Incorporating corrigenda March 2011, March 2012 and February 2013

BSI Standards Publication

Power installations exceeding 1 kV a.c

Part 1: Common rules

This British Standard is the UK implementation of EN 61936-1:2010 incorporating CENELEC corrigenda March 2011, March 2012 and February 2013. It is derived from IEC 61936-1:2010, incorporating IEC corrigendum March 2011. Together with BS EN 50522:2010, it partially supersedes BS 7354:1990, in particular the earthing section. Where conflict exists between BS EN 61936-1:2010 and BS 7354:1990 the provisions of BS EN 61936-1:2010 take precedence.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by IEC corrigendum March 2011 is indicated in the text by [AC1] 〈AC1〉.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags [C] 〈C〉.

CENELEC corrigendum March 2011 adds correct DOR, DOP and DOW values to the EN Foreword. CENELEC corrigendum March 2012 adds special national conditions for Iceland to Annex ZA. CENELEC corrigendum February 2013 adds further special national conditions for Iceland to Annex ZA.

The UK participation in the preparation of EN 61936-1:2010 was entrusted to Technical Committee PEL/99, Erection and operation of power installations. Preparation of this national foreword was entrusted to both PEL/99 and Technical Committee GEL/600, Earthing.

A list of organizations represented on these committees can be obtained on request to their secretaries.

NOTE To ensure wide participation in the process, GEL/600, in particular, has strengthened its membership to include more representation from the UK Electricity Supply industry (TSOs and DNOs) and an earth test equipment manufacturer. Furthermore, detailed consultation has been carried out with The Energy Networks Association (ENA) through its Earthing Co-ordination Group.

Background and developments to IEC/CENELEC documents

In recent years, two documents have existed side-by-side covering, among other things, the earthing of high voltage installations. The first was HD 637 S1, Power installations exceeding 1kV, published in 1999 while the other was IEC 61936-1, of the same title, published in 2002. These documents were produced by working groups of the committees CENELEC TC/99X and IEC TC/99, respectively. As these documents were not published at the same time and the composition of the working groups was to some extent different, a situation arose such that significant discrepancies existed between these two documents, notably, concerning the fundamental safety criterion of allowable human body current and body impedance values under step and touch voltage conditions. This situation was not ideal, and an initiative was taken to develop a revision to IEC 61936-1 under maintenance team IEC TC/99 MT4 and to release it as a European standard. At the same time, a working group CENELEC TC/99X WG1 was formed to extract the earthing content of HD 637 S1 and bring to publication a new European standard on earthing (EN 50522). Parallel voting of EN 61936-1 and EN 50522 was arranged, in order to achieve harmonization of the adopted electrocution safety criteria and both documents were published in 2010.

Differences in the UK approach to earthing design

The differences in the UK approach to earthing are covered in the National Annexes of BS EN 50522 and relate to:

A new additional approach to earthing system design, based on probabilistic methods, is outlined and developed in the National Annexes to BS EN 50522.

2) Deviations of UK safety limits compared to IEC/CENELEC limits

As a result of advice obtained from the UK Health and Safety Executive (HSE), consensus was reached between PEL/99 and GEL/600 that UK HV earthing systems have to be designed according to tolerable voltages based on body impedances not exceeded for 5% of the population, as given in DD IEC/TS 60479-1:2005, Table 1 (Column 2) rather than the 50% values (Column 3). The UK obtained a variation to the new CENELEC and IEC standards which has been recognized in the foreword of BS EN 61936-1:2010 and BS EN 50522:2010, Annex Q (A-Deviations). Hence, these documents specify the required difference in approach to earthing design in the UK, based on the 5 % body impedance values. The new UK tolerable touch voltage figures are given in BS EN 50522, National Annex NA.

3) Additional guidance on assessing fault current distribution, earth potential rise, design and testing of earthing systems

4) Recognition of the use of computer-aided earthing design tools

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
30 June 2013	Implementation of CENELEC corrigendum February 2013 as described above

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November 2010

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Incorporating corrigendum February 2013

English version

Power installations exceeding 1 kV a.c. - Part 1: Common rules

(IEC 61936-1:2010, modified)

Installations électriques en courant alternatif de puissance supérieure à 1 kV - Partie 1: Règles communes
(CEI 61936-1:2010, modifiée)

Starkstromanlagen mit Nennwechselspannungen über 1 kV - Teil 1: Allgemeine Bestimmungen
(IEC 61936-1:2010, modifiziert)

This European Standard was approved by CENELEC on 2010-11-01. 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, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

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Ref. No. EN 61936-1:2010 E

Foreword

The text of document 99/95/FDIS, future edition 2 of IEC 61936-1, prepared by IEC TC 99, System engineering and erection of electrical power installations in systems with nominal voltages above 1 kV a.c. and 1,5 kV d.c., particularly concerning safety aspects, was submitted to the IEC-CENELEC parallel vote.

A draft amendment was prepared by the Technical Committee CENELEC TC 99X, Power installations exceeding 1 kV a.c. (1,5 kV d.c.) and was submitted to formal vote.

The combined texts were approved by CENELEC as EN 61936-1 on 2010-11-01.

This European Standard partially supersedes HD 637 S1:1999.

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)	2011-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-11-01

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

Endorsement notice

The text of the International Standard IEC 61936-1:2010 was approved by CENELEC as a European Standard without with agreed common modifications as given below.

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

[5] IEC 60044-6	NOTE	Harmonized as EN 60044-6.
[16] IEC 60068 series	NOTE	Harmonized in EN 60068 series (not modified).
[17] IEC 60364-4-41	NOTE	Harmonized as EN 60364-4-41.
[18] IEC 60480	NOTE	Harmonized as EN 60480.
[19] IEC 60664-1	NOTE	Harmonized as EN 60664-1.
[23] IEC 62271-100	NOTE	Harmonized as EN 62271-100.
[24] IEC 62271-102	NOTE	Harmonized as EN 62271-102.
[25] IEC 62271-103	NOTE	Harmonized as EN 62271-103.
[26] IEC 62271-104	NOTE	Harmonized as EN 62271-104.
[27] IEC 62271-105	NOTE	Harmonized as EN 62271-105.

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