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colour inside

Electric vehicle conductive charging system – Part 23: DC electric vehicle supply equipment

IEC 61851-23:2023-12 (en)

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CONTENTS

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ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 23: DC electric vehicle supply equipment

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

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

a) the structure has been rearranged according to IEC 61851-1:2017;
b) electrical safety requirements in Clause 8 and Clause 12 have been revised based on the requirements in IEC 62477-1 and inspired by the hazard based safety approach of IEC 62368-1;

c) test methods for checking conformity to the stated requirements have been mostly added; general provisions for compliance tests have been specified in Clause 102;

d) specific requirements and/or information for the following functions have been added: energy transfer with thermal management system (101.2), bi-directional power transfer control (Annex DD), multi- side B separated EV supply equipment (Annex FF), and communication and energy transfer process (Annex GG);

e) Annex AA (system A), Annex BB (system B) and Annex CC (system C) have been updated including additions in conjunction with b) and c). This document has been limited to be applicable to system A, system B and system C;

f) the former Annex DD and Annex EE have been deleted. A new Annex EE, with the requirements for the artificial test load, has been added.

g) a new informative annex for the touch current and the touch impulse current (Annex HH) has been added.

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

Draft	Report on voting
69/907/FDIS	69/925/RVD

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

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

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

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

The clauses of particular requirements in this document supplement or modify the corresponding 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 "This clause of IEC 61851-1:2017 is applicable" are used. The new clauses which are not included in IEC 61851-1:2017 have a clause number starting from 101, for example 3.101, 101.1, etc. The annexes of this document are numbered using double-alphabet, for example Annex AA, to avoid confusion with the annexes in IEC 61851-1:2017.

In this document, the following print types are used:

– *test specifications: italic type*.

– notes: smaller roman type.

Figures in this document use L1 and N to represent the connection of the side A of the EV supply equipment to the AC supply network or DC supply network. This is only to simplify the figures and not to impose requirements.

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.

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

- reconfirmed,
- withdrawn, or
- revised.

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ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 23: DC electric vehicle supply equipment

1 Scope

This part of IEC 61851 applies to the EV supply equipment to provide energy transfer between the supply network and electric vehicles (EVs), with a rated maximum voltage at side A of up to 1 000 V AC or up to 1 500 V DC and a rated maximum voltage at side B up to 1 500 V DC.

This document specifies the EV supply equipment of system A, system B and system C as defined in Annex AA, Annex BB and Annex CC. Other systems are under consideration.

This document provides the requirements for bidirectional power transfer (BPT) EV supply equipment for system A, with a rated maximum voltage at side A up to 1 000 V AC or 1 500 V DC. The requirements for reverse power transfer (RPT) and BPT for system B and system C are under consideration and are not specified in this document.

Annex DD provides information about BPT.

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

Requirements for systems not providing simple separation or protective separation between side A and side B are under consideration.

The requirements for digital communication between EV supply equipment and the EV to control energy transfer are defined in IEC 61851-24.

Requirements for energy transfer with an automated connection device are given in IEC 61851-23-1[1].

Specific requirements for EV supply equipment with multiple vehicle connectors are provided in Annex FF.

General information about energy transfer control, signalling and digital communication is provided in Annex GG.

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

Requirements for EV supply equipment without current, voltage and/or power control are under consideration.

EV supply equipment in compliance with this document are not intended to provide energy transfer to a single EV with

– multiple vehicle connectors of the same EV supply equipment, or
– multiple EV supply equipment.

Requirements for such use case are under consideration.

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[1] Under preparation. Stage at the time of publication: IEC AFDIS 61851-23-1:2023.