

Tutorial: Custom Battery Power for the Power Functions System

By T.J. Avery

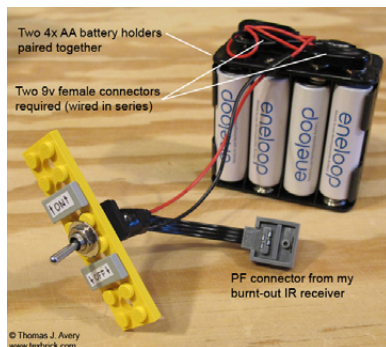
There has always been a trick to getting a custom battery box to work with PF (power functions) components. The issue is basically that there are 4 wires used in the PF cables, and depending on where you are in the circuit, the outer set or the inner set can be used (but not at the same time).

The system is mapped out in detail here: www.philohome.com/pf/diagram.gif. Many, many thanks to Philo for this diagram.

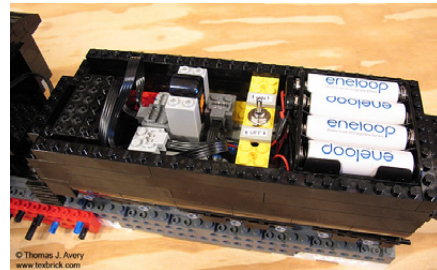
Implementing this information to make a custom PF battery box is what I've figured out recently. I wanted to make a custom (non-LEGO®) battery holder that would take 8x rechargeable AA batteries. That would give me a total of 9.6 volts (rechargeable AA batteries are typically 1.2 V per cell as compared to traditional alkaline batteries that are 1.5 V each) and essentially more and longer lasting power for my models (in comparison to using a standard LEGO battery holder that only takes 6x AA batteries).

Below is a schematic showing the set-up for a custom battery box.

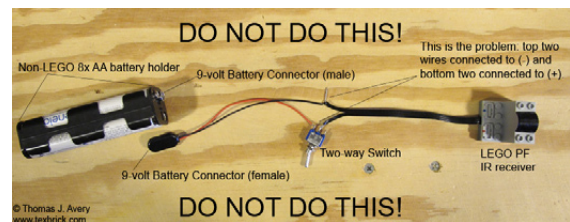
You can find off the shelf non-LEGO battery holders in a variety of sizes and capacities. For AA batteries, I've found holders that take 4 each and also 8. In my example below, I've used two 4x AA holders and wired them together in series.



This is for my UP 844 MOC. The 4xAA holders fit snugly into a space that is 8-studs wide.



When I first started to play around with this, I somehow misinterpreted the information and ended up wiring the batteries up like this:



DO NOT DO THIS! This will make smoke come out of the PF IR receiver box.

My PF receiver is now a pristine example of what a PF receiver should look like from the outside. Inside, it's toast.

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