

SLOVENSKI STANDARD oSIST prEN IEC 60669-2-4:2022

01-december-2022

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				
Ta slovenski standard je istoveten z: prEN IEC 60669-2-4:2022				

<u>ICS:</u> 29.120.40 Stikala

Switches

oSIST prEN IEC 60669-2-4:2022

en,fr,de

oSIST prEN IEC 60669-2-4:2022

iTeh STANDARD PREVIEW (standards.iteh.ai)

oSIST prEN IEC 60669-2-4:2022 https://standards.iteh.ai/catalog/standards/sist/169cc3bd-c6b0-43cd-914af53b5c7d486b/osist-pren-iec-60669-2-4-2022



23B/1415/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 60669-2-4 ED2	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2022-10-28	2023-01-20
SUPERSEDES DOCUMENTS:	
23B/1370/CD, 23B/1381A/CC	

IEC SC 23B : PLUGS, SOCKET-OUTLETS AND SWITCHES	IEC SC 23B : PLUGS, SOCKET-OUTLETS AND SWITCHES			
SECRETARIAT:	SECRETARY:			
Italy	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:				
	QUALITY ASSURANCE SAFETY			
Submitted for CENELEC PARALLEL VOTING	NOT 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.	<u>60669-2-4:2022</u> ards/sist/169cc3bd-c6b0-43cd-914a- rn-iec-60669-2-4-2022			
The CENELEC members are invited to vote through the CENELEC online voting system.				

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

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

PROPOSED STABILITY DATE: 2028

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3	2		INTERNATIONAL ELECTROTECHNICAL COMMISSION
 SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS - Part 2-4: Particular requirements - Isolating switches Part 2-4: Particular requirements - Isolating switches FOREWORD The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprision all national electrotechnical commission (IEC) is a worldwide organization for standardization comprision all national electrotechnical commission (IEC) is a worldwide organization for standardization comprision all national electrotechnical committees (IEC) National Committees, The object of IEC is to promote internation addition to other activities, IEC publishes international Standards, Technical Specifications, Technis, Specifications, Technical Specifications, Technical Specifi			
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	52		 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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- Introduction of a verification test in 16.102 for the effectiveness of an indication of the 55 main contact position 56
- Modification of Tables 1 and 5 57
- 58 The text of this standard is based on the following documents:

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

59

Full information on the voting for the approval of this standard can be found in the report on 60 voting indicated in the above table. 61

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

This part of IEC 60669 shall be used in conjunction with IEC 60669-1:2017. It lists the changes 63 necessary to convert that standard into a specific standard for isolating switches. 64

- 65 When a particular subclause of Part 1 is not mentioned in this part, that subclause applies as far as reasonable. 66
- In this publication, 67
- 68 the following print types are used: •
- requirements proper: in roman type; DARD PREVIEW 69
- 70 test specifications: in italic type;
- notes: in smaller roman type; (standards.iteh.ai) 71
- 72 subclauses, figures, tables or notes which are additional to those in Part 1 are numbered • 73 starting from 101. Annexes additional to those in Part 1 are lettered AA, BB, etc.
- The committee has decided that the contents of this publication will remain unchanged until 74 2008. At this date, the publication will be 75
- 76 reconfirmed; ٠
- 77 ٠ withdrawn;
- 78 ٠ replaced by a revised edition, or
- amended. 79 •
- 80

81 82	SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –
83 84 85 86	Part 2-4: Particular requirements – Isolating switches
87 88	1 Scope
89	This clause of Part 1 applies except as follows.
90	Replacement of the first paragraph:
91 92 93	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.
94	Replacement of the fifth dash of the fourth paragraph:
95 96	- a monophase circuit for motor load with a rated current up to 10 A and a power factor not less than 0,6;
97 98 99	NOTE Isolating switches are designed for overvoltage category III and used in environment of pollution degree 2 according to IEC 60664-1.
100	2 Normative references TANDARD PREVIEW
101	This clause of Part 1 applies except as follows. Saiteh.ai
102	Addition: <u>oSIST prEN IEC 60669-2-4:2022</u>
103 104	IEC 60669-1:2017, Switches for household and similar fixed electrical installations – Part 1: General requirements
105 106	IEC 61180:2016, High-voltage test techniques for low voltage equipment – Definitions, test and procedure requirements, test equipment
107	3 Terms and definitions
108	This clause of Part 1 applies except as follows.
109	Additional definitions:
110 111 112 113	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

- 122 **3.103**
- 123 joule integral
- 124 **l²t**
- 125 integral of the square of the current over a given time interval (t_0, t_1)

126

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

127 4 General requirements

128 This clause of Part 1 applies.

129 5 General remarks on tests

- 130 This clause of Part 1 applies except as follows.
- 131 Replace Table 1 with the following
- 132

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 IICH STANDARD INI	A	V
7	Classification	A	
8	Classification Marking (standards.iteh.a	A	
9	Checking of dimensions	ABC	
10	Protection against electric shock T prEN IEC 60669-2-4:2022	ABC	
11	Provision for earthing s, itch.ai/catalog/standards/sist/169cc3	bd-cABC-43co	1-914a-
12	Terminals ^{a,f,l} f53b5c7d486b/osist-pren-iec-60669-2-4	-20 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 $^{\circ}$	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 ^I	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	
٦	OTAL	18	9

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6

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	Clauses and subclauses	Number of specimens	Number of additional specimens for dual current rating		
а	Five extra screwless terminals are used for the test of 12.3.11 and one extent of 12.3.12.	ktra set of speci	mens is used for the		
b	An extra set of membranes are needed for each of the tests of 13.15.1 and 13.15.2.				
с	^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.		
е	One extra set of specimens may be used.				
f	Two extra set of specimens of terminals suitable for rigid and flexible conduced and 12.2.7.	uctors are requi	red for 12.2.5, 12.2.		
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. subjected first to the tests of 15.1.	In this case the	e specimens shall b		
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 o disconnecting of components is impossible or difficult, the manufacturer shall provide additional prepared tes specimens.				
k	For isolating switches of pattern number 2 one extra set of specimens is u	used.			
I	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.				

136 **6.2** *Modification:*

133

134

135

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- 137 In the first paragraph, add the values "80 A, 100 A and 125 A." bd-c6b0-43cd-914a-153b5c7d486b/osist-pren-icc-60669-2-4-2022
- 138 **6.3 Preferred combinations of number of poles and ratings**
- Replacement in Table 3, first column, last line, of the values "16, 20, 25, 32, 40, and 63" by "equal to or greater than 16".
- 141 Additional subclause:

142 6.101 Standard and preferred values of the rated conditional short-circuit current (I_{nc})

- 143 NOTE The associated power-factors are specified in Table 103.
- 144 6.101.1 Values up to and including 10 000 A
- 145 The standard values of the rated conditional short-circuit current (I_{nc}) are:
- 146 1 500 A, 3 000 A, 4 500 A, 6 000 A and 10 000 A.
- 147 6.101.2 Values above 10 000 A
- 148 The preferred values are:
- 149 15 000 A, 20 000 A and 25 000 A.
- 150 Values above 25 000 A are not considered by this standard.

Classification 151 7

- This clause of Part 1 applies except as follows. 152
- 153 7.1. Addition:
- Isolating switches shall be only of pattern numbers 1, 2, 3 or 03. 154
- 155 7.2 This subclause of Part 1 is not applicable.
- 156 7.6 Addition:
- 157 rail-type
- 158 8 Marking
- 159 This clause of Part 1 applies except as follows.
- 160 8.1 General
- 161 Modify as follows:
- 162 f), g) and h) are not applicable
- 163 Addition:
- iTeh STANDARD PREVIEW n) symbols for open position (OFF) and closed position (ON), 164
- o) symbol for isolating function, and ards.iteh.a1) 165
- 166 p) rated conditional short-circuit current (I_{nc}) .
- 167 The manufacturer shall provide reference(s) of one or more short circuit protection devices 168 (SCPDs) in his catalogue and/or in the instructions which are provided with the isolating switch.
- 8.2 Symbols 169
- 170 Modify as follows:
- 171 Symbols for mini-gap construction, micro-gap constructions and without contact gap are not applicable 172
- 173 Addition:
- 174 – isolating function - rated conditional short-circuit current 175 I_{nc}
- 8.3 Visibility of markings 176
- Addition 177

178 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 179 removal of the front cover of the enclosure when the isolating switch is mounted and wired as 180 in normal use. The isolating symbol may be included in a wiring diagram even combined with 181 symbols of other functions, provided that it is visible from the front under the conditions 182 specified. 183

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184 The marking for the rated conditional short-circuit current (I_{nc}) shall be on the isolating switch 185 or in the manufacturer's documentation.

186 **8.6 Marking of the switch position**

- 187 Replacement of the first sentence of the first paragraph
- 188 Isolating switches shall be so marked that the actual contact position is clearly indicated.
- 189 Deletion of Note 1 and Note 2.

190 9 Checking of dimensions

191 This clause of Part 1 applies.

192 **10 Protection against electric shock**

- 193 This clause of Part 1 applies except as follows.
- 194 **10.3.1** *Replacement of the first two lines:*
- Accessible parts of isolating switches shall be made of insulating material, with the exceptionof the following:
- 197 **11 Provision for earthing**
- 198 This clause of Part 1 applies.

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- 199 12 Terminals//standards.iteh.ai/catalog/standards/sist/169cc3bd-c6b0-43cd-914a-
- f53b5c7d486b/osist-pren-iec-60669-2-4-202
- 200 This clause of Part 1 applies except as follows.
- 201 **12.2.1** Addition to Table 4:

202Table 4 – Relationship between rated currents and connectable cross-sectional areas203of copper conductors

Ranges of rated currents	Rigid conductors (solid or stranded) ^a		
	Nominal cross-sectional areas		Diameter of largest conductor
A		mm ²	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

204 205 oSIST prEN IEC 60669-2-4:2022

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206 12.2.5 Replacement of Table 5:

207 208

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

Nominal diameter of thread	Torque				
mm	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.

209

210 **12.2.5** Addition to Table 6:

211

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

Conductor cross-sectional area ^a mm ²	Diameter of bushing hole ^b mm	Height <i>H</i> ⁰ mm	Mass for conductor kg
35	14,5	320	6,8
50	16	340	9,5

212

213

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214 **12.2.6** Addition to Table 7:

215

Table 7 – Test values for pulling out test

Cross- sectional area of conductors connected to the terminal	35	50
mm ²		
Pull	190	235
N		

216

217 13 Constructional requirements

- 218 This clause of Part 1 applies except as follows.
- 219 **13.12** Addition to Table 13:

220

Table 13 – External cable diameter limits for surface type switches

Rated current A	Cross-sectional areas mm ²	Number of conductors	Limits of external diameter of cables	
			Minimum mm	Maximum mm
	16 up to and including 35	2	ai) _{15,5}	—
80		idards.iteh.		37,1
100		4		41,1
		prEN IEC 50669-2-4:2		
ht	ps://standards.iteh.ai/ca f53b5c7d48i 25 up to and including 50	alog/standa2ds/sist/169	103bd-06b0-43cd-1 2-4-2022 18,5	914a- <u> </u>
125		b/osist-pre3-iec-60669		42,9
		4		47,5
		5		

221

222 Addition

223 13.101 Indication of the contact position

Isolating switches when in the open position shall provide an isolation distance in accordancewith the requirements necessary to satisfy the isolating function.

226 Indication of the contact position shall be provided by the position of the actuating member 227 and/or by suitable means.

228 NOTE A pilot light alone is not considered as suitable means.

The actuating member shall be connected to the moving contacts in a reliable way. The actuating member shall not indicate the open position unless all the moving contacts are in the open position.

Isolating switches shall be so designed that the actuating member can only be fitted in a manner which ensures correct contact position and correct locking if the isolating switch is provided with means for locking. When means are provided or specified by the manufacturer to lock the isolating switch in the open position, locking in that position shall only be possible when the contacts are in the open position.