Convert an ATX Power Supply Into a Regular DC Power Supply!

by Sitnalta

A DC power supply can be hard to find and expensive. With features that are more or less hit or miss for what you need.

In this Instructable, I will show you how to convert a computer power supply into a regular DC power supply with 12, 5 and 3.3 volt outputs. For about $10!

Why use a computer (ATX) power supply? Well, they're available everywhere, and they can output tremendous amounts of power in a small form factor. They have overload protection built right in, and even a 500W model can be reasonably priced with high efficiency. The voltage rails are incredibly stable. Giving nice, clean DC current even at high loads.

Plus, it's likely that many of you simply have an extra one lying around doing nothing. Might as well get the most value for your investment.

Step 1: Getting Started

The first order of business is that of safety. While I'm reasonably sure that there isn't enough residual energy to stop your heart, those capacitors can still bite, and that can cause significant pain and maybe even burns. So be paranoid when getting close to the internal circuitry. It would probably be a good idea to put on some insulating gloves. Also (obviously) make sure the thing is unplugged. You are responsible for your own safety!

Here are the tools/parts needed:

Drill
Needle-nose pliers
Soldering iron
3 x "Banana Jack" Insulated Binding Post sets
1 x bag of "#6" Ring Tongue Terminals (16-14 gauge)
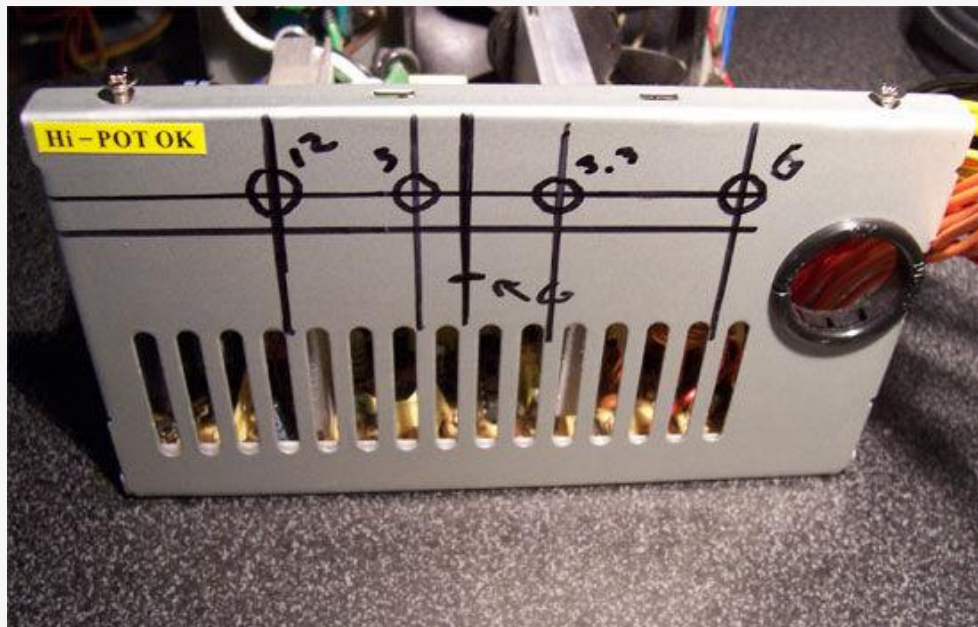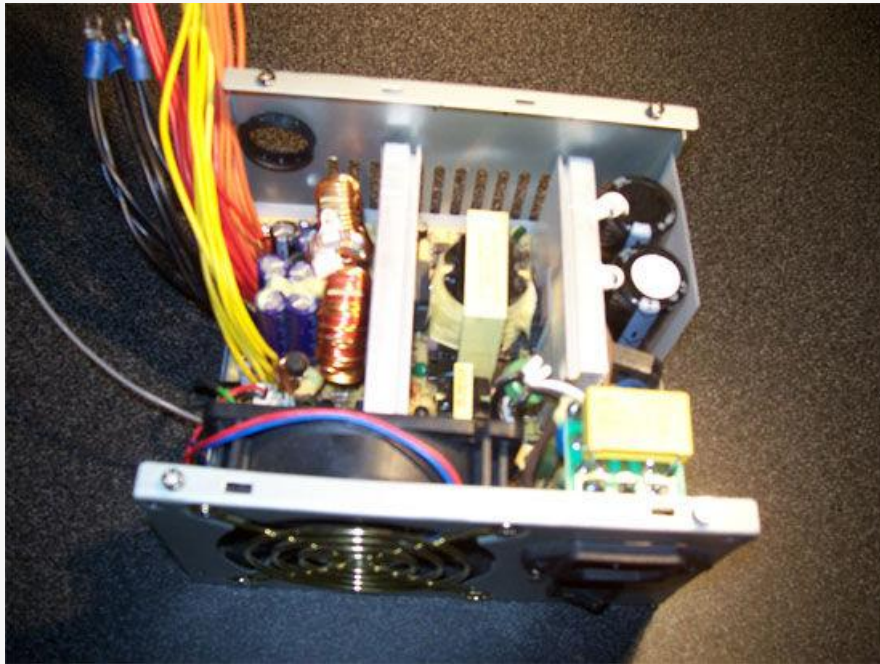Rubber feet
Small bit of heat shrink.
Screwdriver
Wire strippers

Ok, let's get to voiding some warranties!

Step 2: Opening Up

Open the PSU and make an assessment of the space you have to work with. Make sure that there won't be any clearance issues for the binding posts or wires.

Once you have decided how your PSU will be configured, mark with pencil where you want to drill the holes later on. This will help you in cutting the wires to the appropriate length.

Step 3: Wires, Wires Everywhere
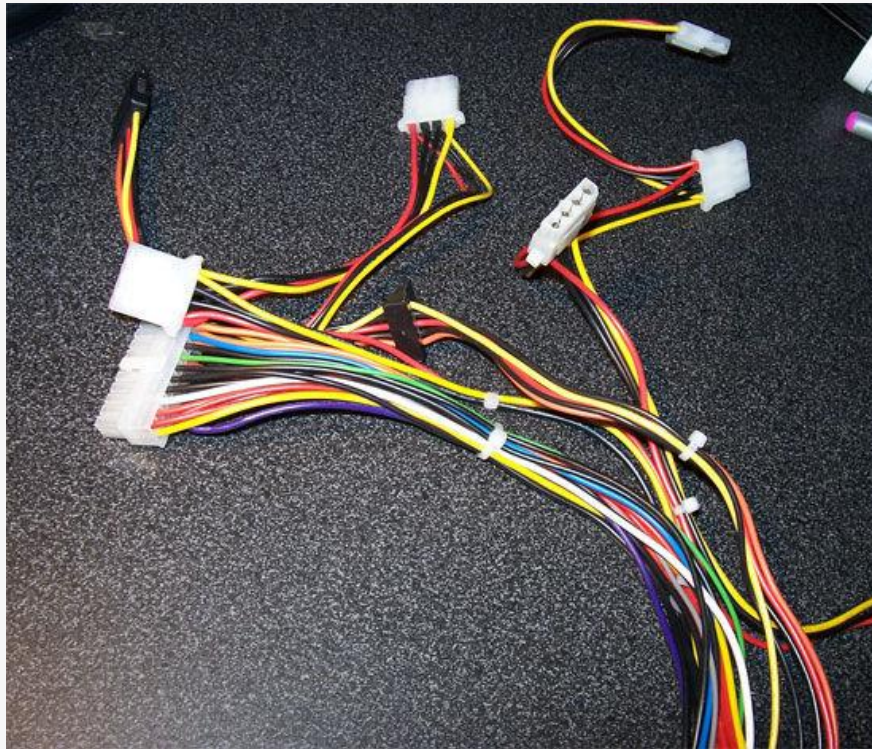
You will be met with the daunting task of sorting through a hundred wires of different colors. The only colors we care about are Black, Red, Orange, Yellow and Green. Any other colors are superfluous and you can cut them at the circuit board.

The green wire is what tells the power supply to turn on from stand-by mode, we want to just solder it to a ground (black) wire. Put some heat shrink on this so it won't short out on anything else. This will tell the PSU to be constantly on without a computer.Cut all of the other wires down to about a foot, and remove any zip-ties or cable organizers. You should have a forest of wires with no connectors.

The colors represent:

YELLOW = 12 Volts
RED = 5 Volts
ORANGE = 3.3 Volts
BLACK = Common Ground.

Now, theoretically, you could be done. Just hook the wires to 4 large alligator clips (one for each color set) or some other terminals. This might be handy if you're just going to be powering one thing, such as a ham radio, electric motor or lights.

Step 4: Grouping Wires

Group the 4 wire colors together and cut them to length to where you marked where the posts would go. Use the wire strippers to take off the insulation and stick about 3-4 wires into one tongue terminal. Then crimp them. The exact number of wires per voltage rail depends on the wattage of the PSU. Mine was a 400W and there are about 9 wires per rail. You need all these wires so that you can get all of the current rated for that rail.

Step 5: Holes
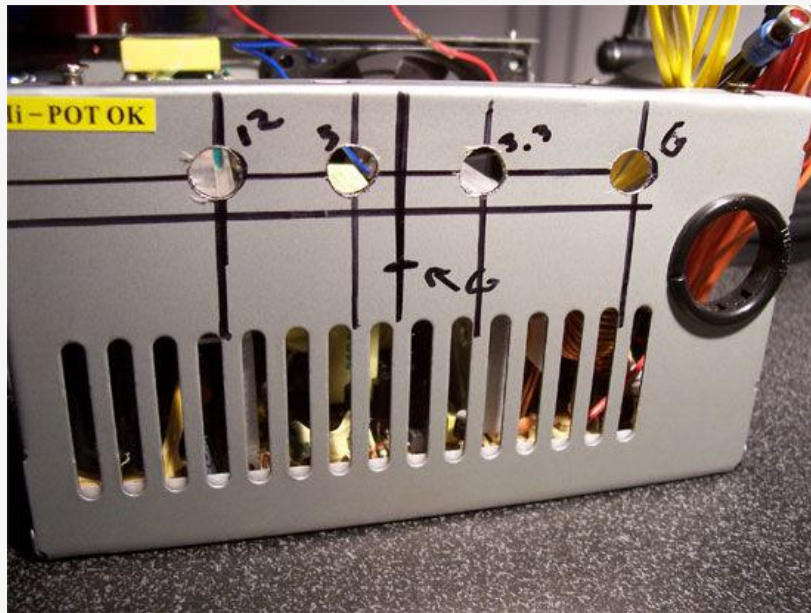
Now we come to the drilling. With most power supply units, you won't be able to completely remove the circuit board from the chassis. But you should be able to remove it partially and wrap it in plastic so that it doesn't get contaminated by metal shavings. Once you have the holes drilled, file away any rough spots and wipe down the chassis with a damp cloth.

This might be a good time to figure out something for that hole the old wiring harness used to go through. I used a washer and the head of a bolt to make a cap, and epoxied it in there. But this is purely cosmetic and unimportant.

Step 6: Putting It Together
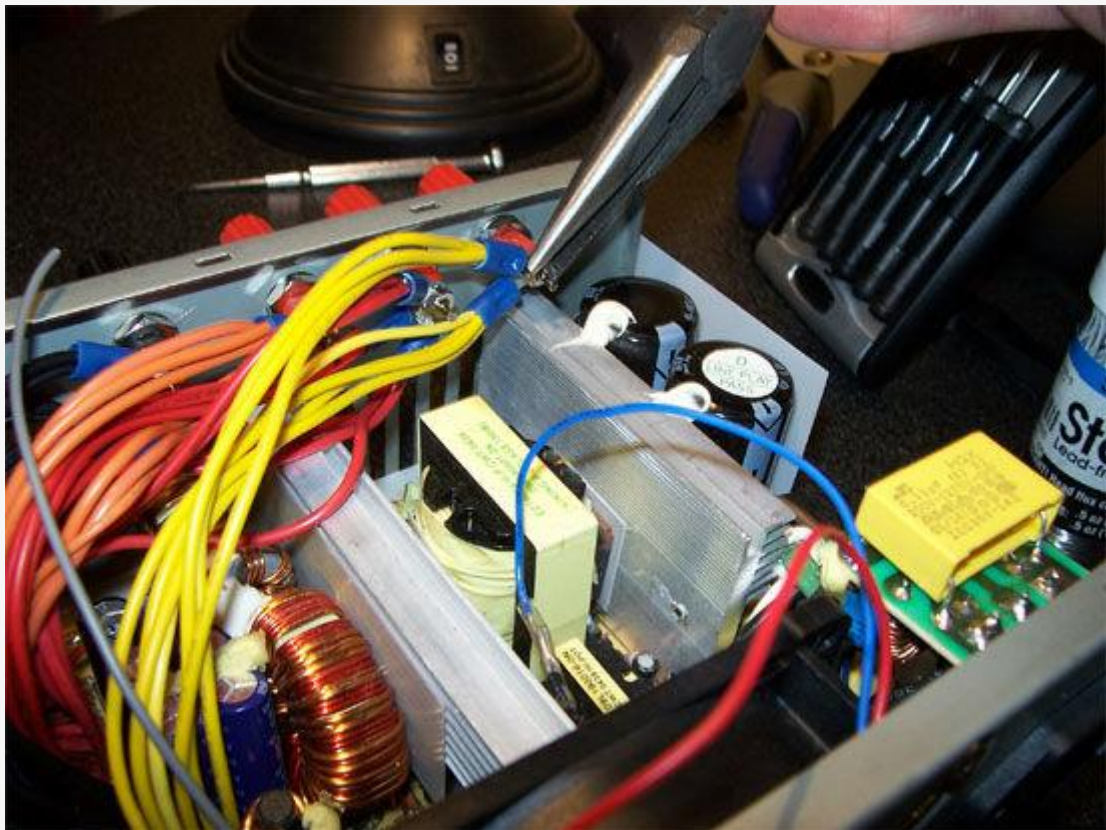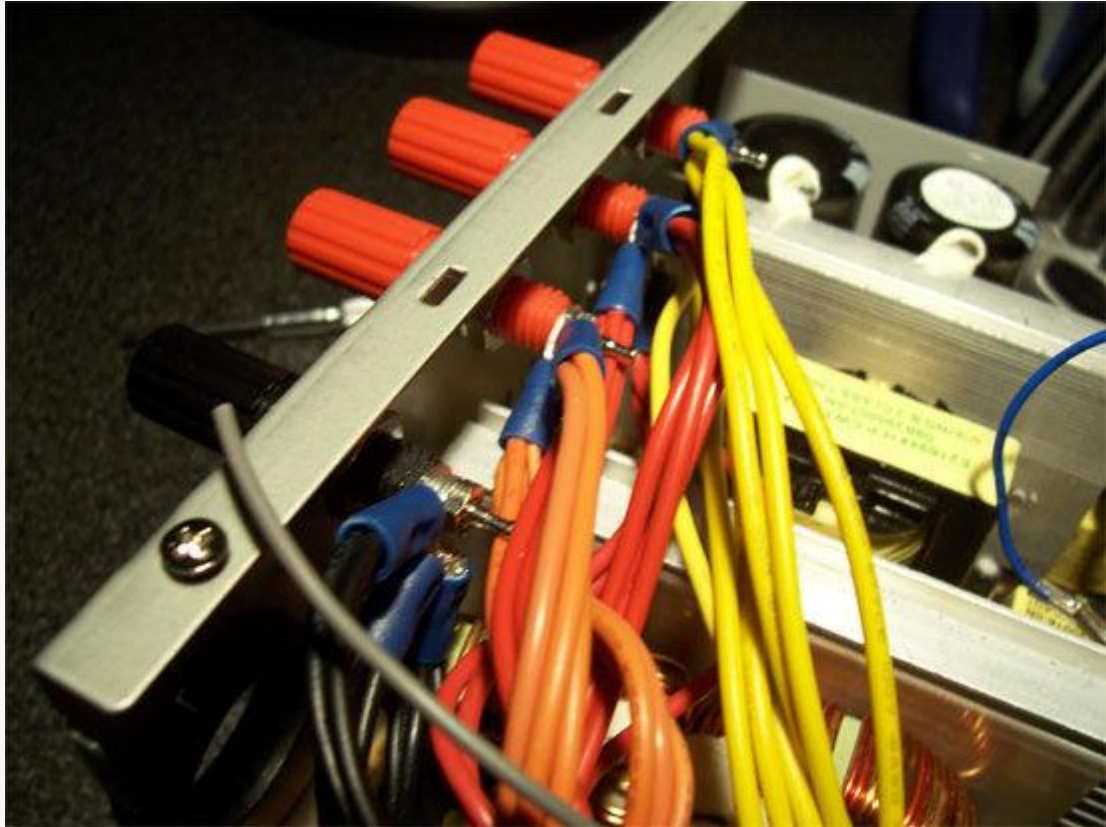
Now comes the fun bit. Install the binding posts while using a small screwdriver to make sure they're all orientated right when you're tightening them down.

Install the tongue terminals onto the back of the binding posts and tighten them down good and snug with the pliers. This might be tricky if you have a high-wattage PSU as you will have more wires. The most the posts shown in these pictures can take is 4 tongue terminals.

After that's done, close up the power supply.

I had some clearance issues with mine- the 90mm fan just wouldn't fit. I figured since it will not be acting as the exhaust fan for a computer anymore, it wouldn't be needed anyway. So I removed it.

Step 7: Make it Pretty
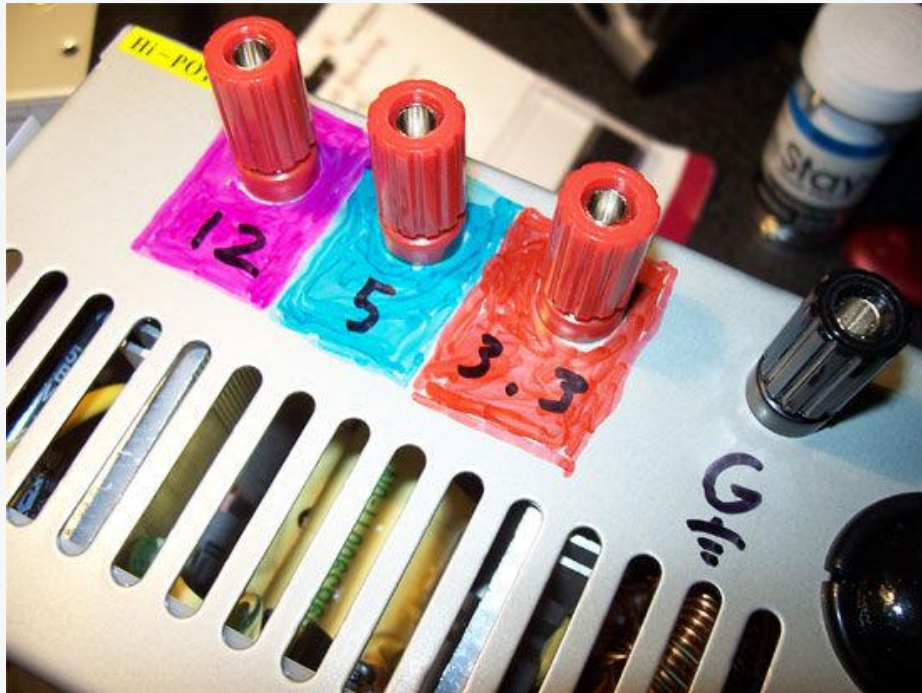
You need some way of clearly marking which post is which voltage. You could go super polished and make a color-coded decal in Illustrator and print it at your local print shop, but I'm lazy... and cheap. So I used some permanent markers. You could also take some plastic or vinyl paint and color each post. Whatever puts a bee in your bonnet.

Lastly, stick on the rubber feet on what you want to be the bottom.

Step 8: Conclusion

My 400 Watt power supply can deliver 23 Amps through the 12V rail, and 40 Amps through the 5V. That's very good for something that, aside from the initial cost of the PSU, cost about $10.

http://www.instructables.com/id/Convert-an-ATX-Power-Supply-Into-a-Regular-DC-Powe/