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INTERNATIONAL STANDARD

Protection against lightning – Part 1: General principles

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 1: General principles

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

This second edition cancels and replaces the first edition, published in 2006, and constitutes a technical revision.

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

1) It no longer covers protection of services connected to structures.
2) Isolated interfaces are introduced as protection measures to reduce failure of electric and electronic systems.
3) First negative impulse current is introduced as a new lightning parameter for calculation purposes.
4) Expected surge overcurrents due to lightning flashes have been more accurately specified for low voltage power systems and for telecommunication systems.

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

FDIS	Report on voting
81/370/FDIS	81/380/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 in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62305 series, under the general title *Protection against lightning*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "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- withdrawn,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.

A bilingual version of this standard may be issued at a later date.

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.

Protection measures considered in IEC 62305 are proved 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 IEC 62305 is illustrated in Figure 1.

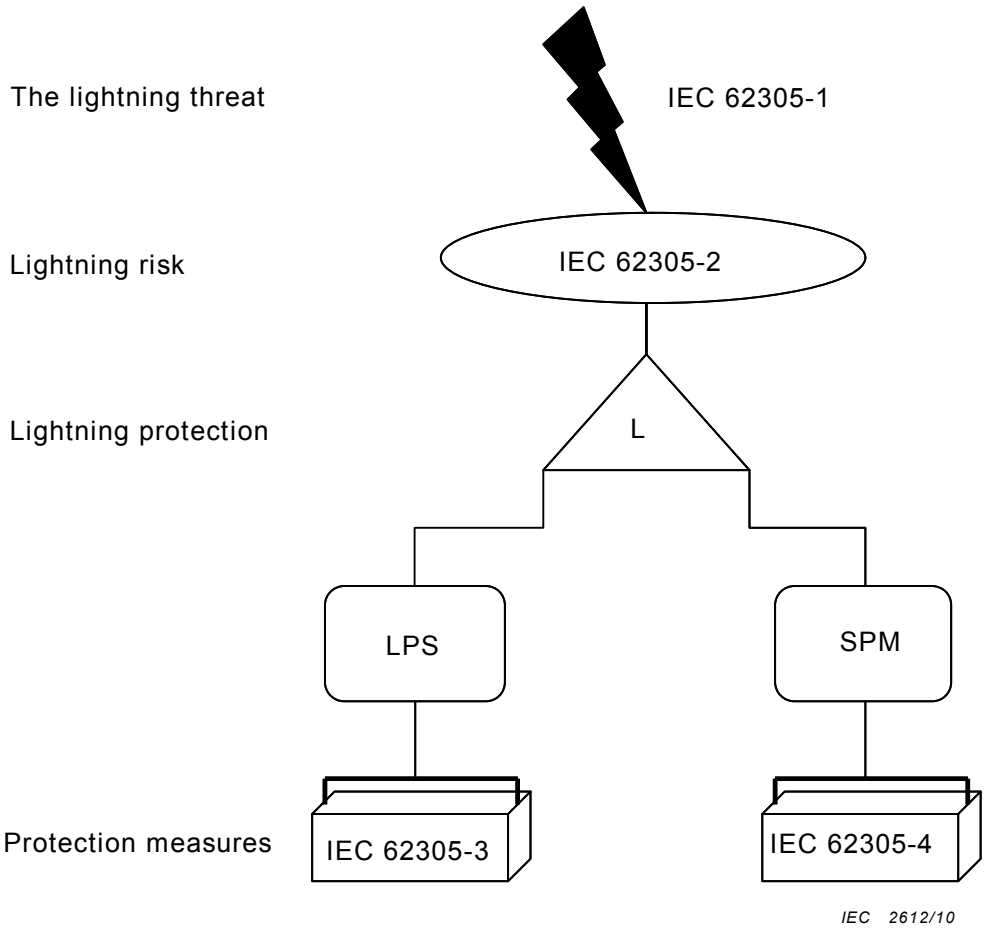

Figure 1 – Connection between the various parts of IEC 62305

PROTECTION AGAINST LIGHTNING –

Part 1: General principles

1 Scope

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

The following cases are outside the scope of this standard:

– railway systems;
– vehicles, ships, aircraft, offshore installations;
– underground high pressure pipelines;
– pipe, power and telecommunication lines placed outside the structure.

NOTE These systems usually fall under special regulations produced by various specialized authorities.

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 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*