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INTERNATIONAL STANDARD

Lightning protection system components (LPSC) -
Part 8: Requirements for components for electrically insulated LPS

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Lightning protection system components (LPSC) - Part 8: Requirements for components for electrically insulated LPS

FOREWORD

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IEC 62561-8 has been prepared by IEC technical committee 81: Lightning protection. It is an International Standard.

This first edition cancels and replaces IEC TS 62561-8 published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TC 62561-8:2018:

a) title and scope of the standard has been adjusted;
b) the document has been updated in line with IEC 60068-2-52:2017 on salt mist treatment;
c) the document has been updated in line with ISO 22479:2019 on humid sulphureous atmosphere treatment;
d) two different possible example configurations for pull out tests have been introduced;
e) additional information on pollution has been included;

f) an alternate test arrangement for high voltage impulse test has been included;

g) a new normative Annex H for applicability of previous tests has been introduced;

h) pass criteria for high voltage impulse testing updated;

i) explanation on high voltage impulse testing with negative polarity has been added.

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

Draft	Report on voting
81/806/FDIS	81/808/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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the 62561 series, published under the general title *Lightning protection system components (LPSC)*, 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,

– withdrawn, or

– revised.

INTRODUCTION

This part of IEC 62561 deals with the requirements and tests for lightning protection system components (LPSC), specifically components for electrically insulated LPS, used for the installation of a lightning protection system (LPS) designed and implemented according to the IEC 62305 series [1][1].

[1] Numbers in square brackets refer to the Bibliography.

1 Scope

This document specifies the requirements and tests for components used for electrically insulated LPS. These components, which can reduce the separation distance, are as follows:

– insulating stand-offs, used in conjunction with an air-termination system and down-conductors with the aim of maintaining the proper separation distance;

– insulating down-conductors, including their specific fasteners.

Testing of insulating stand-offs and insulating down-conductor components for an explosive atmosphere is not covered by this document.

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 60060-2:2025, *High-voltage test techniques - Part 2: Measuring systems*

IEC 60068-2-52:2017, *Environmental testing - Part 2-52: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-75:2014, *Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests*

IEC 61083-1, *Instruments and software used for measurements in high-voltage and high-current tests - Part 1: Requirements for instruments for impulse tests*

IEC 61083-2, *Instruments and software used for measurement in high-voltage and high-current tests - Part 2: Requirements for software for tests with impulse voltages and currents*

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

IEC 62561-1:2023, *Lightning protection system components (LPSC) - Part 1: Requirements for connection components*

IEC 62561-2:2025, *Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes*

IEC 62561-4, *Lightning protection system components (LPSC) - Part 4: Requirements for conductor fasteners*

ISO 4892-2, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps*

ISO 4892-3:2024, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps*

ISO 4892-4, *Plastics - Methods of exposure to laboratory light sources - Part 4: Open-flame carbon-arc lamps*

ISO 6957:1988, *Copper alloys - Ammonia test for stress corrosion resistance*

ISO 22479:2019, *Corrosion of metals and alloys - Sulfur dioxide test in a humid atmosphere (fixed gas method)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

– IEC Electropedia: available at http://www.electropedia.org/

– ISO Online browsing platform: available at http://www.iso.org/obp

3.1
insulating stand-off
non-metallic or composite component, consisting of the insulator and fixation parts, designed to retain, support and insulate the air-termination system or down-conductors at a required separation distance

3.2
effective length correction factor
k_x
factor evaluating the different withstand voltages of air gaps and insulators under test voltages

3.3
steepness correction factor
c_{is_st}
<insulating stand-off> factor considering the effect of higher steepness and the probability of occurrence of subsequent negative short strokes on the disruptive voltage of an insulating stand-off

Note 1 to entry: The value is defined in the test procedure.

3.4
effective length
l_{eff}
<insulating stand-off> length (distance) of an air gap with equivalent breakdown behaviour to an insulating stand-off

3.5
insulating length
l_{st}
<insulating stand-off> shortest measured clearance distance between two conductive elements of different electrical potential, for example between a metallic conductor fastener and a mounting assembly

3.6
equivalent separation distance
s_e
corrected distance value to be used instead of the insulating length of a stand-off distance value equivalent to the separation distance of conventional down-conductors required in IEC 62305-3