

## **Studio Tech**

### **What is AC Line Conditioning and Isolation?**

The AC current coming out of the socket in the wall is SUPPOSED to be a pure 60Hz, 120Volt sine wave. But in fact, most AC coming out of the walls is contaminated by noises, buzzing, humming, and even RF (radio frequencies, like taxi-cabs and police radio). This unwanted noise comes from many different places:

- The AC line can be contaminated with high-frequency noise added to the line by nearby commercial operations, like factories and office buildings. Your whole studio is actually connected to this noisy electrical grid through your AC outlets.

- Electrical wiring acts like an antenna, picking up all kinds of external noise, and the wiring itself introduces noise, from impurities in the copper wire. Such resistance causes noise. Even household appliances can add high-frequency garbage, particularly appliances that have motors.

The AC power line provides a pathway for much of this noise. So if we could somehow clean up the AC, we'd have a quieter recording studio!

**Line conditioners** clean the electricity by doing a few things:

1. Regulate the voltage levels. Voltage coming out of the walls is not a steady 120v. It fluctuates up and down. This is hard on your gear. A line conditioner can hold the voltage at a steady 120v.

2. Prevent spikes and surges. Occasionally, very strong jumps in the voltage will happen. A lightning strike, or a refrigerator or furnace kicking in, can cause this. A line conditioner can suppress these spikes and surges.

3. Clean out noise and RF. Electricity can become noisy, and this noise can get into your audio. A line conditioner can clean the noise out of the AC using filters.

A line conditioner is like a power bar on steroids. It is plugged into the wall just like a power bar, and it may have 2 or 4 outlets. A good line conditioner may cost at least \$100. It might even be built into a UPS.

**UPS is not a courier company.**

UPS stands for Uninterrupted Power Supply.  
It's like battery backup for your whole studio, in case of a blackout.