Surge-protector shopping checklist

Bankrate.com

Don't know the first thing about how to protect your electrical equipment? Then believe it or not, you need this spec sheet filled with incomprehensible jargon. Print this and take it to the store with you the next time you decide to shop for surge protectors or uninterruptible power supplies, or UPS, for your computer or home-entertainment center. Listed below are the common pieces of equipment, and what you should look for. We give two versions of the specifications for each product: One that shows what an adequate version of the product contains, and one for what you should insist on to get the best.

PC surge protectors, adequate protection

These devices:

- Protect your PC investment from damage or loss due to bad power.
- Filter out the electrical line noise to help your equipment perform optimally.

What to look for:

- **Underwriters Laboratories 1449 Standard for TVSS with all three lines protected to <330V**. UL1449 has three of four levels, and best quality surge protectors will offer <330V protection. Inexpensive no-name brands will protect at 400 V and higher, and this is not adequate. Look for the term "clamping voltage 330" on the box. The lower the surge protector's clamping voltage, the greater its level of protection from power spikes and surges. The higher the clamping voltage, the greater the possibility of damage from excess electrical current.
- **Response time of <1 nanosecond**. Surge protectors with a response time above 1 nanosecond (or a billionth of a second) react much too slowly and afford poor protection -- and a billionth of a second can literally mean the difference between life and death where high voltages are concerned. The best devices, in fact, offer response times of 1 picosecond (one trillionth of a second).
- **Rated at 300 joules or higher**. A good surge protector should also be rated to handle 300 joules of current at the very least. The higher the number of total joules it can dissipate, the better. Seek out units that afford 600 joules of protection in terms of energy absorption/dissipation for best protection.
- **Noise filtering**. This technology uses an electromagnet (technically, a toroidal choke coil) which helps smooth out the minor ups and downs of the AC current, thereby

"conditioning" it so that it doesn't stress or strain the electronic equipment attached to the surge protector.

- **Number and types of outlets**. Make sure that the surge protector has enough outlets to meet your current, as well as anticipated future, needs. Make sure that the spacing of the outlets is sufficient to allow you to plug in all of those bulky AC transformers required by some peripherals such as scanners, external hard drives, digital cameras, etc.
- **Proper data-line surge protection**. It is not uncommon for surges and spikes to travel over phone, Ethernet, COAX, DSL and telephone cable lines. All of your incoming-data lines should be connected to the power protection device before being passed onto your AV equipment. Expect to see compliance with Underwriters Laboratories 497A Standard for Secondary Communication Devices (for RJ11 and RJ45 jacks) and Underwriters Laboratories 497 Standard for Paired Conductor Communication Circuits (for coaxial cable).
- **Fail-safe design**. It is critical that, should the surge protector give its life to save your AV components, it be designed to leave the circuit "open," so that successive surges and spikes will not be able to reach your equipment after the surge protector has sacrificed itself.
- **Warranty**. Is it lifetime? Do you get a free replacement if the unit is damaged by a surge or lightning?
- **Equipment protection policy**. Is your connected equipment insured if it is damaged by bad power? How generous is that coverage (the dollar limit)? Does it cover repair costs or replacement or both? The best policies will offer unlimited coverage for repair/replacement of your equipment.

Best protection with PC battery backups, UPS

What they do:

- These units protect your investment from damage or loss due to bad power.
- These units regulate electrical voltage that flow to your PC and peripherals and they prevent brownouts and over-voltages from wearing out critical power supplies and/or causing disk drive failures.
- Battery backup power can be used to keep your computer operational during power interruptions, allowing you to safely shut down the equipment without damaging drives or corrupting data. UPS also allows you to keep VoIP adapters and cable modems powered during a power interruption, allowing you to communicate with the world.

What to look for:

- **Underwriters Laboratories 1778 Standard**, the UL standard for UPS/battery backups.
- **Number and type of outlets** powered by the battery backup.
- **Response time of <1 nanosecond**.
- **Rated at 300 joules or higher**.

- **Proper data-line surge protection (UL 497A and UL 497 ratings)** for Ethernet, COAX, DSL and telephone.
- **Fail-safe design**.
- **Noise filtering**.
- **Battery lifespan of at least two years**.
- **Lifetime warranty and generous equipment protection policy**.

AV surge protectors:

Adequate protection for tube-based TVs

These devices:

- Protect your AV investment from damage or loss due to bad power.
- Filter out the electrical line noise to help your equipment perform optimally.

What to look for:

- **Underwriters Laboratories 1449 Standard for TVSS protected to a clamping voltage of <330V**.
- **Number of outlets**.
- **Response time of <1 nanosecond**.
- **Rated at 300 joules or higher**.
- **Proper data-line surge protection (UL 497A and UL 497 ratings)** for Ethernet, COAX, DSL and telephone.
- **Fail-safe design**.
- **Noise filtering**. Electromagnetic interference and radio frequency interference, if severe enough, can make sound and video quality worse. Look for a unit that offers noise-filtering. This technology will reduce the amount of line noise present in AC current and possibly make your overall picture and sound better.
- **Lifetime warranty and generous equipment protection policy**.

AV battery backups, or UPS

Best protection for home theater gear

What these units do:

- Protect your investment from damage or loss due to bad power.
- Filter electrical noise to help AV equipment provide you with the best video and audio performance possible.
- Regulate electrical voltage that flow to your AV equipment and prevent brownouts and over-voltages from wearing out critical power supplies and/or causing video degradation.
- Battery backup power eliminates all power interruptions and adverse aftereffects (i.e., they prevent loss of Digital Video Recorder, or DVR/multimedia server recordings, they

can prevent hard drive damage, they protect expensive projector and DLP TV bulbs from premature failure due to power loss).

What to look for:

- **Underwriters Laboratories 1778 Standard**.
- **Number of outlets that remain powered by the battery backup**.
- **Response time of <1 nanosecond**.
- **Rated at 300 joules or higher**.
- **Proper data-line surge protection (UL 497A and UL 497 ratings)** for Ethernet, COAX, DSL and telephone.
- **Fail-safe design**.
- **Noise filtering**.
- **Battery lifespan** of at least two years.
- **Automatic voltage regulation**. This feature solves the most common power problem, fluctuating voltages (so-called brownouts/over-voltages). Automatic voltage regulation eliminates the stress fluctuating voltages place on AV component power supplies and can help improve overall video and sound quality.
- **The battery backup/UPS should be designed specifically for AV systems**. PC battery backups are not able to handle the unique power characteristics found in larger TVs and amplifiers. If not designed properly, the battery backup may fail.