



SLOVENSKI STANDARD
SIST EN IEC 61851-25:2021

01-marec-2021

Sistem kabskega napajanja električnih vozil - 23-2. del: Oprema za enosmerno napajanje EV, kjer varnost zagotavlja električno ločevanje

Electric vehicle conductive charging system - Part 23-2: DC EV supply equipment where protection relies on electrical separation

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Ta slovenski standard je istoveten z: **EN IEC 61851-25:2021**
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ICS:

43.120 Električna cestna vozila Electric road vehicles

SIST EN IEC 61851-25:2021 **en**

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EUROPEAN STANDARD

EN IEC 61851-25

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2021

ICS 43.120

English Version

Electric vehicle conductive charging system - Part 25: DC EV
supply equipment where protection relies on electrical separation
(IEC 61851-25:2020)

Systeme de charge par conduction pour vehicules
electriques - Partie 25: Systeme d'alimentation en courant
continu pour vehicules electriques dont la protection
s'appuie sur la separation électrique
(IEC 61851-25:2020)

Konduktive Ladesysteme für Elektrofahrzeuge - Teil 25:
Gleichstromversorgungseinrichtungen für Elektrofahrzeuge
bei denen der Schutz von der elektrischen Trennung
abhängt
(IEC 61851-25:2020)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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Europäisches Komitee für Elektrotechnische Normung

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EN IEC 61851-25:2021 (E)**European foreword**

The text of document 69/735/FDIS, future edition 1 of IEC 61851-25, prepared by IEC/TC 69 "Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61851-25:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-10-08
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-01-08

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The text of the International Standard IEC 61851-25:2020 was approved by CENELEC as a European Standard without any modification.

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

SIST EN IEC 61851-25:2021		
IEC 61851-21-1	NOTE	Harmonized as EN 61851-21-1
IEC 61851-23	NOTE	Harmonized as EN 61851-23
IEC 61851-24:2014	NOTE	Harmonized as EN 61851-24:2014 (not modified)
ISO 18246:2015	NOTE	Harmonized as EN ISO 18246:2017 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Annex ZA of EN IEC 61851-1:2019 is applicable except as follows:

Add the following references:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-30	2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005
IEC 61140	2016	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2016
IEC 61180	2016	High-voltage test techniques for low-voltage equipment - Definitions, test and procedure requirements, test equipment	EN 61180	2016
IEC 61439-7	2018	Low-voltage switchgear and controlgear assemblies - Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicle charging stations	-	-
IEC 61851-1	2017	Electric vehicle conductive charging system - Part 1: General requirements	EN IEC 61851-1	2019
IEC 62477-1	2012	Safety requirements for power electronic converter systems and equipment - Part 1: General	EN 62477-1	2012
-	-		+ A11	2014
-	-		+ A12	2021
IEC 62893-4-1	2020	Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV - Part 4-1: Cables for DC charging according to mode 4 of IEC 61851-1 - DC charging without use of a thermal management system	-	-

EN IEC 61851-25:2021 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 3297	2017	Information and documentation - International standard serial number (ISSN)	-	-
ISO 11898-1	2015	Road vehicles - Controller area network (CAN) - Part 1: Data link layer and physical signalling	-	-
ISO 11898-2	2016	Road vehicles - Controller area network (CAN) - Part 2: High-speed medium access unit	-	-

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IEC 61851-25

Edition 1.0 2020-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electric vehicle conductive charging system –
Part 25: DC EV supply equipment where protection relies on electrical
separation**

**Systeme de charge par conduction pour vehicules electriques –
Partie 25: Systeme d'alimentation en courant continu pour vehicules electriques
dont la protection s'appuie sur la separation electrique**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
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<https://standards.iteh.ai/catalog/standards/sist/f742afc6-3893-4e44-99cc-79c24badad3e/sist-en-iec-61851-25-2021>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –**Part 25: DC EV supply equipment where protection
relies on electrical separation**

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.
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International Standard IEC 61851-25 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks.

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

FDIS	Report on voting
69/735/FDIS	69/740/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

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

This document supplements or modifies clauses in IEC 61851-1:2017. Where the text of subsequent clauses indicates an "*addition*" to or a "*replacement*" of the relevant requirement, test specification or explanation of IEC 61851-1:2017, these changes are made to the relevant text of IEC 61851-1:2017, which then becomes part of this document. Where no change is necessary, the words "Clause X of IEC 61851-1:2017 is applicable" are used. Additional clauses, tables and figures which are not included in IEC 61851-1:2017 have a number starting from 101. Additional annexes are lettered AA, BB, etc.

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

In this document, the following print types are used:

- *test specifications: italic type.*
- notes: 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This document describes the specific requirements for DC EV supply equipment whose secondary circuit and EV are protected from the primary power supply circuit by electrical separation as defined in IEC 61140, where the connection to the separated circuit is limited to a single connection.

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ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 25: DC EV supply equipment where protection relies on electrical separation

1 Scope

This document applies to the DC EV supply equipment for charging electric road vehicles with a rated supply voltage of up to 480 V AC or up to 600 V DC, with rated output voltage not exceeding 120 V DC and output currents not exceeding 100 A DC.

This document provides the requirements for the DC EV supply equipment where the secondary circuit is protected from the primary circuit by electrical separation.

Requirements for bi-directional power flow are not covered in this document.

This document also provides the requirements for the control and the communication between DC EV supply equipment and an EV.

This document also applies to DC EV supply equipment supplied from on-site storage systems.

The aspects covered in this document include:

- characteristics and operating conditions of the DC EV supply equipment;
- specification of the connection between the DC EV supply equipment and the EV;
- requirements for electrical safety for the DC EV supply equipment.

Additional requirements can apply to equipment designed for specific environments or conditions, for example:

- DC EV supply equipment located in hazardous areas where flammable gas or vapour and/or combustible materials, fuels or other combustible, or explosive materials are present;
- DC EV supply equipment designed to be installed at an altitude of more than 2 000 m;
- DC EV supply equipment intended to be used on-board ships.

Requirements for electrical devices and components used in DC EV supply equipment are not included in this document and are covered by their specific product standards.

This document does not apply to:

- safety aspects related to maintenance;
- charging of trolley buses, rail vehicles, industrial trucks and vehicles designed primarily for use off-road;
- equipment on the EV;
- EMC requirements for equipment on the EV while connected, which are covered in IEC 61851-21-1;
- charging the RESS off-board the EV.

NOTE In the following countries electrical separation can only be handled by skilled people: CH

2 Normative references

Clause 2 of IEC 61851-1:2017 is applicable with the following additions.

IEC 60068-2-30:2005, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 61140:2016, *Protection against electric shock – Common aspects for installations and equipment*

IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*

IEC 61439-7:2018, *Low-voltage switchgear and controlgear assemblies –Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicle charging stations*

IEC 61851-1:2017, *Electric vehicle conductive charging system – Part 1: General requirements*

IEC 62477-1:2012, *Safety requirements for power electronic converter systems and equipment – Part 1: General*

IEC 62893-4-1:2020, *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV – Part 4-1: Cables for DC charging according to mode 4 of IEC 61851-1 – DC charging without use of a thermal management system*

ISO 3297:2017, *Information and documentation – International standard serial number (ISSN)*
<https://standards.iteh.ai/catalog/standards/sist/f742afc6-3893-4e44-99cc-79c24badad3e/sist-en-iec-61851-25-2021>

ISO 11898-1:2015, *Road vehicles – Controller area network (CAN) – Part 1: Data link layer and physical signalling*

ISO 11898-2:2016, *Road vehicles – Controller area network (CAN) – Part 2: High-speed medium access unit*

3 Terms and definitions

Clause 3 of IEC 61851-1:2017 is applicable with the following additions to 3.2, 3.3 and 3.7.

ISO and IEC maintain terminological data bases for use in standardization at the following addresses:

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

3.2 Insulation

3.2.101

electrical separation

protective measure in which hazardous-live-parts are insulated from all other electric circuits and parts, from local earth and from touch

[SOURCE: IEC 60050-826:2004, 826-12-27]

3.3 Functions

3.3.101

normal start-up sequence

beginning of an energy transfer sequence with the commands and parameters that are used to transfer energy to an EV when no error condition arises during the energy transfer sequence

3.3.102

normal shutdown

termination of the energy transfer process initiated by the user, by the EV or by the DC EV supply equipment, and not caused by a failure

3.3.103

error shutdown

termination of the energy transfer process caused by a failure detected by the DC EV supply equipment or the EV

3.3.104

emergency shutdown

termination of the energy transfer process caused by a failure detected by the DC EV supply equipment or the EV that may present a safety hazard

3.3.105

control pilot wire

insulated wire incorporated in a cable assembly which is part of the control pilot circuit

3.3.106

digital communication

digitally encoded information exchanged between DC EV supply equipment and an EV, as well as the method by which it is exchanged

[SOURCE: IEC 61851-24:2014, 3.1, modified – The term "charging station" has been replaced with "supply equipment".]

3.3.107

signal

data element that is communicated between DC EV supply equipment and an EV using any means other than digital communication

[SOURCE: IEC 61851-24:2014, 3.2, modified – The term "charging station" has been replaced with "supply equipment".]

3.3.108

device under test**DUT**

sample of DC EV supply equipment that is submitted for testing

3.7 General terms

3.7.101

available DC output power

maximum DC output power that the DC EV supply equipment can supply

3.7.102

available DC output power parameter

parameter transmitted to the EV indicating the available DC output power