

## **Low-Impedance Power Conditioning vs. Surge Suppression**

### **Characteristics of Surge Suppression Technology**

- Surge suppressors do not operate until their clamp voltage is exceeded (approximately 250 V on a 120 V system). Voltage disturbances lower than the clamp voltage can pass right through the suppressor into the equipment being protected.
- Surge suppressors offer no protection from disruptive high-frequency noise.
- By its very design, a surge suppressor can convert less damaging normal-mode disturbances to more damaging common-mode noise.
- Over time, a surge suppressor can fail, usually leaving the user with no indication that his equipment is unprotected.
- Specifications such as “joule ratings” and “response time” are typically used to characterize performance levels of surge suppressors. However, these specifications have little bearing on the level of protection provided.

### **Advantages of POWERVAR Low-Impedance Power Conditioning Technology**

In comparison, the level of protection offered by low-impedance power conditioning is at least one order of magnitude greater than that offered by surge suppression. Ensuring reliable operation of electronic equipment, POWERVAR power conditioning virtually eliminates all power disturbances without introducing power problems of their own.

- POWERVAR power conditioning virtually eliminates all possible disturbances, regardless of their characteristics.
- Provides FULL-TIME power conditioning
- Designed to eliminate disturbances, not merely divert them, POWERVAR power conditioning does not create destructive “noise conversions.”
- Provided with a full five-year warranty, POWERVAR power conditioning products are designed to improve reliability.
- The performance of POWERVAR products is specified via let-through voltage — the voltage that gets through when subjected to a standardized input transient — fully defining the level of protection offered.

### **Commonly Asked Questions Regarding Surge Suppression**

**Q: This surge suppression device meets UL1449. Does the POWERVAR power conditioning device?**

A: UL1449 is a standard developed by Underwriters Laboratories (UL) to ensure the safety of a surge suppressor. It does include a surge test designed to determine whether a product will safely withstand (no flame, sparks, etc.) the types of surges it may be subjected to in the field. If the manufacturer so desires, he can have the surge test let-through voltage measured by UL. However, the mere statement that a product meets UL1449 has no bearing on the level of protection offered. POWERVAR products are classified by UL not as surge suppressors but as power supplies and therefore, are listed under the power supply standards — UL1012 and UL1778.

**Q: The light on the surge protector indicates it is providing protection, right?**

A: Not necessarily. The fact that a surge suppressor’s light is illuminated does not mean it is actually providing protection. On some surge suppressors, the light may merely indicate that the suppressor is plugged in and the power is on. In reality, the device may have failed, providing absolutely no protection to the load. In contrast, POWERVAR products constantly provide power conditioning to the load, even when the power is turned off.

**Q: POWERVAR states that surge suppressors fail. Why then, does POWERVAR employ Metal Oxide Varistors (MOV) in its products?**

A: Properly utilized surge suppressors are useful as integral components of a power conditioning device. POWERVAR employs surge suppressors in its power conditioning products as a first line of defense to extremely severe transients, such as lightning. Also, the failure rate of an MOV is directly related to the number of times the device operates or “fires.” For example, an MOV that is designed to clamp at 250 V will fire far more often than one designed to clamp at 1500 V. This causes the one that clamps at 250 V to have a much shorter lifetime. The suppressors employed in POWERVAR products operate only when subjected to these extremely severe (and extremely rare) disturbances.