

Manufacturing and Test Standards for SPD

All of Siemens Transient Voltage Surge Suppressors (TVSS) are manufactured and tested in accordance with applicable industry standards. The UL and CSA Marks are found on Siemens equipment. These are the most accepted and recognized safety certification marks in North America and provide a unbiased thorough product evaluation and quality assurance assessment.

The following standards are the basis of design, manufacture, and test of TVSS equipment:

ANSI/IEEE C62.11 - 1993

Scope: (1:1) This standard applies to metal oxide surge arresters designed to repeatedly limit the voltage surges on 48Hz to 62Hz power circuits by passing surge discharge current and automatically limiting the flow of system power current. This standards applies to devices for separate mounting and to those supplied integrally with other equipment.

ANSI/IEEE C62.33 - 1982

Scope: (1:1) This standard applies to varistors for surge protective applications on systems with dc to 420Hz frequency and voltages equal to or less than 1000V RMS or 1200V dc. This standard contains definitions, services conditions, and a series of test criteria for determining the electrical characteristics of these varistors. If the characteristics differ from the direction of conduction, then the tests determine the characteristics for both polarities. Arresters covered by ANSI/IEEE C62.1 - 1984 are excluded from this standard. Reaffirmed March 17, 1994.

ANSI/IEEE C62.41 - 1991

Abstract: A practical basis is provided for the selection of voltage and current tests to be applied in evaluating the surge withstand capability of equipment connected to utility power circuits, primarily in residential, commercial, and light industrial applications. The recommended practice covers the origin of surge voltages, rate of occurrence and voltage levels in unprotected circuits, wave shapes of representative surge voltages, energy, and source impedance. Three location categories are defined according to their relative position from building service entrance. For each category, representative waveforms of surge voltages and surge currents are described, organized into two recommended "standard waveforms," and three suggested "additional waveforms."

ANSI/IEEE 62.45 - 1992

Abstract: Guidance is provided for applying surge testing to AC power interfaces of equipment connected to low voltage AC power circuits that are subjected to transient overvoltages. Signal and data lines are not addressed in this document nor are any specifications stated on the withstand levels that might be assigned to specific equipments. An important objective of the document is to call attention to the safety aspects of surge testing.

CSA C22.2M - 1986

This is the CSA guideline for compliance with Canadian Electrical Code for bonding and grounding and surge suppressors. CSA and UL have a reciprocal agreement allowing the sharing of testing information to accommodate CSA Certification and UL listing of surge suppressors.

FIPS PUB 94

Federal Information Standards Publicaiton 94 guidelines for Federal Data Processing Centers and covers the complete environment for installing computers. Topics covered include air conditioning, grounding, transformers, lightning protection, and surge suppression.

IEEE Std 1100 - 1992 Emerald Book

IEEE Recommended Practice for Powering and Grounding Sensitive Electronic Equipment. Section 5.20.9 provides guidelines for installtion utilizing UPS systems. Specifying surge suppression should be placed on the rectifier/charge input circuit and the bypass circuits including the manual bypass. The Emerald Book also contains information concerninng the installation of suppressors within a facility in section 9.11.2.

IEEE Std 446 - 1987 Orange Book

IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications. Sections 6.4.2.2 and 6.7.5 recommend fundamental practices for overvoltage and transient voltage protection.

MIL STD-220A

The military standard for measuring filter attenuation using the 50 ohm insertion loss method. This standard is used for surge suppressors with EMI/RFI filtering circuits.

NEC Article 280 -1,2,4,12,21,25

This covers general requirements, installation requirements, and connection requirements for surge suppressors installed on premise wiring systems on circuits of less than 1000 volts.

NEMA Standards Publication No. LS 1

This document pertains to the National Electrical Manufacturers Association proposed standard for surge suppression. The document provides standard definitions and specifications format.

UL 1449 Second Edition

The UL test procedures incorporate recommendations from IEEE C62.41, C62.45, and UL designed safety tests. The safety testing focuses on mechanical and electrical failure mode and insures that the suppressor being evaluated fails safely. The UL MARK for TVSS 1449 cannot be used if the unit fails the safety test. Additional requirements for the UL MARK include performance testing. Performance testing does not include a pass/fail performance grade, but results in a suppression rating assigned to the specific product. The performance test is a let through test that measures the amount of transient voltage remaining when a specific magnitude transient is injected at the input of the suppressor. A pulse life test is also performed as part of the 1449 listing; this is a pass/fail test and measures the ability of a suppressor to survive multiple transients in succession.

UL 1283

This UL listing is the safety testing procedure for EMI/RFI filters. This is a safety only standard, not a performance standard. Some surge suppressors include a capacitive filter as part of the suppression circuit.

UL 67

This UL listing is the safety testing procedure for EMI/RFI filters. This is a safety only standard, not a performance standard. Some surge suppressors include a capacitive filter as part of the suppression circuit.

UL 50

This UL listing is for panelboard enclosures. This is a safety listing that describes the size and material used for panelboard enclosures.

UL 845

This UL listing is for motor control centers and pertains to suppressors mounted internal to a motor control center bucket.

UL 857

This UL listing is for busplug devices and pertains to a suppressor mounted internally to a busplug unit.