INTERNATIONAL STANDARD

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Plugs and socket-outlets for household and similar purposes –

Part 1: General requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES –

Part 1: General requirements

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 60884-1 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

This consolidated version of IEC 60884-1 consists of the third edition (2002) [documents 23B/658/FDIS and 23B/664/RVD] and its amendment 1 (2006) [documents 23B/816/FDIS and 23B/821/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 3.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

Annexes A and B form an integral part of this standard.

Annex C is for information only.

IEC 60884-1 consists of the following parts, under the general title *Plugs, and socket-outlets for household and similar purposes*:

– Part 1: General requirements
– Part 2-1: Particular requirements for fused plugs,
– Part 2-2: Particular requirements for socket-outlets for appliances
– Part 2-3: Particular requirements for switched socket-outlets without interlock for fixed installations
– Part 2-4: Particular requirements for plugs and socket-outlets for SELV
– Part 2-5: Particular requirements for adaptors
– Part 2-6: Particular requirements for switched socket-outlets with interlock for fixed installations

NOTE In this standard, the following print types are used.

– Requirements proper: in roman type;
– *Test specification: in italic type;*
– Explanatory matter: in smaller roman type.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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,
- withdrawn,
- replaced by a revised edition, or
- amended.

PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES –

Part 1: General requirements

1 Scope

This part of IEC 60884 applies to plugs and fixed or portable socket-outlets for a.c. only, with or without earthing contact, with a rated voltage greater than 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.

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

This standard does not cover requirements for flush mounting boxes; however, it covers only those requirements for surface-type mounting boxes which are necessary for the tests on the socket-outlet.

NOTE 1 General requirements for mounting boxes are given in IEC 60670.

This standard also applies to plugs incorporated in cord sets, to plugs and portable socket-outlets incorporated in 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.

This standard does not apply to

– plugs, socket-outlets and couplers for industrial purposes;

– appliance couplers;

– plugs, fixed and portable socket-outlets for ELV;

NOTE 2 ELV values are specified in IEC 60364-4-41.

– fixed socket-outlets combined with fuses, automatic switches, etc.

NOTE 3 Socket-outlets with pilot lights are allowed provided that pilot lights comply with the relevant standard, if any.

Plugs and fixed or portable socket-outlets complying with this standard are suitable for use at ambient temperatures not normally exceeding 25 °C, but occasionally reaching 35 °C.

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

In locations where special conditions prevail, such as in ships, vehicles and the like and in hazardous locations, for example where explosions are liable to occur, special constructions may be required.

2 Normative references

The following referenced documents are indispensable for the application 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 60050-151:2001, *International Electrotechnical Vocabulary – Part 151: Electrical and magnetic devices*

IEC 60050-442:1998, *International Electrotechnical Vocabulary – Part 442: Electrical accessories*

IEC 60050-826:1982, *International Electrotechnical Vocabulary – Part 826: Electrical installations of buildings*

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60068-2-32:1975, *Environmental testing – Part 2: Tests – Test Ed: Free fall (Procedure 1)*

IEC 60112:1979, *Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60417-2:1998, *Graphical symbols for use on equipment – Part 2: Symbol originals*

IEC 60423:1993, *Conduits for electrical purposes – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529:2001, *Degrees of protection provided by enclosures (IP Code)*

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60884-2-6:1997, *Plugs and socket-outlets for household and similar purposes – Part 2-6: Particular requirements for switched socket-outlets with interlock for fixed electrical installations*

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61140:2001, *Protection against electric shock – Common aspects for installation and equipment*

ISO 1456:1988, *Metallic coatings – Electrodeposited coatings of nickel plus chromium and of copper plus nickel plus chromium*

ISO 1639:1974, *Wrought copper alloys – Extruded sections – Mechanical properties* 1)

ISO 2039-2:1987, *Plastics – Determination of hardness – Part 2: Rockwell hardness*

ISO 2081:1986, *Metallic coatings – Electroplated coatings of zinc on iron or steel*

ISO 2093:1986, *Electroplated coatings of tin – Specification and test methods*

1) Withdrawn

3 Definitions

For the purposes of this part of IEC 60884, the definitions given in IEC 60050(151) as well as the following definitions apply.

NOTE 1 Where the terms "voltage" and "current" are used, they imply r.m.s. values, unless otherwise specified.

NOTE 2 Throughout this standard the word "earthing" is used for “protective earthing”.

NOTE 3 The term "accessory" is used as a general term covering plugs and socket-outlets; the term "portable accessory" covers plugs and portable socket-outlets. Examples of the use of accessories are shown in figure 1a.

NOTE 4 Throughout this standard the term "socket-outlet" covers both fixed and portable socket-outlets, except where the reference is specific to one type or the other.

3.1
plug
accessory having pins designed to engage with the contacts of a socket-outlet, also incorporating means for the electrical connection and mechanical retention of flexible cable

3.2
socket-outlet
accessory having socket-contacts designed to engage with the pins of a plug and having terminals for the connection of cable

3.3
fixed socket-outlet
socket-outlet intended to be connected to fixed wiring

3.4
portable socket-outlet
socket-outlet intended to be connected to, or integral with, the flexible cable and which can easily be moved from one place to another while connected to the supply

3.5
multiple socket-outlet
combination of two or more socket-outlets

NOTE An example is shown in figure 1b.

3.6
socket-outlet for appliances
socket-outlet intended to be built in, or fixed to, appliances

3.7
rewirable plug or rewirable portable socket-outlet
accessory so constructed that the flexible cable can be replaced

3.8
non-rewirable plug or non-rewirable portable socket-outlet
accessory so constructed that it forms a complete unit with the flexible cable after connection and assembly by the manufacturer of the accessory (see also 14.1)

3.9
moulded-on accessory
non-rewirable portable accessory, the manufacture of which is completed by insulating material moulded around pre-assembled component parts and the terminations for the flexible cable

[IEV 442-01-14, modified]

3.10
mounting box
box intended for mounting in or on a wall, floor or ceiling, etc., for flush or surface application, intended for use with fixed socket-outlet(s)

3.11
cord set
assembly consisting of one flexible cable fitted with one plug and one single connector, intended for the connection of an electrical appliance to the electrical supply

3.12
cord extension set
assembly consisting of one flexible cable fitted with one plug and one single or multiple portable socket-outlet

3.13
terminal
insulated or non-insulated connecting device intended for reusable electrical connection of the external conductors

3.14
termination
insulated or non-insulated connecting device intended for non-reusable electrical connection of the external conductors

3.15
clamping unit
part or parts of a terminal necessary for the mechanical clamping and the electrical connection of the conductor(s)

3.16
screw-type terminal
terminal for the connection and subsequent disconnection of a conductor or the interconnection of two or more conductors, capable of being dismantled, the connection being made, directly or indirectly, by means of screws or nuts of any kind

3.17
pillar terminal
screw-type terminal in which the conductor is inserted into a hole or cavity, where it is clamped under the end of the screw or screws. The clamping pressure may be applied directly by the end of the screw or through an intermediate clamping member to which pressure is applied by the end of the screw

NOTE Examples of pillar terminals are shown in figure 2.

3.18
screw terminal
screw-type terminal in which the conductor is clamped under the head of the screw.

The clamping pressure may be applied directly to the head of a screw or through an intermediate part, such as a washer, clamping plate or anti-spread device

NOTE Examples of screw terminals are shown in figure 3.

3.19
stud terminal
screw-type terminal in which the conductor is clamped under a nut. The clamping pressure may be applied directly by a suitably shaped nut or through an intermediate part, such as a washer, clamping plate or anti-spread device

NOTE Examples of stud terminals are shown in figure 3.

3.20
saddle terminal
screw-type terminal in which the conductor is clamped under a saddle by means of two or more screws or nuts

NOTE Examples of saddle terminals are shown in figure 4.

3.21
mantle terminal
screw-type terminal in which the conductor is clamped against the base of a slot in a threaded stud by means of a nut. The conductor is clamped against the base of the slot by a suitably shaped washer under the nut, by a central peg if the nut is a cap nut, or by equally effective means for transmitting the pressure from the nut to the conductor within the slot

NOTE Examples of mantle terminals are shown in figure 5.

3.22
screwless terminal
connecting device for the connection and subsequent disconnection of a rigid (solid or stranded) or flexible conductor or the interconnection of two or more conductors, capable of being dismantled, the connection being made, directly or indirectly, by means of springs, parts of angled, eccentric or conical form, etc., without special preparation of the conductor concerned, other than removal of insulation

3.23
thread-forming screw
screw having an uninterrupted thread, which by screwing in, forms a thread by displacing material

NOTE An example of a thread-forming screw is shown in figure 6.

3.24
thread-cutting screw
screw having an interrupted thread, which by screwing in, forms a thread by removing material

NOTE An example of a thread-cutting screw is shown in figure 7.

3.25
rated voltage
voltage assigned to the plug or socket-outlet by the manufacturer, which will be that specified in the standard sheet, if any

3.26
rated current
current assigned to the plug or socket-outlet by the manufacturer, which will be that specified in the standard sheet, if any

3.27
shutter
movable part incorporated into a socket-outlet arranged to shield at least the live socket-outlet contacts automatically when the plug is withdrawn

3.28
type test
test of one or more devices made to a certain design to show that the design meets certain specifications

3.29
routine test
test to which each individual device is subjected during and/or after manufacture to ascertain whether it complies with certain criteria

3.30
base
part of the socket-outlet supporting the socket-contacts

3.31
live part
conductor or conductive part intended to be energized in normal use, including a neutral conductor, but, by convention, not a PEN conductor

[IEV 826-03-01]

3.32
cable anchorage
that part of an accessory which has the ability to limit the displacement of a fitted flexible cable against pull, push and turning forces

3.33
main part
part carrying the socket contacts

4 General requirements

Accessories and surface-type mounting boxes shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or the surroundings within the meaning of this standard.

Compliance is checked by meeting all the relevant requirements and tests specified.

5 General remarks on tests

5.1 *Tests shall be made to prove compliance with the requirements laid down in this standard, where applicable.*

Tests are made as follows:

– *type tests shall be made on representative specimens of each accessory;*

– *routine tests shall be made on each accessory manufactured according to this standard, where applicable.*

Subclauses 5.2 to 5.5 are applicable to type tests and 5.6 to routine tests.