



Reading the Clock

As soon as the board is powered, all the LEDs will flash. The clock will set to 00:00 and start counting seconds. After one minute, it will read 00:01 and so on.

Now to read the clock... Each LED represents a value. When an LED is lit, that value is active. Add the active values across to read the time.

```
16 8 4 2 1   Hours
32 16 8 4 2 1 Minutes
32 16 8 4 2 1 Seconds
```

Example: (* = light on, 0 = light off)

```
0 * 0 0 * => 8 + 1 => 9 Hours
0 * 0 * 0 0 => 16 + 4 => 20 Minutes
0 * 0 0 * 0 => 16 + 2 => 18 Seconds
```

That is: 09:20:18

Setting the Clock

To set the clock touch the sensor. The two pin header at the bottom right of the printed circuit board (PCB) is the touch sensor. Simply touch a finger to bridge the gap between the pins and the controller will respond. After 5 seconds the clock will begin to advance time. After the minutes are cycled through, the hours will cycle. When you remove your finger the advance will stop and the clock will hold the time. Set the hour first, then the minutes. Touching the sensor for between 2 and 5 seconds will set the clock to the nearest whole minute (backwards or forwards as the case may be). The clock count will begin with a number of seconds between 2 and 4 depending on how long the sensor was touched.

Assembly

The printed circuit board has white outlines for all the parts. Be sure to put the LEDs in with the flat side matching the white outlines. Also, be sure to orient the microcontroller with the notch toward the notch on the outline. The capacitors, resistors and crystal are not polarized and can go either way. The resistors go in the long rectangle boxes labeled R1-R6. The capacitors go in the C1 and C2 boxes and the crystal goes in the X1 box. The 2-pin header goes in PIN1 box at the bottom right of the board. The USB connector sits snug in the two holes on the edge of the board. The leads are small, but you only have to solder the two outer ones. Be sure to not bridge any of the leads with stray solder. You should also solder the USB connector tabs on the top and bottom of the board for a good mechanical connection. Solder the crystal last.

