IEC 60320-2-3

Edition 2.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Appliance couplers for household and similar general purposes – Part 2-3: Appliance couplers with a degree of protection higher than IPX0

Connecteurs pour usages domestiques et usages généraux analogues – Partie 2-3: Connecteurs avec degré de protection supérieur à IPX0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

APPLIANCE COUPLERS FOR HOUSEHOLD AND SIMILAR GENERAL PURPOSES –

Part 2-3: Appliance couplers with a degree of protection higher than IPX0

FOREWORD

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International Standard IEC 60320-2-3 has been prepared by subcommittee 23G: Appliance couplers, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 1998 and Amendment 1:2004. This edition constitutes a technical revision.

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

a) Aligned with IEC 60320-1:2015.
b) The scope is extended to cover current ratings up to and including 16 A.
c) The scope is extended to cover Class I appliance couplers.

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d) The scope is extended to cover appliance couplers for hot and very hot conditions.

e) Added classification regarding the use of retaining devices.

f) Added classification for indoor and outdoor use.

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

FDIS	Report on voting
23G/401/FDIS	23G/403/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-3 is to be used in conjunction with IEC 60320-1: *Appliance couplers for household and similar general purposes – Part 1: General requirements.* It was established on the basis of the third edition of that standard (2015).

The clauses of this standard supplement or modify the corresponding clauses in IEC 60320-1. When a particular subclause or annex of Part 1 is not mentioned in this Part 2-3, the subclause or annex of IEC 60320-1 applies as far as is reasonable. Where this standard states “addition”, “amendment” or “replacement”, the relevant requirement, test specification or explanatory matter in IEC 60320-1 is to be adapted accordingly.

Subclauses which are additional to those in Part 1 are numbered starting from 101.

In this particular standard the following print types are used:

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

A list of all parts in the IEC 60320 series, published under the general title *Appliance couplers for household and similar general 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 "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
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APPLIANCE COUPLERS FOR HOUSEHOLD AND SIMILAR GENERAL PURPOSES –

Part 2-3: Appliance couplers with a degree of protection higher than IPX0

1 Scope

This clause of IEC 60320-1 applies with the following addition:

This document applies to appliance couplers with a degree of protection against ingress of water higher than IPX0.

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.

This clause of IEC 60320-1 applies with the following additions:

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

IEC 60320-3, *Appliance couplers for household and similar general purposes – Part 3: Standard sheets and gauges*

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

3 Terms and definitions

This clause of IEC 60320-1 applies with the following additions:

3.101
accessible surface
surface of an accessory that can be touched by means of the test probe B of IEC 61032 (standard test finger), when the accessory is assembled as in normal use and in the following conditions:

a) for connectors and appliance outlets: without the complementary accessory in engagement but with the cover in the open position;

b) for plug connectors and appliance inlets: with the complementary accessory in the most unfavourable degree of engagement but such that electrical contact is made between the contacts (pins and tubes).

3.102
cover
part that is accessible when the accessory is in normal use and removable only with the use of a tool, but which does not require the use of a tool to open it

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4 General requirements

This clause of IEC 60320-1 applies.

5 General notes on tests

This clause of IEC 60320-1 applies.

6 Standard ratings

This clause of IEC 60320-1 applies.

7 Classification

This clause of IEC 60320-1 applies with the following additions:

7.101 Retaining devices:

a) with retaining device
b) without retaining device

7.102 Appliance coupler without retaining device.

NOTE Only to be used where permitted by the end product standard.

8 Marking

This clause of IEC 60320-1 applies amended as follows:

8.2 *Addition:*

– IP rating.

8.4 *Addition:*

IP rating for example IPX4

NOTE 101 In the IP code the letter "X" is replaced by the relevant number.

Additional subclauses (following 8.8):

8.101 Colours of outdoor cables

Cords of non-rewirable accessories for outdoor use shall not be coloured black, green, white or brown.

8.102 Instructions for retail sale

For couplers intended for retail sale the supplier shall include an instruction leaflet, on or inside the sales package, with each coupler or accessory, clearly describing the extent of its suitability for use outdoors. Information regarding weather resistance shall be clearly visible to the purchaser and a recommendation shall be made that the cord to be fitted to the accessory should not be coloured black, green, white or brown. The instruction sheet shall include information stating that the plug connector shall be connected to the equipment and the connector to the mains supply side.

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If the coupler or accessory is non-rewirable with a cord attached, each free end shall be marked for connection to the appliance or mains supply as appropriate, with guidance on the danger of an incorrect connection or of a connection to an appliance requiring the protection of an earth continuity conductor.

Except when a plug connector or appliance inlet fitted with a cord is supplied direct to a manufacturer for incorporation in other equipment, the free end of such an assembly shall have a label attached stating:

"The cord of this accessory must be properly connected to a piece of equipment before the appliance is energized."

If the coupler or accessory is rewirable, instructions shall be provided on the following:

a) stripping lengths for sheath and insulation;
b) identity of accessories to be connected to appliance or mains cord, as appropriate;
c) connection of brown wire to terminal marked L and blue wire to terminal marked N;
d) importance of correct assembly of cord anchorage including need for at least 3 mm of sheath to protrude beyond the clamping device;
e) suitable for use with circular type cords only.

Compliance with the requirements of 8.101 and 8.102 is checked by inspection.

9 Dimensions and compatibility

This clause of IEC 60320-1 applies with the following addition:

Additional subclause (following 9.5):

9.101 Retaining devices

For standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the relevant standard sheets.

NOTE The relevant standard sheets can be found in IEC 60320-3.

Compliance is checked by the tests of 16.101.

For non-standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the manufacturer's specifications.

10 Protection against electric shock

This clause of IEC 60320-1 applies amended as follows:

10.1 *Addition after the second paragraph:*

Test is performed with the cover open.

11 Provision for earthing

This clause of IEC 60320-1 applies.

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12 Terminals and terminations

This clause of IEC 60320-1 applies.

13 Construction

This clause of IEC 60320-1 applies with the following additions:

Additional subclauses (following 13.10):

13.101 Protection against ingress of water when in engagement

Appliance couplers shall incorporate means for ensuring the required degree of protection against ingress of water when both parts of the appliance couplers are fully engaged.

Compliance is checked by inspection and by the test of 14.101.

13.102 Protection against ingress of water when not in engagement

A connector or plug connector, when fitted with a cord for normal use and when not in engagement with the complementary accessory, shall comply with Clause 10 and 14.101.

13.103 Covers for protection against ingress of water when not in engagement

Connectors and appliance outlets shall be provided with a cover to achieve the required degree of protection against moisture when the complementary accessory is not in position. The cover of a standardized appliance coupler shall be self-closing and shall be securely fixed to the connector or appliance outlet.

Compliance with the requirements of 13.102 and 13.103 is checked by the tests of Clauses 10, 20, 23, 28 and 14.101.

13.104 Protection against ingress of water for integrated appliance couplers

Appliance inlets and appliance outlets integrated or incorporated in the electrical appliance or equipment shall incorporate means of ensuring the required degree of protection against ingress of water, from the open interface to the terminals or terminations.

Compliance is checked by inspection and the test of 14.101.

13.105 Requirements for cover springs

The cover spring(s), if any, of connectors and appliance outlets shall be sufficiently strong to rapidly close the cover when the complementary accessory is not engaged, and to withstand opening and closing in normal operation to an angle of not less than 90° and not more than 100°. The cover and associated spring(s), if any, shall withstand damage when opened to the fullest extent and shall be of corrosion-resistant materials.

This test is not applicable to couplers without retaining device, classified in 7.102.

Compliance with the requirements for corrosion-resistant materials is checked by the test of Clause 28.

Compliance is checked by inspection and by the following test. At the end of the test the cover shall close as required by this document.

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The cover shall be opened to its fullest extent and allowed to close under the influence of the associated spring(s), in sequence, 4 000 times at a rate of 15 ± 2 times per minute.

14 Moisture resistance

This clause of IEC 60320-1 applies amended as follows:

Replacement of the seventh paragraph:

The specimens are kept in the cabinet for 168 h (7 days).

Additional subclause:

14.101 Accessories shall have a degree of protection higher than IPX0 according to IEC 60529.

Compliance is checked by the appropriate test of IEC 60529 and with the treatment specified below, followed immediately by wiping the surplus surface water from the accessory and carrying out the electric strength test of Clause 15.

Accessories shall withstand the electric strength test and inspection shall show that water has not entered the samples to any appreciable extent and has not reached current-carrying parts.

Accessories designed for attachment by cord are tested as follows:

a) for non-rewirable accessories, with the cord supplied;
b) for 6 A rewirable accessories, with 0,75 mm^2 cord;
c) for 10 A rewirable accessories, with 0,75 mm^2 and 1 mm^2 cord;
d) for 16 A rewirable accessories, with 1 mm^2 and 1,5 mm^2 cord.

Appliance inlets and appliance outlets are tested when mounted in or on a suitable watertight enclosure, in accordance with the manufacturer´s instructions for mounting.

Fixing screws of enclosures and covers are tightened with a torque equal to two-thirds of the appropriate torque given in Clause 25. The accessories are placed in the most unfavourable position.

Connectors and appliance outlets are tested with and also without the complementary accessory in engagement, the means for ensuring the required degree of protection against moisture (as specified in 13.102) being positioned as in normal use.

15 Insulation resistance and electric strength

This clause of IEC 60320-1 applies.

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16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

Additional subclause:

16.101 Verification of the retaining device

A retaining device shall be provided to prevent inadvertent disconnection of the accessories when engaged. The retaining catch shall operate correctly. It shall be possible to insert or withdraw the connector and operate the retaining catch with two hands without difficulty.

This test is not applicable to couplers without retaining device, classified in 7.101 b).

Compliance is checked by manual operation and by the following test. During this test the connection between the accessories shall be maintained during the application of the principal weight and shall disconnect when the supplementary weight is applied.

The maximum and minimum forces necessary to separate the coupler are determined by means of an apparatus as shown in Figure 101. This apparatus comprises a mounting plate (A) and an appliance coupler wired as in normal use (B), mounted so that the coupler hangs vertically with the plug connector or appliance inlet downwards.

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