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Wind energy generation systems - Part 24: Lightning protection (IEC 61400-24:2019 + IEC 61400-24:2019/AMD1:2024)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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EUROPEAN STANDARD

EN IEC 61400-24 + A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

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(IEC 61400-24:2019 + IEC 61400-24:2019/AMD1:2024)**

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Protection contre la foudre
(IEC 61400-24:2019 + IEC 61400-24:2019/AMD1:2024)

Windenergieanlagen - Teil 24: Blitzschutz
(IEC 61400-24:2019 + IEC 61400-24:2019/AMD1:2024)

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IEC 60071-2:2018	NOTE	Harmonized as EN IEC 60071-2:2018 (not modified)
IEC 60099-4	NOTE	Harmonized as EN 60099-4
IEC 60099-5	NOTE	Harmonized as EN IEC 60099-5
IEC 60204-1	NOTE	Harmonized as EN 60204-1
IEC 60204-11	NOTE	Harmonized as EN IEC 60204-11
IEC 60243 (series)	NOTE	Harmonized as EN 60243 (series)
IEC 60243-1	NOTE	Harmonized as EN 60243-1
IEC 60243-3	NOTE	Harmonized as EN 60243-3
IEC 60464-2	NOTE	Harmonized as EN 60464-2
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**Wind energy generation systems –
Part 24: Lightning protection**



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**Wind energy generation systems –
Part 24: Lightning protection**

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CONTENTS

FOREWORD.....	12
A1 Amendment A1 FOREWORD A1	14
A1 INTRODUCTION to Amendment 1 A1	16
1 Scope.....	17
2 Normative references.....	17
3 Terms and definitions	19
4 Symbols and units	25
5 Abbreviated terms	28
6 Lightning environment for wind turbine	29
6.1 General.....	29
6.2 Lightning current parameters and lightning protection levels (LPL)	29
7 Lightning exposure assessment	30
7.1 General.....	30
7.2 Assessing the frequency of lightning affecting a single wind turbine or a group of wind turbines.....	32
7.2.1 Categorization of lightning events.....	32
7.2.2 Estimation of average number of lightning flashes to a single or a group of wind turbines	32
7.2.3 Estimation of average annual number of lightning flashes near the wind turbine (N_M).....	35
7.2.4 Estimation of average annual number of lightning flashes to the service lines connecting the wind turbines (N_L)	36
7.2.5 Estimation of average annual number of lightning flashes near the service lines connecting the wind turbine (N_I)	36
7.3 Assessing the risk of damage	38
7.3.1 Basic equation	38
7.3.2 Assessment of risk components due to flashes to the wind turbine (S1).....	38
7.3.3 Assessment of the risk component due to flashes near the wind turbine (S2)	39
7.3.4 Assessment of risk components due to flashes to a service line connected to the wind turbine (S3)	39
7.3.5 Assessment of risk component due to flashes near a service line connected to the wind turbine (S4)	39
8 Lightning protection of subcomponents	40
8.1 General.....	40
8.1.1 Lightning protection level (LPL)	40
8.1.2 Lightning protection zones (LPZ)	41
8.2 Blades	41
8.2.1 General	41
8.2.2 Requirements	41
8.2.3 Verification	42
8.2.4 Protection design considerations	42
8.2.5 Test methods.....	45
8.3 Nacelle and other structural components	46
8.3.1 General	46
8.3.2 Hub	46

8.3.3	Spinner	46
8.3.4	Nacelle	47
8.3.5	Tower	47
8.3.6	Verification methods	48
8.4	Mechanical drive train and yaw system	48
8.4.1	General	48
8.4.2	Bearings	48
8.4.3	Hydraulic systems	49
8.4.4	Spark gaps and sliding contacts	50
8.4.5	Verification	50
8.5	Electrical low-voltage systems and electronic systems and installations	51
8.5.1	General	51
8.5.2	Equipotential bonding within the wind turbine	55
8.5.3	LEMP protection and immunity levels	56
8.5.4	Shielding and line routing	57
8.5.5	SPD protection	58
8.5.6	Testing methods for system immunity tests	62
8.6	Electrical high-voltage (HV) power systems	62
9	Earthing of wind turbines	64
9.1	General	64
9.1.1	Purpose and scope	64
9.1.2	Basic requirements	64
9.1.3	Earth electrode arrangements	64
9.1.4	Earthing system impedance	65
9.2	Equipotential bonding	65
9.2.1	General	65
9.2.2	Lightning equipotential bonding for metal installations	65
9.3	Structural components	66
9.3.1	General	66
9.3.2	Metal tubular type tower	66
9.3.3	Metal reinforced concrete towers	66
9.3.4	Lattice tower	66
9.3.5	Systems inside the tower	67
9.3.6	Concrete foundation	67
9.3.7	Rocky area foundation	67
9.3.8	Metal mono-pile foundation	68
9.3.9	Offshore foundation	68
9.4	Electrode shape dimensions	68
9.5	Execution and maintenance of the earthing system	69
10	Personal safety	69
11	Documentation of lightning protection system	71
11.1	General	71
11.2	Documentation necessary during assessment for design evaluation	71
11.2.1	General	71
11.2.2	General documentation	71
11.2.3	Documentation for rotor blades	72
11.2.4	Documentation of mechanical systems	72
11.2.5	Documentation of electrical and electronic systems	72

11.2.6	Documentation of earthing and bonding systems	72
11.2.7	Documentation of nacelle cover, hub and tower lightning protection systems	72
11.3	Site-specific information	73
11.4	Documentation to be provided in the manuals for LPS inspections	73
11.5	Manuals	73
12	Inspection of lightning protection system	73
12.1	Scope of inspection	73
12.2	Order of inspections	74
12.2.1	General	74
12.2.2	Inspection during production of the wind turbine	74
12.2.3	Inspection during installation of the wind turbine	74
12.2.4	Inspection during commissioning of the wind turbine and periodic inspection	74
12.2.5	Inspection after dismantling or repair of main parts	75
12.3	Maintenance	76
Annex A (informative)	The lightning phenomenon in relation to wind turbines	77
A.1	Lightning environment for wind turbines	77
A.1.1	General	77
A.1.2	The properties of lightning	77
A.1.3	Lightning discharge formation and electrical parameters	77
A.1.4	Cloud-to-ground flashes	78
A.1.5	Upward initiated flashes	84
A.2	Lightning current parameters relevant to the point of strike	87
A.3	Leader current without return stroke	88
A.4	Lightning electromagnetic impulse, LEMP, effects	88
Annex B (informative)	Lightning exposure assessment	89
B.1	General	89
B.2	Methodology to estimate the average annual flashes or strokes to the wind turbines of a wind farm and upward lightning activity in wind turbines	89
B.2.1	General	89
B.2.2	Methodology to determine average annual flashes to turbines of a wind farm estimation by increase of the location factor to consider upward lightning from wind turbines	89
B.2.3	Upward lightning percentage in wind farms	93
B.3	Explanation of terms	93
B.3.1	Damage and loss	93
B.3.2	Composition of risk	95
B.3.3	Assessment of risk components	95
B.3.4	Frequency of damage	96
B.3.5	Assessment of probability, P_{χ} , of damage	98
B.4	Assessing the probability of damage to the wind turbine	98
B.4.1	Probability, P_{AT} , that a lightning flash to a wind turbine will cause dangerous touch and step voltage	98
B.4.2	Probability, P_{AD} , that a lightning flash to the wind turbine will cause injury to an exposed person on the structure	99
B.4.3	Probability, P_B , that a lightning flash to the wind turbine will cause physical damage	100

B.4.4	Probability, P_C , that a lightning flash to the wind turbine will cause failure of internal systems	101
B.4.5	Probability, P_M , that a lightning flash near the wind turbine will cause failure of internal systems	102
B.4.6	Probability, P_U , that a lightning flash to a service line will cause injury to human beings owing to touch voltage	102
B.4.7	Probability, P_V , that a lightning flash to a service line will cause physical damage	103
B.4.8	Probability, P_W , that a lightning flash to a service line will cause failure of internal systems	103
B.4.9	Probability, P_Z , that a lightning flash near an incoming service line will cause failure of internal systems	104
B.4.10	Probability P_P that a person will be in a dangerous place	105
B.4.11	Probability P_e that equipment will be exposed to damaging event.....	105
B.5	Assessing the amount of loss L_X in a wind turbine	105
B.5.1	General	105
B.5.2	Mean relative loss per dangerous event.....	105
Annex C	(informative) Protection methods for blades	107
C.1	General.....	107
C.1.1	Types of blades and types of protection methods for blades.....	107
C.1.2	Blade damage mechanism.....	108
C.2	Protection methods	109
C.2.1	General	109
C.2.2	Lightning air-termination systems on the blade surface or embedded in the surface.....	110
C.2.3	Adhesive metallic tapes and segmented diverter strips	110
C.2.4	Internal down conductor systems.....	111
C.2.5	Conducting surface materials	111
C.3	CFRP structural components	112
C.4	Particular concerns with conducting components	113
C.5	Interception efficiency	114
C.6	Dimensioning of lightning protection systems	115
C.7	Blade-to-hub connection.....	118
C.8	WTG blade field exposure	119
C.8.1	General	119
C.8.2	Application.....	119
C.8.3	Field exposure	119
Annex D	(normative) Test specifications	120
D.1	General.....	120
D.2	High-voltage strike attachment tests	120
D.2.1	Verification of air termination system effectiveness	120
D.2.2	Initial leader attachment test	120
D.2.3	Subsequent stroke attachment test.....	130
D.3	High-current physical damage tests	134
D.3.1	General	134
D.3.2	Arc entry test	134
D.3.3	Conducted current test.....	139

Annex E (informative) Application of lightning environment and lightning protection zones (LPZ).....	144
E.1 Lightning environment for blades	144
E.1.1 Application.....	144
E.1.2 Examples of simplified lightning environment areas	144
E.1.3 Area transitions.....	146
E.2 Definition of lightning protection zones for turbines (not blades)	146
E.2.1 General	146
E.2.2 LPZ 0	147
E.2.3 Other zones	148
E.2.4 Zone boundaries	149
E.2.5 Zone protection requirements	150
Annex F (informative) Selection and installation of a coordinated SPD protection in wind turbines	153
F.1 Location of SPDs	153
F.2 Selection of SPDs	153
F.3 Installation of SPDs.....	153
F.4 Environmental stresses of SPDs.....	154
F.5 SPD status indication and SPD monitoring in case of an SPD failure	155
F.6 Selection of SPDs with regard to protection level (U_p) and system level immunity	155
F.7 Selection of SPDs with regard to overvoltages created within wind turbines	155
F.8 Selection of SPDs with regard to discharge current (I_n) and impulse current (I_{imp}).....	156
Annex G (informative) Information on bonding and shielding and installation technique	157
G.1 Additional information on bonding	157
G.2 Additional information on shielding and installation technique.....	158
Annex H (informative) Testing methods for system level immunity tests	161
Annex I (informative) Earth termination system	166
I.1 General.....	166
I.1.1 Types of earthing systems.....	166
I.1.2 Construction	166
I.2 Electrode shape dimensions	168
I.2.1 Type of arrangement.....	168
I.2.2 Frequency dependence on earthing impedance	170
I.3 Earthing resistance expressions for different electrode configurations	171
Annex J (informative) Example of defined measuring points	174
Annex K (informative) Classification of lightning damage based on risk management	176
K.1 General.....	176
K.2 Lightning damage in blade.....	176
K.2.1 Classification of blade damage due to lightning.....	176
K.2.2 Possible cause of blade damage due to lightning	177
K.2.3 Countermeasures against blade damage due to lightning	178
K.3 Lightning damage to other components.....	180
K.3.1 Classification of damage in other components due to lightning	180
K.3.2 Countermeasures against lightning damage to other components.....	180
K.4 Typical lightning damage questionnaire	180
K.4.1 General	180

K.4.2	Sample of questionnaire	180
☐A1	Annex L (informative) Lightning detection and measurement systems	184
L.1	General	184
L.1.1	Purpose	184
L.1.2	Nomenclature.....	184
L.2	Benefits of lightning detection and measurement systems	184
L.3	Lightning detection and measurement systems	186
L.3.1	General.....	186
L.3.2	Lightning detection systems	186
L.3.3	Lightning measurement systems (LMS) ☐A1.....	187
Annex M	(informative) Guidelines for small wind turbines.....	194
Annex N	(informative) Guidelines for verification of blade similarity	195
N.1	General.....	195
N.2	Similarity constraints	195
Annex O	(informative) Guidelines for validation of numerical analysis methods	198
O.1	General.....	198
O.2	Blade voltage and current distribution	198
O.3	Indirect effects analysis.....	199
Annex P	(informative) Testing of rotating components	200
P.1	General.....	200
P.2	Test specimen.....	200
P.2.1	Test specimen representing a stationary / quasi stationary bearing	200
P.2.2	Test specimen representing a rotating bearing.....	200
P.3	Test setup.....	200
P.3.1	Test set-up representing a stationary/quasi-stationary bearing	200
P.3.2	Test set-up representing a rotating bearing.....	201
P.4	Test procedure.....	202
P.5	Pass/fail criteria	203
Annex Q	(informative) Earthing systems for wind farms	204
Annex ZA	(normative) Normative references to international publications with their corresponding European publications	205
Bibliography	208
Figure 1	– Collection area of the wind turbine	34
Figure 2	– Example of collection area for a complete wind farm (A_{DWF}) with 10 wind turbines (black points) considering overlapping	35
Figure 3	– Collection area of wind turbine of height H_a and another structure of height H_b connected by underground cable of length L_c	37
Figure 4	– Examples of possible SPM (surge protection measures).....	54
Figure 5	– Interconnecting two LPZ 1 using SPDs	55
Figure 6	– Interconnecting two LPZ 1 using shielded cables or shielded cable ducts	55
Figure 7	– Magnetic field inside an enclosure due to a long connection cable from enclosure entrance to the SPD	58
Figure 8	– Additional protective measures	59
Figure 9	– Examples of placement of HV arresters in two typical main electrical circuits of wind turbines	63

Figure A.1 – Processes involved in the formation of a downward initiated cloud-to-ground flash	79
Figure A.2 – Typical profile of a negative cloud-to-ground flash	80
Figure A.3 – Definitions of short stroke parameters (typically $T_2 < 2$ ms)	80
Figure A.4 – Definitions of long stroke parameters (typically 2 ms $< T_{\text{long}} < 1$ s)	81
Figure A.5 – Possible components of downward flashes (typical in flat territory and to lower structures)	83
Figure A.6 – Typical profile of a positive cloud-to-ground flash	84
Figure A.7 – Processes involved in the formation of an upward initiated cloud-to-ground flash during summer and winter conditions	84
Figure A.8 – Typical profile of a negative upward initiated flash	85
Figure A.9 – Possible components of upward flashes (typical to exposed and/or higher structures)	86
Figure B.1 – Winter lightning world map based on LLS data and weather conditions	91
Figure B.2 – Detailed winter lightning maps based on LLS data and weather conditions	92
Figure B.3 – Ratio h/d description	92
Figure C.1 – Types of wind turbine blades	107
Figure C.2 – Lightning protection concepts for large modern wind turbine blades	110
Figure C.3 – Voltages between lightning current path and sensor wiring due to the mutual coupling and the impedance of the current path	113
Figure D.1 – Example of initial leader attachment test setup A	122
Figure D.2 – Possible orientations for the initial leader attachment test setup A	123
Figure D.3 – Definition of the blade length axis during strike attachment tests	124
Figure D.4 – Example of the application of angles during the HV test	124
Figure D.5 – Example of leader connection point away from test specimen	125
Figure D.6 – Initial leader attachment test setup B	126
Figure D.7 – Typical switching impulse voltage rise to flashover (100 μ s per division)	128
Figure D.8 – Subsequent stroke attachment test arrangement	131
Figure D.9 – Lightning impulse voltage waveform	132
Figure D.10 – Lightning impulse voltage chopped on the front	132
Figure D.11 – HV electrode positions for the subsequent stroke attachment test	134
Figure D.12 – High-current test arrangement for the arc entry test	136
Figure D.13 – Typical jet diverting test electrodes	137
Figure D.14 – Example of an arrangement for conducted current tests	141
Figure E.1 – Examples of generic blade lightning environment definition	145
Figure E.2 – Rolling sphere method applied on wind turbine	148
Figure E.3 – Mesh with large mesh dimension for nacelle with GFRP cover	149
Figure E.4 – Mesh with small mesh dimension for nacelle with GFRP cover	149
Figure E.5 – Two cabinets both defined as LPZ 2 connected via the shield of a shielded cable	150
Figure E.6 – Example: division of wind turbine into different lightning protection zones	151
Figure E.7 – Example of how to document a surge protection measures (SPM) system by division of the electrical system into protection zones with indication of where circuits cross LPZ boundaries and showing the long cables running between tower base and nacelle	152

Figure F.1 – Point-to-point installation scheme	154
Figure F.2 – Earthing connection installation scheme	154
Figure G.1 – Two control cabinets located on different metallic planes inside a nacelle	157
Figure G.2 – Magnetic coupling mechanism.....	158
Figure G.3 – Measuring of transfer impedance	160
Figure H.1 – Example circuit of a SPD discharge current test under service conditions.....	162
Figure H.2 – Typical test set-up for injection of test current.....	164
Figure H.3 – Example circuit of an induction test for lightning currents	165
Figure I.1 – Minimum length (l_1) of each earth electrode according to the class of LPS	169
Figure I.2 – Frequency dependence on the impedance to earth.....	170
Figure J.1 – Example of measuring points	174
Figure K.1 – Recommended countermeasures schemes according to the incident classification.....	178
Figure K.2 – Blade outlines for marking locations of damage	183
Figure L.1 – Example of flow chart for lightning detection and alarm output for LPS designs sensitive to charge transfer A_1	193
Figure N.1 – Definitions of blade aerofoil nomenclature	197
Figure O.1 – Example geometry for blade voltage and current distribution simulations.....	198
Figure O.2 – Example geometry for nacelle indirect effects simulations	199
Figure P.1 – Possible test setup for a pitch bearing	200
Figure P.2 – Possible injection of test current into a pitch bearing	201
Figure P.3 – Possible test setup for a main bearing	202
Figure P.4 – Example measurement of the series resistance of the test sample	203
Table 1 – Maximum values of lightning parameters according to LPL (adapted from IEC 62305-1)	29
Table 2 – Minimum values of lightning parameters and related rolling sphere radius corresponding to LPL (adapted from IEC 62305-1)	30
Table 3 – Collection areas A_L and A_1 of service line depending on whether aerial or buried.....	37
Table 4 – Parameters relevant to the assessment of risk components for wind turbine (corresponds to IEC 62305-2)	40
Table 5 – Verification of bearing and bearing protection design concepts	49
Table 6 – LPS General inspection intervals	75
Table A.1 – Cloud-to-ground lightning current parameters	82
Table A.2 – Upward initiated lightning current parameters.....	86
Table A.3 – Summary of the lightning threat parameters to be considered in the calculation of the test values for the different LPS components and for the different LPL.....	87
Table B.1 – Recommended values of individual location factors	90
Table B.2 – Range of upward lightning activity as a function of winter lightning activity for wind farm located in flat terrain	93
Table B.3 – Values of probability, P_A , that a lightning flash to a wind turbine will cause shock to human beings owing to dangerous touch and step voltages (corresponds to IEC 62305-2)	99

Table B.4 – Values of reduction factor r_t as a function of the type of surface of soil or floor (corresponds to IEC 62305-2).....	99
Table B.5 – Values of factor P_O according to the position of a person in the exposed area (corresponds to IEC 62305-2).....	100
Table B.6 – Values of probability, P_{LPS} , depending on the protection measures to protect the exposed areas of the wind turbine against direct lightning flash and to reduce physical damage (corresponds to IEC 62305-2)	100
Table B.7 – Values of probability P_S that a flash to a wind turbine will cause dangerous sparking (corresponds to IEC 62305-2)	100
Table B.8 – Values of reduction factor r_p as a function of provisions taken to reduce the consequences of fire (corresponds to IEC 62305-2)	101
Table B.9 – Values of reduction factor r_f as a function of risk of fire of the wind turbine (corresponds to IEC 62305-2)	101
Table B.10 – Values of probability P_{LI} depending on the line type and the impulse withstand voltage U_W of the equipment (corresponds to IEC 62305-2)	104
Table B.11 – Loss values for each zone (corresponds to IEC 62305-2)	105
Table B.12 – Typical mean values of L_T , L_D , L_F and L_O (corresponds to IEC 62305-2).....	106
Table C.1 – Material, configuration and minimum nominal cross-sectional area of air-termination conductors, air-termination rods, earth lead-in rods and down conductors ^a (corresponds to IEC 62305-3)	116
Table C.2 – Physical characteristics of typical materials used in lightning protection systems (corresponds to IEC 62305-1)	117
Table C.3 – Temperature rise [K] for different conductors as a function of W/R (corresponds to IEC 62305-1)	118
Table C.4 – Range of distribution of direct strikes from field campaigns collecting data on attachment distribution vs. the distance from the tip of wind turbine blades, 39 m to 45 m blades with and without CFRP	119
Table D.1 – Test current parameters corresponding to LPL I.....	138
Table D.2 – Test current parameters for winter lightning exposure testing (duration maximum 1 s)	138
Table D.3 – Test current parameters corresponding to LPL I	142
Table D.4 – Test current parameters corresponding to LPL I (for flexible paths)	142
Table D.5 – Test current parameters for winter lightning exposure testing (duration maximum 1 s)	143
Table E.1 – Blade area definition for the example in concept A	146
Table E.2 – Blade area definition for the example in concept B	146
Table E.3 – Definition of lightning protection zones according to IEC 62305-1.....	147
Table F.1 – Discharge and impulse current levels for TN systems given in IEC 60364-5-53	156
Table F.2 – Example of increased discharge and impulse current levels for TN systems	156
Table I.1 – Impulse efficiency of several ground rod arrangements relative to a 12 m vertical ground rod (100 %).....	171
Table I.2 – Symbols used in Tables I.3 to I.6	171
Table I.3 – Formulae for different earthing electrode configurations	172
Table I.4 – Formulae for buried ring electrode combined with vertical rods	172
Table I.5 – Formulae for buried ring electrode combined with radial electrodes	173

Table I.6 – Formulae for buried straight horizontal electrode combined with vertical rods.....	173
Table J.1 – Measuring points and resistances to be recorded	175
Table K.1 – Classification of blade damage due to lightning	177
Table K.2 – Matrix of blade damages due to lightning, taking account of risk management.....	179
Table K.3 – Classification of damage to other components due to lightning	180
Table L.1 – Considerations and benefits for the OEM (original equipment manufacturer)	185
Table L.2 – Considerations and benefits for owner and/or operator	185
Table L.3 – Considerations and benefits for the Insurance company	186
Table L.4 – Considerations relevant for lightning event counters and peak current sensors	187
Table L.5 – Requirement for each class of lightning measurement systems A_1	188
Table N.1 – Items to be checked and verified when evaluating similarity	196
Table P.1 – Test sequence for high current testing of rotating components	203

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WIND ENERGY GENERATION SYSTEMS –**Part 24: Lightning protection****FOREWORD**

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International Standard IEC 61400-24 has been prepared by IEC technical committee 88: Wind energy generation systems.

This second edition cancels and replaces the first edition, published in 2010. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) it is restructured with a main normative part, while informative information is placed in annexes.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
88/709/FDIS	88/713/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61400 series, published under the general title *Wind energy generation systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
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- amended.

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A1 Amendment A1 FOREWORD

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Amendment 1 to IEC 61400-24:2019 has been prepared by IEC technical committee 88: Wind energy generation systems.

The text of this Amendment is based on the following documents:

Draft	Report on voting
88/1040/FDIS	88/1054/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

A list of all parts in the IEC 61400 series, published under the general title *Wind energy generation systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
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A1 INTRODUCTION to Amendment 1

This amendment to IEC 61400-24:2019 addresses an update of the content in Annex L regarding monitoring systems for detecting lightning strikes on wind turbines. **A1**

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WIND ENERGY GENERATION SYSTEMS –

Part 24: Lightning protection

1 Scope

This part of IEC 61400 applies to lightning protection of wind turbine generators and wind power systems. Refer to Annex M guidelines for small wind turbines.

This document defines the lightning environment for wind turbines and risk assessment for wind turbines in that environment. It defines requirements for protection of blades, other structural components and electrical and control systems against both direct and indirect effects of lightning. Test methods to validate compliance are included.

Guidance on the use of applicable lightning protection, industrial electrical and EMC standards including earthing is provided.

Guidance regarding personal safety is provided.

Guidelines for damage statistics and reporting are provided.

Normative references are made to generic standards for lightning protection, low-voltage systems and high-voltage systems for machinery and installations and electromagnetic compatibility (EMC).

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.

IEC 60364-4-44, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60364-5-53, *Electrical installations of buildings – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60364-6, *Low-voltage electrical installations – Part 6: Verification*

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

IEC TR 60479-4, *Effects of current on human beings and livestock – Part 4: Effects of lightning strokes*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61000 (all parts), *Electromagnetic compatibility (EMC)*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-9, *Electromagnetic compatibility (EMC) – Part 4-9: Testing and measurement techniques – Impulse magnetic field immunity test*

IEC 61000-4-10, *Electromagnetic compatibility (EMC) – Part 4-10: Testing and measurement techniques – Damped oscillatory magnetic field immunity test*

IEC TR 61000-5-2, *Electromagnetic compatibility (EMC) – Part 5: Installation and mitigation guidelines – Section 2: Earthing and cabling*

IEC 61400-23, *Wind turbine generator systems – Part 23: Full-scale structural testing of rotor blades*

IEC 61587-3, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 3: Electromagnetic shielding performance tests for cabinets and subracks*

IEC 61643-11, *Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power distribution systems – Requirements and test methods*

IEC 61643-12, *Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power distribution systems – Selection and application principles*

IEC 61643-21, *Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signalling networks – Performance requirements and testing methods*

IEC 61643-22, *Low-voltage surge protective devices – Part 22: Surge protective devices connected to telecommunications and signalling networks – Selection and application principles*

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

IEC TS 61936-2, *Power installations exceeding 1 kV a.c. and 1,5 kV d.c. – Part 2: d.c.*

IEC 62305-1:2010, *Protection against lightning – Part 1: General principles*

IEC 62305-2:2010, *Protection against lightning – Part 2: Risk management*

IEC 62305-3:2010, *Protection against lightning – Part 3: Physical damage to structures and life hazard*

IEC 62305-4:2010, *Protection against lightning – Part 4: Electrical and electronic systems within structures*

A1 IECRE OD-501, *Type and Component Certification Scheme (wind turbines)* **A1**

ITU-T K.20, *Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents*

ITU-T K.21, *Resistibility of telecommunications equipment installed in customer premises to overvoltages and overcurrents*