SVENSK STANDARD

SS-EN 50341-2-18, utg 2:2023

Fastställd	Sida	Ansvarig kommitté
2023-09-20	1 (93)	SEK TK 11

Elektriska friledningar över 1 kV (AC) – Del 2-18: Svensk normativ bilaga

Overhead electrical lines exceeding AC 1 kV –
Part 2-18: National Normative Aspects (NNA) for Sweden (based on EN 50341-1:2012)

Som svensk standard gäller europastandarden EN 50341-2-18:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50341-2-18:2023.

Nationellt förord

Tidigare fastställd svensk standard SS-EN 50341-2-18, utg 1:2017 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-03-22.

ICS 29.240.20

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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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.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50341-2-18

May 2023

ICS 29.240.20

Supersedes EN 50341-2-18:2016

English Version

Overhead electrical lines exceeding AC 1 kV - Part 2-18: National Normative Aspects (NNA) for Sweden (based on EN 50341-1:2012)

Lignes électriques aériennes dépassant 1 kV en courant alternatif - Partie 2-18 : Aspects Normatifs Nationaux (NNA) pour la Suède (sur la base de l'EN 50341-1:2012)

This European Standard was approved by CENELEC on 2023-03-22. 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, Türkiye 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 50341-2-18:2023 E

SEK Svensk Elstandard

SS-EN 50341-2-18, utg 2:2023

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Foreword

1 The Swedish National Committee (NC) is identified by the following address:

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2 The Swedish NC has prepared this Part 2-18 of EN 50341, listing the Swedish national normative aspects (NNA), under the sole responsibility, and duly passed it through the CENELEC and CLC/TC 11 procedures.

NOTE The Swedish NC also takes the sole responsibility for the technically correct co-ordination of this EN 50341-2-18 with EN 50341. It has performed the necessary checks in the frame of quality assurance/control. It is noted however that this quality assurance/control has been made in the framework of the general responsibility of a standard committee under the national laws/regulations.

3 This NNA is normative in Sweden and informative in other countries.

4 This NNA has to be read in conjunction with Part 1 (EN 50341-1). All clause numbers used in this NNA correspond to those of Part 1. Specific subclauses, which are prefixed "SE", are to be read as amendments to the relevant text in Part 1. Any necessary clarification regarding the application of this NNA in conjunction with Part 1 shall be referred to the Swedish NC who will, in co-operation with CLC/TC 11 clarify the requirements.

When no reference is made in this NNA to a specific subclause, then Part 1 applies.

5 In the case of "boxed values" defined in Part 1, amended values (if any), which are defined in this NNA shall be taken into account in Sweden.

However, any boxed value, whether in Part 1 or in this NNA, shall not be amended in the direction of greater risk in a Project Specification.

6 The national Swedish standards / regulations related to overhead electrical lines exceeding 1 kV (AC) are listed in subclause 2.1/SE

NOTE All national standards referred to in this NNA will be replaced by the relevant European Standards as soon as they become available and are declared by the Swedish NC to be applicable and thus reported to the secretary of CLC/TC 11.

1 Scope

(ncpt)

SE.1 Application to existing overhead lines

This Part 2-18 is applicable for new overhead lines only and not for existing lines.

(A-dev)

SE.2 Maintenance, rebuilding or extension of an overhead line

Measures related to maintenance of the electrical installation shall fulfill the legislation in force when it was erected. In the case of a rebuilding or extension of an electrical installation (overhead line), the current regulations in force shall be applied for the rebuilding or extension.

(Regulations and general advice of the National Electrical Safety Board regarding the installation of electrical installations ”Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda”, Ikraftträdande och övergångsbestämmelser (ELSÄK-FS 2022:1))

(ncpt)

SE.3 Optical ground wire (OPGW) and optical phase conductor (OPCON)

This Part 2-18 is applicable for installation of OPGW and OPCON, also known as OPPC, in overhead lines in Sweden.

(ncpt)

SE.4 All dielectric self supporting optical cable (ADSS) and optical attached cable (OPAC)

This Part 2-18 is applicable for installation of ADSS and OPAC in overhead lines in Sweden.

NOTE The allowable electrical field for the ADSS cable should be taken into consideration when the conductor configuration is determined.

2 Normative references, definitions and symbols

2.1 Normative references

(A-dev)

SE.1 National normative laws, government regulations

Reference	Title
ELSÄK-FS 2011:3	Elsäkerhetsverkets föreskrifter om ansökan om drifttillstånd *Regulations of the National Electrical Safety Board regarding application for operating permit*
ELSÄK-FS 2022:1	Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda *Regulations and general advice of the National Electrical Safety Board regarding the installation of electrical installations*
ELSÄK FS 2022:3	Elsäkerhetsverkets föreskrifter och allmänna råd om innehavarens kontroll av starkströmsanläggningar och elektriska utrustningar *The regulations and general advice of the National Electrical Safety Board regarding checks of electrical installations and electrical equipment by the holder*
SFS 2017:218	Elsäkerhetsförordning *The Swedish Government - Ordinance concerning electrical safety*
BFS 2011:10 - EKS	Boverkets föreskrifter och allmänna råd om tillämpning av europeiska konstruktionsstandarder (eurokoder) *Swedish National Board of Housing, Building and Planning: Application of the European design standards*

NOTE If there is associated amendment instructions to the documents listed above, they shall be included.

(ncpt)

SE.2 National normative standards referred to in this NNA

Reference	Title
SS-EN 335:2013	Träskydd - Definitioner och tillämpning av användningsklasser - Massivt trä och träbaserade produkter *Durability of wood and wood-based products — Use classes: definitions, application to solid wood and wood-based products*
SS-EN 351-1:2007	Träskydd – Träskyddsbehandlat massivt trä – Del 1: Klassificering och upptagning av träskyddsmedel *Durability of wood and wood-based products – Preservative-treated solid wood – Part 1: Classification of preservative penetration and retention*
SS-EN ISO 527-2:2012	Plast - Bestämning av töjningsegenskaper - Del 2: Provningsbetingelser för press- och sprutmassa (ISO 527-2:2012) *Plastics -- Determination of tensile properties -- Part 2: Test conditions for moulding and extrusion plastics*
SS-EN ISO 527-3:2018	Plast - Bestämning av draghållfasthet - Del 3: Provningsbetingelser för filmer och Skivor (ISO 527-3:2018) *Plastics -- Determination of tensile properties -- Part 3: Test conditions for films and sheets*

Reference	Title
SS-ISO 965-4:2021	Metriska ISO-gängor för allmän användning – Gängtoleranser - Del 4: Gränsmått för varmförzinkade utvändiga gängor avsedda för användning tillsammans med invändiga gängor gängade till toleranskvalitet H eller G efter förzinkning *ISO general purpose metric screw threads - Tolerances - Part 4: Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing*
SS-EN 1090-2:2018	Utförande av stål- och aluminiumkonstruktioner – Del 2: Stålkonstruktioner *Execution of steel structures and aluminium structures – Part 2: Technical requirements for steel structures*
SS-EN 1999-1-1:2007	Eurokod 9 : Dimensionering av aluminiumkonstruktioner – Del 1-1: Allmänna regler *Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules*
SS-EN ISO 4892-2:2013	Plast - Metoder för exponering i artificiellt ljus - Del 2: Xenon-arc ljuskällor (ISO 4892-2:2013) *Plastics -- Methods of exposure to laboratory light sources -- Part 2: Xenon-arc lamps*
SS-EN ISO 4892-3:2016	Plast - Metoder för exponering i artificiellt ljus - Del 3: UV lysrör (ISO 4892-3:2016) *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps (ISO 4892-3:2016)*
SS-EN 10164:2018	Stålprodukter med förbättrade deformationsegenskaper i tjockleksriktningen - Tekniska leveransbestämmelser *Steel products with improved deformation properties perpendicular to the surface of the product - Technical delivery conditions*
SS-EN 10204:2005	Metalliska varor - Typer av kontrolldokument *Metallic products - Types of inspection documents*
SS-EN ISO 10684:2004	Fästelement – Varmförzinkning av fästelement F*asteners – Hot dip galvanized coatings*
SS-EN 13670:2009	Betongkonstruktioner – Utförande *Execution of concrete structures*
SS-EN 60060	Högspänningsprovning *High-voltage test techniques*
SS 424 05 02	Isolatorer – Stödisolatorer av pinntyp för friledningar *Insulators – Pin insulators for overhead lines*
SS 424 05 21	Stödisolator av massiv typ för friledningar *Line post insulators*
SS 424 05 31	Isolatorer - Stagisolatorer *Insulators - Stay insulators*
SS 424 08 06	Linor av hård förzinkad ståltråd för luftledningar - Fe140-linor *Hard zinc-coated steel wire strands for overhead lines – Fe140 wire strands*
SS 424 08 11	Tråd av aluminiumlegering för linor för friledningar - AlMgSi-tråd *Aluminium alloy wire for stranded conductors for overhead line – AlMgSi wire*
SS 424 08 12	Linor av aluminiumlegering för friledningar – AlMgSi-linor *Aluminium alloy stranded conductors for overhead line – AlMgSi-conductor*

Reference	Title
SS 424 08 13	Tråd av aluminiumlegering för linor för friledningar - Al 59-tråd *Aluminium alloy wire for stranded conductors for overhead line – Al 59 wire*
SS 424 08 14	Linor av aluminiumlegering för friledningar - Al 59-linor *Aluminium alloy stranded conductors for overhead line – Al 59-conductor*
SS 424 12 50	Najning *Ties*
SS 424 12 51	Förformad najningsspiral *Preformed ties*
SS 436 02 61	Luftledningskorsningar - Högspänningsledning (friledning), högst 52 kV, över allmän väg *Overhead line crossings - High voltage overhead line for max 52 kV above public road*
SS 436 02 62	Luftledningskorsningar - Högspänningsledning (friledning), högst 52 kV, över allmän väg - Trädsäkert korsningsspann *Overhead line crossings - High voltage overhead line for max 52 kV above public road - Crossing span safe for falling trees*
SS 436 02 63	Luftledningskorsningar - Högspänningsledning (friledning), högst 52 kV, över järnväg - Trädsäkert korsningsspann *Overhead line crossings - High voltage overhead line for max 52 kV above railway - Crossing span safe for falling trees*
SS 436 02 65	Luftledningskorsningar - Högspänningsledning (hängspiralkabel utan skärm), 1-24 kV, över allmän väg *Overhead line crossings - High voltage overhead line (self-supporting aerial cable without shield) 1-24 kV above public road*
SS 436 02 66	Luftledningskorsningar - Högspänningsledning (hängspiralkabel utan skärm), 1-24 kV, över järnväg *Overhead line crossings - High voltage overhead line (self-supporting aerial cable without shield) 1-24 kV above railway*
SS 436 02 80	Luftledningskorsningar - Högspänningsledning (metallskärmad hängkabel eller metallskärmad hängspiralkabel), 1-24 kV, över allmän väg *Overhead line crossings - High voltage overhead line (suspension cable with metal sheath) 1-24 kV above public road*
SS 436 02 81	Luftledningskorsningar - Högspänningsledning (metallskärmad hängkabel eller metallskärmad hängspiralkabel), 1-24 kV, över järnväg *Overhead line crossings - High voltage overhead line (suspension cable with metal sheath) 1-24 kV above railway*

(ncpt)

SE.3 National informative documents referred to in this NNA

Reference	Title
NTR Dokument 3: 2017	Nordiska Träskyddsrådet – Nordiska regler för kvalitetskontroll av impregnerat trä – Del 1: Träskyddsbehandlad furu och andra lätt impregnerbara barrträslag *The Nordic Wood Preservation Council – Nordic requirements for quality control of industrially protected wood – Part 1: Scots pine and other permeable softwoods*
Korrosionsinstitutet Bulletin nr 97	Riktlinjer för användning av rosttröga stål - Korrosionstekniska synpunkter *Guidelines for use of weathering steel - Corrosion technical aspects*
Korrosionsinstitutet Bulletin No. 94	Rosttröga stål i byggnader *Weathering steel in buildings*

2.2 Definitions

(A-dev)

SE.1.1 Reinforced lines type 1

Overhead lines so designed that the forces which according to experience is expected to occur do not inflict damage which adversely will affect the capability of these lines or imply hazard to persons or property.

(Regulations and general advice of the National Electrical Safety Board regarding the installation of electrical installations ”Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda”, Brottsäker ledning: 6 kap. 1, 10 and 11 §§, (ELSÄK-FS 2022:1)).

(A-dev)

SE.1.2 Reinforced lines type 2

Design of overhead line within the nominal voltage of 1-25 kV in urban area with reliability level 2, efficient earth fault protection and particular measures to reduce the risk of falling trees.

(Regulations and general advice of the National Electrical Safety Board regarding the installation of electrical installations ”Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda”, Ledning i förstärkt utförande: 5 kap. 5 § and 6 kap. 1 and 11 §§ (ELSÄK-FS 2022:1)).

(A-dev)

SE.2.1 Urban areas

Areas covered by a detailed development plan.

(”Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda”, Område med detaljplan: 5 kap. 6 § and 6 kap. (ELSÄK-FS 2022:1))

(A-dev)

SE.2.1 Rural areas

Areas not covered by a detailed development plan

(”Elsäkerhetsverkets föreskrifter och allmänna råd om hur starkströmsanläggningar ska vara utförda”, Område utan detaljplan: 5 kap. 6 § and 6 kap. (ELSÄK-FS 2022:1))

(ncpt)

SE.3 Similar conductors

Similar conductors are conductors which have the same cross section, material, sag and attachment, see also Table 5.8/SE.1.

(ncpt)

SE.4 Demarcation span

Single spans which separate a line section build as a reinforced line type 1 with timber pole support and with highest system voltage equal to or less than 55 kV. The demarcation span shall be supported by demarcation supports which are timber pole supports without longitudinal guys.

2.3 Symbols

(ncpt)

SE.1

Symbol	Signification	Reference
E_i	Modulus of elasticity, initial stage (before ice load)	9.6.4/SE.1
E_{iL}	Modulus of elasticity, initial lower	9.6.4/SE.1
E_{iU}	Modulus of elasticity, initial upper	9.6.4/SE.1
E_p	Modulus of elasticity, final stage (after ice load)	9.6.4/SE.1
f_{ctm}	Mean value of axial tensile strength of concrete	7.6.5/SE.1
g_e	Dead weight of the conductor	4.5.2/SE.1 to SE.2
g_{i0}	Ice-load at no wind	4.5.2/SE.1 to SE.2
g_{iw}	Ice-load at normal wind	4.5.2/SE.1 to SE.2
g_{w0}	Normal wind load at bare conductor	4.5.2/SE.1 to SE.2
g_{wi}	Normal wind-load at conductor covered by ice load	4.5.2/SE.1 to SE.2
H	Horizontal clearance	Table 5.8/SE.1 to SE.2
h	Horizontal clearance at mixed conductor configuration, height above ground	Table 5.8/SE.1 to SE.2, 4.3
k	Voltage coefficient for distances	Table 5.8/SE.1 to SE.3
S	Voltage dependent distance	5.9.1/SE.1
U_{SK}	Lightning impulse withstand voltage	5.5/SE.1 to SE.2.2
U_{SL}	Switching impulse withstand voltage	5.5/SE.1 to SE.2.2
U_V	Short duration wet power frequency withstand voltage	5.5/SE.1 to SE.2.2
V	Vertical clearance	Table 5.8/SE.1 to SE.2
v	Vertical clearance at mixed conductor configuration	Table 5.8/SE.1 to SE.2
W	Free space, from high water level, for sailing, given by the authorities	Table 5.9.4/SE.2
X	Clearance between conductors, factor in conductor calculation	Table 5.8/SE.3, 9.6.4/SE.1
ε_c	Strain elongation due to creep	9.6.4/SE.1
ε_s	Strain elongation due to stress	9.6.4/SE.1
σ	Stress value	9.6.4/SE.1
σ_0	Stress value in conductor at 0 °C	9.6.4/SE.1
σ_p	Highest stress value at which E_{iL} is valid	9.6.4/SE.1