

English version

**Conductive charging for electric vehicles -
Part 1: D.C. charging station**

Charge conductive
pour véhicules électriques -
Partie 1: Borne de charge courant continu

Konduktive Ladung
von Elektrofahrzeugen -
Teil 1: Gleichstrom-Ladestation

This Technical Specification was approved by CENELEC on 2007-03-01.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

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CENELEC

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

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Foreword

This Technical Specification was prepared by the CENELEC Reporting Secretariat 69, Electric road vehicles and electric industrial trucks.

The text of the draft was submitted to vote in accordance with the Internal Regulations, Part 2, Subclause 11.3.3.3 and was approved by CENELEC as CLC/TS 50457-1 on 2007-03-01.

This Technical Specification is to be used in conjunction with EN 61851-1.

This Technical Specification supersedes ENV 50275-2-3:1998.

In the framework of the conversion of ENV 50275-2-3, Clause 2 has been updated and references to ENV 50275-1 have been replaced by references to EN 61851-1.

The following date was fixed:

- latest date by which the existence of the CLC/TS
has to be announced at national level (doa) 2008-07-01

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Introduction

This Technical Specification “Conductive charging for electric vehicles” is published in separate parts according to the following structure.

This Technical Specification covers the physical, electrical and performance requirements concerning devices for the charging system, when they are not already standardized.

Part 1: D.C. charging station.

Part 2: Communication protocol between off-board charger and electric vehicle.

1 Scope

This Technical Specification, together with EN 61851-1, gives the requirements for d.c. electric vehicle charging stations for conductive connection to the vehicle, with an a.c. supply voltage per IEC 60038, up to 690 V.

This Technical Specification does not cover all safety aspects related to maintenance.

This Technical Specification is not applicable to dedicated off-board charger.

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.

| | | |
|------------------------------|----------------------|---|
| EN 50160 | 1999 | Voltage characteristics of electricity supplied by public distribution systems |
| EN 60068-2-1 + A1 + A2 | 1993 1993 1994 | Environmental testing – Part 2: Tests - Tests A: Cold (IEC 60068-2-1:1990 + A1:1993 + A2:1994) |
| EN 60068-2-2 + A1 + A2 | 1993 1993 1994 | Basic environmental testing procedures – Part 2: Tests - Tests B: Dry heat (IEC 60068-2-2:1974 + IEC 60068-2-2A:1976 + A1:1993 + A2:1994) |
| EN 60068-2-5 | 1999 | Environmental testing – Part 2: Tests - Test Sa: Simulated solar radiation at ground level (IEC 60068-2-5:1975) |
| EN 60068-2-14 | 1999 | Environmental testing – Part 2: Tests - Test N: Change of temperature (IEC 60068-2-14:1984 + A1:1986) |
| EN 60068-2-30 | 2005 | Environmental testing – Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005) |
| EN 60068-2-52 | 1996 | Environmental testing – Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution) (IEC 60068-2-52:1996) |
| EN 60068-2-62 | 1995 | Environmental testing – Part 2: Test methods - Test Ef: Impact, pendulum hammer (IEC 60068-2-62:1991 + A1:1993) |
| EN 60068-2-78 | 2001 | Environmental testing – Part 2-78: Tests - Test Cab: Damp heat, steady state (IEC 60068-2-78:2001) |
| EN 60309-1 | 1999 | Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements (IEC 60309-1:1999) |
| EN 60439-1 + A1 | 1999 2004 | Low-voltage switchgear and controlgear assemblies – Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1:1999 + A1:2004) |
| EN 60529 + corr. May | 1991 1993 | Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989) |
| EN 60664-1 | 2007 | Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests (IEC 60664-1:2007) |

| | | |
|----------------|------|---|
| EN 61180-1 | 1994 | High voltage test techniques for low-voltage equipment |
| EN 61851-1 | 2001 | Electric vehicle conductive charging system – Part 1: General requirements (IEC 61851-1:2001) |
| EN 62052-11 | 2003 | Electricity metering equipment (AC) - General requirements, tests and test conditions – Part 11: Metering equipment (IEC 62052-11:2003) |
| EN 62053-21 | 2003 | Electricity metering equipment (a.c.) - Particular requirements – Part 21: Static meters for active energy (classes 1 and 2) (IEC 62053-21:2003) |
| HD 323.2.3 | 1999 | Environmental testing – Part 2: Tests - Test N: Change of temperature (IEC 60068-2-14:1984 + A1:1986) |
| HD 384.4.43 S2 | 2001 | Electrical installations of buildings – Part 4: Protection for safety Chapter 43: Protection against overcurrent (IEC 60364-4-43:1977+ A1:1997; modified) |
| HD 60364-5-54 | 2007 | Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment - Earthing arrangements, protective conductors and protective bonding conductors (IEC 60364-5-54:2002; modified) |
| IEC 60038 | 1983 | IEC standard voltages |
| IEC 60364-4-44 | 2001 | Electrical installations of buildings – Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances |

3 Definitions

Clause 3 of EN 61851-1 applies with the following additional definition.

3.1

vehicle charging control unit (VCCU)

system embedded in the electric vehicle which controls the charging parameters of the off-board charger

4 General requirements

The d.c. electric vehicle charging station shall be connected to the electric vehicle so that in normal conditions the charging function operates safely, indoors or outdoors, causing no danger to persons or surroundings, even in the event of carelessness that may occur in normal use.

According to 6.2 of EN 61851-1, the EV charging mode is only mode 4 and the supply cable and connector are permanently attached to the charging station (case C).

In general, this is achieved by fulfilling the relevant requirements specified in this Technical Specification and compliance is checked by carrying out all relevant tests. General requirements for the d.c. charging station can also be found in EN 60439-1.