



BSI Standards Publication

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

National foreword

This British Standard is the UK implementation of EN 50341-2-5:2017.

This standard, together with the following list of National Normative Aspect standards, supersedes BS EN 50423-3:2005 and BS EN 50341-3:2001:

Country Code	Origin	Ref
AT	Austrian National Committee	BS EN 50341-2-1
BE	Belgian National Committee	BS EN 50341-2-2
CH	Swiss National Committee	BS EN 50341-2-3
DE	German National Committee	BS EN 50341-2-4:2016
DK	Danish National Committee	BS EN 50341-2-5:2017
ES	Spanish National Committee	BS EN 50341-2-6
FI	Finnish National Committee	BS EN 50341-2-7:2015
FR	French National Committee	BS EN 50341-2-8
GB	British National Committee	BS EN 50341-2-9:2015
GR	Greek National Committee	BS EN 50341-2-10
IE	Irish National Committee	BS EN 50341-2-11
IS	Iceland National Committee	BS EN 50341-2-12
IT	Italian National Committee	BS EN 50341-2-13:2017
LU	Luxemburg National Committee	No NNA available
NL	Nederland's National Committee	BS EN 50341-2-15
NO	Norwegian National Committee	BS EN 50341-2-16:2016
PT	Portuguese National Committee	BS EN 50341-2-17
SE	Swedish National Committee	BS EN 50341-2-18
CZ	Czech National Committee	BS EN 50341-2-19:2015
EE	Estonian National Committee	BS EN 50341-2-20:2015
PL	Polish National Committee	BS EN 50341-2-22:2016
SK	Slovak National Committee	BS EN 50341-2-23:2016

BS EN 50423-3:2005 and BS EN 50341-3:2001 will be withdrawn upon publication of the rest of the series.

The UK participation in its preparation was entrusted to Technical Committee PEL/11, Overhead Lines.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2017.
Published by BSI Standards Limited 2017

ISBN 978 0 580 97923 1

ICS 29.240.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2017.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

English Version

**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)

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

Contents

	Page
European foreword	4
1 Scope	5
1.1 DK.1 Reliability levels	5
2 Normative references, definitions and symbols	5
2.1 DK.1 Normative references	5
2.3 DK.1 Symbols	5
3 Basis of design	6
3.2 Requirements of overhead lines	6
3.2.2 DK.1 Reliability levels	6
4 Actions on lines	6
4.1 DK.1 Introduction	6
4.3 Wind loads	6
4.3.1 DK.1 Field of application and basic wind velocity	6
Table 4.3.1/DK.1 - Reference wind speeds in Denmark	6
4.3.3 DK.1 Mean wind pressure	6
4.4 Wind forces on overhead line components	6
4.4.1 Wind forces on conductors	6
4.4.1.1 DK.1 General	6
DK.2 General	6
4.4.1.3 DK.1 Drag factor	7
4.4.3 Wind forces on lattice towers	7
4.4.3.1 DK.1 General	7
4.4.4 DK.1 Wind forces on poles	7
4.5 Ice loads	7
4.5.1 DK.1 General	7
4.5.2 DK.1 Ice forces on conductors	7
4.6 Combined wind and ice loads	7
4.6.6 Combination of wind velocity and ice loads	7
4.6.6.1 DK.1 Extreme ice load IT combined with a high probability wind velocity VIH	7
4.6.6.2 DK.1 Nominal ice load I3 combined with a low probability wind velocity VIL	7
4.7 DK.1 Temperature effects	7
4.8 Security loads	7
4.8.2 DK.1 Torsional loads	8
4.8.3 DK.1 Longitudinal loads	9
4.12 Load cases	9
4.12.1 DK.1 General	9
4.12.2 DK.1 Standard load cases	9
4.13 DK.1 Partial factors for actions	9
5 Electrical requirements	9
5.6 Load cases for calculation of clearances	9
5.6.1 DK.1 Load conditions	9
5.6.2 DK.1 Maximum conductor temperature	9
5.6.3 DK.1 Wind loads for determination of electric clearances	9
5.6.3.2 DK.1 Nominal wind loads for determination of internal and external clearances	10
5.6.4 DK.1 Ice loads for determination of electric clearances	10
5.6.5 DK.1 Combined wind and ice loads	10
5.8 DK.1 Internal clearances within the span and at the top of support	10
5.9 External clearances	10
5.9.3 DK.1 External clearances to residential and other buildings	10
5.9.4 DK.1 External clearances to crossing traffic routes	10
5.9.7 DK.1 External clearances to recreational areas (playgrounds, sports areas, etc.)	10
6 Earthing systems	11
7 Supports	11
7.1 Initial design considerations	11
7.1.1 DK.1 Introduction	11
7.2.1 DK.1 Steel materials, bolts, nuts and washers, welding consumables	11

7.2.4	DK.1 Holding-down bolts	11
7.3.6	Ultimate limit states	11
7.3.6.1	DK.1 General	11
7.4.6.1	DK.1 General	11
7.4.8	Resistance of connections	11
7.4.8.3	DK.1 General	11
7.6.4	DK.1 Ultimate limit states	11
8	Foundations	12
8.2.2	DK.1 Geotechnical design by calculation	12
8.3	DK.1 Soil investigation and geotechnical data (EN 1997-1:2004 – Section 3)	12
9	Conductors and earth-wires	12
10	Insulators	12
10.1	DK.1 Introduction	12
10.7	DK.1 Mechanical requirements	12
11	Hardware	12
12	Quality assurance, checks and taking-over	12