

Re: Another Novice Q. – recharging – Volts and Amps

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- *From:* Kris Krieger <me@xxxxxxxxxx>
 - *Date:* Wed, 25 Jun 2008 12:11:48 –0500
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Peter Bennett <peterbb@xxxxxxxxxxxxxxxxxxxx> wrote in
news:kea3641d48c8bkakmddm6t3s8ghlljgg4n@xxxxxxxxxxxxxxxxxxxx:

On Mon, 23 Jun 2008 22:46:24 –0500, Kris Krieger <me@xxxxxxxxxx> wrote:

"Tom Biasi" <tombiasi***@optonline.net> wrote in
news:SN6dnboY57y6pf3VnZ2dnUVZ_gCdnZ2d@xxxxxxxxxxxxxxxx:

May I suggest deep cycle sealed lead acid.

Tom

My main question is, are they easily replaceable? They do seem to be easier to deal with, but these units are going into things that I'll (hopefully!) be selling, so I need to make it all as easy as possible, and I know that people can buy the NiMH batteries pretty easily. That's the only reason I've sort-of "fixated" on them. THAT, and it's easy to get the mA ratings that will drive the LEDs I want to use (found one that uses 20 mA, and 3.4V average, but gives out an amazing (to me) average of 18,000micro–candela, which is 226 lumens, which is a bit more than is given off by a 20–watt incandescent bulb (220 lumens). With the LED driver (I think it was you who'd recommended those), that should work out well and I could, I think, use two such LEDs, which should be about the lumens produced by a 40 watt incandescent bulb – which would be super!

Anyway, I haven't seen any drivers that I can recall reference running off of anything other than NiCad, NiMH, or Lithium–Ion batteries, so my impression was that those are the only two that have both enough voltage, and generate enough current, to run the drivers. I've also used store–bought solar lights, which had either NiCad or NiMH

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(depending upon the type), so I know those will work when left outdoors.

So, it might very well be that rechargeable lead–acid batteries can perform similarly, it's just that I don't know anything about them...

– Kris

Lead–acid batteries are normally large and heavy. Your car battery is lead–acid, for example (although there are smaller sizes, and some variations that don't have a liquid electrolyte, available). If you are considering AA, C or D cells for your project, lead–acid batteries are almost certainly not a consideration. I'm not aware of any lead–acid batteries in a "dry cell" format.

AA only.

The background, in brief:

These will be fairly small–scale units that I can put inside of stained–glass things ("lanterns", so to speak) that I design and hand–craft, my intent being to sell them. So the batteries will be just the normal NiMH things that pop into regular ol' solar garden/accent lights. Since the batteries will eventually need to be replaced, I'd like them to be things that people can find very easily and that don't cost an arm and a leg. Someone (Tom B.?) had recommended an LED driver, and I've been looking around at others as well (mainly to read the application notes and datasheets and whatnot so as to gain a better understanding), and Maxim posted a nifty diagram for a combination current and voltage amplifier plus an LED driver (in case it'd be helpful to anyone else, the URL is: http://www.maxim-ic.com/appnotes.cfm/appnote_number/3871) and I *think* that, for the input, I can use the output from a combination battery+solar–cell charging+battery management circuit.

I know that I can build a super–simple unit that will drive one normal–brightness LED; I found a few different schematics for simple low–brightness units, and the simplest are little more than a solar cell, diode, battery, resistor, and LED, with no sort of overcharge protection or any other accommodation for any special needs that one or another sort of battery might have. They're robust, but they won't work for me because these things will be lighting stained glass, and even clear textured glass doesn't transmit as much light as does a smooth clear enclosure (I think the commercial ones are acrylic). Also, the potential customers and sales venues I've polled all have the same complaint: commercial solar lights are too dim. Ultra–cheap is not part of my equation here – I am most

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definitely not going seeking to try to compete with the "\$5-\$9 light" market; Wal-Mart has that very well-covered. Rather, the units, being handcrafted stained glass, will each be a minimum of around \$60, and prob. a lot more than that, depending upon the time and skill it takes to construct a particular design. I do want to squeeze as many Lumens as possible out of a *maximum* of 4 NiMH batteries, to be charged during the daytime by solar cells, plus I want to charge the batteries in about 5-6 hours in good sunlight – and that last part is why I'm looking into overcharge protection, since it's likely that some lights will receive 8 (or even more) hours of good sunlight.

So that is why I'd asked about whether there is any significance to the relationship between the solar cell(s) V/mA rating, and the battery V/mA rating – I don't want to "cook" the batteries.

TIA!

– Kris