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Switches for household and similar fixed electrical installations - Part 2-1: Particular requirements - Electronic switches (IEC 60669-2-1:2021)

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See Eesti standard EVS-EN IEC 60669-2-1:2022 sisaldab Euroopa standardi EN IEC 60669-2-1:2022 ja selle paranduse AC:2024 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60669-2-1:2022 consists of the English text of the European standard EN IEC 60669-2-1:2022 and its corrigendum AC:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.09.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 16.09.2022.
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September 2022

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AC EN 60669-2-5:2016 AC

English Version

Switches for household and similar fixed electrical installations - Part 2-1: Particular requirements - Electronic control devices (IEC 60669-2-1:2021)

Interrupteurs pour installations électriques fixes domestiques et analogues - Partie 2-1: Exigences particulières - Dispositifs de commande électronique (IEC 60669-2-1:2021)

Schalter für Haushalt und ähnliche ortsfeste elektrische Installationen - Teil 2-1: Besondere Anforderungen - Elektronische Schalter (IEC 60669-2-1:2021)

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European foreword

The text of document 23B/1326/FDIS, future edition 5 of IEC 60669-2-1, prepared by SC 23B “Plugs, socket-outlets and switches” of IEC/TC 23 “Electrical accessories” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60669-2-1:2022.

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) 2023-07-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-07-12

〖AC〗 This document supersedes EN 60669-2-1:2004, EN 50428:2005 and EN 60669-2-5:2016 and all of their amendments and corrigenda (if any). 〖/AC〗

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The text of the International Standard IEC 60669-2-1:2021 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 60050 (series)	NOTE	Harmonized as EN IEC 63223[1] (series)
IEC 60085:1984	NOTE	Harmonized as HD 566 S1:1990 (not modified)
IEC 60364-4-41	NOTE	Harmonized as HD 60364-4-41
IEC 60664-3	NOTE	Harmonized as EN 60664-3
IEC 61000-6-3	NOTE	Harmonized as EN IEC 61000-6-3
IEC 61058-1:2016	NOTE	Harmonized as EN IEC 61058-1:2018 (not modified)
IEC 61140	NOTE	Harmonized as EN 61140
IEC 62612	NOTE	Harmonized as EN 62612
IEC 62717	NOTE	Harmonized as EN 62717

[1] Under preparation. Stage at time of publication: prEN IEC 63223.

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IEC 60669-2-1

Edition 5.0 2021-02

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Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic control devices

Interrupteurs pour installations électriques fixes domestiques et analogues – Partie 2-1: Exigences particulières – Dispositifs de commande électronique



IEC 60669-2-1:2021-02(en-fr)

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IEC 60669-2-1

Edition 5.0 2021-02

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Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic control devices

Interrupteurs pour installations électriques fixes domestiques et analogues – Partie 2-1: Exigences particulières – Dispositifs de commande électronique

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SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 2-1: Particular requirements – Electronic control devices

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FOREWORD

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International Standard IEC 60669-2-1 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

This fifth edition cancels and replaces the fourth edition published in 2002, Amendment 1:2008 and Amendment 2:2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) incorporation of the requirements for HBES switches, previously included in IEC 60669-2-5;
b) modification of 19.106, test and requirements for switches for LEDs;
c) general indication to cover electronic control devices;
d) test for looping through.

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

FDIS	Report on voting
23B/1326/FDIS	23B/1342/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part of IEC 60669 is to be used in conjunction with IEC 60669-1:2017, hereinafter referred to as Part 1. It lists the changes necessary to convert that standard into a specific standard for electronic control devices.

In this document, the following print types are used:

– requirements proper: in roman type;

– *test specifications: in italic type;*

– notes: in smaller roman type.

Subclauses, figures, tables or notes which are additional to those in Part 1 are numbered starting from 101.

A list of all the parts in the IEC 60669 series, published under the general title *Switches for household and similar fixed electrical installations*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,
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SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 2-1: Particular requirements – Electronic control devices

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1 Scope

This clause of Part 1 is completely replaced by the following:

This part of IEC 60669 applies to electronic control devices, a general term to cover electronic switches, home and building electronic systems (HBES) / building automation and control systems (BACS) switches and electronic extension units.

It applies to electronic switches and to HBES/BACS switches, for alternating current (AC) only with a rated switching voltage not exceeding 250 V and a rated current not exceeding 16 A, intended for household and similar fixed electrical installations, either indoors or outdoors.

It also applies to electronic extension units with a rated supply voltage not exceeding 250 V AC and 120 V DC, such as sensors and push buttons.

This document also applies to electronic remote control switches (RCS) and electronic time delay switches (TDS). Particular requirements are given in Annex FF.

Switches including only passive components such as resistors, capacitors, inductors, positive temperature coefficient (PTC) and negative temperature coefficient (NTC) components, varistors, printed wiring boards and connectors are not considered as electronic control devices.

This document also applies to electronic switches and HBES/BACS switches for the operation of lighting equipment circuits and the control of the brightness of lighting equipment (dimmers) as well as the control of the speed of motors (for example, those used in ventilating fans) and for other purposes (for example, heating controls).

The operation and/or control as mentioned above can be transmitted by an electronic signal via several media, for example, powerline (mains), twisted pair, optical fibre, radio frequency, infrared, etc. and are performed:

– intentionally by a person via an actuating member, a key, a card, etc., via a sensing surface or a sensing unit, by means of touch, proximity, turn, optical, acoustic, thermal;
– by physical means, for example, light, temperature, humidity, time, wind velocity, presence of people;
– by any other influence.

This document also applies to electronic control devices which include integrated radio receivers and transmitters.

This document covers only those requirements for mounting boxes which are necessary for the tests on the electronic control devices.

Requirements for general purpose mounting boxes are given in the relevant part, if any, of IEC 60670.

Electronic control devices complying with this document are suitable for use at ambient temperature not normally exceeding 25 °C but occasionally reaching 35 °C with a lower limit of the ambient air temperature of −5 °C.

NOTE 1 For lower temperatures, see Annex E.

Functional safety aspects are not covered by this document. Functional safety requirements are covered by the standards of the controlled devices.

In locations where special conditions prevail, such as in ships, vehicles and the like and in hazardous locations, for example where explosions are liable to occur, special construction and/or additional requirements may be required.

This document is not intended to cover devices which are designed to be incorporated in appliances or are intended to be delivered together with a specific appliance and which are within the scope of IEC 60730 (all parts) or IEC 61058-1.

Examples of designs of electronic switches and HBES/BACS switches and functions are shown in Annex AA.

Additional requirements for electronic control devices using DLT-technology in accordance with IEC 62756-1 are given in Annex CC.

Electrical interface specification for phase-cut dimmer used in phase-cut dimmed lighting systems are given for information only in Annex EE.

NOTE 2 Electronic switches and HBES/BACS switches without a mechanical switch in the main circuit do not provide a "full off-state". Therefore, the circuit on the load side are to be considered to be live.

2 Normative references

This clause of Part 1 applies except as follows.

Addition:

IEC 60050-845, *International Electrotechnical Vocabulary (IEV) – Part 845: Lighting* (available at www.electropedia.org)

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

IEC 60127 (all parts), *Miniature fuses*

IEC 60317 (all parts), *Specifications for particular types of winding wires*

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

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

IEC 60669-1:2017, *Switches for household and similar fixed electrical installations – Part 1: General requirements*

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IEC 60669-2-2:2006, *Switches for household and similar fixed electrical installations – Part 2-2: Particular requirements – Electromagnetic remote-control switches (RCS)*

IEC 60669-2-3:2006, *Switches for household and similar fixed electrical installations – Part 2-3: Particular requirements – Time-delay switches (TDS)*

IEC 60670 (all parts), *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations*

IEC 60704-1, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*

IEC 60715, *Dimensions of low-voltage switchgear and controlgear – Standardized mounting on rails for mechanical support of switchgear, controlgear and accessories*

IEC 60730 (all parts), *Automatic electrical controls*

IEC 60990, *Methods of measurement of touch current and protective conductor current*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)*

IEC 61000-2-2, *Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems*

IEC 61000-3-2:2018, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-3:2013, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*
IEC 61000-3-3:2013/AMD1:2017

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*

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IEC 61000-4-20:2010, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

IEC 61558-2-16, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units*

IEC 62504, *General lighting – Light emitting diode (LED) products and related equipment – Terms and definitions*

IEC 62756-1, *Digital load side transmission lighting control (DLT) – Part 1: Basic requirements*

IEC/TR 63037:2019, *Electrical interface specifications for self ballasted lamps and controlgear in phase-cut dimmed lighting systems*

IEC 63044-3:2017, *Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 3: Electrical safety requirements*

CISPR 14-1:2016, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission*

CISPR 15:2018, *Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment*

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission requirements*
CISPR 32:2015/AMD1:2019

ISO 306:2013, *Plastics – Thermoplastic materials – Determination of Vicat softening temperature (VST)*

ISO 3741, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Precision methods for reverberation test rooms*

ISO 3744, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane*

3 Terms and definitions

This clause of Part 1 applies except as follows.

Add the terms and definitions in IEC 63044-3:2017 and the following:

3.101
electronic switch
stand-alone device designed to make or break and/or control directly the current in one or more electric circuits either through mechanical switching element(s) via an electronic control circuit, or through an electronic switching element via a mechanical/electronic control circuit

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