

INTERNATIONAL STANDARD



**Switches for appliances –
Part 2-5: Particular requirements for change-over selectors**

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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD



**Switches for appliances –
Part 2-5: Particular requirements for change-over selectors**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SWITCHES FOR APPLIANCES –

Part 2-5: Particular requirements for change-over selectors

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.
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International Standard IEC 61058-2-5 has been prepared by subcommittee 23J: Switches for appliances, of IEC technical committee 23: Electrical accessories.

This third edition cancels and replaces the second edition published in 2010 and constitutes a technical revision.

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

- a) updated references due to new structure of IEC 61058-1;
- b) changes on conducting the heating test due to the corresponding changes in IEC 61058-1.

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

FDIS	Report on voting
23J/447/FDIS	23J/449/RVD

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

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 change-over selectors*.

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" or "replacement", the relevant text of IEC 61058-1 is to be adapted accordingly.

In this standard:

- 1) the following print types are used:
 - requirements proper: in roman type;
 - *test specifications: in italic type*;
 - notes/explanatory matter: in smaller roman type.
- 2) subclauses, figures and 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, published 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

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SWITCHES FOR APPLIANCES –

Part 2-5: Particular requirements for change-over selectors

1 Scope

Replacement:

1.1 This Part of IEC 61058 applies to change-over selectors (mechanical or electronic) for appliances 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 change-over selectors 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 ~~may~~ can involve transmission of a signal, for example electrical, optical, acoustic or thermal, between the actuating member or sensing unit and the switch.

Change-over selectors which incorporate additional control functions governed by the switch function are within the scope of this document.

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 a part of an appliance or equipment such as a door.

NOTE 1 Electronic change-over selectors ~~may~~ can be combined with mechanical change-over selectors giving full disconnection or micro-disconnection.

NOTE 2 Electronic change-over selectors 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 change-over selectors used in tropical climates, additional requirements ~~may be necessary~~ can apply.

NOTE 4 Attention is drawn to the fact that the standards for appliances ~~may~~ can contain additional or alternative requirements for change-over selectors.

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

1.2 This document applies to change-over selectors intended to be incorporated in, on, or with an appliance.

1.3 This document also applies to change-over selectors incorporating electronic devices.

2 Normative references

This clause of Part 1 is applicable ~~except as follows~~.

Addition:

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

3 Terms and definitions

This clause of Part 1 is applicable, except as follows.

3.3 Terms and definitions relating to the different types of switches

Additional term and definition:

3.3.101

change-over selector

device designed to carry, but not to make or break, current, used for changing the connections of one or more electric circuits

4 General requirements

This clause of Part 1 is applicable.

5 General ~~notes~~ information on tests

This clause of Part 1 is applicable, except as follows:

~~5.5.1 to 5.5.3~~ Subclauses 5.2.2 and 5.2.9 of IEC 61058-1:2016 are not applicable.

Addition at the end of 5.4:

~~5.5.101~~ For the tests ~~of~~ referred to in Clauses 13 to 18, three specimens ~~Nos. 3 to 5~~ are used.

6 Rating

This clause of Part 1 is applicable.

7 Classification

This clause of Part 1 is applicable, except as follows.

~~7.1.2~~ Subclause 7.2 of IEC 61058-1:2016 is not applicable.

Additional subclause:

7.4 According to number of operating cycles

~~7.1.4.101~~ 50 operating cycles.

Additional subclauses:

7.101 According to type of actuation of the switch

~~7.1.7.101~~ 7.101.1 – locked change-over selector;

~~7.1.7.102~~ 7.101.2 – unlocked change-over selector;

~~7.1.7.103~~ 7.101.3 – change-over selector actuated with a tool.

NOTE ~~101~~ Complex actuation of the actuating member (e.g. by the subsequent actuation in at least two different directions to complete the operation of the switch) is regarded as being a locking means.

8 Marking and documentation

This clause of Part 1 is applicable, except as follows.

~~In Table 3, items Nos. 4.5 to 4.7 and 4.16 to 4.17 are not applicable.~~

Addition:

8.1.3 By documentation

Table ~~101~~ 3 – ~~Change-over selector information~~ Switch information and loads placed in groups

No	Characteristic of change-over selector	Subclause	Means of information	
			Common type reference CT	Unique type reference UT
101	TYPE OF CHANGE-OVER SELECTOR			
101.1	Symbol for change-over selector		Marking	Documentation

~~8.3~~ 8.2 Symbols

Addition:

Symbol for change-over selector, given as a box around the symbol for the number of operating cycles

1E3

Additional subclause:

8.2.101 The different positions of the actuating member shall be clearly marked.

Compliance is checked by inspection.

9 Protection against electric shock

This clause of Part 1 is applicable.

10 Provision for earthing

This clause of Part 1 is applicable.

11 Terminals and terminations

This clause of Part 1 is applicable.

12 Construction

This clause of Part 1 is applicable, except as follows.

12.2 Constructional requirements relating to safety during mounting and normal operation of the switch

12.2.1 Addition ~~at the end of Subclause 12.2.1:~~

The locking means for the actuating member shall be fixed in such a way that it cannot be displaced or removed, except by use of a tool.

Additional subclause:

12.2.101 A change-over selector shall be capable of carrying specified rated currents, and shall also be capable of carrying ~~for a specified time~~ currents under specified abnormal circuit conditions, such as those of short circuit, ~~for a specified amount of time.~~

13 Mechanism

This clause of Part 1 is applicable, except as follows.

Subclause 13.1 is not applicable to change-over selectors classified according to ~~7.1.7.101 and 7.1.7.103~~ 7.101.1 and 7.101.3.

14 Protection against ingress of solid foreign objects, ingress of water and humid conditions

This clause of Part 1 is applicable.

15 Insulation resistance and dielectric strength

This clause of Part 1 is applicable.

16 Heating

This clause of Part 1 is applicable, except as follows.

~~For the test of Subclause 16.2.2 item j), the specimens are not subjected to the 20 operating cycles.~~

16.4 Heating test

Item i) does not apply.

17 Endurance

This clause of Part 1 is ~~applicable except as follows~~ replaced by the following:

~~17.2.1 and 17.2.3.4.1 to 17.2.4.9 are not applicable.~~

~~Addition:~~

17.101 Mechanical endurance tests

Change-over selectors classified according to ~~7.1.4.1 to 7.1.4.6~~ 7.4.1 to 7.4.6 of IEC 61058-1:2016 shall be submitted to a mechanical endurance test. The thermal and

mechanical conditions are according to ~~17.2.2 and 17.2.3~~ 17.3 and 17.4 of IEC 61058-1:2016. During the test no electrical load is applied to the change-over selectors.

For change-over selectors with locking means (classified according to ~~7.1.7.101~~ 7.101.1), the locking mechanism is also submitted to the mechanical endurance test. This test, however, may be made separately, and separate test specimens may be used.

Change-over selectors classified according to ~~7.1.4.7, 7.1.4.8~~ 7.4.7, 7.4.8 of IEC 61058-1:2016 and ~~7.1.4.101~~ 7.101.1 of this document are submitted to a mechanical endurance test, and following that, to a temperature cycling test according to ~~11.1.1.3.4~~ 11.5.

After the tests, the switch is deemed to comply if the conditions according to ~~17.2.5~~ 17.6 of IEC 61058-1:2016 are satisfied.

NOTE ~~101~~ For change-over selectors with screwless terminals, this test is carried out during the tests of ~~11.1.1.3.4~~ 11.5.

17.102 Abnormal operation

Unlocked change-over selectors (classified according to ~~7.1.7.102~~ 7.101.2) shall have sufficient switching capacity under abnormal operation.

For unlocked change-over selectors intended for both AC and DC, compliance is checked by subjecting one set of test specimens to 10 cycles of operation at rated load having a $\cos \varphi = 0,6$, and another set of test specimens to 10 cycles of operation at DC rated non inductive load. Other change-over selectors are tested with the relevant nature of supply.

The unlocked change-over selectors are actuated by hand at an ambient temperature of $25\text{ °C} \pm 10\text{ °C}$.

After the test, the switch is deemed to comply if:

- all actions function as declared;
- the temperature rise at the terminals does not exceed 55 K when tested in accordance with ~~16.2~~ 16.4, with the exception that the temperature rise test at the terminals is carried out at rated current.

18 Mechanical strength

This clause of Part 1 is applicable.

19 Screws, current-carrying parts and connections

This clause of Part 1 is applicable.

20 Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies

This clause of Part 1 is applicable.

21 ~~Resistance to heat and fire~~ Fire hazard

This clause of Part 1 is applicable.

22 Resistance to rusting

This clause of Part 1 is applicable.

23 Abnormal operation and fault conditions for ~~electronic~~ switches

This clause of Part 1 is applicable.

24 Components for ~~electronic~~ switches

This clause of Part 1 is applicable.

25 EMC requirements

This clause of Part 1 is applicable.

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**Switches for appliances –
Part 2-5: Particular requirements for change-over selectors**

**Interrupteurs pour appareils –
Partie 2-5: Exigences particulières pour les présélecteurs**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SWITCHES FOR APPLIANCES –

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- b) changes on conducting the heating test due to the corresponding changes in IEC 61058-1.

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This standard is to be used in conjunction with IEC 61058-1:2016 and IEC 61058-1-1:2016.

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In this standard:

- 1) the following print types are used:
 - requirements proper: in roman type;
 - *test specifications: in italic type*;
 - notes/explanatory matter: in smaller roman type.
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SWITCHES FOR APPLIANCES –

Part 2-5: Particular requirements for change-over selectors

1 Scope

Replacement:

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These change-over selectors 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 can involve transmission of a signal, for example electrical, optical, acoustic or thermal, between the actuating member or sensing unit and the switch.

Change-over selectors which incorporate additional control functions governed by the switch function are within the scope of this document.

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 a part of an appliance or equipment such as a door.

NOTE 1 Electronic change-over selectors can be combined with mechanical change-over selectors giving full disconnection or micro-disconnection.

NOTE 2 Electronic change-over selectors 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 change-over selectors 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 change-over selectors.

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

This document applies to change-over selectors intended to be incorporated in, on, or with an appliance.

This document also applies to change-over selectors incorporating electronic devices.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

3 Terms and definitions

This clause of Part 1 is applicable, except as follows.

3.3 Terms and definitions relating to the different types of switches

Additional term and definition:

3.3.101

change-over selector

device designed to carry, but not to make or break, current, used for changing the connections of one or more electric circuits

4 General requirements

This clause of Part 1 is applicable.

5 General information on tests

This clause of Part 1 is applicable, except as follows.

Subclauses 5.2.2 and 5.2.9 of IEC 61058-1:2016 are not applicable.

Addition at the end of 5.4:

For the tests referred to in Clauses 13 to 18, three specimens are used.

6 Rating

This clause of Part 1 is applicable.

7 Classification

This clause of Part 1 is applicable, except as follows.

Subclause 7.2 of IEC 61058-1:2016 is not applicable.

Additional subclause:

7.4 According to number of operating cycles

7.4.101 50 operating cycles.

Additional subclauses:

7.101 According to type of actuation of the switch

7.101.1 – locked change-over selector;

7.101.2 – unlocked change-over selector;

7.101.3 – change-over selector actuated with a tool.

NOTE Complex actuation of the actuating member (e.g. by the subsequent actuation in at least two different directions to complete the operation of the switch) is regarded as being a locking means.

8 Marking and documentation

This clause of Part 1 is applicable, except as follows.

Addition:

8.1.3 By documentation

Table 3 – Switch information and loads placed in groups

No	Characteristic	Subclause	Means of information	
			Common type reference CT	Unique type reference UT
101	TYPE OF CHANGE-OVER SELECTOR			
101.1	Symbol for change-over selector		Marking	Documentation

8.2 Symbols

Addition:

Symbol for change-over selector, given as a box around the symbol for the number of operating cycles

1E3

Additional subclause:

8.2.101 The different positions of the actuating member shall be clearly marked.

Compliance is checked by inspection.

9 Protection against electric shock

This clause of Part 1 is applicable.

10 Provision for earthing

This clause of Part 1 is applicable.

11 Terminals and terminations

This clause of Part 1 is applicable.

12 Construction

This clause of Part 1 is applicable, except as follows.

12.2 Constructional requirements relating to safety during mounting and normal operation of the switch

12.2.1 *Addition:*

The locking means for the actuating member shall be fixed in such a way that it cannot be displaced or removed, except by use of a tool.

Additional subclause:

12.2.101 A change-over selector shall be capable of carrying specified rated currents, and shall also be capable of carrying currents under specified abnormal circuit conditions, such as those of short circuit, for a specified amount of time.

13 Mechanism

This clause of Part 1 is applicable, except as follows.

Subclause 13.1 is not applicable to change-over selectors classified according to 7.101.1 and 7.101.3.

14 Protection against ingress of solid foreign objects, ingress of water and humid conditions

This clause of Part 1 is applicable.

15 Insulation resistance and dielectric strength

This clause of Part 1 is applicable.

16 Heating

This clause of Part 1 is applicable, except as follows.

16.4 Heating test

Item i) does not apply.

17 Endurance

This clause of Part 1 is replaced by the following:

17.101 Mechanical endurance tests

Change-over selectors classified according to 7.4.1 to 7.4.6 of IEC 61058-1:2016 shall be submitted to a mechanical endurance test. The thermal and mechanical conditions are according to 17.3 and 17.4 of IEC 61058-1-1:2016. During the test no electrical load is applied to the change-over selectors.

For change-over selectors with locking means (classified according to 7.101.1), the locking mechanism is also submitted to the mechanical endurance test. This test, however, may be made separately, and separate test specimens may be used.

Change-over selectors classified according to 7.4.7, 7.4.8 of IEC 61058-1:2016 and 7.101.1 of this document are submitted to a mechanical endurance test, and following that, to a temperature cycling test according to 11.5.

After the tests, the switch is deemed to comply if the conditions according to 17.6 of IEC 61058-1-1:2016 are satisfied.

NOTE For change-over selectors with screwless terminals, this test is carried out during the tests of 11.5.

17.102 Abnormal operation

Unlocked change-over selectors (classified according to 7.101.2) shall have sufficient switching capacity under abnormal operation.

For unlocked change-over selectors intended for both AC and DC, compliance is checked by subjecting one set of test specimens to 10 cycles of operation at rated load having a $\cos \varphi = 0,6$, and another set of test specimens to 10 cycles of operation at DC rated non inductive load. Other change-over selectors are tested with the relevant nature of supply.

The unlocked change-over selectors are actuated by hand at an ambient temperature of $25\text{ °C} \pm 10\text{ °C}$.

After the test, the switch is deemed to comply if:

- all actions function as declared;
- the temperature rise at the terminals does not exceed 55 K when tested in accordance with 16.4, with the exception that the temperature rise test at the terminals is carried out at rated current.

18 Mechanical strength

This clause of Part 1 is applicable.

19 Screws, current-carrying parts and connections

This clause of Part 1 is applicable.

20 Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies

This clause of Part 1 is applicable.

21 Fire hazard

This clause of Part 1 is applicable.

22 Resistance to rusting

This clause of Part 1 is applicable.

23 Abnormal operation and fault conditions for switches

This clause of Part 1 is applicable.

24 Components for switches

This clause of Part 1 is applicable.

25 EMC requirements

This clause of Part 1 is applicable.

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

INTERRUPTEURS POUR APPAREILS –

Partie 2-5: Exigences particulières pour les présélecteurs

AVANT-PROPOS

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La Norme internationale IEC 61058-2-5 a été établie par le sous-comité 23J: Interrupteurs pour appareils, du comité d'études 23 de l'IEC: Petit appareillage.

Cette troisième édition annule et remplace la deuxième édition parue en 2010. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) mise à jour des références pour tenir compte de la nouvelle structure de l'IEC 61058-1;
- b) modifications concernant la réalisation de l'essai d'échauffement, pour tenir compte des modifications correspondantes apportées à l'IEC 61058-1.

Le texte de cette Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
23J/447/FDIS	23J/449/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

La présente norme doit être utilisée conjointement avec l'IEC 61058-1:2016 et l'IEC 61058-1-1:2016.

Le présent document complète ou modifie les articles correspondants de l'IEC 61058-1, de façon à transformer cette publication en norme IEC: *Exigences particulières pour les présélecteurs*.

Lorsqu'un paragraphe particulier de l'IEC 61058-1 n'est pas mentionné dans ce document, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme indique "addition" ou "remplacement", le texte correspondant de l'IEC 61058-1 doit être adapté en conséquence.

Dans la présente norme:

- 1) les caractères suivants sont utilisés:
 - exigences: caractères romains;
 - *spécifications d'essai: en italique;*
 - notes explicatives: en petits caractères romains.
- 2) les paragraphes, figures et tableaux qui sont ajoutés à ceux de l'IEC 61058-1 sont numérotés à partir de 101.

Une liste de toutes les parties de la série IEC 61058, publiées sous le titre général *Interrupteurs pour appareils*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "<http://webstore.iec.ch>" dans les données relatives au document recherché. A cette date, le document sera

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