SLOVENSKI STANDARD
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Switches for household and similar fixed electrical installations - Part 1: General requirements

Switches for household and similar fixed-electrical installations -- Part 1: General requirements

Schalter für Haushalt und ähnliche ortsfeste elektrische Installationen -- Teil 1: Allgemeine Anforderungen

Interrupteurs pour installations électriques fixes domestiques et analogues -- Partie 1: Prescriptions générales

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29.120.40 Stikala Switches

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English version

Switches for household and similar fixed-electrical installations Part 1: General requirements
(IEC 60669-1:1998, modified)

Interrupteurs pour installations électriques fixes domestiques et analogues
Partie 1: Prescriptions générales
(CEI 60669-1:1998, modifiée)

Schalter für Haushalt und ähnliche ortsfeste elektrische Installationen
Teil 1: Allgemeine Anforderungen
(IEC 60669-1:1998, modifiziert)

This European Standard was approved by CENELEC on 1999-01-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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 the International Standard IEC 60669-1:1998, prepared by SC 23B, Plugs, socket-outlets and switches, of IEC TC 23, together with the common modifications prepared by the Technical Committee CENELEC TC 23B, Switches for household and similar fixed electrical installations, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60669-1 on 1999-01-01.

This European Standard supersedes EN 60669-1:1995 and its amendment A2:1996.

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) 2000-05-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-10-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes A, B, ZA and ZB are normative, annex ZC is informative.
Annexes ZA, ZB and ZC have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60669-1:1998 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

Add after note 1:

Unless otherwise specified in subsequent parts, this standard applies to switches intended to be used at 50 Hz.

NOTE 2 - Switches according to this standard are intended for functional purposes only.

Renumber subsequent notes.

2 Normative references

Replace the text of clause 2 by :

NOTE - Normative references to international publications are listed in Annex ZA (normative).

3 Definitions

3.1.3 **Replace** by “void”.

Add the following definitions :

3.1.6
switch of normal gap construction
switch construction having a clearance between the contacts in the open position not less than 3 mm

3.1.7
switch of micro-gap construction
switch construction having a clearance between the contacts in the open position less than 1,2 mm

3.1.8
switch without gap construction
switch having a semiconductor switching device which has no contact gap

3.21
type test
(IEV 151-04-15) test of one or more switches made to a certain design to show that the design meets certain specifications

3.22
routine test
(IEV 151-04-16) test to which each individual switch is subjected during and/or after manufacture to ascertain whether it complies with certain criteria

3.23
surface-type switch
switch, which when mounted, projects wholly above the surface on which it is mounted

3.24
flush-type switch
switch mainly intended to be mounted in a flush-type box

3.25
semi flush-type switch
switch mainly intended to be mounted in a semi flush-type box

3.26
panel-type switch
switch mainly intended for mounting to a panel having an aperture through which the intended accessible surface of the switch protrudes

3.27
architrave-type switch
switch having a cover plate of such proportions that it may be accommodated within an architrave

3.28
live part
(IEV 826-03-01) conductor or conductive part intended to be energised in normal use, including a neutral conductor but, by convention not a PEN conductor

NOTE - A protective conductor (PE) is not a live part.

3.29
actuating member
(IEV 442-04-16) part which is pulled, pushed or turned or otherwise moved to cause an operation

4 General requirements

Add after the first paragraph:

Where tolerances are not specified in this standard the values are to be regarded as nominal.

5 General notes on tests

5.4 **Replace** the 11th paragraph by:

Switches marked with a dual voltage are tested at the higher voltage.

Replace the last paragraph by:

Momentary contact switches are not to be submitted to the tests of 18.2 and 19.2.

6 Ratings

6.1 **Replace** the first and second paragraphs by:

Switches shall preferably have rated voltages of 250 V and 400 V.

The values 230 V, 380 V and 440 V may be used.

For momentary contact switches the preferred rated voltages are 130 V and 250 V.

6.2 In the first paragraph **add** "45 A" after "40 A".

Replace the second paragraph by:

The rated current shall not be less than 6 A, except that rated currents of 1 A, 2 A and 4 A are allowed for momentary contact switches, electromagnetic remote control switches and time delay switches.

7 Classification

7.1.4 **Delete,** in the second dashed text, the word "splash-proof".

Delete, in the third dashed text, the word "jet-proof".

7.1.7 **Add** at the end of the subclause:

NOTE - See Annex ZB for special national conditions.

7.2 Table 1, column 1, **add** the value "45" after "40".

8 Marking

8.1 **Add:**

NOTE - See Annex ZB for special national conditions.

8.3 On the last paragraph before note 2, **replace** the words "on removal of any cover or cover-plate which may be present when the switch is mounted and wired as in normal use" by "during installation".

Add:

NOTE - See Annex ZB for special national conditions.

8.6 **Replace** the first sentence of the first paragraph by:

If switches of pattern numbers 2, 3, 03 and switches having a rated voltage exceeding 250 V and rated current exceeding 16 A are marked to indicate the switch position, they shall be so marked that the direction of the movement of the actuating member to its different positions or the actual switch position is clearly indicated.

Delete the last but one paragraph and the relevant note 2.

8.8 **Change** note 2 into a requirement and **replace** its first sentence by:

If special precautions are necessary in order to ensure that, after installation, the conditions necessary to meet the requirements of this standard are achieved, the instruction sheet shall include clear information with regard to the following:

9 Checking of dimensions

Add after the first paragraph:

The manufacturer of the switch shall specify in his catalogue the type of boxes (flush or surface, etc.) in which his switches are to be mounted.

10 Protection against electric shock

10.2 **Add:**

NOTE - See Annex ZB for special national conditions.

10.3 **Replace** "covers or cover-plates" by "covers, cover-plates and other parts of the enclosure".

Add:

NOTE - See Annex ZB for special national conditions.

10.3.1 **Replace** "covers or cover-plates" by " covers, cover-plates and other parts of the enclosure".

10.3.2 **Replace** "covers or cover-plates" by "covers, cover-plates and other parts of the enclosure".

Add:

NOTE - See Annex ZB for special national conditions.

10.5 **Add** after the third paragraph:

NOTE 1 - See Annex ZB for special national conditions.

11 Provision for earthing

11.1 **Change** notes 1 and 2 into requirements.

11.2 **Replace** the second paragraph by:

They shall have a capacity not less than that of the corresponding terminals for the supply conductors.

Add:

NOTE - See Annex ZC for A-deviations.

11.3 At the beginning of the paragraph, **replace** "Switches" by "Surface-type switches".

12 Terminals

12.2.1 In table 2, **replace** the value "40" by "45".

12.2.4 **Replace** the second paragraph by:

Terminals the body of which is made of materials as detailed in 22.5, are considered as complying with this requirement.

12.2.5 **Delete** the paragraph before table 4.

Replace the text of note 1 in table 4 by "Void".

12.2.6 In the last paragraph, **replace** "in case where they exist in the relevant IEC standard" by "if any, according to HD 21.3,"

Replace the note by:

NOTE - See Annex ZB for special national conditions.

12.3.1 **Number** the present note as note 1, and **add**:

NOTE 2 - The tests of 12.3.12 are carried out using rigid solid conductors only.

12.3.2 **Replace** table 7 by:

Table 7 - Relationship between rated currents and connectable cross-sectional areas of copper conductors for screwless terminals

Rated current A	Conductors		
	Nominal cross-sectional areas mm^2	Diameter of the largest rigid conductor mm	Diameter of the largest flexible conductors mm
Up to and including 4	0,75-1	1,19	-
Above 4 and including 6	1-1,5	1,45	1,73
Above 6 and including 16[1)]	1,5-2,5	2,13	2,21

1) Each supply terminal of switches other than those of patter numbers 3, 03, and 7, shall allow the connection of 2 x 2,5 mm^2 conductors. In such cases terminals for rated current 10 A with separate independent clamping means for each conductor shall be used.

12.3.11 **Replace** table 8 by:

Table 8 - Test current for the verification of the electrical and thermal stresses in normal use of screwless terminals

Rated current A	Test current A	Cross sectional area of the conductor mm^2
Up to and including 4	9	0,75
Above 4 and including 6	13,5	1
Above 6 and including 10	17,5	1,5
Above 10 and including 16	22	2,5

12.3.12 **Replace** in the paragraph after note 3 the reference “table 8” by “table 9”.

13 Constructional requirements

13.12 **Replace** in table 12, column 1, the value "40" by "40-45".

13.15.2 **Replace** the note by:

NOTE - See Annex ZB for special national conditions.

15 Resistance to ageing, to harmful ingress of water and to humidity

15.1 **Replace** in the 9th paragraph, the value "55 %" by "75 %".

15.2.1 **Add** after the last paragraph:

During the test, the drain hole, if any, of switches with IP higher than IPX4 shall not be opened.

15.2.2 **Replace** this subclause by:

Switches with a degree of protection IPX4 are tested according to EN 60529.

15.2.3 **Replace** this subclause by:

Switches with a degree of protection IPX5 are tested according to EN 60529.

Add the following subclause:

15.2.4 During the test of 15.2.2 or 15.2.3 care shall be taken not to disturb the switch, for instance with shocks or jerks, to such an extent that the results of the test are modified.

If the accessory is provided with a drain hole, inspection shall show that water having entered the specimen does not accumulate and drip off without further damage to the whole equipment.

NOTE 1 - For a degree of protection higher than IPX4, it may be necessary to open the drain hole for inspection.

NOTE 2 - If the accessory is not provided with drain holes, consideration should be given to the dispersal of any accumulation of water which may occur.

Immediately after the test of 15.2.2 or 15.2.3 the specimens shall withstand the electric strength test as specified in 16.2. This test shall begin within 5 min after completion of the test of 15.2.2 or 15.2.3.

16 Insulation resistance and electric strength

16.2 **Replace** in Table 14, item 3, third column, "(note 2)" by "(note 1)".

17 Temperature rise

Add the following row to table 15 between the values given for rated currents "40" and "63":

45	51	16

19 Normal operation

19.1 In table 17, **replace** the value "40" by "45".

In the 14th paragraph after table 17, **replace** the words "length 0,3 m ± 0,015 m" by "length of at least 1 m".

19.2 **Replace** the second paragraph, page 107, by:

Switches of pattern N° 7 are tested as a double switch of pattern number N° 6. While testing one part, the other part is in the off position.

Add, in the last but one paragraph, after the words "in clause 17," the words "using conductors as specified in this subclause, and .....".

20 Mechanical strength

Delete in the first dashed text “other than ordinary”.

22 Screws, current carrying parts and connections

22.1 **Delete** the second sentence of the second paragraph.

23 Creepage distances, clearances and distances through sealing compound

23.1 In table 20, item 2, **replace** the values "4[1)]" by "4 [1) 6)]"
In table 20, item 7, **replace** the value "3" by "3 [6)]"
In table 20, item 9, **replace** the value “3” by “2,5”.

Add at the bottom of table 20:

6) Clearances and creepage distances between live parts of different polarity are reduced to 1 mm for the distance between the lead wires in the pinch of a neon indicator lamp with external resistor.

Add the following subclause:

23.3 Ordinary surface-type switches shall not have bare current-carrying strips at the back.

Compliance is checked by inspection.

24 Resistance of insulating material to abnormal heat, to fire and to tracking

24.1.1 **Replace** the existing item b) by:

b) for parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though they are in contact with them, and parts of insulating materials necessary to hold in position the earthing terminal in an enclosure, by the test made at a temperature of 650 °C.

Annex B Additional requirements for switches having facilities for the outlet and retention of flexible cables

3 Definition

Renumber 3.21 as 3.201.

8 Marking

8.1 **Add** the following paragraph at the end of this subclause:

In addition for switches where a cord anchorage is intended to clamp effectively flexible cables other than those nominal cross-sectional areas appropriate to the rating of the switch as given in Table 2, then the minimum and maximum sizes for which the anchorage is provided may be marked in an area adjacent to the

anchorage, e.g. "6 mm - 16 mm" or "6-16". This information shall be put on the switch and/or the packaging unit.

13 Constructional requirements

13.16 In the first paragraph, **replace**: "code designation 60227 IEC 53" by "code designation 60227 IEC 52 or 60227 IEC 53".

Replace the last but one paragraph by:

An a.c. voltage of 2 000 V is applied for 1 min between the conductors and any metal clamp of the cord anchorage.

Add at the end of the subclause:

For flexible cable outlet switches:

- *It shall be clear how the relief from strain and the prevention of twisting is intended to be effected,*
- *the cord anchorage, or at least part of it, shall be integral with or permanently fixed to one of the component parts of the switch,*
- *makeshift methods, such as tying the flexible cable in a knot or tying the ends with a string, shall not be used,*
- *cord anchorages shall be suitable for the different types of flexible cables for which they are intended.*

Rewirable switches with earthing connection shall be designed with ample space for slack of the earthing conductor in such a way that, if the strain relief should fail, the connection of the earthing conductor is subjected to strain after the connections of current carrying conductors and that, in the case of excessive stresses, the earthing conductor will break after the current carrying conductors.

Add:

Annex C

Routine test

(Under consideration)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE - When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
IEC 60212	1971	Standard conditions for use prior to and during the testing of solid electrical insulating materials	HD 437 S1	1984
IEC 60227-1[1)]	1993	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V Part 1: General requirements	-	-
IEC 60227-3 (mod)	1993	Part 3: Non-sheathed cables for fixed wiring	HD 21.3 S3	1995
IEC 60227-4	1992[2)]	Part 4: Sheathed cables for fixed wiring	-	-
IEC 60227-5 + A1 (mod)	1979 1987	Part 5: Flexible cables (cords)	HD 21.5 S3	1994
IEC 60245-1[3)]	1994	Rubber insulated cables of rated voltages up to and including 450/750 V Part 1: General requirements	-	-
IEC 60245-4 (mod)	1994	Part 4: Cords and flexible cables	HD 22.4 S3	1995
IEC 60364-4-46 (mod)	1981	Electrical installations of buildings Part 4: Protection for safety Chapter 46: Isolation and switching	HD 384.4.46 S1	1987
IEC 60417	1973	Graphical symbols for use on equipment Index, survey and compilation of the single sheets	HD 243 S12[4)]	1995

Publication	Year	Title	EN/HD	Year
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993

1) HD 21.1. S3:1997, which is related to, but not directly equivalent with, IEC 60227-1:1993, applies instead.
2) IEC 60227-4:1979, mod., was harmonized as HD 21.4 S2:1990.
3) HD 22.1. S3:1997, which is related to, but not directly equivalent with, IEC 60245-1:1994, applies instead.
4) HD 243 S12 is superseded by EN 60417-1 & -2:1999, which are based on IEC 60417-1 & -2:1998.

IEC 60670	1989	General requirements for enclosures for accessories for household and similar fixed electrical installations	-	-
IEC 60695-2-1	1991[5)]	Fire hazard testing Part 2: Test methods -- Section 1: Glow-wire test and guidance	-	-
IEC 60998-1 (mod)	1990	Connecting devices for low-voltage circuits for household and similar purposes Part 1: General requirements	EN 60998-1	1993
IEC 60998-2-1 (mod)	1990	Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units	EN 60998-2-1	1993
IEC 60998-2-2	1991	Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	EN 60998-2-2	1993
IEC 60999-1 (mod)	1990	Connecting devices - Safety requirements for screw-type and screwless-type clamping units for electrical copper conductors Part 1: General requirements and particular requirements for conductors from 0,5 mm² up to 35 mm² (included)	EN 60999-1 + corr. March	1993 1997
ISO 1456	1988	Metallic coatings - Electrodeposited coatings of nickel plus chromium and of copper plus nickel plus chromium	-	-
ISO 2039-2	1987	Plastics - Determination of hardness Part 2: Rockwell hardness	-	-
ISO 2081	1986	Metallic coatings - Electroplated coatings of zinc on iron or steel	-	-
ISO 2093	1986	Electroplated coatings of tin Specification and test methods	-	-

5) IEC 60695-2-1:1991 is superseded by IEC 60695-2-1/0 to 1/3:1994, which are harmonized as EN 60695-2-1/0 to 1/3:1996.