



DPC: 22 / 30447335 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 12 January 2022

Origin: International

Latest date for receipt of comments: 19 February 2022

Project No. 2021/03121

Responsible committee: PEL/23 Electrical accessories

Interested committees:

Title: BS EN IEC 60669-2-4 Switches for household and similar fixed electrical installations - Part 2-4: Particular requirements - Isolating switches

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

**WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD.
THIS DRAFT IS NOT CURRENT BEYOND 19 February 2022**

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <http://standardsdevelopment.bsigroup.com>

Responsible Committee Secretary: **Mr Simon Bounds (BSI)**
Direct tel: **0208 996 7281**
E-mail: simon.bounds@bsigroup.com

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



23B/1370/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER: IEC 60669-2-4 ED2	
DATE OF CIRCULATION: 2021-12-24	CLOSING DATE FOR COMMENTS: 2022-03-18
SUPERSEDES DOCUMENTS: 23B/1367/RR	

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 CD to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	

This document is still under study and subject to change. It should not be used for reference purposes.

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

NOTE FROM TC/SC OFFICERS:

This document represents the first CD of the new edition of IEC 60669-2-4. The comments will be discussed by MT4 during its next meeting

Copyright © 2021 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SWITCHES FOR HOUSEHOLD AND SIMILAR
FIXED ELECTRICAL INSTALLATIONS –****Part 2-4: Particular requirements –
Isolating switches**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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 16A.
- Introducing a circuit motor load with a rated current not exceeding 10A and a power factor not less than 0.6 in the scope.

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

FDIS	Report on voting
23B/737/FDIS	23B/744/RVD

56

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

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

- 60 This part of IEC 60669 shall be used in conjunction with IEC 60669-1:2017. It lists the changes
61 necessary to convert that standard into a specific standard for isolating switches.
- 62 When a particular subclause of Part 1 is not mentioned in this part, that subclause applies as
63 far as reasonable.
- 64 In this publication,
- 65 • the following print types are used:
- 66 – requirements proper: in roman type;
- 67 – *test specifications: in italic type*;
- 68 – notes: in smaller roman type;
- 69 • subclauses, figures, tables or notes which are additional to those in Part 1 are numbered
70 starting from 101. Annexes additional to those in Part 1 are lettered AA, BB, etc.
- 71 The committee has decided that the contents of this publication will remain unchanged until
72 2008. At this date, the publication will be
- 73 • reconfirmed;
- 74 • withdrawn;
- 75 • replaced by a revised edition, or
- 76 • amended.
- 77

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 monophasic 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.

2 Normative references

This clause of Part 1 applies except as follows.

Addition:

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

conditional short-circuit current

I_{nc}

value of the a.c. component of a prospective current, 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

116 **3.103**117 **I^2t** 118 integral of the square of the current over a given time interval (t_0 , t_1)

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

120 **4 General requirements**

121 This clause of Part 1 applies.

122 **5 General remarks on tests**

123 This clause of Part 1 applies except as follows.

124 Replace Table 1 with the following

125 **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	JKL
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	
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	JKL
21	Resistance to heat ^h	ABC	
22	Screws, current-carrying parts and connections	ABC	
23	Creepage distances, clearances and distances through sealing compound	ABC	
18.101	Short circuit withstand capability ^m	XYZ + PQR	
16.101	Impulse test ^l	XYZ	
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

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.		

126

127 **6 Ratings**

128 This clause of Part 1 applies except as follows.

129 **6.2 Modification:**130 *In the first paragraph, add the values "80 A, 100 A and 125 A."*131 **6.3 Preferred combinations of number of poles and ratings**

132 *Replacement in Table 3, first column, last line, of the values "16, 20, 25, 32, 40, and 63" by*
 133 *"equal and above 16".*
 134

135 *Additional subclause:*136 **6.101 Standard and preferred values of the conditional short-circuit current (I_{nc})**

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

138 **6.101.1 Values up to and including 10 000 A**139 The standard values of the conditional short-circuit current (I_{nc}) are:

140 1 500 A, 3 000 A, 4 500 A, 6 000 A and 10 000 A.

141 **6.101.2 Values above 10 000 A**

142 The preferred values are:

143 15 000 A, 20 000 A and 25 000 A.

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

145 **7 Classification**

146 This clause of Part 1 applies except as follows.

147 **7.1. Addition:**

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

149 **7.2** This subclause of Part 1 is not applicable.

150 **7.6 Addition:**

151 – *rail type*

152

153 **8 Marking**

154 This clause of Part 1 applies except as follows.

155 **8.1 General**

156 Modify as follows:

157 f), g) and h) are not applicable

158 *Addition:*

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

160 o) symbol for isolating function,

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

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

164 **8.2 Symbols**

165 Modify as follows:

166 *Symbols for Mini-gap construction, Micro-gap constructions and Without contact gap are not*
167 *applicable*

168 *Addition:*

169 – isolating function 

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

171 **8.3 Visibility of markings**

172 *Addition*

173 Isolating switches shall be marked with the symbols for isolating function and for the closed and
174 open position. These markings shall be visible from the front after installation, even after
175 removal of the front cover of the enclosure when the isolating switch is mounted and wired as

176 in normal use. The isolating symbol may be included in a wiring diagram even combined with
 177 symbols of other functions, provided that it is visible from the front under the conditions
 178 specified.

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

181 **8.6 Marking of the switch position**

182 *Replacement of the first sentence of the first paragraph*

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

184 *Deletion of Note 1 and Note 2.*

185 **9 Checking of dimensions**

186 This clause of Part 1 applies.

187 **10 Protection against electric shock**

188 This clause of Part 1 applies except as follows.

189 **10.3.1** *Replacement of the first two lines:*

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

192 **11 Provision for earthing**

193 This clause of Part 1 applies.

194 **12 Terminals**

195 This clause of Part 1 applies except as follows.

196 **12.2.1** *Addition to Table 4:*

197 **Table 4 – Relationship between rated currents and connectable cross-sectional areas**
 198 **of copper conductors for screw-type terminals**

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

199

200

201 **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 1,6	0,05	–	0,1	0,1	–
Above 1,6 up to and including 2,0	0,1	–	0,2	0,2	–
Above 2,0 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

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.