

Re: how to get this PWM DC motor control to handle more power

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- *From:* Tim Wescott <tim@xxxxxxxxxxxxxxxxxxxx>
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Robert Monsen wrote:

On Tue, 28 Oct 2008 10:58:38 -0500, "causalitist"
<nate53143@xxxxxxxxxxxxx> wrote:

this is the circuit in question, page 3 is the part I'm asking about, not
the PWM circuit on page 1,2:
<http://kitsrus.com/pdf/k166.pdf>

The IRF4905 and IRFZ44 limit current to 74A and 49A respectively.

The LM324 Quad op-Amp limits Voltage to 32V

What is an op-amp that will work here, but be able to handle 100v or maybe
55v min?

As far as current and total wattage , I'm looking for min 100A , ideally
500A

As far as Wattage/practical heat dissipation, obviously ideal Wattage
would be (500A*100V) , I would think many many mosfets working together
would be the only practical solution to heat dissipation/wattage.

I'm a 1rst year EE major, we haven't covered this stuff at all, I made the
original circuit, but want it to handle more power.

I've wanted to make this circuit since I was 13 years old, I've been
saving this huge brushed DC motor since I was 13

Thank you so much!

The only practical way to do this would be using a microprocessor to
monitor current and voltage levels, generate the pwm outputs, and to
set the precise duty cycles required for the load. 500A out of a bank
of lithium ion batteries will cause your mosfets to smoke is a

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millisecond if not controlled very precisely. In addition, you need to worry about the inductive effects of the motor, which will can cause huge spikes which will violate the voltage restrictions on the mosfets when the current is changed. You'll also need big heatsinks.

I'd start small, maybe 20A, and see where that takes you. You'll learn as you blow things up.

You can get really cheap parts to smoke at the various online surplus electronics outlets, like goldmine–elec.com. Pick up a bunch of P and N hv mosfets, and a bunch of shottky diodes (which you'll use to protect the mosfets). For \$50, you can get way more parts than you'll need during the learning process. Once you figure out the gotchas, you can buy real parts at digikey or mouser.

How big is the motor? Are you building a car?

Regards,
Bob Monsen

Everything Bob says, except the microprocessor is optional. A good analog controller will do just fine.

Of course, it may be easier to do with a micro, but it's not necessary.

Tim Wescott
Wescott Design Services
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