

TECHNICAL SPECIFICATION

**Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive
charging of electric vehicles -
Part 7: Vehicle adapters**

Document Preview

[IEC TS 62196-7:2026](https://standards.iteh.ai/IEC/TS/62196-7/2026)

<https://standards.iteh.ai/catalog/standards/iec/a5d343f7-fad5-40e3-a420-7056755b5318/iec-ts-62196-7-2026>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2026 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search -

webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC TS 62196-7:2026

<https://standards.iteh.ai/catalog/standards/iec/a5d343f7-fad5-40e3-a420-7056755b5318/iec-ts-62196-7-2026>

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General	10
4.1 General requirements	10
4.3 General notes on tests	11
5 Ratings	11
5.1 Preferred rated operating voltage ranges	11
5.2 Preferred rated currents	12
5.2.1 General	12
5.2.3 Accessories not suitable for making and breaking an electric circuit under load	12
5.2.4 Accessories suitable for, or not suitable for, making and breaking an electrical circuit under load	12
6 Connection between the power supply and the electric vehicle	12
6.1 Interfaces	12
6.2 Basic interface	12
6.3 DC interface	12
6.4 Combined interface	12
6.701 Inlet interface	12
6.702 Connector interface	13
7 Classification of accessories	13
7.1 According to the construction of adapter	13
7.2 According to function	13
8 Marking	13
9 Dimensions	13
10 Protection against electric shock	14
10.1 General	14
10.2 Accessories with shutters	14
10.3 Contact sequencing and order of contact insertion and withdrawal	14
10.4 Misassembly	14
11 Size and color of protective earthing and neutral conductors	14
12 Provision for earthing	15
13 Terminal	15
14 Interlocks	15
15 Resistance to aging of rubber and thermoplastic material	15
16 General construction	16
17 Construction of socket-outlets	18
18 Construction of plugs and vehicle connectors	18
19 Construction of vehicle inlets	18
20 Degrees of protection	18
21 Insulation resistance and dielectric strength	20
22 Breaking capacity	20

23	Normal operation	20
23.1	Mechanical, electrical, and thermal stresses and contaminants	20
23.2	Load endurance test	20
23.3	No-load endurance test	20
23.4	Lid springs	21
24	Temperature rise	21
24.1	According to GG-AA/GG-BB adapter	21
25	Flexible cables and their connection	21
26	Mechanical strength	23
26.1	General	23
26.2	Ball impact	23
26.3	Drop test	25
26.4	Flexing test	25
26.5	Cable gland test	27
26.6	Shutters	27
26.7	Insulated end caps	28
27	Screws, current-carrying parts and connections	28
28	Creepage distances, clearances and distances through sealing compound	28
29	Resistance to heat and to fire	28
30	Corrosion and resistance to rusting	28
31	Conditional short-circuit current	28
32	Electromagnetic compatibility	28
33	Vehicle drive-over	29
34	Thermal cycling	29
35	Humidity exposure	29
36	Misalignment	30
36.1	General	30
36.2	Samples	30
36.3	Misalignment test	30
37	Contact endurance test	32
701	Construction of the adapter connector	32
702	Construction of the adapter inlet	33
703	Thermal protection requirements for a general adapter	34
703.1	General	34
703.2	Thermal protective device	34
Annex AA (normative)	Temperature rise test for a AA-GG/BB-GG general adapter	36
AA.1	General test conditions	36
AA.2	Temperature rise test for a general adapter	36
Annex BB (informative)	Thermal management requirements for an advanced adapter	40
BB.1	General	40
BB.2	Temperature monitoring	40
BB.3	Temperature rise test for advanced adapters	40
BB.4	Thermal sensing device test for advanced adapters	41
BB.4.1	Thermal sensing device test for the adapter connector	42
BB.4.2	Thermal sensing device test for the adapter inlet	42
Annex CC (informative)	Hardware coding solutions	44

Annex DD (informative) Required structure on vehicle adapters.....	46
Bibliography.....	47
Figure 701 – Type A adapter.....	9
Figure 702 – Type B adapter.....	9
Figure 703 – Type C adapter	10
Figure 704 – Diagram showing the protection degree requirement of Type A adapter	18
Figure 705 – Apparatus for testing the cable anchorage	22
Figure 706 – Ball impact test	24
Figure 707 – Apparatus for flexing test	27
Figure 708 – Overview of the mechanical load test for Type A vehicle adapter	31
Figure 709 – Application of external mechanical load (mounted according to Figure 708)	31
Figure 710 – Temperature rise criteria under external mechanical load.....	32
Figure 711 – Schematic diagram for thermal protection	34
Figure AA.1 – Reference device 1.....	36
Figure AA.2 – Reference device 2.....	37
Figure AA.3 – Test setup	38
Figure BB.1 – Schematic diagram for thermal management	40
Figure BB.2 –Test setup	41
Figure CC.1 – Control pilot circuit of AA-GG vehicle adapter	44
Figure CC.2 – Control pilot circuit of BB-GG vehicle adapter	44
Table 701 – Conductor cross-sections for the cables of Type B and Type C adapters	10
Table 702 – Pull force and torque test values for cable anchorage.....	23
Table 703 – Impact energy for ball impact test.....	24
Table 704 – Mechanical load flexing test	26
Table AA.1 – Maximum contact resistance and dimensions of Reference device 1.....	37
Table AA.2 – Maximum contact resistance and dimensions of Reference device 2.....	38
Table CC.1 – Hardware code combinations	45
Table DD.1 – Required structure on a vehicle adapter	46

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Plugs, socket-outlets, vehicle connectors and vehicle inlets -
Conductive charging of electric vehicles -
Part 7: Vehicle adapters**

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TS 62196-7 has been prepared by subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee TC 23: Electrical accessories. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
23H/563/DTS	23H/576A/RVDTS

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 Technical Specification 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/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.

This document is to be read in conjunction with IEC 62196-1:2022 and IEC 62196-3:20—. The clauses of the particular requirements in IEC 62196-7 supplement or modify the corresponding clauses in IEC 62196-1 and IEC 62196-3. Where the text indicates "addition" to or "replacement" of the relevant requirement, test specification or explanation of IEC 62196-1 and IEC 62196-3, these changes are made to the relevant text of IEC 62196-1 and IEC 62196-3, which then becomes part of this document. 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 701.

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, or
- revised.

IEC TS 62196-7:2026

<https://standards.iteh.ai/catalog/standards/iec/a5d343f7-fad5-40e3-a420-7056755b5318/iec-ts-62196-7-2026>