

# Bodo's Power Systems®

Electronics in Motion and Conversion

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Setting the Benchmark  
for Accurate Current Measurement

# Reducing Transient Damage



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The impact of power-related problems is far-reaching and affects just about every aspect of community, business and even private life. To protect sensitive equipment from harmful transients, we propose a reliable TPMOV technology delivering higher safety levels for all kind of electrical installations, especially for solar.

### Three Distinct Types of Damage

Most transients originate from within a facility and nearly 80% of today's overvoltage problems are caused by equipment and power disturbances within the plant. These inter-facility transients are caused by light load panels switching on and off, motors starting and stopping, and close conductor proximity, just to name a few. Less than 20% of transient problems originate outside of the facility due to lightning strikes, utility grid switching, switching of capacitor banks or electrical accidents.

Transients cause three general types of damage to sensitive electrical equipment:

Disruptive damage occurs when a voltage transient enters an electronic component which interprets it as a valid logic command, resulting in system lock-up, malfunctions, faulty output or corrupted files. Dissipative damage is caused by a repetitive, short duration energy surge which results in long-term deterioration. And last but not least there is also destructive damage which is associated with high level energy surges, resulting in immediate equipment failure.

### SPD Solution with Built In Thermal Protection Saves Space and Money

A Surge Protection Device (SPD) contains by definition at least one nonlinear component and is designed to limit overvoltage peak and divert surge current. The market offers a multitude of surge suppression options. However most SPDs are designed to function in tandem with fuses and so they take up quite a lot of space. An integrated, compact system will by comparison reduce costs and eliminate the need for additional overcurrent protection, saving space as well as money.



### Surge Suppression by Thermally Protected MOV

The Thermally Protected MOV (TPMOV®) is a patented invention of Mersen developed to assist in eliminating the failure characteristics of Metal-Oxide-Varistors. The fail-safe solution is composed of a voltage clamping device and a disconnecting mechanism that monitors the status of the metal-oxide disk. In the event that the disk is approaching thermal runaway it is effectively disconnected from system power. The TPMOV is rated for 40kA of 8/20  $\mu$ s surge current with ratings from 150V to 550V. The TPMOV has two built-in, isolated indicating features. The first is a visual indicator with two finger safe pins showing on the front of the enclosure when the unit has disconnected from system power. The second is a remote indicator composed of a micro-switch. When the TPMOV disconnects from system power the switch changes status. All these features reduce the costly engineering time required for traditional MOV products. Because TPMOV footprints are similar to those of equivalent voltage ratings of traditional 25 to 45mm MOVs they can be used on existing systems without costly board redesigns. The "no-fuse" surge suppressor does not require the use of additional fuses or overcurrent protection and can be installed upstream or downstream of the main disconnect.



*Figures: Surge Trap™ SPDs manufactured by Mersen offer a patented no-fuse Type 2 solution combined with a patented thermal overload technology that delivers higher safety ratings and protection.*

*TPMOV® is a registered trademark of Mersen*

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