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Anslutningsdon för konduktiv laddning av elfordon – Del 1: Allmänna fordringar

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

Som svensk standard gäller europastandarden EN 62196-1:2012. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62196-1:2012.

Nationellt förord

Europastandarden EN 62196-1:2012

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62196-1, Second edition, 2011 - Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62196-1, utgåva 1, 2004, gäller ej fr o m 2015-02-01.

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English version

**Plugs, socket-outlets, vehicle connectors and vehicle inlets -
Conductive charging of electric vehicles -
Part 1: General requirements
(IEC 62196-1:2011)**

Fiches, socles de prise de courant, prises
mobiles et socles de connecteur de
véhicule -
Charge conductive des véhicules
électriques -
Partie 1: Règles générales
(CEI 62196-1:2011)

Stecker, Steckdosen,
Fahrzeugkupplungen und
Fahrzeugstecker -
Konduktives Laden von Elektrofahrzeugen
-
Teil 1: Allgemeine Anforderungen
(IEC 62196-1:2011)

This European Standard was approved by CENELEC on 2012-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 23H/266/FDIS, future edition 2 of IEC 62196-1, prepared by SC 23H, "Industrial plugs and socket-outlets", of IEC TC 23, "Electrical accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62196-1:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-11-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-02-01

This document supersedes EN 62196-1:2003.

EN 62196-1:2012 includes the following significant technical changes with respect to EN 62196-1:2003:

- increase in d.c.voltage for accessories;
- permitted use of accessories with vehicles complying with 7.2.3.1 of EN 61851-1:2011;
- minor changes to definitions;
- additional voltage and current ratings (Clause 5) and test values (Clauses 12 and 13) ;
- removal of markings to identify generic types of vehicle inlets and connectors;
- addition of a "high power d.c." to the type of accessories covered by the Standard;
- modification of the description of "universal" and "basic" interfaces based on changes to EN 61851-1:2011;
- simplification of the marking requirements (Clause 8);
- additional requirements for accessories with shutters;
- division of Clause 9 to create Clauses 9 and 11;
- Clause 9: specific requirements for inlet, plug and socket-outlet;
- Clause 11: EVSE (Electric Vehicle Supply Equipment) requirements: the basic generic requirements for charging stations;
- renumbering of annexes.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62196-1:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-2-75:1997 NOTE Harmonized as EN 60068-2-75:1997 (not modified).

IEC 60309-1 NOTE Harmonized as EN 60309-1.

IEC 61008-1 NOTE Harmonized as EN 61008-1.

IEC 61009-1 NOTE Harmonized as EN 61009-1.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60112 + corr. October + corr. June + A1	2003 2003 2003 2009	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112 + A1	2003 2009
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	-	-
IEC 60228	2004	Conductors of insulated cables	EN 60228 + corr. May	2005 2005
IEC 60245-4 (mod) + A1 + A2	1994 1997 2003	Cables of rated voltages up to and including 450/750 V and having cross-linked insulation - Part 4: Cords and flexible cables	HD 22.4 S3 ¹⁾ + A1 + A2	1995 1999 2002
IEC 60269-1 + A1	2006 2009	Low-voltage fuses - Part 1: General requirements	EN 60269-1 + A1	2007 2009
IEC 60269-2 (mod)	2010	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 J	HD 60269-2	2010
IEC 60309-4	-	Plugs, socket-outlets and couplers for industrial purposes - Part 4: Switched socket-outlets and connectors with or without interlock	EN 60309-4	-
IEC 60529 + A1	1989 1999	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May + A1	1991 1993 2000
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60664-3	2003	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2003
IEC 60695-2-11 + corr. January	2000 2001	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001
IEC 60695-10-2	-	Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test	EN 60695-10-2	-

¹⁾ HD 22.4 S3 is superseded by HD 22.4 S4:2004.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60947-1	-	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	-
IEC 60999-1	1999	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 mm ² up to 35 mm ² (included)	EN 60999-1	2000
IEC 60999-2	2003	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 2: Particular requirements for clamping units for conductors above 35 mm ² up to 300 mm ² (included)	EN 60999-2	2003
IEC 61851-1	2010	Electric vehicle conductive charging system - Part 1: General requirements	EN 61851-1	2011
ISO 1456	-	Metallic and other inorganic coatings - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium	EN ISO 1456	-
ISO 2081	-	Metallic and other inorganic coatings - Electroplated coatings of zinc with supplementary treatments on iron or steel	EN ISO 2081	-
ISO 2093	-	Electroplated coatings of tin - Specification and test methods	-	-

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INTRODUCTION

IEC 61851-1:2010 specifies Electric Vehicle Conductive Charging Equipment. This International Standard, referred to as IEC 62196 series in IEC 61851-1:2010, specifies the requirements for plugs, socket-outlets, vehicle connectors, vehicle inlets and cable assemblies as described in IEC 61851-1:2010. Some charging can be achieved by direct connection from an electric vehicle to common mains socket-outlets. Some modes of charging require a dedicated supply and charging equipment incorporating control and communication circuits. This standard covers the mechanical, electrical and performance requirements for dedicated plugs, socket outlets, vehicle connectors and vehicle inlets for interfacing between such dedicated charging equipment and the electric vehicle.

This standard may be divided into several parts as necessary, as follows:

- Part 1: General requirements, comprising clauses of a general character.

Subsequent parts: Particular requirements dealing with particular types of accessories. The clauses of these particular requirements supplement or modify the corresponding clauses in Part 1. Where the text of subsequent parts indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of Part 1, these changes are made to the relevant text of Part 1, which then becomes part of the standard. Where no change is necessary, the words "This clause of Part 1 is applicable" are used.

- Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories.
- Part 3: Dimensional compatibility and interchangeability requirements for pin and contact-tube accessories for dedicated d.c. charging or for combined a.c./d.c. charging (under consideration)

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 plugs, socket-outlets, connectors, inlets and cable assemblies for electric vehicles (EV), herein referred to as “accessories”, intended for use in conductive charging systems which incorporate control means, with a rated operating voltage not exceeding

- 690 V a.c. 50 Hz – 60 Hz, at a rated current not exceeding 250 A,
- 1 500 V d.c. at a rated current not exceeding 400 A.

These accessories and cable assemblies are intended to be used for circuits specified in IEC 61851-1:2010 which operate at different voltages and frequencies and which may include ELV and communication signals.

The accessories covered by this standard are intended only to be used with vehicles that comply with the requirements of 7.2.3.1 of IEC 61851-1:2010.

These accessories and cable assemblies are to be used in an ambient temperature of between –30 °C and +50 °C.

NOTE In some countries, other requirements may apply.

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

The accessories covered by this standard are for use in certain modes of charging EVs. These modes are defined in IEC 61851-1:2010. These definitions and a description of the types of connection (cases A, B and C), also described in IEC 61851-1:2010, are reproduced herein as Annex A.

NOTE In the following country, Mode 1 will not be allowed: UK.

This standard does not apply to those standardised accessories used in charging systems where the use of such accessories constructed to the requirements of other standards is permitted (e.g. in mode 1 and mode 2). Such standardized accessories may be used for those situations (mode and case) identified in IEC 61851-1:2010.

This standard can be used as a guide for accessories with a lesser number of contacts and lower ratings for use with light duty vehicles.

2 Normative references

The following referenced documents are indispensable for the application 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 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
Amendment 1 (2009)¹

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 60245-4:1994, *Rubber insulated cables of rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*
Amendment 1 (1997)
Amendment 2 (2003)²

IEC 60269-1:2006, *Low-voltage fuses – Part 1: General requirements*
Amendment 1 (2009)³

IEC 60269-2:2010, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to J*

IEC 60309-4, *Plugs, socket-outlets and couplers for industrial purposes – Part 4: Switched socket-outlets and connectors with or without interlock*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
Amendment 1 (1999)⁴

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

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60695-2-11:2004, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

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

IEC 60947-1, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60999 -1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 60999 -2:2003, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 2: Particular requirements for clamping units for conductors above 35 mm² up to 300 mm² (included)*

¹ There exists a consolidated edition (2009) that includes IEC 60112 (1993) and its Amendment 1 (2009).

² There exists a consolidated edition (2004) that includes IEC 60245-4 (1994) and its Amendments 1 (1997) and 2 (2003).

³ There exists a consolidated edition (2009) that includes IEC 60269-1 (2006) and its Amendment 1 (2009).

⁴ There exists a consolidated edition (2001) that includes IEC 60529 (1989) and its Amendment 1 (1999).

IEC 61851-1:2010, *Electric vehicle conductive charging system – Part 1: General requirement*

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*