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Particular requirements for source switching equipment (SSE)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/25

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English Version

**Particular requirements for source switching equipment (SSE)
(IEC 62991:2022)**Exigences particulières relatives au matériel de
commutation de source (SSE)
(IEC 62991:2022)Besondere Anforderungen an
Quellenumschaltanlagen (SSE)
(IEC 62991:2022)

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Europäisches Komitee für Elektrotechnische Normung**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

EN IEC 62991:2025 (E)**European foreword**

The text of document 23K/78/FDIS, future edition 1 of IEC 62991, prepared by SC 23K "Electrical Energy Efficiency products" of IEC/TC 23 "Electrical accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62991:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-04-30 document have to be withdrawn

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This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZZ, which is an integral part of this document.

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.

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The text of the International Standard IEC 62991:2022 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 standard indicated:

IEC 60038	NOTE	Approved as EN 60038
IEC 60112	NOTE	Approved as EN IEC 60112
IEC 60364-4-41	NOTE	Approved as HD 60364-4-41
IEC 60364-8-1:2019	NOTE	Approved as HD 60364-8-1:2019 (not modified)
IEC 60529	NOTE	Approved as EN 60529
IEC 60669-1:2017	NOTE	Approved as EN 60669-1:2018
IEC 60947-1:2020	NOTE	Approved as EN IEC 60947-1:2021 (not modified)
IEC 60947-4-1:2018	NOTE	Approved as EN IEC 60947-4-1:2019 (not modified)
IEC 60947-6-1:2021	NOTE	Approved as EN IEC 60947-6-1:2023 (not modified)
IEC 61000-6-1	NOTE	Approved as EN IEC 61000-6-1
IEC 61140	NOTE	Approved as EN 61140

IEC 62019 NOTE Approved as EN 62019

IEC 62933-1:2018 NOTE Approved as EN IEC 62933-1:2018 (not modified)

EN IEC 62991:2025 (E)**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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-78	-	Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state	EN 60068-2-78	2013
IEC 60085	-	Electrical insulation – Thermal evaluation and designation	EN 60085	2008
IEC 60127-1	-	Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links	EN IEC 60127-1	2024
IEC 60212	-	Standard conditions for use prior to and during the testing of solid electrical insulating materials	EN 60212	2011
IEC 60228	-	Conductors of insulated cables	EN IEC 60228	2024
IEC 60317-0-1	2013	Specifications for particular types of winding wires - Part 0-1: General requirements - Enamelled round copper wire	EN 60317-0-1 + A1	2014 2019
IEC 60364-8-82	2022 ¹	Low voltage electrical installations- Part 8-82: Prosumer's low-voltage electrical installations	-	-
IEC 60384-14 + A1	2013 2016	Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 60384-14 + A1 + AC	2013 2016 2016

¹ Dated as no EN equivalent exists.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60417	database	Graphical symbols for use on equipment (available at http://www.graphical-symbols.info/equipment)	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN IEC 60664-1 + AC	2020 2020-12
IEC 60664-3	-	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2017
IEC 60669	series	Switches for household and similar fixed-electrical installations	EN 60669-1 + AC + AC EN IEC 60669-2-1 + A11 + AC EN 60669-2-2 EN 60669-2-3 EN 60669-2-4 EN 60669-2-5 EN 60669-2-6	2018 2018-11 2020-02 2022 2022 2024-01 2006 2006 2005 2016 2012
IEC 60695-2-10	-	Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure	EN IEC 60695-2-10 + AC	2021 2024-01
IEC 60695-2-11	2021	Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)	EN IEC 60695-2-11	2021
IEC 60898-1	-	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Part 1: Circuit-breakers for a.c. operation	EN 60898-1	2019
IEC 60898-2	-	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Part 2: Circuit-breakers for AC and DC operation	EN 60898-2	2021
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN IEC 61000-4-3	2020

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5	-	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5 + A1	2014 2017
IEC 61000-4-6	-	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN IEC 61000-4-6	2023
IEC 61000-4-8	-	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	2010
IEC 61000-4-11	-	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN IEC 61000-4-11 + AC + AC	2020 2020-06 2022-10
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61095	2009	Electromechanical contactors for household and similar purposes	EN 61095	2009
IEC 61558-2-6	-	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1100 V - Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers	EN 61558-2-6	2009
IEC 62873-3-1	2020 ²	Residual current operated circuit-breakers for household and similar use - Part 3-1: Particular requirements for devices with screwless-type terminals for external copper conductors	-	-
IEC 62873-3-3	2022 ³	Residual current operated circuit-breakers for household and similar use - Part 3-3: Specific requirements for devices with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors	-	-

² Dated as no EN equivalent exists.

³ Dated as no EN equivalent exists.

EN IEC 62991:2025 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 14-1	2020	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission equipment	EN IEC 55014-1	2021
ISO 306	-	Plastics – Thermoplastic materials – Determination of Vicat softening temperature (VST)	EN ISO 306	2022

EN IEC 62991:2025 (E)**Annex ZZ**
(informative)**Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered**

This European standard has been prepared under a Commission's standardisation request relating to harmonised standards in the field of the Low Voltage Directive, M/511, to provide one voluntary means of conforming to safety objectives of Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding safety objectives of that Directive, and associated EFTA regulations.

Table ZZ.1 — Correspondence between this European standard and Annex I of Directive 2014/35/EU [2014 OJ L96]

Safety Objectives of Directive 2014/35/EU	Clause(s) / subclause(s) of this EN	Remarks / Notes
(1) (a)	4, 5, 6 - 9.2	
(1) (b)	4 - Annex D, 5, 8.1 - 9.1, 8.2.2 - 9.3, 8.2.3 - 9.11, 8.2.5 - 9.5, 8.2.6 - 9.6, 8.7.2.2 - 9.11.2	
(1) (c)	7, 8.1 - 9.1	
(2) (a), (b), (c) and (d)	8.2.2 - 9.3, 8.2.3 - 9.11, 8.2.4 - 9.4, 8.3 - 9.7, 8.4 - 9.8, 8.5 - 9.9, 8.6 - 9.10, 8.7 - 9.11, 8.11 - 9.15, 8.12 - 9.16.2, 9.1 - Annex D	
(3) (a), (b) and (c)	8.2.2 - 9.3, 8.4 - 9.8, 8.7 - 9.11, 8.8 - 9.12, 8.9 - 9.13, 8.10 - 9.14, 8.11 - 9.15, 8.12 - 9.16.3, 8.13 - 9.17	

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WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.



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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Particular requirements for source switching equipment (SSE)

Exigences particulières relatives au matériel de commutation de source (SSE)



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IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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Particular requirements for source switching equipment (SSE)

Exigences particulières relatives au matériel de commutation de source (SSE)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PARTICULAR REQUIREMENTS FOR
SOURCE SWITCHING EQUIPMENT (SSE)**
FOREWORD

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

Draft	Report on voting
23K/78/FDIS	23K/79/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.

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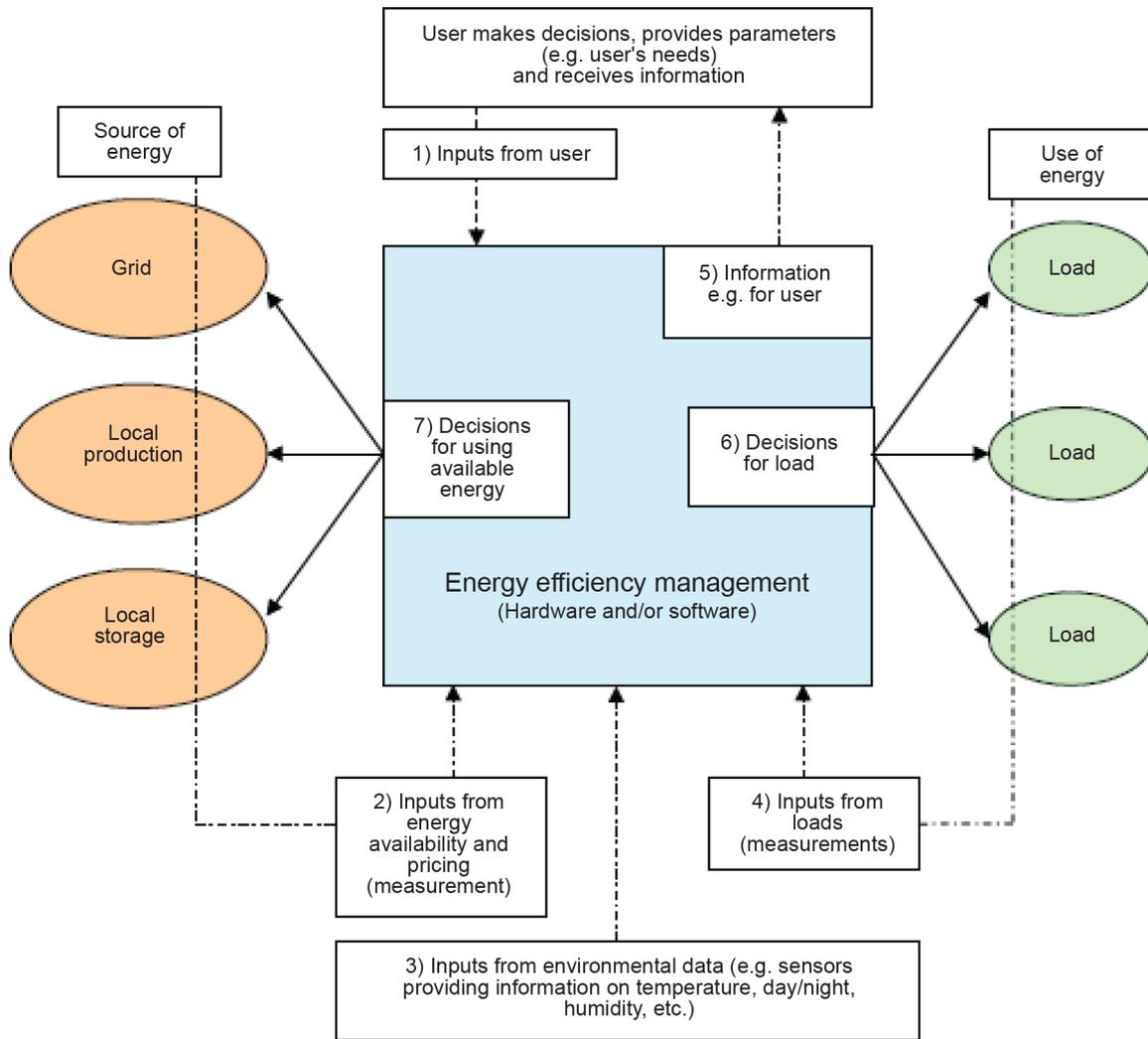
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INTRODUCTION

The optimization of electrical energy usage can be facilitated by appropriate design and installation considerations. An electrical installation can provide the required level of service and safety for the lowest level of electrical consumption.

This is considered by designers as a general requirement of their design procedures to establish the best use of electrical energy.

The optimization of the use of electricity is based on energy efficiency management taking into consideration the price of electricity, electrical consumption of the loads and real-time adaptation, as described in Figure 1, which is reproduced from IEC 60364-8-1:2019, Figure 1.



IEC

Figure 1 – Energy efficiency management system (EEMS)

This document applies to source switching equipment (SSE), for household and similar uses (see Figure 2).

SSE is intended:

- to make transparent to the end-user the use of energy sources, taking into account local generation or storage;
- to optimize the electrical energy originating either from the grid or from other local sources/storage.

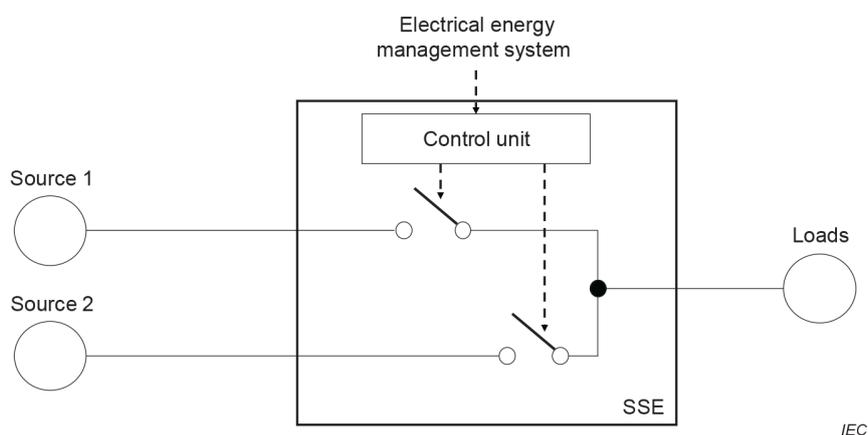


Figure 2 – Principle of management of two sources with source switching equipment (SSE)

NOTE Examples of use of SSE are given Annex A.

As defined by IEC 60364-8-82:2022, the main operating modes of SSE are:

- direct feeding mode: corresponding to the normal source (supply from the grid). Storage units can supply current-using-equipment or be charged by the grid or local power supplies;
- island mode: loads supplied by local energy sources and storage units, disconnected from the grid;
- reverse feeding mode: corresponding to the supply of the grid. Storage units can supply current-using-equipment and/or the grid or be charged by local power supplies.

Transfer from/to the direct feeding mode to island mode and vice versa can be achieved by the operation of the SSE which can be either directly controlled (manually or remotely) or automatically controlled.

Operation of SSE is to occur in safe conditions as described in IEC 60364-8-82:2022.

This document does not cover communication aspects such as protocols and interoperability nor data security or other related aspects.

SSE switching operations are based on similar principles as transfer switching equipment (TSE). For applications with higher currents, for example, for industrial applications, the reader may refer to IEC 60947-6-1.

PARTICULAR REQUIREMENTS FOR SOURCE SWITCHING EQUIPMENT (SSE)

1 Scope

This International Standard applies to source switching equipment, hereafter referred to as SSE, for household and similar uses, primarily intended to be used for energy efficiency (EE) purposes with local production and/or storage of energy.

SSE is intended to be installed in low voltage prosumer electrical installations (PEI) to deliver the electrical energy:

- either to current-using equipment (direct feeding mode or island mode);
- or to the grid (reverse feeding mode).

SSE is intended to select and/or combine two power sources (e.g. selected from among grid, local power source, storage units) within an electrical energy management system (EEMS). SSE can also be used for backup supply.

NOTE 1 "Switching device for islanding" (SDFI) function is under consideration as additional requirements can be necessary. See also Figure 4 of IEC 60364-8-82:2022.

SSE is part of the fixed electrical installation.

This document applies to SSE for operation in AC single or multiphase main circuits with rated voltages not exceeding 440 V AC, frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A (40 A for screwless terminals). They are intended to be used in installations with prospective short circuit currents not exceeding 25 000 A. DC operations are not covered by this edition and are kept under consideration for a future revision of this document.

According to this document, SSE can be operated:

- manually (M-SSE), or
- remotely (R-SSE), or
- automatically (A-SSE), or
- a combination of the above methods of operation, e.g. manual and remote.

SSE is used to select two sources sequentially. SSE able to run two (or more) sources in parallel are not covered by this edition and are kept under consideration for a future revision of this product standard.

SSE can be operated with interlocks and/or synchronization.

NOTE 2 In some countries, it is not permitted to have synchronization of local sources with the grid for particular grid conditions, e.g. when fluctuations of the grid voltage or frequency are outside the tolerance limits.

SSE is constructed either as combined SSE (C-SSE, based on dedicated products such as circuit breakers, switches or contactors) or non-combined SSE (NC-SSE).

According to this document, C-SSE is based on switching units of the same type.

SSE is intended for use in circuits where protection against electrical shock and over-current is provided according to installation rules for low voltage electrical installations, unless the SSE already contains such protective function.

SSE is normally installed by instructed persons (IEC 60050-195:2021, 195-04-02) or skilled persons (IEC 60050-195:2021, 195-04-01). SSE is normally used by ordinary persons (IEC 60005-195:2021, 195-04-03) and does not require maintenance.

The requirements of this document apply for standard environmental conditions. They are applicable to SSE intended for use in an environment with pollution degree 2 and overvoltage categories III according to IEC 60664-1:2020. SSE has at least a degree of protection IP 20 according to IEC 60529. Additional requirements can be necessary for devices used in locations having more severe environmental conditions.

SSE does not, by its nature, provide an isolation function nor the overcurrent protection. However, isolation and overcurrent protection functions as covered by relevant product standards can be provided by combined SSE.

This document does not apply to transfer switching equipment (TSE) intended to be used by skilled persons, as covered by IEC 60947-6-1:2021.

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 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60127-1, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60212, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

IEC 60228, *Conductors of insulated cables*

IEC 60317-0-1:2013, *Specifications for particular types of winding wires – Part 0-1: General requirements – Enamelled round copper wire*

IEC 60364-8-82:2022, *Low voltage electrical installations – Part 8-82: Functional aspects – Prosumer's low-voltage electrical installations*

IEC 60384-14:2013, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60384-14:2013/AMD1:2016

IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

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

IEC 60664-3, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

- IEC 60669 (all parts), *Switches for household and similar fixed-electrical installations*
- IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*
- IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*
- IEC 60898-1, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation*
- IEC 60898-2, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 2: Circuit-breakers for AC and DC operation*
- IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*
- IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
- IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*
- IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*
- IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*
- IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*
- IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*
- IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*
- IEC 61095:2009, *Electromechanical contactors for household and similar purposes*
- IEC 61558-2-6, *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers for general applications*
- IEC 62873-3-1, *Residual current operated circuit-breakers for household and similar use – Part 3-1: Particular requirements for devices with screwless-type terminals for external copper conductors*
- IEC 62873-3-3, *Residual current operated circuit-breakers for household and similar use – Part 3-3: Specific requirements for devices with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors*
- CISPR 14-1:2020, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission*

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ISO 306, *Plastics – Thermoplastic materials – Determination of Vicat softening temperature (VST)*

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