

IEEE Standard Test Specifications for Gas-Tube Surge-Protective 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 C62.31-1987, IEEE Standard Test Specifications for Gas-Tube Surge-Protective Devices.)

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

With the trend to electrically vulnerable electronic apparatus that is exposed to surges from the environment, interest in gas-tube surge-protective devices has grown. Initially there were no standard terms to define these devices or standard tests to compare them. In an effort to address this situation, the IEEE Surge-Protective Devices Committee formed its Low-Voltage Surge-Protective Devices Working Group in 1970, which prepared the first edition of this standard. The diverse requirements, experiences, and vocabularies of representatives from many fields, including communications, power utilities, electronics manufacturers, and producers of gas tubes were melded in the standard. In 1981 the Low-Voltage Gap Type Protective Devices Working Group was formed to carry on this work, and reissued the standard in 1984.

A series of round-robin tests were conducted by members of the working group using the 1984 version of the standard. This series of tests indicated the need for improvements to several test specifications. These improvements, as well as many editorial revisions, are incorporated in this issue of the standard.

At the time this standard was published it was under consideration for approval as an American National Standard. The American National Standards Committee C62 on Surge Arresters had the following members at the time this document was sent to letter ballot.

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CLAUSE	PAGE
1. Scope	1
1.1	1
1.2	1
1.3	1
1.4	1
1.5	2
2. Definitions.....	2
3. Service Conditions	3
3.1 Standard Service Conditions.....	3
3.2 Nonstandard Service Conditions.....	4
3.3 Radiation	4
4. Standard Design Test Criteria	4
4.1 DC Breakdown Voltage Test	5
4.2 Capacitance Test	5
4.3 Insulation Resistance Test.....	6
4.4 Impulse Breakdown Voltage Test.....	6
4.5 Maximum Single Impulse Discharge Current Test.....	8
4.6 Impulse Life Test	8
4.7 AC Discharge Current Test.....	9
4.8 Alternating Follow-Current Test.....	10
4.9 DC Holdover Test for Two-Electrode Devices.....	10
4.10 DC Holdover Test for Three-Electrode Devices.....	11
4.11 Transition Time Test.....	13
4.12 Impulse Transverse Voltage Test.....	14
4.13 AC Transverse Voltage Test.....	14
4.14 Voltampere Characteristic Test.....	16
4.15 Crosstalk Test.....	16
4.16 Failure Modes	16
4.17 Backup Air-Gap Devices	17

IEEE Standard Test Specifications for Gas-Tube Surge-Protective Devices

1. Scope

1.1

This standard applies to gas-tube surge-protective devices for application on systems with voltages ≤ 1000 V rms or 1200 V dc. These protective devices are designed to limit voltage surges on balanced or unbalanced communication circuits and on power circuits operating from dc to 420 Hz. This standard contains a series of standard test criteria for determining the electrical characteristics of these gas-tube surge-protective devices.

1.2

The tests in this standard are intended as design tests as defined under design tests in ANSI/IEEE Std 100-1988, IEEE Standard Dictionary of Electrical and Electronics Terms,¹ and provide a means of comparison among various gas-tube surge-protective devices.²

1.3

Gas-tube devices are used to provide over-voltage protection in electrical circuits. When the breakdown voltage of the gas tube is exceeded, the normal high-impedance state of the tube changes to a low-impedance state to allow the gas tube to conduct the surge discharge current. After the tube conducts the surge discharge current, it interrupts the flow of power follow current and returns to its high-impedance state.

1.4

The test criteria and definitions of this standard provide a common engineering language beneficial to the user and manufacturer of gas-tube surge-protective devices.

¹ANSI/IEEE publications are available from IEEE Service Center, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331, or from the Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.

²In this standard, the term *arrester* is used when the definition of gas-tube surge arrester (see Section 2.) is intended, and the term *protector* is used when the definition of surge protector (see Section 2.) is intended. When a test applies to both protectors and arresters the term *device* or *gas-tube device* is used alone. For the purpose of this standard, all connections to a device are by means of the terminals.