



BSI Standards Publication

Electric vehicle conductive charging system

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

National foreword

This British Standard is the UK implementation of EN IEC 61851-25:2021. It is identical to IEC 61851-25:2020.

The UK participation in its preparation was entrusted to Technical Committee PEL/69, Electric vehicles.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
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English Version

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

Système de charge par conduction pour véhicules
électriques - Partie 25: Système d'alimentation en courant
continu pour véhicules électriques dont la protection
s'appuie sur la séparation 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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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-01-08

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Endorsement notice

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

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

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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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
69/735/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.

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 –

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)*

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

3.7.103

DC output current

DC current supplied to the EV by the DC EV supply equipment

3.7.104

available DC output current

value of the highest DC current that the DC EV supply equipment can supply to the EV at a given time

3.7.105

available DC output current parameter

parameter sent by the EV supply equipment to the vehicle that indicates the highest current that can be supplied to the EV

3.7.106

rated DC output current

output current assigned to the DC EV supply equipment by the manufacturer under normal operating conditions

3.7.107

requested DC output current

value of the DC output current that is requested by the EV

3.7.108

requested DC output current parameter

parameter sent by the EV to the DC EV supply equipment indicating the requested DC output current

3.7.109

DC output voltage

voltage present between the DC+ and DC– terminals at the vehicle connector

3.7.110

rated DC output voltage

output voltage assigned to the DC EV supply equipment by the manufacturer

3.7.111

rated DC output voltage parameter

parameter sent by the DC EV supply equipment to indicate the rated DC output voltage

3.7.112

DC output voltage target parameter

value sent by the EV to the DC EV supply equipment that indicates the requested value of the DC output voltage

3.7.113

DC output voltage limit parameter

value sent by the EV to the DC EV supply equipment that indicates the allowable DC output voltage

4 General requirements

Clause 4 of IEC 61851-1:2017 is applicable.

5 Classification

Clause 5 of IEC 61851-1:2017 is applicable, except as follows.

5.1.2 Characteristics of power supply output

Replacement:

The EV supply equipment shall be classified as DC EV supply equipment.

5.6 Protection against electric shock

Subclause 5.6 of IEC 61851-1:2017 is not applicable.

5.7 Charging modes

Subclause 5.7 of IEC 61851-1:2017 is not applicable.

6 Charging modes and functions

Clause 6 of IEC 61851-1:2017 is applicable, except as follows.

6.1 General

Replacement:

Clause 6 describes the functions for energy transfer to EVs.

6.2 Charging modes

Subclause 6.2 of IEC 61851-1:2017 is not applicable.

6.3 Functions provided in Mode 2, 3 and 4

Subclause 6.3 of IEC 61851-1:2017 is replaced by the following:

6.3 Mandatory functions

6.3.1 General

The DC EV supply equipment shall supply a DC output current to the EV in accordance with the requested DC output current parameter from the EV, subject to the requirements of the mandatory functions as indicated below.

NOTE The DC EV supply equipment acts as a slave to the EV. Further details are given in Annex AA, Annex BB and Annex EE.

The following functions shall be provided by the DC EV supply equipment:

- verification that the EV is properly connected to the DC EV supply equipment in accordance with 6.3.2;
- verification of the latching of the vehicle coupler in accordance with 6.3.3;
- latching and unlatching of the vehicle coupler in accordance with 6.3.4;
- communication with the vehicle in accordance with 6.3.5;
- monitoring of the continuity of the control pilot circuit in accordance with 6.3.6;
- verification function before energy transfer in accordance with 6.3.7;

- energization and control of the power supply to the EV in accordance with 6.3.8;
- protection against overvoltage in accordance with 6.3.9;
- de-energization of the power supply to the EV in accordance with 6.3.10;
- shutdown of DC EV supply equipment in accordance with 6.3.10.2, 6.3.10.3 and 6.3.10.4.

Values, timing and tolerances for the DC output current and the DC output voltages shall be tested in accordance with Annex BB.

6.3.2 Verification that the EV is properly connected to the DC EV supply equipment

The DC EV supply equipment shall determine that the EV is properly connected to the DC EV supply equipment.

Proper connection is assumed when the continuity of the control pilot circuit is detected.

Compliance is checked in accordance with DD.3.1.

6.3.3 Verification of the latching of the vehicle coupler

The DC EV supply equipment shall determine that the vehicle connector is properly latched to the vehicle inlet.

The DC EV supply equipment shall not energize the conductors in the cable assembly when the vehicle connector is not latched to a vehicle inlet.

The DC EV supply equipment shall enter into an emergency shutdown if the vehicle connector is disconnected from the vehicle inlet while under power.

Compliance is checked in accordance with DD.3.8.6.

6.3.4 Latching and unlatching of the vehicle coupler

A mechanical or electromechanical means shall be provided to prevent intentional and unintentional disconnection under load of the vehicle connector according to IEC 62196-1.

Compliance is checked by inspection.

6.3.5 Communication with the EV

6.3.5.1 General

Digital communication shall be established between the EV and the DC EV supply equipment to validate and control the energy transfer.

The DC EV supply equipment shall be able to receive and interpret all mandatory digital communication data as described in Annex FF.

Compliance is checked in accordance with Clause DD.3.

The vehicle connector shall not be energized until the compatibility assessment is successfully completed in accordance with 6.3.7.2.

Compliance is checked by the test in Annex DD applying the messages defined in Table FF.2 and Table FF.3 of Annex FF.

6.3.5.2 Available DC output current parameter

The EV supply equipment shall inform the EV of the value of the available DC output current that can be provided by the EV supply equipment.

The value may be changed and retransmitted during energy transfer, to adapt to power limitations, (e.g. for load management), without exceeding the rated DC output current.

The DC EV supply equipment shall limit the DC output current to the available output current parameter or interrupt the energy supply if the DC output current drawn by the EV exceeds the available DC output current parameter.

Compliance is checked in accordance with DD.3.7 and DD.3.8.

6.3.5.3 Available DC output power parameter

A means shall be provided to inform the EV on the available DC output power of the DC EV supply equipment.

The DC EV supply equipment may decrease the DC output current if the power demand exceeds this value.

Compliance is checked in accordance with DD.3.7.

NOTE Available DC output power is indicated before the beginning of energy transfer. Dynamic power limitation due to the AC supply network limitations is an option that could modify the available DC output power during energy transfer on some DC EV supply equipment (see Clause EE.5).

6.3.5.4 DC output voltage target parameter and DC output voltage limit parameter

The DC EV supply equipment shall compare the DC output voltage with the values of the DC output voltage target parameter and the DC output voltage limit parameter received from the EV, and with the rated DC output voltage.

Shutdown conditions are in accordance with 6.3.10 if one of these values is exceeded.

Timing and tolerances that are applicable are indicated in Annex BB.

NOTE The values of the DC output voltage target parameter and the DC output voltage limit parameter are set before the beginning of the energy transfer. They can be modified during energy transfer.

6.3.5.5 Monitoring of energy transfer requirements of the EV and adjustment of energy supply conditions

A means shall be provided to continuously monitor the data transmitted by the EV and to adjust the DC output current and/or DC output voltage and all associated parameters.

The DC EV supply equipment shall initiate an error shutdown if valid data is not received for more than 1 s. An energy transfer cycle can be reinitiated by the EV after such shutdown.

The DC EV supply equipment shall be able to deliver DC output power up to the rated DC output voltage and up to the rated DC output current within the limit of its rated DC output power at the ambient temperature 0 °C to 40 °C below 2 000 m above sea level. The DC EV supply equipment shall not exceed its available DC output power, even if the power requested by the EV is higher than the available DC output power. Outside this operating range the DC EV supply equipment is allowed to reduce the power.

NOTE 1 National or industrial codes and regulations can require different operating temperature ranges.

NOTE 2 Tolerances and timing for the DC output current are given in Annex BB.

Compliance is checked in accordance with DD.3.7.

6.3.6 Monitoring of the continuity of the control pilot circuit

The EV supply equipment shall monitor the continuity of the control pilot circuit. The EV supply equipment shall initiate an emergency shutdown on detection of interruption of the control pilot circuit. Re-initialisation of the complete energy transfer procedure according to DD.3.5 shall be required in order to restart the energy transfer cycle.

Compliance is checked in accordance with DD.3.5 and DD.3.8.6.

6.3.7 Verification function before energy transfer

6.3.7.1 General

The verification function is carried out when the vehicle connector has been fully inserted, latched and the control pilot circuit verified (see DD.3.5 and EE.1.2), and before energy is supplied to the EV.

6.3.7.2 Compatibility assessment before energy transfer

The DC EV supply equipment shall complete a compatibility assessment with the EV before starting the energy transfer cycle. The check shall include at least the following elements:

- Reception of energy transfer requirements from the EV:
 - DC output voltage target parameter;
 - DC output voltage limit parameter;
- Validation by the DC EV supply equipment of information received from the EV;
- Transmission of DC EV supply equipment energy transfer parameters:
 - available DC output current;
 - rated DC output voltage;
 - available DC output power;
- Transmission by DC EV supply equipment of the confirmed DC output voltage limit parameter;
- Reception of validation information transmitted by the EV indicating that the information is accepted.

Energy transfer shall only proceed if the compatibility assessment is completed correctly.

Compliance is checked in accordance with DD.3.3 applying the messages defined in Table FF.2 and Table FF.3.

6.3.7.3 Verification of the absence of a short-circuit on the cable assembly

With the EV connected to the DC EV supply equipment and before the EV contactor is closed, the DC EV supply equipment shall have a means to check for a short circuit between DC+ and DC– of the output circuit, the cable and vehicle coupler.

Compliance is checked in accordance with DD.3.4.

6.3.8 Energization of the power supply to the EV

The vehicle connector shall not be energized unless energy exchange has been allowed by the control pilot function.

Compliance is checked in accordance with DD.3.5.

The DC output current and the DC output voltage of the DC EV supply equipment shall not exceed the values of the parameters transmitted by the EV.

Compliance is checked in accordance with DD.3.6 and DD.3.8.

Requirements on the rate change of current, timing and tolerance are given in Annex BB.

6.3.9 Protection against overvoltage

The DC output voltage of the DC EV supply equipment shall not be greater than +2 % of the rated DC output voltage.

The DC EV supply equipment shall perform an error shutdown if the measured DC output voltage exceeds for more than 2 s the rated DC output voltage of the DC EV supply equipment by 2 %, or the DC output voltage limit parameter sent by the EV by 1,5 V or 2 %, whichever is the greater.

The DC EV supply equipment shall perform an emergency shutdown if the DC output voltage exceeds the DC output voltage limit parameter sent by the EV by 1 % for 1 s or exceeds 150 V for more than 30 ms.

Compliance is checked in accordance with DD.3.7 and DD.3.8.

6.3.10 De-energization of the power supply to the EV

6.3.10.1 General

If the signal status from the EV control energy transfer function no longer allows energization, the power supply to the EV shall be interrupted but the control pilot circuit may remain in operation.

Three shutdown procedures are possible:

- normal shutdown;
- error shutdown;
- emergency shutdown.

The DC EV supply equipment shall have a means to allow the user to initiate normal or emergency shutdown.

Compliance is checked by inspection.

6.3.10.2 Normal shutdown

The DC EV supply equipment shall stop energy transfer by controlled interruption of DC output current to the EV, where DC output current descends with a controlled slope under the control of the EV and the DC EV supply equipment.

The data exchange and protocol are indicated in Annex EE.

Table 1 shows events and reducing conditions for normal shutdown.

Table 1 – Normal shutdown events and conditions

Event	Particular	Time for starting to reduce DC output current	Minimum rate of DC output current ramp down
Normal shutdown request from EV	Shutdown signal from EV ^a is received.	Within 1 s after reception of the digital data frame	100 A/s
Normal shutdown by DC EV supply equipment	DC EV supply equipment detects internal events ^b	According to the manufacturer's definition and less than 1 min	100 A/s
Normal shutdown by DC EV supply equipment	User pushes on the stop button	Within 1 s	100 A/s
^a Signal definitions are given in Annex FF.			
^b For example, time limit exceeded.			

Compliance is tested in accordance with DD.3.8.4.

6.3.10.3 Error shutdown

The DC EV supply equipment shall stop the energy transfer by controlled interruption of the DC output current to the EV, where the DC output current descends with a controlled slope, after the error shutdown is triggered by the DC EV supply equipment or by a message from the EV.

Table 2 indicates the main events and reducing conditions for error shutdown.

Table 2 – Error shutdown events and conditions

Event	Particular	Time for starting to reduce DC output current	Minimum rate of DC output current ramp down
Pilot wire voltage error	State of CP is "Error" in Table AA.1 ^a	Less than 100 ms	200 A/s
Digital communication reception error	A valid digital data frame is not received for more than 1 s	Less than 100 ms after the 1 s time-out	200 A/s
Overvoltage	DC output voltage exceeds rated DC output voltage of DC EV supply equipment for more than 2 s Or DC output voltage exceeds DC output voltage limit parameter sent by EV equipment for more than 2 s	Less than 100 ms after the 2 s time-out	200 A/s
Reception of shutdown signal from EV	Shutdown signal from EV is received	Within 1 s after reception of the digital data frame	200 A/s
^a This error becomes emergency shutdown when the voltage is < 2,0 V DC (see 6.3.10.4).			
^b The error signals are defined in Annex FF.			

Compliance is tested in accordance with DD.3.8.5.

6.3.10.4 Emergency shutdown

The DC EV supply equipment shall stop power transfer within 30 ms after the emergency shutdown was triggered. The DC output voltage shall fall (between DC+ and DC-) ≤ 60 V DC within 1 s after the emergency shutdown was triggered.

The emergency shutdown shall be initiated by:

- the voltage of the control pilot circuit $< 2,0$ V DC;
- disconnection of vehicle connector under load;
- the DC output voltage exceeds DC output voltage limit sent by the EV or exceeds 150 V DC for more than 30 ms, as described in 6.3.9;
- reception of emergency shutdown signal from EV or initiated by the user.

The DC output voltage of the DC EV supply equipment shall not be greater than +2 % of the rated DC output voltage.

Compliance is tested in accordance with DD.3.8.6.

7 Communications

Clause 7 of IEC 61851-1:2017 is replaced with the following.

Replacement:

7.1 General

This Clause 7 provides a general description and the basic requirements for the control communication function. The specific procedure and protocol is described in Annex EE.

The DC EV supply equipment supplies energy in response to digital information received by the EV.

NOTE This implies that the EV manages the battery charging. The corresponding desired voltage and current levels are transmitted to the DC EV supply equipment by the EV.

7.2 System configuration

The communication between the DC EV supply equipment and the EV is established using the pilot control function and via digital communication, as described in Annex EE. The DC EV supply equipment supplies energy to the EV according to the parameters sent by the EV, provided all conditions required as indicated in Clause 6 are satisfied.

NOTE This implies that the EV controls the energy transfer. The DC EV supply system acts as a slave to the EV.

The detailed operational procedure is given in Clause 6 and in Annex EE.

7.3 Digital communication between the DC EV supply equipment and the management system

The telecommunication network or telecommunication port of the DC EV supply equipment, connected to the telecommunication network, if any, shall comply with the requirements for connection to telecommunication networks according to IEC 60950-1:2005, Clause 6, IEC 60950-1:2005/AMD1:2009, Clause 6 and IEC 60950-1:2005/AMD2:2013, Clause 6.