

TECHNICAL SPECIFICATION

**Direct current (DC) appliance couplers for information and communication technology (ICT) equipment installed in data centres and telecom central offices –
Part 3: AC/DC appliance inlet**

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Part 3: AC/DC appliance inlet**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DIRECT CURRENT (DC) APPLIANCE COUPLERS FOR INFORMATION
AND COMMUNICATION TECHNOLOGY (ICT) EQUIPMENT INSTALLED
IN DATA CENTRES AND TELECOM CENTRAL OFFICES –**

Part 3: AC/DC appliance inlet

FOREWORD

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IEC TS 63236-3 has been prepared by IEC technical committee 23: Electrical accessories. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

DTS	Report on voting
23/917/DTS	23/959A/RVDTS

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 Technical Specification 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/standardsdev/publications.

This Part 3 is to be used in conjunction with IEC TS 63236-1:2021.

The clauses of this document supplement or modify the corresponding clauses in IEC 63236-1. When a particular subclause or annex of Part 1 is not mentioned in this Part 3, the subclause or annex of IEC 63236-1 applies as far as is reasonable. Where this document states “addition”, “amendment” or “replacement”, the relevant requirement, test specification or explanatory matter in IEC 63236-1 is to be adapted accordingly.

Clauses or subclauses which are additional to those in Part 1 are numbered starting from 101.

A list of all the parts in the IEC 63236 series, published under the general title *Direct current (DC) appliance couplers for information and communication technology (ICT) equipment installed in data centres and telecom central offices*, 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,
- replaced by a revised edition, or
- amended.

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DIRECT CURRENT (DC) APPLIANCE COUPLERS FOR INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) EQUIPMENT INSTALLED IN DATA CENTRES AND TELECOM CENTRAL OFFICES –

Part 3: AC/DC appliance inlet

1 Scope

This part of IEC 63236, which is a Technical Specification, sets the additional requirements for appliance inlets used for information and communication technology (ICT) equipment installed in data centres and telecom central offices and which are suitable for both alternating current and direct current.

The accessories according to this document are intended to be used by ordinary persons in data centres only where the value of the voltage distribution system is defined as follows:

- for a DC voltage distribution system the values defined in IEC TS 63236-1:2021, Clause 1, apply;
- for an AC voltage distribution system the voltage does not exceed 250 V (AC) and the rated current according to the standard sheets.

Appliance couplers complying with this document are suitable for normal use at ambient air temperatures not normally exceeding +60 °C, with a lower limit of the ambient air temperature of -5 °C.

This document is valid for appliance couplers for protection class I equipment.

Appliance couplers are not suitable for

- use in place of plug and socket-outlet systems according to the IEC TS 62735 series,
- use in place of plug and socket-outlet systems according to the IEC 60884 series,
- use in place of devices for connecting luminaires (DCLs) according to IEC 61995 (all parts) or luminaire supporting couplers (LSCs).

2 Normative references

This clause of IEC TS 63236-1:2021 applies.

3 Terms and definitions

This clause of IEC TS 63236-1:2021 applies except as follows:

Addition:

3.101

hybrid appliance inlet

appliance inlet designed to mate standardized connectors for alternating current according to IEC 60320-3 and direct current according to IEC TS 63236-1

4 General requirements

This clause of IEC TS 63236-1:2021 applies.

5 General notes on tests

This clause of IEC TS 63236-1:2021 applies.

6 Standard ratings

This clause of IEC TS 63236-1:2021 is replaced as follows:

Replacement:

The hybrid appliance inlet shall have the following ratings:

For direct current:

- 294 V DC to 400 V DC, max 2 600 W

For alternating current:

- 10 A, 250 V AC

7 Classification of appliance couplers

This clause of IEC TS 63236-1:2020 applies except as follows:

Addition:

Add the following new list item:

- c) classified as suitable for both DC and AC supply.

8 Marking

8.1 General

This clause of IEC TS 63236-1:2021 applies except as follows:

Replace the three first dashes with the following:

– for direct current:

max rated voltage, for example	400 VDC
max rated power in watts or kilowatts, for example	max 2 600 W to max 2,6 kW

– for alternating current:

rated current in amperes, for example	10 A
rated voltage, for example	250 V AC

8.2 Additional markings

This clause of IEC TS 63236-1:2021 applies.

8.3 Symbols or alphanumeric notations

This clause of IEC TS 63236-1:2021 applies except as follows:

Addition:

Add the following new entry:

alternating current AC or ~

8.4 Legibility of markings

This clause of IEC TS 63236-1:2021 applies.

8.5 Terminal markings and wiring instructions

This clause of IEC TS 63236-1:2021 applies.

9 Dimensions and compatibility

This clause of IEC TS 63236-1:2021 applies except as follows:

9.4 Dimensions for appliance couplers

Replacement:

Replace the first paragraph with the following:

The hybrid appliance inlet shall comply with standard sheet 1 (Figure D.1) in Annex D.

10 Protection against electric shock

This clause of IEC TS 63236-1:2021 applies.

11 Provision for earthing

This clause of IEC TS 63236-1:2021 applies.

12 Terminals and terminations

This clause of IEC TS 63236-1:2021 applies:

13 Construction

This clause of IEC TS 63236-1:2021 applies.

14 Insulation resistance and electric strength

This clause of IEC TS 63236-1:2021 applies.

15 Forces necessary to insert and to withdraw the connector

This clause of IEC TS 63236-1:2021 is not applicable.

16 Operation of contacts

This clause of IEC TS 63236-1:2021 applies.

17 Resistance to heating of appliance couplers

This clause of IEC TS 63236-1:2021 applies.

18 Breaking capacity

This clause of IEC TS 63236-1:2021 is not applicable.

19 Normal operation

This clause of IEC TS 63236-1:2021 is not applicable.

20 Temperature rise

This clause of IEC TS 63236-1:2021 is not applicable.

21 Cables and their connection

This clause of IEC TS 63236-1:2021 is not applicable.

22 Mechanical strength

This clause of IEC TS 63236-1:2021 applies.

23 Resistance to heat and ageing

This clause of IEC TS 63236-1:2021 applies.

24 Screws, current-carrying parts and connections

This clause of IEC TS 63236-1:2021 applies.

25 Creepage distances, clearances and distances through sealing compound

This clause of IEC TS 63236-1:2021 applies.

26 Resistance of insulating material to heat, fire and tracking

This clause of IEC TS 63236-1:2021 applies.

27 Resistance to rusting

This clause of IEC TS 63236-1:2021 applies.

28 Electromagnetic compatibility (EMC) requirements

This clause of IEC TS 63236-1:2021 applies.

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Annex A
(normative)

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

This annex of IEC TS 63236-1:2021 applies.

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Annex B
(normative)

Test schedule

This annex of IEC TS 63236-1:2021 is replaced as follows:

Replace Table B.1 with the following:

Table B.1 – Test schedule

Group	Clause/subclause	Description of the tests	Hybrid appliance inlet
1 3 samples	8	Marking	X
	9	Dimensions and compatibility	X
	10	Protection against electrical shock	X
	11	Provision for earthing	X
	12	Terminals and terminations	X
	13	Construction	X
	15	Forces necessary to insert and to withdraw the connector/appliance outlet	
	16	Operation of contacts	X
	17	Resistance to heating of appliance couplers	X
	22	Mechanical strength	X
	22.2	Free fall test	
	22.3	Lateral pull test for contacts	
	22.4	Impact test	X
	22.5	Pull tests for connectors with a separate front part	
	24	Screws, current-carrying parts and connections	X
	25	Clearances, creepage distances and solid insulation	X
27	Resistance to rusting	X	
28	Electromagnetic compatibility (EMC) requirements	X	
2 3 samples ^a	14	Insulation resistance and electrical strength	X
	15	Forces necessary to insert and to withdraw the connector/appliance outlet	
	18	Breaking capacity	
	19	Normal operation	
	20	Temperature rise	
3 3 samples ^b	21	Cords and their connections	
4 3 samples ^b	21.3	Flexing test	

Group	Clause/subclause	Description of the tests	Hybrid appliance inlet
5 2 samples ^a	23	Resistance to heat and ageing	X
6 2 samples ^a	23.2.2 or 23.2.3	Ageing test for appliance couplers made of rubber or thermoplastic materials	X
7 2 samples ^a	26	Resistance of insulating material to heat, fire and tracking	
	26.1.4	Degree of severity (glow-wire test 750 °C (sample 1))	X
	26.1.4	Degree of severity (glow-wire test 650 °C (sample 2))	X
8 3 samples ^a	26	Resistance of insulating material to heat, fire and tracking	
	26.2	Resistance to tracking	X
^a Sample of each different material.			
^b Sample of each type of cable, cross-sectional area and manufacturer of the cable.			

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Annex C
(informative)

Alternative gripping tests

This annex of IEC TS 63236-1:2021 is not applicable.

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Annex D
(normative)

Standard sheets and gauges

This annex of IEC TS 63236-1:2021 is replaced as follows:

Replace Annex D with the following:

D.1 Standard sheets

General tolerances according to ISO 2768-1; tolerance class medium.

For symbols of geometric tolerances see ISO 1101.

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Standard sheet 1 (Figure D.1)

Hybrid appliance inlet

The outline marked with 3) shall be at a distance of $(16,5 \pm 0,5)$ mm from the engagement face at the bottom of the inlet.

The distance from the engagement face at the bottom of the inlet to plane A-A may, however, be less elsewhere within the area marked with 1). Plane A-A need not necessarily be extended to the outline of area marked with 1).

A rim which is slightly rounded on top is allowed around the recess if it has a thickness of at least 1,5 mm.

Retaining devices or parts thereof may be within the area marked with 1).

No other parts of the inlet may protrude beyond plane A-A.

The height marked with 2): For appliance inlets arranged countersunk in the outer surface of equipment and if this surface is curved or inclined with respect to the axis of the appliance inlet, this dimension shall be not more than 17 mm; the minimum shall be determined by visual inspection.

Dimensions to be checked by means of a gauge or 3D measurement.

NOTE The sketches are not intended to govern design, except as regards the dimensions shown. Dimensions without tolerances are only recommendations.

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Dimensions in millimetres

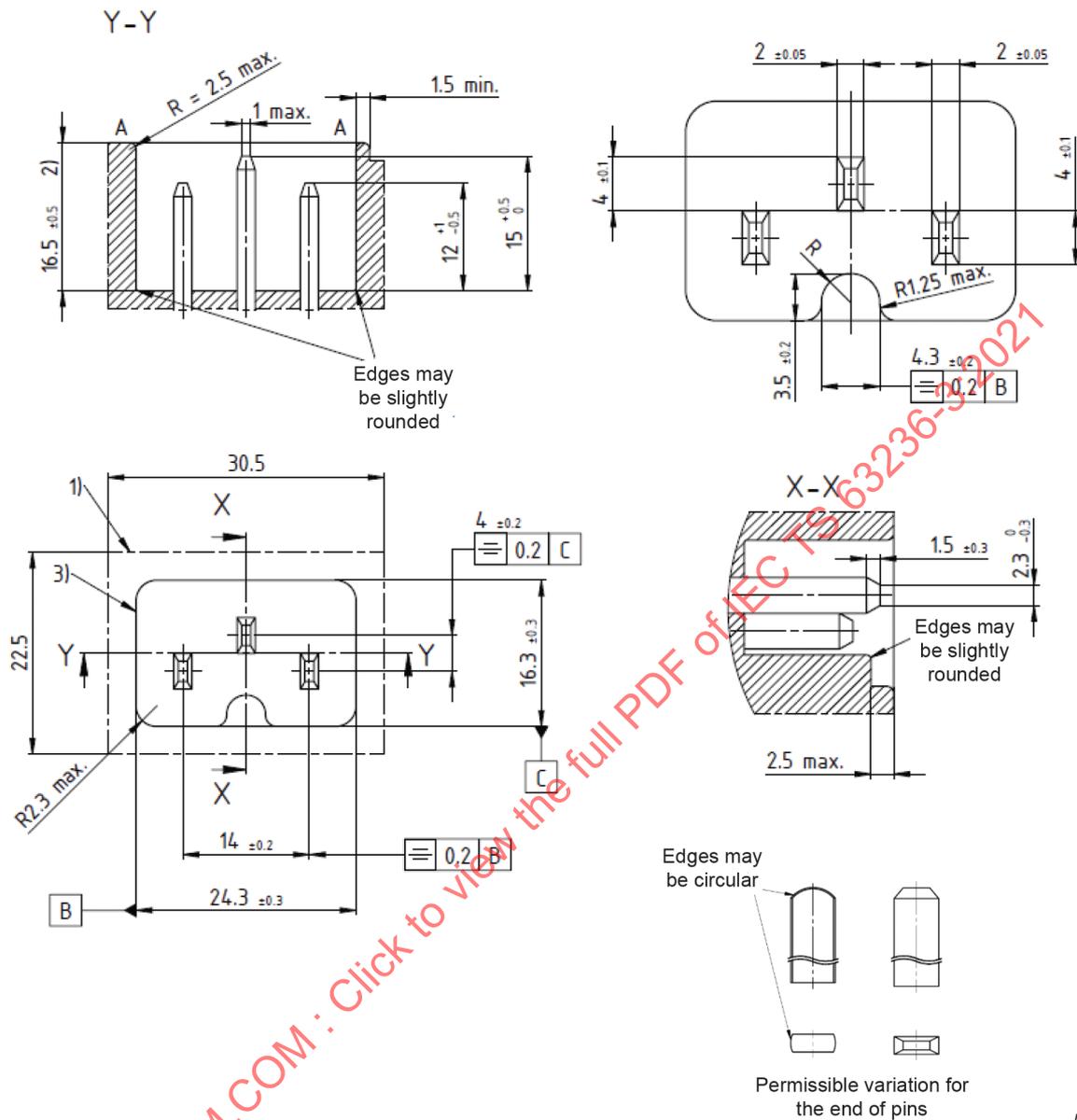


Figure D.1 – Hybrid appliance inlet

Standard sheet 2 (Figure D.2)

Positioning of the "+" and "-" pins

Hybrid appliance inlet

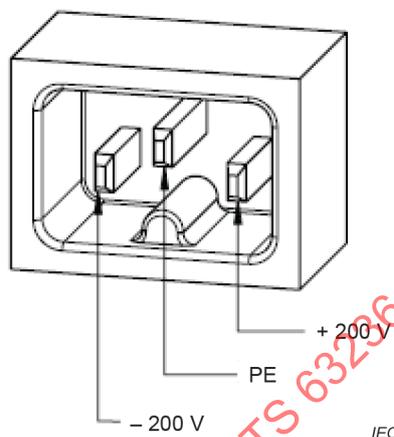


Figure D.2 – Positioning of the "+" and "-" pins

D.2 Gauges

D.2.1 Distance to the point of first contact

This subclause of IEC TS 63236-1:2021 is not applicable.

D.2.2 "GO" gauges for appliance inlets according to standard sheet 1 (Figure D.1)

The gauge in Figure D.3 shall be inserted fully into the appliance inlet with a force not exceeding 60 N.

The thickness of the gauge plate k , as well as the nominal values of the dimensions s and t of the handle and of the hole in the gauge plate, are left free, but the tolerances $h7$ and $F8$ shall be respected.

The plane A-A of the inlet shall lie between planes B-B and C-C of the gauge.

Then the gauge plate k shall be pushed over the handle to check the free area around the inlet opening.

For appliance inlets according to standard sheet 1 (Figure D.1), the "GO" gauges described in Figure D.3 shall be inserted.