

Everything You Need to Know About Whole House Surge Protectors

(Excerpted from an article by Upstate Electrical Solutions, Greenville, SC)



Look around your home at your electronics and appliances. Your flat-screen TV, your computer, your DVR. Your refrigerator, microwave, coffeemaker, dishwasher, or big-ticket systems like your heating and air conditioning unit. What would happen if a massive power surge occurred and wiped out all these appliances?

You may think your electronics and appliances are safe because you've plugged them into a power strip. But are they really safe? Or is that power strip no more than an extension cord with extra outlets? What happens when electronic circuits are subjected to power surges?

The combination of power grid disruptions, severe weather, and infrastructure that needs updating makes the possibility of debilitating power surges very real. Especially if you rely on technology in your home, it may be time to consider a whole house surge protector. Take a look at everything you need to know about this valuable piece of electrical safety equipment.

What Is a Whole House Surge Protector?

A whole-house surge protector is hard-wired to your electrical system to provide power surge protection for your entire home. When electrical voltage spikes or surges, the whole house surge protector blocks it or grounds it so your appliances and electronics aren't damaged.

Proper grounding is key to successful surge protection. Without grounding, the surge protector won't work correctly. If you're unsure about your home's grounding system, have your electrician check it out when installing the whole house surge protector.

The best whole house surge protection systems can stop surges of 40,000 amps and more. Alarms or lights that indicate when a surge has been stopped are useful features to look for.

In some cases, you may want to consider separate whole house systems to protect phone, cable, and internet lines. Multi-level surge protection systems can help protect against both surges coming from outside your home and those caused by your appliances themselves when they turn on and off.

Only a professional electrician should install whole house surge protectors. They have the expertise to make sure everything is properly grounded and to correct any incorrect installation or defects in your existing electrical wiring. You can expect the process to take just a couple of hours — a short duration of time for the protection you receive.

The Most Common Types of Surges

Power surges happen amazingly fast, coming and going in far less than a second. However, they have the potential to destroy your home entertainment system and crash your computers.

The most common causes of power surges include:

- **Downed power lines.** When utility lines near your home go down, often because of a storm, your home can receive bursts of overvoltage that can damage appliances, electronics, and your entire electrical system. Power line problems can also result from accidents, animals messing with the line, and branches blowing against the power lines.
- **High electricity demand.** Perhaps a local factory has a sudden change in its electricity use that causes a surge throughout the neighborhood. Extreme weather can result in overuse of appliances such as air conditioners, leading to blackouts or brownouts, which in turn can produce power surges.
- **Cycling of appliances within your home.** Appliances that use a lot of energy — including refrigerators, air conditioners, electric clothes dryers, and the like — can cause mini power fluctuations every time they turn off and on. In fact, 80% of power surges within the home are generated by this internal electrical cycling. These minor power surges may not cause a noticeable response, such as tripping circuit breakers. Over time, however, they cause problems with your appliances and electronics, degrading their performance and potentially frying the circuit boards of everything from your electric stove or computer to even LED light bulbs.
- **Faulty wiring.** How old is the wiring in your home? Older homes often don't have the wiring capacity to handle the demand of today's appliances and electronics. In some cases, the wiring may be wearing out, or it may not have been installed correctly.
- **Lightning.** Lightning is the most extreme cause of power surges. A lightning bolt can send 200,000 amps of electricity through your home's wiring, producing electrical surges of more than 50,000 volts and burning your home electrical system out in a second.

Will a Whole House Surge Protector Protect Against Lightning?

The answer to this question depends on how close the lightning strike is. If it's more than a mile or so from your house, it's not likely to cause any damage to your electrical system. However, if your home or a nearby electrical transformer is hit directly by lightning, your whole house surge protector isn't going to be strong enough to defend against that massive, unequalled power surge.

Think about it this way: Because TV towers often sustain lightning strikes, they use the most robust protection against lightning possible, far stronger than any whole house surge protector provides. And yet, they are still damaged if hit by a direct lightning strike.

Lightning moves through the air, so it doesn't need wires to carry the charge. That means that even when your whole house surge protector takes action to disconnect appliances from your system, the lightning will continue to leap through the air gaps to get to the ground it's trying to reach. Lightning also creates side flashes, branching to send electricity in multiple directions at once. It can leap, for instance, across a room from your electrical system to the metal pipes of your plumbing, all in search of grounding. This can occur even if the lightning didn't hit your home directly but grounded itself outside.

True lightning protection systems do exist, but they're very expensive, and probably overkill for your home. And even these systems can't guarantee 100% protection against a direct strike.

What your whole house surge protector can do in the event of a local lightning storm is provide protection against distant strikes and against the electrical spikes likely to occur when distant lightning downs power lines. If you're in the direct line of a lightning storm, unplug your appliances to protect them until the storm passes.

Why Not Just Use Plug Strip Surge Protectors?

You don't have to choose between a whole house surge protector and the power strip-style surge protectors that you probably already have in use throughout your home. The two types of surge protectors, in fact, work hand in hand to give you the invaluable protection your appliances and electronics require.

Those power strip surge protectors are intended to protect primarily against the internal power surges caused by the cycling on and off of your electrical appliances and heating/cooling systems. They also provided an added layer of protection against power surges coming from outside your home. Yes, your whole house surge protector will protect against most of the overvoltage hitting your electrical system when, say, local power lines go down — but if even a small percentage of that surge makes it into your wiring, having your electronics plugged in to power strip surge protectors can provide an additional buffer.

But make sure that power strip is actually a surge protector. It's easy to think that all power strips are alike and provide the same protection. Some, however, are just extra outlets on a cable, and provide absolutely no surge protection at all.

You can choose from multiple modes of plug-in surge protection, with lower end devices starting at about \$20 and high-end stations running up to \$300.

- Multi-outlet power strips. Again, make sure these actually provide surge protection, as many do not.
- Surge stations.
- Uninterruptible power supply stations. These plug-in devices also provide short-term battery power as well as surge protection, making them a good choice for electric-powered medical devices.

Yes, you want plug-in surge protectors. But to truly protect your electronics and appliances, you want them in addition to your whole house surge protector, not instead of the whole house protection you need.

The Cost of NOT Having Whole House Surge Protectors

How much are your electronics and appliances worth? That 60-inch TV or your Sub-Zero fridge? What about the data you have stored on your laptop, your desktop computer, and your tablets? Could you replace it if you lost it? What about all the photos, music, and videos stored on your computers and mobile devices?

Imagine how you'd feel learning of a power grid problem in your neighborhood while you were at work or on vacation. Knowing that all your electrical appliances are protected makes all the difference in that type of situation.

Whole house surge protection isn't that costly to install to begin with. Compared to the loss of all your appliances and electronics, it's a bargain. A power surge coming from outside your home can destroy the circuitry of your expensive refrigerator, wipe your computers' hard drives, and fry the rest of your electrical system for good measure.

And remember, not every appliance can be protected with a plug-in surge protector. Are you going to pull out your installed refrigerator or dishwasher to make sure they're protected at the outlets? Instead, a whole house surge protector acts as a filter, keeping out unsafe and irregular voltage so that all your electronics and appliances aren't affected