



Juice Goose announces replaceable AC line surge protection.

The new Replaceable Surge Protection ("RSP") module provides enhanced, observable surge protection for audio video equipment. This new component includes five features:

1. Triple surge protection between line and neutral

The paralleling of MOVs provides increased peak current and energy-handling capabilities. The RSP includes a primary and two secondary metal oxide varistors (MOVs) which provides three times the surge power rating of standard, single MOV surge protectors. The RSP has a power rating of 300 Joules with a peak surge current rating of 30,000 amps.

2. Zero diversion of surge protection to the ground line

Voltage transients on the ground line can cause performance problems with digital processors in electronic equipment, including DSPs, computers and communications equipment. The RSP works only across the hot and neutral legs of the AC power line and can not create ground line interference.

3. Thermal cut off in the event of extreme power line surge

To manage the surge protection circuit in the event of an excessive or extended over voltage situation, the RSP uses fully integrated, thermally self protected MOVs with built in thermal cut off (TCO) capability.

An MOV is designed to divert line surges for very short durations (up to 20 microseconds), but does not have the capacity to conduct sustained current especially under extreme, high voltage conditions. Under normal utility voltage conditions, this is not a problem. However, situations such as loss of a neutral conductor or shorted lines on the high voltage system can lead to sustained over-voltage and damage to a MOV. To manage this situation, MOVs in the RSP have a built-in thermal cut off (TCO) component that stops current flow to the MOV in cases of sustained power line fault. This feature does not stop current flow to the equipment load being powered by the Juice Goose product but reduces the likelihood of damage to the MOV and extends its service life.

4. LED indication that surge protection is active

The primary MOV in the replaceable surge protection module is connected to an LED or LED circuit (depending on the Juice Goose model) which provides a visual indication that surge protection is functioning. In the event of MOV damage due to AC power line fault or due to excessive wear over an extended period, the LED will no longer be lit or it will change color (state) to indicate surge protection may no longer be working.

Note: The LED is connected to the primary MOV. It is possible, but unlikely the two secondary MOVs are no longer protecting but the primary one is. In that case, the RSP surge protector is still working, but with a lower capacity to sustain power line surges. It is also possible that the primary MOV is no longer functioning, causing the protection LED to go out while the two secondary MOVs are still working. In either case, it is advisable to replace the RSP.

5. Replaceable surge protection module if protection is lost

When necessary, the RSP surge protection module can be replaced. This is a safe and easy process which should be performed by a qualified technician according to instructions provided with the Juice Goose power product. Replacement RSP modules are available from Juice Goose at a nominal price. Contact Juice Goose (info@juicegoose.com or 713-772-1404) for more information.

Enhanced functionality and affordability

Over the past several years, growing concern about dangerous AC line surges has been coupled with confusion about the durability of certain surge protection components and performance of certain surge protection devices.

Expensive, “non-sacrificial”, series mode surge devices provide adequate but not superior protection against surges and little else in the way of power line protection. (See the Juice Goose white paper dated, June 2012.) The RSP is designed as a less expensive protection option that works well and provides peace of mind with a visual indication of surge protection functionality and replaceability should the need ever arise.

What is an MOV?

An MOV (Metal Oxide Varistor) is a voltage dependent electrical component that looks similar to a disc capacitor. As a surge protector it is typically connected between line and neutral. Under normal circumstances the MOV has a very high resistance and is “invisible” to the power circuit. However, when exposed to a high voltage surge the varistor resistance drops dramatically, making it an efficient conductor. The potentially destructive energy of the incoming surge pulse is conducted through and absorbed by the MOV, thereby protecting vulnerable electronic components and preventing damage.

An MOV is not a sacrificial component. Properly selected and installed MOVs are highly effective surge protectors with long service lives within the defined bounds of their application. The majority of MOV failures are caused by power line faults that result in sustained high voltage. Of course, like other electronic components, exposure to extreme circumstances can lead, either immediately or over time, to component failure. The same is true with other electrical components such as capacitors or integrated circuits.

Metal oxide varistors were first employed in the 1930s to protect telephone systems from power surges. Today, they are relied upon as a core operating component in many surge arrester devices manufactured and sold by companies with significant research and design resources and choices of any surge protection components. Examples include GE (TRANQUELL) and ASCO Power Technologies.

iTMOV® Specifications

iTMOV is a registered trademark of Littelfuse®

MOV Quantity	Disc Diameter (mm)	Max Continuous Operating (V)	Max Suppressed (UL 1449) (V)	Transient Energy (2ms) (J)	Peak Surge Current (1x) (A)	Peak Surge Current (2x) (A)	Varistor Voltage at 1mA Test Current		Max Clamping @100 A (V)	Typical Capacitance (pF)
							Min (V)	Max (V)		
3	20	130	400	300	30,000	19,500	184	226	340	1,900

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