



SLOVENSKI STANDARD
oSIST prEN IEC 62196-1:2024
01-junij-2024

Vtiči, vtičnice, konektorji in uvodnice na vozilih - Kabelsko napajanje električnih vozil - 1. del: Splošne zahteve

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

Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker - Konduktives Laden von Elektrofahrzeugen – Teil 1: Allgemeine Anforderungen

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

Ta slovenski standard je istoveten z: prEN IEC 62196-1:2024

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ICS:

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43.120	Električna cestna vozila	Electric road vehicles

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23H/550/CDV

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IEC SC 23H : PLUGS, SOCKET-OUTLETS AND COUPLERS FOR INDUSTRIAL AND SIMILAR APPLICATIONS, AND FOR ELECTRIC VEHICLES	
SECRETARIAT: France	SECRETARY: Mrs Anne Le Guennec
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 69	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

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

PROPOSED STABILITY DATE: 2030

NOTE FROM TC/SC OFFICERS:

The list of changes in FOREWORD will be subject to change and some drawings in Standard Sheets shall be improved at the next stage

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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Part 1: General requirements

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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.

227

228

This fifth edition cancels and replaces the fourth edition published in 2022. This edition constitutes a technical revision.

229

Sec note: The following list of changes will be subject to change

230

231

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

232

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235

a) addition of new tests for latching devices and retaining means;

b) inclusion of type 4 accessories;

c) addition of new annex to incorporate the content of IEC TS 62196-3-1.

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

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

237

238 Full information on the voting for its approval can be found in the report on voting indicated in
239 the above table.

240 The language used for the development of this International Standard is English.

241 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
242 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
243 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
244 described in greater detail at www.iec.ch/standardsdev/publications.

245 A list of all parts in the IEC 62196 series, published under the general title *Plugs, socket-outlets,*
246 *vehicle connectors and vehicle inlets – Conductive charging of electric vehicles*, can be found
247 on the IEC website.

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

251 In this document, the following print types are used:

- 252 – requirements proper: in roman type;
- 253 – *test specifications: in italic type;*
- 254 – notes: in smaller roman type.

255 The committee has decided that the contents of this document will remain unchanged until the
256 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
257 specific document. At this date, the document will be

- 258 • reconfirmed,
- 259 • withdrawn,
- 260 • replaced by a revised edition, or
- 261 • amended.

262

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INTRODUCTION

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

268 IEC 62196 (all parts) specifies the requirements for plugs, socket-outlets, vehicle connectors,
269 vehicle inlets and cable assemblies as described in the IEC 61851 series and in IEC 62752.

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

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

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

277 The IEC 62196 series consists of the following parts:

- 278 – Part 1: General requirements, comprising clauses of a general character.
- 279 – Part 2: Dimensional compatibility and interchangeability requirements for AC pin and
280 contact-tube accessories.
- 281 – Part 3: Dimensional compatibility and interchangeability requirements for DC and AC/DC
282 pin and contact-tube vehicle couplers.
- 283 – Part 4: Dimensional compatibility and interchangeability requirements for DC pin and
284 contact-tube accessories for Class II or Class III applications.
- 285 – Part 6: Dimensional compatibility requirements for DC pin and contact-tube vehicle couplers
286 intended to be used for DC EV supply equipment where protection relies on electrical
287 separation.

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Document Preview

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

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Part 1: General requirements

297 **1 Scope**

298 This part of IEC 62196 is applicable to EV plugs, EV socket-outlets, vehicle connectors, vehicle
299 inlets, herein referred to as "accessories", and to cable assemblies for electric vehicles (EV)
300 intended for use in conductive charging systems which incorporate control means, with a rated
301 operating voltage not exceeding:

- 302 – 690 V AC 50 Hz to 60 Hz, at a rated current not exceeding 250 A;
303 – 1 500 V DC at a rated current not exceeding 800 A.

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

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

309 These accessories and cable assemblies are anticipated to be used at an ambient temperature
310 between -30 °C and $+40\text{ °C}$.

311 NOTE 1 In some countries, other requirements can apply.

312 NOTE 2 In the following country, -40 °C applies: SE.

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

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

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

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

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

322 **2 Normative references**

323 The following documents are referred to in the text in such a way that some or all of their content
324 constitutes requirements of this document. For dated references, only the edition cited applies.
325 For undated references, the latest edition of the referenced document (including any
326 amendments) applies.

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

328 IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic*
329 *(12 h + 12 h cycle)*

- 330 IEC 60112, *Method for the determination of the proof and the comparative tracking indices of*
331 *solid insulating materials*
- 332 IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including*
333 *450/750 V*
- 334 IEC 60228:2004, *Conductors of insulated cables*
- 335 IEC 60245-4, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4:*
336 *Cords and flexible cables*
- 337 IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*
- 338 IEC 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by*
339 *authorized persons (fuses mainly for industrial application) – Examples of standardized systems*
340 *of fuses A to K*
- 341 IEC 60309-4:2021, *Plugs, fixed or portable socket-outlets and appliance inlets for industrial*
342 *purposes – Part 4: Switched socket-outlets with or without interlock*
- 343 IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
344 IEC 60529:1989/AMD1:1999
345 IEC 60529:1989/AMD2:2013
- 346 IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems –*
347 *Part 1: Principles, requirements and tests*
- 348 IEC 60664-3, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of*
349 *coating, potting or moulding for protection against pollution*
- 350 IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods –*
351 *Glow-wire flammability test method for end-products (GWEPT)*
- 352 IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*
- 353 IEC 60947-3:2020, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors,*
354 *switch-disconnectors and fuse-combination units*
- 355 IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and*
356 *switching elements – Electromechanical control circuit devices*
- 357 IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*
- 358 IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*
- 359 IEC 61851-1:2017, *Electric vehicle conductive charging system – Part 1: General requirements*
- 360 IEC 61851-23:—¹, *Electric vehicle conductive charging system – Part 23: DC electric vehicle*
361 *supply equipment*
- 362 IEC 62196-2:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive*
363 *charging of electric vehicles – Part 2: Dimensional compatibility requirements for AC pin and*
364 *contact-tube accessories*

¹ Second edition under preparation. Stage at the time of publication: IEC PRVC 61851-23:2022.

365 IEC 62196-3:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive*
366 *charging of electric vehicles – Part 3: Dimensional compatibility requirements for DC and*
367 *AC/DC pin and contact-tube vehicle couplers*

368 IEC Guide 117:2010. *Electrotechnical equipment – Temperatures of touchable hot surfaces*

369 ISO 1456, *Metallic and other inorganic coatings – Electrodeposited coatings of nickel, nickel*
370 *plus chromium, copper plus nickel and of copper plus nickel plus chromium*

371 ISO 2081, *Metallic and other inorganic coatings – Electroplated coatings of zinc with*
372 *supplementary treatments on iron or steel*

373 ISO 2093, *Electroplated coatings of tin – Specification and test methods*

374 ISO 4521:2008, *Metallic and other inorganic coatings – Electrodeposited silver and silver alloy*
375 *coatings for engineering purposes – Specification and test methods*

376 **3 Terms and definitions**

377 For the purposes of this document, the following terms and definitions apply.

378 ISO and IEC maintain terminological databases for use in standardization at the following
379 addresses:

- 380 • IEC Electropedia: available at <http://www.electropedia.org/>
- 381 • ISO Online browsing platform: available at <http://www.iso.org/obp>

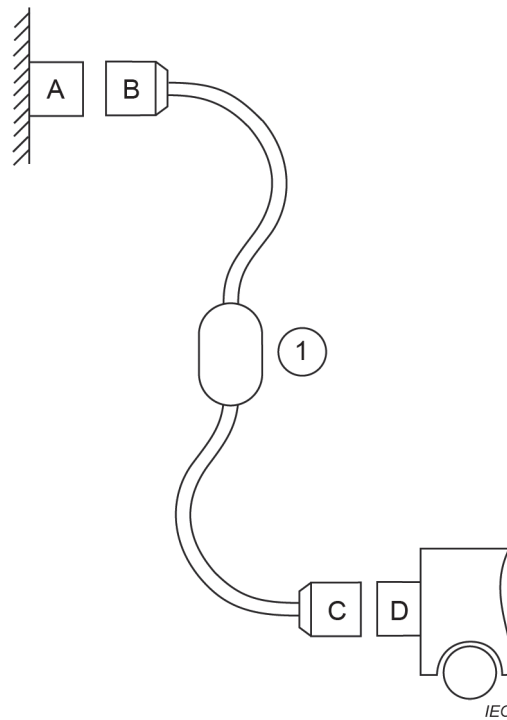
382 NOTE 1 Where the terms "voltage" and "current" are used, they imply root mean square (RMS) values, unless
383 otherwise specified.

384 NOTE 2 The application of accessories is shown in Figure 1.

Document Preview

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Key

- 1 In-cable control and protective device (IC-CPD)
 A Standard socket-outlet or EV socket-outlet
 B Standard plug or EV plug
 C Vehicle connector
 D Vehicle inlet

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Figure 1 – Diagram showing the use of the accessories**3.1****accessory**

EV plug, EV socket-outlet, vehicle connector or vehicle inlet, with cable (forming a cable assembly) or without cable, for use in conductive charging systems for electric vehicles

3.2**auxiliary power**

external electrical energy power supply used for purposes other than charging of the electric vehicle propulsion battery

Note 1 to entry: In French, the resulting assembly when a plug is inserted into a socket-outlet is called "prise de courant".

3.3**cable assembly**

assembly consisting of flexible cable or cord fitted with a standard plug or EV plug and/or a vehicle connector, that is used to establish the connection between the EV and the supply network or an EV charging station

Note 1 to entry: A cable assembly can be detachable or be a part of the EV or of the EV charging station.

Note 2 to entry: A cable assembly can include one or more cables, with or without a fixed jacket, which can be in a flexible tube, conduit or wire way.

[SOURCE: IEC 61851-1:2017, 3.5.2, modified – "plug" has been replaced with "standard plug or EV plug".]

407