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INTERNATIONAL STANDARD



**Lightning protection system components (LPSC) –
Part 3: Requirements for isolating spark gaps (ISGs)**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

Part 3: Requirements for isolating spark gaps (ISGs)

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, 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. 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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IEC 62561-3 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 2017. This edition constitutes a technical revision.

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

- a) alignment with the latest edition of ISO 22479 relating to humid sulphurous atmosphere treatment;
- b) addition of a new normative Annex D for the applicability of previous tests.

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

Draft	Report on voting
81/727/FDIS	81/729/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.

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INTRODUCTION

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

LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

Part 3: Requirements for isolating spark gaps (ISGs)

1 Scope

This part of IEC 62561 specifies the requirements and tests for isolating spark gaps (ISGs) for lightning protection systems.

ISGs can be used to indirectly bond a lightning protection system to other nearby metalwork where a direct bond is not permissible for functional reasons.

Typical applications include the connection to

- earth-termination systems of power installations,
- earth-termination systems of telecommunication systems,
- auxiliary earth electrodes of voltage-operated, earth fault circuit breakers,
- rail earth electrodes of power and DC railways,
- measuring earth electrodes for laboratories,
- installations with cathodic protection and stray current systems,
- service entry masts for low-voltage overhead cables,
- bypassing insulated flanges and insulated couplings of pipelines.

~~This does not cover applications where follow currents occur.~~

~~NOTE—Lightning protection system components (LPSC) can also be suitable for use in hazardous conditions such as fire and explosive atmosphere. Due regard will be taken of the extra requirements necessary for the components to be installed in such conditions.~~

Applications where follow currents occur are not included.

Extra requirements for the components can be necessary for LSCs intended for use in hazardous atmospheres.

NOTE 1 In CENELEC member countries, testing requirements of components for explosive atmospheres are specified in CLC/TS 50703-2.

NOTE 2 Testing of components for an explosive atmosphere (as defined in the IEC 60079-10 series) 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 60068-2-52:~~1996~~2017, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*⁴

IEC 60068-2-75:~~1997~~2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*²

IEC 62305-1:2010, *Protection against lightning – Part 1: General principles*

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

ISO 4892-2:~~2006~~2013, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*³

ISO 4892-3:~~2006~~2016, *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps*⁴

ISO 4892-4:2013, *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 6988:1985, *Metallic and other non-organic coatings – Sulphur dioxide test with general condensation of moisture*~~

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

¹ ~~2nd edition (1996). A 3rd edition IEC 60068-2-52: *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)* is under preparation. Stage at the time of publication: IEC PRVC 60068-2-52:2017.~~

² ~~1st edition (1997). This 1st edition was replaced in 2014 by a 2nd edition IEC 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*.~~

³ ~~2nd edition (2006). This 2nd edition was replaced in 2013 by a 3rd edition ISO 4892-2:2013, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*.~~

⁴ ~~2nd edition (2006). This 2nd edition was replaced in 2016 by a 3rd edition: ISO 4892-3: 2016, *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps*.~~

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Lightning protection system components (LPSC) –
Part 3: Requirements for isolating spark gaps (ISGs)**

**Composants des systèmes de protection contre la foudre (CSPF) –
Partie 3: Exigences pour les éclateurs d'isolement**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

COMPOSANTS DES SYSTÈMES DE PROTECTION CONTRE LA Foudre (CSPF) –

Partie 3: Exigences pour les éclateurs d'isolement

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L'IEC 62561-3 a été établie par le comité d'études 81 de l'IEC: Protection contre la foudre. Il s'agit d'une Norme internationale.

Cette troisième édition annule et remplace la deuxième édition parue en 2017. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) alignement sur l'édition la plus récente de l'ISO 22479 concernant le traitement en atmosphère sulfureuse humide;
- b) ajout d'une nouvelle Annexe D normative concernant l'applicabilité des essais antérieurs.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
81/727/FDIS	81/729/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

Une liste de toutes les parties de la série IEC 62561, publiée sous le titre général *Composants des systèmes de protection contre la foudre (CSPF)*, se trouve sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

INTRODUCTION

La présente partie de l'IEC 62561 traite des exigences et des essais pour les composants des systèmes de protection contre la foudre (CSPF), en particulier des éclateurs d'isolement utilisés pour l'installation d'un système de protection contre la foudre (SPF) conçu et mis en œuvre conformément à la série IEC 62305.

COMPOSANTS DES SYSTÈMES DE PROTECTION CONTRE LA Foudre (CSPF) –

Partie 3: Exigences pour les éclateurs d'isolement

1 Domaine d'application

La présente partie de l'IEC 62561 spécifie les exigences et les essais applicables aux éclateurs d'isolement destinés aux systèmes de protection contre la foudre.

Les éclateurs d'isolement peuvent être utilisés pour raccorder indirectement un système de protection contre la foudre à une autre partie métallique proche lorsqu'un raccordement direct n'est pas admissible pour des raisons fonctionnelles.

Les applications types concernent le raccordement

- à la prise de terre des installations de puissance,
- à la prise de terre des réseaux de télécommunication,
- aux électrodes de terre auxiliaires des disjoncteurs de défaut à la terre actionnés par tension,
- aux rails de terre d'une voie ferrée en courant continu,
- aux électrodes de terre de mesure des laboratoires,
- aux installations avec protection cathodique et courants vagabonds,
- aux pylônes d'entrée pour câbles aériens basse tension,
- aux brides isolantes de dérivation et aux raccords isolés de canalisations.

Les applications dans lesquelles apparaissent des courants de suite ne sont pas couvertes.

Des exigences spéciales pour les composants peuvent être nécessaires pour les CSPF destinés à être utilisés dans des atmosphères dangereuses.

NOTE 1 Dans les pays membres du CENELEC, les exigences d'essai des composants pour les atmosphères explosives sont spécifiées dans la CLC/TS 50703-2.

NOTE 2 Les essais des composants pour atmosphère explosive (selon la définition de la série IEC 60079-10) ne sont pas couverts par le présent document.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60068-2-52:2017, *Essais d'environnement – Partie 2-52: Essais – Essai Kb: Brouillard salin, essai cyclique (solution de chlorure de sodium)*

IEC 60068-2-75:2014, *Essais d'environnement – Partie 2-75: Essais – Test Eh: Essais au marteau*

IEC 62305-1:2010, *Protection contre la foudre – Partie 1: Principes généraux*

IEC 62561-1, *Composants des systèmes de protection contre la foudre (CSPF) – Partie 1 Exigences pour les composants de connexion*

ISO 4892-2:2013, *Plastiques – Méthodes d'exposition à des sources lumineuses de laboratoire – Partie 2: Lampes à arc au xénon*

ISO 4892-3:2016, *Plastiques – Méthodes d'exposition à des sources lumineuses de laboratoire – Partie 3: Lampes fluorescentes UV*

ISO 4892-4:2013, *Plastiques – Méthodes d'exposition à des sources lumineuses de laboratoire – Partie 4: Lampes à arc au carbone*

ISO 6957:1988, *Alliages de cuivre – Essai à l'ammoniaque pour la résistance à la corrosion sous contrainte*

ISO 22479:2019, *Corrosion des métaux et alliages – Essai au dioxyde de soufre en atmosphère humide (méthode avec volume fixe de gaz)*