

The Need for Surge Protection Devices

Why you should care about Surge Protective Devices

- Damages due to electrical surges is one of the leading causes of failure of electrical equipment and it is estimated that damage due to lightning alone costs the US economy \$5-6 billion dollars per year according to the National Lightning Safety Institute. Residences in the US suffered damage to the tune of \$825 million according to the Insurance Information Institute in 2016 alone. This number has risen 40% since 2007 due to increase of electronics and electrical equipment susceptible to surge.
- The cost of an average downtime for a critical facility due to surge damage is \$130,000 per event.
- On average a typical building experiences surge up to 150 times a month. America's dependence on connected devices and smart electronics establishes a need to protect the safe and reliable operation of such equipment that is susceptible to electrical surge damage.
- NEMA estimates that up to 80% of surges are created within a facility. The remaining 20% are caused by external events such as lightning. These cause damage to your electrical equipment and appliances that can damage or shorten the life of expensive electrical and electronic equipment or cause it to malfunction resulting in permanent damage and fires.
- New era of digitization - The use of sensitive, sophisticated electrical and electronic equipment is growing at an unprecedented rate – and so is the need to protect that equipment.
- Electrification - The evolution of building energy management and control as well as Smart Grid technologies will increasingly contribute to this complex electrical system and may contribute to an environment that can potentially damage this electronic equipment.

What are Surge Protective Devices (SPDs)?

An SPD is a device designed to protect electrical devices from voltage surges and spikes. The purpose of a surge protective device is to limit voltage surges that occur in the normal electrical system as power is supplied to an electric or electronic device. This is accomplished by diverting surge current and limiting any unwanted voltages to a level that will not damage the protected equipment.

A common source for surges generated inside a building are devices that switch power on and off. This can be anything from a simple thermostat switch operating a heating element to a switch-mode power supply found on many devices. In total, 60%-80% of surges are created within a facility. These surges contain limited energy but are often the cause of system upset or cumulative damage to electronics. Surges that originate from outside the facility include those due to lightning and utility grid switching. These surges from external surges, although less common, are typically much more severe than those from internal sources. You can learn more at www.nemasurge.org.

Who are the Manufacturers of SPDs?

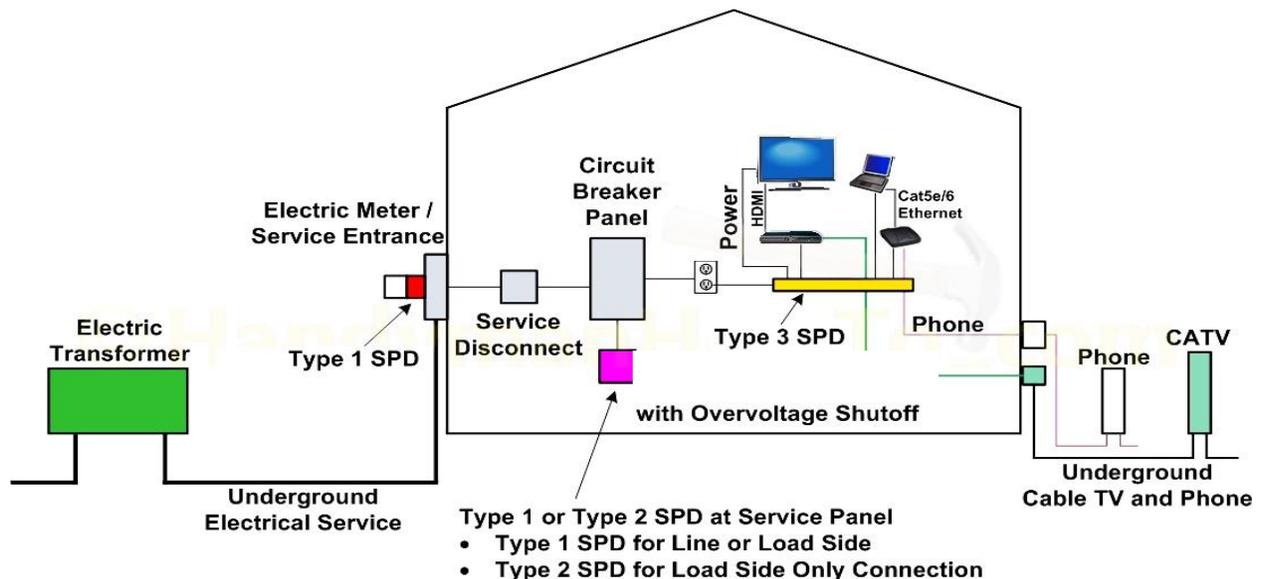
The vast majority of the US base manufacturers are Members of the National Electrical Manufacturers Association (NEMA). The 19 companies include ASCO Power Technologies, CITEL, Eaton, ERICO, GE, Hubbell, Legrand/Pass & Seymour, Leviton, Littelfuse, Mersen, Maxivolt, Phoenix Contact, Raycap, Schneider Electric, Space Age Electronics, Surge Suppression, TRC, and Thomas & Betts.

What are the benefits of SPDs?

- Helps maintain the reliability and operation of equipment by limiting the amount of surge current flowing in electrical equipment due to electrical surge events.
- Saves money-SPDs cost a fraction of replacing electrical equipment or electronics that were damaged by a surge event. The average U.S. home has over \$15,000 worth of equipment that needs protection. SPDs cost a fraction of the equipment.
- Reduce energy and energy costs-many new power strip SPDs can help reduce energy by making sure unused equipment is not using power when it is not in use.
- Provide safety-limiting the chance of a fire starting due to a surge event, or by protecting life safety equipment and the supply provisions to critical data operations within process facilities, office buildings and homes.

Where are SPDs found?

Surge protective devices can be found in almost every building type. In commercial buildings, SPDs are used to protect emergency lighting, emergency circuits ensuring proper elevator and escalator operations, computer systems, lighting, data centers and electronic equipment. In industrial applications, SPDs are used to protect machinery with safety interlock circuits, control systems and vital telecommunications links that keep the plants protected at all times. In the residential space, you will often find plug in SPDs in the form of power strips protecting home offices and entertainment equipment. A new trend in the residential space, especially in areas of major storms, is hard-wired devices that are installed at the electrical panel that protects the electrical system of the whole house.



<https://www.swartzelectric.biz/surge-protection/>

Key Takeaways

1. Surge protection is essential to protect our electrical infrastructure.
2. Surge Protective Devices (SPDs) are no longer an “accessory” to the electrical system – they are a necessity.
3. Surge protection must become an integral protective component of any facility management system including commercial, industrial or residential applications alike.