



With today's electronics becoming smaller, more sensitive and more expensive no one can escape the need for quality surge protection. Every day hundreds of short duration voltage surges (some potentially larger than 5000 volts) can enter your business. These surges are also referred to as "spikes" or "transients". Because they last for a very short time (generally less than 1/1,000 of a second), these surges do not always destroy your equipment. Sometimes they may only cause your computer screen to flicker. Other times, you may be left with a smoking wreck where your newest CNC machine was. The most costly result of these small surges is the wear and tear they put on all electronics. Your computer controlled machinery could last up to 30% longer with the proper protection. In fact, most manufacturing equipment, including lathes, inserters, extrusion machines, welders, and, of course, robotics now have micro-processor controls. When you look at the cost of replacing all the electronics in a business, not to mention the lost revenue if the systems are down, proper surge protection is the only intelligent option.

Lightning is the most recognized cause of power surges. Your local power company is, unfortunately, the most common. Also responsible for voltage spikes are local industrial facilities and even the machines, motors and condensers in your own building. The "2-98" rule states that roughly 2% of the surge related damage to electronics is caused by direct lightning. The remaining 98% comes from other sources.

Proper protection should be divided into two environments: Power and Data/Telecom. When recommending surge protection for electrical power, focus should be placed on the most recognized standard in the industry (ANSI/IEEE C62.41-1991 – Application Guidelines for Transient Voltage Surge Suppression). This standard divides a building into three categories (A,B,C). Category C is defined as the service entrance or main disconnect. Category B is at the distribution and sub-panel environment and Category A is at individual equipment or wall outlets. Maximum protection requires a surge suppressor at each one of these locations (A,B,C) and minimum protection requires a surge suppressor at two of the locations which feed the sensitive load.

Using a basic approach, start at the sensitive equipment and work backwards. For example, if the sensitive equipment is located in an x-ray room and fed from a 225A panel; we would recommend a Category B device on the 225A panel. The voltage configuration will vary depending on the service voltage coming into the panel. If the 225A panel is fed from a 1200A main distribution panel, we would recommend a Category C device at the 1200A panel. The theory involves the Category C device dissipating the majority of the transient, at the main distribution panel. The Category B device will dissipate transient let-through from the Category C device and also, any internally generated transients, such as from inductive load switching. The transient let-through can be dissipated even further by installing a Category A device (plug-in or hard-wire suppressor) at the equipment; however, with two stages of panel protection, clamp levels can be achieved below 300 volts for 120/208 volt applications.

Nothing can give a 100% guarantee of safety when dealing with transient surges. Lightning does not follow UL approved waveforms, and when an open neutral event occurs at your local utility, line voltage can remain at more than twice nominal for several minutes.





Given a decent installation (short, straight leads and a good ground) one level of protection should stop at least 90% of a major surge. The sub-panel protector will see only 10% of the original surge. With a 90% dissipation, there is now less than 1% of the surge left. A third stage of protection will increase the dissipation to 99.9%.

Transients can easily enter data/telecom lines, just as they can electric power lines, and damage sensitive electronic equipment. Some basic information needed before applying data/telecom suppression is:

- Maximum continuous operating voltage (dc) of data lines
- Number and size of wires to protect
- Allowable resistance for the data line
- Location of data line (inside or outside)
- Speed of data line (capacitance)
- Type of connection

DITEK products cover an array of power and data/telecom applications including service entrance, distribution and sub-panels, individual equipment and data lines. DITEK manufactures over 1000 surge protection devices to fit virtually any application. Some of the applications DITEK products are used on are...

- Electrical Panels (Main and Sub-panels)
- Fire and Burglar Alarm Systems
- Telephone KSU and PBX Systems
- Computers (Power, Modem, Network Cable)
- Data (Cat5 & 6, ISDN, DID, DSL, Ethernet and More)
- CCTV Cameras
- Residential Whole House protection

Some unique features about DITEK's products are:

- Ten Year Limited Warranty
- High Surge Current handling
- Easy and Fast Installation
- Competitive Cost
- Meets Industry Standards
- Contains Suppression Between All Modes (L-N, L-G, L-L, N-G)

