

**SLOVENSKI STANDARD**  
**oSIST prEN IEC 62196-3:2024**  
**01-junij-2024**

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**Vtiči, vtičnice, konektorji in uvodnice na vozilih - Kabelsko napajanje električnih vozil - 3. del: Zahteve za dimenzijsko združljivost za spojke na vozilih s trni in cevastimi kontakti za enosmerni (DC) in izmenični/enosmerni (AC/DC) tok**

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility requirements for DC and AC/DC pin and contact-tube vehicle couplers

Stecker, Steckdosen und Fahrzeugsteckvorrichtungen - Konduktives Laden von Elektrofahrzeugen - Teil 3: Maßliche Kompatibilitätsanforderungen an Fahrzeugsteckvorrichtungen mit Stiften und Buchsen für Gleichstrom und kombiniert für Gleich- und Wechselstrom

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 pour les prises de courant de véhicule à broches et alvéoles pour courant continu et pour courants alternatif et continu

**Ta slovenski standard je istoveten z: prEN IEC 62196-3:2024**

**ICS:**

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

**oSIST prEN IEC 62196-3:2024**

**en,fr,de**





# 23H/551/CDV

## COMMITTEE DRAFT FOR VOTE (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 <b>Attention IEC-CENELEC parallel voting</b> 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

<https://standards.iteh.ai/catalog/standards/sist/40894683-6495-4b06-b0bc-582cc15e7fce/osist-pren-iec-62196-3-2024>

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TITLE:

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

PROPOSED STABILITY DATE: 2030

NOTE FROM TC/SC OFFICERS:

Some drawings 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 3: Dimensional compatibility requirements  
for DC and AC/DC pin and contact-tube vehicle couplers**

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## FOREWORD

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IEC 62196-3 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.

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220

This third edition cancels and replaces the second edition published in 2022. This edition constitutes a technical revision.

221

222

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

223

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226

a) The content of IEC TS 62196-3-1 has been integrated into this document as normative Annex CCC. As far as applicable, the clause numbers are identical with the main part. Added subclauses, tables and figures start with the number 100 to avoid confusion with the main part.

227

b) interchangeability requirements have been removed from the title of Part 3;

228

c) increased ratings for all configurations;

229

d) reference to new tests in IEC 62196-1 (Clauses 34, 35, 36 and 37).



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

Draft	Report on voting
23H/500/FDIS	23H/504/RVD

231  
232 Full information on the voting for its approval can be found in the report on voting indicated in  
233 the above table.

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

235 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in  
236 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available  
237 at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are  
238 described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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

242 This document is to be read in conjunction with IEC 62196-1:2022. The clauses of the particular  
243 requirements in this document supplement or modify the corresponding clauses in  
244 IEC 62196-1:2022. Where the text indicates an "addition" to or a "replacement" of the relevant  
245 requirement, test specification or explanation of IEC 62196-1:2022, these changes are made to  
246 the relevant text of IEC 62196-1:2022, which then becomes part of this document. Where no  
247 change is necessary, the words "Clause X of IEC 62196-1:2022 is applicable" are used.

248 Subclauses, figures, tables, or notes which are additional to those in IEC 62196-1:2022 are  
249 numbered starting from 301.

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

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

254 The committee has decided that the contents of this document will remain unchanged until the  
255 stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the  
256 specific document. At this date, the document will be

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

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## INTRODUCTION

264 IEC 61851 (all parts) specifies requirements for electric vehicle (EV) conductive supply  
265 equipment.

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

268 Charging using off-board DC charging equipment can be achieved by the direct connection of  
269 an electric vehicle to DC EV supply equipment incorporating control and communication circuits.

270 To support the connection of DC power for such vehicles, this document provides the standard  
271 interface configurations of DC vehicle couplers and accessories to be used in conductive  
272 charging of electric vehicles, taking the most frequent charging situations into consideration.

273 IEC 62196 is divided into several parts as follows:

- 274 – Part 1: General requirements, comprising clauses of a general character.
- 275 – Part 2: Dimensional compatibility requirements for AC pin and contact-tube accessories.
- 276 – Part 3: Dimensional compatibility requirements for DC and AC/DC pin and contact-tube  
277 vehicle couplers.
- 278 – Part 4: Dimensional compatibility requirements for DC pin and contact-tube accessories for  
279 Class II or Class III applications.
- 280 – Part 6: Dimensional compatibility requirements for DC pin and contact-tube couplers for  
281 applications using a system of protective electrical separation.

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

286  
287 **Part 3: Dimensional compatibility requirements**  
288 **for DC and AC/DC pin and contact-tube vehicle couplers**  
289

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291

292 **1 Scope**

293 This part of IEC 62196 is applicable to vehicle couplers with pins and contact tubes of  
294 standardized configuration, herein also referred to as "accessories", intended for use in electric  
295 vehicle conductive charging systems which incorporate control means, with rated operating  
296 voltage and current in accordance with IEC 62196-1:2022.

297 This document applies to high power DC interfaces and combined AC/DC interfaces of vehicle  
298 couplers that are intended for use in conductive charging systems for circuits specified in  
299 IEC 61851-1:2017 and IEC 61851-23:—<sup>1</sup>.

300 This document applies to accessories and cable assemblies that employ  
301 – thermal sensing, or  
302 – thermal transport and thermal sensing  
303 with the system architecture described in CCC.4.100 of Annex CCC.

304 The DC vehicle connectors and inlets covered by this document are used only in charging  
305 mode 4, according to IEC 61851-1:2017, 6.2.4, and case C, as shown in IEC 61851-1:2017,  
306 Figure 3.

307 These vehicle couplers are intended to be used for circuits specified in IEC 61851-23:— which  
308 operate at different voltages, and which can include ELV and communication signals.

309 This document applies to the vehicle couplers to be used in an ambient temperature between  
310 –30 °C and +40 °C.

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

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

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

315 These accessories are intended to be connected to cables according to the IEC 62893 series  
316 for DC cables.

317 **2 Normative references**

318 Clause 2 of IEC 62196-1:2022 applies, except as follows.

319 *Additional normative references:*

320 IEC 60364-5-54:2011, *Low-voltage electrical installations – Part 5-54: Selection and erection*  
321 *of electrical equipment – Earthing arrangements and protective conductors*

---

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

322 IEC 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials –*  
323 *Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and*  
324 *sheathing compounds*

325 IEC 62196-1:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive*  
326 *charging of electric vehicles – Part 1: General requirements*

327 IEC 62196-2:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive*  
328 *charging of electric vehicles – Part 2: Dimensional compatibility requirements for AC pin and*  
329 *contact-tube accessories*

330 IEC 62893-4-1:—<sup>2</sup>, *Charging cables for electric vehicles of rated voltages up to and including*  
331 *0,6/1 kV – Part 4-1: Cables for DC charging according to mode 4 of IEC 61851-1 – DC charging*  
332 *without use of a thermal management system*

333 ISO 2719:2016, *Determination of flash point – Pensky-Martens closed cup method*

334 ISO 17409:2020, *Electrically propelled road vehicles – Conductive power transfer – Safety*  
335 *requirements*

336 ISO 25178-1:2016, *Geometrical product specifications (GPS) – Surface texture: Areal – Part 1:*  
337 *Indication of surface texture*

338 *Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Eighth revised*  
339 *edition, United Nations, 2019*

340 *OECD Guidelines for the Testing of Chemicals, Section 3, Test No. 301: Ready*  
341 *Biodegradability, 17 Jul 1992*

### 342 **3 Terms and definitions**

343 Clause 3 of IEC 62196-1:2022 applies.

### 344 **4 General**

345 Clause 4 of IEC 62196-1:2022 applies except as follows:

346 *Addition:*

347 *Add the following after the 2<sup>nd</sup> paragraph of 4.1 of IEC 62196-1:20XX:*

348 Accessories of the combined interface for AC/DC type intended for use with AC shall comply  
349 with the ratings and requirements of IEC 62196-2:2022.

### 350 **5 Ratings**

351 Clause 5 of IEC 62196-1:202X applies, except as follows:

352 *Addition:*

#### 353 **5.2.2 Rated current for signal or control purposes**

354 *Add the following text at the end of Subclause 5.2.2:*

---

<sup>2</sup> Under preparation. Stage at the time of publication: IEC FDIS 62893-4-1:2020.

355 For configuration AA, control pilot contacts are rated 30 V, 10 A. The auxiliary power supply  
356 may consist of a safety extra-low voltage system circuit.

357 **5.2.4 Accessories suitable or, not suitable for, making and breaking an electrical circuit**  
358 **under load**

359 Clause 5.2.4 is not applicable.

360 *Add the following new subclause:*

361 **5.301 Rated current for auxiliary power supply contacts**

362 For configuration BB, auxiliary power supply contacts are rated 30 V, 10 A. The auxiliary power  
363 supply may consist of a safety extra-low voltage system circuit.

364 **6 Connection between the power supply and the electric vehicle**

365 Clause 6 of IEC 62196-1:202X applies, except as follows:

366 **6.2 Basic interface**

367 *Not applicable.*

368 **6.3 DC interface**

369 *Replacement:*

370 *Replace the existing text of IEC 62196-1:202X, 6.3 with the following:*

371 The DC interface may contain up to 12 power or signal contacts, with only one physical configuration  
372 of contact positions. The electrical ratings and contact functions are described in

373 Table 301.

374

375

**Table 301 – Overview of the DC vehicle interface**

Position number <sup>a</sup>	Configuration						Symbol	Function
	AA		BB		GG			
	$U_{max}$ V	$I_{max}$ A	$U_{max}$ V	$I_{max}$ A	$U_{max}$ V	$I_{max}$ A		
1	1 000	400	950	250	1 500	600	DC +	DC +
2	1 000	400	950	250	1 500	600	DC –	DC –
3	30	10	30	2	30	2	CP	Control Pilot 1
4	30	10	30	2	30	2	CP2	Control Pilot 2
5	30	10	-	-	-	-	CP3	Control Pilot 3
6	30	2	30	2	30	2	COM1	Communication 1 (+)
7	30	2	30	2	30	2	COM2	Communication 1 (–)
8	30	2	-	-	-	-	IM	Isolation Monitor
9	-	-	-	-	-	b	PE	Protective earth
10	30	2	-	-	-	-	PP or CS	Proximity detection or connection switch
11	30 <sup>c</sup>	10 <sup>c</sup>	30	20	-	-	AUX1	Auxiliary Power Supply 1 (+)

12	-	-	30	20	-	-	AUX2	Auxiliary Power Supply 1 (-)
<p><sup>a</sup> Position number does not refer to the location and/or identification of the contact in the accessory.</p> <p><sup>b</sup> Conductor size dependent upon system requirements</p> <p><sup>c</sup> For configuration AA, position 11 is optional.</p>								

376

377 DC vehicle interfaces shall be used in a system according to IEC 61851-23:—, Annex AA "DC  
378 EV supply equipment of System A," Annex BB "DC EV supply equipment of System B," or Annex  
379 DD "DC EV Supply Equipment of System G" (under development) respectively. See the  
380 corresponding standard sheets for additional interface details.

381 For use with non-isolated DC EV supply equipment, the interface shall be provided with a  
382 contact for protective earthing conductors.

383 For use with isolated DC EV supply equipment, the interface may be provided with a contact  
384 for protective earthing conductors.

#### 385 6.4 Combined interface

386 *Replacement:*

387 *Replace the existing text of IEC 62196-1:202X, 6.4 with the following:*

388 A combined interface includes both an AC interface and a DC interface.

389 The combined interface permits AC or DC energy through separate power contacts. The  
390 electrical ratings and their function are described in Table 302.

391

**Table 302 – Overview of the combined AC/DC vehicle interface**

Position number <sup>a</sup>	Configuration EE				Configuration FF			
	$U_{max}$	$I_{max}$	Symbol	Function	$U_{max}$	$I_{max}$	Symbol	Function
	V	A			V	A		
1	250 <sup>b</sup>	32 <sup>b</sup>	L1	L1	480 <sup>c</sup>	63 <sup>c,e</sup>	L1	L1
2	250 <sup>b</sup>	32 <sup>b</sup>	L2	L2/N	480 <sup>c</sup>	63 <sup>c</sup>	L2	L2
3	–	–	–	–	480 <sup>c</sup>	63 <sup>c</sup>	L3	L3
4	–	–	–	–	480 <sup>c</sup>	63 <sup>c,e</sup>	N	Neutral
5	–	– <sup>f</sup>	PE	Protective earth	–	– <sup>f</sup>	PE	Protective earth
6	30 <sup>d</sup>	2 <sup>d</sup>	CP	Control pilot	30 <sup>d</sup>	2 <sup>d</sup>	CP	Control pilot
7	30 <sup>d</sup>	2 <sup>d</sup>	PP or CS	Proximity detection or connection switch	30 <sup>d</sup>	2 <sup>d</sup>	PP or CS	Proximity detection or connection switch
8	1 000	400 <sup>g,h</sup>	DC+	DC+	1 000	400 <sup>g,h</sup>	DC+	DC+
9	1 000	400 <sup>g,h</sup>	DC–	DC–	1 000	400 <sup>g,h</sup>	DC–	DC–