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INTERNATIONAL STANDARD

colour inside

Electrical accessories – Cord sets and interconnection cord sets

IEC 60799:2018-03 RLV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL ACCESSORIES – CORD SETS AND INTERCONNECTION CORD SETS

FOREWORD

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International Standard IEC 60799 has been prepared by subcommittee 23G: Appliance couplers, of IEC technical committee 23: Electrical accessories.

This third edition cancels and replaces the second edition published in 1998. This edition constitutes a technical revision.

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

a) alignment with IEC 60320-1:2015;

b) extension to include appliance couplers in accordance with IEC 60320-2-3:–[1].

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

FDIS	Report on voting
23G/393/FDIS	23G/397/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.

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

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- withdrawn,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

IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

[1] Under preparation. Stage at the time of publication: IEC/FDIS 60320-2-3:2018.

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ELECTRICAL ACCESSORIES – CORD SETS AND INTERCONNECTION CORD SETS

1 Scope

This document specifies requirements for cord sets and interconnection cord sets for household and similar general purpose equipment.

It does not apply to cord sets for industrial purposes (with plugs and connectors according to IEC 60309) nor to cord extension sets.

NOTE Although electrical supply flexes provided with rewirable plugs and connectors are not cord sets in the sense of this document, but considered as being similar to cord sets and serving the same purpose, ~~it is recommended to apply~~ the requirements as specified in this document are also applicable to such assemblies as well as far as is reasonable.

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 60050(151):1978, *International Electrotechnical Vocabulary – Chapter 151: Electrical and magnetic devices*~~

IEC TR 60083~~:1997~~, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

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 60320-1~~:1994~~, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

~~IEC 60320-2-2:1990, *Appliance couplers for household and similar general purposes – Part 2: Interconnection couplers for household and similar equipment*~~

IEC 60320-2-3, *Appliance coupler for household and similar general purposes – Part 2-3: Appliance coupler with a degree of protection higher than IPX0*

~~IEC 60536:1976, *Classification of electrical and electronic equipment with regard to protection against electric shock*~~

IEC 60884-1~~:1994~~, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*
~~Amendment 1 (1994)~~
~~Amendment 2 (1995)~~

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

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3 Terms and definitions

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

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

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

3.1
cord set
assembly consisting of one flexible cable or cord fitted with one non-rewirable plug and one non-rewirable connector, intended for the connection of an electrical appliance or equipment to the electrical supply

3.2
interconnection cord set
assembly consisting of one cable or cord fitted with one non-rewirable plug connector and one non-rewirable connector, intended for the interconnection ~~of the electrical supply from one electrical appliance or equipment to another~~ between two electrical appliances

~~NOTE 1 – The definitions of non-rewirable plug and non-rewirable connector are given in IEC 60884-1 and IEC 60320-1 respectively.~~

~~NOTE 2 – The difference between a cord set or an interconnection cord set and a cord extension set is that the latter has a portable socket-outlet instead of a connector and cannot be used to connect appliances or equipment directly to the electrical supply.~~

~~NOTE 3 – Non-rewirable plugs attached to a length of cord, sometimes called incomplete cord sets, are covered by IEC 60884-1.~~

[SOURCE: IEC 60050-442:1998, 442-07-06, modified – "a" has been changed to "one" in two places, "flexible cable" has been replaced by "cable", and "between two electrical appliances" replaces "of the electrical supply from one electrical appliance or equipment to another".]

3.3
non-rewirable accessory
accessory so constructed that it forms a complete unit with flexible supply cable or cord after connection and assembly by the manufacturer of the accessory

3.4
type test
test of one or more devices made to a certain design to show that the design meets certain ~~specifications~~ requirements

[SOURCE: ~~IEV 151-04-15~~ IEC 60050-811:1991, 811-10-04, modified – In the definition, "requirements" has replaced "specifications".]

3.5
routine test
test to which each individual device is subjected during and/or after manufacture to ascertain whether it complies with certain criteria

[SOURCE: ~~IEV 151-04-16~~ IEC 60050-811:1991, 811-10-05, modified – In the definition, "and/or" has replaced "or".]

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4 General requirements

Cord sets and interconnection cord sets shall be so designed and constructed that in normal use their performance is reliable and without danger to the user or surroundings.

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

Tests are as follows:

- type tests are made on representative samples of each cord set and interconnection cord set;
- routine tests are made on each cord set and interconnection cord set manufactured to this document, where applicable.

NOTE Routine tests are specified in Annex A.

5 Requirements

5.1 Requirements for component parts

The plug of a cord set shall comply with the requirements of IEC 60884-1.

The connector of a cord set or an interconnection cord set shall comply with the requirements of IEC 60320-1.

The plug connector of an interconnection cord set shall comply with the requirements of ~~IEC 60320-2-2~~ IEC 60320-1.

The connector, with a degree of protection higher than IPX0, of a cord set or an interconnection cord set shall comply with the requirements of IEC 60320-2-3.

The plug connector, with a degree of protection higher than IPX0, of an interconnection cord set shall comply with the requirements of IEC 60320-2-3.

The cord of a cord set or interconnection cord set shall comply with the requirements of ~~IEC 60227 or IEC 60245~~ relevant IEC standards.

Compliance with the requirements for plugs, connectors, plug connectors and cords is checked by the tests specified in the relevant standards. During the test of one component, the influence on the other components of the assembly is ignored.

~~The end of a stranded conductor shall not be consolidated by soft soldering at places where the conductor is subject to contact pressure unless the clamping means is designed so as to obviate the risk of a bad contact due to cold flow of the solder.~~

5.2 Requirements for the assembly

5.2.1 Rated voltage

The rated voltage of the connector and the cord shall be not less than the rated voltage of the plug. For interconnection cord sets, the rated voltage of the connector and the plug connector shall be the same.

5.2.2 Rated current

The rated current of the plug or plug connector shall be not less than the rated current of the connector.

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5.2.3 Class of equipment

The plug and the connector shall be of a type intended for the connection of the same class of equipment, as given in ~~IEC 60536~~ IEC 61140.

A cord set comprising a connector for class II equipment may, however, comprise a plug ~~for class I equipment~~ with three pins according to IEC TR 60083 or to other three-pin systems.

5.2.4 Marking

Plugs, connectors and plug connectors shall be marked as specified in the relevant standards.

Cord sets and interconnection cord sets that are not delivered together with an appliance and of which the plug or the plug connector and the connector have not been made by the same manufacturer shall, in addition, be marked with either the name, trademark or identification mark of the maker of the complete cord set or interconnection cord set or of the responsible vendor.

This marking shall not only be put on the package.

NOTE The marking of the name, trademark or identification mark of the maker or responsible vendor ~~may~~ can, for example, be applied on a sleeve provided around the cord set.

Plugs, connectors, cord sets or interconnection cord sets for the connection of class II equipment shall not be marked with the symbol for class II construction (the double square).

5.2.5 Type of cord

The cord of a cord set or interconnection cord set shall be not lighter than the type and have a cross-sectional area not less than those specified in Table 1, depending on the type of connector incorporated in the cord set or interconnection cord set.

NOTE A cord of a lower IEC code designation is lighter than a cord of a higher code designation. For example, 60227 IEC 42 is lighter than 60227 IEC 53.

Table 1 – Types of cords for cord sets and interconnection cord sets

~~Connector~~			~~Lightest type of flexible cable or cord~~		~~Minimum cross-sectional area~~	
~~Rated current A~~	~~Class of equipment~~	~~For conditions~~			~~mm²~~	
~~0,2~~	~~II~~	~~Cold~~		~~60227 IEC 41~~		~~1)~~
~~2,5~~	~~I~~	~~Cold~~		~~60227 IEC 52~~	~~0,75~~	
~~2,5~~	~~II~~	~~Cold~~		~~60227 IEC 52~~	~~0,75~~	~~2)~~
~~6~~	~~II~~	~~Cold~~		~~60227 IEC 52~~	~~0,75~~	
~~10~~	~~I~~	~~Cold~~		~~60227 IEC 53~~	~~0,75~~	~~3)~~
			~~or~~	~~60245 IEC 53~~	~~0,75~~	~~3)~~
~~10~~	~~I~~	~~Hot or very hot~~		~~60245 IEC 53~~	~~0,75~~	~~3)~~
			~~or~~	~~60245 IEC 51~~	~~0,75~~	~~3)~~
~~10~~	~~II~~	~~Cold~~		~~60227 IEC 53~~	~~0,75~~	~~3)~~
			~~or~~	~~60245 IEC 53~~	~~0,75~~	~~3)~~
~~16~~	~~I~~	~~Cold~~		~~60227 IEC 53~~	~~1~~	~~3)~~
			~~or~~	~~60245 IEC 53~~	~~1~~	~~3)~~
~~16~~	~~I~~	~~Very hot~~		~~60245 IEC 53~~	~~1~~	~~3)~~
			~~or~~	~~60245 IEC 51~~	~~1~~	~~3)~~
~~16~~	~~II~~	~~Cold~~		~~60227 IEC 53~~	~~1~~	~~3)~~
			~~or~~	~~60245 IEC 53~~	~~1~~	~~3)~~

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~~1) See 5.2.6.~~

~~2) If the cord has a length not exceeding 2 m, a nominal cross-sectional area of 0,5 mm² is allowed.~~

~~3) If the cord has a length exceeding 2 m, nominal cross-sectional areas shall be~~

~~– 1 mm² for 10 A cord sets and interconnection cord sets;~~

~~– 1,5 mm² for 16 A cord sets and interconnection cord sets.~~

Type of connector	Type of cord[a]	Nominal cross-sectional area
		mm²
0,2 A	60227 IEC 41[b]	–
2,5 A for class I equipment	60227 IEC 52	0,75
2,5 A for class II equipment	60227 IEC 52	0,75[c]
6 A	60227 IEC 52	0,75
10 A for cold conditions	60227 IEC 53 or 60245 IEC 53	0,75[d]
10 A for hot conditions	60245 IEC 53 60245 IEC 89	0,75[d]
10 A for very hot conditions	60245 IEC 53 60245 IEC 89	0,75[d]
16 A for cold conditions	60227 IEC 53 or 60245 IEC 53	1,0[d]
16 A for very hot conditions	60245 IEC 53 60245 IEC 89	1,0[d]

NOTE For a cross-sectional area using American Wire Gauge (AWG), see Annex D of IEC 60320-1:2015.

[a] Other cable or cord with equivalent properties may also be used.

[b] In length not exceeding 2 m.

[c] If the cord has a length not exceeding 2 m, a nominal cross-sectional area of 0,5 mm² is allowed.

[d] If the cord has a length exceeding 2 m, nominal cross-sectional areas shall be minimum
– 1,0 mm² for 10 A connectors;
– 1,5 mm² for 16 A connectors.

Compliance with the requirements of 5.2.1 to 5.2.5 is checked by inspection.

~~5.2.6 Length of cord~~

~~The length of the flexible cord of a cord set or interconnection cord set shall be not more than 2 m if the cord has a cross-sectional area of 0,5 mm² or less.~~

~~NOTE – Flat twin tinsel cords, IEC code designation 60227 IEC 41, have a cross-section less than 0,5 mm².~~

~~The length of the cord is measured between the points where the cord or cord guard enters the plug or plug connector and the connector respectively. If there is no definite end, the length is measured from the point where the overall diameter is 1 mm more than the outer diameter of the cord. For flat cords, this increased diameter is measured over the larger axis of the cord.~~

~~Compliance with the requirements is checked by inspection and measurement.~~

6 Continuity and polarity

In cord sets and interconnection cord sets for use in polarized systems, the continuity between corresponding ~~plug pins and connector contacts~~ pins of plugs/plug connectors and contacts of connectors shall be maintained correctly in each pole.

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Compliance is checked by ~~measurement~~ inspection.

7 EMC requirements

NOTE Requirements for accessories incorporating electronic components are not included as the need has not yet been established.

7.1 Immunity for cord sets and interconnection cord sets not incorporating electronic components

These cord sets and interconnection cord sets are not sensitive to normal electromagnetic disturbances and therefore no immunity tests are required.

7.2 Emission for cord sets and interconnection cord sets not incorporating electronic components

These cord sets and interconnection cord sets are not generating electromagnetic disturbances, consequently no emission tests are necessary.

NOTE These cord sets and interconnection cord sets ~~may~~ can only generate electromagnetic disturbances during occasional operations of insertion and withdrawal of the accessories. The frequency, the level and the consequences of these emissions are considered as part of the normal electromagnetic environment.

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