

TECHNICAL SPECIFICATION



High-voltage switchgear and controlgear –
Part 314: Direct current disconnectors and earthing switches

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 314: Direct current disconnectors and earthing switches

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IEC TS 62271-314 has been prepared by subcommittee 17A: Switching devices, of IEC technical committee 17: High-voltage switchgear and controlgear. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
17A/1377/DTS	17A/1388B/RVDTS

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 Technical Specification 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 is to be read in conjunction with IEC TS 62271-5:2024, to which it refers and which is applicable unless otherwise specified in this document. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in IEC TS 62271-5. Modifications to these clauses and subclauses are given under the same references whilst additional subclauses are numbered from 101.

A list of all parts of 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 314: Direct current disconnectors and earthing switches

1 Scope

This part of IEC 62271, which is a Technical Specification, applies to high-voltage direct current disconnectors and earthing switches, designed for indoor and outdoor installations and for operation on HVDC transmission systems having direct voltages of 100 kV and above.

It also applies to the operating devices of these disconnectors and earthing switches and their auxiliary equipment.

NOTE Disconnectors in which the fuse forms an integral part are not covered by 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 60050-471, *International Electrotechnical Vocabulary (IEV) – Part 471: Insulators*

IEC 60050-614, *International Electrotechnical Vocabulary (IEV) – Part 614: Generation, transmission and distribution of electricity – Operation*

IEC 60071-11:2022, *Insulation co-ordination – Part 11: Definitions, principles and rules for HVDC system*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

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 TS 62271-5:2024, *High-voltage switchgear and controlgear – Part 5: Common specifications for direct current switchgear and controlgear*

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*

IEC 62271-201:2014, *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*

IEC 62271-203:2022, *High-voltage switchgear and controlgear – Part 203: AC gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-151, IEC 60050-441, IEC 60050-471, IEC 60050-614, and IEC TS 62271-5, as well as 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>

3.1 General terms and definitions

3.1.101

indoor switchgear and controlgear

switchgear and controlgear designed solely for installation within a building or other housing, where the switchgear and controlgear is protected against wind, rain, snow, abnormal dirt deposits, abnormal condensation, ice and hoar frost

[SOURCE: IEC 60050-441:2000, 441-11-04]

3.1.102

outdoor switchgear and controlgear

switchgear and controlgear suitable for installation in the open air, i.e. capable of withstanding wind, rain, snow, dirt deposits, condensation, ice and hoar frost

[SOURCE: IEC 60050-441:2000, 441-11-05]

3.1.103

user

person or legal entity using the disconnectors or earthing switches

Note 1 to entry: This can include the purchaser (for example an electricity supplier), but it can also include the contracting company, the staff responsible for erection of installation, the maintenance or operating staff or anybody else temporarily or permanently responsible for the disconnector, earthing switch or electrical installation, or even the operation of the switchgear.

3.2 Assemblies of switchgear and controlgear

3.2.101

test object

equipment needed to represent the switchgear and controlgear for a particular type test

[SOURCE: IEC 62271-1:2017, 3.2.1]

3.3 Parts of assemblies

3.3.101

transport unit

part of switchgear and controlgear intended for transportation without being dismantled

[SOURCE: IEC 62271-1:2017, 3.3.1]

3.3.102

busbar

low-impedance conductor to which several electric circuits can be connected at separate points

Note 1 to entry: In many cases, the busbar consists of a bar.

[SOURCE: IEC 60050-151:2001, 151-12-30]

3.4 Switching devices

3.4.101

disconnecter

mechanical switching device which provides, in the open position, an isolating distance in accordance with specified requirements

Note 1 to entry: A disconnecter is capable of opening and closing a circuit when either negligible current is broken or made, or when no significant change in the voltage across the terminals of each of the poles of the disconnecter occurs. It is also capable of carrying currents under normal circuit conditions and carrying for a specified time currents under abnormal conditions such as those of short-circuit.

Note 2 to entry: "Negligible current" implies residual currents such as the capacitive currents of converter stations, cables, DC filter capacitors, bushings, connections, and currents of permanently connected grading elements of circuit-breakers and voltage dividers (see applications indicated in Annex A of IEC TS 62271-5:2024). The currents may be $\leq 1A$ according to CIGRE TB-683.

[SOURCE: IEC 60050-441:2000, 441-14-05, modified – Note 2 to entry has been added]

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3.4.102

divided support disconnecter (or earthing switch)

disconnecter (or earthing switch) in which the fixed and moving contacts of each pole are not supported by a common base or frame

Note 1 to entry: A typical example is the pantograph or semi-pantograph disconnecter (or earthing switch).

[SOURCE: IEC 60050-441:2000, 441-14-06 and –07, modified – The term "earthing switch" is completed with "divided support" and the term "disconnecter" substituted by "earthing switch" in Note 1 to entry when appropriate; Note 2 to entry deleted.]

3.4.103

centre-break disconnecter

disconnecter in which both contacts of each pole are movable and engage at a point substantially midway between their supports

Note 1 to entry: This term applies to high-voltage disconnecters only.

[SOURCE: IEC 60050-441:2000, 441-14-08]

3.4.104

double-break disconnecter

disconnecter that opens a circuit at two points

[SOURCE: IEC 60050-441:2000, 441-14-09]