

Re: Battery level tester.

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2004-09/6743.html>

From: Colin Dawson (nospam_at_cjdawson.com)

Date: 09/26/04

Date: Sun, 26 Sep 2004 16:18:08 +0000 (UTC)

"John Fields" <jjfields@austininstruments.com> wrote in message
news:ch9dl0950jntid20e0udompkfggakf3g3i@4ax.com...

> On Sun, 26 Sep 2004 09:22:59 +0000 (UTC), "Colin Dawson"

> <nospam@cjdawson.com> wrote:

>

>>I think everyone here has managed to completely miss the point of what I'm
>>asking.

>

> ---

> I don't think so. What's happened is that you have fixed in your mind

> what you want to hear and you don't understand what you've being told

> so you've concluded that since it doesn't sound like what you want to

> hear it must be bogus.

> ---

Maybe your right. I have locked my mind on a possible solution and refuse to accept "No" for an answer. I'm a computer programmer by trade and find that other developers (and me sometimes) say that something cannot be done, only to find that with a little more thought and creativity, that there is a way (all-be-it complicated) to accomplish whatever is was.

I do see electronics as being any different to a computer program, after all they're not that unrelated. A program is, to put it simplistically is basically a sequence of flipping switches. (ok ok, that's probably too simple)

>

>>There is enough voltage in my setup to power everything that I want to
>>power. The cables are thick enough to power everything that I want to
>>power, and then some. (I can easily double the number of devices without
>>ricking overrating the stuff that I've used. I've done it)

>

> ---

> If you increase the number of devices demanding current from the

> battery it won't "overrate" the rest of the stuff, all it'll do is

> reduce the amount of time until the battery voltage drops to some

> arbitrary point.

> ---

oops, sorry. I should have been talking Amperage, the leads that run from the battery can carry about 40Amps (Not sure the exact thickness, but it's the stuff that's used in model power boats to connect from the battery to speed controller. I think it's about 4 or 5 mm thick)

>

>>At the moment my "Battery Monitor" is actually a "VoltMeter". I don't
>>want
>>a VoltMeter connected to the battery, as it doesn't tell me when it's time
>>to start thinking about recharging the battery.

>

> ---

> Yes, it will. There is a voltage below which current shouldn't be
> taken from the battery, and once the battery voltage decays to that
> point it should either be disconnected or recharged.

> ---

OK, I need to get more literal about this. At the moment, the circuit that I'm using measures a voltage range between 11v and 14v. I know from previous experiments that I want to recharge my battery when the voltage drops to about 11v with no load (other than the monitor circuit). Also I know that as I increase the load the voltage that the monitor reads is forced lower by .x of a volt depending on the load. The higher the load, the higher that this .x is. At the moment my circuit, when under high load, shows the 11V reading pretty quickly when the battery is under a high load. When I shut off the load, the voltage returns to a higher value and gives it's true reading, which match the chemical thingy in the battery (which I can't see in normal use as it's not illuminated, and shut in the boot of a car)

>

>>What I want is a "Battery Level Meter". Just because I start pulling 10A
>>from my battery doesn't mean that it's capacity suddenly drops, as a
>>VoltMeter shows.

>

> ---

> Yes, it does. If you look at the discharge curves for *any* battery
> you'll find that as the rate of discharge increases (as more current
> is drawn from it) the smaller its capacity becomes. The capacity of
> most batteries (C) is rated in Ampere Hours, but full capacity can
> only be achieved if some fraction of the one hour rate of current is
> drawn, ususally C/10 or C/20 for lead-acid batteries. That means that
> if you have a fully charged 100AH battery rated for C/10 and you draw
> 10 amperes from it, its voltage will decay to the cutoff point (say
> 10V for a 12V lead-acid battery) in 10 hours. However, if you take
> 100A from it its voltage will decay to 10V in substantially less than
> 1 hour. Also, since the battery's internal impedance will cause its
> voltage to fall more and more as more and more current is drawn from
> it, that will futher shorten the time until it reaches cutoff.

> ---
>

Let me put this another way. Say I've been using my battery for a while. I will consider it completely flat when it reaches 10v either under load or not. At the moment, my battery is reading 11.3v and is under load. My circuit, is showing 11.3v. When I turn off the load, the battery voltage immediately jumps up to 11.7v. When I turn on the load it slowly returns to 11.3v. One of the devices that I'm using is a laptop. When the hard drive is working, the current rapidly changes as the drive heads move across the disk and data is read/written. This turns the LEDs on the circuit into quite a good light show, which is really annoying and I want to stop it doing that.

>
>>*I don't care what the Voltage of the battery is.*
>
> ---
> *Well, you should, and that's precisely why I said that you want to*
> *hear what you want to hear, not what's at variance with what you*
> *believe.*
> ---

hmm, I shouldn't have said that. It's why I built the circuit in the first place. What I want is a steady reading, not one that makes the LED's look like a reject from a bad SCI FI Film.

<snipped>
>>*(at this point Colin has thrown his teddy out of the cot)*

>>
>>*Get the point now?*
>
> ---
> *That you're frustrated because of your ignorance _and_ spoiled _and_*
> *petulant? It's starting to sink in...*

I asked for that.

> ---
>
>>*Won't anyone give me a straight answer on how the hell to build an Ammeter*
>>*circuit, so that I can get the "BATTERY LEVEL MONITOR" to give a correct*
>>*reading?*
>
> ---
> *Yowzah boss!!!*
>
>
> +-----+
> /|

> A--+ [FUSE]
> //
> [AMMETER] +-----+
> ///
> +-----+ [DRIVE] [VOLTMETER]
> ////
> [BATTERY] [VOLTMETER] +-----+
> ///
> B--+-----+ /
> \/
> +-----+
>
> *Everything else connects (just like the drive with its own set of
> wires and its own fuse) to points A and B. That is, directly to the
> ammeter and the battery.*
>
> *But... That's still only going to give you voltage readings and
> current readings, so you'll still have to disconnect loads depending
> on battery voltage.*
>
> *Or maybe you want something to let you know how much charge is still
> in the battery or how much time you've got left until it goes flat? A
> battery "gas gauge" kind of thingy?*

Yes, that's exactly what I'm trying to achieve.

>
> *Well, boss, if that's what yuh wants, just ax fo' it an' ahm sho' some
> of us ol' niggers'll jump at the chance to serve yuh.*
>
> --
> *John Fields*

Colin Dawson
www.cjdawson.com