Re: pic micro programming

Source: http://sci.tech−archive.net/Archive/sci.electronics.repair/2007−03/msg01199.html

- *From*: "eddie" <eddition99@xxxxxxxxxxx>
- *Date*: 24 Mar 2007 01:29:20 −0700

On Mar 18, 7:38 am, "petrus bitbyter"
<pieterkraltlaatdit...@xxxxxxxxxxxxxxxxx> wrote:

> "eddie" <edditio...@xxxxxxxxxxx> schreef in
> berichtnews:1174208077.030570.153350@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

> On Mar 16, 2:24 pm, "petrus bitbyter"
> <pieterkraltlaatdit...@xxxxxxxxxxxxxxxxx> wrote:
>
> > "eddie" <edditio...@xxxxxxxxxxx> schreef in
> > berichtnews:1174070874.183667.291320@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>
> > I am trying to program a pic micro 16f877 to
> > desplay the rpm of a
> > motor on a lcd. I as using a sensor which
> > gives me 4 puls per
> > revolution of the motor shaft. I am trying to
> > use the capture and
> > compare property if the pic . can anyone
> > help me . Anyothe method to
> > do the same procedure is appreciated.
> > thank yo
>
> Any idea what the pulses you get, will look like? Any idea
> about minimum
> and
> maximum speed expected? Have the PIC16F877 datasheet
> already? Read it?
> (It's
> only about 200 pages and you will not need all of them.) I

> may be wrong
> but
> from your post I got the idea that someone told you to start
> this project
> but that you have hardly an idea how and where to start. You
> even seem to
> have no feeling about what you really want to measure. Who
> told you to
> use a
> PIC16F877? Nice chip but quite a gun to kill a fly. Advise
> you'd better
> think over the basic idea of rpm and ways to measure it.
> Then look for
> how
> to use a micro to do so.
>
> petrus bitbyter

> As you should know i can only put 5v into the pic and the puls am
> getting goes from 0 to 5 volts. its square waveform.Its part of a
> ptoject yes...and i choses this 40pin device because i have other
> things which i have to impliment on the project.Its a small 12v Dc
> motor which am trying to find the Rpm . minimum rpm i want to desplay
> on my Lcd is 400 and maximum is 1500. I have got the data sheet and
> some other aplication notes from the microchip website and have been
> reading it thats why i mentioned about the capture and compare
> function of the pic. All the other part of the porject i can
> handle ..i need just a little help on makin the pic calculating the
> RPM. I dont have much knowlwdge on assembler language so am using C.I
> am using Mplab with Hitech compiler.
> anyhelp is appreciated

So this clears a lot for me. As "rpm" has the property "events/time" you have two approaches to measure it. The first is: count events for a fixed time, the second is: measure time between two events. With your sensor that provides four pulses/revolution you will have a range of 1600−6000 pulses/minute.

With the first approach approach mentioned you have to count pulses for a minute, divide the result by four and display it. You can also count for a quarter of a minute and display the result without dividing. You can count for shorter times as well at the cost of accuracy. In this approach you will need a counter and a timer. Both are available in the chip you want to use. Set up the counter to count external pulses and the timer for the time you want to count. Reset the counter and start the timer. When the timer times out you can stop the counter and read out its content.

> For the second approach we need to look at the time between two pulses. So 1600−6000 pulses/minute is 27−100 pulses/s which results in 37.5−10ms/pulse. A PIC running at 20MHz can measure time in units of 0.2us (which is the internal clock divided by four). So you set up a counter to count those units. Which will have values between 187500 and 50000. That first value does not fit in a 16−bit counter. So we use the prescaler to divide the internal clock by 4 once more, to count units of 0.8us. (You achive the same by running the PIC at 5MHz but at the cost of processing power). Having that counter value you can calculate the rpm, which will not be too difficult using the Hitech compiler.
>
> Whatever you choose, you will need the PICs datasheet badly. Setting up timers, counters and the prescaler requires several bits set (or cleared) in the special function registers. Once you're going to do more things with the PIC, you will need some kind of interrupt scheme. But you have the right tools at your hands. You may need some time to learn the best way using them.
>
> As an aside: Use "I" instead of "i" when you mean yourself. It's the way its defined in English.
>
> petrus bitbyter− Hide quoted text −
>
> − Show quoted text −

thankxx.....i will definatly look in to that

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