

POWER

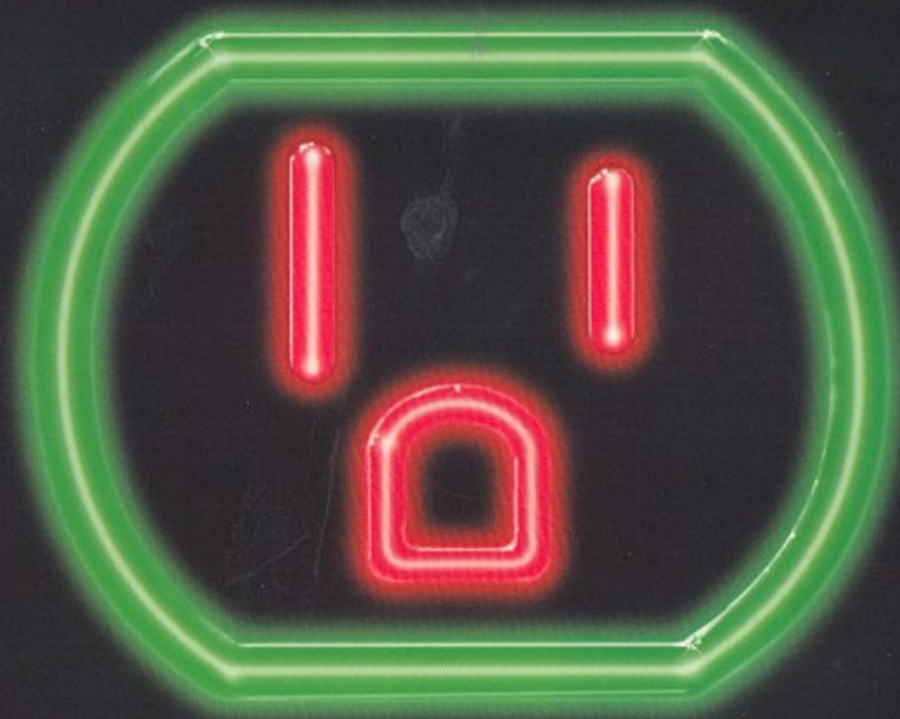
POINTS

A TECHNICAL BRIEFING
FROM PSE&G

The power is in your hands.



PSE&G



TRANSIENT VOLTAGE SURGE SUPPRESSORS

A cost-effective method of protecting computers and other sensitive electronic equipment from voltage surges and spikes.



What is a transient voltage surge suppressor?

A **transient voltage surge suppressor** (TVSS) is a power protection device that prevents excessively high voltages from damaging or destroying computers and other sensitive electronic equipment.

The surge suppressor prevents voltage surges from reaching protected systems by diverting electrical current to alternate pathways or absorbing the energy in the surge. With prices starting as low as \$15, the surge suppressor is the most affordable power protection device on the market today.

A look at the problem

Surge suppressors are effective at protecting electronic equipment from transient voltage impulses. Transients, commonly referred to as *spikes* or *surges*, are sudden, sharp increases in voltage of up to several thousand volts, with a duration ranging from one microsecond to one millisecond.

Spikes and surges can be caused by lightning, short circuits on the line, static electricity, and switching at the utility or customer site. Operation of elevators, office machines, HVAC (heating, ventilating, and air conditioning) equipment, and other machines can produce surges. Electrical noise can also be generated by radio frequency interference such as radio, TV, microwaves, radar, arc welding, and lightning. Electrical noise is of low voltage but can alter data.



Where to use suppressors (Continued)

In addition to power outlets, surge suppressors should also be installed at main and subdistribution panels throughout the power distribution network. A larger surge suppressor, sometimes called a surge arrester, should be placed at the service entrance where utility power enters the building and connects with facility wiring. This helps protect the building's electrical system from lightning and other external sources of large surges.

As a rule, you will find surges highest at the building service entrance and distribution panels, lower at receptacles located far away from these points. Because of the inherent impedance found in the building power distribution system, the farther the current travels, the lower the transient voltage and current levels.

In local area networks, where many PC's and workstations are connected to a common data line, surge suppressors should be attached with appropriate network or phone connections to the suppressor. This prevents impulses traveling through data communications lines from reaching workstations, servers, and other attached devices.

How to select a suppressor

Here are some factors to consider when shopping for a surge protector:

- **Clamping voltage.** This is the voltage at which the surge suppressor acts to prevent any further rise in voltage from reaching the protected devices. Clamping voltage should be clearly stated on the suppressor.

Some experts suggest that the clamping voltage should be 500 volts. Voltages at that level can be handled by a computer's power supply without causing damage. At the same time, the 500-volts clamping voltage prevents the suppressor from having to clamp on many lower voltage surges not dangerous to equipment, thereby eliminating frequent and unnecessary clamping that could shorten the suppressor's life.



How to select a suppressor (Continued)

- **EMI/RFI filtration.** Many surge suppressor manufacturers advertise their devices as capable of filtering electromagnetic and radio frequency interference that can generate electrical noise. Although it is often prominently featured in advertising, this feature may not be needed, as most PC's are manufactured with built-in noise filtration.
- **LED.** A desirable feature is indicator lights showing when the device is on or off and also when it is actively blocking a voltage surge. It is important to know whether the suppressor has failed, since it may be allowing dangerous spikes through to your equipment.
- **Fuse.** Many suppressors have a fuse or circuit breaker. In case of extremely high voltages, the fuse blows, or the breaker trips, and current stops flowing. Operation of protected devices is interrupted, and data may be lost, but the equipment (including the suppressor) is saved from damage or destruction.
- **Warranties.** Some manufacturers' warranties offer replacement of the surge suppressor only, while others pay for repair of equipment damaged as a result of a failed surge suppressor. Such warranties do not compensate you for the time and cost of replacing damaged or lost data. Check the manufacturer's warranty carefully for limits and exclusions.

PSE&G is here to help

If you experience power quality problems, call us. We can help you determine what level of protection you need and guide you toward selecting the right type and size of power protection equipment needed to solve your problems.

For more information....

Call the PSE&G marketing office nearest you.

Cranford.....	1-800-782-0067
Mt. Laurel.....	1-800-992-0461
Paramus	1-800-752-0017
Princeton	1-800-832-0076
Secaucus.....	1-800-722-0256
W. Paterson.....	1-800-752-0024