

TECHNICAL SPECIFICATION

Direct current (DC) appliance couplers for information and communication technology (ICT) equipment installed in data centres and telecom central offices –

Part 1: 2,6 kW system

[IEC TS 63236-1:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/f00f9486-74a8-4fac-b72b-4e746bc0942f/iec-ts-63236-1-2021>



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.120.01, 29.120.30

ISBN 978-2-8322-9927-2

Warning! Make sure that you obtained this publication from an authorized distributor.

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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 1: 2,6 kW system

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IEC TS 63236-1 has been prepared by IEC technical committee 23: Electrical accessories. It is a Technical Specification.

IEC TS 63236-1 is to be used in conjunction with the other parts of the IEC 63236 series, if applicable.

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

DTS	Report on voting
23/915/DTS	23/957A/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.

In this document, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

A list of all 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- withdrawn,
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Part 1: 2,6 kW system

1 Scope

This part of IEC 63236, which is a Technical Specification, applies to DC appliance couplers for class I equipment with two active contacts plus an earthing contact, a rated power of 2,6 kW and a rated voltage range from 294 V to 400 V DC. They are intended to power DC information and communication technology equipment only, as specified in IEC 62368-1.

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

- 380 V with a tolerance of ± 20 V for installations with no backup battery or with a voltage regulation system;
- 380 V with a voltage range of 294 V to 400 V for installations with a backup battery where voltage regulation is not guaranteed;
- the voltage value between each live conductor and earth does not exceed 200 V DC during normal operation;
- there are two abnormal voltage ranges (duration below 10 min):
 - 260 V up to 294 V, and [IEC TS 63236-1:2021](https://standards.iteh.ai/catalog/standards/sist/f00f9486-74a8-4fac-b72b-4e746bc0942f/iec-ts-63236-1-2021)
 - above 400 V to 410 V. <https://standards.iteh.ai/catalog/standards/sist/f00f9486-74a8-4fac-b72b-4e746bc0942f/iec-ts-63236-1-2021>

The maximum current of the appliance couplers is

- 6,5 A when the voltage between live contacts is 400 V DC,
- 8,8 A when the voltage between live contacts is 294 V DC,

and can rise up to 10 A when the voltage between live contacts decreases to 260 V DC for 10 min maximum.

The voltage between live conductors can fall down to 260 V DC when the voltage discharge value of the battery reaches the disconnecting level. The consequence is that the current increases accordingly.

The accessories according to this document do not require maintenance.

The accessories according to this document are intended for use in circuits where

- basic protection,
- an overcurrent protection (of 8,8 A or less for each socket-outlet or multiple socket-outlet),
- the fault protection (indirect contact protection), and
- additional protection

are already assured.

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

Appliance couplers are not suitable for use in place of plug and socket-outlet systems according to the IEC TS 62735 series.

Appliance couplers according to this document are not intended to be used in portable accessories covered by IEC TC 23.

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 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-60, *Environmental testing – Part 2-60: Tests – Test Ke: Flowing mixed gas corrosion test*

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

IEC 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

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

IEC 60417, *Graphical symbols for use on equipment* (available at: <http://www.graphicalsymbols.info/equipment>)

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

IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60999-1, *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, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 62368-1, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

IEC TS 63236-3, *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*

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

ISO 1456, *Metallic coatings and other inorganic coatings – Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium*

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

appliance coupler

means enabling the connection and disconnection of an appliance or equipment to the supply

SEE: Figure 1.

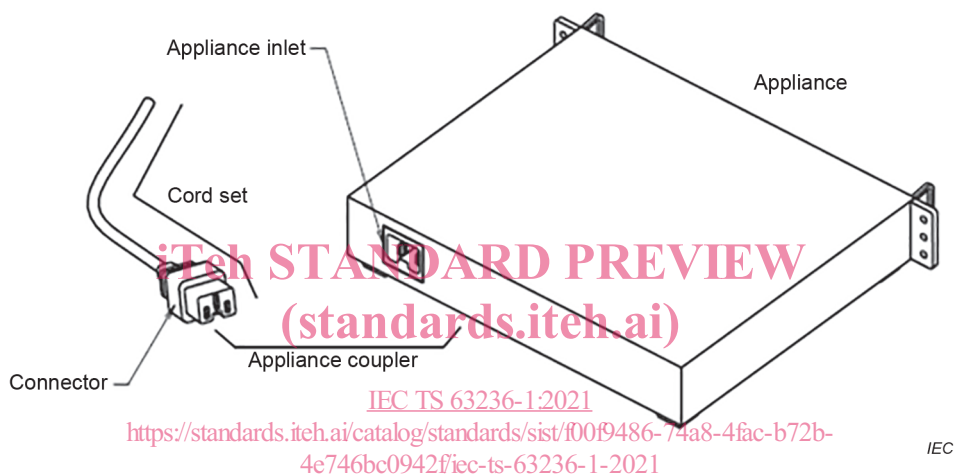


Figure 1 – Intended use of appliance couplers

3.1.1

connector

part of the appliance coupler integral with, or intended to be attached to, one cord connected to the supply

SEE: Figure 1.

[SOURCE: IEC 60050-442:1998, 442-07-02]

3.1.2

appliance inlet

part of the appliance coupler integrated as a part of an appliance or incorporated as a separate part in the appliance or equipment or intended to be fixed to it

SEE: Figure 1.

3.2

rewirable accessory

accessory so constructed that a cable or cord can be replaced

3.3**non-rewirable accessory**

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

3.4**cord set**

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

SEE: Figure 1.

3.5**integrated appliance coupler**

appliance coupler which is formed by the housing or enclosure of the appliance or equipment and cannot be tested separately

3.6**incorporated appliance coupler**

appliance coupler built in or fixed to an appliance or equipment, but that can be tested separately

3.7**retaining device**

mechanical provision or arrangement which holds a connector in proper engagement with a corresponding appliance inlet and prevents its unintentional withdrawal

3.8**rated voltage**

voltage assigned by the manufacturer for a specified operating condition of an accessory

[SOURCE: IEC 60050-442:1998, 442-01-03]

3.9**rated current**

current assigned by the manufacturer for a specified operating condition of an accessory

[SOURCE: IEC 60050-442:1998, 442-01-02]

3.10**terminal**

part of an accessory to which a conductor is attached, providing a re-usable connection

[SOURCE: IEC 60050-442:1998, 442-06-05]

3.11**termination**

part of an accessory to which a conductor is permanently attached

[SOURCE: IEC 60050-442:1998, 442-06-06]

3.12**thread-cutting screw**

screw having an interrupted thread which, by screwing in, makes a thread by removing material from the cavity

[SOURCE: IEC 60050-442:1998, 442-06-03]

3.13**type test**

conformity test made on one or more items representative of the production

[SOURCE IEC 60050-151:2001, 151-16-16]

3.14**routine test**

conformity test made on each individual item during or after manufacture

[SOURCE: IEC 60050-151:2001, 151-16-17]

3.15**clamping unit**

part(s) of the terminal necessary for the mechanical clamping and the electrical connection of the conductor(s), including the parts which are necessary to ensure the correct contact pressure

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

3.16.1**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

3.16.2**stud terminal**

screw-type terminal in which the conductor is clamped under a nut

3.16.3**saddle terminal**

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

3.16.4**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

3.17**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

3.18**thread-forming screw**

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

3.19**rated power**

power assigned to the appliance coupler

3.20**rated voltage range**

voltage range assigned to the appliance coupler

3.21**base**

part of the connector or inlet supporting the socket-contacts

3.22**live part**

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

[SOURCE: IEC 60050-826: 826-12-08, modified – "normal operation" has been replaced by "normal use", "PEM or PEL conductor" has been deleted, and the note has been deleted.]

3.23**cable anchorage**

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

3.24**main part**

assembly consisting of the base and other parts

3.25**prospective short-circuit current**

current that would flow in the circuit if the connector, the limitation device and the short circuit in the appliance inlet were replaced by links of negligible impedance without any other change in the circuit

3.26**prospective let-through i^2t value**

value that would be let through by the current limiting device if the connector and the short circuit in the appliance inlet were replaced by links of negligible impedance

3.27**stroke**

insertion or a withdrawal of the appliance coupler

3.28**exposed-conductive-part**

conductive part of equipment which can be touched and which is not normally live, but which can become live when basic insulation fails

4 General requirements

Appliance couplers 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.

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