Risk Alert

Church Mutual INSURANCE COMPANY

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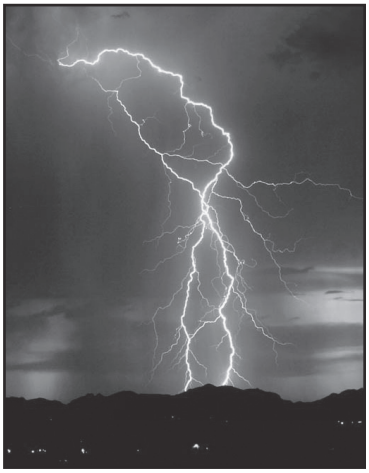
Surge protection for houses of worship



When it comes to losses of electrical and electronic equipment, few events can match the destruction caused by electrical surges (transients). This phenomenon is responsible for about 50 percent of our electronic equipment failures today. A house of worship can greatly reduce its risk of equipment damage, component degradation and system disruptions with a surge protection system.

An electrical surge is a short duration, high-energy impulse that is imparted on the normal electrical power system whenever there is a sudden change in the electrical circuit. The most obvious source is from lightning, but surges can also come from normal utility switching operations or unintentional grounding of electrical conductors, such as when an overhead power line falls to the ground. These surges can also enter your premises through internet cable and telecommunication lines. Exterior sources account for only 20 percent of all electrical surges, with the remaining 80 percent accounted for by equipment within a facility. Known sources of transients within a house of worship include everyday items, such as fax machines, photocopiers, air conditioners and elevators. In each case, the normal electric circuit is suddenly exposed to a large dose of energy that can adversely affect the sensitive electronic equipment.

Surge protection basics

A surge protection device (SPD) is designed to absorb and divert high-current surges to ground and bypass your equipment, thereby limiting the voltage that is impressed on the equipment.

Installation

In order to be successful in preventing equipment damage, surge protection must be properly sized and grounded. Because the surge protection is supposed to divert surge energy to ground, it is very important that your electrical system be properly grounded. Anything less than a proper ground may cause surge energy to be diverted throughout the building, with potentially hazardous effects. It is recommended to retain a qualified, licensed electrician to ensure that all SPDs are properly installed.

Zones of protection

IEEE Std 1100, Recommended Practice for Powering and Grounding Electronic Equipment, contains recommended guidelines for installation, grounding and protection of your electronic equipment, such as computers, servers, photocopiers and other sensitive electronic equipment. IEEE Std 1100 recommends three “zones of protection.” The first zone is at the main breaker, where the SPD is placed to divert surges coming from external sources, such as lightning. The second zone of protection is within the building at panel boards and branch circuit panels. The third zone of protection is at the outlet or point-of-use level.

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More information

The National Electrical Code (NEC®), NFPA-70 Article 285 provides details on the proper installation of SPDs. NEC Article 250 provides details on proper grounding of your electrical system. For additional information on surge protection, see Hartford Steam Boiler's Bulletin #431, Guidelines for Providing Surge Protection at Commercial, Institutional and Industrial Facilities, at http://www.hsb.com/information.asp?id=182.

For a complete collection of the *Risk Alert* series, visit our website and look in the Safety Resources section.