
Munich RE

# Quick Reference Fact Sheet for Low-Voltage Surge Protection

## Risk Solutions

**Hartford Steam Boiler**
One State Street
P.O. Box 5024
Hartford, CT 06102-5024
Tel: (800) 472-1866
www.munichre.com/hsb

The following is a quick reference fact sheet for surge protection of low-voltage electrical distribution systems. For more detailed information, please refer to HSB's Guideline for Providing Surge Protection at Commercial, Institutional, and Industrial Facilities on our website, www.hsb.com.

- Electrical surges, or transients, are a leading cause of equipment failure.

- Surges can come from the outside (lightning, utility operations) or from within a facility.

- *It is **critical** that a facility have a good, **low-resistance grounding** system to protect against surges.*

- Employ a "Zones of Protection" approach for maximum protection against electrical surges:
  - **Zone 1:** Install a surge protection device (SPD), also known as a transient voltage surge suppresser (TVSS) on the electrical service entrance equipment to protect against surges generated from outside the facility.
  - **Zone 2:** Install SPDs at each distribution panel supplying critical or sensitive electronic equipment. This will provide protection against internally generated surges.
  - **Zone 3:** Install SPDs locally at each piece of equipment requiring protection.

- Understand the technical ratings of SPDs:
  - **System Voltage** — 120 V, 240 V, 480 V, etc.
  - **Circuit Configuration** — Single or three phase, delta or wye connection, etc.
  - **Voltage Protection Rating** — ( UL 1449- 3rd edition) -the maximum rated surge voltage value that will be allowed to pass through the circuit to the protected load device. The "VPR" replaces older terms, such as "Suppressed Voltage Rating" (SVR) or "Clamping Voltage". The voltage protection ratings range from 330V, up to 6000V.
  - **Surge Current** — how manufacturers rate or size their SPDs. It is the amount of current the SPD can safely divert to ground. It is also referred to as "single impulse rating", "maximum current rating" or "life rating".
  - **Short-Circuit Current Rating** — the maximum prospective short-circuit current that the SPD (and its fuse or circuit breaker) are able to withstand without causing damage, or creating an electrical hazard

1866
Hartford Steam Boiler

- **Application** — (Type 1, 2,or 3) Service Entrance, Distribution panel, or for local equipment use.
- **Standards** Tested to UL 1449-3rd edition, and IEEE Std C62.45

– Data Line Protection — SPDs should be installed on all systems susceptible to electrical transients, including phone/fax lines, cable or satellite systems, and local area networks (LAN).

– Installation:
- SPDs should be installed n accordance with NEC article 285, and as close to the equipment being protected as possible.
- Cable lengths should be short and straight.
- A solid connection to the system grounding conductor is essential.
- The surge protectors should be equipped with operation indicators.

– Use a Professional Engineer experienced with surge suppression technology for design and coordination of the protection scheme.

– Use a licensed electrician for installation of SPDs on service entrance and distribution panels.


ES432 (rev 4/2013)