

## **MProTimer (Two modes)**

I wanted to make a pocket personal timer with one push button and two LEDs.

The PICAXE 18X chip has allowed this to be possible.

IC1 is a hex 2-input Schmitt trigger which is used in conjunction with R1 and C1 to remove the switch bounce from SW1.

### ***Pressing the button turns it on.***

When SW1 is pressed IC1a through D2 supplied power to IC2 and at the same time IC1b through R2 and D4 tells the PICAXE program to begin. Out1 (pin7) of IC2 then send a high through IC1c&d and D3 to keep IC2 powered as soon as SW1 is released.

(This removes the need for a separate on/off switch.)

The program is now running.

The tens LED lights - while this is lit, if you push the button a number of times - this will be the tens of minutes component of the timing period - During this time IN0 counts the pulses (push button presses) from SW1, this is stored internally in the PICAXE as the number of tens of minutes to time for.

After five seconds the tens LED goes out and the units LED lights. If the button is pushed while it is lit, this will be the (units) minutes component of the timing period - IN0 will count the pulses from SW1.

eg. If you push twice while the tens LED is lit this will cause it to time for 20 minutes. If you push twice while the units LED is lit, this will cause it to time for 2 minutes. These are combined - the timing period will be 22 minutes.

(If you want less than ten minutes, don't push the button while the tens LED is on, just let it pass.)

Let's say you selected 22 minutes. The unit will then display the time selected by flashing the tens LED twice and the units LED twice, a quick beep indicates the timing period has begun. The unit will then start counting down.

The tens LED flashes every second. When there are less than five minutes left both LEDs light alternately. When there is less than one minute left the units LED flashes. During the last ten seconds both LEDs flash and the unit ticks each second. The unit then rings to indicate the time has expired.

If during the timing period the button is held in for at least 3 seconds, the timing will be interrupted with a small beep signal. The unit will then display (via the LEDs) the number of minutes that were remaining (Just add the tens indication(x10) and the units indication). The unit then turns off.

### **COUNT UP TIMING MODE**

If you do not push the button while the tens or units LEDs are lit, you will see that both LEDs light. If you press the button while both are lit the unit is placed into the count up mode.

This has a maximum of two hours. During the first hour the units LED will flash. At one hour the unit gives a quick beep sound and for the next hour the tens LED will flash. After two hours the unit beeps twice and then turns off.

If the button is held in for more than three seconds at any time during this mode, the timing stops and the LEDs display the elapsed time. Just add the tens indication(x10) and the units indication. The unit then turns off.