SLOVENSKI STANDARD
SIST EN 50341-2-5:2018

01-februar-2018

Nadzemni električni vodi za izmenične napetosti nad 1 kV - 2-5. del: Nacionalna normativna določila (NNA) za Dansko (na podlagi EN 50341-1:2012)

Overhead electrical lines exceeding AC 1 kV – Part 2-5: National Normative Aspects (NNA) for DENMARK (based on EN 50341-1:2012)

Lignes électriques aériennes dépassant 1 kV en courant alternatif - Partie 2-5: Aspects normatifs nationaux (NNA)pour le DANEMARK (basé sur l'EN 50341-1:2012)

Ta slovenski standard je istoveten z: EN 50341-2-5:2017

ICS:

29.240.20	Daljnovodi	Power transmission and distribution lines

SIST EN 50341-2-5:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50341-2-5

February 2017

ICS 29.240.20

English Version

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This European Standard was approved by CENELEC on 2017-02-01.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, 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: Avenue Marnix 17, B-1000 Brussels

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European foreword

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

Dansk Standard
Göteborg Plads 1
DK-2150 Nordhavn
Phone no. +45 39 96 61 01
E-mail: dansk.standard@ds.dk

2 The Danish NC has prepared this Part 2-5 of EN 50341, listing the Danish national normative aspects, under its sole responsibility, and duly passed it through the CENELEC and CLC/TC 11 procedures.

NOTE The Danish NC also takes sole responsibility for the technically correct coordination of this EN 50341-2-5 with EN 50341-1:2012. 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 standards committee under the national laws/regulations.

3 This EN 50341-2-5 is normative in Denmark and informative for other countries.

4 This EN 50341-2-5 has to be read in conjunction with EN 50341-1:2012, hereinafter referred to as Part 1. All clause numbers used in this Part 2-5 correspond to those of Part 1.

Specific sub clauses, which are prefixed “DK”, are to be read as amendments to the relevant text in Part 1. Any necessary clarification regarding the application of Part 2-5 in conjunction with Part 1 shall be referred to the Danish NC who will, in cooperation with CLC/TC 11 clarify the requirements.

When no reference is made in Part 2-5 to a specific sub clause, then Part 1 applies.

5 In the case of “boxed values” defined in Part 1, amended values (if any) which are defined in Part 2-5 shall be taken into account in Denmark.

However any “boxed values“, whether in Part 1 or Part 2-5, shall not be amended in the direction of greater risk in a Project Specification.

6 The national Danish standards/regulations related to overhead electrical lines exceeding 1 kV (AC) are identified in 2.1/DK1.

NOTE All national standards referred to in this Part 2-5 will be replaced by the relevant European Standards as soon as they become available and are declared by the Danish NC to be applicable and thus reported to the secretary of CLC/TC 11.

1 Scope

(snc)

This Part 2-5 is applicable for new permanent overhead lines only and generally not for existing lines in Denmark. If some planning/design or execution work on existing lines in Denmark has to be performed, the degree of application of this Standard shall be agreed upon by the parties concerned and the authorities.

1.1 DK.1 General

(ncpt)

Installations in the planning and construction stage may be completed adopting the standard edition valid at the beginning of planning.

2 Normative references, definitions and symbols

2.1 DK.1 Normative references

(A-dev)

Lov nr. 525 af 29/04/2015.
Lov om sikkerhed ved elektriske anlæg, elektriske installationer og elektrisk materiel (Elsikkerhedsloven)

Act No. 525 - 29/04/2015.
Act on the Safety of Electrical Plants, Electrical Installations and Electrical Equipment (the Electrical Safety Act)

Bekendtgørelse nr. 1114 af 18/08/2016
Bekendtgørelse om sikkerhed for udførelse af elektriske anlæg

Executive Order no. 1114 18/08/2016
Executive Order on Safety in connection with the Construction of Electrical Plants

2.3 DK.1 Symbols

(ncpt)

Symbol	Signification	Reference
L	Length of the intact span [m]	4.8.2/DK.1
E	Modulus of elasticity of the conductor [N/mm^2]	4.8.2/DK.1
γ	Weight of the conductor including possible external Load divided by the cross-sectional area [N/m/mm^2]	4.8.2/DK.1
σ	Tensile stress in the conductor prior to breakage [N/mm^2]	4.8.2/DK.1
I	Max movement of movable suspension in the direction of the line [m]	4.8.2/DK.1
u	Deflection of the support in the direction of the line at the attachment point of the insulator [m]	4.8.2/DK.1
d	Horizontal conductor swing [m]	5.6.3.2/DK.1

y_0	Overhead line sag at 0°C [m]	5.6.3.2/DK.1
l_k	Distance from the attachment point of the conductor and the turning point of the insulator string [m]	5.6.3.2/DK.1

3 Basis of design

3.2 Requirements of overhead lines

3.2.2 DK.1 Reliability requirements

(ncpt)

One reliability level generally applies corresponding to level 3.

4 Actions on lines

4.1 DK.1 Introduction

(snc)

For assessment of climatic data to determine numerical values for action approach 1 is applied.

4.3 Wind loads

4.3.1 DK.1 Field of application and basic wind velocity

(snc)

The basic wind velocity, $V_{b,0}$ can be taken as given in Table 4.3.1 below

Table 4.3.1/DK.1 - Reference wind speeds in Denmark

Part of the country	Reference wind speed
The whole of Denmark, however with the exceptions mentioned below	24 m/s
The west coast of Jutland	27 m/s
From the west coast line of Jutland and 25 km inland	Linear declination from 27 m/s to 24 m/s

Further information can be found in DS/EN 1991-1-4 DK NA.

4.3.3 DK.1 Mean wind pressure

(snc)

Density of air of ρ=1.25 kg/m^3 is used in Denmark. This is independent of temperature and altitude.

4.4 Wind forces on overhead line components

4.4.1 Wind forces on conductors

4.4.1.1 DK.1 General

(ncpt)

Method 4 in Table 4.3 should be used for the determination of the reference height above ground, h of the conductors.

DK.2 General

(ncpt)

For calculation of the mechanical tension in a section, the equivalent mean section length should be used as the span length.

4.4.1.3 DK.1 Drag factor

(npct)

Method 1 or 2 shall be used for determination of the drag factor of the conductors.

4.4.3 Wind forces on lattice towers

4.4.3.1 DK.1 General

(npct)

Method 1 should be used for determining the wind forces on the tower itself.

4.4.4 DK.1 Wind forces on poles

(ncpt)

Method 2 is used for determination of the reference height for the pole.
The reference height should be 60% of the total height.

4.5 Ice loads

4.5.1 DK.1 General

(ncpt)

No ice loads apply on insulators or towers.

DK.2 Characteristic ice load

(snc)

The characteristic ice load, I, on a conductor with the diameter d in mm is I = 12 + 0.9 d [N/m]
The ice is considered as glaze ice. For a 30 mm conductor the value reflects a 50-year return period load.
Density of ice is 900 kg/m^3.

4.5.2 DK.1 Ice forces on conductors

(ncpt)

The vertical ice force on a support from each sub-conductor is $Q_I = I\ (L_{W1}+L_{W2})/2$

4.6 Combined wind and ice loads

4.6.6 Combination of wind velocity and ice loads

4.6.6.1 DK.1 Extreme ice load I_T combined with a high probability wind velocity V_{IH}

(snc)

$\Psi_W = 0.4$
Only the extreme ice load combined with the reduced wind load have to be investigated, i.e. I = 0.

4.6.6.2 DK.1 Nominal ice load I_3 combined with a low probability wind velocity V_{IL}

(snc)

This situation should not be investigated in Denmark.

4.7 DK.1 Temperature effects

(snc)

The following temperature effects should be considered:
a) A minimum temperature to be considered with no other climatic action: -20 °C
b) A normal ambient reference temperature assumed for the extreme wind velocity condition: 5 °C
c+d) Not relevant
e) A temperature to be used for the combination of wind and ice: 0 °C.

4.8 Security loads