

# tech tips

TECHNICAL INFORMATION AND PRODUCT SOLUTIONS

**October 2001**

## **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 ONEAC® 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, ONEAC power conditioning virtually eliminates all power disturbances without introducing power problems of their own.

- ONEAC power conditioning virtually eliminates all possible disturbances, regardless of their characteristics.
- Provides FULL-TIME power conditioning
- Designed to eliminate disturbances, not merely divert them, ONEAC power conditioning does not create destructive “noise conversions.”
- Provided with a full five-year warranty, ONEAC power conditioning products are designed to improve reliability.
- The performance of ONEAC 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.

### **Common Asked Questions Regarding Surge Suppression**

#### **Q: This surge suppression device meets UL1449. Does the ONEAC 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. ONEAC 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.

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**ONEAC®**

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TT0102 Rev. -

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**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, ONEAC products constantly provide power conditioning to the load, even when the power is turned off.

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

A: Properly utilized surge suppressors are useful as integral components of a power conditioning device. ONEAC 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 ONEAC products operate only when subjected to these extremely severe (and extremely rare) disturbances.