Irish Standard
I.S. EN 62196-1:2014

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

I.S. EN 62196-1:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62196-1

November 2014

ICS 29.120.30; 43.120

Supersedes EN 62196-1:2012

English Version

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements (IEC 62196-1:2014 , modified)

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule - Charge conductive des véhicules électriques - Partie 1: Règles générales
(CEI 62196-1:2014 , modifiée)

Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker - Konduktives Laden von Elektrofahrzeugen - Teil 1: Allgemeine Anforderungen
(IEC 62196-1:2014 , modifiziert)

This European Standard was approved by CENELEC on 2014-10-06. 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.

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

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Ref. No. EN 62196-1:2014 E

Foreword

The text of document 23H/302/FDIS, future edition 3 of IEC 62196-1, prepared by IEC/SC 23H "Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles" of IEC/TC 23 "Electrical accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62196-1:2014.

A draft amendment, which covers common modifications to IEC 62196-1, was prepared by CLC/TC 23BX "Switches, boxes and enclosures for household and similar purposes, plugs and socket outlets for d.c. and for the charging of electrical vehicles including their connectors" and approved by CENELEC.

This document supersedes EN 62196-1:2012.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-10-06
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2019-10-06

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62196-1:2014 are prefixed "Z".

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.

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

Endorsement notice

The text of the International Standard IEC 62196-1:2014 was approved by CENELEC as a European Standard with agreed common modifications.

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 60947-1	NOTE Harmonized as EN 60947-1.
IEC 60999-1:1999	NOTE Harmonized as EN 60999-1:2000 (not modified).
IEC 60999-2:2003	NOTE Harmonized as EN 60999-2:2003 (not modified).
IEC 61008-1	NOTE Harmonized as EN 61008-1.
IEC 61009-1	NOTE Harmonized as EN 61009-1.
IEC 61300-2-4	NOTE Harmonized as EN 61300-2-4.
IEC 61300-2-6	NOTE Harmonized as EN 61300-2-6.
IEC 61300-2-7	NOTE Harmonized as EN 61300-2-7.
IEC 62752	NOTE Harmonized as EN 62752.

COMMON MODIFICATIONS

9 Dimensions

Addition to subclause 9.2:

9.2.Z1 If other non-EV standardized accessories may be physically joined together with the EV accessories, these shall not be able to function.

EXAMPLE No function can be achieved by switching off the main contacts when no appropriate EV plug and vehicle inlet is inserted (see EN 61851-1).

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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-14	-	Environmental testing -- Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60112	-	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	-
IEC 60227	series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750	-	-
IEC 60228	2004	Conductors of insulated cables	EN 60228	2005
			+corrigendum May 2005	2005
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	EN 60269-1	-
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	HD 60269-2	-
IEC 60309-4 (mod)	2006	Plugs, socket-outlets and couplers for industrial purposes -- Part 4: Switched socket-outlets and connectors with or without interlock	EN 60309-4	2007
IEC 60449	-	Voltage bands for electrical installations of buildings	HD 193 S2	-
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
			+corrigendum May 1993	1993
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	-	Insulation coordination for equipment within low-voltage systems -- Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	-
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)	EN 60695-2-11	-
IEC 60695-10-2	-	Fire hazard testing -- Part 10-2: Abnormal heat - Ball pressure test method	EN 60695-10-2	-
IEC 61851-1	2010	Electric vehicle conductive charging system -- Part 1: General requirements	EN 61851-1	2011
IEC 61851-23	2014	Electric vehicle conductive charging system -- Part 23: D.C. electric vehicle charging station	EN 61851-23	2014
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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IEC 62196-1

Edition 3.0 2014-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule – Charge conductive des véhicules électriques – Partie 1: Règles générales

IEC 62196-1:2014-06(en-fr)

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1: General requirements

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard 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.

This third edition cancels and replaces the second edition published in 2011 and constitutes a technical revision.

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

a) addition of a preferred operating voltage of 1 000 V d.c.;
b) addition of a preferred rated current of 80 A d.c.;
c) addition of a provision for a combined interface a.c./d.c.;
d) description of d.c. configurations (previously under consideration);

e) addition of requirements pertaining to the locking mechanism, the interlock and the latching device;

f) addition of a test for accessories not suitable for making and breaking an electrical circuit under load;

g) addition of requirements and tests for insulated end caps.

The text of this standard is based on the following documents:

FDIS	Report on voting
23H/302/FDIS	23H/305/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62196 series, 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 these particular requirements supplement or modify the corresponding clauses in Part 1.

In this standard, 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 publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

IEC 61851-1 specifies electric vehicle conductive charging equipment.

The IEC 62196 series specifies the requirements for plugs, socket-outlets, vehicle connectors, vehicle inlets and cable assemblies as described in IEC 61851-1.

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.

IEC 62196 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.

IEC 62196 is divided into several parts as follows:

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

– Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories.

– Part 3[1]: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers.

[1] To be published

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, vehicle connectors, vehicle inlets and cable assemblies for electric vehicles, 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 to 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 are intended to be installed by instructed persons (IEC 60050-195:1998, IEC 60050-195/AMD1:2001, 195-04-02) or skilled persons (IEC 60050-195:1998, IEC 60050-195/AMD1:2001, 195-04-01) only.

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

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

NOTE 1 In some countries, other requirements may apply.

NOTE 2 the following countries, –35 °C applies: SE.

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

The accessories covered by this part of IEC 62196 are for use in certain modes of charging electric vehicles. These modes are defined in IEC 61851-1. These definitions and a description of the types of connection (cases A, B and C), are described in IEC 61851-1:2010, 6.2 and 6.3.1.

NOTE 3 In the following countries, mode 1 will not be allowed: UK, US, CA, SG.

This part of IEC 62196 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.

This part of IEC 62196 may 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 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.