

# **FREQUENTLY ASKED QUESTIONS**

**Explaining Surge Protective Devices**

**in 21 General Terms**

**{Residential Applications Only}**

**1. What is a Surge?**

- A. *Transients or surges are defined as sub-cycle power disturbances greater than two times the peak RMS voltage. These Transient voltage spikes typically last for less than 1/60<sup>th</sup> of a second; however, they can create high currents causing severe damage to connected devices.*

**2. Where do surges come from?**

- A. *Surges can come from numerous sources, including some that come from within the home or business. A surge tends to happen whenever the electrical system is suddenly stressed. This stress can be the result of a problem somewhere on the utility grid to the mundane cycling of an air conditioner.*

**3. What kind of damages can surges cause?**

- A. *A surge places extra voltage stress on wiring and electrical devices. If the voltage stress is beyond the tolerance of these devices, then electricity may flow uncontrollably, damaging components with excess current flow. The amount of damage depends on several factors including the amount of surge voltage and the amount of surge current caused by it. This can manifest itself as an “invisible” fault where nothing appears damaged but the electrical device does not function, to obvious electrical burning. Repetitive small surges can have a cumulative effect of wearing down an electrical devices immunity to surge events, eventually resulting in “invisible” faults.*

**4. Is there a difference between lightning protection and surge protection?**

*A. Yes. The main difference is in the raw energy handling capability. Surge protectors are designed to mitigate short duration voltage transients. These are the most common surges on electrical systems. Surge protectors do offer some protection against lightning, however a surge protector may not be able to compensate for a direct or near lightning event. Lightning arrestors are specifically designed to deal with the significant current and long duration of a lightning event. Lightning protection is designed to protect structures and structural wiring, not electrical devices. Often both lightning and surge protective devices are used together in a layered approach to provide protection for electrical devices. Even this approach is not 100% effective against lightning damage.*

**5. What is the classification of a direct lightning strike?**

*A. A direct lightning strike is a lightning event where a portion of the lightning energy is transferred to electrical devices. This can happen by the lightning current traveling directly through the device, lightning traveling to the device through the ground, or by induction into the electrical device by simply being near the current of the lightning strike.*

**6. How do surges get into the home?**

*A. Surges typically enter the home through any wire that goes to the outside world as well as from some lights and appliances that are already inside the home. Surges are not limited to power lines. They can come in through telephone and cable lines as well.*

**7. If I install surge protection will all of my power problems go away?**

- A. *No. Surge transients are just one of many power quality problems. Some of these problems, like voltage sags, are often confused as a surge because people notice the lights dim and then return to normal. A surge protector does not protect against low voltage, just transient high voltage. Other power quality problems that surge protectors typically do not protect against are:*
- 1. Severe harmonic distortion*
  - 2. Sustained undervoltage*
  - 3. Sustained overvoltage*
  - 4. Momentary outages*

**8. What is meant by a “Clear Blue Sky Failure”?**

- A. *Electrical device failures can occur at any time, not just during stormy weather. As with all devices, eventually it will fail. Either due to a major power quality issue, repetitive small power quality problems, lack of preventative maintenance or any of a number of other causes, eventually electrical devices will fail.*

**9. Will the installation of surge protectors save me money on my utility bill?**

- A. *No. Surge protectors will not save money on a utility bill. Some manufacturers claim energy savings by using their products; however these claims are extremely difficult to substantiate. Most “energy saving” devices use capacitors to change the electrical characteristics of the home just as is done in industry. Industry does this to be in compliance with utility power consumption agreements so that the industry is not charged extra for poor power consumption characteristics. That is where the industry saves most of its money on utility bills. The average home just does not have the same problem as industry.*

**10. Where do you install surge protectors?**

- A. *Surge protectors are installed where power, cable and telephone lines enter (or leave) the premises. They are also installed where extra protection is desired or where causes of transient voltages are known to be generated, as in an arc welder receptacle.*

**11. What is the difference between primary and secondary protection?**

- A. *Primary protection is surge protection designed to be placed at the service entrance without the necessity to use external fusing.*
- B. *Secondary surge protection is designed to be placed downstream of primary surge protective devices where there are fuses or other circuit protection elements. Secondary surge protective devices are a supplement to primary surge protectors.*

**12. What kinds of protectors are available?**

- A. *There are as many surge protectors as there are different uses of electricity. Consult the manufacturer for recommendations on the surge protector that would best fit a particular application.*

**13. How can you determine what type of protector to use?**

- A. *Once protection is deemed necessary for a particular application, some basic information will be required to determine the proper surge protective device to use. This information includes the type of electrical service, voltages, communication protocols, number of wires, and location where the surge protector will be placed. Consult the manufacturer for specific recommendations.*

**14. Is one manufacturer better than another?**

- A. *Yes. Persons purchasing surge protectors should evaluate for themselves which manufacturer is best suited to meet their needs.*
- B. *Utilities evaluate various surge protectors and offer a quality primary surge protective device.*

**15. Can protectors be purchased for self-installation?**

- A. *Installing a meter-based surge protective device is dangerous due to the location of install – between the meter and meter socket. Trained Utility personnel should install meter-based surge protective devices.*
- B. *Yes, point-of-use surge protectors are designed to be self-installed.*
- C. *Yes. If the purchaser is qualified to work with the electrical or communication system, then that person is capable of installing a surge protector in that system.*

**16. Are there regulatory requirements that manufacturers must meet?**

- A. *Yes. Manufacturers of surge protectors, including communication surge protectors, are required to prove that the surge protector functions without undue risk to personnel or property. This is done by “Listing” the surge protector by testing the devices to a national standard by a Nationally Recognized Testing Laboratory (NRTL). After Listing a product with a NRTL, the manufacturer’s products are examined for compliance about every three months by unannounced inspectors. The current Safety Standard for Surge Protection Devices is ANSI/UL 1449 3<sup>rd</sup> Edition.*

**17. How long does a protector last?**

- A. *The longevity of a surge protector depends on the electrical environment into which it is placed. There is no set time limit on how long a surge protector will last. However, surge protectors that are capable of handling significant surge energy usually will outlast those of less capability.*

**18. What happens when protectors fail? Will they cut power to my home or equipment?**

- A. *The meter-based surge protection device does not cut power to the home or equipment.*
- B. *What happens when the protector fails depends entirely on the surge protector used. Some surge protectors will disconnect the load when it fails, while others are designed not to. Most surge protectors fail “short circuit” and will typically disconnect the internal surge protection elements via internal fusing. Another symptom of a failed surge protector could be tripped circuit breakers.*
- C. *Communication surge protectors that have sacrificed themselves to a surge event will typically prevent communication to connected devices.*

*In all cases a surge protector that has failed should be replaced.*

**19. Do insurance policies come with the protectors?**

- A. *The Surge Protective Device comes with a manufacturer’s limited warranty. It is not insurance. Since a surge protector only protects against high transient voltages, it is highly recommended that point-of-use surge protectors be used on sensitive electronic equipment.*
- B. *The purchaser of a surge protector should fully read and understand all warranties, guarantees, or promises provided with the surge protector.*

**20. What is the difference between a product warranty and an extended warranty?**

- A. *A product warranty literally covers the surge protector only. If there is a problem with the surge protector during the warranty period, then any compensation made will be only associated with the surge protector itself.*
- B. *An extended warranty is a claim that the surge protector will protect certain electrical devices connected to that surge protector, and that the owner of the surge protector will be compensated for surge related damage to qualifying electrical devices should the surge protector be deemed responsible for allowing that damage.*

**21. How do you make a warranty claim and can I make a claim against my homeowner's insurance?**

- A. *Contact information for warranty claims is usually provided with the documentation that comes with the surge protector. Warranty contact information may also be found at the manufacturer's website.*
- B. *A claim against the homeowner's insurance policy can be made; this is up to each individual.*
- C. *Care must be taken to not appear to be making an attempt to get two payments for the same event as this may be illegal.*