

**Kõrgepingeline lülitus- ja juhtimisaparatuur. Osa 1:
Üldliigitus**

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

| EESTI STANDARDI EESSÕNA | NATIONAL FOREWORD |
|---|--|
| See Eesti standard EVS-EN 62271-1:2009 sisaldab Euroopa standardi EN 62271-1:2008 ingliskeelset teksti. | This Estonian standard EVS-EN 62271-1:2009 consists of the English text of the European standard EN 62271-1:2008. |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. |
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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)

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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.

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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- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-11-01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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CONTENTS

| | |
|--|----|
| FOREWORD..... | 6 |
| 1 General..... | 8 |
| 1.1 Scope..... | 8 |
| 1.2 Normative references..... | 8 |
| 2 Normal and special service conditions..... | 12 |
| 2.1 Normal service conditions..... | 13 |
| 2.2 Special service conditions..... | 14 |
| 3 Terms and definitions..... | 16 |
| 3.1 General terms..... | 16 |
| 3.2 Assemblies of switchgear and controlgear..... | 19 |
| 3.3 Parts of assemblies..... | 19 |
| 3.4 Switching devices..... | 20 |
| 3.5 Parts of switchgear and controlgear..... | 20 |
| 3.6 Operation..... | 26 |
| 3.7 Characteristic quantities..... | 29 |
| 3.8 Index of definitions..... | 30 |
| 4 Ratings..... | 32 |
| 4.1 Rated voltage (U_r)..... | 33 |
| 4.2 Rated insulation level..... | 33 |
| 4.3 Rated frequency (f_r)..... | 37 |
| 4.4 Rated normal current and temperature rise..... | 37 |
| 4.5 Rated short-time withstand current (I_k)..... | 40 |
| 4.6 Rated peak withstand current (I_p)..... | 40 |
| 4.7 Rated duration of short circuit (t_k)..... | 41 |
| 4.8 Rated supply voltage of closing and opening devices and of auxiliary and control circuits (U_a)..... | 41 |
| 4.9 Rated supply frequency of closing and opening devices and of auxiliary circuits..... | 43 |
| 4.10 Rated pressure of compressed gas supply for controlled pressure systems..... | 43 |
| 4.11 Rated filling levels for insulation and/or operation..... | 43 |
| 5 Design and construction..... | 43 |
| 5.1 Requirements for liquids in switchgear and controlgear..... | 43 |
| 5.2 Requirements for gases in switchgear and controlgear..... | 43 |
| 5.3 Earthing of switchgear and controlgear..... | 44 |
| 5.4 Auxiliary and control equipment..... | 44 |
| 5.5 Dependent power operation..... | 50 |
| 5.6 Stored energy operation..... | 50 |
| 5.7 Independent manual or power operation (independent unlatched operation)..... | 51 |
| 5.8 Operation of releases..... | 51 |
| 5.9 Low- and high-pressure interlocking and monitoring devices..... | 52 |
| 5.10 Nameplates..... | 52 |
| 5.11 Interlocking devices..... | 53 |
| 5.12 Position indication..... | 53 |
| 5.13 Degrees of protection provided by enclosures..... | 54 |
| 5.14 Creepage distances for outdoor insulators..... | 55 |
| 5.15 Gas and vacuum tightness..... | 56 |

| | | |
|------|--|-----|
| 5.16 | Liquid tightness | 56 |
| 5.17 | Fire hazard (flammability) | 57 |
| 5.18 | Electromagnetic compatibility (EMC) | 57 |
| 5.19 | X-ray emission | 57 |
| 5.20 | Corrosion | 58 |
| 6 | Type tests | 58 |
| 6.1 | General | 58 |
| 6.2 | Dielectric tests | 60 |
| 6.3 | Radio interference voltage (r.i.v.) test | 67 |
| 6.4 | Measurement of the resistance of circuits | 67 |
| 6.5 | Temperature-rise tests | 68 |
| 6.6 | Short-time withstand current and peak withstand current tests | 71 |
| 6.7 | Verification of the protection | 73 |
| 6.8 | Tightness tests | 74 |
| 6.9 | Electromagnetic compatibility tests (EMC) | 76 |
| 6.10 | Additional tests on auxiliary and control circuits | 82 |
| 6.11 | X-radiation test procedure for vacuum interrupters | 86 |
| 7 | Routine tests | 88 |
| 7.1 | Dielectric test on the main circuit | 88 |
| 7.2 | Tests on auxiliary and control circuits | 88 |
| 7.3 | Measurement of the resistance of the main circuit | 89 |
| 7.4 | Tightness test | 89 |
| 7.5 | Design and visual checks | 90 |
| 8 | Guide to the selection of switchgear and controlgear | 90 |
| 8.1 | Selection of rated values | 91 |
| 8.2 | Continuous or temporary overload due to changed service conditions | 91 |
| 9 | Information to be given with enquiries, tenders and orders | 92 |
| 9.1 | Information with enquiries and orders | 93 |
| 9.2 | Information with tenders | 93 |
| 10 | Transport, storage, installation, operation and maintenance | 94 |
| 10.1 | Conditions during transport, storage and installation | 94 |
| 10.2 | Installation | 94 |
| 10.3 | Operation | 96 |
| 10.4 | Maintenance | 96 |
| 11 | Safety | 99 |
| 11.1 | Precautions by manufacturers | 100 |
| 11.2 | Precautions by users | 100 |
| 11.3 | Electrical aspects | 100 |
| 11.4 | Mechanical aspects | 101 |
| 11.5 | Thermal aspects | 101 |
| 11.6 | Operation aspects | 101 |
| 12 | Influence of the product on the environment | 101 |
| | Annex A (normative) Identification of test specimens | 102 |
| | Annex B (normative) Determination of the equivalent r.m.s. value of a short-time current during a short circuit of a given duration | 104 |
| | Annex C (normative) Method for the weatherproofing test for outdoor switchgear and controlgear | 105 |