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High-voltage switchgear and controlgear -
Part 201: AC solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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High-voltage switchgear and controlgear - Part 201: AC solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

FOREWORD

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IEC 62271-201 has been prepared by subcommittee 17C: Assemblies, 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 2014. This edition constitutes a technical revision.

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

a) aligned with the third edition of IEC 62271-200 published in 2021 and its Amendment 1 published in 2024, for structure, definitions, classifications, ratings and testing procedures, where appropriate;
b) clause numbering aligned with IEC 62271-1:2017, including the adoption of the subclause names of Clause 3;

c) in Clause 3 specific terms and definitions are added for "in service", "normal operating condition" and "normal use";

d) earthing circuit is more precisely described, including ratings and test requirements;

e) number of mechanical tests on interlocks is reduced for type testing;

f) forces to apply during type testing are better prescribed (refer to 7.102);

g) resistance measuring on main circuit is only needed before continuous current tests (as reference for routine tests) and not anymore needed after this continuous current test. Rationale for this deletion is that this measured resistance does not mean anything; as the temperature rise test was just finished, a new temperature rise test will not give new information;

h) IEC 62271-100:2021 has been taken into account in 7.101.2;

i) IEC 62271-107:2019 and IEC IEEE 62271-37-013:2021 are also considered in 7.101.2;

j) LSC category is more precisely described, including an explaining flowchart (Annex G);

k) examples not covered by the IAC test are transferred from Clause 6 to 9.103;

l) the term "assembly" is defined in Clause 3 and used as synonym for "solid-insulation enclosed switchgear and controlgear" in this document;

m) "metallic" is replaced by "metal" where applicable;

n) a 1 s rule was introduced for Criterion 4 during IAC tests regarding hot gases versus glowing particles as cause of ignition;

o) internal arc tests for switchgear with protrusions are more precisely described in Annex A;

p) partitions accessible in normal use are now PA, PB1 or PB2 instead of PI which has been removed (refer to 6.103.3)

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

Draft	Report on voting
17C/980/FDIS	17C/995/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

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/publications.

This document should be read in conjunction with IEC 62271-1:2017 and its Amendment 1:2021, 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 62271-1. Amendments to these clauses and subclauses are given under the same numbering, whilst additional subclauses are numbered from 101.

The reader's attention is drawn to the fact that Annex C lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this document.

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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

High-voltage (IEC 60050-601:1985 [1],[1] 601-01-27) switchgear refers to rated voltages above 1 kV. However, medium-voltage is commonly used for distribution systems with rated voltages above 1 kV and generally applied up to and including 52 kV; refer to IEC 60050-601:1985 [1], 601-01-28.

Although primarily dedicated to three-phase systems, this document can also be applied to single-phase and two-phase systems.

Switchgear and controlgear assemblies having a metal enclosure are covered by IEC 62271-200 [2].

Gas-filled medium-voltage designs use to have design pressures below 500 kPa, as mentioned for example in the introduction of EN 50187 [3].

[1] Numbers in square brackets refer to the Bibliography.

1 Scope

This part of IEC 62271 is applicable to prefabricated solid-insulation enclosed switchgear and controlgear assemblies designed for:

– alternating current;

– rated voltages above 1 kV and up to and including 52 kV;

– service frequencies up to and including 60 Hz;

– indoor installation;

– areas limited to authorized personnel.

The assembly can include either air-insulated or fluid-filled compartments, or both.

For components installed in a solid-insulation enclosed switchgear and controlgear, this document supplements or even replaces in some cases, the requirements as stated by the individual product standards.

The list of components which can be inside the solid-insulation enclosed switchgear and controlgear is not limited to the ones explicitly cited in this document.

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 60050-151, *International Electrotechnical Vocabulary (IEV) - Part 151: Electrical and magnetic devices*

IEC 60050-441, *International Electrotechnical Vocabulary (IEV) - Part 441: Switchgear, controlgear and fuses*

IEC 60060-1:2025, *High-voltage test techniques - Part 1: General terminology and test requirements*

IEC 60270, *High-voltage test techniques - Partial discharge measurements*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD 1:1999
IEC 60529:1989/AMD 2:2013

IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62271-1:2017, *High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear*
IEC 62271-1:2017/AMD1:2021

IEC 62271-100:2021, *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*
IEC 62271-100:2021/AMD1:2024

IEC 62271-102:2018, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*
IEC 62271-102:2018/AMD1:2022

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*

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

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

IEC 62271-107:2019, *High-voltage switchgear and controlgear - Part 107: Alternating current fused circuit-switchers for rated voltages above 1 kV up to and including 52 kV*

IEC/IEEE 62271-37-013:2021, *High-voltage switchgear and controlgear - Part 37-013: Alternating current generator circuit-breakers*

ISO 4126-2, *Safety devices for protection against excessive pressure - Part 2: Bursting disc safety devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62271-1, IEC 60050-151, IEC 60050-441 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

NOTE The classification system for definitions of IEC 62271-1:2017 is followed. Terms and definitions are referenced and prioritized in the following order:

– Clause 3 of this document;
– IEC 62271-1:2017;
– IEC 60050-441;
– IEC 60050-151.

3.1 General terms and definitions

The definitions in 3.1 of IEC 62271-1:2017 are applicable, with the following additions:

3.1.101
ambient air temperature
<of an assembly> temperature, determined under specified conditions, of the air surrounding the enclosure of an assembly

[SOURCE: IEC 60050-441:1984, 441-11-13, modified – "prescribed" has been replaced by "specified", "complete switching device or fuse" by "enclosure of an assembly" and the note has been removed.]