

TIP SHEET

WHAT IS THE SURGE-TRAP® SPD?

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Is all time-delay created equal?

The Surge-Trap is a branded surge protection device (SPD) that utilizes Mersen's patented thermally protected metal oxide varistor (TPMOV®) technology. This technology eliminates the need for fuses to be installed in series with the Surge-Trap SPD, which saves money and panel space. Surge-Trap SPD is typically installed in industrial control panels to protect sensitive electrical equipment from harmful voltage transients. Nearly 80% of all transients are caused by equipment or power disturbances within a facility.

What Types of Ratings Do SPDs Have?

Do SPDs have a current rating? This is a trick question! They do not have a continuous current rating however they do have other important current-based ratings. They are required to have a short circuit current rating (SCCR), which is the maximum rms current at a specified voltage the SPD can withstand.

The nominal discharge current (I_n) is new to UL 1449 Third Edition (effective 9/29/09). This is the peak value of the current (20kA maximum) through the SPD (8/20 μ s waveform) where the SPD remains functional after 15 surges.

There are two main voltage ratings for an SPD, the first is maximum continuous operating voltage (MCOV) which is the maximum rms voltage that may be applied to the SPD per each connected mode.

Voltage protection rating (VPR) is determined as the nearest high value (from a list of preferred



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values) to the measured limiting voltage determined during the transient-voltage surge suppression test using the combination wave generator at a setting of 6kV, 3kA.

How Do I Select The Correct SPD?

When selecting an SPD you must make sure that the available fault current is less than or equal to the SCCR of the SPD. The nominal discharge current should be as high as possible because an SPD with a higher I_n will be able to handle more surges (at lower currents) than one with a lower I_n .

WHAT IS THE SURGE-TRAP® SPD?

Mersen makes it easy to select the correct Surge-Trap SPD. All you need to know is the system voltage, configuration and short circuit current. All Surge-Trap SPDs have a 200kA SCCR (without fuses), which you need to make sure is not exceeded. From the selection chart, find your voltage configuration and preferred protections modes. There is no need to worry about the nominal discharge current as all Surge-Trap SPDs are rated at the UL maximum 20kA.

How Is an SPD Installed and How Does It Work?

A Surge-Trap SPD is always installed in parallel with the load. When the circuit has the normal operating voltage the Surge-Trap SPD will not be conducting current. Once the system experiences an overvoltage the Surge-Trap SPD will “turn on” and begin to conduct the extra voltage to ground, allowing the load to continue running at the correct voltage. This operation is similar to a pressure relief valve in a steam system.

How Do I Retrofit an Existing Panel?

Providing there is adequate space, retrofitting an existing panel with a Surge-Trap SPD is easy. Typical industrial control panels will have a main disconnect that feeds a power distribution block (PDB) and then on to the individual loads. The Surge-Trap SPD mounts on standard 35mm DIN-rail typically found inside the panel. It should be installed as close as possible to the PDB and connected with #6-#14 AWG; the wire should not exceed 20” in length. It is important to make sure the wires do not have a bend radius less than 4” or any loops, as this will result in higher let-thru voltages. Twisting the conductors further improves protection and lowers let-thru voltages.

For more information on Mersen’s Surge-Trap SPDs visit: <https://ep-us.mersen.com/products/family/surge-protection-lightning-protection-and-power-monitoring>

