



SLOVENSKI STANDARD

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Zaščita pred delovanjem strele - 3. del: Fizična škoda na zgradbah in nevarnost za živa bitja (IEC 62305-3:2006, spremenjen)

Protection against lightning -- Part 3: Physical damage to structures and life hazard

Blitzschutz -- Teil 3: Schutz von baulichen Anlagen und Personen

Protection contre la foudre -- Partie 3: Dommages physiques sur les structures et risques humains

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62305-3

February 2006

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English version

Protection against lightning
Part 3: Physical damage to structures and life hazard
(IEC 62305-3:2006, modified)

Protection contre la foudre
Partie 3: Dommages physiques
sur les structures et risques humains
(CEI 62305-3:2006, modifiée)

Blitzschutz
Teil 3: Schutz von baulichen Anlagen
und Personen
(IEC 62305-3:2006, modifiziert)

This European Standard was approved by CENELEC on 2006-02-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 81/264/FDIS, future edition 1 of IEC 62305-3, prepared by IEC TC 81, Lightning protection, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62305-2 on 2006-02-01.

A draft amendment, prepared by the Technical Committee CENELEC TC 81X, Lightning protection, containing some common modifications to document 81/264/FDIS, was submitted to the formal vote and was approved by CENELEC on 2006-02-01 for inclusion into EN 62305-2.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2006-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-02-01

This European Standard makes reference to International Standards. Where the International Standard referred to has been endorsed as a European Standard or a home-grown European Standard exists, this European Standard shall be applied instead. Pertinent information can be found on the CENELEC web site.

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Endorsement notice

The text of the International Standard IEC 62305-2:2006 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

3 Terms and definitions

Modify the following definitions as follows:

3.16

connecting component

part of an external LPS which is used for the connection of conductors to each other or to metallic installations, defined as in EN 50164 series

3.17

fixing component

part of an external LPS which is used to fix the elements of the LPS to the structure to be protected, defined as in EN 50164 series

Annex E

E.4.3.3 Welding or clamping to the steel-reinforcing rods

Modify the Note as follows:

NOTE Specifically designed clamps complying with and tested according to the EN 50164 series shall be used.

E.4.3.7 Down-conductors

Modify the 12th paragraph as follows:

If steel structures are used as down-conductors every steel column shall be connected to the steel reinforcing rods of the concrete foundation according to Figure E.8 by proprietary bonding points complying with the EN 50164 series

E.5.2.4.1 General information

Modify the first paragraph as follows:

The maximum permissible temperature for a conductor will not be exceeded if the cross-section complies with Table 6 and the EN 50164 series.

E.5.2.4.2 Non-isolated air-termination

Add at the end of the second paragraph:

NOTE Z1 For more details see EN 50164 series.

E.5.5 Components

Replace the text of the subclause by:

Components of LPS shall withstand the electromagnetic effects of lightning current and predictable accidental stresses without being damaged. This can be achieved by choosing components that have successfully been tested in accordance with the EN 50164 series.

All components shall comply with the EN 50164 series.

E.5.6.1 Mechanical design

Modify the 6th paragraph as follows:

The LPS designer and the LPS installer should specify conductor fasteners and fixtures which will withstand the electrodynamic forces of lightning current in the conductors and also allow for the expansion and contraction of conductors due to the relevant temperature rise according to the EN 50164 series.

E.5.6.2.1 Materials

Modify the first paragraph 1 as follows:

LPS materials and conditions of use are listed in Table 5 and the EN 50164 series.

E.5.6.2.2.1 Metals in soil and air

Modify the Note as follows:

NOTE Spark gaps having a protection level U_p of 2,5 kV and a minimum I_{imp} of 50 kA (10/350 μ s) complying with EN 50164-3 are suitable.

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IEC 62305-3

Edition 1.0 2006-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Protection against lightning –
Part 3: Physical damage to structures and life hazard
(standards.iteh.ai)

Protection contre la foudre –
Partie 3: Dommages physiques sur les structures et risques humains

SIST EN 62305-3:2006

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ELECTROTECHNICAL
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INTERNATIONALE

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CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references	9
3 Terms and definitions	10
4 Lightning protection system (LPS).....	13
4.1 Class of LPS	13
4.2 Design of the LPS	14
4.3 Continuity of steelwork in reinforced concrete structures	14
5 External lightning protection system	15
5.1 General	15
5.2 Air-termination systems	15
5.3 Down-conductor systems.....	19
5.4 Earth-termination system.....	22
5.5 Components	24
5.6 Materials and dimensions	26
6 Internal lightning protection system	29
6.1 General	29
6.2 Lightning equipotential bonding	29
6.3 Electrical insulation of the external LPS.....	32
7 Maintenance and inspection of an LPS.....	33
7.1 Application of inspections	33
7.2 Order of inspections	33
7.3 Maintenance.....	33
8 Protection measures against injury to living beings due to touch and step voltages	34
8.1 Protection measures against touch voltages.....	34
8.2 Protection measures against step voltages.....	34
Annex A (normative) Positioning the air-termination system.....	35
Annex B (normative) Minimum cross-section of the entering cable screen in order to avoid dangerous sparking	41
Annex C (informative) Partitioning of the lightning current amongst down-conductors	42
Annex D (informative) Additional information for LPS in the case of structures with a risk of explosion.....	46
Annex E (informative) Guidelines for the design, construction, maintenance and inspection of lightning protection systems	52
Bibliography.....	154

Figure 1 – Loop in a down-conductor	20
Figure 2 – Minimum length l_1 of each earth electrode according to the class of LPS	22
Figure A.1 – Volume protected by a vertical air-termination rod	35
Figure A.2 – Volume protected by a vertical air-termination rod	36
Figure A.3 – Volume protected by a wire air-termination system	36
Figure A.4 – Volume protected by isolated wires combined in a mesh according to the protective angle method and rolling sphere method	37
Figure A.5 – Volume protected by non-isolated wires combined in a mesh according to the mesh method and the protective angle method	38
Figure A.6 – Design of an air-termination system according to the rolling sphere method	39
Figure C.1 – Values of coefficient k_c in the case of a wire air-termination system and a type B earth-termination system.....	43
Figure C.2 – Values of coefficient k_c in the case of a mesh air-termination system and type B earth-termination system.....	44
Figure C.3 – Examples of calculation of the separation distance in the case of a meshed air-termination system, an interconnecting ring of the down-conductors at each level and a type B earth-termination system	45
Figure E.1 – LPS design flow diagram	54
Figure E.2 – Values of coefficient k_c in case of a sloped roof with air-termination on the ridge and a type B earthing system	61
Figure E.3 – LPS design for a cantilevered part of a structure.....	62
Figure E.4 – Equipotential bonding in a structure with a steel reinforcement	64
Figure E.5 – Welded joints of reinforcing rods in reinforced concrete, if permitted.....	65
Figure E.6 – Example of clamps used as joints between reinforcing rods and conductors	66
Figure E.7 – Examples for connection points to the reinforcement in a reinforced concrete wall	67
Figure E.8 – Use of metallic facade as natural down-conductor system and connection of facade supports	70
Figure E.9 – Connection of the continuous strip windows to a metal façade covering.....	72
Figure E.10 – Internal down-conductors in industrial structures.....	75
Figure E.11– Installation of bonding conductors in reinforced concrete structures and flexible bonds between two reinforced concrete parts	77
Figure E.12 – Protective angle method air-termination design for different heights according to Table 2	81
Figure E.13 – Isolated external LPS using two isolated air-termination masts designed according to the protective angle air-termination design method	82
Figure E.14 – Isolated external LPS using two isolated air-termination masts, interconnected by horizontal catenary wire	83
Figure E.15 – Example of design of an air-termination of a non-isolated LPS by air-termination rods.....	84
Figure E.16 – Example of design of an air-termination of a non isolated LPS by a horizontal wire according to the protective angle air-termination design method	85
Figure E.17 – Protected volume of an air- termination rod or mast on a sloped surface.....	86

Figure E.18 – Design of an LPS air-termination according to the rolling sphere method, protective angle method, mesh method and general arrangement of air-termination elements	88
Figure E.19 – Design of an LPS air-termination conductor network on a structure with complicated shape	89
Figure E.20 – Space protected by two parallel air-termination horizontal wires or two air-termination rods ($r > h_t$)	90
Figure E.21 – Points at which lightning will strike a building	92
Figure E.22 – Example of design of non-isolated LPS air-termination according to the mesh method air-termination design	96
Figure E.23 – Some examples of details of an LPS on a structure with sloped tiled roofs	99
Figure E.24 – Construction of an LPS using natural components on the roof of the structure	101
Figure E.25 – Positioning of the external LPS on a structure made of insulating material e.g. wood or bricks with a height up to 60 m with flat roof and with roof fixtures	102
Figure E.26 – Construction of air-termination network on a roof with conductive covering where puncturing of the covering is not acceptable	103
Figure E.27 – Construction of external LPS on a structure of steel-reinforced concrete using the reinforcement of the outer walls as natural components	104
Figure E.28 – Example of an air-termination stud used on car park roofs	105
Figure E.29 – Air-termination rod used for protection of a metallic roof fixture with electric power installations which are not bonded to the air-termination system	106
Figure E.30 – Method of achieving electrical continuity on metallic parapet cladding	107
Figure E.31 – Metallic roof fixture protected against direct lightning interception, connected to air-termination system	110
Figure E.32 – Example of construction of lightning protection of a house with a TV antenna using the mast as an air-termination rod	112
Figure E.33 – Installation of lightning protection of metallic equipment on a roof against a direct lightning flash	113
Figure E.34 – Connection of natural air-termination rod to air-termination conductor	115
Figure E.35 – Construction of the bridging between the segments of the metallic façade plates	116
Figure E.36 – Installation of external LPS on a structure of isolating material with different roof levels	118
Figure E.37 – Examples of geometry of LPS conductors	119
Figure E.38 – Construction of an LPS using only two down-conductors and foundation earth electrodes	120
Figure E.39 – Examples of connection of earth termination to the LPS of structures using natural down-conductors (girders) and detail of a test joint	124
Figure E.40 – Construction of foundation earth ring for structures of different foundation design	128
Figure E.41 – Examples of two vertical electrodes in type A earthing arrangement	130
Figure E.42 – Meshed earth termination system of a plant	134

Figure E.43 – Examples of separation distance between the LPS and metal installations	140
Figure E.44 – Directions for calculations of the separation distance s for a worst case lightning interception point at a distance l from the reference point according to 6.3	141
Figure E.45 – Example of an equipotential bonding arrangement	144
Figure E.46 – Example of bonding arrangement in a structure with multiple point entries of external conductive parts using a ring electrode for interconnection of bonding bars	145
Figure E.47 – Example of bonding in the case of multiple point entries of external conductive parts and an electric power or communication line using an internal ring conductor for interconnection of the bonding bars	146
Figure E.48 – Example of bonding arrangement in a structure with multiple point entries of external conductive parts entering the structure above ground level	147
Table 1 – Relation between lightning protection levels (LPL) and class of LPS (see IEC 62305-1)	13
Table 2 – Maximum values of rolling sphere radius, mesh size and protection angle corresponding to the class of LPS	16
Table 3 – Minimum thickness of metal sheets or metal pipes in air-termination systems	18
Table 4 – Typical values of the distance between down-conductors and between ring conductors according to the class of LPS	20
Table 5 – LPS materials and conditions of use	25
Table 6 – Material, configuration and minimum cross-sectional area of air-termination conductors, air-termination rods and down-conductors	27
Table 7 – Material, configuration and minimum dimensions of earth electrodes	28
Table 8 – Minimum dimensions of conductors connecting different bonding bars or connecting bonding bars to the earth-termination system	30
Table 9 – Minimum dimensions of conductors connecting internal metal installations to the bonding bar	30
Table 10 – Isolation of external LPS – Values of coefficient k_i	32
Table 11 – Isolation of external LPS – Values of coefficient k_c	32
Table 12 – Isolation of external LPS – Values of coefficient k_m	33
Table B.1 – Cable length to be considered according to the condition of the screen	41
Table C.1 – Values of coefficient k_c	42
Table E.1 – Suggested fixing centres	97
Table E.2 – Maximum period between inspections of an LPS	149

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PROTECTION AGAINST LIGHTNING –

Part 3: Physical damage to structures and life hazard

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC national committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes international standards, technical specifications, technical reports, publicly available specifications (PAS) and guides (hereafter referred to as "IEC publication(s)"). Their preparation is entrusted to technical committees; any IEC national committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International standard IEC 62305-3 has been prepared by IEC technical committee 81: Lightning protection.

The IEC 62305 series (Parts 1 to 5), is produced in accordance with the new Publications' Plan, approved by National Committees (81/171/RQ (2001-06-29)), which restructures in a more simple and rational form and updates the Publications of the IEC 61024 series, the IEC 61312 series and the IEC 61663 series.

The text of this first edition of IEC 62305-3 is compiled from and replaces

- IEC 61024-1, first edition (1990).
- IEC 61024-1-2, first edition (1998).

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

FDIS	Report on voting
81/264/FDIS	81/269/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above Table.

This publication has been drafted, as close as possible, in accordance with the ISO/IEC Directives, Part 2.

IEC 62305 consists of the following parts, under the general title *Protection against lightning*:

Part 1: General principles

Part 2: Risk management

Part 3: Physical damage to structures and life hazard

Part 4: Electrical and electronic systems within structures

Part 5: Services¹

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

- reconfirmed;
 - withdrawn;
 - replaced by a revised edition; or
 - amended.
- <https://standards.iteh.ai/catalog/standards/sist/e04a6313-c71c-4d2a-ae5d-96b8702b6100/sist-en-62305-3-2006>

In the United States, based on the requirements of NFPA 780: Standard for the Installation of Lightning Protection Systems 2004 Edition and practical experience in the use of horizontal earth electrodes, the minimum length of horizontal earth electrodes is not required to be twice that required for vertical electrodes.

In France, Portugal and Spain:

- natural components cannot substitute as lightning protection components but may be used to complete/enhance the LPS;
- aluminium solid round diameters should be extended from 8 mm to 10 mm;
- stranded conductors cannot be used as down-conductors;
- diameter of solid round conductors should be extended from 16 mm to 18 mm;
- hot dip galvanized steel solid tape thickness should be extended from 2 mm to 3,5 mm.

¹ To be published

INTRODUCTION

This part of IEC 62305 deals with the protection, in and around a structure, against physical damage and injury to living beings due to touch and step voltages.

The main and most effective measure for protection of structures against physical damage is considered to be the lightning protection system (LPS). It usually consists of both external and internal lightning protection systems.

An external LPS is intended to:

- a) intercept a lightning flash to the structure (with an air-termination system);
- b) conduct the lightning current safely towards earth (using a down-conductor system);
- c) disperse the lightning current into the earth (using an earth-termination system).

An internal LPS prevents dangerous sparking within the structure using either equipotential bonding or a separation distance (and hence electrical insulation) between the external LPS (as defined in 3.2) components and other electrically conducting elements internal to the structure.

Main protection measures against injury to living beings due to touch and step voltages are intended to:

- 1) reduce the dangerous current flowing through bodies by insulating exposed conductive parts, and/or by increasing the surface soil resistivity;
- 2) reduce the occurrence of dangerous touch and step voltages by physical restrictions and/or warning notices.

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The type and location of an LPS should be carefully considered in the initial design of a new structure, thereby enabling maximum advantage to be taken of the electrically conductive parts of the structure. By doing so, design and construction of an integrated installation is made easier, the overall aesthetic aspects can be improved, and the effectiveness of the LPS can be increased at minimum cost and effort.

Access to the ground and the proper use of foundation steelwork for the purpose of forming an effective earth termination may well be impossible once construction work on a site has commenced. Therefore, soil resistivity and the nature of the earth should be considered at the earliest possible stage of a project. This information is fundamental to the design of an earth-termination system and may influence the foundation design work for the structure.

Regular consultation between LPS designers and installers, architects and builders is essential in order to achieve the best result at minimum cost.

If lightning protection is to be added to an existing structure, every effort should be made to ensure that it conforms to the principles of this standard. The design of the type and location of an LPS should take into account the features of the existing structure.

PROTECTION AGAINST LIGHTNING –

Part 3: Physical damage to structures and life hazard

1 Scope

This part of IEC 62305 provides the requirements for protection of a structure against physical damage by means of a lightning protection system (LPS), and for protection against injury to living beings due to touch and step voltages in the vicinity of an LPS (see IEC 62305-1).

This standard is applicable to:

- a) design, installation, inspection and maintenance of an LPS for structures without limitation of their height;
- b) establishment of measures for protection against injury to living beings due to touch and step voltages.

NOTE 1 Specific requirements for an LPS in structures dangerous to their surroundings due to the risk of explosion are under consideration. Additional information is provided in Annex D for use in the interim.

NOTE 2 This part of IEC 62305 is not intended to provide protection against failures of electrical and electronic systems due to overvoltages. Specific requirements for such cases are provided in IEC 62305-4.

2 Normative references (standards.iteh.ai)

The following referenced documents are indispensable for the application 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 60079-10:2002, *Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas*

IEC 60079-14:2002, *Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)*

IEC 61241-10:2004, *Electrical apparatus for use in the presence of combustible dust – Part 10: Classification of areas where combustible dusts are or may be present*

IEC 61241-14:2004, *Electrical apparatus for use in the presence of combustible dust – Part 14: Selection and installation*

IEC 61643-12:2002, *Low-voltage surge protective devices – Part 12: Surge protective devices connected to low voltage power distribution systems – Selection and application principles*

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

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

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