



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 61851-23-3:2025**  
**01-marec-2025**

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**Sistem kableskega napajanja električnih vozil - 23-3. del: Postaja za kablesko napajanje električnega vozila z enosmernim tokom za megavatne napajalne sisteme**

Electric vehicle conductive charging system - Part 23-3: DC electric vehicle supply equipment for Megawatt charging systems

Système de charge par conduction pour véhicules électriques - Partie 23-3: Système d'alimentation en courant continu pour véhicules électriques pour les systèmes de recharge mégawatt

**Ta slovenski standard je istoveten z: prEN IEC 61851-23-3:2025**

<https://standards.iteh.ai/catalog/standards/sist/6983fcf6-9181-4ce5-9ae8-678a23c8af61/osist-pren-iec-61851-23-3-2025>

**ICS:**

43.120            Električna cestna vozila            Electric road vehicles

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SECRETARY:

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OF INTEREST TO THE FOLLOWING COMMITTEES:

SC 23H

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 SUBMITTED FOR CENELEC PARALLEL VOTING NOT 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.

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TITLE:

**<p>Electric vehicle conductive charging system - Part 23-3: DC electric vehicle supply equipment for Megawatt charging systems</p>**

PROPOSED STABILITY DATE: 2027

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## 224 INTERNATIONAL ELECTROTECHNICAL COMMISSION

225

226

227 **ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –**

228

229 **Part 23-3: DC electric vehicle supply equipment for Megawatt charging systems**

230

231

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262 International Standard IEC 61851-23-3 has been prepared by IEC technical committee 69:  
263 Electric power/energy transfer systems for electrically propelled road vehicles and industrial  
264 trucks.

265 The text of this document is based on the following documents:

XXX	Report on voting
69/XX/XXX	69/XX/RVD

266

267 Full information on the voting for the approval of this document can be found in the report on  
268 voting indicated in the above table.

269 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

270 This document is to be read in conjunction with IEC 61851-1:2017 and IEC 61851-23:2023.

271 The clauses of particular requirements in this document supplement or modify the  
272 corresponding clauses in IEC 61851-23:2023. Where the text of subsequent clauses indicates  
273 an "addition" to or a "replacement" of the relevant requirement, test specification or explanation  
274 of IEC 61851-23:2023, these changes are made to the relevant text of IEC 61851-23:2023,  
275 which then becomes part of this document. Where no change is necessary, the words "IEC  
276 61851-23:2023, [clause] is applicable" are used, where [clause] indicated the relevant clause.  
277 The new clauses, which are not included in IEC 61851-23:2023, have a clause number starting  
278 from 201, for example 3.201, 201.1, etc. The new annexes of this document are numbered  
279 using triple-alphabet, for example Annex III, to avoid confusion with the annexes in IEC 61851-  
280 1:2017 and IEC 61851-23:2023.

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

282 – *test specifications: italic type.*

283 – notes: smaller roman type.

284 A list of all parts in the IEC 61851 series, published under the general title *Electric vehicle*  
285 *conductive charging system*, can be found on the IEC website.

286 The committee has decided that the contents of this publication will remain unchanged until the  
287 stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to  
288 the specific publication. At this date, the publication will be

289 – reconfirmed,

290 – withdrawn,

291 – replaced by a revised edition, or

292 – amended.

293

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

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## Introduction

299

300 Responding to the global challenges of CO<sub>2</sub> reduction and energy safety, the automobile  
 301 industry has started the development and commercialization of heavy duty electric vehicles  
 302 (EV). These heavy duty EVs are equipped with significantly larger batteries than passenger  
 303 cars or light commercial vehicles. The charging power provided by standards published before  
 304 the publication of this standard, does not allow recharging of these batteries within the time  
 305 needed for a commercial application of heavy duty EVs – especially considering long routes  
 306 with limited time for intermediate charging. Consequently, this standard allows for superior  
 307 charging power up to several megawatts and describes the related safety and interoperability  
 308 requirements. Table 201 shows the comparison between IEC 61851-23 and this document.

309

**Table 201 – Comparison between IEC 61851-23 and IEC 61851-23-3**

Topic	IEC 61851-23	IEC 61851-23-3
Rated maximum voltage of the EV supply equipment at side B (EV side)	1 000 V	1 250 V
Rated continuous current of the EV supply equipment at side B (EV side)	maximum as defined in IEC 62196-3:2022	as defined in IEC TS 63379:202X
Basic signalling	CP and PP (Annex CC)	CE and ID
Digital communication	HomePlug GreenPHY (Annex CC) with ISO 15118-2, ISO 15118-20 or DIN 70121 as application layer	Ethernet 10BASE-T1S with ISO 15118-20 as application layer

310

311 Although the system described in this standard has been developed for heavy duty EVs, its  
 312 application is not limited to these in principle.

313 and The standard at hand for the EV supply equipment is accompanied by standards for the coupler  
 314 interface and the vehicle side.

315

316 **ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –**

317

318 **Part 23-3: DC electric vehicle supply equipment for Megawatt charging systems**

319

320 **1 Scope**

321 *Replacement:*

322 This part of the IEC 61851 series, together with [IEC 61851-1 Ed. 3] and [IEC 61851-23, Ed.  
323 2.0], applies to the EV supply equipment to provide energy transfer between the supply network  
324 and electric vehicles (EVs), with a rated maximum voltage at side A (supply network side) up  
325 to 1 000 V AC or up to 1 500 V DC and a rated maximum voltage at side B (EV side) up to 1  
326 250 V DC.

327 NOTE 1 A rated maximum voltage of the EV supply equipment at side B of 1 500 V DC is under consideration.

328 This document specifies the EV supply equipment of Megawatt Charging System (MCS)  
329 equipped with a coupler according to IEC TS 63379. Systems different to system MCS using a  
330 coupler specified in IEC TS 63379 are under consideration.

331 Requirements for bidirectional power flow systems are under consideration.

332 This document does not cover all safety aspects related to maintenance.

333 Requirements for systems not providing protective separation between side A (supply network  
334 side) and side B (EV side) are under consideration.

335 The requirements for digital communication between the EV supply equipment and the EV for  
336 control of energy transfer are defined in ISO 15118-10<sup>1</sup> and ISO 15118-20.

337 The specific requirements for EV supply equipment with multiple side Bs (EV sides) are  
338 provided in Annex FF.

339 General information of communication and the energy transfer process is described in  
340 Annex GG.

341 General information on the touch current and touch impulse current is provided in Annex HH.

342 EV supply equipment in compliance with this document is not intended to provide energy  
343 transfer to a single EV using:

- 344 – multiple vehicle connectors of the same EV supply equipment; or
- 345 – multiple EV supply equipments.

346 Requirements for such use case are not specified in this document, but are under consideration.

347 NOTE 2 The safety requirements of vehicle during charging are specified in ISO 5474 series.

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<sup>1</sup> Under preparation. Stage at the time of publication: ISO/DIS 15118-10:2024

348 NOTE 3 Requirements for an optional automated connection of system MCS are under preparation in IEC 61851-  
349 27.

350 Requirements for EVs mated to an EV supply equipment according to this document are  
351 specified in ISO 5474-3:2023, Annex B.

## 352 2 Normative references

353 IEC 61851-23:2023, Clause 2 is applicable, except as follows:

354 *Addition:*

355 IEC TS 63379:202X, *Vehicle connector, vehicle inlet and cable assembly for megawatt DC*  
356 *charging*

357 ISO 15118-10:202X, *Road vehicles – Vehicle-to-grid communication interface – Part 10:*  
358 *Physical layer and data link layer requirements for wired ethernet communication*

359 ISO 15118-20:2022, *Road vehicles – Vehicle-to-grid communication interface – Part 2: 2nd*  
360 *generation network layer and application layer requirements*

361 ISO 15118-20:2022/AMD1:202X, *Road vehicles – Vehicle-to-grid communication interface –*  
362 *Part 2: 2nd generation network layer and application layer requirements*

363 IEEE 802.3-2022, *IEEE Standard for Ethernet*

364 Open Alliance Inc., *Channel and components - Requirements for 10BASE-T1S link segments*  
365 [online], version x.x, 2024. Available at: <https://opensig.org/> (TBD)<sup>2</sup>

## 366 3 Terms and definitions

367 IEC 61851-23:2023, Clause 3, is applicable except as follows:

### 368 3.3 Functions

#### 369 3.3.1

370 *Replacement:*

#### 371 **charge enable conductor (identification: CE)**

372 conductor incorporated in a cable assembly, which, together with the protective conductor, is  
373 part of the charge enable circuit

#### 374 3.3.5

375 *Replacement:*

#### 376 **insertion detection function (identification: ID)**

377 electrical or mechanical means to indicate the insertion state of the vehicle connector in the  
378 vehicle inlet of the EV and/or to indicate the insertion state of the EV plug in the EV socket-  
379 outlet of the EV supply equipment

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<sup>2</sup> Document under development.

## 380 4 General requirements

381 IEC 61851-23:2023, Clause 4 is applicable, except as follows:

382 *Addition:*

383 Unless otherwise specified in this document:

- 384 – the requirements and tests for system C in IEC 61851-23:2023 apply for system MCS, and
- 385 – all references in IEC 61851-23:2023 to “Annex CC” are replaced by “Annex CC of IEC
- 386 61851-23-3:202X”.

387 EV supply equipment with a rated continuous current at side B  $\geq 500$  A:

- 388 – in the voltage range:  $500 \text{ V DC} \leq \text{voltage at side B} \leq 1\,250 \text{ V}$ , the EV supply equipment shall
- 389 provide the rated continuous current at side B or rated continuous power at side B, and
- 390 – in the voltage range:  $400 \text{ V DC} \leq \text{voltage at side B} < 500 \text{ V DC}$ , the EV supply equipment
- 391 shall be capable of continuously providing a current at side B  $\geq 500$  A.

392 EV supply equipment with a rated continuous current at side B  $< 500$  A shall provide:

- 393 – the rated continuous current at side B or rated continuous power at side B in the voltage
- 394 range:  $400 \text{ V DC} \leq \text{voltage at side B} \leq 1\,250 \text{ V}$ .

## 395 5 Classification

396 IEC 61851-23:2023, Clause 5 is applicable, except as follows:

397 *Replacement:*

### 398 5.101 Characteristics of EV supply equipment

#### 399 5.101.3 System

400 The EV supply equipment shall be classified according to the system:

- 401 – System MCS (see Annex CC).

## 402 6 Charging modes and functions

403 IEC 61851-23:2023, Clause 6, is applicable, except as follows:

### 404 6.3 Functions provided in Mode 4

#### 405 6.3.1 Mandatory functions in Mode 4

##### 406 6.3.1.1 General

407 *Replacement:*

408 The EV supply equipment shall supply a DC current and voltage to the EV battery system

409 according to an EVCC request.

410 The following functions shall be provided by EV supply equipment as given below:

- 411 – continuous continuity checking of the protective conductor according to 6.3.1.2;