

DIYODE

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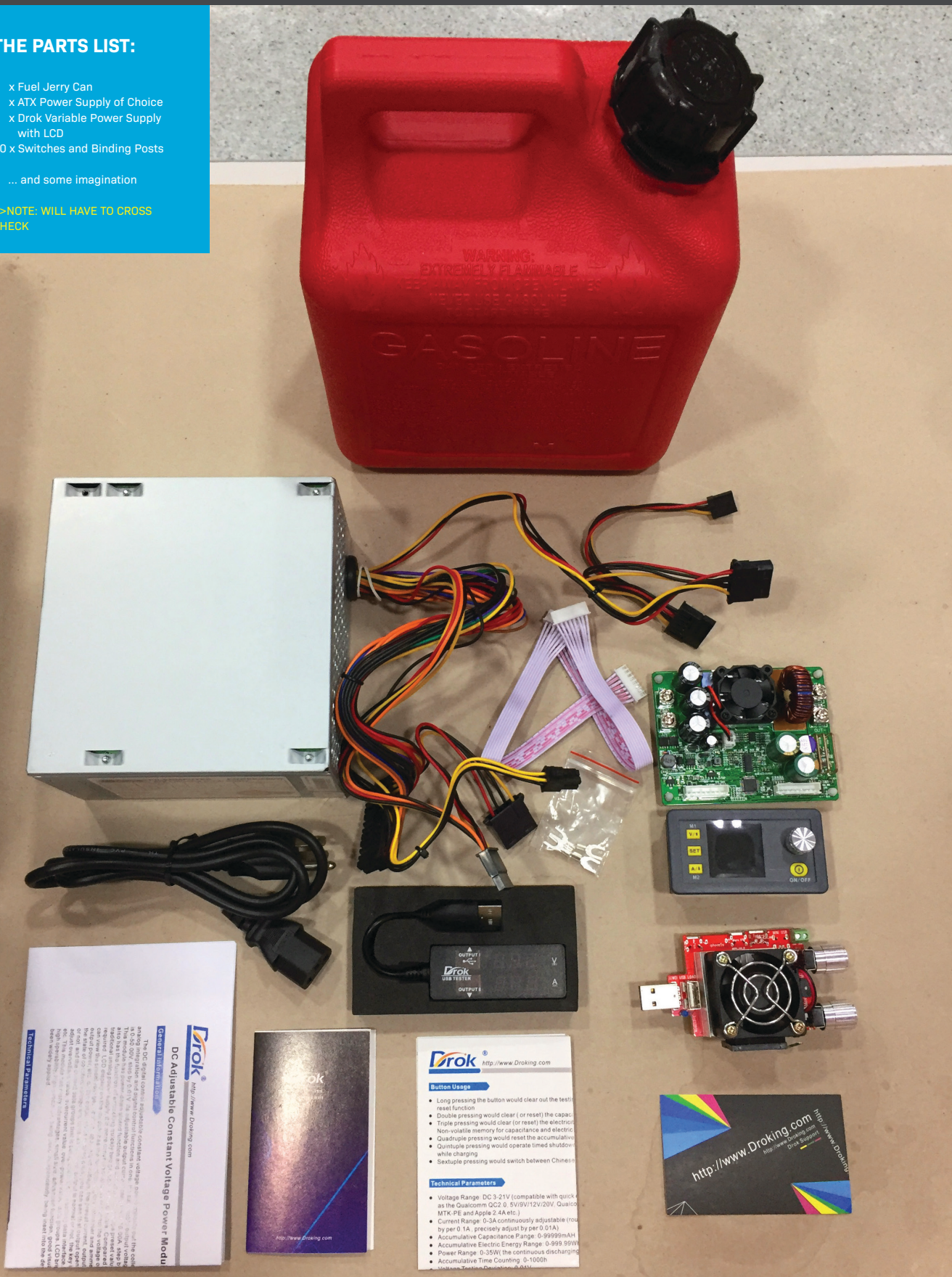
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THE PARTS LIST:

- 1 x Fuel Jerry Can
- 1 x ATX Power Supply of Choice
- 1 x Drok Variable Power Supply with LCD
- 10 x Switches and Binding Posts

... and some imagination

>>>NOTE: WILL HAVE TO CROSS CHECK



JERRY CAN POWER SUPPLY



ROGER McCOLLIN

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Adding fuel to the workbench toolkit! Don't stress... it's a metaphor...

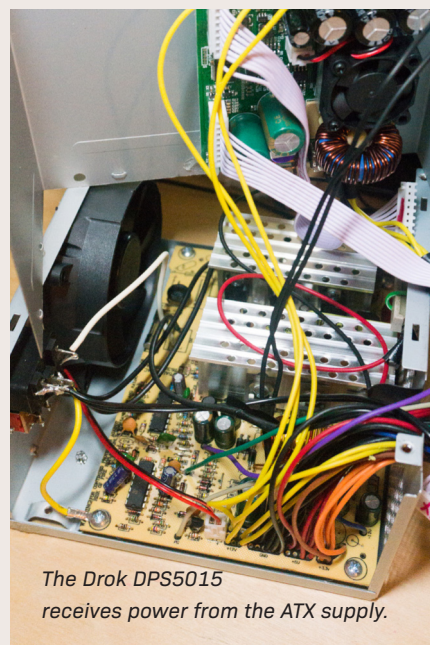
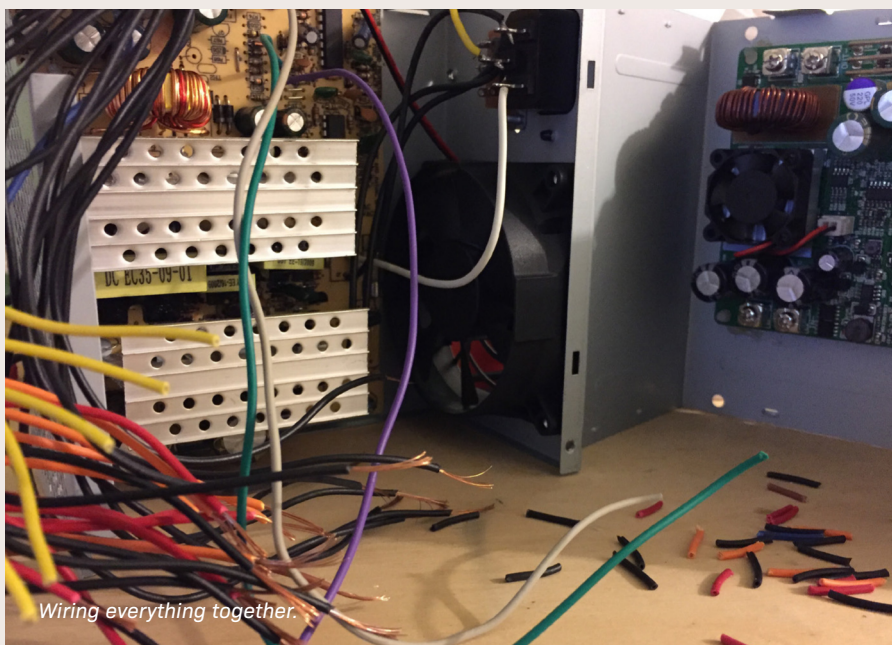
Roger needed a case for his bench power supply. He turned to something rather unconventional - a petrol jerry can! We were intrigued by the choice, but love the result! So much so, we caught up with Roger to find out more.

Clearly using an ATX supply is a great idea (we just published an idea like that too). But a fuel can case? Now that's unique! What made you choose a fuel can as a case? Aside from the obvious humour element!

I had purchased the parts for the build, but I was having difficulty finding a suitable enclosure of the right dimensions. I thought of designing an enclosure to be 3D printed, however I do not own a 3D printer, and with the cost of having it printed at shapeways.com (where I usually print) I might as well have purchase a bench top power supply rather than DIY! >>

◀ **LEFT**
The finished project.





» As an alternative, I thought a small toolbox or fishing tackle box would work, but at the hardware store there were none of the right dimension either. On the way out of the store I walked past a stack of these fuel cans and found that the size seemed perfect. Also, the plastic was sturdy, they had handles to help with transportation when my hands are full, and I knew it'd look cool on my desk!

So it was almost by chance! It definitely does look cool! You've removed the outer case from the ATX supply. Was this to provide ventilation to the other circuitry or for another reason?

That ATX power supply is still housed in its case. I opened it up to cut the hot line wire to add an on/off switch (the original PS did not have a built-in switch). I was also able to fit/mount the DPS5015 adjustable buck converter on the inside of the ATX metal case and screw it back together there would not have been enough space in the fuel can for the DPS5015 otherwise. To improve airflow, an extra 5V 0.25A fan is also installed at the original bottle opening.

RIGHT ▶
The Jerry Can displaying its new found glory.

Great to know - keeping the case intact is preferred for safety, obviously. The addition of a Drok DPS5015 step down is a great idea for a configurable output. Are you happy with the performance of it?

I decided to include the DPS5015 to have access to 9V. The DPS5015 documentation states that the input voltage must be 1.1 times higher than the output voltage. Therefore, I am not able to get

the full 12+V at the VAR(IABLE) binding post. When I set it to 9.00V the display reports 8.99V, but a multimeter reads 9.15V at the PROG (programmable) binding post. But I believe I can work with it just fine for now. More testing needs to be done though.

Sounds like it's still within tolerance and basic accuracy of many multimeters. So there could be a few things at play there - perhaps a voltage reference is the next addition? You have two power switches - one for ATX and one for Drok? Was there a reason to split them?

The ATX power supply I used does not have any way to switch off mains power, so I cut the hot line and included the switch. The other switch connects the green (power on) wire to ground.

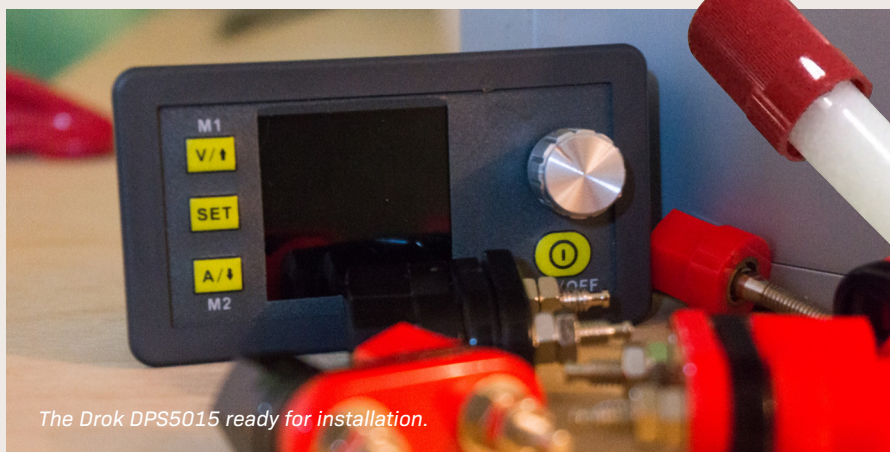
Oh, so you have ATX control and hard power control - awesome! Generally we see "low and wide" cases for bench supplies. How stable is the fuel can, fully loaded with your hardware?

The weight of the ATX provides a good bit of stability to the fuel can. I haven't experienced any tipping over due to the form factor.

Excellent. Of course it would work on its side too, but it would be frustrating if it was unstable. Are you happy with the final performance and aesthetics?

The performance is fine for what it is. It fills a need, where I would previously have to use batteries or a multitude of adapters while working on projects. I wish I had taken more care with some of the drilling and cutting of the fuel can though; at first, I was getting wide fluctuations at the 3.3V binding post. When I reopened the ATX





The Drok DPS5015 ready for installation.

I realised that I had left one of the orange wires loose in the metal case. But insulating the end of the wire with electrical tape solved the problem.

A loose wire! That'll do it... If you were starting this project from scratch again, with the knowledge you have now, would you change anything?

One major issue I had was cutting the ATX wires too short. This made it difficult to attach them to the binding posts inside the fuel can. In retrospect, when I build another one (which I intend to do) I will purchase ATX cable extensions and attach those to the binding posts. That will allow me to plug in or swap out the ATX PS quickly and easily. Also, the labels I made look terrible so I'll do a better job of those next time.

Great idea to be able to update the ATX power supply without any fuss. It sounds like this project has come to a successful conclusion, at least for the time being. What are you working on now?

I have been continuing my work on a robotic art project (please, forgive the awful music in the videos!).

At this stage of the project, I am seeking ways to power the robots by 18650 lithium-ion or LiFePo4 cells to allow the bots to roam without being tethered to a powerbank.

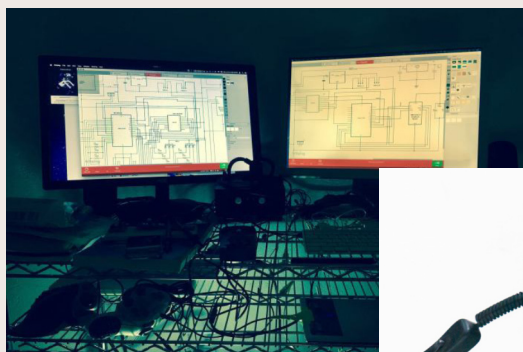
This means making the 3D printed parts larger to accommodate the 18650 cells. But it has been difficult finding charging boards with built-in UPS features. One of the recent articles in DIYODE has been of some help in this regard though!

Awesome - looks like an amazing project and we can't wait to see where it goes! Thanks for taking us through your project, Roger. ■

GOT SOMETHING TO SAY?

To discuss this feature, visit:

<https://diyode.io/00?xxxx>



◀ LEFT & BELOW ▼

Roger has also been working on 'AUDRIE'.

<https://3and50.com/portfolio/audrie/>

