

An American National Standard

IEEE Standard Test Specifications for Low-Voltage Air Gap Surge-Protective Devices (Excluding Valve and Expulsion Type Devices)

Sponsor
**Surge Protective Devices Committee
of the
IEEE Power Engineering Society**

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Foreword

(This Foreword is not a part of IEEE C62.32-1981, IEEE Standard Test Specifications for Low-Voltage Air Gap Surge-Protective Devices, Excluding Valve and Expulsion Type Devices.)

The low-voltage air gap surge-protective device is a gap-type overvoltage limiter for use on communications, power, and signaling circuits. It has been used in one form or another for many years.

With the development of newer and more sophisticated electronic apparatus, which was usually more vulnerable to the electrical environment, it became evident that there was an industry wide requirement for improved protective devices. An effort to address this problem was initiated in 1970 when the IEEE Surge Protective Devices Committee formed its Low-Voltage Surge-Protective Devices Working Group.

It soon became apparent that there were no standard terms to describe these devices or standard tests which would permit comparison with other similar or different devices. The working group first addressed the gas tube arrester and published IEEE Std 465.1-1977 (ANSI/IEEE C62.31), IEEE Standard Test Specifications for Gas Tube Surge-Protective Devices.

Experts were drawn from any fields ranging from communications and power utilities, through electronics manufacturers, to manufacturers of Air Gap Surge-Protective Devices. The diverse requirements, experiences and vocabularies of these representatives were melded to produce this standard which should be of service to all potential users.

At the time this standard was approved, the Low-Voltage Air Gap Surge-Protective Devices Task Force had the following membership:

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IEEE Standard Test Specifications for Low-Voltage Air Gap Surge-Protective Devices (Excluding Valve and Expulsion Type Devices)

1. Scope

1.1

This standard applies to air gaps for over-voltage protection applications on systems with operating voltages equal to or less than 600 V rms. These protective devices are designed for limiting the voltages on balanced or unbalanced communication and signaling circuits. Specifically, excluded from this standard are valve and expulsion type devices covered by ANSI/IEEE C62.1-1981, Standard for Surge Arresters for Alternating-Current Power Circuits. This standard contains a series of standard tests for determining the electrical characteristics of these air gap devices.

1.2

The tests in this standard are intended as design tests as defined in ANSI/IEEE Std 100-1977, Standard Dictionary of Electrical and Electronics Terms, and provide a means of comparison among various air gap surge-protective devices. For those parameters affected by the interaction of the arrester with its associated mounting arrangement, some tests are necessarily applicable to the protector.¹

1.3

Air gap devices are used to provide over-voltage protection in electrical circuits. When the device's breakdown voltage is exceeded, its normal high impedance state changes to a low impedance state to allow conduction of the surge discharge current. After the device conducts the surge discharge current, it interrupts the flow of system follow current and returns to its high impedance state. In the event of continuing current not representing normal system conditions,

¹Hereinafter the terms *arresters* and *protectors* are used in accordance with the definitions of **air gap surge arresters** and **air gap surge protectors** respectively, contained in Section 2. When a test can apply to both, protectors and arresters, the term *device* or *air gap device* is used alone. For the purpose of this standard, all connections to a device are by means of the *terminals*.