

INTERNATIONAL STANDARD

**Radio-frequency connectors -
Part 1-3: Electrical test methods - Surge withstand - Surge protective devices
built in a coaxial connector - Performance requirements and testing methods**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Surge protective devices built in a coaxial connector -
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FOREWORD

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IEC 61169-1-3 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

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

Draft	Report on voting
46F/738/FDIS	46F/741/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 IEC 61169 series, published under the general title *Radio-frequency connectors*, 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- withdrawn, or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.

1 Scope

This part of IEC 61169 is applicable to built-in devices (hereinafter referred to as "SPD" – surge protective device) or surge protection of telecommunications and signalling networks against indirect and direct effects of lightning or other transient over voltages.

An SPD is intended to protect the electrical apparatus from transient over voltages and to divert surge currents.

The SPD built in the coaxial connector can be a gas discharge tube type, a $\frac{1}{4}$ wavelength short stub type, a flash-off gap type, and a hybrid type thereof.

The purpose of these built-in SPD is to protect modern electronic equipment connected to telecommunications and signalling networks with nominal system voltages up to 1 000 V (RMS) AC and 1 500 V DC.

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

IEC 61169-1:2013, *Radio frequency connectors - Part 1: Generic specification - General requirements and measuring methods*

IEC 61169-1-2, *Radio-frequency connectors - Part 1-2: Electrical test methods - Insertion loss*

IEC 61643-311:2013, *Components for low-voltage surge protective devices - Part 311: Performance requirements and test circuits for gas discharge tubes (GDT)*

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

IEC 60068-1:2013, *Environmental testing - Part 1: General and guidance*

IEC 60068-2-38:2021, *Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test*

IEC 60364-5-51:2005, *Electrical installations of buildings - Part 5-51: Selection and erection of electrical equipment - Common rules*

IEC 60721-3-3:1994, *Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations²*

IEC 60721-3-3:1994/AMD1:1995

IEC 60721-3-3:1994/AMD2:1996

IEC 61180-1, *High-voltage test techniques for low-voltage equipment - Part 1- Definitions, test and procedure requirements*

IEC 61643-12, *Low-voltage surge protective devices - Part 12: Surge protective devices connected to low-voltage power distribution systems - Selection and application principles*

IEC 61643-21:2025, *Low-voltage surge protective devices - Part 21: Surge protective devices connected to telecommunications and signalling networks - Performance requirements and testing methods*

IEC 62305-4, *Protection against lightning - Part 4: Electrical and electronic systems within structures*

ISO/IEC 11801:2002, *Information technology - Generic cabling for customer premises*

ITU-T Recommendation K.12:2024, *Characteristics of gas discharge tubes for the protection of telecommunication installations*

ITU-T Recommendation K.20:2022, *Resistibility of telecommunication equipment installed in a telecommunication centre to overvoltages and overcurrents*

ITU-T Recommendation K.21:2022, *Resistibility of telecommunication equipment installed in customer premises to overvoltages and overcurrents*

ITU-T Recommendation K.28:2012, *Parameters of thyristor-based surge protective devices for the protection of telecommunications installations*

ITU-T Recommendation K.44:2019, *Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents - Basic recommendation*

ITU-T Recommendation K.55:2002, *Overvoltage and overcurrent requirements for insulation displacement connectors (IDC) terminations*

² This publication has been withdrawn.

ITU-T Recommendation K.65:2011, *Overvoltage and overcurrent requirements for termination modules with contacts for test ports or surge protective devices*

IEEE C62.36:2016, *IEEE standard test methods for surge protectors and protective circuits used in information and communication technology (ICT) circuits, and smart grid data circuits*

IEEE C62.64:2009, *IEEE standard specifications for surge protectors used in low-voltage data, communications, and signaling circuits*
