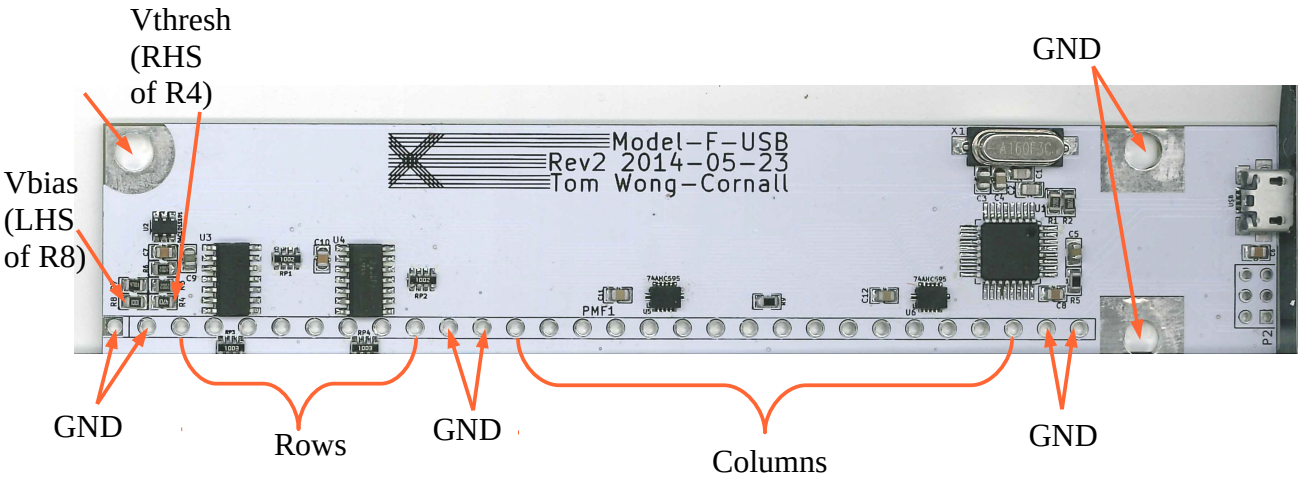
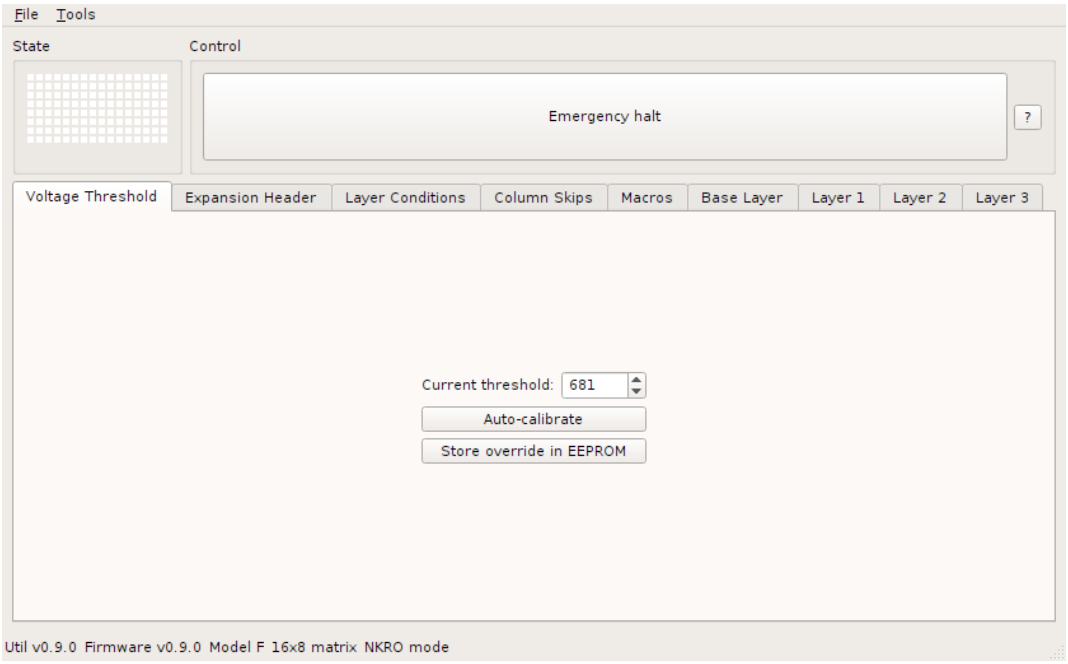
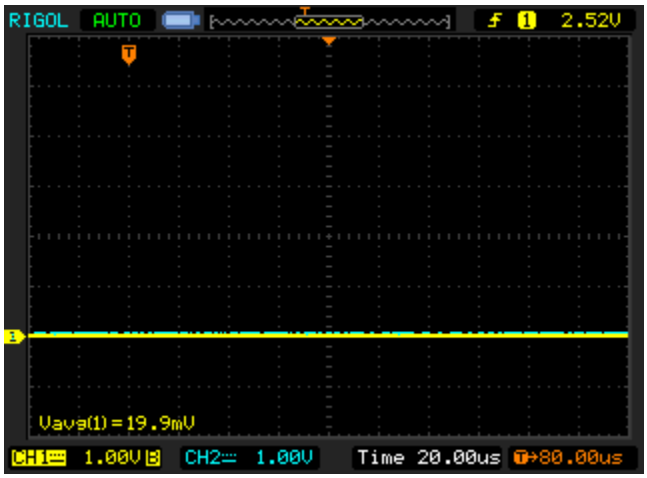


1. Plug in controller, flash with dfu-programmer or Atmel FLIP etc. (instructions in installation manual)
2. Start util. A disconnected and completely blank controller will autocalibrate to a voltage threshold of 681. Check under “State” that all the cells are white (unpressed).

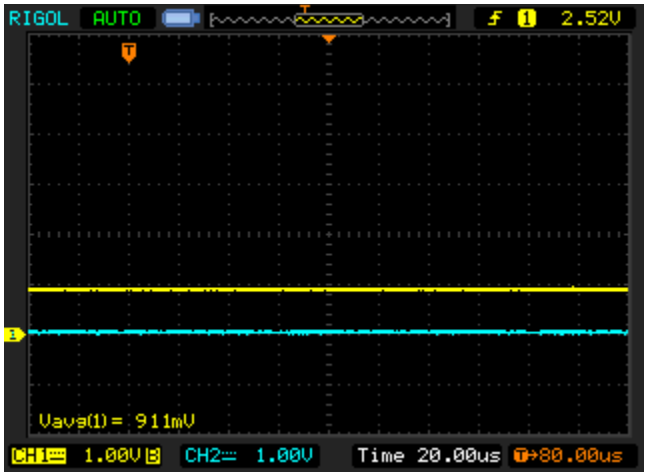


3. Connect ground clip of Channel A oscilloscope probe to a grounding point on the controller. Remove hook-ends from both probes:

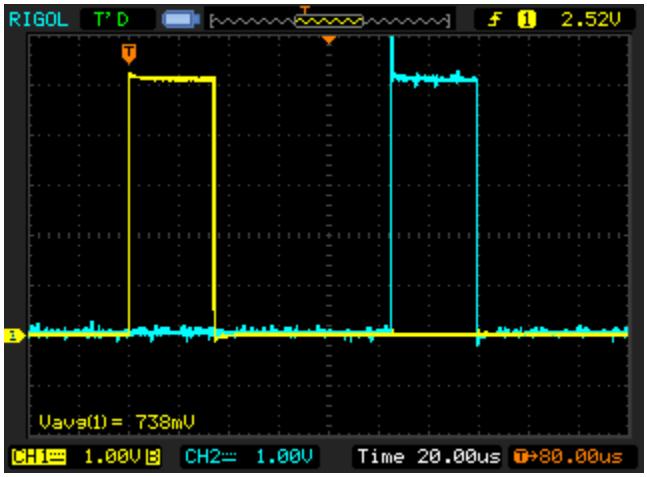
4. Enable both scope channels, set scale of each to 1V and lower them a couple of volts below 0 so you can fit a 5V signal onscreen later. Set time scale to 20us, bring trigger back 80us from the centre of the screen. Set trigger to 2.5V.



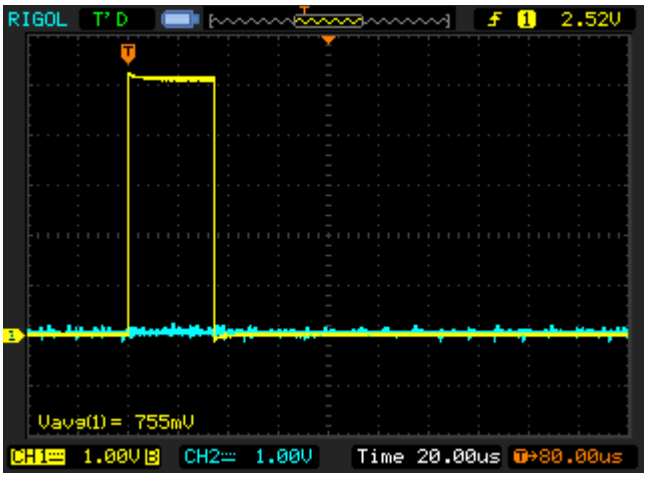
5. Measure test point “Vbias”; this should be roughly 920mV or so. All of the rows should be the same:



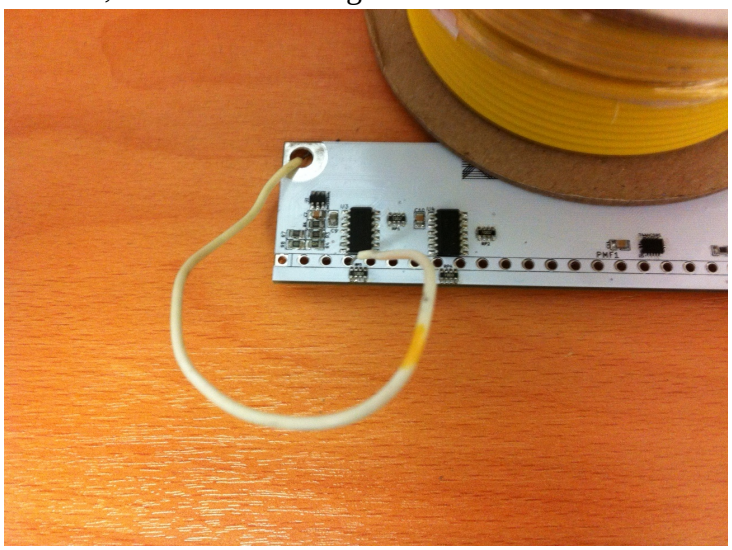
6. Measure test point “Vthresh”; with threshold in the util set to 681, this should be roughly 1.4V.
7. Drop threshold in util to 80 (click Tools->GUI Keyboard Unlock so you can type in a value), measure “Vthresh” again; it should now be around 900mV. All cells in the “State” display should all change to a dark grey (pressed).
8. Check each column is strobing:
    1. Take both scope probes, hold Channel A in left hand, Channel B in right. Starting from the left-most column, probe each column in pairs with its neighbour (e.g. first probe Col1 with ChA and Col2 with ChB, then probe Col2 with ChA and Col3 with ChB etc.)
    2. Check you get two nicely squared pulses, that ramp to 5V quickly and drop cleanly to 0V. If ChB probe hasn't been clipped to ground, this will naturally be noisier; we are only using this probe to check that column isn't shorted to its neighbour.



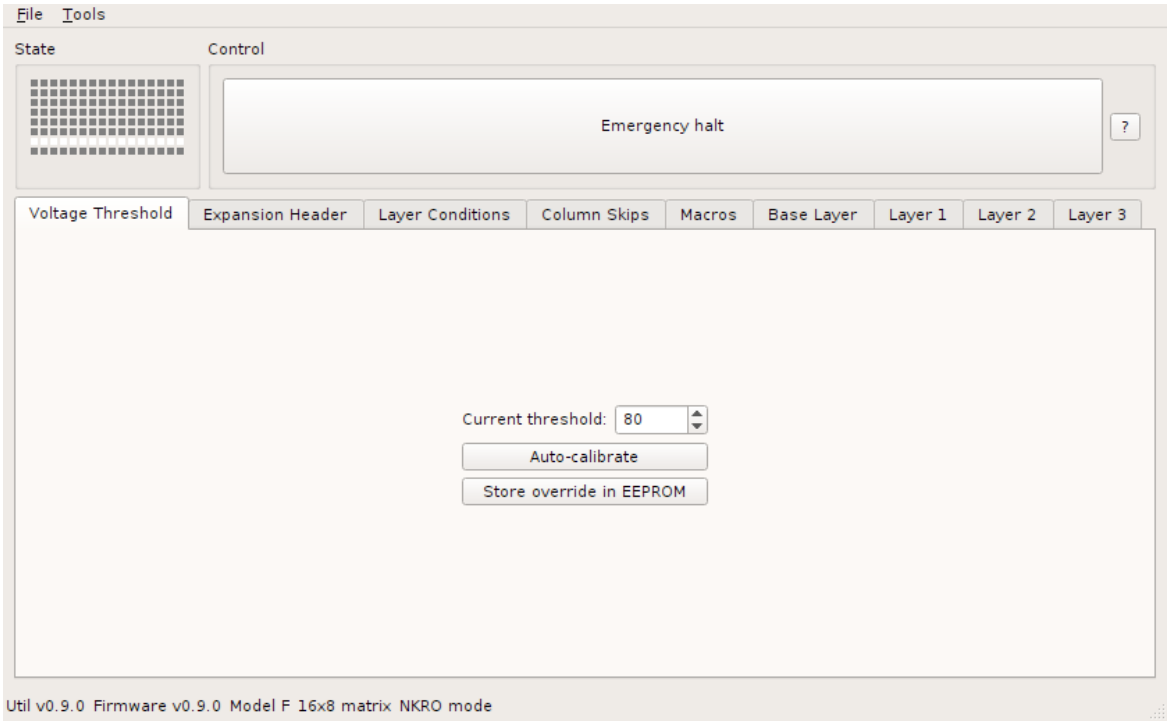
    3. When you get to the 16th column, the neighbouring pin is a Gnd pin, so you'll end up with a lonesome pulse:



9. Check each row is being measured correctly:
    1. Set threshold to 80 if not already (if you run into problems during the test, try reducing threshold to 20 or so first and repeat)
    2. Take a piece of wire, attach one end to ground somehow



    3. With the other end, touch a row
    4. Check in the util that that the corresponding row has changed to white (unpressed):



    5. Repeat until all 8 rows have been tested