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INTERNATIONAL STANDARD

Plugs, socket-outlets and couplers with arcuate contacts

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PLUGS, SOCKET-OUTLETS AND COUPLERS WITH ARCUATE CONTACTS

FOREWORD

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International Standard IEC 62986 has been prepared by subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

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

FDIS	Report on voting
23H/386/FDIS	23H/387/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.

In this standard, the following print types are used:

– requirements: in roman type;
– *conformity statements: in italic type*;
– notes: in small roman type.

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- withdrawn,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.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

The object of this document is to provide for a safe, compact and practical IEC system of standardized plugs and socket-outlets with arcuate contacts. It contains performance and dimensional requirements taking into account essential differences in the infrastructures and installation rules throughout the world.

PLUGS, SOCKET-OUTLETS AND COUPLERS WITH ARCUATE CONTACTS

1 Scope

This document sets the general and dimensional interchangeability requirements for plugs, socket-outlets, connectors and appliance inlets with arcuate contacts of standardized configurations (hereinafter referred to as accessories), with a rated operating voltage not exceeding 600 V AC at a frequency of 50 Hz and 60 Hz and with rated currents of 20 A and 30 A, primarily intended for commercial use indoors, in conditions where the presence of water is negligible.

This document applies to accessories for use when the ambient temperature is normally within the range of –25 °C to +40 °C. These accessories are intended to be connected to cables of copper or copper alloy only.

Interchangeability requirements are defined for IP20 accessories.

NOTE The conditions of use indoors are based on the limitations given by IEC 60364-5-51:2005, Table 51A, AD1.

Socket-outlets or appliance inlets incorporated in or fixed to electrical equipment are within the scope of this document.

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

IEC 60228:2004, *Conductors of insulated cables*

IEC 60245-4, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*

IEC 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to K*

IEC 60309-1:1999, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements*
IEC 60309-1:1999/AMD1:2005
IEC 60309-1:1999/AMD2:2012

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

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

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

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

ISO 2081, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

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

NMX-J-436-ANCE-2014/CSA C22.2 No.49-14/ANSI/UL 62, *Flexible Cords and Cables*

UL 1581, *Reference Standard for Electrical Wires, Cables and Flexible Cords*

3 Terms and definitions

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

NOTE The application of accessories is shown in Figure 1.

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

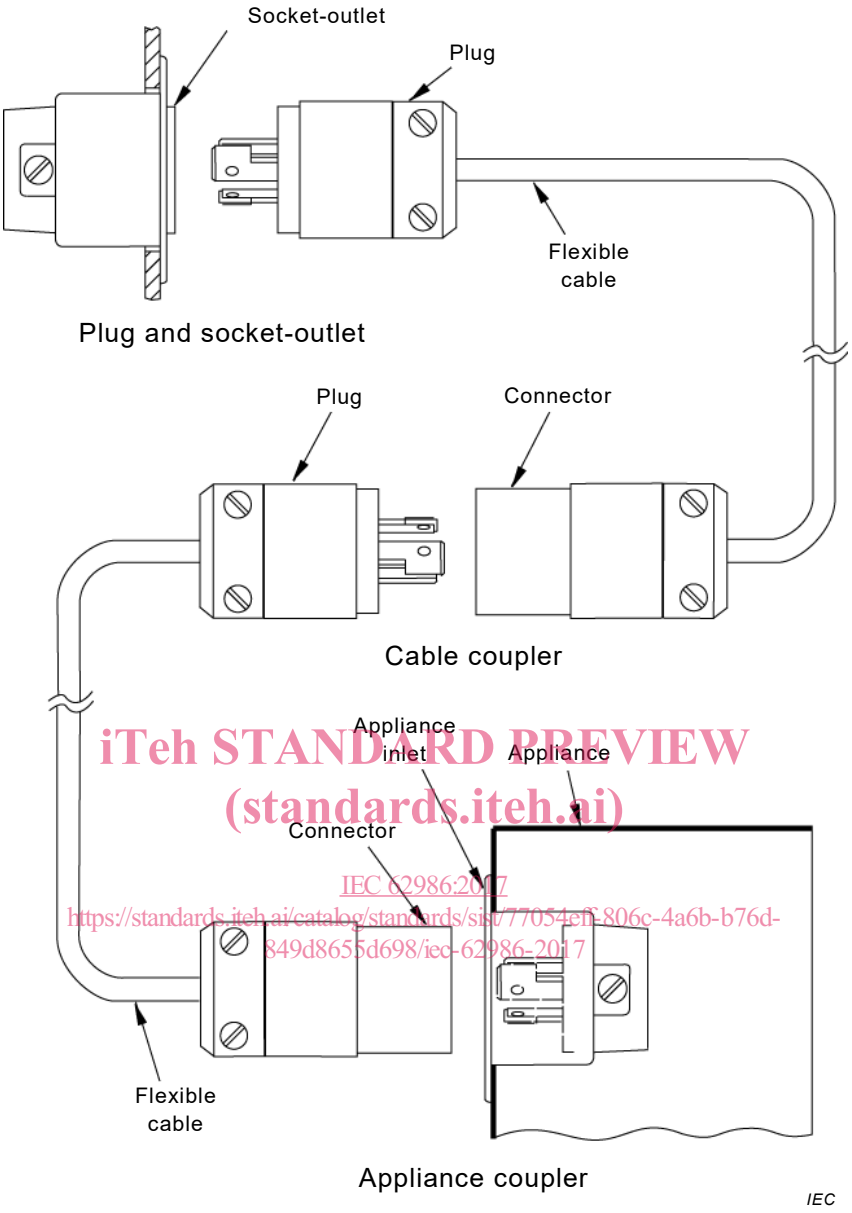

Figure 1 – Diagram showing the uses of the accessories

3.1
plug and socket-outlet
means enabling the connection at will of a flexible cable to fixed wiring. It consists of two parts:

[SOURCE: IEC 60309-1:1999, 2.1]

3.1.1
socket-outlet
part intended to be installed with the fixed wiring or incorporated in equipment. A socket-outlet may also be incorporated in the output circuit of an isolating transformer

[SOURCE: IEC 60309-1:1999, 2.1.1]

3.1.2
plug
part integral with or intended to be attached directly to one flexible cable connected to the equipment or to a connector

[SOURCE: IEC 60309-1:1999, 2.1.2]

3.2
cable coupler
means enabling the connection at will of two flexible cables. It consists of two parts:

[SOURCE: IEC 60309-1:1999, 2.2]

3.2.1
connector
part integral with or intended to be attached to one flexible cable connected to the supply

Note 1 to entry: In general, a connector has the same contact arrangement as a socket-outlet.

[SOURCE: IEC 60309-1:1999, 2.2.1]

3.2.2
plug
part integral with or intended to be attached to one flexible cable connected to the equipment or to a connector

Note 1 to entry: The plug of a cable coupler is identical to the plug of a "plug and socket-outlet".

[SOURCE: IEC 60309-1:1999, 2.2.2]

3.3
appliance coupler
means enabling the connection at will of a flexible cable to the equipment. It consists of two parts:

[SOURCE: IEC 60309-1:1999, 2.3]

3.3.1
connector
part integral with, or intended to be attached to, one flexible cable connected to the supply

Note 1 to entry: In general, the connector of an appliance coupler is identical to the connector of a cable coupler.

[SOURCE: IEC 60309-1:1999, 2.3.1]

3.3.2
appliance inlet
part incorporated in, or fixed to, the equipment or intended to be fixed to it

Note 1 to entry: In general, an appliance inlet has the same contact arrangement as a plug.

[SOURCE: IEC 60309-1:1999, 2.3.2]

3.4
rewirable plug or connector
accessory so constructed that the flexible cable can be replaced

[SOURCE: IEC 60309-1:1999, 2.4]

3.5
non-rewirable plug or connector
accessory so constructed that the flexible cable cannot be separated from the accessory without making it permanently useless

[SOURCE: IEC 60309-1:1999, 2.5]

3.6
rated current
current assigned to the accessory by the manufacturer

[SOURCE: IEC 60309-1:1999, 2.11]

3.7
rated operating voltage
nominal voltage of the supply for which the accessory is intended to be used

[SOURCE: IEC 60309-1:1999, 2.13]

3.8
basic insulation
insulation necessary for the proper functioning of the accessory and for basic protection against electric shock

[SOURCE: IEC 60309-1:1999, 2.14]

3.9
supplementary insulation (protective insulation)
independent insulation provided in addition to the basic insulation, in order to ensure protection against electric shock in the event of a failure of the basic insulation

[SOURCE: IEC 60309-1:1999, 2.15]

3.10
double insulation
insulation comprising both basic insulation and supplementary insulation

[SOURCE: IEC 60309-1:1999, 2.16]

3.11
reinforced insulation
improved basic insulation with such mechanical and electrical qualities that it provides the same degree of protection against electric shock as double insulation

[SOURCE: IEC 60309-1:1999, 2.17]

3.12
terminal
conductive part provided for the connection of a conductor to an accessory

[SOURCE: IEC 60309-1:1999, 2.18]

3.12.1
pillar terminal
terminal in which the conductor is inserted into a hole or cavity, where it is clamped under the shank of the screw or screws. The clamping pressure may be applied directly by the shank of