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IEC 62305-1

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# PRE-RELEASE VERSION (FDIS)

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## Protection against lightning – Part 1: General principles

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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NOTE FROM TC/SC OFFICERS:

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## PROTECTION AGAINST LIGHTNING –

### Part 1: General principles

#### FOREWORD

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IEC 62305-1 has been prepared by IEC technical committee 81: Lightning protection. It is an International Standard.

This third edition cancels and replaces the second 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) reference to the IEC 62561 series [1]<sup>1</sup> is made in Annex D to provide a link to relevant lightning protection system components according to the IEC 62561 series;

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<sup>1</sup> Numbers in square brackets refer to the Bibliography.

- b) risk management introduces the concept of types of loss with public relevance;
- c) the concept of frequency of damage that can impair the availability of the internal systems within the structure has been introduced;
- d) surge currents due to lightning flashes have been more accurately specified for SPD dimensioning in low-voltage power systems and in telecommunication systems.

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

Draft	Report on voting
81/XX/FDIS	81/XX/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 International Standard 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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 62305 series, published under the general title *Protection against lightning*, 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](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.



## INTRODUCTION

There are no devices or methods capable of modifying the natural weather phenomena to the extent that they can prevent lightning discharges. Lightning flashes to, or nearby, structures (or lines connected to the structures) are hazardous to people, to the structures themselves, their contents and installations as well as to lines. This is why the application of lightning protection measures is essential.

The need for protection, the economic benefits of installing protection measures, and the selection of adequate protection measures should be determined in terms of risk management. Risk management is the subject of IEC 62305-2 [2].

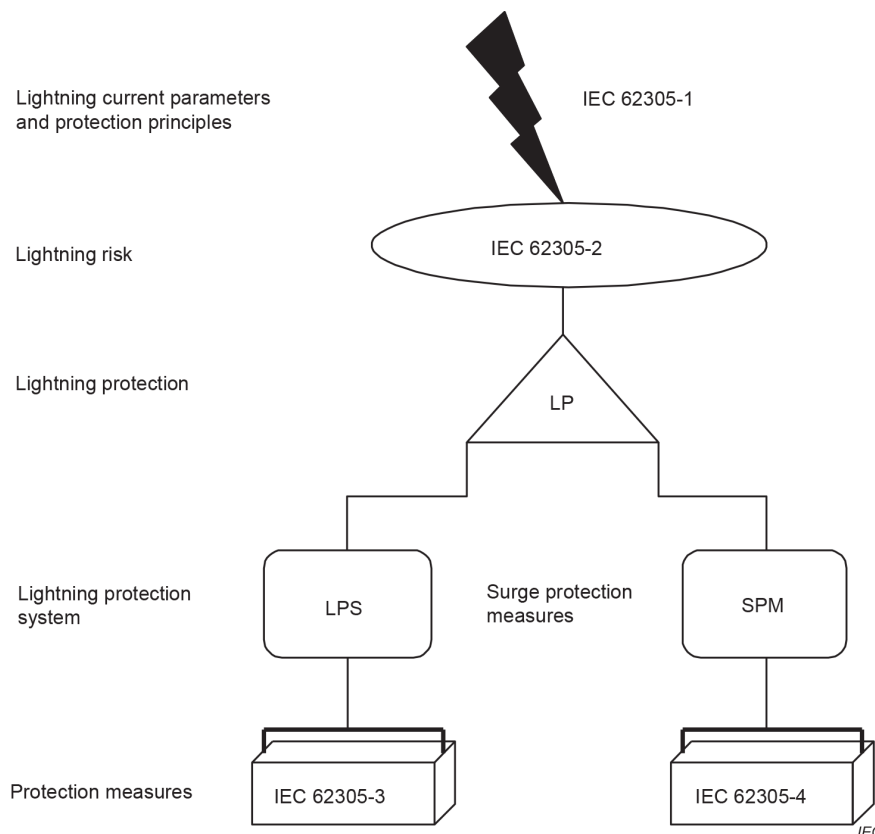
Protection measures considered in the IEC 62305 series have been proven to be effective in risk reduction.

All measures for protection against lightning form the overall lightning protection. For practical reasons the criteria for design, installation and maintenance of lightning protection measures are considered in two separate groups:

- the first group concerning protection measures to reduce physical damage and life hazard in a structure is given in IEC 62305-3;
- the second group concerning protection measures to reduce failures of electrical and electronic systems in a structure is given in IEC 62305-4.

The connection between the parts of the IEC 62305 series is illustrated in Figure 1.

NOTE The implementation of an IEC 62793 [3] compliant TWS in the protection measures for a structure can assist in reducing physical damage, life hazard, and failure of electrical and electronic systems.



**Figure 1 – Connection between the various parts of the IEC 62305 series**

## PROTECTION AGAINST LIGHTNING –

### Part 1: General principles

#### 1 Scope

This part of IEC 62305 provides general principles for the protection of structures against lightning, including their installations and contents, as well as persons.

The following cases are outside the scope of this document:

- railway systems;
- vehicles, ships, aircraft, offshore installations;
- underground high-pressure pipelines;
- pipe, power and telecommunication lines separated from the structure;
- nuclear power plants.

The IEC 62305 series should be considered as a minimum requirement for these structures.

Until any further information by CIGRE is available the lightning current parameters described in this document can be applied also for offshore installations.

NOTE 1 In these cases, structures usually fall under special regulations produced by various specialized authorities. For structures (subsidiary or others) not falling under such special regulations, the IEC 62305 series still applies.

NOTE 2 Lightning protection of wind turbines is also covered by IEC 61400-24 [4].

#### 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 62305-3:—<sup>2</sup>, *Protection against lightning – Part 3: Physical damage to structures and life hazard*

IEC 62305-4:—<sup>3</sup>, *Protection against lightning – Part 4: Electrical and electronic systems within structures*

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<sup>2</sup> Third edition under preparation. Stage at the time of publication IEC CDV 62305-3:2023.

<sup>3</sup> Third edition under preparation. Stage at the time of publication IEC FDIS 62305-4:2023.