

Surge Protection

Without adequate protection, your computer, VCR, microwave and other solid-state equipment are susceptible to “spikes” or “surges” in your home’s electrical system, which can weaken components and lead to shortened life.

Where Do Surges Come From?

It’s a common belief that the greatest threats of power surges are from sources outside the home, such as lightning or damage to the utility’s power line. While those threats are real, they are not as commonplace as the surges that occur within the building. The electric motors that power many large household appliances - and even smaller ones like blenders and vacuum cleaners – cause spikes in the current feeding a building’s electrical system. The spikes occur twice in the power cycle. The first time is after the motor goes on and attains its full speed at which point its power-supply need decreases. For that brief instant, the residual current still in the system has nowhere to go, which creates a spike that can send unwanted energy through the wires and right into your computer or TV. If unprotected by a surge suppressor, those susceptible microchips inside your equipment could be damaged. The same thing happens again when the motor turns off, momentarily leaving excess electrical energy in the lines. The damage to equipment might not be immediately apparent. A power surge can alter the electronic characteristics of the computer or VCR, so that even regular operation of the device can destroy it.

What Can Be Done?

You can protect your solid state equipment by purchasing and using surge suppressors. The most common form of surge protector is a “power strip” – a heavy electrical cord attached to a long panel with multiple outlets. The unit is plugged into the wall

socket and acts quickly to reduce spikes of power that come through the system.

Here are some important considerations in selecting a good surge suppressor:

1. **Response Time:** A good surge protector acts within nanoseconds (a nanosecond is defined as a billionth of a second) to dissipate the extra heat energy caused by a power surge. The product's packaging should provide information about its nanosecond response time.
2. **Joule Rating:** The unit's "joule" rating is another indication of how well it will protect your equipment. Joules (pronounced almost like "jewels") are a scientific unit for measuring energy, so the higher the joule rating, the larger the surge the product can handle. If your surge protector is attached to a single, small appliance, a joule rating as low as 70 might be adequate. For higher-end equipment, especially when two or more appliances are plugged into the same surge protector, a rating of 360 to 480 joules is recommended.
3. **Voltage Rating:** While the joule rating should be high, the voltage rating should be low. The rating indicates how much electricity from a sudden power spike the device will allow to pass through – obviously, the less the better. Consumer Reports, which tested more than a dozen models of surge suppressors, has recommended units rated at 330 volts and advises against suppressors with a rating higher than 500 volts. Also, look for units that are equipped to absorb surges between any pair of the three wires (positive, negative and ground) in an electrical circuit.

And, importantly, be sure the product is approved by Underwriters Laboratory (UL).

For more information about surge protection products from Washington Electric Co-op, see [WEC Power Quality 12-2011](#). For an order sheet (*.pdf) [surge device order form July 2012](#)