BS EN IEC 62196-6:2022

BSI Standards Publication

Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles

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

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

National foreword

This British Standard is the UK implementation of EN IEC 62196-6:2022. It is identical to IEC 62196-6:2022.

The UK participation in its preparation was entrusted to Technical Committee PEL/23/4, Protected type plugs and sockets.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 00976 7

ICS 29.120.30; 43.120

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2022.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62196-6

June 2022

ICS 29.120.30; 43.120

English Version

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - 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 (IEC 62196-6:2022)

Fiches, socles de prise de courant, prises mobiles de véhicule et socles de connecteur de véhicule - Charge conductive des véhicules électriques - Partie 6: Exigences dimensionnelles de compatibilité pour les prises de courant de véhicules à broches et alvéoles à courant continu pour système d'alimentation pour véhicules électriques en courant continu lorsque la protection est réalisée par séparation électrique (IEC 62196-6:2022)

Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker - Konduktives Laden von Elektrofahrzeugen - Teil 6: Anforderungen an die Kompatibilität von Maßen für Gleichstrom-Fahrzeugsteckvorrichtungen mit Stiften und Kontaktbuchsen, vorgesehen für den Gebrauch mit Gleichstrom-Versorgungseinrichtungen für Elektrofahrzeuge, bei denen der Schutz auf elektrischer Trennung beruht (IEC 62196-6:2022)

This European Standard was approved by CENELEC on 2022-05-27. 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, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

© 2022 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN IEC 62196-6:2022 E

AVA Documents Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

European foreword

The text of document 23H/501/FDIS, future edition 1 of IEC 62196-6, prepared by 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 IEC 62196-6:2022.

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) 2023-02-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-05-27

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

This document is read in conjunction with EN IEC 62196-1:2022.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62196-6:2022 was approved by CENELEC as a European Standard without any modification.

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.

Annex ZA of EN IEC 62196-1:2022 applies, in addition to the following:

Publication	Year	Title	EN/HD	Year
IEC 61851-25	2020	Electric vehicle conductive charging system - Part 25: DC EV supply equipment where protection relies on electrical separation	EN IEC 61851-25	2021
IEC 62196-1	2022	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements	EN IEC 62196-1	2022

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

CONTENTS

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

AVA Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

Table 601 – Overview of the DC vehicle interface 9
Table 1 – Size for conductors 11
Table 9 – Normal operation 14
Table 10 – Test current and nominal cross-sectional areas of copper conductors for temperature rise test 14
Table 11 – Pull force and torque test values for cable anchorage 14

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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

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 62196-6 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:

Draft	Report on voting
23H/501/FDIS	23H/505/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.

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

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 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 document is to be read in conjunction with IEC 62196-1:2022. The clauses of the particular requirements in Part 6 supplement or modify the corresponding clauses in Part 1. Where the text indicates "addition" to or "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 this standard. Where no change is necessary, the words "Clause X of IEC 62196-1:2022 is applicable" are used.

Subclauses, figures or tables which are additional to those in IEC 62196-1:2022 are numbered starting from 601.

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 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.

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022

INTRODUCTION

With the continued development and expansion of the use of electric power into other classes of electric vehicles (EV) and hybrid electric vehicles, the introduction and commercialization of electric powered two or three wheelers (hereafter e-PTWs) are being accelerated in the global market and responding to the global concerns on CO_2 reduction and energy saving.

In comparison with the passenger cars, e-PTWs have a shorter range per charge and need more charging possibilities, especially public DC charging stations. This document provides general and basic requirements for a compact interface for small sized DC EV supply equipment, which could be installed in various places such as convenience stores, newspaper stands, lottery shops, etc., and could help the diffusion of e-PTWs.

Documents
Document Sharing Hub

Full document details: BS EN IEC 62196-6:2022