

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Switches for appliances – **STANDARD PREVIEW**
Part 2-4: Particular requirements for independently mounted switches
(standards.iteh.ai)

Interrupteurs pour appareils – **IEC 61058-2-4:2018**
Partie 2-4: Exigences particulières pour les interrupteurs à montage indépendant

<https://standards.iteh.ai/catalog/standards/sist/b9cc5540-ec07-4602-9008-1aea041c1f0a/iec-61058-2-4-2018>



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SWITCHES FOR APPLIANCES –**Part 2-4: Particular requirements for
independently mounted switches**

FOREWORD

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International Standard IEC 61058-2-4 has been prepared by subcommittee 23J: Switches for appliances, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 1995 and constitutes a technical revision.

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

- a) overall format modified to support the revised structure of the series;
- b) Annexes K and M have been included as an integral part of this document;
- c) Annex L has been included for information purposes only.

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

CDV	Report on voting
23J/433/CDV	23J/441/RVC

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 document is to be used in conjunction with IEC 61058-1:2016.

This document supplements or modifies the corresponding clauses in IEC 61058-1, so as to convert that publication into the IEC standard: *Particular requirements for independently mounted switches*.

When a particular subclause of IEC 61058-1 is not mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text of IEC 61058-1 is to be adapted accordingly.

In this document:

- 1) the following print types are used:
 - requirements proper: in roman type;
 - *test specifications*: in italic type;
 - explanatory matter: in smaller roman type.
- 2) subclauses, figures or tables which are additional to those in IEC 61058-1 are numbered starting from 101.

A list of all the parts in the IEC 61058 series, under the general title *Switches for appliances*, 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

SWITCHES FOR APPLIANCES –

Part 2-4: Particular requirements for independently mounted switches

1 Scope

Clause 1 of IEC 61058-1:2016 is applicable, except as follows.

Addition:

This document applies to independently mounted switches for appliances (mechanical or electronic) actuated by hand, by foot or by other human activity, to operate or control electrical appliances and other equipment for household or similar purposes with a rated voltage not exceeding 480 V and a rated current not exceeding 63 A.

These switches are intended to be operated by a person, via an actuating member or by actuating a sensing unit. The actuating member or sensing unit can be integral with or arranged separately, either physically or electrically, from the switch and involve transmission of a signal, for example, electrical, optical, acoustic or thermal, between the actuating member or sensing unit and the switch.

Switches which incorporate additional control functions governed by the switch function are within the scope of this document.

[IEC 61058-2-4:2018](https://standards.iteh.ai/catalog/standards/sist/b9ec5346-ec07-4662-9608-13ca041c104e/iec-61058-2-4-2018)

This document also covers the indirect actuation of the switch when the operation of the actuating member or sensing unit is provided by a remote control or by a part of an appliance or equipment, such as a door.

NOTE 1 Electronic switches can be combined with mechanical switches giving full disconnection or micro-disconnection.

NOTE 2 Electronic switches without a mechanical switch in the supply circuit provide only electronic disconnection. Therefore, the circuit on the load side is always considered to be live.

NOTE 3 For switches used in tropical climates, additional requirements can apply.

NOTE 4 Attention is drawn to the fact that the standards for appliances can contain additional or alternative requirements for switches.

NOTE 5 Throughout this document, the word "appliance" means "appliance or equipment".

2 Normative references

Clause 2 of IEC 61058-1:2016 is applicable except as follows.

Addition:

IEC 60227-5, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 5: Flexible cables (cords)*

IEC 60245-4, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

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

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

3 Terms and definitions

Clause 3 of IEC 61058-1:2016 is applicable, except as follows.

3.3 Terms and definitions relating to the different types of switches

Additional terms and definitions:

3.3.101

independently mounted switch

switch intended to be mounted away from the controlled appliance or equipment

3.3.102

design A switch

switch where the cover or coverplate can be removed without displacement of the conductor(s)

3.3.103

design B switch

switch where the cover or coverplate cannot be removed without displacement of the conductor(s)

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4 General requirements

Clause 4 of IEC 61058-1:2016 is applicable.

5 General information on tests

Clause 5 of IEC 61058-1:2016 is applicable.

6 Rating

Clause 6 of IEC 61058-1:2016 is applicable.

7 Classification

Clause 7 of IEC 61058-1:2016 is applicable except as follows.

7.5 Degree of protection against solid foreign objects

Replacement:

The degree of protection against solid foreign objects is declared.

With the exception of IP0X and IP1X, all IP ratings are allowed.

7.11 According to resistance to ignitability by the glow wire temperature

Subclause 7.11.1 of IEC 61058-1:2016 is not applicable.

7.22 According to the type of forced cooling

Subclause 7.22.2 of IEC 61058-1:2016 is not applicable.

Additional subclauses:

7.101 According to design

7.101.1 design A switch;

7.101.2 design B switch.

NOTE 1 See definitions 3.3.102 and 3.3.103.

NOTE 2 If a switch has a base which cannot be separated from the cover or cover plate, and requires an intermediate plate which can be removed for redecorating the wall, it is considered to be of design A, provided the intermediate plate meets the requirements specified for covers and cover plates.

7.102 According to outlet facilities

7.102.1 switch with inlet/outlet facilities for rigid cables;

7.102.2 switch with inlet facilities for rigid cables and outlet facilities for flexible cables.

8 Marking and documentation

Clause 8 of IEC 61058-1:2016 is applicable with the following modifications to Table 3:
<http://www.iteh.ai/standards/iec-61058-2-4-2018>
<http://www.iteh.ai/standards/iec-61058-2-4-2018>

Table 3 – Switch information and loads placed in groups

Modification:

No.	Characteristic	Subclause	Means of information	
			Common type reference CT	Unique type reference UT
2	SWITCH ENVIRONMENT/MOUNTING			
2.1	Degree of protection provided for the switch when mounted according to documentation (IP code of IEC 60529) NOTE Additional letters listed in IEC 60529 are not used.	7.5 and 7.6	Marking	Marking
4	ELECTRICAL LOAD/CONNECTION			
4.1	Rated voltage or rated voltage range	6.1	Marking	Marking

Additional rows:

101	SWITCH DESIGN			
101.1	Type of switch design	7.101.1 and 7.101.2	Document-ation	Document-ation
102	OUTLET FACILITIES			
102.1	Type of outlet facilities	7.102	Document-ation	Document-ation

9 Protection against electric shock

Clause 9 of IEC 61058-1:2016 is applicable, except as follows.

9.1 Addition of the following sentence to a):

The switch shall be fitted with the conductor of the smallest or largest nominal cross-sectional area according to Table 4 whichever is more unfavourable, or with a rigid conduit, a pliable conduit or a flexible conduit.

Addition to d):

This test finger, with an electrical indicator, is not applied to membranes in inlet openings and is applied to thin-walled knock-outs with a force of only 10 N.

Additional subclause:

9.101 Switches operated by means of a removable key or by means of an intermediate part, such as a cord, a chain or a rod, shall be so designed that the key or intermediate part can only touch parts which are insulated from live parts.

The key or intermediate part shall be insulated from metal parts of the mechanism, unless the clearances and creepage distances between live parts and metal parts of the mechanism have at least the values specified in 20.2.5 and 20.4.5.

Compliance is checked by inspection, by the test of 15.3 and, if necessary, by measurement.

NOTE Lacquer or enamel is not considered to be insulating material for the purpose of 9.101.

10 Provision for earthing

Clause 10 of IEC 61058-1:2016 is applicable.

11 Terminals and terminations

Clause 11 of IEC 61058-1:2016 is applicable.

12 Construction

Clause 12 of IEC 61058-1:2016 is not applicable.

Additional subclauses:

12.101 Insulating linings, barriers and the like, shall have adequate mechanical strength and shall be secured in a reliable manner.

Compliance is checked by inspection after the tests of Clause 18.

12.102 Switches shall be so constructed as to permit:

- easy introduction and connection of the conductors in the terminals;
- adequate space between the underside of the base and the surface on which the base is mounted or between the sides of the base and the enclosure (cover or box) so that, after installation of the switch, the insulation of the conductors does not come in contact with live parts of different polarity or with moving parts of the mechanism, such as the spindle of a rotary switch;

NOTE This requirement does not imply that the metal parts of the terminals are necessarily protected by insulating barriers or insulating shoulders to avoid contact, due to incorrect installation of the terminal metal parts, with the insulation of the conductor.

- easy fixing of the base to a wall or in a box and correct positioning of the conductors. For surface-type switches, mounted on a mounting plate, a wiring channel may be needed to comply with this requirement.

In addition, switches classified according to 7.101.1 (design A switch) shall permit an easy positioning and removal of the cover or cover plate, without displacing the conductors.

Compliance is checked by inspection and by an installation test with conductors of the largest cross-sectional area for the relevant terminal size, in Table 4.

12.103 Covers and cover plates or parts thereof, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixing.

Covers and cover plates or parts thereof may be fixed by means of a single fixing, for example by a screw, provided that they are retained in position by another means (e.g. by a shoulder).

It is recommended that the fixings of covers and cover plates or parts thereof be captive. The use of tight fixing washers of cardboard or the like is deemed to be an adequate method for securing screws intended to be captive.

NOTE Live parts and non-earthed metal parts separated from live parts in such a way that creepage distances and clearances have values specified in Clause 20 are not considered as accessible if the requirements of 12.103 are met.

For switches with a degree of protection IPX0, the fixing of covers or cover plates shall not serve to fix any other part, except the knobs.

When the fixings of covers or cover plates also serve to fix the base, there shall be sufficient means to maintain the base in position after removal of the cover or cover plate.

Decorative covers, cover plates or parts thereof not providing protection against electric shock are not considered as covers or cover plates within the meaning of 12.103.

For covers and cover plates or parts thereof whose fixing is of the screw-type, compliance is checked by inspection and by an installation test.

For covers and cover plates or parts thereof whose fixing is not dependent on screws and whose removal is obtained by applying a force in a direction approximately perpendicular to the mounting/supporting surface, compliance is checked by applying the test described in 13.3.2 of IEC 60669-1:2017 under the conditions set out in 20.4 to 20.6 of IEC 60669-1:2017.

12.104 Surface-type switches with degree of protection IPX0 shall be so constructed that, when they are fixed and wired as in normal use, there are no free openings in their enclosures.

Compliance is checked by inspection and by an installation test with conductors of the cross-sectional area specified in Table 4.

NOTE Small gaps between enclosures and conduits or cables, or between enclosures and operating means are disregarded.

12.105 Knobs of rotary switches shall be securely coupled to the shaft or part operating the mechanism.

The knob is subjected for 1 min to an axial pull of 100 N .

In addition, for knobs of switches having only one direction of operation, a torque of 1 Nm or the actuating torque if this is greater, is applied 100 times in the direction opposite to the direction of operation.

During the test, the knob shall not become detached.

NOTE Requirements for the fixation of other types of actuating members are under consideration.

12.106 Screws or other means for mounting the switch on a surface or in a box or enclosure apart from panel mounting shall be easily accessible from the front. These means shall not serve any other fixing purpose.

12.107 Other electrical accessories combined with switches shall comply with the requirements of the standard for the accessory in question.

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12.108 Switches other than those with degree of protection IPX0 shall be totally enclosed when fitted with conduits or cables.

Surface-type switches other than those with degree of protection IPX0 shall have provision for opening a drain hole at least 5 mm in diameter, or 20 mm² in area with a width and length of at least 3 mm.

The drain hole shall be effective in at least two positions of the switch when this is mounted on a vertical wall, one of these with the conductors entering at the top and the other with the conductors entering at the bottom.

Compliance is checked by measurement and by inspection during the relevant tests of 14.2.

NOTE A drain hole in the back of the enclosure is deemed to be effective only if the design of the enclosure ensures a clearance of at least 5 mm from the wall, or provides a drainage channel of at least the size specified.

12.109 Switches to be installed in a box shall be so designed that the conductor ends can be prepared after the box is mounted in position, but before the switch is fitted in the box.

In addition, the base shall have adequate stability when mounted in the box.

Compliance is checked by inspection and by an installation test with the appropriate cable with conductors of the largest cross-sectional areas specified, for the relevant terminal size, in Table 4.

12.110 Single pole surface type switches of an IP degree higher than X0 with an enclosure having more than one inlet opening shall be provided with an additional terminal for

maintaining the continuity of a second current carrying conductor and complying with the appropriate requirements of Clause 11, or with an adequate space for a floating terminal.

Compliance is checked by inspection and by the relevant tests of Clause 11.

NOTE For switches for Class I appliances, this terminal is additional to the terminal required according to Clause 10.

12.111 Inlet openings shall allow the introduction of the conduit or the protective covering of the sheathed cable so as to afford complete mechanical protection.

IPX0 surface-type switches shall be so constructed that the conduit or protective covering can enter at least 1 mm into the enclosure.

In IPX0 surface-type switches, the inlet opening for conduit entries, or at least two of them if there are more than one, shall be capable of accepting conduit sizes of 16, 20, 25 or 32 or a combination of at least two of any of these sizes.

Compliance is checked by inspection during the test of 12.109 and by measurement.

NOTE Inlet openings of adequate size can also be obtained by the use of knock-outs or of suitable insertion pieces.

If ordinary surface-type switches are intended for back entry from a conduit they shall be so designed that they have provision for back entry from a conduit perpendicular to the mounting surface of the switch.

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Compliance is checked by inspection.

If the switch is provided with membranes in inlet openings, these shall be replaceable.

Compliance is checked by inspection.

12.112 Switches classified according to 7.102.2 shall have cord anchorages at the declared outlet facilities for flexible cables such that the conductors are relieved from strain, including twisting, where they are connected to the terminals, and such that their covering is protected from abrasion and kept in position.

12.112.1 It shall be clear how the relief from strain and the prevention of twisting is intended to be effected.

12.112.2 The inlet or bushing shall be provided with a smoothly rounded opening.

12.112.3 Makeshift methods such as tying the cable into a knot, or tying the ends with string shall not be used.

12.112.4 Cord anchorages of switches shall be of insulating material, or, if of metal, be insulated from accessible metal parts or accessible insulating surfaces, by insulation complying with the requirements for supplementary insulation.

The cord anchorages shall be so designed that their parts do not fall out when the cover is removed, even if the switches are not fitted with their cables.

12.112.5 Cord anchorages shall further be so designed that:

- for any attachment method, the cable is not fixed by penetration of its insulation in such a way that the insulation of the cable is cut or otherwise significantly damaged. A slight