

INTERNATIONAL STANDARD

**Plugs and socket-outlets for household and similar purposes –
Part 2-6: Particular requirements for switched socket-outlets with interlock for
fixed electrical installations**

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INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD
AND SIMILAR PURPOSES –****Part 2-6: Particular requirements for switched socket-outlets
with interlock for fixed electrical installations**

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60884-2-6:1997. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60884-2-6 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 1997. This edition constitutes a technical revision.

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

a) alignment to IEC 60884-1, fourth edition.

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

Draft	Report on voting
23B/1547/FDIS	23B/1561/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be used in conjunction with IEC 60884-1:2022.

This document supplements or modifies the corresponding clauses in IEC 60884-1:2022, so as to convert that publication into the IEC standard: Particular requirements for switched socket-outlets without interlock for fixed installations.

When a particular subclause of IEC 60884-1:2022 is mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text of IEC 60884-1:2022 is to be adapted accordingly.

In this document the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- Explanatory matter: in smaller roman type.

Subclauses, notes, figures and tables or figures which are additional to those in IEC 60884-1:2022 are numbered starting from 101.

A list of all the parts in the IEC 60884 series, under the general title *Plugs and socket-outlets for household and similar purposes*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES –

Part 2-6: Particular requirements for switched socket-outlets with interlock for fixed electrical installations

1 Scope

Replace IEC 60884-1:2022, Clause 1 with the following:

This part of IEC 60884 applies to switched socket-outlets with interlock for AC only, for fixed electrical installations, with or without earthing contact, with rated voltage above 50 V but not exceeding 440 V and a rated current not exceeding 32 A, intended for household and similar purposes, either indoors or outdoors.

Switched socket-outlets with interlock according to this document consist of a combination of socket-outlets according to IEC 60884-1, interlocked with a switch according to IEC 60669-1 and/or IEC 60669-2-1 supplied as a complete ~~unit~~ accessory.

The rated current is limited to 16 A maximum for fixed accessories provided with screwless terminals.

This document does not cover requirements for flush mounting boxes.

However, it covers those requirements for surface-type mounting boxes which are necessary for the tests on socket-outlets.

NOTE 1 General requirements for mounting boxes are covered by IEC 60670.

NOTE 2 Interlocked socket-outlets incorporating devices according to IEC 60898, IEC 61008 and IEC 61009 are not covered by this document. This document ~~may~~ can be used as a guide for the requirements and tests of these accessories where relevant.

This document does not apply to

- interlocked socket-outlets for industrial purposes;
- interlocked socket-outlets for EV;
- interlocked socket-outlets for SELV.

~~Accessories complying with this standard are suitable for use at an ambient temperature not normally exceeding 25 °C, but occasionally reaching 35 °C.~~

Plugs and socket-outlets complying with this document are suitable for use at ambient temperatures not normally exceeding +40 °C, but their average temperature over a period of 24 h does not exceed +35 °C, with a lower limit of the ambient air temperature of –5 °C.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60884-1:2022, Clause 2 is applicable, except as follows:

Add to the list of normative references:

IEC 60669-1:~~1993~~2017, *Switches for household and similar fixed-electrical installations – Part 1: General requirements*

IEC 60669-2-1:~~1996~~2021, *Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic-switches control devices*

IEC 60884-1:~~1994~~2022, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

IEC 60884-1:2022, Clause 3 is applicable, except as follows:

Addition:

3.101

interlock

device, either electrical or electronic or mechanical or a combination of these, which prevents the pins/contacts of a plug from becoming live before the plug is in proper engagement with a socket-outlet and which either prevents the plug from being withdrawn while its pin/contacts are live or makes the contacts of the socket-outlet dead before the plug is withdrawn

3.102

switched socket-outlet with interlock

factory assembled ~~unit~~ accessory consisting of a socket-outlet with an integral switching device controlling the socket-outlet, which is provided with an interlock

3.103

retaining device

mechanical arrangement which holds a plug in position when it is in proper engagement, and prevents its unintentional withdrawal

4 General requirements

IEC 60884-1:2022, Clause 4 is applicable.

5 General ~~notes~~ remarks on tests

IEC 60884-1:2022, Clause 5 is applicable, except as follows:

5.4 Additional samples

Add after the ~~fourth~~ second paragraph:

For the test of Clause 15, it is possible that three additional specimens ~~may be~~ are necessary.

6 Ratings

IEC 60884-1:2022, Clause 6 is applicable.

7 Classification

IEC 60884-1:2022, Clause 7 is applicable, except as follows:

7.2 Add the following subclauses:

7.2.101 Switched socket-outlets with interlock are classified:

7.2.101.1 According to the method of actuating the switch:

- rotary;
- tumbler;
- rocker;
- push-button;
- touch;
- proximity;
- optical;
- acoustic;
- other external influences.

7.2.101.2 According to the number of poles of the switch:

- single-pole;
- double-pole;
- three-pole;
- three-pole with neutral.

7.2.101.3 According to the type of interlock:

- mechanical;
- electrical;
- electronic;
- a combination of any of these.

7.2.101.4 According to the retaining device:

- without device;
- with device.

8 Marking

IEC 60884-1:2022, Clause 8 is applicable, except as follows:

8.1 General

Add the following dashed list items before Note 2:

- symbol of mini-gap construction, if applicable;
- symbol of micro-gap construction, if applicable;
- symbol for semiconductor switching device, if applicable.

8.2 Symbols

Add the following dashed list items before the notes:

- Mini-gap construction m
- Micro-gap construction μ
- Semiconductor switching device..... ~~(under consideration)~~ ϵ
- "OFF" position O
- "ON" position..... I

Addition:

8.101 Identification of line terminals

Terminals of switched socket-outlets with interlock intended for the connection of the phase conductors shall be identified, unless the method of connection is of no importance or is self-evident or is indicated in a wiring diagram. Such identification may take the form of a letter L or in the case of more than one terminal, the letters L₁, L₂, L₃, etc., which may be accompanied by an arrow pointing to the relevant terminal(s).

Alternatively, the surface of such terminals shall be bare brass or copper, other terminals being covered with a metallic layer of another colour.

These indications shall not be placed on screws or any other easily removable parts.

8.102 Indication of the actual switch position

Switched socket-outlets with interlock shall be so marked that the direction of movement of the actuating member to its different positions or the actual switch position, is clearly indicated.

These indications shall be clearly visible on switched socket-outlets with interlock fitted with their cover or cover plate as for normal use. If these indications are placed on the cover or cover plate, it shall not be possible to fix the cover or cover plate in a position such that the indications are incorrect.

For indicating the direction of movement of the operating means, the symbols "O" and "I" may be used.

The short, straight line indicating the "ON" position shall be radial for rotary switches, perpendicular to the axis of rotation of the dolly for tumbler switches and rocker switches, and vertical for push-button switches when mounted vertically in its intended position.

9 Checking of dimensions

IEC 60884-1:2022, Clause 9 is applicable.

10 Protection against electric shock

IEC 60884-1:2022, Clause 10 is applicable, except as follows:

Addition:

10.101 Requirements for operating parts

Knobs, operating levers, push-buttons, rockers and the like, for operating switches in switched socket-outlets with interlock shall be of insulating material, unless their accessible metal parts are separated from the metal parts of the mechanism by double insulation or reinforced insulation, or in the case of switched socket-outlets with interlock with earthing terminals, they are reliably connected to earth.

Compliance is checked by inspection and by the tests of Clause 17 and Clause 21.

~~NOTE — For definition of the terms "double insulation" and "reinforced insulation", see IEC 60536.~~

10.102 Requirements for accessible metal parts (protrusion from enclosure)

Metal parts of the switch mechanism, such as the spindle or the pivot of the dolly or rocker, that are not insulated from live parts, shall not protrude from the enclosure.

Compliance is checked by inspection. If necessary, the actuating member may be removed or broken.

If the actuating member has to be broken, compliance is checked after the test of Clause 28.

10.103 Requirements for accessible metal parts (accessibility)

Metal parts of the switch mechanism, such as the spindle or the pivot of the dolly or rocker, shall not be accessible when the switched socket-outlet with interlock is mounted as for normal use.

In addition, these metal parts shall be insulated from accessible metal parts, including metal frames supporting the base of flush-type switched socket-outlets with interlock, liable to be mounted in a metal box, and also from screws used for fixing the base to its support.

This additional requirement does not apply if the metal parts of the mechanism are separated from live parts in such a way that the creepage distances and clearances have at least twice the values specified in 27.1, or as an alternative for switched socket-outlets with interlock provided with earthing terminals, if they are reliably connected to earth.

Compliance is checked by inspection. If necessary, measurement and the tests of Clause 17 and Clause 20 may be used.

11 Provision for earthing

IEC 60884-1:2022, Clause 11 is applicable.

12 Terminals and terminations

IEC 60884-1:2022, Clause 12 is applicable.

13 Construction of fixed socket-outlets

IEC 60884-1:2022, Clause 13 is applicable, except as follows:

Addition:

13.101 Switch poles

Switches shall be constructed to match the number of poles of the socket-outlet, except that the neutral pole is not switched in unswitched neutral socket-outlets.

The earthing contact is not considered as a pole and the earth circuit shall not be switched.

The position of the switch operating member shall be such that it does not prevent, nor shall its correct operation be prevented by, the proper insertion of the corresponding plug or plugs.

~~NOTE— This may be checked by reference to the appropriate standard sheets for the system of plugs and socket-outlets used in the country in question.~~

Compliance is checked by inspection and by a manual test.

13.102 Attachment of knobs

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

Compliance is checked by the following test.

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

After this, knobs of switches having only one direction of operation are turned, if possible, without undue force, 100 times in the reverse direction.

During the test the knob shall not become detached.

13.103 Indication of the position

The actuating member of a switch, when released, shall automatically take up the position corresponding to that of the moving contacts, except that, for those with a single push-button, the actuating member may take up a single rest position.

13.104 Rest and intermediate position

Switches shall be so constructed that the moving contacts can come to rest only in the "ON" or "OFF" position, an intermediate position being, however, permissible if it corresponds to the intermediate position of the actuating member and if the insulation between the fixed and moving contacts is then adequate.

When in the intermediate position, the insulation between the fixed and moving contacts is checked by applying a voltage of substantially sine-wave form, having a frequency of 50 Hz or 60 Hz, for 1 min across the switch gap, the test voltage being 1 250 V for switched socket-outlets with interlock having a rated voltage up to and including 130 V, or 2 000 V for switched socket-outlets with interlock having a rated voltage exceeding 130 V.

Compliance with the requirements of 13.103 and 13.104 is checked by inspection, by manual test and for switches with the intermediate position by the electrical test in the preceding paragraph.

13.105 Undue arcing

Switches shall be constructed so that undue arcing cannot occur when the switch is operated slowly.

Compliance is checked by causing the switch, at the end of the test of Clause 21, to break the circuit a further ten times, the actuating member being moved steadily by hand over a period of 2 s and the moving contacts being stopped, if possible, in an intermediate position, the actuating member then being released.

During the test, no sustained arcing shall occur.

13.106 Making and breaking

Switched socket-outlets with interlock with switches operating more than one pole shall make and break all poles virtually simultaneously, except that for multiple switches with switched neutral, the neutral shall not make after or break before other poles.

Compliance is checked by inspection and by a manual test.

13.107 Action of the mechanism without cover or cover plate

The action of the mechanism, if the covers or cover plates are removable for installation purposes, shall be independent of the presence of the covers or cover plates.

Compliance is checked by connecting the switch, without cover or cover plate, of the switched socket-outlet with interlock in series with a lamp and by ~~normally~~ pressing the actuating member without undue force.

During the test the lamp shall not flicker.

14 Construction of plugs and portable socket-outlets

IEC 60884-1:2022, Clause 14 is not applicable.

15 Interlocked socket-outlets

IEC 60884-1:2022, Clause 15 is replaced by the following:

15.101 General

Switched socket-outlets with interlock shall be so constructed that a plug cannot be inserted into or completely withdrawn from the socket-outlet while the socket contacts are live, and the socket contacts of the socket-outlet cannot be made live until a plug is almost completely in engagement.

Compliance is checked by carrying out the tests of 15.102.1 or 15.102.2 as applicable after the test of Clause 21.

15.102 Switched socket-outlets with interlock without retaining devices

15.102.1 Switched socket-outlets with interlock without retaining devices shall be:

- so constructed that the moving contacts of the switch are mechanically coupled with the socket-outlet in such a way that, during the withdrawal of the plug, they break before or substantially at the same time as the pins of the plug are disconnected from the socket contacts of the socket-outlet;
- so designed that, after engagement with the relevant plugs the interlock operates correctly;
- so designed that the operation of the interlock is not impaired by normal wear of the plug.

Compliance is checked by the test of 15.102.2 and Clause 21.

15.102.2 Switched socket-outlets with interlock are connected as shown in Figure 101.

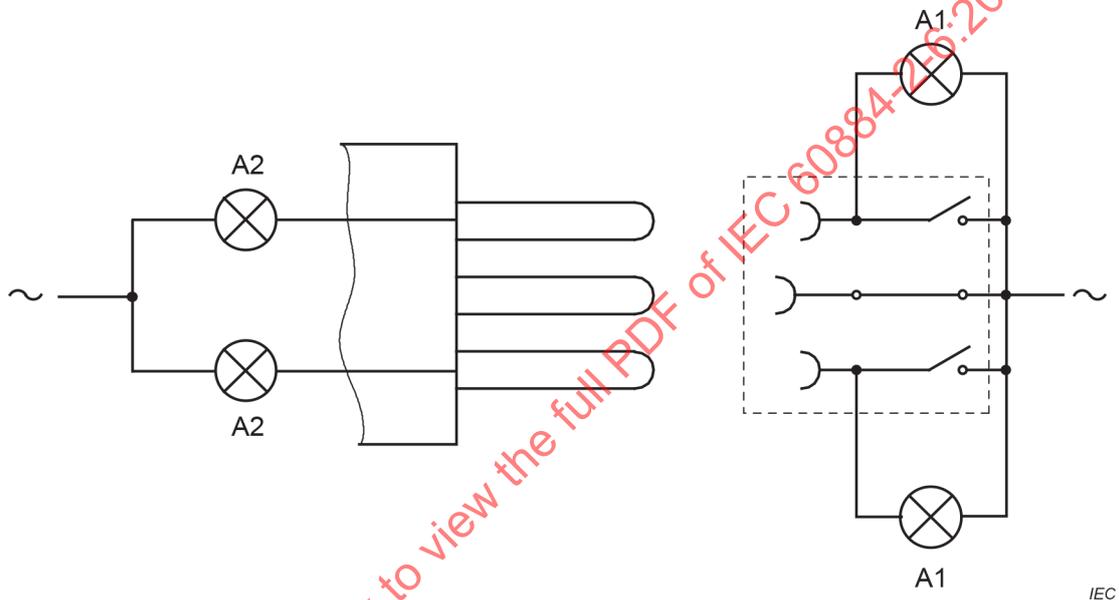


Figure 101 – Circuit for the tests of 15.101

The test is carried out as follows.

Without the plug inserted an attempt shall be made to close the switching device. The switch contacts shall not close.

This is checked by a continuity test made between the supply terminals and the contact assembly of the socket-outlet.

The plug connected as in Figure 101 is inserted and the switching device is then closed. The lamps A1 shall not light, the lamps A2 shall light.

The plug is then withdrawn slowly in the most unfavourable direction and then the lamps A1 shall light. The test is considered to be fulfilled if these conditions are met.

NOTE 1 A reduction of the brightness of the lamps A2 may occur during the time that the lamps A1 are illuminated.

NOTE 2 In case of doubt in determining the illumination time of the lamps, the test may be repeated using oscilloscopes.

The above test shall be carried out three times on each of the three specimens.

NOTE 3 For this test, specimens specially prepared by the manufacturer ~~may~~ can be used.

15.2 15.103 Switched socket-outlets with interlock with retaining devices

15.103.1 Switched socket-outlets with interlock with retaining devices shall be:

- so constructed that the interlock is mechanically linked with the operation of a switching device so that the plug can neither be withdrawn from the socket-outlet while the contacts are alive, nor be inserted while the switching device is in the ON position;
- so designed that with any complementary accessory the interlock operates correctly.

Compliance is checked by inspection, by a manual test and by the test of 15.103.2-4.

15.103.2-4 Switched socket-outlets with interlock with a mechanical retaining device locking the plug into the socket-outlet are subjected to the following test.

An axial pull is applied to an appropriate plug inserted in the switched socket-outlet with interlock, with the mechanical retaining device in the locked position. The switched socket-outlet with interlock is fixed to mounting plate A of an apparatus as shown in Figure ~~13~~ 25 so that the axis of the socket-contacts are vertical and the entry holes for the pins of the plug face downwards.

The test plug according to the relevant standard sheets shall have finely ground pins of hardened steel, having a surface roughness not exceeding $0,8 \mu\text{m}$ over their active length and spaced at the nominal distances, with a tolerance of $\pm 0,05 \text{ mm}$.

The diameter of round pins or the distance between contact surfaces for other types of pin shall be in accordance with the minimum dimension(s) given in the relevant standard sheets, with a tolerance of $^{+0,01}_0 \text{ mm}$.

The pins are wiped free from grease before use.

The test plug is inserted into and withdrawn from the socket-outlet ten times. It is then again inserted, a mass being attached to it by means of a suitable clamp D. The total mass of the plug, the clamp and the carrier, shall exert a pull force equal to 120 N.

During the test the plug shall not come out of the socket-outlet and the mechanical retaining device shall remain in the locked position.

After the test, the switched socket-outlet with interlock shall show no damage within the meaning of this document.

For the purpose of this test, the earthing contact is considered as one pole.

16 Resistance to ageing, ~~to harmful ingress of water~~ protection provided by enclosures, and resistance to humidity

IEC 60884-1:2022, Clause 16 is applicable.

17 Insulation resistance and electric strength

IEC 60884-1:2022, Clause 17 is applicable, except as follows:

17.2 Test for measuring the insulation resistance

17.2.1 Add the following at the end of Subclause 17.2.1:

For items g) and h) of 17.1.12.2, the insulation resistance shall not be less than 2 MΩ.

17.1.12.2 Replace the ~~last~~ second paragraph ~~before the notes by~~ (i.e., the paragraph after the list) with:

For switches of a switched socket-outlet with interlock, the insulation resistance is measured consecutively:

- f) between all poles connected together and the body, with the switch in the "ON" position;
- g) between each pole in turn and all others connected to the body, with the switch in the "ON" position;
- h) between the terminals which are electrically connected together when the switch is in the "ON" position, the switch being in the "OFF" position.

The term "body" includes accessible metal parts, metal frames supporting the base of flush-type switched socket-outlets with interlock, operating keys, metal foil in contact with the outer surface of accessible external parts and operating keys of insulating material, the point of anchorage of the cord, chain or rod for switches operated by such means, fixing screws of bases or covers and cover plates, external assembly screws, earthing terminals and any metal part of the mechanism if required to be insulated from live parts (see 10.102).

18 Operation of earthing contacts

IEC 60884-1:2022, Clause 18 is applicable.

19 Temperature rise

IEC 60884-1:2022, Clause 19 is applicable.

20 Breaking capacity

IEC 60884-1:2022, Clause 20 is applicable, with the following addition:

20.101 Switches incorporated in switched socket-outlets with interlock

Switches incorporated in switched socket-outlets with interlock shall be in accordance with IEC 60669-1 or IEC 60669-2-1.

21 Normal operation

IEC 60884-1:2022, Clause 21 is replaced by:

Switched socket-outlets with interlock shall withstand without excessive wear or other harmful effect, the mechanical, electrical and thermal stresses occurring in normal use.

Compliance is checked by the following test:

- a) The switch shall comply with ~~the appropriate clauses of~~ IEC 60669-1 or IEC 60669-2-1.
- b) The specimens are checked by carrying out 5 000 load cycles at rated voltage and rated current with a power factor $0,8 \pm 0,05$, with the interlocking device in operation.

During the test the specimens are not ~~lubricated~~ lubricated and shall function correctly.

After the test the specimens shall withstand an electric strength test as specified in Clause 17, and a temperature rise test as specified in Clause 19, the test current being reduced to the rated current value.

After these tests the specimens shall not show:

- wear impairing their further use;
- discrepancy between the position of the actuating member and that of the moving contact, if the position of the actuating member is indicated;
- deterioration of enclosures, insulating linings or barriers to such an extent that the switch cannot be further operated, or that the requirements of Clause 10 are no longer complied with;
- loosening of electrical or mechanical connections;
- seepage of sealing compound;
- relative displacement of the moving contacts of the switches.

The humidity treatment according to 16.3 is not repeated before the electric strength test of this Clause 21.

Then the test of Clause 15 shall be performed to check the interlocking mechanism.

22 Force necessary to withdraw the plug

IEC 60884-1:2022, Clause 22 is applicable except as follows:

22.1 General

Add, after the third paragraph, the following:

For switched socket-outlets with interlock with a retaining device the test is carried out with the retaining device unlocked.

23 Flexible cables and their connection

IEC 60884-1:2022, Clause 23 is not applicable.

24 Mechanical strength

IEC 60884-1:2022, Clause 24 is applicable.

25 Resistance to heat

IEC 60884-1:2022, Clause 25 is applicable.

26 Screws, current-carrying parts and connections

IEC 60884-1:2022, Clause 26 is applicable.

27 Creepage distances, clearances and distances through sealing compound

IEC 60884-1:2022, Clause 27 is applicable with the following addition:

Add the following subclause:

27.101 Additional requirement for switches incorporated in switched socket-outlets with interlock

For switches incorporated in switched socket-outlets with interlock, the creepage distances, clearances and distances through sealing compound shall be in accordance with IEC 60669-1 or IEC 60669-2-1.

Compliance is checked by measurement.

28 Resistance of insulating material to abnormal heat, to fire and to tracking

IEC 60884-1:2022, Clause 28 is applicable.

29 Resistance to rusting

IEC 60884-1:2022, Clause 29 is applicable.

30 Additional tests on pins provided with insulating sleeves

IEC 60884-1:2022, Clause 30 is not applicable.

31 EMC requirements

IEC 60884-1:2022, Clause 31 is applicable.

32 Electromagnetic fields (EMF) requirements

IEC 60884-1:2022, Clause 32 is applicable.

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Annexes

The annexes of IEC 60884-1:2022 are applicable except as follows:

Annex A (normative)

Safety-related routine tests for factory-wired portable accessories (protection against electric shock and correct polarity)

IEC 60884-1:2022, Annex A is not applicable.

Annex B (informative)

Alternative gripping tests

IEC 60884-1:2022, Annex B is not applicable.

Annex C (normative)

Switches incorporated in portable socket-outlets

IEC 60884-1:2022, Annex C is not applicable.

Annex I (normative)

Additional requirements and tests for plugs and socket-outlets for high-load (HL) application

IEC 60884-1:2022, Annex I is not applicable.

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INTERNATIONAL STANDARD

**Plugs and socket-outlets for household and similar purposes –
Part 2-6: Particular requirements for switched socket-outlets with interlock for
fixed electrical installations**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD
AND SIMILAR PURPOSES –****Part 2-6: Particular requirements for switched socket-outlets
with interlock for fixed electrical installations**

FOREWORD

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- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60884-2-6 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 1997. This edition constitutes a technical revision.

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

- a) alignment to IEC 60884-1, fourth edition.

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

Draft	Report on voting
23B/1547/FDIS	23B/1561/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be used in conjunction with IEC 60884-1:2022.

This document supplements or modifies the corresponding clauses in IEC 60884-1:2022, so as to convert that publication into the IEC standard: Particular requirements for switched socket-outlets without interlock for fixed installations.

When a particular subclause of IEC 60884-1:2022 is mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text of IEC 60884-1:2022 is to be adapted accordingly.

In this document the following print types are used:

- requirements proper: in roman type;
- *test specifications*: in italic type;
- Explanatory matter: in smaller roman type.

Subclauses, notes, figures and tables or figures which are additional to those in IEC 60884-1:2022 are numbered starting from 101.

A list of all the parts in the IEC 60884 series, under the general title *Plugs and socket-outlets for household and similar purposes*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES –

Part 2-6: Particular requirements for switched socket-outlets with interlock for fixed electrical installations

1 Scope

Replace IEC 60884-1:2022, Clause 1 with the following:

This part of IEC 60884 applies to switched socket-outlets with interlock for AC only, for fixed electrical installations, with or without earthing contact, with rated voltage above 50 V but not exceeding 440 V and a rated current not exceeding 32 A, intended for household and similar purposes, either indoors or outdoors.

Switched socket-outlets with interlock according to this document consist of a combination of socket-outlets according to IEC 60884-1, interlocked with a switch according to IEC 60669-1 and/or IEC 60669-2-1 supplied as a complete accessory.

The rated current is limited to 16 A maximum for fixed accessories provided with screwless terminals.

This document does not cover requirements for flush mounting boxes.

However, it covers those requirements for surface-type mounting boxes which are necessary for the tests on socket-outlets.

NOTE 1 General requirements for mounting boxes are covered by IEC 60670.

NOTE 2 Interlocked socket-outlets incorporating devices according to IEC 60898, IEC 61008 and IEC 61009 are not covered by this document. This document can be used as a guide for the requirements and tests of these accessories where relevant.

This document does not apply to

- interlocked socket-outlets for industrial purposes;
- interlocked socket-outlets for EV;
- interlocked socket-outlets for SELV.

Plugs and socket-outlets complying with this document are suitable for use at ambient temperatures not normally exceeding +40 °C, but their average temperature over a period of 24 h does not exceed +35 °C, with a lower limit of the ambient air temperature of –5 °C.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60884-1:2022, Clause 2 is applicable, except as follows:

Add to the list of normative references:

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

IEC 60669-2-1:2021, *Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic control devices*

IEC 60884-1:2022, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

IEC 60884-1:2022, Clause 3 is applicable, except as follows:

Addition:

3.101 interlock

device, either electrical or electronic or mechanical or a combination of these, which prevents the pins/contacts of a plug from becoming live before the plug is in proper engagement with a socket-outlet and which either prevents the plug from being withdrawn while its pin/contacts are live or makes the contacts of the socket-outlet dead before the plug is withdrawn

3.102 switched socket-outlet with interlock

factory assembled accessory consisting of a socket-outlet with an integral switching device controlling the socket-outlet, which is provided with an interlock

3.103 retaining device

mechanical arrangement which holds a plug in position when it is in proper engagement, and prevents its unintentional withdrawal

4 General requirements

IEC 60884-1:2022, Clause 4 is applicable.

5 General remarks on tests

IEC 60884-1:2022, Clause 5 is applicable, except as follows:

5.4 Additional samples

Add after the second paragraph:

For the test of Clause 15, it is possible that three additional specimens are necessary.

6 Ratings

IEC 60884-1:2022, Clause 6 is applicable.

7 Classification

IEC 60884-1:2022, Clause 7 is applicable, except as follows:

7.2 *Add the following subclauses:*

7.2.101 Switched socket-outlets with interlock are classified:

7.2.101.1 According to the method of actuating the switch:

- rotary;
- tumbler;
- rocker;
- push-button;
- touch;
- proximity;
- optical;
- acoustic;
- other external influences.

7.2.101.2 According to the number of poles of the switch:

- single-pole;
- double-pole;
- three-pole;
- three-pole with neutral.

7.2.101.3 According to the type of interlock:

- mechanical;
- electrical;
- electronic;
- a combination of any of these.

7.2.101.4 According to the retaining device:

- without device;
- with device.

8 Marking

IEC 60884-1:2022, Clause 8 is applicable, except as follows:

8.1 General

Add the following dashed list items before Note 2:

- symbol of mini-gap construction, if applicable;
- symbol of micro-gap construction, if applicable;
- symbol for semiconductor switching device, if applicable.

8.2 Symbols

Add the following dashed list items before the notes:

- Mini-gap construction m
- Micro-gap construction μ
- Semiconductor switching device..... ϵ
- "OFF" position O
- "ON" position..... I

Addition:

8.101 Identification of line terminals

Terminals of switched socket-outlets with interlock intended for the connection of the phase conductors shall be identified, unless the method of connection is of no importance or is self-evident or is indicated in a wiring diagram. Such identification may take the form of a letter L or in the case of more than one terminal, the letters L₁, L₂, L₃, etc., which may be accompanied by an arrow pointing to the relevant terminal(s).

Alternatively, the surface of such terminals shall be bare brass or copper, other terminals being covered with a metallic layer of another colour.

These indications shall not be placed on screws or any other easily removable parts.

8.102 Indication of the actual switch position

Switched socket-outlets with interlock shall be so marked that the direction of movement of the actuating member to its different positions or the actual switch position, is clearly indicated.

These indications shall be clearly visible on switched socket-outlets with interlock fitted with their cover or cover plate as for normal use. If these indications are placed on the cover or cover plate, it shall not be possible to fix the cover or cover plate in a position such that the indications are incorrect.

For indicating the direction of movement of the operating means, the symbols "O" and "I" may be used.

The short, straight line indicating the "ON" position shall be radial for rotary switches, perpendicular to the axis of rotation of the dolly for tumbler switches and rocker switches, and vertical for push-button switches when mounted vertically in its intended position.

9 Checking of dimensions

IEC 60884-1:2022, Clause 9 is applicable.

10 Protection against electric shock

IEC 60884-1:2022, Clause 10 is applicable, except as follows:

Addition:

10.101 Requirements for operating parts

Knobs, operating levers, push-buttons, rockers and the like, for operating switches in switched socket-outlets with interlock shall be of insulating material, unless their accessible metal parts are separated from the metal parts of the mechanism by double insulation or reinforced insulation, or in the case of switched socket-outlets with interlock with earthing terminals, they are reliably connected to earth.

Compliance is checked by inspection and by the tests of Clause 17 and Clause 21.

10.102 Requirements for accessible metal parts (protrusion from enclosure)

Metal parts of the switch mechanism, such as the spindle or the pivot of the dolly or rocker, that are not insulated from live parts, shall not protrude from the enclosure.

Compliance is checked by inspection. If necessary, the actuating member may be removed or broken.

If the actuating member has to be broken, compliance is checked after the test of Clause 28.

10.103 Requirements for accessible metal parts (accessibility)

Metal parts of the switch mechanism, such as the spindle or the pivot of the dolly or rocker, shall not be accessible when the switched socket-outlet with interlock is mounted as for normal use.

In addition, these metal parts shall be insulated from accessible metal parts, including metal frames supporting the base of flush-type switched socket-outlets with interlock, liable to be mounted in a metal box, and also from screws used for fixing the base to its support.

This additional requirement does not apply if the metal parts of the mechanism are separated from live parts in such a way that the creepage distances and clearances have at least twice the values specified in 27.1, or as an alternative for switched socket-outlets with interlock provided with earthing terminals, if they are reliably connected to earth.

Compliance is checked by inspection. If necessary, measurement and the tests of Clause 17 and Clause 20 may be used.

11 Provision for earthing

IEC 60884-1:2022, Clause 11 is applicable.

12 Terminals and terminations

IEC 60884-1:2022, Clause 12 is applicable.

13 Construction of fixed socket-outlets

IEC 60884-1:2022, Clause 13 is applicable, except as follows:

Addition:

13.101 Switch poles

Switches shall be constructed to match the number of poles of the socket-outlet, except that the neutral pole is not switched in unswitched neutral socket-outlets.

The earthing contact is not considered as a pole and the earth circuit shall not be switched.

The position of the switch operating member shall be such that it does not prevent, nor shall its correct operation be prevented by, the proper insertion of the corresponding plug or plugs.

Compliance is checked by inspection and by a manual test.

13.102 Attachment of knobs

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

Compliance is checked by the following test.

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

After this, knobs of switches having only one direction of operation are turned, if possible, without undue force, 100 times in the reverse direction.

During the test the knob shall not become detached.

13.103 Indication of the position

The actuating member of a switch, when released, shall automatically take up the position corresponding to that of the moving contacts, except that, for those with a single push-button, the actuating member may take up a single rest position.

13.104 Rest and intermediate position

Switches shall be so constructed that the moving contacts can come to rest only in the "ON" or "OFF" position, an intermediate position being, however, permissible if it corresponds to the intermediate position of the actuating member and if the insulation between the fixed and moving contacts is then adequate.

When in the intermediate position, the insulation between the fixed and moving contacts is checked by applying a voltage of substantially sine-wave form, having a frequency of 50 Hz or 60 Hz, for 1 min across the switch gap, the test voltage being 1 250 V for switched socket-outlets with interlock having a rated voltage up to and including 130 V, or 2 000 V for switched socket-outlets with interlock having a rated voltage exceeding 130 V.

Compliance with the requirements of 13.103 and 13.104 is checked by inspection, by manual test and for switches with the intermediate position by the electrical test in the preceding paragraph.

13.105 Undue arcing

Switches shall be constructed so that undue arcing cannot occur when the switch is operated slowly.

Compliance is checked by causing the switch, at the end of the test of Clause 21, to break the circuit a further ten times, the actuating member being moved steadily by hand over a period of 2 s and the moving contacts being stopped, if possible, in an intermediate position, the actuating member then being released.

During the test, no sustained arcing shall occur.

13.106 Making and breaking

Switched socket-outlets with interlock with switches operating more than one pole shall make and break all poles virtually simultaneously, except that for multiple switches with switched neutral, the neutral shall not make after or break before other poles.

Compliance is checked by inspection and by a manual test.

13.107 Action of the mechanism without cover or cover plate

The action of the mechanism, if the covers or cover plates are removable for installation purposes, shall be independent of the presence of the covers or cover plates.

Compliance is checked by connecting the switch, without cover or cover plate, of the switched socket-outlet with interlock in series with a lamp and by pressing the actuating member without undue force.

During the test the lamp shall not flicker.

14 Construction of plugs and portable socket-outlets

IEC 60884-1:2022, Clause 14 is not applicable.

15 Interlocked socket-outlets

IEC 60884-1:2022, Clause 15 is replaced by the following:

15.101 General

Switched socket-outlets with interlock shall be so constructed that a plug cannot be inserted into or completely withdrawn from the socket-outlet while the socket contacts are live, and the socket contacts of the socket-outlet cannot be made live until a plug is almost completely in engagement.

Compliance is checked by carrying out the tests of 15.102.1 or 15.102.2 as applicable after the test of Clause 21.

15.102 Switched socket-outlets with interlock without retaining devices

15.102.1 Switched socket-outlets with interlock without retaining devices shall be:

- so constructed that the moving contacts of the switch are mechanically coupled with the socket-outlet in such a way that, during the withdrawal of the plug, they break before or substantially at the same time as the pins of the plug are disconnected from the socket contacts of the socket-outlet;
- so designed that, after engagement with the relevant plugs the interlock operates correctly;
- so designed that the operation of the interlock is not impaired by normal wear of the plug.

Compliance is checked by the test of 15.102.2 and Clause 21.

15.102.2 Switched socket-outlets with interlock are connected as shown in Figure 101.

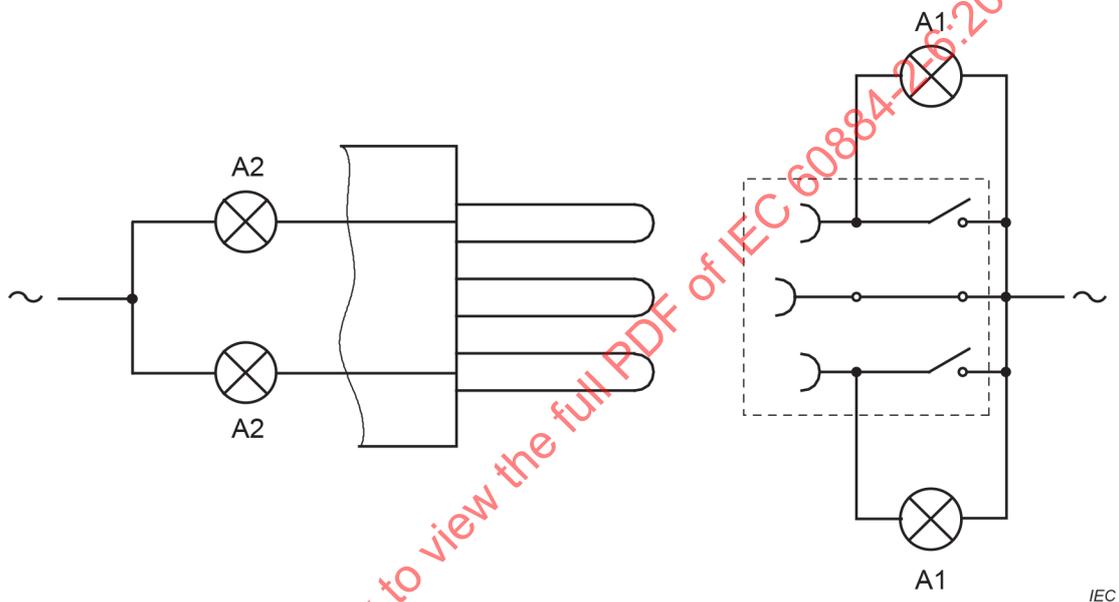


Figure 101 – Circuit for the tests of 15.101

The test is carried out as follows.

Without the plug inserted an attempt shall be made to close the switching device. The switch contacts shall not close.

This is checked by a continuity test made between the supply terminals and the contact assembly of the socket-outlet.

The plug connected as in Figure 101 is inserted and the switching device is then closed. The lamps A1 shall not light, the lamps A2 shall light.

The plug is then withdrawn slowly in the most unfavourable direction and then the lamps A1 shall light. The test is considered to be fulfilled if these conditions are met.

NOTE 1 A reduction of the brightness of the lamps A2 can occur during the time that the lamps A1 are illuminated.

NOTE 2 In case of doubt in determining the illumination time of the lamps, the test can be repeated using oscilloscopes.

The above test shall be carried out three times on each of the three specimens.

NOTE 3 For this test, specimens specially prepared by the manufacturer can be used.