

DIGITAL G FORCE METER

The digital g force meter is pretty straightforward to build. It uses the PIC's internal oscillator and therefore doesn't need an external crystal and associated caps.

As shown in the schematic, the display is made up of two, dual LED common cathode modules with the segment pins wired in parallel and connected to PORTB of the PIC.

The four cathode lines are connected to PORTA, which controls which display is active.

When the PIC is running, only a single segment of one digit is lit at any given time.

The switching occurs fast enough (every 512 μ S) to create the illusion of continuous illumination. This is done in order to keep the current draw low enough to allow the PIC to drive the display directly.

I chose to RC filter the pulse output of the ADXL202 into a DC level for increased resolution. If the chip is turned 90 degrees from the direction it's orientated in the photo, you will have to use the X axis output instead.

When the meter is turned on, it tests the LED display, counting down from 9 – 0 and lasting 10 seconds.

Then it takes a reference measurement of what it will consider zero g.

The accelerometer should be level and stationary at this point in order to be accurate.

Afterwards, it will display plus (+) or minus (-) g measurements in it's Y axis with a range of – 2.00 G to +2.00 G.

For builders who wish to use a common anode LED display, contact me at mikeberg@ringolake.com for that version.