AC Polarity

The power transformers integral to all of our components serve two functions: They step up (or down) the AC supplied from the wall socket, and they isolate the equipment chassis from that same AC. Because it is not perfect, a transformer unavoidably leaks a small amount of current, almost always closer to one side of the transformer's primary winding than to the other. When two or more components connected in a system exhibit different chassis AC voltages (because of the differing degree of leakage of each), current flows through the shield ground of the interconnects running between them, creating what is known as a ground loop, carrying or even generating noises. These noises manifest themselves as audible hum or buzz, contaminating every note your system recreates and contributing to a hazy, murky soundfield and loss of low-level resolution. Removing, or at least minimizing, this noise can provide one of the most dramatic and cost-effective improvements imaginable, especially in more affordable products. Simply reversing the orientation of the AC plug can reduce the chassis voltage and, with it, the noise.

But most power cord plugs today have either two blades—one wider than the other—or three, the latter including a ground pin. Both types allow the plug to be inserted into the socket in only one way. We'll look at how to get around this limitation in a minute.

To reduce the voltage difference between the chassis of your audio components, you will need a digital VOM (volt ohm meter) and some "cheater" AC adaptor plugs, both available affordably at home-improvement and hardware stores. If you can find "cheater" plugs that have equal-sized blades on both sides, you can save some effort. If not, you will need to trim down the wider tab using a file. You'll see why in a moment.

To begin measuring the AC floating on a component's chassis, remove all interconnects going to and from the first component you are going to measure. This crucial step ensures that there are no shared ground paths with any other components. With your VOM set to AC volts (if set to DC, you risk damaging the VOM), insert the black probe securely into the round ground receptacle of the same wall socket you are using to power this component. Make sure it is securely connected to that ground. You could apply a slight bend to the probe in order to keep it firmly in place if you have to work alone. Using the red probe, find a good chassis ground on the component you are measuring. Try a non-painted surface on the back of the chassis. You may need to loosen or remove a screw in order to get a good unpainted contact point.

After writing down the reading from the meter's display, unplug the device from the wall, put your modified cheater plug in the socket, then plug the component into the cheater plug, but invert the previous plug orientation. Now take a second reading with your VOM. Your final orientation for the plug should be the orientation that yields the lowest AC voltage. Repeat this process on every component in your system. When you have them each presenting the lowest AC potential, reconnect all your interconnects, and get ready! You will now be treated to a new musical landscape, with noticeably less glare and haze, smoother texture, quieter backgrounds, enhanced micro-dynamics, heightened low-level resolution, wider, deeper, better layered soundstaging, and more localized and better focused images.

WARNING: Some units may have their warranty voided by bypassing the ground, so check your owner's manual. In some areas, the use of "cheater" plugs may violate electrical safety laws. If a component is plugged into the wall with a cheater plug, potentially lethal voltages may appear on the chassis. Proceed at your own risk. **Greg Weaver**

Have a tip you'd like to share? Email **rharley@nextscreen.com**