

# 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  
connecteurs de véhicule – Charge conductive des véhicules électriques –  
Partie 1: Exigences générales**





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## CONTENTS

FOREWORD .....	6
INTRODUCTION .....	8
1 Scope .....	9
2 Normative references .....	9
3 Terms and definitions .....	11
4 General .....	21
4.1 General requirements .....	21
4.2 Components .....	21
4.2.1 Ratings .....	21
4.2.2 Mechanical assembly .....	21
4.2.3 Current-carrying parts of incorporated components .....	21
4.2.4 Electrical connections .....	21
4.3 General notes on tests .....	22
5 Ratings .....	23
5.1 Preferred rated operating voltage ranges .....	23
5.2 Preferred rated currents .....	23
5.2.1 General .....	23
5.2.2 Rated current for signal or control purposes .....	24
5.2.3 Accessories not suitable for making and breaking an electrical circuit under load .....	24
5.2.4 Accessories suitable for, or not suitable for, making and breaking an electrical circuit under load .....	24
6 Connection between the power supply and the electric vehicle .....	24
6.1 Interfaces .....	24
6.2 Basic interface .....	24
6.3 DC interface .....	24
6.4 Combined interface .....	24
7 Classification of accessories .....	25
7.1 According to purpose .....	25
7.2 According to the method of connecting the conductors .....	25
7.3 According to serviceability .....	25
7.4 According to electrical operation .....	25
7.5 According to interface .....	25
7.6 According to locking facilities .....	25
7.7 According to interlock facilities .....	25
7.8 According to the presence of shutter(s) .....	25
8 Marking .....	25
9 Dimensions .....	28
10 Protection against electric shock .....	29
10.1 General .....	29
10.2 Accessories with shutters .....	29
10.3 Contact sequencing and order of contact insertion and withdrawal .....	32
10.4 Misassembly .....	33
11 Size and colour of protective earthing and neutral conductors .....	33
12 Provisions for earthing .....	34

13	Terminals .....	36
13.1	Common requirements .....	36
13.2	Screw type terminals .....	38
13.3	Mechanical tests on terminals .....	40
14	Interlocks .....	43
14.1	Accessories with interlock .....	43
14.2	Accessories with integral switching device .....	48
14.3	Control circuit devices and switching elements .....	48
14.4	Pilot contacts and auxiliary circuits .....	48
15	Resistance to ageing of rubber and thermoplastic material .....	48
16	General construction .....	49
17	Construction of EV socket-outlets – General .....	53
18	Construction of EV plugs and vehicle connectors .....	53
19	Construction of vehicle inlets .....	54
20	Degrees of protection .....	54
21	Insulation resistance and dielectric strength .....	56
22	Breaking capacity .....	57
23	Normal operation .....	60
23.1	Mechanical, electrical, and thermal stresses and contaminants .....	60
23.2	Load endurance test .....	60
23.3	No-load endurance test .....	61
23.4	Lid springs .....	62
24	Temperature rise .....	62
25	Flexible cables and their connection .....	64
25.1	Strain relief .....	64
25.2	Requirements for EV plugs and vehicle connectors .....	64
25.2.1	Non-rewirable EV plugs and vehicle connectors .....	64
25.2.2	Rewirable EV plugs and vehicle connectors .....	64
25.3	EV plugs and vehicle connectors provided with a flexible cable .....	65
26	Mechanical strength .....	67
26.1	General .....	67
26.2	Ball impact .....	68
26.3	Drop test .....	69
26.4	Flexing test .....	70
26.5	Cable gland test .....	72
26.6	Shutters .....	73
26.7	Insulated end caps .....	73
26.7.1	General .....	73
26.7.2	Insulated end caps – Change of temperature test .....	74
26.7.3	Insulated end caps – Pull test .....	74
27	Screws, current-carrying parts and connections .....	74
28	Creepage distances, clearances and distances through sealing compound .....	77
29	Resistance to heat and to fire .....	78
30	Corrosion and resistance to rusting .....	79
31	Conditional short-circuit current .....	80
31.1	General .....	80

31.2	Ratings and test conditions .....	80
31.3	Test circuit .....	81
31.4	Calibration .....	84
31.5	Test procedure .....	84
31.6	Behaviour of the equipment under test .....	85
31.7	Acceptance conditions .....	85
32	Electromagnetic compatibility .....	85
32.1	Immunity .....	85
32.2	Emission .....	85
33	Vehicle drive over .....	85
34	Thermal cycling .....	86
34.1	General .....	86
34.2	Initial temperature rise test .....	86
34.3	Thermal cycling test .....	86
34.4	Final temperature rise test .....	86
35	Humidity exposure .....	87
35.1	General .....	87
35.2	Initial temperature rise test .....	87
35.3	Humidity test .....	87
35.4	Final temperature rise test .....	87
36	Misalignment .....	87
36.1	General .....	87
36.2	Samples .....	88
36.3	Misalignment test .....	88
37	Contact endurance test .....	90
37.1	Equipment .....	90
37.2	Test sequence .....	91
37.3	Compliance .....	92
	Bibliography .....	94
	Figure 1 – Diagram showing the use of the accessories .....	12
	Figure 2 – Lug terminals .....	16
	Figure 3 – Mantle terminals .....	16
	Figure 4 – Pillar terminals .....	17
	Figure 5 – Saddle terminals .....	18
	Figure 6 – Screw-type terminals .....	19
	Figure 7 – Stud terminals .....	20
	Figure 8 – Test piston .....	28
	Figure 9 – Gauge "A" for checking shutters .....	31
	Figure 10 – Gauge "B" for checking shutters .....	32
	Figure 11 – Gauges for testing insertability of round unprepared conductors having the maximum specified cross-section .....	39
	Figure 12 – Equipment test arrangement .....	41
	Figure 13 – Apparatus for checking the withdrawal force .....	46
	Figure 14 – Verification of the latching device .....	47
	Figure 15 – Circuit diagrams for breaking capacity and normal operation tests .....	59

Figure 16 – Points of measurement.....	64
Figure 17 – Apparatus for testing the cable anchorage .....	66
Figure 18 – Ball impact test .....	68
Figure 19 – Arrangement for mechanical strength test for EV plugs and vehicle connectors .....	70
Figure 20 – Apparatus for flexing test .....	72
Figure 21 – Diagram of the test circuit for the verification of short-circuit current withstand of two-pole equipment on a single-phase AC or DC.....	82
Figure 22 – Diagram of the test circuit for the verification of short-circuit current withstand of three-pole equipment .....	83
Figure 23 – Diagram of the test circuit for the verification of short-circuit current withstand of four-pole equipment .....	84
Figure 24 – Overview of the mechanical load test .....	89
Figure 25 – Application of external mechanical load (mounted according to Figure 24) .....	89
Figure 26 – Temperature rise criteria under external mechanical load.....	90
Figure 27 – Forced-air circulating oven .....	90
Figure 28 – Thermal cycling.....	92
Figure 29 – Pass/fail based on temperature rise criteria.....	93
 Table 1 – Size for conductors .....	34
Table 2 – Short-time test currents .....	35
Table 3 – Values for flexing under mechanical load test.....	42
Table 4 – Value for terminal pull test.....	43
Table 5 – Withdrawal force with respect to ratings .....	47
Table 6 – Cable length used to determine pull force on retaining means .....	50
Table 7 – Test voltage for dielectric strength test.....	57
Table 8 – Breaking capacity .....	60
Table 9 – Normal operation.....	61
Table 10 – Test current and nominal cross-sectional areas of copper conductors for temperature rise test.....	63
Table 11 – Pull force and torque test values for cable anchorage.....	67
Table 12 – Summary of mechanical tests .....	67
Table 13 – Impact energy for ball impact test.....	69
Table 14 – Mechanical load flexing test .....	71
Table 15 – Torque test values for glands .....	73
Table 16 – Pulling force on insulated end caps .....	74
Table 17 – Tightening torque for verification of mechanical strength of screw-type terminals.....	75

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE  
INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –****Part 1: General requirements****FOREWORD**

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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. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2014. This edition constitutes a technical revision.

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

- a) deletion of references to universal AC and DC interfaces;
- b) additional requirements for contact materials and plating;
- c) changes to the temperature rise test to include additional points of measurement;
- d) additional tests for accessories to address thermal stresses and stability, mechanical wear and abuse, and exposure to contaminants;

e) relocation of information and requirements for DC charging to IEC 62196-3.

The text of this International Standard is based on the following documents:

Draft	Report on voting
23H/499/FDIS	23H/503/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.

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/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.

Subsequent parts of IEC 62196 deal with the requirements of particular types of accessories. The clauses of those particular requirements supplement or modify the corresponding clauses in this document.

In this document, the following print types are used:

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- *test specifications*: in italic type;
- notes: in smaller roman type.

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## INTRODUCTION

IEC 61851 (all parts) specifies requirements for electric vehicle (EV) conductive charging systems.

IEC 62196 (all parts) specifies the requirements for plugs, socket-outlets, vehicle connectors, vehicle inlets and cable assemblies as described in the IEC 61851 series.

Some charging can be achieved by direct connection from an electric vehicle to standard socket-outlets connected to a supply network (mains or electrical grid).

Some modes of charging require a dedicated supply and charging equipment incorporating control and communication circuits.

IEC 62196 (all parts) covers the mechanical, electrical and performance requirements for plugs, socket-outlets, vehicle connectors and vehicle inlets for the connection between the EV supply equipment and the electric vehicle.

The IEC 62196 series consists of the following parts:

- Part 1: General requirements, comprising clauses of a general character.
- Part 2: Dimensional compatibility and interchangeability requirements for AC pin and contact-tube accessories.
- Part 3: Dimensional compatibility and interchangeability requirements for DC and AC/DC pin and contact-tube vehicle couplers.
- Part 3-1: Vehicle connector, vehicle inlet and cable assembly intended to be used with a thermal management system for DC charging.
- Part 4<sup>1</sup>: Dimensional compatibility and interchangeability requirements for DC pin and contact-tube accessories for Class II or Class III applications.
- Part 6: Dimensional compatibility and interchangeability requirements for DC pin and contact-tube couplers for applications using a system of protective electrical separation.

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<sup>1</sup> Pending publication.

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

- 690 V AC 50 Hz to 60 Hz, at a rated current not exceeding 250 A;
- 1 500 V DC at a rated current not exceeding 800 A.

These accessories and cable assemblies are intended to be installed by instructed persons (IEV 195-04-02) or skilled persons (IEV 195-04-01) only.

These accessories and cable assemblies are intended to be used for circuits specified in IEC 61851 (all parts), which operate at different voltages and frequencies, and which can include extra-low voltage and communication signals.

These accessories and cable assemblies are intended to be used at an ambient temperature between –30 °C and +40 °C.

NOTE 1 In some countries, other requirements can apply.

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

NOTE 3 The manufacturer can enlarge the temperature range on the condition that the specified range information is provided.

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

The accessories covered by this document are intended for use in electric vehicle supply equipment in accordance with IEC 61851 (all parts).

This document does not apply to standard plug and socket-outlets used for mode 1 and mode 2 according to IEC 61851-1:2017, 6.2.

NOTE 4 In the following countries, mode 1 is not allowed: UK, US, CA, SG.

#### 2 Normative references

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.

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*