SLOVENSKI STANDARD
oSIST prEN IEC 62196-1:2024

01-junij-2024

Vtiči, vtičnice, konektorji in uvodnice na vozilih - Kabelsko napajanje električnih vozil - 1. del: Splošne zahteve

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements

Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker - Konduktives Laden von Elektrofahrzeugen – Teil 1: Allgemeine Anforderungen

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteurs de véhicule - Charge conductive des véhicules électriques - Partie 1: Exigences générales

Ta slovenski standard je istoveten z: **prEN IEC 62196-1:2024**

ICS:

29.120.30	Vtiči, vtičnice, spojke	Plugs, socket-outlets, couplers
43.120	Električna cestna vozila	Electric road vehicles

oSIST prEN IEC 62196-1:2024 **en,fr,de**

23H/550/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62196-1 ED5**	
DATE OF CIRCULATION: **2024-04-05**	CLOSING DATE FOR VOTING: **2024-06-28**
SUPERSEDES DOCUMENTS: **23H/534/CD, 23H/543A/CC**	

IEC SC 23H : PLUGS, SOCKET-OUTLETS AND COUPLERS FOR INDUSTRIAL AND SIMILAR APPLICATIONS, AND FOR ELECTRIC VEHICLES

SECRETARIAT: France	SECRETARY: Mrs Anne Le Guennec
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 69	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements

PROPOSED STABILITY DATE: 2030

NOTE FROM TC/SC OFFICERS:

The list of changes in FOREWORD will be subject to change and some drawings in Standard Sheets shall be improved at the next stage

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –

Part 1: General requirements

FOREWORD

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IEC 62196-1 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. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2022. This edition constitutes a technical revision.

Sec note: The following list of changes will be subject to change

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

a) addition of new tests for latching devices and retaining means;

b) inclusion of type 4 accessories;

c) addition of new annex to incorporate the content of IEC TS 62196-3-1.

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

Draft	Report on voting
23H/499/FDIS	23H/503/RVD

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 International Standard 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.

A list of all parts in the IEC 62196 series, published under the general title *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles*, can be found on the IEC website.

Subsequent parts of IEC 62196 deal with the requirements of particular types of accessories. The clauses of those particular requirements supplement or modify the corresponding clauses in this document.

In this document, the following print types are used:

– requirements proper: in roman type;
– *test specifications: in italic type*;
– notes: in smaller 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 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 document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC 61851 (all parts) specifies requirements for electric vehicle (EV) conductive charging systems.

IEC 62196 (all parts) specifies the requirements for plugs, socket-outlets, vehicle connectors, vehicle inlets and cable assemblies as described in the IEC 61851 series and in IEC 62752.

Some charging can be achieved by direct connection from an electric vehicle to standard socket-outlets connected to a supply network (mains or electrical grid).

Some modes of charging require a dedicated supply and charging equipment incorporating control and communication circuits.

IEC 62196 (all parts) covers the mechanical, electrical and performance requirements for plugs, socket-outlets, vehicle connectors and vehicle inlets for the connection between the EV supply equipment and the electric vehicle.

The IEC 62196 series consists of the following parts:

– Part 1: General requirements, comprising clauses of a general character.
– Part 2: Dimensional compatibility and interchangeability requirements for AC pin and contact-tube accessories.
– Part 3: Dimensional compatibility and interchangeability requirements for DC and AC/DC pin and contact-tube vehicle couplers.
– Part 4: Dimensional compatibility and interchangeability requirements for DC pin and contact-tube accessories for Class II or Class III applications.
– Part 6: Dimensional compatibility requirements for DC pin and contact-tube vehicle couplers intended to be used for DC EV supply equipment where protection relies on electrical separation.

PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –

Part 1: General requirements

1 Scope

This part of IEC 62196 is applicable to EV plugs, EV socket-outlets, vehicle connectors, vehicle inlets, herein referred to as "accessories", and to cable assemblies for electric vehicles (EV) intended for use in conductive charging systems which incorporate control means, with a rated operating voltage not exceeding:

– 690 V AC 50 Hz to 60 Hz, at a rated current not exceeding 250 A;

– 1 500 V DC at a rated current not exceeding 800 A.

These accessories and cable assemblies are intended to be installed by instructed persons (IEV 195-04-02) or skilled persons (IEV 195-04-01) only.

These accessories and cable assemblies are intended to be used for circuits specified in IEC 61851 (all parts), which operate at different voltages and frequencies, and which can include extra-low voltage and communication signals.

These accessories and cable assemblies are anticipated to be used at an ambient temperature between −30 °C and +40 °C.

NOTE 1 In some countries, other requirements can apply.

NOTE 2 In the following country, −40 °C applies: SE.

NOTE 3 The manufacturer can enlarge the temperature range on the condition that the specified range information is provided.

These accessories are intended to be connected only to cables with copper or copper-alloy conductors.

The accessories covered by this document are intended for use in electric vehicle supply equipment in accordance with IEC 61851 (all parts).

This document does not apply to standard plug and socket-outlets used for mode 1 and mode 2 according to IEC 61851-1:2017, 6.2.

NOTE 4 In the following countries, mode 1 is not allowed: UK, US, CA, SG.

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 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

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 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 60309-4:2021, *Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes – Part 4: Switched socket-outlets with or without interlock*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

IEC 60664-3, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

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 60947-3:2020, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

IEC 61851-1:2017, *Electric vehicle conductive charging system – Part 1: General requirements*

IEC 61851-23:—[1], *Electric vehicle conductive charging system – Part 23: DC electric vehicle supply equipment*

IEC 62196-2:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 2: Dimensional compatibility requirements for AC pin and contact-tube accessories*

[1] Second edition under preparation. Stage at the time of publication: IEC PRVC 61851-23:2022.

IEC 62196-3:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 3: Dimensional compatibility requirements for DC and AC/DC pin and contact-tube vehicle couplers*

IEC Guide 117:2010. *Electrotechnical equipment – Temperatures of touchable hot surfaces*

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*

ISO 4521:2008, *Metallic and other inorganic coatings – Electrodeposited silver and silver alloy coatings for engineering purposes – Specification and test methods*

3 Terms and definitions

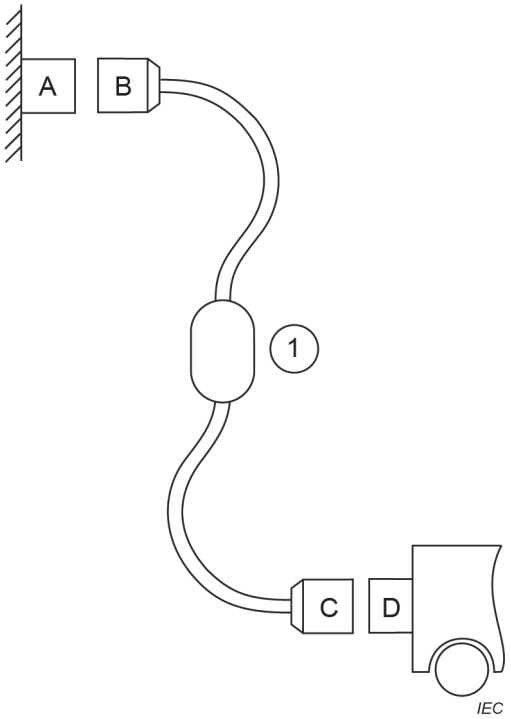
For the purposes of this document, the following terms and definitions apply.

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

NOTE 1 Where the terms "voltage" and “current” are used, they imply root mean square (RMS) values, unless otherwise specified.

NOTE 2 The application of accessories is shown in Figure 1.



Key

1	In-cable control and protective device (IC-CPD)
A	Standard socket-outlet or EV socket-outlet
B	Standard plug or EV plug
C	Vehicle connector
D	Vehicle inlet

Figure 1 – Diagram showing the use of the accessories

3.1
accessory

EV plug, EV socket-outlet, vehicle connector or vehicle inlet, with cable (forming a cable assembly) or without cable, for use in conductive charging systems for electric vehicles

3.2
auxiliary power
external electrical energy power supply used for purposes other than charging of the electric vehicle propulsion battery

Note 1 to entry: In French, the resulting assembly when a plug is inserted into a socket-outlet is called "prise de courant".

3.3
cable assembly
assembly consisting of flexible cable or cord fitted with a standard plug or EV plug and/or a vehicle connector, that is used to establish the connection between the EV and the supply network or an EV charging station

Note 1 to entry: A cable assembly can be detachable or be a part of the EV or of the EV charging station.

Note 2 to entry: A cable assembly can include one or more cables, with or without a fixed jacket, which can be in a flexible tube, conduit or wire way.

[SOURCE: IEC 61851-1:2017, 3.5.2, modified – "plug" has been replaced with "standard plug or EV plug".]