

UL 1449 3rd Edition (Type 2) - What You Should Know

All UL® Listed Surge Protection Devices (SPD's), commonly known as surge suppressors, must comply with the new Underwriters Laboratories Standard UL 1449 3rd Edition. Formerly, all UL Listed surge suppressors complied with UL 1449 2nd Edition.

So what's the Difference?

The major differences between 2nd Edition and 3rd Edition are the surge testing methods, terminology, and markings.

Surge Testing Method

2nd Edition surge testing consisted of the following:

1. Three 6000V/500A surges were applied to the device to measure the initial let-through voltage.
2. 20 surges of 6000V/3kA were then applied to the device per mode. This is known as the Duty Cycle Test.
3. Another three 6000V/500A surges were applied to verify that the let-through voltage did not change more than 10%.

3rd Edition surge testing is now much more rigorous:

1. Three 6000V/3000A surges are applied to the device to measure the initial let-through voltage.
2. 15 surges of either 3kA, 5kA, 10kA or 20kA are then applied through the device per mode. This is known as the Nominal Discharge Current Test and is used to determine the Nominal Discharge Current rating (I_n) of the device. The manufacturer specifies which current level (3kA, 5kA, 10kA or 20kA) is to be used.
3. Another three 6000V/3000A surges are applied to verify that the let-through voltage has not changed more than 10%.

Terminology

1. UL is changing the term Transient Voltage Surge Suppressor (TVSS) to Surge Protective Device (SPD). In Europe, surge suppressors have always been known as surge protective devices and this change standardizes the term.

2. UL has created 4 types of Surge Protective Devices:

TYPE 1: Hard-Wired Suppressors installed before the Main Disconnect. This category includes products formally called "Secondary Arrestors".

TYPE 2: Hard-wired Suppressors installed after the Main Disconnect. This category includes Eaton's CHSPT2 products.

TYPE 3: Cord-Connected or Direct Plug-in Point of Use Suppressors.

TYPE 4: Component Type. This covers anything from discrete components to assemblies to be used within another device. Recognized Component is the old term.

3. As the test method used to determine the let-through voltage has changed significantly, the term used to describe the surge rating has changed from Suppressed Voltage Rating (SVR) to Voltage Protection Rating (VPR). Since the surge used to determine the let-through is now 6 times larger, the VPR will be a

larger number than the SVR. A device with a 400V or 500V SVR has a 700V or 800V VPR.

Markings

The following Markings will now be required by UL 1449 3rd Edition:

1. The Type of SPD

- a. Refers to the location where the device can be used.
- b. Can be Type 1, 2, 3 or 4.

2. The Enclosure Type (NEMA 4 Designation).

3. The MCOV (Maximum Continuous Operating Voltage)

- a. The maximum continuous operating voltage that may be applied to the device per mode.
- b. All CHSP Type 2 devices have a MCOV of 150V L - N and 300V L - L.

4. The Short Circuit Current Rating (SCCR)

- a. The amount of current the device can withstand under short-circuit conditions.
- b. All CHSP Type 2 devices have a SCCR of 22kA.

5. The Nominal Discharge Current Rating (I_n)

- a. The amount of current (3kA, 5kA, 10kA or 20kA) the device can withstand for 15 impulses.
- b. Measure of how the device performs when installed and subjected to operating scenarios closer to real life situations.

6. Voltage Protection Rating (VPR)

- a. The measured limiting voltage after a surge event.
- b. All CHSP Type 2 devices have the following ratings: 600V L - N, 1000V L - L, 800V N - G & 600V L - G.

Why is all of this important?

1. The new surge testing method is much more demanding. As a result, our new suppression ratings will be higher. However, the ability of our devices to suppress a given surge has not changed. In other words, our higher Voltage Protection Rating (VPR) under the 3rd Edition is equivalent to our lower Suppressed Voltage Rating (SVR) under the 2nd Edition.

2. The Nominal Discharge Current Rating (I_n) provides independently verified confirmation of the ability of our devices to repeatedly withstand very large surges.

3. All Eaton CHSP AC Power Surge Protectors are now UL 1449 3rd Edition Listed. When comparing Eaton's products to others in the industry, be sure to evaluate 3rd Edition ratings.



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