# Surge Suppressors & Power Strips

**Mindfulness Minute: Incorporate safety into your workflow by considering the hazards associated with your equipment each time you use it.**

While both surge suppressors and power strips allow you to plug multiple appliances into one device, they operate quite differently. A power strip is essentially an extension cord with multiple outlets. When loaded beyond its load capacity, a power strip can overheat, damage equipment, or cause a fire. UL listed power strips have no surge protection components and are tested only for their performance as extension cords. A surge suppressor has its own internal circuitry called a metal-oxide varistor (MOV) that will protect equipment from damaging electrical surges. The MOV becomes a conductive component when the voltage across it exceeds a certain level.

### *Joule Rating & Clamping Voltage*

Two important specifications for a surge suppressor are the joule rating and clamping voltage. The joule rating determines how much power the surge suppressor can withstand. A high joule rating (>800 J) means the device can handle one large surge, or multiple smaller surges. The clamping voltage is the lowest threshold voltage at which the MOV will be activated to protect your equipment by conducting excess electricity to the ground line. Over time, the protective components of the MOV weaken from repeated power surges, reducing its effectiveness.

### *Choose a Surge Suppressor that:*

1. has a high joule rating (≥ 800 J)
2. has a low clamping voltage threshold (< 400 V)
3. is UL/ANSI 1449 listed and labeled as a Transient Voltage Surge Suppressor (TVSS)
4. has indicator LEDs confirming the device is functioning properly (grounded & protected).

*Indicator LED showing the surge suppressor is working properly.*

### *Determine Maximum Load Capacity (MLC)*

The maximum load capacity (MLC; measured in watts) that a multi-tap outlet can safely handle depends on the amp rating (12 A, 15 A, or 20 A) of the device and the voltage of the circuit (usually 120 V). Simply multiply the volts by the amps. For a 15-amp surge suppressor on a 120-volt circuit, the MLC is 1800 watts. **Don't** exceed the load capacity rating of the power strip or surge suppressor. The best practice is to keep the total connected current load at or below 80% of the maximum load capacity.

| **Example calculation for equipment plugged into 15-amp rated surge protector; connected to 120 VAC (E) 60Hz outlet** | | |
|---|---|---|
| | **Current (I) I=P/E** | **Power (P) P=IxE** |
| Computer or Desktop | 2.0 Amp | 250 Watts |
| LCD Monitor | 1.8 Amp | 220 Watts |
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| Speakers | 0.34 Amp | 40 Watts |
| Desk Lamp | 0.5 Amp | 60 Watts |
| Scanner | 1.5 Amp | 180 Watts |
| Printer (Printing) | 2.5 Amp | 300 Watts |
| **Total Current Load** | **10.44 Amp** | **1270 Watts** |
| **Use assessment:** **Total Current Load/ Max Load Capacity x 100% = 1270 watts/1800 watts x 100% = 70% of capacity (acceptable)** | | |


*The power requirements of equipment are typically stated on the technical spec label on the back or underside of the device.*