

PRE-RELEASE VERSION (FDIS)

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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 43.120

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FINAL DRAFT INTERNATIONAL STANDARD (FDIS)

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SECRETARY:

Mr Peter Van den Bossche

OF INTEREST TO THE FOLLOWING COMMITTEES:

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ENVIRONMENT

QUALITY ASSURANCE

SAFETY

SUBMITTED FOR CENELEC PARALLEL VOTING

NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

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

PROPOSED STABILITY DATE: 2021

NOTE FROM TC/SC OFFICERS:

The version submitted has two secretary notes removed which were present in the version submitted initially

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

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

FOREWORD

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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/XX/FDIS	69/XX/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.

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.

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

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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)*

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*