

INTERNATIONAL STANDARD

**Lightning protection system components (LPSC) –
Part 1: Requirements for connection components**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

Part 1: Requirements for connection components

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International Standard IEC 62561-1 has been prepared by IEC technical committee 81: Lightning protection.

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

FDIS	Report on voting
81/416/FDIS	81/422A/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.

The content of this part of IEC 62561 is taken from European Standard EN 50164-1.

A list of all the parts in the IEC 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 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,
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- replaced by a revised edition, or
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INTRODUCTION

This part of IEC 62561 deals with the requirements and tests for lightning protection system components (LPSC) used for the installation of a lightning protection system (LPS) designed and implemented according to the IEC 62305 series of standards.



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LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

Part 1: Requirements for connection components

1 Scope

This part of IEC 62561 specifies the requirements and tests for metallic connection components that form part of a lightning protection system (LPS). Typically, these can be connectors, bonding and bridging components, expansion pieces and test joints.

Testing of components for an explosive atmosphere is not covered by this standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-52:1996, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

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

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

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

ISO 6988:1985, *Metallic and other non-organic coatings – Sulfur dioxide test with general condensation of moisture*

3 Terms and definitions

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

3.1

connection component

part of an external LPS which is used for the connection of conductors to each other or to metallic installations

Note 1 to entry Connection component includes connectors, clamps, bridging component and expansion piece.

3.2

metal installation

extended metal items in the structure to be protected which may form a path for lightning current, such as pipes, staircases, elevator guide rails, ventilation, heating and air conditioning ducts, and interconnected reinforcing steel

3.3

bridging component

connection component for the connection of metal installations

3.4

expansion piece

connection component designed to compensate for changes in length in conductors and/or metal installations caused by temperature changes

3.5

connector

connection component to interconnect two or more conductors

3.6

clamp

connection component for the connection of conductors to metal installations

3.7

pipe clamp

clamp for the connection of conductors to metal pipes

3.8

test joint

joint designed to facilitate electrical testing and measurement of LPS components

3.9

connection range

minimum to maximum range for which a specific connection component is designed to be used

3.10

bonding bar

metal bar on which metal installations, external conductive parts, electric power and telecommunication lines and other cables can be connected to an LPS

3.11

type test

test required to be made before supplying a type of material covered by this standard on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application

Note 1 to entry These tests are of such a nature that, after they have been carried out, they need not be repeated unless changes are made to the accessory materials, design or type of manufacturing process which might change the performance characteristics.

4 Classification

4.1 Classification of components depends on the withstand lightning current as follows:

- a) class H for heavy duty;
- b) class N for normal duty.

The selection of classes H and N should be performed by the manufacturer in accordance with the test parameters identified in Table 1.

4.2 Classification is also made according to the installation of connection components:

- a) embedded in concrete;
- b) not embedded in concrete.

5 Requirements

5.1 General

Connection components shall be designed in such a manner that when they are installed in accordance with the manufacturer's instructions their performance shall be reliable, stable and safe for persons and surrounding equipment.

NOTE A summary of the requirements and their corresponding tests is given in Annex A.

5.2 Installation instructions

The manufacturer of the connection components shall provide at least the following information:

- the classification of the component;
- the recommended tightening torque;
- the range of conductor sizes and materials;
- the connection configuration.

Compliance is checked by inspection.

5.3 Lightning current carrying capability

Connection components shall have sufficient lightning current carrying capability.

Compliance is checked in accordance with 6.3 following the manufacturer's declaration for the class (H or N) of the connection components in accordance with 4.1.

5.4 Static mechanical stress

Connection components shall have a sufficient withstand capability against static mechanical stresses.

Equipotential bonding bars are excluded from this requirement.

Compliance is checked in accordance with 6.4.

5.5 Screwed clamping connection

Where screws and/or nuts are used as the clamping connection, the design shall be such that the conductor and/or the metal installation is always securely fastened by the screw and/or nut application.

Compliance is checked by inspection and in accordance with 6.3.

5.6 Dismantling of test joints

It shall be possible to dismantle the test joints after lightning current stress.

Compliance is checked in accordance with 6.3.

5.7 Damage to conductors and metal installations

Connection components shall be so designed that they connect the conductors and/or the metal installations without undue damage to the conductors, the metal installations and/or the connection components.