

UL STANDARD 1449 CHANGES ~ SURGE PROTECTIVE DEVICES (SPD/TVSS)

TEST DESCRIPTION	UL1449 2 nd Edition (Issue Date: Aug 1996)	UL1449 2.5 Revision* (Effective Date: Feb 2007)	UL 1449 3 rd Edition** (Effective Date: Sep 2009)
Abnormal Limited Current "Thermal Runaway"	5A, 2.5A, 0.5A, and 0.13A	Added 10A Abnormal Limited Current Test (Three impulses each voltage code)	Added 10A Abnormal Limited Current Test (Three impulses each voltage code)
Abnormal Intermediate Current "Thermal Runaway"	N/A	Added 100A, 500A, and 1kA Abnormal Intermediate Current Test (Three impulses each current level) (Three impulses each voltage code) The test sample must either disconnect safely at the rated current or maintain the current level for seven hours without charring, flaming, or ignition of the cheesecloth and tissue paper covering the enclosure. NOTE - TEST REQUIREMENT: The full rated test current must flow through the device.	Added 100A, 500A, and 1kA Abnormal Intermediate Current Test (Three impulses each current level) (Three impulses each voltage code) The test sample must either disconnect safely at the rated current or maintain the current level for seven hours without charring, flaming, or ignition of the cheesecloth and tissue paper covering the enclosure. NOTE - TEST REQUIREMENT: The full rated test current must flow through the device.
Suppression Voltage Rating "SVR" (Voltage Clamping Level)	6kV/500A ; 8/20µs Waveform	No Change	Suppression Voltage Rating "SVR" replaced by Voltage Protection Rating "VPR" 6kV/3kA; 8/20µs Waveform (Clamping voltage measurements are taken at six times higher current levels.)
Duty Cycle Test	6kV/3Ka Combination Waveform Impulses: Ten positive & ten negative pulses @ 1 minute intervals with nominal voltage applied between pulses	No Change	Duty Cycle Test replaced by Nominal Discharge Test, which consists of three sets of five impulses, with a 30-minute wait time between sets. These sets of impulses are required for each mode of protection and each voltage code offered by the manufacturer (up to seven times current level). Surge Protective Device (SPD) "Type" TEST REQUIREMENTS: Type 1: 10kA or 20kA; 8/20µs waveform, as selected by manufacturer. Type 2: 3kA, 5kA, 10kA or 20kA; 8/20µs waveform, as selected by manufacturer. Type 3: Devices are required to survive (15) 6kV/3kA impulses. The three sets of five impulses are applied at one minute intervals with AC power MCOV (115% to 125% over nominal voltage) being applied 250mS after the impulse. After the 15 th impulse, AC power is applied for 30 minutes. Upon test completion, the VPR Test is repeated and the results must be within 10% of the original test results. NOTE - TEST REQUIREMENT: The full rated test current must flow through the device. During and following the Nominal Discharge Current Test, the opening of supplementary protective devices, internal or external shall not occur.
Surge Arrestor was not included; it was previously tested to IEEE Standard C62.34	N/A	N/A	New "Type" Designations - Surge Protective Device (SPD) "Type" APPLICATION REQUIREMENTS: Type 1: Replaces the secondary surge arrestor designation and must be permanently connected. SPDs intended for installation between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, and cannot be installed with an external overcurrent protection device. Type 2: Designates permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device, including SPDs located at the branch panel. Type 3: Designation for plug-ins and strips. Point-of-utilization SPDs installed at a minimum conductor length of 10M (30 feet) from the electrical service panel to the point of utilization, e.g. cord-connected, direct plug-in, receptacle-type SPDs installed at the utilization equipment being protected. Type 4: Designates equipment that is installed within other listed equipment; denoted as "recognized" equipment today (UR).

*2002: UL forms an STP Committee to revise UL 1449 2nd Edition.
 2003-04: Group of industry participants lobby for additional safety testing to be added to UL 1449 2nd Edition, claiming that the level of intermediate currents that could cause safety concerns are not being addressed in the current 1449 Edition. This group lobbies for support from the NEMA organization as well as directly to UL.
 2005: The UL STP Committee approves a file review to UL 1449 to include additional abnormal test current levels. This revision is commonly referred to as UL 1449 2.5 Edition. The file review effective date was February 09, 2007.
 **2005-2006: The UL STP Committee continues to complete UL 1449 3rd Edition. The decision was made to harmonize with the IEC Standard 61643 (previously based on IEEE documents) and to pursue adopting the 3rd Edition Standard as an ANSI national standard. This standard is adopted in August 2006 with an effective date of September 29, 2009. Also four types of SPDs were added to the 1449 document to harmonize with the IEC document and to bring Secondary Surge Arrestors into the UL 1449 Standard.