

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

AMENDMENT 2  
AMENDEMENT 2

Plugs and socket-outlets for household and similar purposes –  
Part 1: General requirements

(standards.iteh.ai)

Prises de courant pour usages domestiques et analogues –  
Partie 1: Règles générales

<https://standards.iteh.ai/catalog/standards/sist/60c9cb9e-42f9-4597-b5dd-79f3f10a9410/iec-60884-1-2002-amd2-2013>



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE **XA**  
CODE PRIX

ICS 29.120.30

ISBN 978-2-83220-577-8

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## FOREWORD

This amendment has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

The text of this amendment is based on the following documents:

FDIS	Report on voting
23B/1088/FDIS	23B/1096/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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- replaced by a revised edition, or
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The contents of the corrigendum of March 2014 have been included in this copy.

[IEC 60884-1:2002/AMD2:2013](https://standards.iteh.ai/catalog/standards/sist/60cbcb9e-42f9-4597-b5dd-79f3f10a9410/iec-60884-1-2002-amd2-2013)

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## INTRODUCTION to Amendment 2

The changes listed in this Amendment 2 apply to IEC 60884-1:2002 as amended by Amendment 1:2006.

## 1 Scope

*Replace the fourth paragraph by the following new paragraph:*

This standard also applies to plugs which are a part of cord sets, to plugs and portable socket-outlets which are a part of cord extension sets and to plugs and socket-outlets which are a component of an appliance, unless otherwise stated in the standard for the relevant appliance.

*Replace the penultimate paragraph and Note 4 by the following new paragraph and Note 4 and add new Note 5 as follows:*

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

NOTE 4 Socket-outlets complying with this standard are only suitable for incorporation or mounting in equipment in such a way and in such a place that it is unlikely that the surrounding temperature exceeds 35 °C.

NOTE 5 In the following country it is required that plugs and socket-outlets complying with this standard are suitable for use at ambient temperatures not normally exceeding 35 °C, but occasionally reaching 40 °C: CN.

## 2 Normative references

*Replace "IEC 60068-2-30:1980" by "IEC 60068-2-30, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 + 12 h cycle)"*

*Replace "IEC 60068-2-32:1975" by "IEC 60068-2-31, Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens".*

*Replace "IEC 60417-2:1998" by "IEC 60417, Graphical symbols for use on equipment"*

*Add the following new normative references:*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60669 (all parts), *Switches for household and similar fixed-electrical installations*

IEC 61058 (all parts), *Switches for appliances*

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

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

## 3 Definitions

*Replace the existing definitions 3.1, 3.2, 3.4, 3.16, 3.27 and 3.33 by the following new definitions:*

### 3.1

#### **plug**

accessory intended for frequent use by ordinary persons, having pins designed to engage with the contacts of a socket-outlet, also incorporating means for the electrical connection and mechanical retention of one flexible cable

NOTE For special purposes such as lighting chains (see also IEC 60598-2-20), two or three single-core cables can be connected within the plug.

### 3.2

#### **socket-outlet**

accessory intended for frequent use by ordinary persons, having socket contacts designed to engage with the pins of a plug and having terminals or terminations for the connection of cable

### 3.4

#### **portable socket-outlet**

socket-outlet intended to be connected to or integral with one flexible cable and which can easily be moved from one place to another while connected to the supply

### 3.16

#### **screw-type terminal**

terminal for the connection and subsequent disconnection of one conductor or the interconnection and subsequent disconnection of two or more conductors, the connection being made, directly or indirectly, by means of screws or nuts of any kind

### 3.27

#### **shutter**

movable part incorporated into a socket-outlet arranged to shield at least the live socket contacts automatically when the plug is withdrawn

### 3.33

#### **main part**

assembly consisting of the base and other parts. This assembly is not intended to be dismantled at any time after manufacture

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Add, after the existing definition 3.33, the following new definitions:  
<https://standards.iteh.ai/catalog/standards/sist/60cb48e-42f9-4597-b5dd-79f3f10a9410/iec-60884-1-2002-amd2-2013>

### 3.34

#### **grommet**

component used to support and protect the cable or conduit at the point of entry

NOTE 1 It may also prevent the ingress of moisture or contaminants.

NOTE 2 Examples of membranes and grommets are shown in Figure 45.

### 3.35

#### **entry membrane**

component or integral part of the accessory used to protect the cable which may be used to support the cable or conduit at the point of entry

NOTE 1 An entry membrane may also prevent the ingress of moisture or contaminants and may be part of a grommet.

NOTE 2 Examples of membranes and grommets are shown in Figure 45.

### 3.36

#### **protecting membrane**

component or integral part of the accessory that is not intended to be penetrated in normal use and is intended to provide protection against ingress of water or solid objects and/or to allow the operation of an accessory

NOTE Examples of membranes and grommets are shown in Figure 45.

## 4 General requirements

Replace the first paragraph by the following new paragraph:

Accessories and boxes of surface mounting accessories shall be so designed and constructed that, in normal use, their performance is reliable and safety is achieved by reducing risk to a tolerable level, as defined in ISO/IEC Guide 51.

## 5 General remarks on tests

### 5.2

Add, at the end of the subclause, the following paragraph:

The fixing screws of terminals, covers and cover plates shall be tightened with a torque equal to two-thirds of the values specified in Table 6 unless otherwise specified.

### 5.4





Add, at the end of the first paragraph, the following sentence:

For the test of 10.6, three additional specimens are required.

## 6 Ratings

**Table 1 – Preferred combinations of types and ratings**

Replace the existing Table 1 by the following new Table 1:

Type	Rated voltage V	Rated current A
2P (non-rewirable plugs only)	130 or 250	2,5
2P (plugs only)	130 or 250	6
2P 2P + 	130 or 250	10 13 16 32
2P +  3P +  3P + N + 	440	10 13 16 32
NOTE Standardized values and configurations of existing systems are reported in IEC 60083.		

Replace the note below the table as follows:

NOTE In the following countries fixed 2P socket-outlets are not allowed: AT, BR CH, DE, FR, IT.

### 6.3

Delete this subclause.

## 7 Classification

### 7.1.1

*Replace the existing subclause as follows:*

**7.1.1** Accessories are classified according to the degree of protection against access to hazardous parts and against harmful effects due to the ingress of solid foreign object as described in IEC 60529.

### 7.1.2

*Replace the existing subclause as follows:*

**7.1.2** Accessories are classified according to the degree of protection against harmful effects due to the ingress of water as described in IEC 60529.

### 7.1.5

*Add, at the end of this subclause, the following new Note:*

NOTE In the following country accessories with screwless terminals for rigid conductors only are not allowed: IT.

### 7.2.4

*Replace the existing Note by the following new Note:*

NOTE If a fixed socket-outlet has a base which cannot be separated from the cover or cover-plate, and requires a supplementary plate to meet the standard which can be removed for redecorating the wall without displacement of the conductors, it is considered to be of design A, provided the supplementary plate meets the requirements specified for covers and cover-plates.

## 7.3 Plugs classification

*Replace the existing text of this subclause by the following new text:*

Plugs are classified according to the class of equipment to which they are intended to be connected:

- plugs for equipment of class I;
- plugs for equipment of class II.

For the description of the classes of equipment, see IEC 61140.

NOTE This standard does not apply to plugs for equipment of class 0.

## 8 Marking

### 8.1

*Add, after the fifth dashed item, the following new Note 1:*

NOTE 1 The type reference may be the series reference only.

*Replace the existing sixth and seventh dashed items by the following:*

- first characteristic numeral for the degree of protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects, if declared to be higher



than 2, and for fixed socket-outlets higher than 4 in which case the second characteristic numeral shall also be marked;

- second characteristic numeral for the degree of protection against harmful effects due to ingress of water, if declared to be higher than 0, and for fixed socket-outlets higher than 2 in which case the first characteristic numeral shall also be marked.

*Renumber the existing Note 1 as Note 2 and delete the existing Note 2.*

## 8.2

*Add, after the symbol of protective earth, the following reference:*

(IEC 60417-5019 (2006-08))

*Replace, in Note 1, "IEC 60417-2" by "IEC 60417".*

## 8.3

*Delete, in the third dashed item, the words "if any".*

*Add, after the third dashed item, the following new dashed item:*

- an indication of the suitability to accept rigid conductors only for screwless terminals for those socket-outlets having this restriction;

## 8.6

*Replace the existing subclause by the following new subclause:*

**8.6** For surface-type mounting boxes forming an integral part of socket-outlets having an IP code higher than IP4X, or higher than IPX2, the IP code shall be marked on the outside of its associated enclosure so as to be easily discernible when the socket-outlet is mounted and wired as in normal use.

## 8.8

*Replace the first paragraph of this subclause by the following:*

The marking shall be durable and clearly legible with normal or corrected vision, without additional magnification.

## 9 Checking of dimensions

### 9.2

*Replace the third dashed item by the following new dashed item:*

- a socket-outlet with earthing contact, if the existing plug of the present national system is a plug for class 0 equipment.

*Replace the second paragraph by the following new paragraph:*

It shall not be possible to engage existing plugs on the present national system for equipment of class 0 or of class I with a socket-outlet exclusively designed to accept plugs for class II equipment.

## 10 Protection against electric shock

### 10.1

*Replace the first paragraph by the following new paragraph:*

Fixed socket-outlets, plugs when engaged and portable socket-outlets shall be so designed and constructed that when they are mounted and/or wired as for normal use, live parts are not accessible, even after removal of parts which can be removed without the use of a tool.

### 10.2

*Replace the word "bases" by the words "main parts".*

*Delete the words "plugs and".*

#### 10.2.1

*Replace, in the first paragraph, the words "Metal covers or cover-plates" by "Accessible metal parts", twice.*

#### 10.2.2

*Replace, in the first paragraph, the words "Metal covers or cover-plates are automatically connected" by "Accessible metal parts are reliably connected".*

### 10.4

*Replace, in the first paragraph "10.2" by "10.2.1 or 10.2.2".*

*Replace the last paragraph by the following new paragraph:*

*Compliance is checked by inspection and by the tests of 10.2.1 or 10.2.2.*

### 10.5

*Add, after the third paragraph, the following new paragraph:*

Shutters shall be so designed that a plug is inserted with the same movement in a socket-outlet with shutters as in a socket-outlet without shutters.

### 10.7

*Replace the first two paragraphs by the following new paragraphs and add a new note after the first paragraph, as follows:*

Socket-outlets with or without lid, classified according to 7.2.1 b), shall be so constructed that, when mounted and wired as in normal use, live parts shall not be accessible with a test wire of 1 mm in diameter (see Figure 10).

NOTE In the following countries the increased protection is considered fulfilled when the lid (spring loaded) is closed: CH, DE.

*Compliance is checked by applying with a test wire of 1,0 mm in diameter (see Figure 10) a force of 1 N on all accessible surfaces in the most unfavourable conditions without a plug inserted with the lid, if any, open.*

## 11 Provision for earthing

### 11.2

Delete the fourth paragraph.

### 11.3

Replace Note 1 by the following new Note 1:






NOTE 1 This requirement does not apply to the accessible metal parts mentioned in 10.2.1.








Replace in Note 2 the word "bases" by the words "main parts".

## 12 Terminals and terminations

**Table 3 – Relationship between rated current and connectable nominal cross-sectional areas of copper conductors**

Replace the entire existing Table 3 by the following new Table 3:

Current and type of accessory	Rigid (solid or stranded) copper conductors <sup>c</sup>		Flexible copper conductors	
	Nominal cross-sectional area mm <sup>2</sup>	Diameter of the largest conductor mm	Nominal cross-sectional area mm <sup>2</sup>	Diameter of the largest conductor mm
6 A	–	–	From 0,75 up to 1,5 inclusive	1,73
10 A 3P+N+  (fixed accessory)	From 1 up to 2,5 inclusive <sup>a</sup>	2,13	From 1 up to 2,5 inclusive	2,21
10 A 3P+N+  (portable accessory)	–	–	From 0,75 up to 2,5 inclusive	1,73
10 A and 13 A 2P and 2P+  (fixed accessory)	From 1 up to 2,5 inclusive <sup>ab</sup>	2,13	From 1 up to 2,5 inclusive <sup>ab</sup>	2,21
10 A and 13 A 2P and 2P+  (portable accessory)	–	–	From 0,75 up to 1,5 inclusive	1,73
13 A 2P and 2P+  (fixed accessory) (Socket-outlets for fused plugs)	From 1,5 up to 3 × 2,5 <sup>b</sup> From 1,5 up to 2 × 4 <sup>b</sup>	2,72	From 1,5 up to 3 × 2,5 <sup>b</sup> From 1,5 up to 2 × 4 <sup>b</sup>	2,72

Current and type of accessory	Rigid (solid or stranded) copper conductors <sup>c</sup>		Flexible copper conductors	
	Nominal cross-sectional area mm <sup>2</sup>	Diameter of the largest conductor mm	Nominal cross-sectional area mm <sup>2</sup>	Diameter of the largest conductor mm
13 A 2P and 2P+  (portable accessory) (fused plugs)	–	–	From 0,5 up to 1,5	1,73
16 A 2P and 2P +  (fixed accessory)	From 1,5 up to 2 × 2,5 inclusive	2,13	–	–
16 A 2P and 2P +  (portable accessory)	–	–	From 0,75 up to 1,5 inclusive	1,73
16 A other than 2P and 2P +  (fixed accessory)	From 1,5 up to 4 inclusive	2,72	–	–
16 A other than 2P and 2P +  (portable accessory)	From 1,5 up to 4 inclusive	2,72	From 1 up to 2,5 inclusive	2,21
25A 2P +  (fixed accessory)	From 2,5 up to 6 inclusive	3,47	–	–
25A 2P +  (portable accessory)	–	–	From 2,5 up to 6 inclusive	3,05
32 A (fixed accessory)	From 2,5 up to 10 inclusive	4,32	–	–
32 A (portable accessory)	–	–	From 2,5 up to 6 inclusive	3,87

<sup>a</sup> The terminal shall allow the connection of two 1,5 mm<sup>2</sup> conductors which have a diameter of 1,45 mm.  
<sup>b</sup> Some countries require the looping-in of three conductors of 2,5 mm<sup>2</sup>, or two conductors of 4 mm<sup>2</sup>.  
<sup>c</sup> The use of flexible conductors is permitted.

**12.3.7**

Replace the first and the second dashed items by the following new dashed items:

- the clamping of one of the conductors is independent of the clamping of the other conductor(s);
- during the connection or disconnection the conductors can be connected or disconnected either at the same time or separately.

**12.3.8**

*Delete the Note.*

*Replace the last paragraph by the following new paragraph:*

*Compliance is checked by inspection.*

**12.3.11**

*Replace the existing Table 10 by the following new Table 10:*

Rated current A	Test current A	Nominal cross-sectional area of the conductor mm <sup>2</sup>
10 and 13	17,5	1,5
16	22	2,5

NOTE For socket-outlets having rated currents lower than 10 A, the test current is proportionally determined and the cross-sectional area of the conductors is 1,5 mm<sup>2</sup>.

*Replace the fifth paragraph of b) by the following new paragraph:*

*The voltage drop in each screwless terminal is determined as prescribed for the test of a) and is done at the following moments:*

- *after the first 24 temperature cycles and after the 192<sup>nd</sup> temperature cycle;*
- *additional measurements shall be carried out after any 3 of the following temperature cycles: after the 48<sup>th</sup>, 72<sup>nd</sup>, 96<sup>th</sup>, 120<sup>th</sup>, 144<sup>th</sup> or 168<sup>th</sup> temperature cycles.*

**Table 12 – Deflection test forces**

*Replace the title of Table 12 by the following new title:*

**Table 12 – Deflection test forces for screwless terminals****13 Construction of fixed socket-outlets****13.1**

*Add, after the first paragraph, the following new paragraph:*

Parts of socket contact assemblies, which will be in contact with the portion of the pin intended to make electrical contact when the plug is fully inserted in the socket-outlet shall ensure metallic opposing contacts at least on two sides of each pin.

**13.2**

*Replace the second paragraph by the following new paragraphs and new note:*

Socket contacts and pin(s) of socket-outlets, which are made of copper or copper alloy, as specified in 26.5, are considered as complying with this requirement.

*Compliance is checked by inspection or by chemical analysis, if necessary.*

The pin(s) of socket-outlets shall be constructed in such a way that the mechanical strength of the pin(s) does not depend on the plastic material.

NOTE In certain designs the pin(s) of the accessories are hollow and filled with plastic.

*Compliance is checked by inspection and in case of doubt by the tests of 14.2 and Clause 21 on a new set of specimens without plastic.*

#### 13.4

*Replace the entire subclause by the following new subclause:*

#### 13.4 Socket-outlets shall be so constructed as to permit

- easy introduction into the terminal and reliable connection of the conductors in the terminals, except for lead wires of pilot lights;

NOTE 1 Screw terminals as shown in Figures 2 to 5 are considered suitable for reliable connection of the conductors.

- easy fixing of the main part to a wall or in a mounting box;
- correct positioning of the conductors;
- adequate space between the underside of the main part and the surface on which the main part is mounted or between the sides of the main part and the enclosure (cover or box) so that, after installation of the socket-outlet, the insulation of the conductors is not necessarily pressed against live parts of different polarity.

NOTE 2 This requirement does not imply that the metal parts of the terminal 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.

For surface type socket-outlets to be mounted on a mounting plate, a wiring channel may be needed to comply with this requirement.

*Compliance is checked by inspection and by an installation test with conductors of the largest nominal cross-sectional area specified in Table 3.*

In addition, for socket-outlets having screwless terminals, the socket-outlets shall be so constructed that the connecting and/or disconnecting means of the screwless terminals cannot be activated by the conductors during and after installation of the socket-outlet in a box or on a wall.

NOTE 3 This requirement does not imply that the connecting and/or disconnecting means cannot be touched by the conductors.

NOTE 4 This requirement may be met by the placement of the connecting and/or disconnecting means and/or the use of protective barriers or shoulders placed around the connecting and/or disconnecting means.

*Compliance is checked by inspection and in case of doubt by the following test.*

*The test is carried out with a solid copper conductor having the smallest cross-sectional area, as specified in 12.3.2.*

*The conductor is pushed as far as possible into the terminal under test or is inserted so that adequate connection is obvious.*

*A test probe according to IEC 61032 test probe 1 is pushed against the connecting or disconnecting means with a force of 120 N in the direction opposite to the mounting direction as described in Figure 46a.*

*During the application of the force, the conductor, except for lead wires of pilot lights, is subjected to a pull of 30 N; the pull is applied in one smooth and continuous motion, for 1 min, in the direction of the longitudinal axis of the conductor space.*

*During the application of the pull, the conductor shall not come out of the screwless terminal.*

*The force of 120 N has to be applied before the force of 30 N is applied. The force of 30 N is maintained on the conductor during the complete test.*

*Care shall be taken that the test probe does not touch the conductor during the application of the forces.*

*Where the axis between the application force and the axis through the force necessary to operate the connecting/disconnecting means deviates by more than 20°, it is allowed to exert the calculated resulting force directly onto the connecting/disconnecting means using the test probe; an example is shown in Figure 46b.*

*If the angle is greater than 60° no test is necessary and the product is deemed to comply with the requirements without further tests.*

*If it is not possible to exert a force onto the connecting/disconnecting device, the product is deemed to comply with the requirements without further tests.*

In addition, socket-outlets classified as design A shall permit easy positioning and removal of the cover or cover-plate, without displacing the conductors or activating the connecting and/or disconnecting means of screwless terminals.

NOTE 5 This requirement does not imply that the connecting and/or disconnecting means cannot be touched by the cover or cover plate.

*Compliance is checked by inspection and by an installation test with conductors of the largest nominal cross-sectional area specified in Table 3.*

### **13.7**

*Replace in the third paragraph the word "base" by the words "main part".*

### **13.9**

*Replace the second paragraph by the following new paragraph:*

Drain holes, small gaps between enclosures or boxes and conduits, cables, or earthing contacts, if any, or between enclosures or boxes and grommets or membranes and knockouts are neglected provided they do not compromise the declared IP rating.

### **13.16**

*Replace the second paragraph by the following new paragraph:*

Surface-type socket-outlets having a degree of protection from IPX4 to IPX6 shall have provision for opening a drain hole.

### **13.18**

*Replace the existing subclause by the following new subclause:*

**13.18** Earthing contacts, phase contacts and neutral contacts shall be locked against rotation.