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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

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

FOREWORD

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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- withdrawn,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*

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)*

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

IEC 60417, *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

IEC 60644, *Specification for high-voltage fuse-links for motor circuit applications*

IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61000-4-18:2019, *Electromagnetic compatibility (EMC) – Part 4-18: Testing and measurement techniques – Damped oscillatory wave immunity test*

IEC 61230, *Live working – Portable equipment for earthing or earthing and short-circuiting*

IEC 61812-1, *Time relays for industrial use and residential use – Part 1: Requirements and tests*

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 62271-110:2017, *High-voltage switchgear and controlgear – Part 110: Inductive load switching*

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*