

UL 1449 4th Edition

The Necessary Safety Standard for Surge Protection Devices



The newly issued UL 1449 4th Edition is the standard for safety and is the preferred standard for all AC surge protection devices (SPDs).

Official Definition

Requirements that cover surge protective devices (SPDs) designed for repeated limiting of transient voltage surges as specified in the standard on 50 or 60 Hz power circuits not exceeding 1000 V.

How the Standard Impacts Surge Protection Devices

- UL 1449 standard specifies various tests that OEMs must pass to claim compliance
- Standard SPDs must have UL 1449 certification to meet safety standards for specific markets



What SPD Types are Covered

SPD Type	Coverage
Type 1	<ul style="list-style-type: none"> • Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of service equipment • Installed without use of external overcurrent protective device
Type 2	<ul style="list-style-type: none"> • Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device
Type 3	<ul style="list-style-type: none"> • Point-of-utilization SPDs • Installed at a minimum conductor length of 10 meters (30 feet) from the electrical service panel
Type 4	<ul style="list-style-type: none"> • Component assembly consisting of one or more Type 5 components (typically MOV or SASD) • Must comply with limited current tests and In • Not tested as standalone devices to intermediate and high current faults
Type 5	<ul style="list-style-type: none"> • Discrete component surge suppressors such as surge components (MOV or SASD) • May be mounted on a PCB connected by leads • Can be utilized within an enclosure with mounting means and wiring terminations • Not tested to low, intermediate or high fault currents • Must be mounted within another enclosure

Testing is Key

Critical to UL listing is standardized testing. This table details the testing regulations for Type 4 and Type 5 SPD component assemblies.

Test Criteria	Type 4 SPD	Type 5 SPD
I Leakage (initial)	Required	Required
Dielectric Voltage Withstand	Required	Required
Vn (Before and After In)	Required	Required
Nominal Discharge Current (In)	Required	Required
Measured Limiting Voltage (MLV)	Required	Required
Disconnecter	Required	Not Applicable
Limited Current	Required	Not Applicable
Grounding Continuity	Optional	Optional
Fault and Overcurrent	Optional	Optional
Insulation Resistance	Optional	Optional

Required Markings

At Transtector Systems, we take our responsibility to meet standards seriously. All of our SPDs include clear and permanent required markings to ensure the solutions you choose meet UL 1449.

- Manufacturer name
- Catalog number
- SPD Type
- Electrical ratings
- Nominal discharge current (In) rating
- Maximum continuous operating voltage rating (MCOV)
- Voltage protection rating (VPR)
- Measured limiting voltage (MLV)
- Date or period of manufacture
- Short circuit current rating (SSCR)



Type 4 component assemblies and Type 5 SPDs require MLV, MCOV, operating voltage, and In ratings. For Type 5 SPDs these ratings may be provided in data sheets.

Glossary of Key Terms

- **Fault current** – Current from power system that flows in a short circuit
- **Maximum continuous operating voltage (MCOV)** – Maximum amount of voltage that can be applied continuously to SPD
- **Measured limiting voltage** – Maximum magnitude of voltage measured when In is applied
- **Nominal discharge current (In)** – Peak value of current (8 x 20 wave shape) driven through the SPD 15 times (SPD must remain operational)
- **Nominal operating voltage** – Normal AC power voltage of the system
- **Nominal voltage (Vn)** – DC voltage measured across the SPD when 1mA flows
- **Short circuit current rating (SCCR)** – Suitability of an SPD to withstand a declared short circuit from the power source
- **Voltage protection rating (VPR)** – Voltage rating selected from a list of preferred values when a combination wave of 6kV 3kA is applied

Contact Us for More Information

To learn more about UL 1449 and how it improves SPD safety and performance, contact your Transtector Systems representative at +1 208 772 8515, +1 800 882 9110 or visit us at www.transtector.com.



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