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Quality Kits For The DIYer

How to reduce power supply noise in your OLCircuits kit

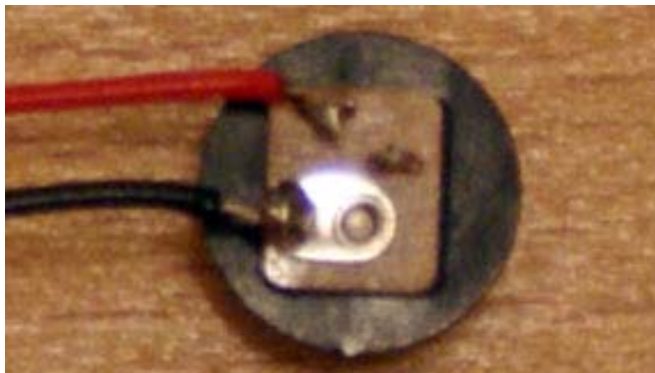
Electricity is delivered to your home in the form of *alternating current* (a.k.a. “AC”). Audio is also *alternating current*. Therefore, you can *hear* alternating current. I just fast-forwarded through a ton of stuff, but it is the fact... and it is a problem. So, we use *direct current* (a.k.a. “DC”). Even after your pedalboard supply or dedicated wall-transformer, which rectifies the AC into DC (and steps down the 110v/220v/etc. to 9v), there may be some *ripple* which translates into hum. You can hear this more in a high-gain pedal than in others.

So let’s filter this ripple down a bit...

This is the back of your DC jack.

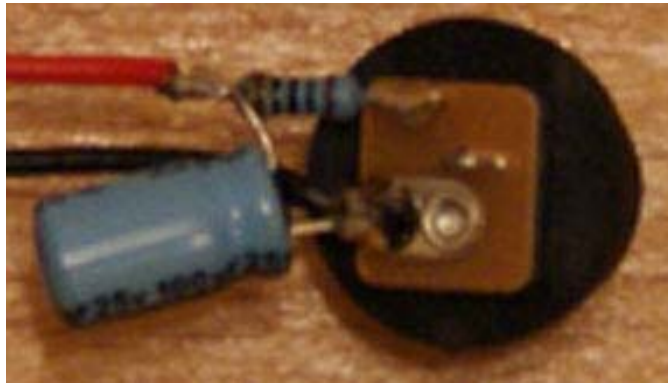


Here it is with the 9v+ (red) and ground (black) wires soldered to it. I’m using red and black, but the color of wire doesn’t matter. You may already have more wires attached - I’m only showing the basics.



The filter is simple. Make it neat and tidy to avoid contact with other components.

- 1) Solder a 100-ohm (up to 220-ohm, but don't go higher) resistor where the red wire was connected (I've cut all but 1/8" from the leads).
- 2) Solder the negative lead of a 100uF electrolytic capacitor to the ground point (leaving the ground wire undisturbed). I've cut all but 1/8" off the negative lead. Make sure your capacitor is rated at least somewhat higher than the voltage going into it (I use 25v capacitors for these 9v circuits, but 16v capacitors would be fine).
- 3) Solder the positive lead of the capacitor to the resistor as shown below.
- 4) Solder your 9v+ wire to the junction you've just created. If you haven't already done so, that is the wire you should solder to the "V+/"DC"/"9v" on your PCB.



Again, be neat and tidy with this. Don't allow the exposed leads to touch the enclosure or anything else.

You're done. That will silence or significantly reduce the hum from your pedal power supply.

But you may not need to do part (or any) of this. See the next page...☺

NOTE¹: While a capacitor is required to create an RC filter (it's the "C" in "RC" ☺), your PCB may already have a "smoothing" capacitor on it. Most OLCircuits PCBs already have this - *usually a 100uF (or a 47uF or 22uF in some cases) that is going between the ground trace and the 9V trace (often near the upper left or right corner)*. In this case, you only need a resistor (as shown below). If you're unsure if you have the smoothing capacitor already on the PCB, your pedal will tell you by humming louder with the resistor alone. In that case, add the capacitor.



NOTE²: OLCircuits is adding the entire RC Filter as a revision to PCBs. Currently, the [Dr. Watt](#), [Orange Peel](#) (the PCB that is screen-printed), and the [Professor Tweed](#) (screen-printed) PCBs have this RC filter on-board. If you have one of these PCBs, you don't need to add any part of this filter to your DC jack.