SLOVENSKI STANDARD

SIST EN 61851-1:2002

prva izdaja
september 2002

Electric vehicle conductive charging system - Part 1: General requirements (IEC 61851-1:2001)

ICS 43.120

Referenčna številka
SIST EN 61851-1:2002(en)

EUROPEAN STANDARD **EN 61851-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM April 2001

ICS 43.120

English version

Electric vehicle conductive charging system
Part 1: General requirements
(IEC 61851-1:2001)

Dispositif de charge conductive
pour véhicules électriques
Partie 1: Prescriptions générales
(CEI 61851-1:2001)

Konduktive Ladung von
Elektrofahrzeugen
Teil 1: Allgemeine Anforderungen
(IEC 61851-1:2001)

This European Standard was approved by CENELEC on 2001-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61851-1:2001 E

Foreword

The text of document 69/124/FDIS, future edition 1 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 2001-03-01.

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) 2001-12-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-03-01

NOTE The series EN 61851 will supersede the series ENV 50275.

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes A and ZA are normative and annexes B to E are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61851-1:2001 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61140 NOTE: Harmonized as EN 61140:2001 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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
IEC 60038 (mod)	1983	IEC Standard voltages[1)]	HD 472 S1	1989
IEC 60245-1[2)]	1994	Rubber insulated cables of rated	-	-
A1	1997	voltages up to and including 450/750 V	-	-
A2	1997	Part 1: General requirements	-	-
IEC 60245-2[3)]	1994	Part 2: Test methods	-	-
A1	1997		-	-
A2	1997		-	-
IEC 60245-3[4)]	1994	Part 3: Heat resistant silicone insulated	-	-
A1	1997	cables	-	-
IEC 60245-4 (mod)	1994	Part 4: Cords and flexible cables	HD 22.4 S3 + A1	1995 1999
A1	1997		-	-
IEC 60309-1	1999	Plugs, socket-outlets and couplers for industrial purposes Part 1: General requirements	EN 60309-1	1999
IEC 60364-4-41 (mod)	1992	Electrical installations of buildings Part 4: Protection for safety --	HD 384.4.41 S2	1996
A1	1996	Chapter 41: Protection against electric	-	-
A2	1999	shock	-	-
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1992
IEC 60950 (mod) + corr. January	1999 2000	Safety of information technology equipment	EN 60950	2000

1) The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

2) HD 22.1 S3:1997, which is related to, but not directly equivalent with, IEC 60245-1:1994, applies instead.

3) HD 22.2 S3:1997, which is related to, but not directly equivalent with, IEC 60245-2:1994, applies instead.

4) HD 22.3 S3:1995 + A1:1999, which is related to, but not directly equivalent with, IEC 60245-3:1980, applies instead.

INTERNATIONAL STANDARD

IEC 61851-1

First edition
2001-01

Electric vehicle conductive charging system –

Part 1:
General requirements

Dispositif de charge conductive pour véhicules électriques –

Partie 1:
Prescriptions générales

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE R

For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 1: General requirements

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61851-1 has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.

The text of this standard is based on the following documents:

FDIS	Report on voting
69/124/FDIS	69/127/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annex A forms an integral part of this standard.

Annexes B, C, D and E are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

This standard is published in separate parts under the general title *Electric vehicle conductive charging system* and includes:

- Part 1: General requirements
- Part 21: Electric vehicle requirements for conductive connection to an a.c./d.c. supply [1]
- Part 22: AC electric vehicle charging station [1]
- Part 23: DC electric vehicle charging station [1]

A bilingual version of this publication may be issued at a later date.

[1] To be published.

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 1: General requirements

1 Scope

This part of IEC 61851 applies to equipment for charging electric road vehicles at standard a.c. supply voltages (as per IEC 60038) up to 690 V and at d.c. voltages up to 1 000 V, and for providing electrical power for any additional services on the vehicle if required when connected to the supply network.

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 excluded, but the lack of information on this type of vehicle means that the requirements for the standard are unavailable at present.

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

NOTE 3 Requirements for specific inlet, connector, plug and socket-outlets for EVs are also under consideration. They shall be incorporated in a separate standard (in the IEC 60309 series) when complete.

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 normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61851. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61851 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60038:1983, *IEC standard voltages*

IEC 60245-1:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 1: General requirements* [1]
Amendment 1 (1997)
Amendment 2 (1997)

IEC 60245-2:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 2: Test methods* [2]
Amendment 1 (1997)
Amendment 2 (1997)

---

[1] There is a consolidated edition 3.2 (1998) that includes IEC 60245-1 (1994) and its amendment 1 (1997) and amendment 2 (1997).

[2] There is a consolidated edition 2.2 (1998) that includes IEC 60245-2 (1994) and its amendment 1 (1997) and amendment 2 (1997).

IEC 60245-3:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 3: Heat resistant silicone rubber insulated cables*
Amendment 1 (1997)

IEC 60245-4:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*
Amendment 1 (1997)

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

IEC 60364-4-41:1999, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock* [1]

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

IEC 60950:1999, *Safety of information technology equipment*

3 Definitions

For the purpose of this part of IEC 61851, the following definitions apply:

3.1
auxiliary circuit
electrical circuit supplying the vehicle functions other than for propulsion, such as lamps, windscreen motors and radios

3.2
battery assembly
energy store
assembly consisting of secondary cells or monoblocs, one or several battery trays and such auxiliary appliances as battery fuses, automatic topping-up equipment, intercell connectors, battery monitoring devices

3.3
cable assembly
piece of equipment which is used to establish the connection between the EV and the EVSE. It may be either fixed and included in one of these devices, or detachable. It includes the flexible cable and the connector and/or plug that are required for proper connection (see figures 1 to 3)

3.4
charger
power converter that performs the necessary functions for charging a battery

3.4.1
class I charger
charger having functional (basic) insulation throughout, whose conductive accessible parts are connected to the protective earthing conductor and provided with an earthing terminal or connection to the vehicle

3.4.2
class II charger
charger having double insulation and/or reinforced insulation throughout. It shall have a lead-through protective conductor for earthing the EV chassis

---

[1] There is a consolidated edition 3.2 (1999) that includes IEC 60364-4-41 (1992) and its amendment 1 (1996) and amendment 2 (1999).