

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 50341-2-18:2023 sisaldab Euroopa standardi EN 50341-2-18:2023 ingliskeelset teksti.       | This Estonian standard EVS-EN 50341-2-18:2023 consists of the English text of the European standard EN 50341-2-18:2023.                              |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.                                                  | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. |
| Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.05.2023. | Date of Availability of the European standard is 19.05.2023.                                                                                         |
| Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.                                              | The standard is available from the Estonian Centre for Standardisation and Accreditation.                                                            |

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

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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.

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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**

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

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

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

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

(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<br><i>The Nordic Wood Preservation Council – Nordic requirements for quality control of industrially protected wood – Part 1: Scots pine and other permeable softwoods</i> |
| Korrosionsinstitutet<br>Bulletin nr 97  | Riktlinjer för användning av rosttröga stål - Korrosionstekniska synpunkter<br><i>Guidelines for use of weathering steel - Corrosion technical aspects</i>                                                                                                                                                                              |
| Korrosionsinstitutet<br>Bulletin No. 94 | Rosttröga stål i byggnader<br><i>Weathering steel in buildings</i>                                                                                                                                                                                                                                                                      |

**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", Brotsäker 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.