

Where to Install SPDs for AC Powered Electronic Equipment

Knowing where to install surge protection can be difficult. The balance must be found between installing SPDs on every distribution board/"point-of-use" and installing insufficient protection leaving the facility vulnerable to damage. The following 5 steps provide guidelines to optimizing your investment in protection without paying for over-coverage:

1) The first line of defense is to install an adequate surge protection device at the primary service entrance to that facility. This unit is normally the largest surge-rated device, as it may be subjected to the injection of direct lightning currents. Typically a rating of at least 100kA 8/20 μ s is required. This primary protection alone is often adequate for the protection of the facility's robust electrical/electro-mechanical equipment such as heating, lights and motors.

2) For sensitive electronic equipment, a second line of defense to further reduce the let-through voltage of the service entrance protection should be installed. Generally this is applied at selected branch distribution boards. These secondary device(s) also serve to protect branch circuit equipment from internally generated transients –

approximately 70 to 85% of all transients are generated within one's own facility. A surge rating of 40kA 8/20 μ s is recommended for secondary devices.

3) Subcircuits that feed electrically noisy equipment such as variable speed drives and industrial equipment should also be protected to prevent electrical noise feeding back onto other circuits.

4) Where sensitive electronic equipment is located more than 30' away from the closest upstream SPD, additional protection may be required. This is termed "point-of-use" protection and should be installed as close to the electronic equipment as possible.

5) Suppressed Voltage Rating (SVR) is a measure of how well an SPD clamps a transient voltage of 500A 8/20 μ s, 6kV 1.2/50 μ s. For sensitive electronic equipment, check that the closest upstream SPD has an SVR lower than the equipment's withstand threshold. An SVR of less than 400V is generally preferred for such application.

