consists of the English text of the European standard EN IEC 62271-106:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.06.2021.	Date of Availability of the European standard is 04.06.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.130.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62271-106

June 2021

ICS 29.130.10

Supersedes EN 62271-106:2011 and all of its amendments and corrigenda (if any)

English Version

High-voltage switchgear and controlgear - Part 106: Alternating current contactors, contactor-based controllers and motor-starters (IEC 62271-106:2021)

Appareillage à haute tension - Partie 106: Contacteurs, combinés de démarrage à contacteurs et démarreurs de moteurs, pour courant alternatif (IEC 62271-106:2021)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 106: Wechselstrom-Schütze, Kombinationsstarter und Motorstarter mit Schützen (IEC 62271-106:2021)

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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.

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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

Ref. No. EN IEC 62271-106:2021 E

European foreword

The text of document 17A/1296/FDIS, future edition 2 of IEC 62271-106, 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 62271-106:2021.

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) 2022-02-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-05-31

This document supersedes EN 62271-106:2011 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.

Endorsement notice

The text of the International Standard IEC 62271-106:2021 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 60034-11	NOTE	Harmonized as EN 60034-11
IEC 60060 (series)	NOTE	Harmonized as EN 60060 (series)
IEC 60255-149:2013	NOTE	Harmonized as EN 60255-149:2013 (not modified)
IEC 62271-103	NOTE	Harmonized as EN 62271-103

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60060-1	2010	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	2010
IEC 60068-2-1	2007	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	2007
IEC 60068-2-2	2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007
IEC 60068-2-30	2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005
IEC 60076-2	-	Power transformers - Part 2: Temperature rise for liquid-immersed transformers	EN 60076-2	-
IEC 60076-11	2018	Power transformers - Part 11: Dry-type transformers	EN IEC 60076-11	2018
IEC 60255-21-1	1988	Electrical relays - Part 21: Vibration, shock, bump and seismic tests on measuring relays and protection equipment - Section One: Vibration tests (sinusoidal)	EN 60255-21-1	1995
IEC 60282-1	-	High-voltage fuses - Part 1: Current-limiting fuses	EN IEC 60282-1	-
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	-	-
IEC 60644	-	Specification for high-voltage fuse-links for motor circuit applications	EN 60644	-
IEC 60947-5-1	-	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1	-
IEC 61000-4-18	2019	Electromagnetic compatibility (EMC) - Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	EN IEC 61000-4-18	2019

Publication	Year	Title	EN/HD	Year
IEC 61230	-	Live working - Portable equipment for earthing or earthing and short-circuiting	EN 61230	-
IEC 61812-1	-	Time relays for industrial and residential use - Part 1: Requirements and tests	EN 61812-1	-
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 62271-110	2017	High-voltage switchgear and controlgear – Part 110: Inductive load switching	EN IEC 62271-110	2018
IEC 62271-200	2021	High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN IEC 62271-200	2021

IEC 62271-106

Edition 2.0 2021-04

INTERNATIONAL STANDARD

High-voltage switchgear and controlgear – Part 106: Alternating current contactors, contactor-based controllers and motor-starters

IEC 62271-106:2021-04(en)

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INTERNATIONAL STANDARD

High-voltage switchgear and controlgear – Part 106: Alternating current contactors, contactor-based controllers and motor-starters

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CONTENTS

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 106: Alternating current contactors, contactor-based controllers and motor-starters

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 62271-106 has been prepared by subcommittee 17A: Switching devices, of IEC technical committee 17: High-voltage switchgear and controlgear.

This second edition cancels and replaces the first edition published in 2011. It constitutes a technical revision.

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

- document numbered to correspond to IEC 62271-1 2017.

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

FDIS	Report on voting
17A/1296/FDIS	17A/1301/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard is to be read in conjunction with IEC 62271-1:2017. 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 parts of the IEC 62271 series 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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 106: Alternating current contactors, contactor-based controllers and motor-starters

1 Scope

This part of IEC 62271 applies to AC contactors and/or contactor-based controllers and motor-starters designed for indoor installation and operation at frequencies up to and including 60 Hz on systems having voltages above 1 kV and up to and including 24 kV. This document also includes additional requirements for outdoor installations where the equipment is housed in an additional protective enclosure.

It is applicable only to three-pole devices for use in three-phase systems, and single-pole devices for use in single-phase systems. Two-pole contactors and starters for use in single-phase systems are subject to agreement between manufacturer and user.

Contactors and/or starters dealt with in this document typically do not have adequate short-circuit interruption capability. In this context, this document gives requirements for:

– starters associated with separate short-circuit protective devices;
– controllers – contactors combined with short-circuit protective devices (SCPD).

Contactors intended for closing and opening electric circuits and, if combined with suitable relays, for protecting these circuits against operating overloads are covered in this document.

This document is also applicable to the operating devices of contactors and to their auxiliary equipment.

Motor-starters intended to start and accelerate motors to normal speed, to ensure continuous operation of motors, to switch off the supply from the motor and to provide means for the protection of motors and associated circuits against operating overloads are dealt with.

Motor-starter types included are:

– direct-on-line starters;
– reversing starters;
– two-direction starters;
– reduced kVA (voltage) starters;
  - auto-transformer starters;
  - rheostatic starters;
  - reactor starters.

This document does not apply to:

– circuit-breaker-based motor-starters;
– single-pole operation of multi-pole contactors or starters;
– two-step auto-transformer starters designed for continuous operation in the starting position;
– unbalanced rheostatic rotor starters, i.e. where the resistances do not have the same value in all phases;
– equipment designed not only for starting, but also for adjustment of speed;

– liquid starters and those of the "liquid-vapour" type;
– semiconductor contactors and starters making use of semiconductor contactors in the main circuit;
– rheostatic stator starters;
– contactors or starters designed for special applications.

This document does not deal with components contained in contactors and contactor-based motor-starters, for which individual specifications exist.

NOTE 1 Thermal electrical relays are covered by IEC 60255-149.

NOTE 2 High-voltage current-limiting fuses are covered by IEC 60282-1 and IEC 60644.

NOTE 3 Metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV are covered by IEC 62271-200.

NOTE 4 Disconnectors and earthing switches are covered by IEC 62271-102.

NOTE 5 High-voltage switches above 1 kV and less than 52 kV are covered by IEC 62271-103.

The object of this document is to state:

a) the characteristics of contactors and starters and associated equipment;
b) the conditions with which contactors or starters comply with reference to:
    1) their operation and behaviour,
    2) their dielectric properties,
    3) the degrees of protection provided by their enclosures, where applicable,
    4) their construction,
    5) for controllers, interactions between the various components, for example SCPD co-ordination;
c) the tests intended for confirming that these conditions have been met, and the methods to be adopted for these tests;
d) the information to be given with the equipment or in the manufacturer's literature.

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.

IEC 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-2-1:2007, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-30:2005, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60076-2, *Power transformers – Part 2: Temperature rise for liquid-immersed transformers*

IEC 60076-11:2018, *Power transformers – Part 11: Dry-type transformers*