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Tugevoolupaigaldised nimivahelduvpingega üle 1 kV

Power installations exceeding 1 kV a.c.

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-HD 637 S1:2002 sisaldab Euroopa standardi HD 637 S1:1999 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.08.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-HD 637 S1:2002 consists of the English text of the European standard HD 637 S1:1999.</p> <p>This document is endorsed on 19.08.2002 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>1.1 Käesolevas standardis on esitatud üle 1 kV nimipingega vahelduvvoolusüsteemidesse kuuluvate elektripaigaldiste projekteerimise ja ehitamise nõuded, mille eesmärk on tagada paigaldiste sihipärasel kasutamisel nende ohutus ja nõuetekohane talitus.</p> <p>1.2 Käesolevat standardit ei rakendata järgmiste elektripaigaldiste projekteerimisel ja ehitamisel: eri paigaldiste vahelised maa-alused ja õhuliinid; elektriraudteed (välja arvatud elektriraudtee toitealajaamad); kaevandusseadmed ja -paigaldised (välja arvatud lahtiste kaevanduste omad); luminofoorlampipaigaldised; laevade elektripaigaldised ja mandrilavapaigaldised; elektrostaatilised seadmed; katsetamispaigad; meditsiiniseadmed (nt meditsiinilised röntgenseadmed).</p> <p>1.3 Käesolev standard ei kehti tehasetooteliste tüüpsete komplektjaotlate projekteerimisel, kui nende kohta on olemas asjakohased IEC või CENELECI standardid.</p>	<p>Scope:</p>
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ICS 29.240.01

Võtmesõnad: elektripaigaldis, kõrgepingepaigaldis, maandussüsteem

English version

Power installations exceeding 1 kV a.c.

Installations électriques de tensions
nominales supérieures à 1 kV en
courant alternatif

Starkstromanlagen mit
Nennwechselspannungen über 1 kV

This Harmonization Document was approved by CENELEC on 1999-01-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

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

This Harmonization Document exists in three official versions (English, French, German).

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

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Foreword

This Harmonization Document was prepared by the Technical Committee CENELEC TC 99X „Power Installations exceeding AC 1 kV (DC 1,5 kV)“.

The text of the draft was submitted to the formal vote and was approved by CENELEC as HD 637 S1 on 1999-01-01.

During the draft stage this standard was labelled prEN 50179; it is cited under this number in various other European Standards, such as EN 50110-1.

The purpose of this Harmonization Document is to provide, in a convenient form, general requirements for the design and the erection of electrical power installations in systems with nominal voltages above 1 kV a.c.

There are many national laws, standards and internal rules dealing with the matter coming within the scope of this standard and these practices have been taken as a basis for this work.

The standard and its normative and informative annexes identifies installation characteristics which represent the minimum attainable for all CENELEC countries under stated conditions. These characteristics ensure an acceptable reliability of an installation and its safe operation.

The standard is supplemented by an informative annex of A-deviations and a normative annex of Special National Conditions and National Provisions (part of national standards, specifications or practices). These annexes identify, as appropriate, where such minimum attainable characteristics require adjustments to take account of national legislation and/or the local environment.

This concept is believed to be a first decisive step to the gradual alignment in Europe of the practices concerning the design and erection of power installations.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 1999-07-01
- latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 2000-01-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2001-01-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, annexes A to G and T are normative and annexes H to S and U are informative.

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1 Scope and normative references

1.1 This standard contains the requirements for the design and erection of electrical installations, in systems with nominal voltage above 1 kV a.c., so as to provide safety and proper functioning for the use intended.

For the purpose of interpreting this standard an electrical power installation is considered to be one of the following:

- a) Substation
A closed electrical operating area with switchgear and/or transformers in a transmission or distribution network. When switchgear and/or transformers are located outside a closed electrical operating area, this is also taken to be an installation.
- b) One or more generating stations located on a single site.
The installation includes generator and transformer units with all associated switchgear and all electrical auxiliary systems. Connections between generating stations located on different sites are excluded.
- c) The electrical system of a factory, industrial plant or other industrial, agricultural, commercial or public premises.
Connections between closed electrical areas (including substations), located on the same site, are taken to be part of the installations, except where such connections form part of a transmission or distribution network.

The electrical power installation includes among others, the following equipment:

- generators, motors and other rotating machines;
- switchgear;
- transformers;
- converters;
- cables;
- lines;
- wiring systems;
- batteries;
- capacitors;
- earthing systems;
- buildings and fences which are part of a closed electrical operating area
- associated control equipment.

1.2 This standard does not apply to the design and erection of:

- Overhead and underground lines between separate installations;
- Electric railways (but does apply to the substation feeding a railway system);
- Mining equipment and installations (except for opencast mining);
- Fluorescent lamp installations;
- Installations on ships and off-shore installations;
- Electrostatic equipment;
- Test sites;
- Medical equipment, e.g. medical X-ray equipment.

1.3 This standard does not apply to the design of factory-built, type tested switchgear for which separate IEC or CENELEC standards exist.

1.4 Normative references

This Harmonization Document 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 Harmonization Document only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 50014	Electrical apparatus for potentially explosive atmospheres General requirements
EN 50015	Electrical apparatus for potentially explosive atmospheres Oil immersion 'o'
EN 50016	Electrical apparatus for potentially explosive atmospheres Pressurized apparatus 'p'
EN 50017	Electrical apparatus for potentially explosive atmospheres Powder filling 'q'
EN 50018	Electrical apparatus for potentially explosive atmospheres Flameproof enclosure 'd'
EN 50019	Electrical apparatus for potentially explosive atmospheres Increased safety 'e'
EN 50020	Electrical apparatus for potentially explosive atmospheres Intrinsic safety "i"
EN 50028	Electrical apparatus for potentially explosive atmospheres Encapsulation 'm'
EN 50110-1	Operation of electrical installations
EN 50110-2	Operation of electrical installations (national annexes)
EN 50265-1	Common test methods for cables under fire conditions – Test for resistance to vertical flame propagation for a single insulated conductor or cable Part 1: Apparatus
EN 50265-2-1	Common test methods for cables under fire conditions – Test for resistance to vertical flame propagation for a single insulated conductor or cable Part 2-1: Procedures – 1 kW pre-mixed flame
EN 50265-2-2	Common test methods for cables under fire conditions – Test for resistance to vertical flame propagation for a single insulated conductor or cable Part 2-2: Procedures – Diffusion flame
EN 50267-2-3	Common test methods for cables under fire conditions – Tests on gases evolved during combustion of materials from cables Part 2-3: Procedures – Determination of degree of acidity of gases for cables by determination of the weighted average of pH and conductivity
EN 60060-2	High-voltage test techniques - Part 2: Measuring systems
EN 60068 (series)	Environmental testing
EN 60071-1	Insulation co-ordination -- Part 1: Definitions, principles and rules

EN 60071-2	Insulation co-ordination -- Part 2: Application guide
EN 60076-2	Power transformers -- Part 2: Temperature rise
EN 60255-6	Electrical relays - Part 6: Measuring relays and protection equipment
EN 60298	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
EN 60517	Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above
EN 60617-13	Graphical symbols for diagrams - Part 13: Analogue elements
EN 60622	Sealed nickel-cadmium prismatic rechargeable single cells
EN 60623	Vented nickel-cadmium prismatic rechargeable single cells
EN 60694	Common specifications for high-voltage switchgear and controlgear standards
EN 60721-1	Classification of environmental conditions Part 1: Environmental parameters and their severities
EN 60721-3 (series)	Classification of environmental conditions -- Part 3: Classification of groups of environmental parameters and their severities
EN 60865-1	Short-circuit currents -- Calculation of effects Part 1: Definition and calculation methods
EN 60896-1	Stationary lead-acid batteries -- General requirements and methods of test Part 1: Vented types
ENV 61024-1	Protection of structures against lightning -- Part 1: General principles
EN 61082-1	Preparation of documents used electrotechnology Part 1: General requirements
EN 61100	Classification of isolating liquids according to fire point and net calorific value
EN 61219	Live working -- Earthing or earthing and short-circuiting equipment using lances as short-circuiting device -- Lance earthing
EN 61230	Live working - Portable equipment for earthing or earthing and short-circuiting
EN 61330	High voltage/low-voltage prefabricated substations
HD 246.2	Diagrams, charts, tables -- Part 2: Item designation (IEC 60113-2)
HD 384.3	Electrical installations of buildings Part 3: Assessment of general characteristics (IEC 60364-3, modified)
HD 384.4.442	Electrical installations of buildings -- Part 4: Protection for safety Chapter 44: Protection against overvoltages Section 442: Protection of low-voltage installations against faults between high-voltage systems and earth
HD 405.3	Tests on electric cables under fire conditions Part 3: Tests on bunched wires or cables (IEC 60332-3)
HD 464	Dry-type power transformers (IEC 60726, modified)

HD 472	Nominal voltages for low-voltage public electricity supply systems (IEC 60038, modified)
HD 478 (series)	Classification of environmental conditions (IEC 60721 series)
HD 533	Short-circuit current calculation in three-phase a.c. systems (IEC 60909, modified)
HD 606 (series)	Measurement of smoke density of electric cables burning under defined conditions (IEC 61034 series, modified)
IEC 60044-6	Instrument transformers -- Part 6: Requirements for protective current transformers for transient performance
IEC 60050 (series)	International electrotechnical vocabulary (IEV)
IEC 60287-3-1	Electrical cables – calculation of the current rating Part 3: Sections on operating conditions Section 1: Reference operating conditions and selection of cable type
IEC 60331	Fire-resisting characteristics of electric cables
IEC 60466	A.C. insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV
IEC 60478 (series)	Stabilized power supplies, d.c. output
IEC 60478-1	Stabilized power supplies, d.c. output -- Part 1: Terms and definitions
IEC 60478-2	Stabilized power supplies, d.c. output -- Part 2: Rating and performance
IEC/TR2 60479-1	Effects of current on human beings and livestock -- Part 1: General aspects
IEC 60518	Dimensional standardization of terminals for high-voltage switchgear and controlgear
IEC 60724	Guide to the short-circuit temperature limits of electric cables with a rated voltage not exceeding 0,6/1,0 kV
IEC/TR 60815	Guide for the selection of insulators in respect of polluted conditions
IEC/TR 60826	Loading and strength of overhead transmission lines
IEC 60949	Calculation of thermally permissible short-circuit currents, taking into account non-adiabatic heating effects
IEC 61243 (series)	Live working – Voltage detectors
IEC/TR2 61634	High-voltage switchgear and controlgear - Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear
CISPR 18 (series)	Radio interference characteristics of overhead power lines and high-voltage equipment
ISO 1996 (series)	Acoustics – Description and measurement of environmental noise
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