SVENSK STANDARD SS-EN 50522

Fastställd	Utgåva	Sida	Ansvarig kommitté
2022-04-20	2	1 (1+77)	SEK TK 99

Jordning av elinstallationer överstigande 1 kV AC

Earthing of power installations exceeding 1 kV a.c.

Som svensk standard gäller europastandarden EN 50522:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50522:2022.

Nationellt förord

I bilaga P redovisas svenska avvikelser, vilka av CENELEC accepterats till följd av speciella nationella förhållanden.

Tidigare fastställd svensk standard SS-EN 50522, utgåva 1, 2011 (en), SS-EN 50522, utgåva 1, 2011 (sv) med ändring SS-EN 50522/R1:2014, gäller ej fr o m 2025-01-10.

ICS 29.120.50

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: www.elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

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.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50522

March 2022

ICS 29.120.50

Supersedes EN 50522:2010 and all of its amendments and corrigenda (if any)

English Version

Earthing of power installations exceeding 1 kV a.c.

Prises de terre des installations électriques de puissance en courant alternatif de tension supérieure à 1 kV

Erdung von Starkstromanlagen mit Nennwechselspannungen über 1 kV

This European Standard was approved by CENELEC on 2022-01-10. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 50522:2022 E

SEK Svensk Elstandard

SS-EN 50522, utg 2:2022

Contents

Page

European foreword

This document (EN 50522:2022) has been prepared by CLC/TC 99X “Power installations exceeding 1 kV AC (1,5 kV DC)”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-01-10
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2025-01-10

This document will supersede EN 50522:2010 and all of its amendments and corrigenda (if any).

EN 50522:2022 includes the following significant technical changes with respect to EN 50522:2010:

— Text sections in italic which were indicating that the section is a copy of an IEC 61936-1 text replaced by reference note to IEC 61936-1 due to copyright reasons.

— Clause 3 is updated regarding touch voltages.

— Improved figures in Clause 3 for distribution of earth fault currents.

— The process of designing earthing system is clarified in 5.4 and Figure 9.

— Rearranged Annex A and B including prospective permissible touch voltage and permissible step voltage.

— Introduction of stainless steel in Annex C and Annex D.

— More details and figures regarding fences in Annex G.

— Enlarged table of reduction factors and application on cables in Annex I.

— New figures in Annex J (J.4 and J.5).

— Details on soil resistivity measurements and touch voltage measurements including flow chart in Annex L.

— Clause 10 was Annex M in previous version.

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

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

1 Scope

This document is applicable to specify the requirements for the design and erection of earthing systems of electrical installations, in systems with nominal voltage above 1 kV AC and nominal frequency up to and including 60 Hz, so as to provide safety and proper functioning for the use intended.

NOTE 1 The technical and procedural principles of this document can be applied when third parties' installations and facilities are planned and/or erected in the vicinity of HV electrical power installations.

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

a) substation, including substation for railway power supply;

b) electrical power installations on mast, pole and tower;

   switchgear and/or transformers located outside a closed electrical operating area;

c) one (or more) power station(s) located on a single site;

   the electrical power installation includes generators and transformers with all associated switchgear and all electrical auxiliary systems. Connections between generating stations located on different sites are excluded;

d) the electrical system of a factory, industrial plant or other industrial, agricultural, commercial or public premises;

e) electrical power installations on offshore facilities for the purpose of generation, transmission, distribution and/or storage of electricity;

f) transition towers/poles between overhead lines and underground lines.

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

— rotating electrical machines;

— switchgear;

— transformers and reactors;

— converters;

— cables;

— wiring systems;

— batteries;

— capacitors;

— earthing systems;

— buildings and fences which are part of a closed electrical operating area;

— associated protection, control and auxiliary systems;

— large air core reactor.

NOTE 2 In general, a standard for an item of equipment takes precedence over this document.

This document does not apply to the design and erection of earthing systems of any of the following:

— overhead and underground lines between separate installations;

— electrified railway tracks and rolling stock;

— mining equipment and installations;

— fluorescent lamp installations;

— installations on ships according to IEC 60092 (all parts) and offshore units according to IEC 61892 (all parts), which are used in the offshore petroleum industry for drilling, processing and storage purposes;

— electrostatic equipment (e.g. electrostatic precipitators, spray-painting units);

— test sites;

— medical equipment, e.g. medical X-ray equipment.

NOTE 3 The standard EN 50341 series, Overhead lines exceeding AC 1 kV, specifies requirements for the design and erection of earthing systems in overhead lines.

NOTE 4 The scope of this document does not include the requirements for carrying out live working on electrical power installations.

NOTE 5 The scope of this document considers safety requirements for HV installations and its influences on LV installations. For electrical installation up to 1 kV, the standard HD 60364 series applies.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60909 (series), *Short-circuit currents in three-phase a.c. systems* (IEC 60909 series)

EN IEC 62561-2, *Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes (IEC 62561-2)*

HD 60364-1, *Low-voltage electrical installations - Part 1: Fundamental principles, assessment of general characteristics, definitions (IEC 60364-1)*

IEC 60479-1:2018, *Effects of current on human beings and livestock – Part 1: General aspects*

IEC 61936-1:2010, *Power installations exceeding 1 kV a.c. - Part 1: Common rules*