SLOVENSKI STANDARD
oSIST prEN IEC 60669-2-4:2023

01-september-2023

Stikala za gospodinjstva in podobne nepremične električne inštalacije - 2-4. del: Posebne zahteve - Ločilniki

Switches for household and similar fixed electrical installations - Part 2-4: Particular requirements - Isolating switches

Schalter für Haushalt und ähnliche ortsfeste elektrische Installationen - Teil 2-4: Besondere Anforderungen - Trennschalter

Interrupteurs pour installations électriques fixes domestiques et analogues - Partie 2-4: Prescriptions particulières - Interrupteurs-sectionneurs

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Ta slovenski standard je istoveten z: **prEN IEC 60669-2-4:2023**

ICS:

29.120.40	Stikala	Switches

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23B/1460/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60669-2-4 ED2**	
DATE OF CIRCULATION: **2023-06-23**	CLOSING DATE FOR VOTING: **2023-09-15**
SUPERSEDES DOCUMENTS: **23B/1415/CDV, 23B/1453A/RVC**	

IEC SC 23B : PLUGS, SOCKET-OUTLETS AND SWITCHES	
SECRETARIAT: Italy	SECRETARY: Mr Cristiano Masini
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Switches for household and similar fixed electrical installations - Part 2-4: Particular requirements - Isolating switches

PROPOSED STABILITY DATE: 2028

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NOTE FROM TC/SC OFFICERS:

This document is a second CDV on IEC 60669-2-4. The first CDV, even if approved, received many abstantion, leading to possible negative vote a FDIS stage. MT4 therefore discussed the comments antroduced some technical changes.

The changes are the deletion of 16.102 (present in the first CDV) and the subsequent introduction of a In some Country note in 13.101.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 2-4: Particular requirements – Isolating switches

FOREWORD

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International Standard IEC 60669-2-4 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 2004 of which it constitutes a technical revision.

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

– Revision of the present edition with reference to the published IEC60669-1:2017 Edition 4 with its amendments and references to clauses and tables.

– Introducing the values for isolating switches with ratings from 6A to 13A.

– Introducing a circuit motor load with a rated current not exceeding 10A and a power factor not less than 0.6 in the scope.

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55 – Modification of Tables 1 and 5

56 The text of this standard is based on the following documents:

FDIS	Report on voting
23B/xxxx/FDIS	23B/xxxx/RVD

57
58 Full information on the voting for the approval of this standard can be found in the report on
59 voting indicated in the above table.

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

61 This part of IEC 60669 shall be used in conjunction with IEC 60669-1:2017. It lists the changes
62 necessary to convert that standard into a specific standard for isolating switches.

63 When a particular subclause of Part 1 is not mentioned in this part, that subclause applies as
64 far as reasonable.

65 In this publication,

66 • the following print types are used:

67 – requirements proper: in roman type;

68 – *test specifications: in italic type*;

69 – notes: in smaller roman type;

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70 • subclauses, figures, tables or notes which are additional to those in Part 1 are numbered
71 starting from 101. Annexes additional to those in Part 1 are lettered AA, BB, etc.

72 The committee has decided that the contents of this publication will remain unchanged until
73 2008. At this date, the publication will be

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74 • reconfirmed;
75 • withdrawn;
76 • replaced by a revised edition, or
77 • amended.
78

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SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 2-4: Particular requirements – Isolating switches

1 Scope

This clause of Part 1 applies except as follows.

Replacement of the first paragraph:

This part of IEC 60669 applies to manually operated general purpose isolating switches with a rated voltage not exceeding 440 V and a rated current not exceeding 125 A, intended for household and similar fixed electrical installations, either indoors or outdoors.

Replacement of the fifth dash of the fourth paragraph:

- a monophase circuit for motor load with a rated current up to 10 A and a power factor not less than 0,6;

NOTE Isolating switches are designed for overvoltage category III and used in environment of pollution degree 2 according to IEC 60664-1.

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2 Normative references

This clause of Part 1 applies except as follows.

Addition:

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

IEC 61180:2016, *High-voltage test techniques for low voltage equipment – Definitions, test and procedure requirements, test equipment*

3 Terms and definitions

This clause of Part 1 applies except as follows.

Additional definitions:

3.101
isolating switch
switch designed to provide isolation of the installation or part of the installation and equipment from the supply and to carry and to make and break the current in all line current carrying poles

3.102
rated conditional short-circuit current
I_{nc}
value of the AC component of a prospective current assigned by the manufacturer, which a switch without integral short-circuit protection, but protected by a suitable short-circuit protective device (hereinafter referred to as SCPD) in series, can withstand under specified conditions of use and behaviour

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3.103
joule integral
I²t
integral of the square of the current over a given time interval (t_0, t_1)

$$I^2t = \int_{t_0}^{t_1} i^2 \mathrm{d}t$$

4 General requirements

This clause of Part 1 applies.

5 General remarks on tests

This clause of Part 1 applies except as follows.

Replace Table 1 with the following

Table 1 – Number of specimens needed for the tests

Clauses and subclauses		Number of specimens	Number of additional specimens for dual current rating
6	Ratings	A	
7	Classification	A	
8	Marking	A	
9	Checking of dimensions	ABC	
10	Protection against electric shock	ABC	
11	Provision for earthing	ABC	
12	Terminals [a,f,l]	ABC	JKL
13	Constructional requirements [b, m]	ABC	
14	Mechanism	ABC	
15	Resistance to ageing, protection provided by enclosures of switches, and resistance to humidity	ABC	
16	Insulation resistance and electric strength [c]	ABC	
17	Temperature rise	ABC	JKL
18	Making and breaking capacity	ABC [i]	JKL
19	Normal operation	ABC [i]	JKL
20	Mechanical strength [d,g]	ABC	
21	Resistance to heat [h]	ABC	
22	Screws, current-carrying parts and connections	ABC	
23	Creepage distances, clearances and distances through sealing compound	ABC	
16.101	Impulse test [l]	XYZ	
18.101	Short circuit withstand capability [m]	XYZ + PQR	
19.2	Test for switches intended for externally ballasted lamp loads	DEF	MNO
19.3	Test for switches intended for self ballasted lamp loads	UVW	XYZ
24.1	Resistance to abnormal heat and to fire	GHI	
24.2	Resistance to tracking [e]	GHI	
25	Resistance to rusting	GHI	
TOTAL		18	9

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Clauses and subclauses	Number of specimens	Number of additional specimens for dual current rating
[a] Five extra screwless terminals are used for the test of 12.3.11 and one extra set of specimens is used for the test of 12.3.12.		
[b] An extra set of membranes are needed for each of the tests of 13.15.1 and 13.15.2.		
[c] One extra set of specimens of switches fitted with pilot light may be used for the tests of Clause 16.		
[d] One extra set of specimens of cord-operated isolating switches is needed for the test of 20.10.		
[e] One extra set of specimens may be used.		
[f] Two extra set of specimens of terminals suitable for rigid and flexible conductors are required for 12.2.5, 12.2.6 and 12.2.7.		
[g] One extra set of specimens is needed for the tests of 20.5.1 and 20.5.2.		
[h] One extra set of specimens may be used for the tests of 21.2 and 21.3. In this case the specimens shall be subjected first to the tests of 15.1.		
[i] Number of specimens required for insulation-piercing terminals (IPTs) are shown in Table D.1		
[j] For switches with pilot light units if the electronic circuitry is so enclosed that the short-circuiting or disconnecting of components is impossible or difficult, the manufacturer shall provide additional prepared test specimens.		
[k] For isolating switches of pattern number 2 one extra set of specimens is used.		
[l] Test to be carried out only if the clearance of item 6 of Clause 23 is lower than 4 mm.		
[m] For the test of 18.101 six additional specimens are used.		

131

132 6 Ratings

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133 This clause of Part 1 applies except as follows.

134 **6.2** *Modification:*

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135 *In the first paragraph, add the values* "80 A, 100 A and 125 A."

136 **6.3 Preferred combinations of number of poles and ratings**

137 *Replacement in Table 3, first column, last line, of the values "16, 20, 25, 32, 40, and 63" by*
138 *"equal to or greater than 16".*

139 *Additional subclause:*

140 **6.101 Standard and preferred values of the rated conditional short-circuit current (I_{nc})**

141 NOTE The associated power-factors are specified in Table 103.

142 **6.101.1 Values up to and including 10 000 A**

143 The standard values of the rated conditional short-circuit current (I_{nc}) are:

144 1 500 A, 3 000 A, 4 500 A, 6 000 A and 10 000 A.

145 **6.101.2 Values above 10 000 A**

146 The preferred values are:

147 15 000 A, 20 000 A and 25 000 A.

148 Values above 25 000 A are not considered by this standard.

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7 Classification

This clause of Part 1 applies except as follows.

7.1. *Addition:*

Isolating switches shall be only of pattern numbers 1, 2, 3 or 03.

7.2 This subclause of Part 1 is not applicable.

7.6 *Addition:*

– *rail-type*

8 Marking

This clause of Part 1 applies except as follows.

8.1 General

Modify as follows:

f), g) and h) are not applicable

Addition:

n) symbols for open position (OFF) and closed position (ON),

o) symbol for isolating function,

p) rated conditional short-circuit current (I_{nc}).

The manufacturer shall provide reference(s) of one or more short circuit protection devices (SCPDs) in his catalogue or in the instructions which are provided with the isolating switch or both.

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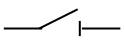
8.2 Symbols

Modify as follows:

Symbols for mini-gap construction, micro-gap constructions and without contact gap are not applicable

Addition:

– isolating function ..... 

– rated conditional short-circuit current ..... I_{nc}

8.3 Visibility of markings

Addition

Isolating switches shall be marked with the symbols for isolating function and for the closed and open position. These markings shall be visible from the front after installation, even after removal of the front cover of the enclosure when the isolating switch is mounted and wired as in normal use. The isolating symbol may be included in a wiring diagram even combined with symbols of other functions, provided that it is visible from the front under the conditions specified.

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The marking for the rated conditional short-circuit current (I_{nc}) shall be on the isolating switch or in the manufacturer's documentation.

8.6 Marking of the switch position

Replacement of the first sentence of the first paragraph

Isolating switches shall be so marked that the actual contact position is clearly indicated.

Deletion of Note 1 and Note 2.

9 Checking of dimensions

This clause of Part 1 applies.

10 Protection against electric shock

This clause of Part 1 applies except as follows.

10.3.1 *Replacement of the first two lines:*

Accessible parts of isolating switches shall be made of insulating material, with the exception of the following:

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11 Provision for earthing

This clause of Part 1 applies.

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12 Terminals

This clause of Part 1 applies except as follows.

12.2.1 *Addition to Table 4:*

Table 4 – Relationship between rated currents and connectable cross-sectional areas of copper conductors

Ranges of rated currents A	Rigid conductors (solid or stranded)[c]	
	Nominal cross-sectional areas mm²	Diameter of largest conductor mm
Above 50 up to and including 80	From 10 up to 25 inclusive	6,85
Above 80 up to and including 100	From 16 up to 35 inclusive	7,90
Above 100 up to and including 125	From 25 up to 50 inclusive	9,10

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12.2.5 *Replacement of Table 5:*

Table 5– Tightening torque for verification of the mechanical strength of screw-type terminals

Nominal diameter of thread mm	Torque Nm				
	1	2	3	4	5
Up to and including 2,8	0,2	–	0,4	0,4	–
Above 2,8 up to and including 3,0	0,25	–	0,5	0,5	–
Above 3,0 up to and including 3,2	0,3	–	0,6	0,6	–
Above 3,2 up to and including 3,6	0,4	–	0,8	0,8	–
Above 3,6 up to and including 4,1	0,7	1,2	1,2	1,2	1,2
Above 4,1 up to and including 4,7	0,8	1,2	1,8	1,8	1,8
Above 4,7 up to and including 5,3	0,8	1,4	2,0	2,0	2,0
Above 5,3 up to and including 6,0	1,2	1,8	2,5	3,0	3,0
Above 6,0 up to and including 8,0	2,5	2,5	3,5	6,0	4,0
Above 8,0 up to and including 10,0	–	3,5	4,0	10,0	6,0
Above 10,0 up to and including 12,0	–	4,0	–	–	8,0
Above 12,0 up to and including 15,0	–	5,0	–	–	10,0

NOTE 1 Column 1 applies to screws without heads if the screw when tightened does not protrude from the hole, and to other screws which cannot be tightened by means of a screwdriver with a blade wider than the diameter of the screw.

Column 2 applies to nuts of mantle terminals which are tightened by means of a screwdriver.

Column 3 applies to other screws which are tightened by means of a screwdriver.

Column 4 applies to nuts of mantle terminals in which the nut is tightened by means other than a screwdriver.

Column 5 applies to screws or nuts, other than nuts of mantle terminals, which are tightened by means other than a screwdriver.

Where a screw has a hexagonal head with a slot for tightening with a screwdriver and the values of columns 3 and 5 are different, the test is made twice, first applying to the hexagonal head the torque specified in column 5 and then applying the torque specified in column 3 by means of a screwdriver. If the values of columns 3 and 5 are the same, only the test with the screwdriver is made.

NOTE 2 For mantle terminals the specified nominal diameter is that of the slotted stud.

NOTE 3 The shape of the blade of the test screwdriver should suit the head of the screw to be tested.

NOTE 4 The screws and nuts should not be tightened in jerks.

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12.2.5 *Addition to Table 6:*

Table 6 – Test values for flexion and pull-out for copper conductors

Conductor cross-sectional area[a] mm²	Diameter of bushing hole [b] mm	Height *H* [c] mm	Mass for conductor kg
35	14,5	320	6,8
50	16	340	9,5