

## Re: Power supply tutorial? (kinda long)

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  - *Date:* Sun, 16 Oct 2005 16:49:30 GMT
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"Mark Haase" <[mehaase@xxxxxxxxxx](mailto:mehaase@xxxxxxxxxx)> wrote in message  
[news:mehaase-1C2038.12063216102005@xx](mailto:news:mehaase-1C2038.12063216102005@xx)

> Hey all--

>

> I'm looking to build a power supply for a mobile robot. I want to build  
> a battery-based supply that can recharge the battery when plugged into  
> the wall while supplying power for the robot at the same time. The long  
> range goal is for the robot to find a base station when its batteries  
> are low and recharge itself, then continue doing whatever it was doing.

>

> Problem is, most of my electronics knowledge is in logic. I'm pretty  
> clueless about other areas, particularly power electronics. Are there  
> any good tutorials (online or book form) for learning about this stuff?

I don't think you mentioned what type of cells? You can't just connect some  
types of cells to a constant voltage source. It's much more complex –  
particularly if you want fast charging.

The best approach might be to buy a suitable charger and just concentrate on  
the other parts of the system.

If you are using lead acid cells then consider using a charger with a  
"float" setting. That will only charge the battery to about 95% full but on  
the float setting it won't matter if it stays on charge forever. (eg it's  
fail safe). This setup will supply power to the robot at the same time no  
problem. For info – Lead acid cells need a constant voltage charger with  
current limiting.

If you are using NiCAD or NiMH cells then you could look for an automatic  
charger with an LED that indicates "charge complete". Use an opto sensor to  
detect the status of the LED. The main problem is you want to draw power  
from the battery at the same time. That's quite tricky as any current surges  
might fool the charger into thinking that the cells were full. For info –  
NiCAD and NiMH cells need a constant \_current\_ charger – usually with a  
"peak voltage detector" (NiCAD) or a "negative delta V" detector (NiMH) to  
detect when the cells are full – plus a thermal and/or timer safety cut off  
to prevent overcharging.

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- Prev by Date: [\*Re: looking for universal programmer schematic\*](#)
  - Next by Date: [\*Re: looking for universal programmer schematic\*](#)
  - Previous by thread: [\*looking for universal programmer schematic\*](#)
  - Next by thread: [\*Re: Power supply tutorial? \(kinda long\)\*](#)
  - Index(es):
    - ◆ [\*Date\*](#)
    - ◆ [\*Thread\*](#)