SVENSK STANDARD SS-EN 61851-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2011-12-07	2	1 (1+53)	SEK TK 69

Elfordon –
Konduktiv laddning –
Del 1: Allmänna fordringar

Electric vehicle conductive charging system –
Part 1: General requirements

Som svensk standard gäller europastandarden EN 61851-1:2011. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61851-1:2011.

Nationellt förord

Europastandarden EN 61851-1:2011

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61851-1, Second edition, 2010 - Electric vehicle conductive charging system - Part 1: General requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61851-1, utgåva 1, 2001, gäller ej fr o m 2014-04-01.

ICS 43.120

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61851-1

August 2011

ICS 43.120

Supersedes EN 61851-1:2001

English version

Electric vehicle conductive charging system - Part 1: General requirements
(IEC 61851-1:2010)

Système de charge conductive pour véhicules électriques - Partie 1: Règles générales (CEI 61851-1:2010)

Elektrische Ausrüstung von Elektro-Straßenfahrzeugen - Konduktive Ladesysteme für Elektrofahrzeuge - Teil 1: Allgemeine Anforderungen (IEC 61851-1:2010)

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 61851-1:2011 E

SEK Svensk Elstandard

Foreword

The text of document 69/173/FDIS, future edition 2 of IEC 61851-1, prepared by IEC TC 69, Electric road vehicles and electric industrial trucks, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61851-1 on 2011-04-12.

This European Standard supersedes EN 61851-1:2001.

The main changes with respect to EN 61851-1:2001 are the following:

– revision of connector definitions and current levels (Clause 8);

– modification definition of pilot wire to pilot function;

– division of Clause 9 to create Clauses 9 and 11;

– Clause 9: specific requirements for inlet, plug and socket–outlet;

– Clause 11: EVSE requirements: the basic generic requirements for charging stations;

– renumbering of annexes;

– deletion of previous Annex A and integration of charging cable requirements into new Clause 10;

– Annex B becomes Annex A and is normative for all systems using a PWM pilot function with a pilot wire;

– Annex C becomes Annex B;

– replacement of previous Annex D (coding tables for power indicator) with B.4 in Annex B using new values;

– new informative Annex C describing an alternative pilot function system.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-01-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-04-01

Annexes ZA, ZB and ZC have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61851-1:2010 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 60068-2-1:2007	NOTE	Harmonized as EN 60068-2-1:2007 (not modified).
IEC 60068-2-14:2009	NOTE	Harmonized as EN 60068-2-14:2009 (not modified).
IEC 60364-6:2006	NOTE	Harmonized as HD 60364-6:2007 (modified).

IEC 60947-1:2007	NOTE Harmonized as EN 60947-1:2007 (not modified).
IEC 60947-6-1:2005	NOTE Harmonized as EN 60947-6-1:2005 (not modified).
IEC 61140	NOTE Harmonized as EN 61140.
IEC 61851-21	NOTE Harmonized as EN 61851-21.
IEC 61851-22	NOTE Harmonized as EN 61851-22.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
-	-	Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 1: General requirements, frequency bands and electromagnetic disturbances	EN 50065-1	2001
IEC 60038 (mod)	2009	IEC standard voltages	FprEN 60038[1)]	2011
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 60068-2-75	1997	Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	1997
IEC 60068-2-78	2001	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001
IEC 60276	-	Definitions and nomenclature for carbon brushes, brush-holders, commutators and slip-rings	EN 60276	-
IEC 60309-1	1999	Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements	EN 60309-1 + A11	1999 2004
IEC 60309-2	1999	Plugs, socket-outlets and couplers for industrial purposes - Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories	EN 60309-2 + A11	1999 2004
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41 + corr. July	2007 2007
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC/TR 60755	2008	General requirements for residual current operated protective devices	-	-
IEC 60884-1	2002	Plugs and socket-outlets for household and similar purposes - Part 1: General requirements	-	-

[1)] At draft stage.

Publication	Year	Title	EN/HD	Year
IEC 60884-2-5	1995	Plugs and socket-outlets for household and similar purposes - Part 2: Particular requirements for adaptors	-	-
IEC 60947-3	2008	Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	EN 60947-3	2009
IEC 60950-1 (mod) + corr. August	2005 2006	Information technology equipment - Safety - Part 1: General requirements	EN 60950-1 + A11 + A12	2006 2009 2011
IEC 60990	1999	Methods of measurement of touch current and protective conductor current	EN 60990	1999
IEC 61000-6-1	2005	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	EN 61000-6-1	2007
IEC 61000-6-3	2006	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	EN 61000-6-3	2007
IEC 61008-1 (mod)	2010	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) - Part 1: General rules	FprEN 61008-1	200X[1)]
IEC 61009-1 (mod)	2010	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules	FprEN 61009-1	200X[1)]
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment - Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
IEC 62196-1	2003	Plugs, socket-outlets, vehicle couplers and vehicle inlets - Conductive charging of electric vehicles - Part 1: Charging of electric vehicles up to 250 A a.c. and 400 A d.c.	EN 62196-1	2003
ISO 6469-2	2009	Electrically propelled road vehicles - Safety specifications - Part 2: Vehicle operational safety means and protection against failures	-	-
ISO 6469-3	2001	Electric road vehicles - Safety specifications - Part 3: Protection of persons against electric hazards	-	-
SAE J1772	2010	Recommended practices: SAE Electric Vehicle and Plug In Hybrid Electric Vehicle Conductive Charge Coupler	-	-

CONTENTS

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 1: General requirements

1 Scope

This part of IEC 61851 applies to on-board and off-board equipment for charging electric road vehicles at standard a.c. supply voltages (as per IEC 60038) up to 1 000 V and at d.c. voltages up to 1 500 V, and for providing electrical power for any additional services on the vehicle if required when connected to the supply network.

Electric road vehicles (EV) implies all road vehicles, including plug in hybrid road vehicles (PHEV), that derive all or part of their energy from on-board batteries.

The aspects covered include characteristics and operating conditions of the supply device and the connection to the vehicle; operators and third party electrical safety, and the characteristics to be complied with by the vehicle with respect to the a.c./d.c. EVSE, only when the EV is earthed.

NOTE 1 Class II vehicles are not defined, but the lack of information for this type of vehicle means that the requirements for the standard are under consideration.

NOTE 2 This standard also applies to EVSE with on-site storage capability.

Requirements for specific inlet, connector, plug and socket-outlets for EVs are contained in IEC 62196-1:2003. Standard sheets for the vehicle connector and inlet are also under consideration. They will be incorporated in a separate part of standard IEC 62196.

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

This standard is not applicable to trolley buses, rail vehicles, industrial trucks and vehicles designed primarily for use off-road.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60038:2009, *IEC standard voltages*

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

IEC 60068-2-75:1997, *Environmental testing – Part 2: Tests – Test Eh: Hammer tests*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60276, *Definitions and nomenclature for carbon brushes, brush-holders, commutators and slip-rings*

IEC 60309-1:1999, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements*

IEC 60309-2:1999, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2007*, Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC/TR 60755:2008, *General requirements for residual current operated protective devices*

IEC 60884-1:2002, *Plugs and socket-outlets for household and similar purposes – Part 1:General requirements*

IEC 60884-2-5:1995*, Plugs and socket-outlets for household and similar purposes – Part 2 particular requirements for adaptors*

IEC 60947-3:2008, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60950-1:2005, *Information technology equipment – Safety – Part 1: General requirements*

IEC 60990:1999*, Methods of measurement of touch current and protective conductor current*

IEC 61000-6-1:2005, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments*

IEC 61000-6-3:2006, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61008-1:2010, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – General rules*

IEC 61009-1:2010, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – General rules*

IEC 61180-1:1992, *High-voltage test techniques for low-voltage equipment – Part 1: definitions, test and procedure requirements*

IEC 62196-1:2003, *Plugs, socket-outlets, vehicle couplers and vehicle inlets – Conductive charging of electric vehicles – Part 1: Charging of electric vehicles up to 250 A a.c. and 400 A d.c.*

ISO 6469-2:2009, *Electrically propelled road vehicles – Safety specifications – Part 2: Vehicle operational safety means and protection against failures*

ISO 6469-3:2001, *Electric road vehicles – Safety specifications – Part 3: Protection of persons against electric hazards*

EN 50065-1:2001*, Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz – Part 1: General requirements, frequency bands and electromagnetic disturbances*

SAE J1772:2010, *Recommended practices: SAE Electric Vehicle and Plug In Hybrid Electric Vehicle Conductive Charge Coupler*