Questions and Answers on Transient Surges

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Tutorial FAQ on Data Line Surge Protection

What are transients and where do they come from?

Transient voltage surges (TVSs) are high energy voltage spikes that are usually associated with lightning strikes or poor power quality. Even if lightning doesn't directly hit your data line, the current can reach 300,000 amperes on data line from nearby strikes. In fact, a lightning strike that is three miles away can still cause interruptions on data lines.

Transient surges can also be caused by energy from fluorescent lighting, motors and poor power circuits. Other damaging culprits are AC wiring errors, differences in reference potential, and electrostatic discharge (ESD). The effects are degraded system performance, increased down-time, or even physical equipment damage.

I already have AC surge protectors. Why do I need data line surge protection?

AC surge protectors are great, but they still only solve half the problem. In addition to affecting AC power lines, transients can also attack incoming telephone lines and data communication lines. Therefore, an comprehensive method of protection should be utilized. If correctly routed the cable, or used shielded cable do I need protectors?

Even routing cable correctly does not prevent electromagnetic energy from getting onto data lines. You should always place the cables away from motors and lights or run shielded cable. However, transient voltage surge suppressors (TVSS) still should be used, along with battery-backed power to assure disaster avoidance.

Which TVSS Do I Buy?

There are several different types of TVSSs (Air Gaps, Gas Tubes, MOVs, Zener Diodes, and Silicon Avalanche Diodes). Each protects a certain type of electronic circuit. For example fused protection circuits should be used for primary building entrance applications. Patton uses Silicon Avalanche Diodes (SADs) to protect equipment ports. SADs are characterized by the high surge shunting capability, extremely fast response times, and low insertion losses. The don't degrade with repeated surges so they are ideal for port protection applications. In the case of an extreme overvoltage, SADs fail short, sacrificing themselves to save the equipment circuitry.

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