

# Re: PID question

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- *From:* John Popelish <jpopelish@xxxxxxxx>
  - *Date:* Thu, 23 Nov 2006 01:09:02 -0500
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hondgm@xxxxxxxx wrote:

John Popelish wrote:

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Well, not really. I was going to have only one DAC that provides the ref voltage for the regulator, then use that, along with the current sense value, to limit current. Remember the PID is being done in a micro, and the only analog I/O is one DAC out and one A/D measuring load current.

I lost some of those details.

So the DAC provides the analog signal representing the output of low selector, (the setpoint for the analog PID current controller), and the ADC provides the load voltage measurement into the software PID voltage controller. You will still need an analog current measurement to provide feedback for the analog PID current controller.

The only question left in my mind is whether or not the micro has the bandwidth to perform the PID voltage controller and low selector with adequate response.

Actually, I have an ADC that reads the load current. I also have one that reads load voltage, which is a little redundant.

## Re: PID question

The one that reads current cannot be involved in the analog current regulation, without slowing it down, though it is fine to use it for monitoring the average current for other purposes. You will have to use the analog signal it digitizes as the feedback for the analog PID current regulator.

The micro is 16 bit, with a 100ksps A/D and a some DSP type functionality. It seems to handle it ok; it's just that some loads causes the voltage output to jump all over the place. For example, pure resistive loads are fine. If I put a small motor on as a load with some current limiting, it has problems. The voltage output jumps all over.

Every regulator has an upper frequency limit. You have to decide what is fast enough. If you add capacitance across the output, it can help stabilize the voltage for frequencies higher than the regulator can keep up with, but then you lose the high frequency response with the current limit. This is a trade off.