



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



- **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 in
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.

NOT IF, BUT HOW