SLOVENSKI STANDARD
SIST EN 62305-3:2006

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Nadomešča:
SIST IEC 61024-1:1996

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

Ta slovenski standard je istoveten z: EN 62305-3:2006

ICS:

91.120.40	Zaščita pred strelo	Lightning protection

SIST EN 62305-3:2006 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62305-3

February 2006

ICS 29.020; 91.120.40

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

Ref. No. EN 62305-3:2006 E

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.

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 µs) complying with EN 50164-3 are suitable.

IEC 62305-3

Edition 1.0 2006-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

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

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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: Services[1]

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.

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.

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

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*