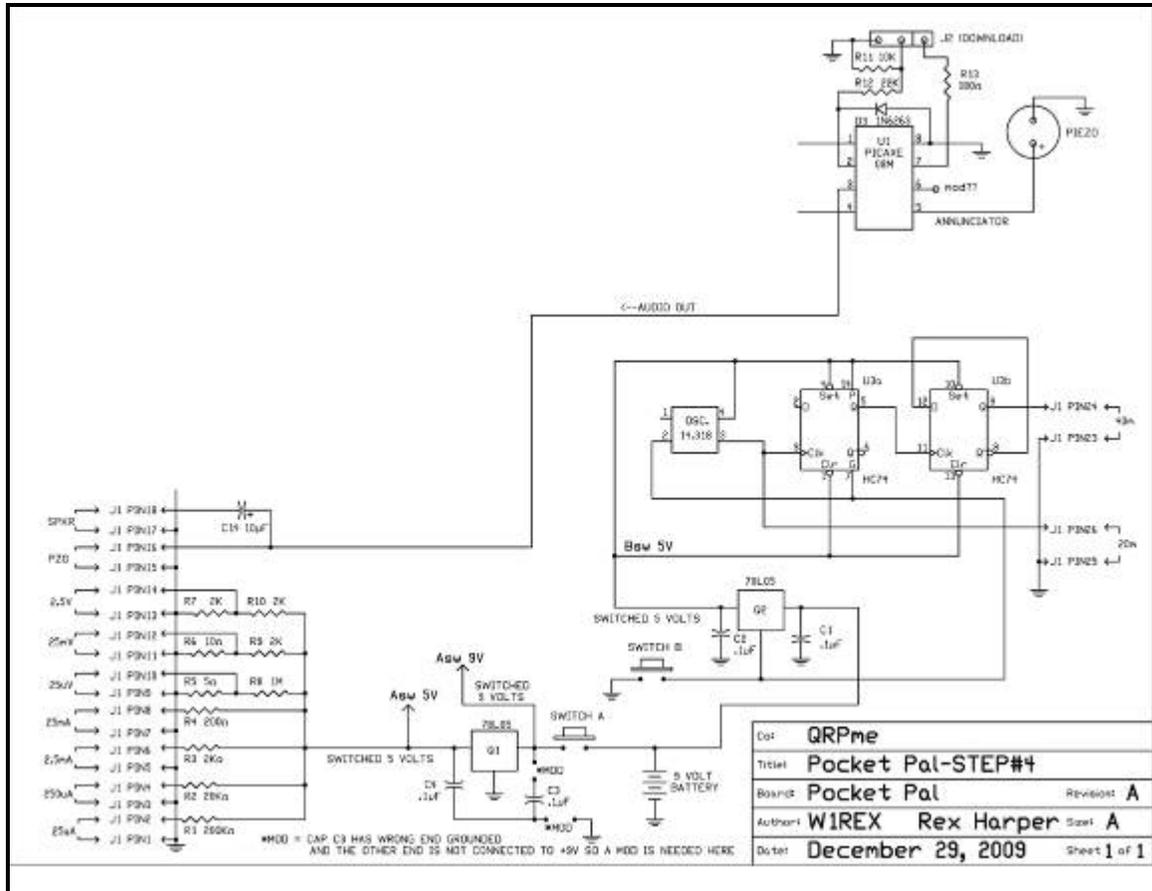


Pocket PAL STEP#4



OK. Now its time for some microprocessor fun! The Picaxe micro in the Pocket PAL is used as an audio signal generator and as a frequency counter. For this step, we will only be concerned with the audio generator.

ASSEMBLY

The parts required to assemble the microprocessor circuitry are:

C14 is 10uf

R11 = 10K R12 = 22K R13 = 180

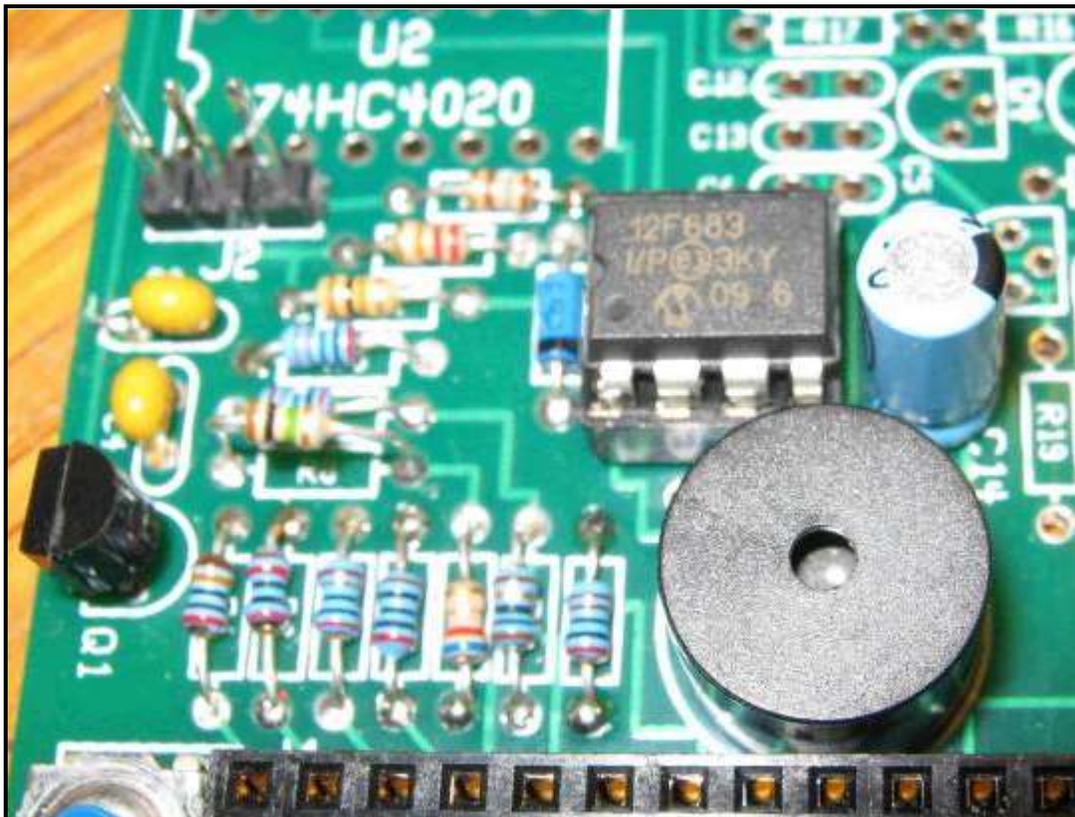
D3 is a 1N6263 diode (blue)

U1 is a Picaxe 08M micro installed IN an 8 pin DIP socket

J2 is a 3 pin male Molex header which also includes a corresponding Molex female shell and 3 terminal pins

Piezo speaker

The only thing problematic about this section of circuitry is installing the small Molex header connector and building the Picaxe downloading cable. If you build the downloading cable first, then you can use the Molex end as a 'handle' for the male Molex connector while soldering it into the board. This will save you from accidentally burning your fingertips. (I keep a small female Molex connector made up as a handle for holding the headers while soldering as I use them all the time.) Solder in all the other stuff and then tackle the cable.



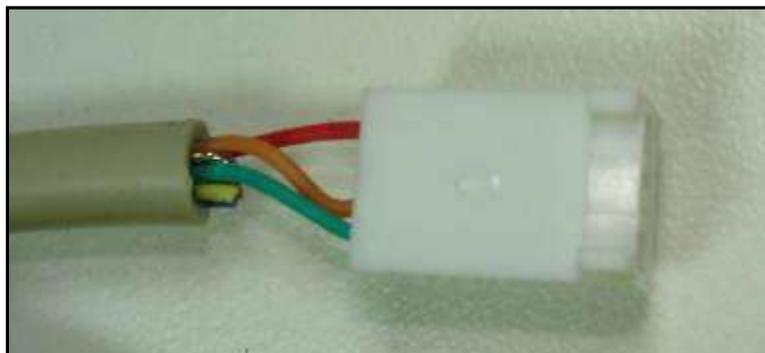
The downloading cable can be made using an 'old' DB9F computer serial cable like the one pictured below. The DB9F connector plugs into the PC while the other end is modified for the Picaxe



The remote end of the serial cable is cut off and 3 Molex terminal pins are soldered on the Txd, Rxd and Ground (2, 3 and 5 on the PC end) pins. Complete circuit details for both Serial and USB downloading cables can be found at the Picaxe site:

< http://www.rev-ed.co.uk/docs/picaxe_manual3.pdf >

Use the link to the manual and go to Page 42 for circuit and cable info on the enhanced serial interface... Many computer Serial cables have the same color code as shown in the photo below. Orange, Red and Green were used for Rxd, Txd and ground respectively. Solder the terminal pins to the wires being careful to not use too much solder as that might clog up the spring action of the terminal. If the terminals were supplied as a strip, you need to trim them off close to the actual terminal workings to fit inside the housing. Too much 'flash' metal sticking off the side of the terminal will prevent it from being inserted into the housing.



Completed Molex serial download connector

OPERATION

The intended operation of the Picaxe microprocessor is two-fold: to produce some sort of audio signal to check out peizo speakers, headphones and permanent magnet speakers. When pushbutton A is pressed, the Picaxe micro powers up and should go into a routine that generates the desired audio signal. This audio signal is available at two sets of test connector pins: pins J15-16 for testing piezo speakers and headphones and pins J17-18 for small permanent magnet speakers.

What you need to do now is to go to the Picaxe website and download the free Programming Editor and check out the manuals under to Help tab on the command bar. I was hoping that we could have a group discussion on the design of the audio signal program and what kind of audio signal is desired as the kit was intended to be a learning experience about the Picaxe microprocessor. Here is a 'starter' program that would generate a two tone signal.

```
START:    Sound 4,(50,10,0,10,125,10,0,10)
          Goto START
```

Go to the manuals section of the Picaxe Programming Editor and check out the sound command. The Sound command is the principle command in the Picaxe to generate sound signals... Noodle around with the Programming Editor, serial download cable, Pocket PAL and program to become familiar with the whole Picaxe experience.

More later!