SVENSK STANDARD

SS-EN IEC 62271-202, utg 3:2023

Fastställd	Sida	Ansvarig kommitté
2023-02-22	1 (127)	SEK TK 17AC

Kopplingsapparater för spänning över 1 kV – Del 202: Prefabricerade ställverk med märkväxelspänning över 1 kV upp till och med 52 kV

High-voltage switchgear and controlgear – Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV

Som svensk standard gäller europastandarden EN IEC 62271-202:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62271-202:2022.

Nationellt förord

Europastandarden EN IEC 62271-202:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62271-202, Third edition, 2022 - High-voltage switchgear and controlgear - Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62271-202, utg 2:2014 med eventuella ändringar och rättelser, gäller ej fr o m 2025-07-27.

ICS 29.130.10

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: www.elstandard.se

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.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

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.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62271-202

August 2022

ICS 29.130.10

Supersedes EN 62271-202:2014; EN 62271-202:2014/AC:2014; EN 62271-202:2014/AC:2015

English Version

High-voltage switchgear and controlgear - Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV (IEC 62271-202:2022)

Appareillage à haute tension - Partie 202: Postes préfabriqués pour courant alternatif de tensions assignées supérieures à 1 kV et inférieures ou égales à 52 kV (IEC 62271-202:2022)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 202: Fabrikfertige Wechselstrom-Stationen für Bemessungsspannungen über 1 kV bis einschließlich 52 kV (IEC 62271-202:2022)

This European Standard was approved by CENELEC on 2022-07-27. 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

Ref. No. EN IEC 62271-202:2022 E

SEK Svensk Elstandard

SS-EN IEC 62271-202, utg 3:2023

European foreword

The text of document 17C/843/FDIS, future edition 3 of IEC 62271-202, prepared by SC 17C "Assemblies" of IEC/TC 17 "High-voltage switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62271-202:2022.

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) 2023-04-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-07-27

This document supersedes EN 62271-202:2014 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 62271-202:2022 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 61936-1:2021	NOTE	Harmonized as EN IEC 61936-1:2021 (not modified)
IEC 60059:1999	NOTE	Harmonized as EN 60059:1999 (not modified)
IEC 60076 (series)	NOTE	Harmonized as EN 60076 (series)
IEC 62271-4:2013	NOTE	Harmonized as EN 62271-4:2013 (not modified)
IEC 60364-4-41:2005	NOTE	Harmonized as HD 60364-4-41:2017 + A11:2017
IEC 60721-3-2:2018	NOTE	Harmonized as EN IEC 60721-3-2:2018 (not modified)
IEC 60068 (series)	NOTE	Harmonized as EN 60068 (series)
IEC/TR 62271-208:2009	NOTE	Harmonized as CLC/TR 62271-208:2010 (not modified)
IEC 60243-1:2013	NOTE	Harmonized as EN 60243-1:2013 (not modified)
ISO 9223	NOTE	Harmonized as EN ISO 9223

ISO 9224	NOTE	Harmonized as EN ISO 9224
IEC 60721-2-6:1990	NOTE	Harmonized as HD 478.2.6 S1:1993 (not modified)
IEC/IEEE 82079-1:2019	NOTE	Harmonized as EN IEC/IEEE 82079-1:2020 (not modified)
ISO 13732-1:2006	NOTE	Harmonized as EN ISO 13732-1:2008 (not modified)
IEC 62430:2019	NOTE	Harmonized as EN IEC 62430:2019 (not modified)
ISO 1460	NOTE	Harmonized as EN ISO 1460
ISO 1461	NOTE	Harmonized as EN ISO 1461
ISO 2081	NOTE	Harmonized as EN ISO 2081
ISO 2409	NOTE	Harmonized as EN ISO 2409
ISO 9227	NOTE	Harmonized as EN ISO 9227
ISO 11997 (series)	NOTE	Harmonized as EN ISO 11997 (series)
ISO 7784 (series)	NOTE	Harmonized as EN ISO 7784 (series)
ISO 12944 (series)	NOTE	Harmonized as EN ISO 12944 (series)
IEC 60865-1:2011	NOTE	Harmonized as EN 60865-1:2012 (not modified)
IEC 60076-3	NOTE	Harmonized as EN 60076-3
IEC 61869 (series)	NOTE	Harmonized as EN IEC 61869 (series)

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 60050-441	-	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses	-	-
IEC 60050-461	2008	International Electrotechnical Vocabulary - Part 461: Electric cables	-	-
IEC 60068-2-5	2018	Environmental testing - Part 2-5: Tests - Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering	EN IEC 60068-2-5	2018
IEC 60071-1	2019	Insulation co-ordination - Part 1: Definitions, principles and rules	EN IEC 60071-1	2019
IEC 60076-1	2011	Power transformers - Part 1: General	EN 60076-1	2011
IEC 60076-2	2011	Power transformers - Part 2: Temperature rise for liquid-immersed transformers	EN 60076-2	2011
IEC 60076-5	2006	Power transformers - Part 5: Ability to withstand short circuit	EN 60076-5	2006
IEC 60076-7	2018	Power transformers - Part 7: Loading guide for mineral-oil-immersed power transformers	-	-
IEC 60076-10	2016	Power transformers - Part 10: Determination of sound levels	EN 60076-10	2016
IEC 60076-11	2018	Power transformers - Part 11: Dry-type transformers	EN IEC 60076-11	2018
IEC 60076-12	2008	Power transformers - Part 12: Loading guide for dry-type power transformers	-	-
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013

Publication	Year	Title	EN/HD	Year
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 60721-1	1990	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1	1995
+ A1	1992		-	-
+ A2	1995		+ A2	1995
IEC 60721-2-2	2012	Classification of environmental conditions - Part 2-2: Environmental conditions appearing in nature - Precipitation and wind	EN 60721-2-2	2013
IEC 60721-2-4	2018	Classification of environmental conditions - Part 2-4: Environmental conditions appearing in nature - Solar radiation and temperature	EN IEC 60721-2-4	2018
-	-		+ AC	2018-12
IEC 60721-3-4	-	Classification of environmental conditions - Part 3-4: Classification of groups of environmental parameters and their severities - Stationary use at non-weatherprotected locations	EN IEC 60721-3-4	-
IEC/TS 60815-1	2008	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles	-	-
IEC 60947-1	-	Low-voltage switchgear and controlgear - Part 1: General rules	EN IEC 60947-1	-
IEC 61180-1	1992[1]	High-voltage test techniques for low-voltage equipment -- Part 1: Definitions, test and procedure requirements	-	-
IEC 61439	series	Low-voltage switchgear and controlgear assemblies	EN IEC 61439	series
IEC 61439-1	2020	Low-voltage switchgear and controlgear assemblies - Part 1: General rules	EN IEC 61439-1	2021
IEC 62262	2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	2002
IEC 62271-1	2017	High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear	EN 62271-1	2017
IEC 62271-200	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

[1] This publication has been partially replaced with IEC 61180:2016.

Publication	Year	Title	EN/HD	Year
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	EN 62271-201	2014
IEC 62271-212	2016	High-voltage switchgear and controlgear - Part 212: Compact Equipment Assembly for Distribution Substation (CEADS)	EN 62271-212	2017
ISO 1182	2010	Reaction to fire tests for products - Non-combustibility tests	-	-
ISO 1716	2018	Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value)	EN ISO 1716	2018
ISO 6508-1	2016	Metallic materials - Rockwell hardness test - Part 1: Test method	EN ISO 6508-1	2016
-	-	Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels	EN 10025-2	2019

IEC 62271-202

Edition 3.0 2022-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

High-voltage switchgear and controlgear – Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV

Appareillage à haute tension – Partie 202 : Postes préfabriqués pour courant alternatif de tensions assignées supérieures à 1 kV et inférieures ou égales à 52 kV

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.130.10

ISBN 978-2-8322-1609-5

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 202: AC prefabricated substations for rated voltages above 1 kV and 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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
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.

IEC 62271-202 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) the whole document contents and structure are reviewed with due consideration of IEC 62271-1:2017;
b) modification of the title and scope to include high-voltage switchgear prefabricated substations;
c) inclusion of CEADS as a possible component of MV/LV prefabricated substation;
d) in 7.2.101, the possible influence of surrounding elements on the dielectric performance of high-voltage components as high-voltage switchgear and controlgear and high-voltage interconnections non-metal-enclosed or without earthed screen are now considered;

e) new informative Annex G with testing procedure to evaluate the impact of solar radiation in temperatures inside the enclosure and how to apply it;

f) new informative Annex H for appropriate consideration of installation conditions of electronic equipment;

g) the rated power of a prefabricated substation is now defined as a three-parameter rated value. See 5.101.1;

h) minimum dimensions for access doors to the prefabricated substation in 6.104.4 and for free height of operation aisle in 6.105.3 have been introduced;

i) continuous current (temperature rise) test methods have been revised/clarified where necessary;

j) Figure D.1, which shows the mineral-oil-immersed power transformer load factor inside the enclosure, has been corrected.

The text of this document is based on the following documents:

Draft	Report on voting
17C/843/FDIS	17C/849/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/standardsdev/publications.

This document is to be read in conjunction with IEC 62271-1:2017, 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 62271-1:2017. Amendments 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 can be found, under the general title *High-voltage switchgear and controlgear*, 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,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

A prefabricated substation is defined as a high-voltage type-tested assembly comprising an enclosure containing at least a power transformer and/or a high-voltage switchgear and controlgear, and, in general, all or some of the following main components: low-voltage switchgear and controlgear, electrical high-voltage interconnection and low-voltage interconnection. The prefabricated substation can include all necessary auxiliary and control equipment for its operation. The purpose being to supply low-voltage power from a high-voltage system and/or vice versa (high-voltage/low-voltage transformer substation) or distribute electric power in a high-voltage network (high-voltage switchgear substation).

These prefabricated substations can be in locations accessible to the public and should ensure protection not only to authorized persons but also to general public under the specified service conditions.

Therefore, in addition to the specified characteristics, ratings and relevant test procedures, particular attention has been paid to the specification concerning the protection of persons, both operators and general public. Use of type-tested components and suitable design and construction of the assembly contributes to this protection. The correct design and performance of the prefabricated substation is verified by means of relevant type and routine tests described in this document, including internal arc tests (if applicable).

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV

1 Scope

This part of IEC 62271 specifies the service conditions, rated characteristics, general structural requirements and test methods of enclosed high-voltage prefabricated substations. These prefabricated substations are cable-connected to AC high-voltage networks with an operating voltage up to and including 52 kV and power frequencies up to and including 60 Hz. They can be manually operated from inside (walk-in type) or from outside (non-walk-in type). They are designed for outdoor installation at locations with public accessibility and where protection of personnel is provided.

These prefabricated substations can be situated at ground level or partially or completely below ground level. The last are also called "underground prefabricated substations".

In general, two types of prefabricated substations are considered in this document:

– high-voltage switchgear prefabricated substations;
– high-voltage/low-voltage transformer prefabricated substations (step-up and step-down).

A high-voltage switchgear prefabricated substation comprises an enclosure containing in general the following electrical components:

– high-voltage switchgear and controlgear;
– auxiliary equipment and circuits.

A high-voltage/low-voltage transformer prefabricated substation comprises an enclosure containing in general the following electrical components:

– power transformer(s);
– high-voltage and low-voltage switchgear and controlgear;
– high-voltage and low-voltage interconnections;
– auxiliary equipment and circuits.

However, relevant provisions of this document are applicable to designs where not all these electrical components exist (for example, a prefabricated substation consisting of power transformer and low-voltage switchgear and controlgear).

The listed electrical components of a high-voltage/low-voltage transformer prefabricated substation can be incorporated in the prefabricated substation either as separate components or as an assembly type CEADS according to IEC 62271-212.

This document covers only designs using natural ventilation. However, relevant provisions of this document are applicable to designs using other means of ventilation except the rated power of the prefabricated substation and associated class of enclosure (see 5.101), the continuous current tests (see 7.5) and all temperature rise related requirements, which would need an agreement between manufacturer and user.

NOTE 1 IEC 61936-1 [1][1] provides general rules for the design and erection of high-voltage power installations. As well, it specifies additional requirements for the external connections, erection and operation at the place of installation of high-voltage prefabricated substations compliant with IEC 62271-202, which are regarded as a component of such installation. Non-prefabricated high-voltage substations, are generally covered by IEC 61936-1 [1].

NOTE 2 High-voltage switchgear prefabricated substations can include instrument transformers, according to IEC 61869 (all parts). These substations are not high-voltage/low-voltage transformer prefabricated substations.

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

IEC 60050-461:2008, *International Electrotechnical Vocabulary (IEV) – Part 461: Electric cables*

IEC 60068-2-5:2018, *Environmental testing – Part 2-5: Tests – Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering*

IEC 60071-1:2019, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60076-1:2011, *Power transformers – Part 1: General*

IEC 60076-2:2011, *Power transformers – Part 2: Temperature rise for liquid-immersed transformers*

IEC 60076-5:2006, *Power transformers – Part 5: Ability to withstand short circuit*

IEC 60076-7:2018, *Power transformers – Part 7: Loading guide for mineral-oil-immersed power transformers*

IEC 60076-10:2016, *Power transformers – Part 10: Determination of sound levels*

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

IEC 60076-12:2008, *Power transformers – Part 12: Loading guide for dry-type power transformers*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

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

IEC 60721-1:1990, *Classification of environmental conditions – Part 1: Environmental parameters and their severities*
IEC 60721-1:1990/AMD1:1992
IEC 60721-1:1990/AMD2:1995

IEC 60721-2-2:2012, *Classification of environmental conditions – Part 2-2: Environmental conditions appearing in nature – Precipitation and wind*

IEC 60721-2-4:2018, *Classification of environmental conditions – Part 2-4: Environmental conditions appearing in nature – Solar radiation and temperature*

IEC 60721-3-4, *Classification of environmental conditions – Part 3-4: Classification of groups of environmental parameters and their severities – Stationary use at non-weather protected locations*

IEC TS 60815-1:2008, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 1: Definitions, information and general principles*

IEC 60947-1, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 61180-1:1992, *High-voltage test techniques for low voltage equipment – Part 1: Definitions, test and procedure requirements*[2]

IEC 61439 (all parts), *Low-voltage switchgear and controlgear assemblies*

IEC 61439-1:2020, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

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 62271-200:2021, *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 62271-212:2016, *High-voltage switchgear and controlgear – Part 212: Compact Equipment Assembly for Distribution Substation (CEADS)*

ISO 1182:2010, *Reaction to fire tests for products – Non-combustibility tests*

ISO 1716:2018, *Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value)*

ISO 6508-1:2016, *Metallic materials – Rockwell hardness test – Part 1: Test method*

EN 10025-2:2019, *Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels*

---

2 This publication has been partially replaced with IEC 61180:2016.