SIST

SLOVENSKI STANDARD
SIST EN 62196-3:2015

01-april-2015

Vtiči, vtičnice in spojke na vozilih - kabelsko napajanje električnih vozil - 3. del: Zahteve za dimenzijsko združljivost in izmenljivost za spojke na vozilih s trni in cevastimi kontakti za samo enosmerni (d.c.) in kombinirano izmenični/enosmerni (a.c./d.c.) tok (IEC 62196-3:2014)

Plugs, socket-outlets, and vehicle couplers - conductive charging of electric vehicles - Part 3: Dimensional compatibility and interchangeability requirements for dedicated d.c. and combined a.c./d.c. pin and contact-tube vehicle couplers (IEC 62196-3:2014)

Stecker, Steckdosen und Fahrzeugsteckvorrichtungen - Konduktives Laden von Elektrofahrzeugen - Teil 3: Anforderungen an und Hauptmaße für Stifte und Buchsen für die Austauschbarkeit von Fahrzeugsteckvorrichtungen zum dedizierten Laden mit Gleichstrom und als kombinierte Ausführung zum Laden mit Wechselstrom/Gleichstrom (IEC 62196-3:2014)

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule - Charge conductive des véhicules électriques - Partie 3: Exigences dimensionnelles de compatibilité et d'interchangeabilité pour les connecteurs de véhicule à broches et alvéoles pour courant continu et pour courants alternatif et continu (CEI 62196-3:2014)

Ta slovenski standard je istoveten z: **EN 62196-3:2014**

ICS:

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

SIST EN 62196-3:2015 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62196-3

November 2014

ICS 29.120.30; 43.120

English Version

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers (IEC 62196-3:2014)

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule - Charge conductive des véhicules électriques - Partie 3: Exigences dimensionnelles de compatibilité et d'interchangeabilité pour les connecteurs de véhicule à broches et alvéoles pour courant continu et pour courants alternatif et continu (CEI 62196-3:2014)

Stecker, Steckdosen und Fahrzeugsteckvorrichtungen - Konduktives Laden von Elektrofahrzeugen - Teil 3: Anforderungen an und Hauptmaße für Stifte und Buchsen für die Austauschbarkeit von Fahrzeugsteckvorrichtungen zum dedizierten Laden mit Gleichstrom und als kombinierte Ausführung zum Laden mit Wechselstrom/Gleichstrom (IEC 62196-3:2014)

This European Standard was approved by CENELEC on 2014-07-24. 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, Former Yugoslav Republic of Macedonia, 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.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 23H/303/FDIS, future edition 1 of IEC 62196-3, 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 62196-3:2014.

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)	2015-05-28
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-07-24

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 62196-3:2014 was approved by CENELEC as a European Standard without any modification.

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.

Clause 2 of EN 62196-1:2014 applies, except as follows.

Additional normative reference:

Publication	Year	Title	EN/HD	Year
IEC 62196-2	2011	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories	EN 62196-2 +A11 +A12	2012 2013 2014

IEC 62196-3

Edition 1.0 2014-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles –
Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule – Charge conductive des véhicules électriques – Partie 3: Exigences dimensionnelles de compatibilité et d'interchangeabilité pour les connecteurs de véhicule à broches et alvéoles pour courant continu et pour courants alternatif et continu

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 29.120.30, 43.120

ISBN 978-2-8322-1668-2

CONTENTS

FOREWORD 3
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 7
4 General 7
5 Ratings 7
6 Connection between the power supply and the electric vehicle 7
7 Classification of accessories 9
8 Marking 10
9 Dimensions 10
10 Protection against electric shock 10
11 Size and colour of earthing conductors 10
12 Provision for earthing 10
13 Terminals 11
14 Interlocks 11
15 Resistance to aging of rubber and thermoplastic material 11
16 General construction 11
17 Construction of socket-outlets 11
18 Construction of plugs and vehicle connectors 12
19 Construction of vehicle inlets 12
20 Degrees of protection 12
21 Insulation resistance and dielectric strength 12
22 Breaking capacity 12
23 Normal operation 12
24 Temperature rise 12
25 Flexible cables and their connection 13
26 Mechanical strength 13
27 Screws, current-carrying parts and connections 14
28 Creepage distances, clearances and distances 14
29 Resistance to heat, to fire and to tracking 14
30 Corrosion and resistance to rusting 14
31 Conditional short-circuit current withstand test 14
32 Electromagnetic compatibility 14
33 Vehicle driveover 14
Bibliography 15

Table 301 – Compatibility of mating accessories at vehicle 9
Table 302 – Interface Overview 10

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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

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.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62196-3 has been prepared by subcommittee 23H: Plugs, socket-outlets and couplers foe industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

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

FDIS	Report on voting
23H/303/FDIS	23H/306/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.

This part of IEC 62196 is to be read in conjunction with IEC 62196-1. The clauses of the particular requirements in Part 3 supplement or modify the corresponding clauses in Part 1. Where the text 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.

Subclauses, figures, tables or notes which are additional to those in IEC 62196-1 are numbered starting from 301.

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

Responding to global challenges of CO_2 reduction and energy security, the automobile industries have been accelerating the development and commercialization of electric vehicles and hybrid electric vehicles.

In addition to the prevailing hybrid electric vehicles, battery electric vehicles including plug-in hybrid electric vehicles are going to be mass-marketed.

To support the diffusion of such vehicles, this standard provides the standard interface configurations of vehicle couplers to be used in conductive charging of electric vehicles, taking the most frequent charging situations into consideration.

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: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers.

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

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

1 Scope

This part of IEC 62196 is applicable to vehicle couplers with pins and contact-tubes of standardized configuration, herein also referred to as “accessories”, intended for use in electric vehicle conductive charging systems which incorporate control means, with rated operating voltage up to 1 500 V d.c. and rated current up to 250 A, and 1 000 V a.c. and rated current up to 250 A.

This part of IEC 62196 applies to high power d.c. interfaces and combined a.c./d.c. interfaces of vehicle couplers specified in IEC 62196-1:2014, and intended for use in conductive charging systems for circuits specified in IEC 61851-1:2010, and IEC 61851-23:2014.

The d.c. vehicle connectors covered by this part of the standard are used only in charging mode 4, according to Case C in Clause 6.2 of IEC 61851-1:2010, Figure 3 in Clause 6.3.1 of IEC 61851-1:2010 and IEC 62196-2:2011.

The d.c. vehicle inlets covered by this part of the standard are used only in charging mode 4, according to Case C in Clause 6.2 of IEC 61851-1:2010, Figure 3 in Clause 6.3.1 of IEC 61851-1:2010.

These vehicle couplers are intended to be used for circuits similar to those specified in IEC 61851-23 which operate at different voltages and which may include ELV and communication signals.

This part of IEC 62196 applies to the vehicle couplers to be used in an ambient temperature of between –30 °C and +50 °C.

NOTE 1 In some countries, other requirements may apply.

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

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

2 Normative references

Clause 2 of IEC 62196-1:2014 applies, except as follows.

Additional normative reference:

IEC 62196-2:2011, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories*

3 Terms and definitions

Clause 3 of IEC 62196-1:2014 applies.

4 General

Clause 4 of IEC 62196-1:2014 applies.

5 Ratings

Clause 5 of IEC 62196-1:2014 applies.

6 Connection between the power supply and the electric vehicle

Clause 6 of IEC 62196-1:2014 applies, except as follows:

6.4 Universal interface

Not applicable.

6.5 Basic interface

Not applicable.

6.6 D.C. configurations

Replacement:

For all d.c. configurations, the d.c. interface may contain up to 12 power or signal contacts, with only one physical configuration of contact positions. The electrical ratings and their function are described in Table 4 of 62196-1. They shall be used in a system according to IEC 61851-23:2014, Annex AA “D.C. electric vehicle charging station of System A” or Annex BB “D.C. Electric vehicle charging station of System B” respectively. See the corresponding standard sheets for additional interface details.

6.7 Contact sequencing

Addition:

For all d.c. interfaces, the contact sequence during the connection process shall be:

– Protective Earth (if any)
– d.c. power contacts
– Isolation monitor contacts:

NOTE 1 if provided, isolation monitor contacts shall mate before or simultaneously with the control pilot contact.

– Proximity detection or connection switch contact

NOTE 2 if provided, proximity detection or connection switch contacts shall mate before or simultaneously with the control pilot contact.

– Control pilot contact

During disconnection the order shall be reversed.

Additional subclause:

6.301 Configuration EE and FF combined interface

A combined interface extends the use of a basic interface for a.c. and d.c charging. D.C. charging can be achieved by providing additional d.c. power contacts to supply d.c. energy to the electric vehicle.

The basic portion of the combined vehicle inlet can be used with a basic connector for a.c. charging only or a combined vehicle connector for d.c. charging.

Combined couplers shall only be used for d.c. charging with the “d.c. electric vehicle charging station of System C” described in IEC 61851-23:2014, Annex CC.

General requirements and ratings for all contacts are given in IEC 62196-1:2014, Table 5.

If the a.c. or d.c ratings of a mating connector and inlet differ, the coupler (mating pair) shall be used at the lower rating of either the vehicle connector or vehicle inlet of the mating accessory.

Ratings and requirements for the use of the combined interface with a.c. are defined in IEC 62196-2:2011.

Electric vehicles with a combined vehicle inlet shall withstand a.c. voltage at the power contacts of the basic portion.

NOTE This requirement will be withdrawn when an equivalent update is included in ISO 17409.

Table 301 – Compatibility of mating accessories at vehicle

		Vehicle connector								
		Type 1	Type 2	Type 3	Configuration AA	Configuration BB	Configuration EE	Configuration FF	Universal, high power a.c.	Universal, high power d.c.
Vehicle inlet	**Type 1**	Yes	-	-	-	-	-	-	-	-
	Type 2	-	Yes	-	-	-	-	-	-	-
	Type 3	-	-	Yes	-	-	-	-	-	-
	Configuration AA	-	-	-	Yes	-	-	-	-	-
	Configuration BB	-	-	-	-	Yes	-	-	-	-
	Configuration EE	Yes	-	-	-	-	Yes	-	-	-
	Configuration FF	-	Yes	-	-	-	-	Yes	-	-
	Universal, high power a.c.	-	-	-	-	-	-	-	Yes	-
	Universal, high power d.c.	-	-	-	-	-	-	-	-	Yes

NOTE 1 For Type 1, Type 2 and Type 3 refer to the corresponding standard sheets in IEC 62196-2:2011.

NOTE 2 For Configurations AA, BB, EE, and FF, refer to the corresponding standards sheets.

NOTE 3 For Universal high power a.c. and Universal high power d.c., refer to IEC 62196-1:2014.

7 Classification of accessories

Clause 7 of IEC 62196-1:2014 applies, except as follows:

7.1 *Replacement:*

– Vehicle connectors,
– Vehicle inlets.

7.5 *Replacement:*

As specified in Clause 6 and IEC 61851-1:2010:

– Combined interface

Additional subclause:

7.301 According to the standard sheets used:

– Configuration AA
– Configuration BB
– Configuration EE
  a.c. corresponding to Type 1 in IEC 62196-2:2011 and d.c.
– Configuration FF