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Kopplingsapparater för spänning över 1 kV – Del 1: Gemensamma specifikationer

*High-voltage switchgear and controlgear –
Part 1: Common specifications*

Som svensk standard gäller europastandarden EN 62271-1:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62271-1:2008.

Nationellt förord

Europastandarden EN 62271-1:2008

består av:

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- **IEC 62271-1, First edition, 2007 - High-voltage switchgear and controlgear - Part 1: Common specifications**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60694, utgåva 1, 1996, SS-EN 60694 C2, utgåva 1, 1999, SS-EN 60694/A1, utgåva 1, 2001 och SS-EN 60694/A2, utgåva 1, 2001, gäller ej fr o m 2011-11-01.

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English version

**High-voltage switchgear and controlgear -
Part 1: Common specifications
(IEC 62271-1:2007)**

Appareillage à haute tension -
Partie 1: Spécifications communes
(CEI 62271-1:2007)

Hochspannungs-Schaltgeräte
und -Schaltanlagen -
Teil 1: Gemeinsame Bestimmungen
(IEC 62271-1:2007)

This European Standard was approved by CENELEC on 2008-11-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 17A/799/FDIS, future edition 1 of IEC 62271-1, prepared by SC 17A, High-voltage switchgear and controlgear, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62271-1 on 2008-11-01.

This European Standard supersedes EN 60694:1996 + corrigendum May 1999 + A1:2000 + A2:2001.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62271-1:2007 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 60068-1	NOTE Harmonized as EN 60068-1:1994 (not modified).
IEC 60099-4	NOTE Harmonized as EN 60099-4:2004 (modified).
IEC 60664-1	NOTE Harmonized as EN 60664-1:2007 (not modified).
IEC 62271-100	NOTE Harmonized as EN 62271-100:2001 (not modified).
ISO 9001	NOTE Harmonized as EN ISO 9001:2000 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60034-1	- ¹⁾	Rotating electrical machines - Part 1: Rating and performance	EN 60034-1	2004 ²⁾
IEC 60038 (mod)	1983	IEC standard voltages ³⁾	HD 472 S1 + corr. February + A1	1989 2002 1995
IEC 60050-131	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 131: Circuit theory	-	-
IEC 60050-151	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 151: Electrical and magnetic devices	-	-
IEC 60050-191	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 191: Dependability and quality of service	-	-
IEC 60050-351	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 351: Control technology	-	-
IEC 60050-441	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60050-446	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 446: Electrical relays	-	-
IEC 60050-551	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 551: Power electronics	-	-
IEC 60050-581	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60050-601	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 601: Generation, transmission and distribution of electricity - General	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

³⁾ The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-604	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 604: Generation, transmission and distribution of electricity - Operation	-	-
IEC 60050-605	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 605: Generation, transmission and distribution of electricity - Substations	-	-
IEC 60050-811	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Chapter 811: Electric traction	-	-
IEC 60050-826	- ¹⁾	International Electrotechnical Vocabulary (IEV) - Part 826: Electrical installations	-	-
IEC 60051-1	- ¹⁾	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 1: Definitions and general requirements common to all parts	EN 60051-1	1998 ²⁾
IEC 60051-2	- ¹⁾	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 2: Special requirements for ammeters and voltmeters	EN 60051-2	1989 ²⁾
IEC 60051-4	- ¹⁾	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 4: Special requirements for frequency meters	EN 60051-4	1989 ²⁾
IEC 60051-5	- ¹⁾	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 5: Special requirements for phase meters, power factor meters and synchroscopes	EN 60051-5	1989 ²⁾
IEC 60059	- ¹⁾	IEC standard current ratings	EN 60059	1999 ²⁾
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60064 (mod)	- ¹⁾	Tungsten filament lamps for domestic and similar general lighting purposes - Performance requirements	EN 60064 + A11	1995 ²⁾ 2007
IEC 60068-2	Series	Environmental testing - Part 2: Tests	EN 60068-2	Series
IEC 60071-1	2006	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	2006
IEC 60071-2	1996	Insulation co-ordination - Part 2: Application guide	EN 60071-2	1997
IEC 60073	- ¹⁾	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators	EN 60073	2002 ²⁾
IEC 60081	- ¹⁾	Double-capped fluorescent lamps - Performance specifications	EN 60081	1998 ²⁾
IEC/TR 60083	- ¹⁾	Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60085	- ¹⁾	Electrical insulation - Thermal evaluation and designation	EN 60085	2008 ²⁾
IEC 60115-4	Series	Fixed resistors for use in electronic equipment - Part 4: Sectional specification: Fixed power resistors	-	-
IEC 60130	Series	Connectors for frequencies below 3 MHz	EN 60130	Series
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	- ⁴⁾	-
IEC 60228	- ¹⁾	Conductors of insulated cables	EN 60228 + corr. May	2005 ²⁾ 2005
IEC 60245	Series	Rubber insulated cables - Rated voltages up to and including 450/750 V	- ⁵⁾	-
IEC 60255-8 (mod)	- ¹⁾	Electrical relays - Part 8: Thermal electrical relays	EN 60255-8	1998 ²⁾
IEC 60255-21-1	- ¹⁾	Electrical relays - Part 21: Vibration, shock, bump and seismic tests on measuring relays and protection equipment - Section 1: Vibration tests (sinusoidal)	EN 60255-21-1	1995 ²⁾
IEC 60255-21-3	- ¹⁾	Electrical relays - Part 21: Vibration, shock, bump and seismic tests on measuring relays and protection equipment - Section 3: Seismic tests	EN 60255-21-3	1995 ²⁾
IEC 60269-2 (mod)	- ¹⁾	Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) - Examples of standardized systems of fuses A to I	HD 60269-2	2007 ²⁾
IEC 60270	- ¹⁾	High-voltage test techniques - Partial discharge measurements	EN 60270	2001 ²⁾
IEC 60296	- ¹⁾	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear	EN 60296 + corr. September	2004 ²⁾ 2004
IEC 60309-1	- ¹⁾	Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements	EN 60309-1 + A11	1999 ²⁾ 2004
IEC 60309-2	- ¹⁾	Plugs, socket-outlets and couplers for industrial purposes - Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories	EN 60309-2 + A11	1999 ²⁾ 2004
IEC 60376	- ¹⁾	Specification of technical grade sulfur hexafluoride (SF_6) for use in electrical equipment	EN 60376	2005 ²⁾

⁴⁾ The HD 21 series, which is related to, but not directly equivalent with the IEC 60227 series, applies instead.

⁵⁾ The HD 22 series, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation*, which is related to, but not directly equivalent with the IEC 60245 series, applies instead.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60393-1	- ¹⁾	Potentiometers for use in electronic equipment - Part 1: Generic specification	-	-
IEC 60417	Data-base	Graphical symbols for use on equipment	-	-
IEC 60445 (mod)	- ¹⁾	Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals and conductor terminations	EN 60445	2007 ²⁾
IEC 60480	- ¹⁾	Guidelines for the checking and treatment of sulphur hexafluoride (SF_6) taken from electrical equipment and specification for its re-use	EN 60480	2004 ²⁾
IEC 60502-1	- ¹⁾	Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) - Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)	-	-
IEC 60507	- ¹⁾	Artificial pollution tests on high-voltage insulators to be used on a.c. systems	EN 60507	1993 ²⁾
IEC 60512-2	Series	Connectors for electronic equipment - Tests and measurements - Part 2: Electrical continuity and contact resistance tests	EN 60512-2	Series
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60617	Data-base	Graphical symbols for diagrams	-	-
IEC 60669-1 (mod)	- ¹⁾	Switches for household and similar fixed-electrical installations - Part 1: General requirements	EN 60669-1	1999 ²⁾
IEC 60695-1	Series	Fire hazard testing - Part 1: Guidance for assessing the fire hazard of electrotechnical products	EN 60695-1	Series
IEC 60695-7	Series	Fire hazard testing - Part 7: Toxicity of fire effluent	EN 60695-7	Series
IEC 60721-1	- ¹⁾	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1	1995 ²⁾
IEC 60721-2	Series	Classification of environmental conditions - Part 2: Environmental conditions appearing in nature	HD 478.2	Series
IEC 60721-3	Series	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities	EN 60721-3	Series
IEC 60730-2-9 (mod)	- ¹⁾	Automatic electrical controls for household and similar use - Part 2-9: Particular requirements for temperature sensing controls	EN 60730-2-9 + A11	2002 ²⁾ 2003
IEC 60730-2-13 (mod)	- ¹⁾	Automatic controls for household and similar use - Part 2-13: Particular requirements for humidity sensing controls	EN 60730-2-13	2008 ²⁾

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 60815	1986	Guide for the selection of insulators in respect of polluted conditions	-	-
IEC 60909-0	- ¹⁾	Short-circuit currents in three-phase a.c. systems - Part 0: Calculation of currents	EN 60909-0	2001 ²⁾
IEC/TR 60909-1	- ¹⁾	Short-circuit currents in three-phase a.c. systems - Part 1: Factors for the calculation of short-circuit currents according to IEC 60909-0	-	-
IEC 60932 ⁶⁾	- ¹⁾	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	-	-
IEC 60947-2	- ¹⁾	Low-voltage switchgear and controlgear - Part 2: Circuit-breakers	EN 60947-2	2006 ²⁾
IEC 60947-3	- ¹⁾	Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	EN 60947-3	200X ⁷⁾
IEC 60947-4-1	- ¹⁾	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters	EN 60947-4-1	2001 ²⁾
IEC 60947-4-2	- ¹⁾	Low-voltage switchgear and controlgear - Part 4-2: Contactors and motor-starters - AC semiconductor motor controllers and starters	EN 60947-4-2	2000 ²⁾
IEC 60947-5-1	- ¹⁾	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1 + corr. July	2004 ²⁾ 2005
IEC 60947-7-1	- ¹⁾	Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	2002 ²⁾
IEC 60947-7-2	- ¹⁾	Low-voltage switchgear and controlgear - Part 7-2: Ancillary equipment - Protective conductor terminal blocks for copper conductors	EN 60947-7-2	2002 ²⁾
IEC 61000-4-1	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series	EN 61000-4-1	2007 ²⁾
IEC 61000-4-4	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2004 ²⁾
IEC 61000-4-11	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004 ²⁾

⁶⁾ IEC 60932 is superseded by IEC/TS 62271-304, which is harmonized as CLC/TS 62271-304.

⁷⁾ To be ratified.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-17	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test	EN 61000-4-17	1999 ²⁾
IEC 61000-4-18	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	EN 61000-4-18 + corr. September	2007 ²⁾ 2007
IEC 61000-4-29	- ¹⁾	Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests	EN 61000-4-29	2000 ²⁾
IEC 61000-5	Series	Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines	EN 61000-5	Series
IEC 61000-6-2	- ¹⁾	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	EN 61000-6-2 + corr. September	2005 ²⁾ 2005
IEC/TS 61000-6-5	- ¹⁾	Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Immunity for power station and substation environments	-	-
IEC 61020-4	- ¹⁾	Electromechanical switches for use in electronic equipment - Part 4: Sectional specification for lever (toggle) switches	-	-
IEC 61180-1	- ¹⁾	High-voltage test techniques for low-voltage equipment - Part 1: Definitions, test and procedure requirements	EN 61180-1	1994 ²⁾
IEC/TS 61634 ⁸⁾	- ¹⁾	High-voltage switchgear and controlgear - Use and handling of sulphur hexafluoride (SF ₆)	-	-
IEC 61810	Series	Electromechanical elementary relays	EN 61810	Series
IEC 62063	- ¹⁾	High-voltage switchgear and controlgear - The use of electronic and associated technologies in auxiliary equipment of switchgear and controlgear	-	-
IEC 62262	- ¹⁾	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	2002 ²⁾
IEC 62271-2 ⁹⁾	- ¹⁾	High-voltage switchgear and controlgear - Part 2: Seismic qualification for rated voltages of 72,5 kV and above	EN 62271-2	2003 ²⁾
IEC/TR 62271-300	- ¹⁾	High-voltage switchgear and controlgear - Part 300: Seismic qualification of alternating current circuit-breakers	-	-
IEC 62326-1	- ¹⁾	Printed boards - Part 1: Generic specification	EN 62326-1	2002 ²⁾

⁸⁾ IEC/TS 61634 is superseded by IEC/TR 62271-303.

⁹⁾ IEC 62271-2 is superseded by IEC 62271-207, which is harmonized as EN 62271-207.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 11 (mod)	- ¹⁾	Industrial scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement	EN 55011	2007 ²⁾
CISPR 16-1	Series	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus	EN 55016-1	Series
CISPR 18-2	- ¹⁾	Radio interference characteristics of overhead power lines and high-voltage equipment - Part 2: Methods of measurement and procedure for determining limits	-	-

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 1: Common specifications

1 General

1.1 Scope

This part of IEC 62271 applies to a.c. switchgear and controlgear designed for indoor and outdoor installation and for operation at service frequencies up to and including 60 Hz on systems having voltages above 1 000 V.

This standard applies to all high-voltage switchgear and controlgear except as otherwise specified in the relevant IEC standards for the particular type of switchgear and controlgear.

NOTE For the use of this standard, high voltage (see IEC 601-01-27) is the rated voltage above 1 000 V. However, the term medium voltage (see IEC 601-01-28) is commonly used for distribution systems with voltages above 1 kV and generally applied up to and including 52 kV.

1.2 Normative references

The following referenced documents are indispensable for the application 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 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60038:1983, *IEC standard voltages*

IEC 60050-131, *International Electrotechnical Vocabulary (IEV) – Part 131: Circuit theory*

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

IEC 60050-191, *International Electrotechnical Vocabulary (IEV) – Chapter 191: Dependability and quality of service*

IEC 60050-351, *International Electrotechnical Vocabulary (IEV) – Part 351: Control technology*

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

IEC 60050-446, *International Electrotechnical Vocabulary (IEV) – Chapter 446: Electrical relays*

IEC 60050-551, *International Electrotechnical Vocabulary (IEV) – Power electronics*

IEC 60050-581, *International Electrotechnical Vocabulary (IEV) – Chapter 581: Electro-mechanical components for electronic equipment*

IEC 60050-601, *International Electrotechnical Vocabulary (IEV) – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 60050-604, *International Electrotechnical Vocabulary (IEV) – Chapter 604: Generation, transmission and distribution of electricity – Operation*