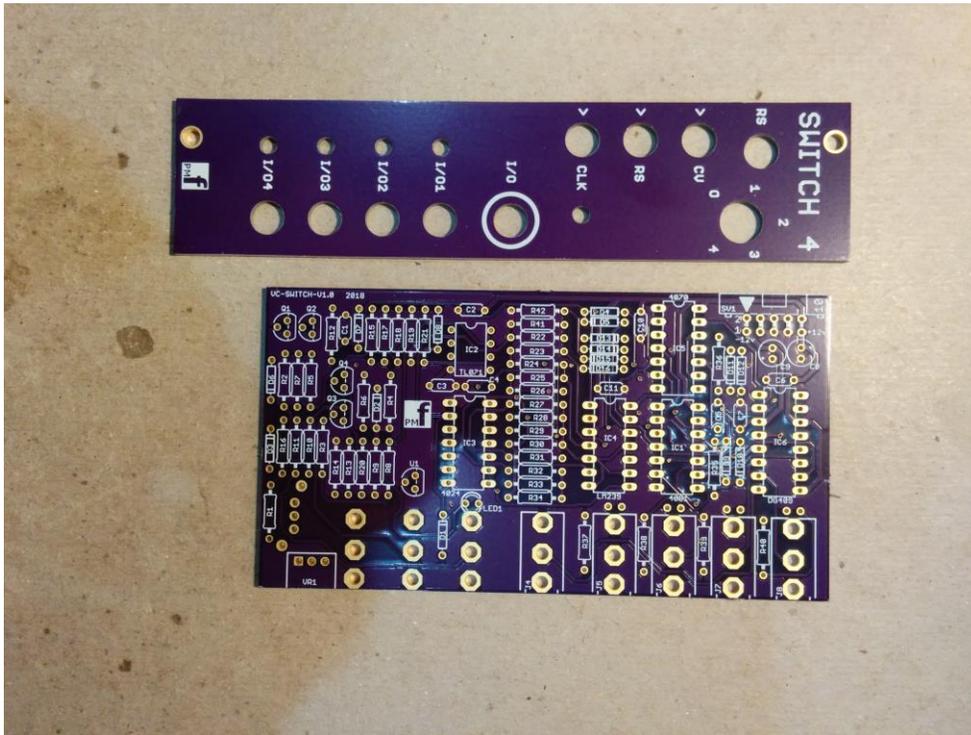


Switch4 v1.1/1.2 – Assembly Guide

Thank you for purchasing this module! This is an average build with some precision integrated circuits. Some of the pads are quite small and you will need a chisel tip or screwdriver tip soldering iron and the skill to solder these tiny joints.

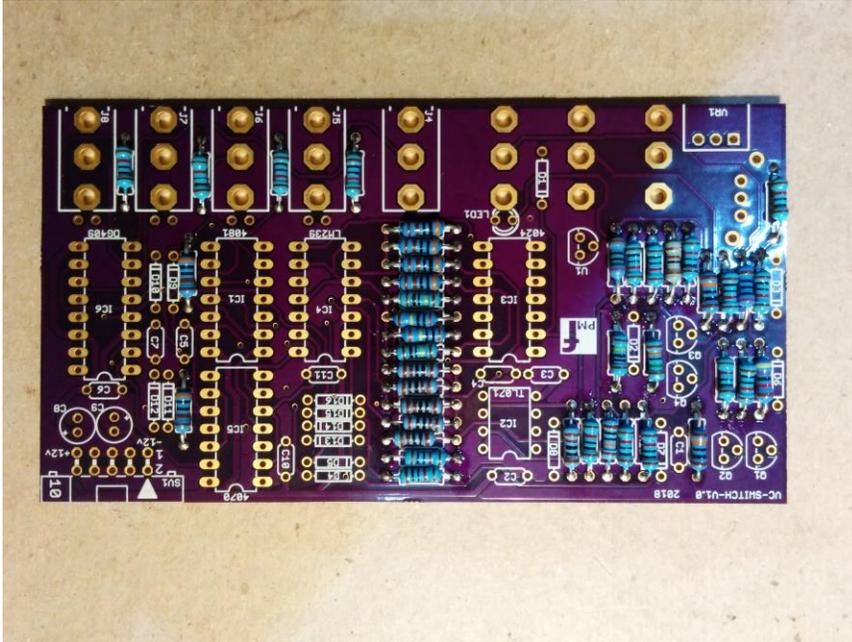


The module is designed and sized for **Euro rack** systems. You will need a 16-10 pin eurorack power ribbon connector with $-12/0/+12$ which is connected to a synth power supply. Follow the parts lists, these instructions and the PCB silkscreen text to build the module. The module consists of 1 PCB board and a front panel. You must follow the order of assembly as described below since some components will be soldered underneath other components.

Constructing the board

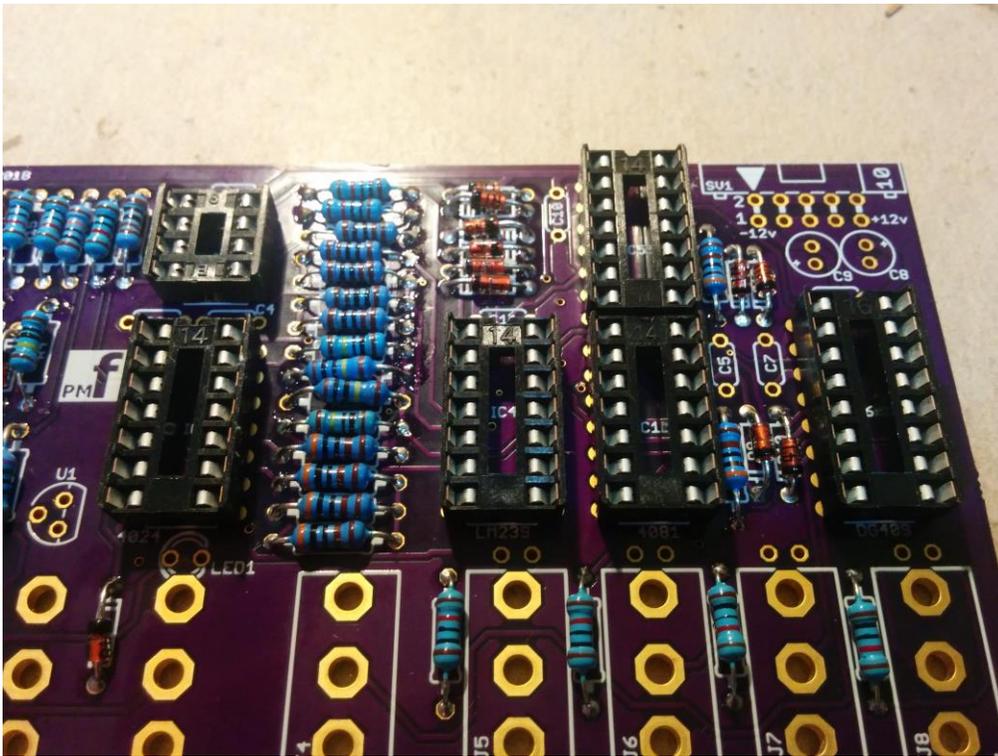
1. Resistors

Install the flat resistors on the TOP of the board. Solder and clip the leads.



2. Diodes

Install the diodes on the TOP of the board. These are polarized components. Align the stripe on the diode with the stripe marked on the board. Solder and clip the leads.

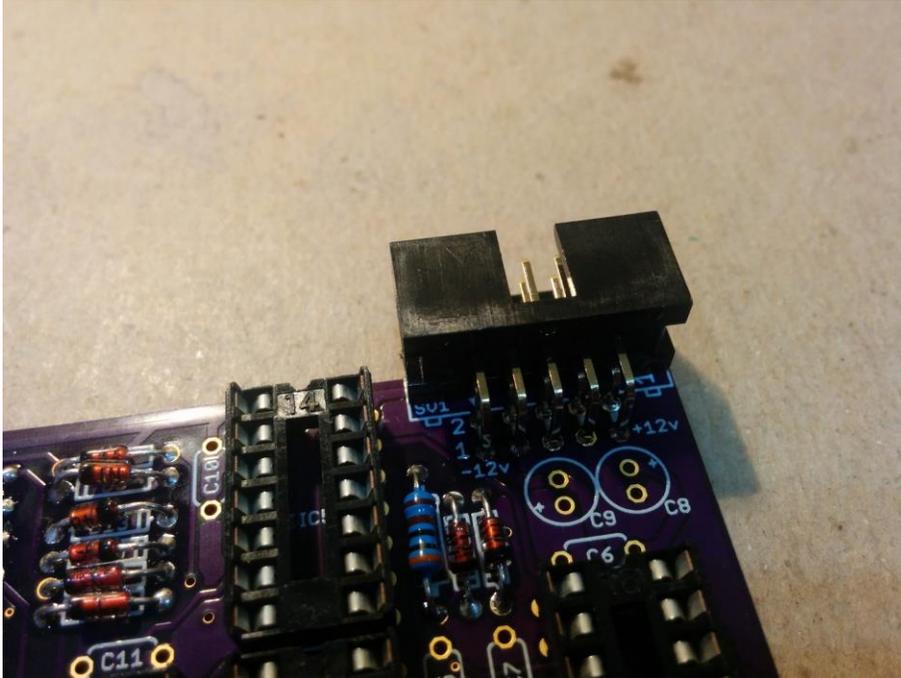


4. Power socket

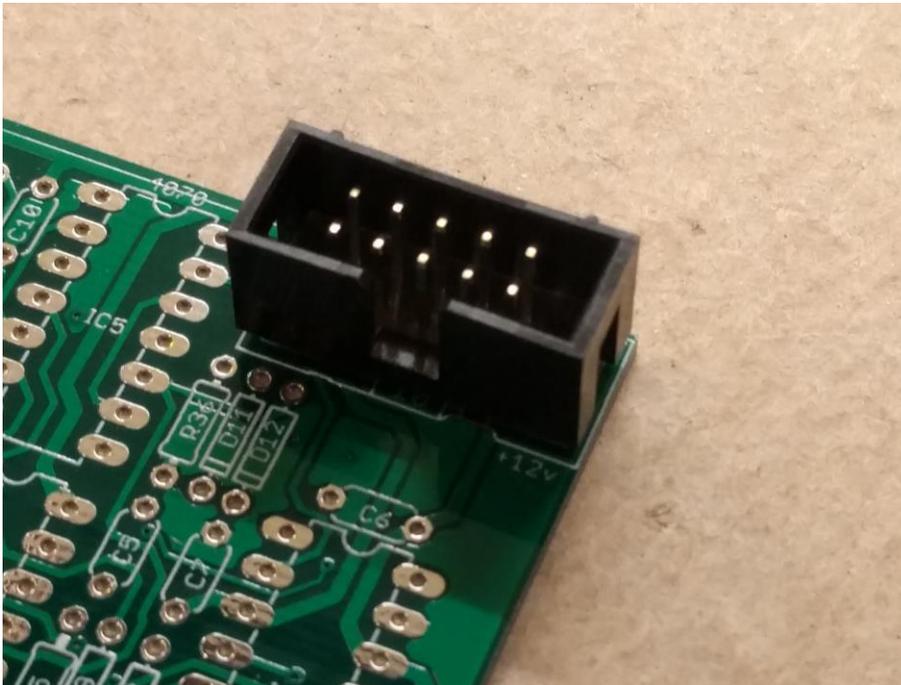
Version 1.1 boards have a right angle socket: The cut-out in the socket should face the top. Solder on the underside.

Version 1.2 boards have a straight socket: The cut-out in the socket should face the jacks. Solder on the underside.

Install the 10 pin power socket on the TOP of the board. **This must be installed with the correct orientation or the module will be damaged when the power is connected.**



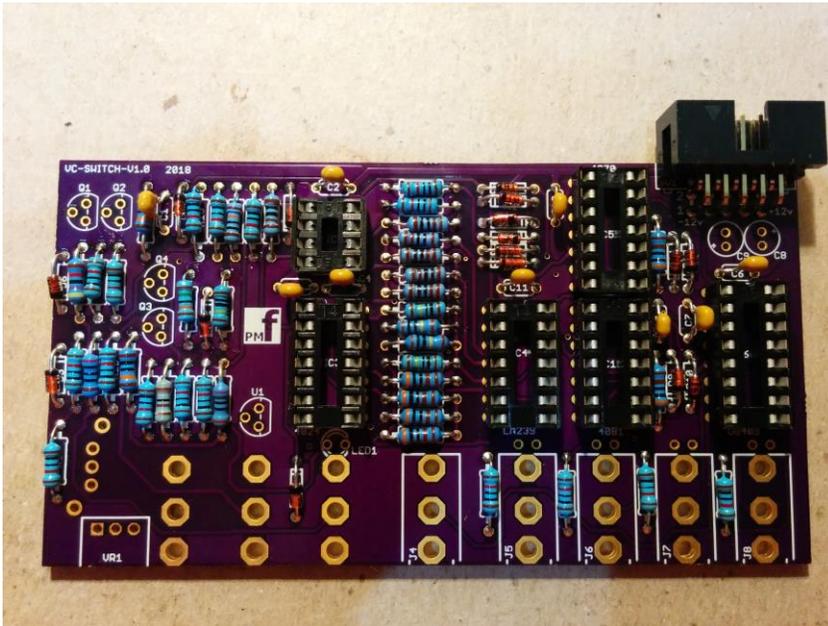
V1.1 Power



V1.2 Power.

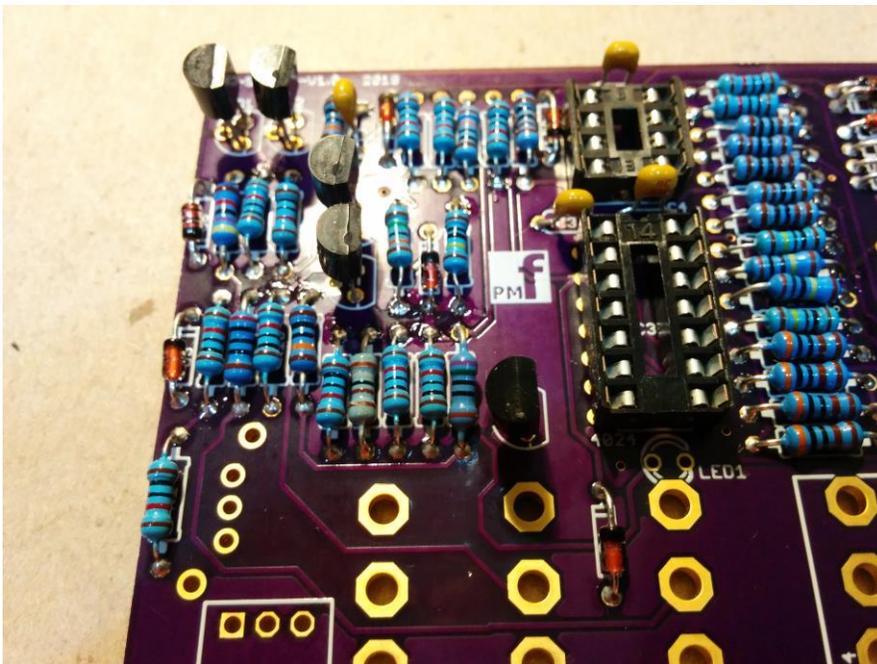
5. Ceramic/film/polypropylene capacitors

Install the ceramic/film capacitors on the TOP of the board. Solder and clip the leads.



6. Transistors and Voltage reference

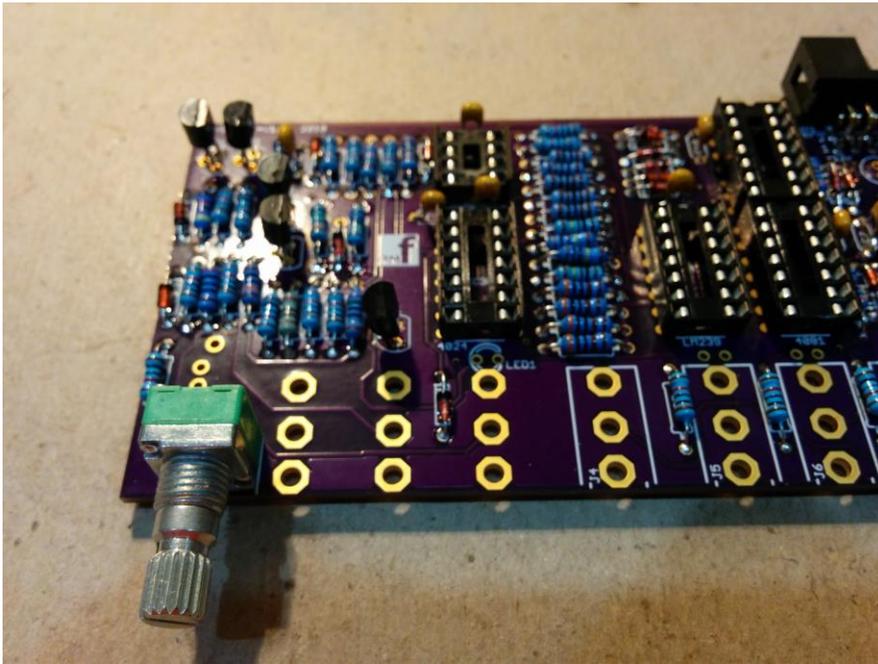
Install the transistors and voltage reference on the TOP of the board. These are polarized components. Align the outline with the outline on the board. They should be raised off the board surface slightly and at the same height. Solder and clip the leads.



7. Potentiometer

If the pot has positioning lugs on the front, cut these off with a sharp pair of flush cutting pliers. The front of the pot (where the shaft protrudes) needs to be flat.

Tack one pin only with solder. This will be finalized later. Please ensure it is on the CORRECT SIDE OF THE BOARD.

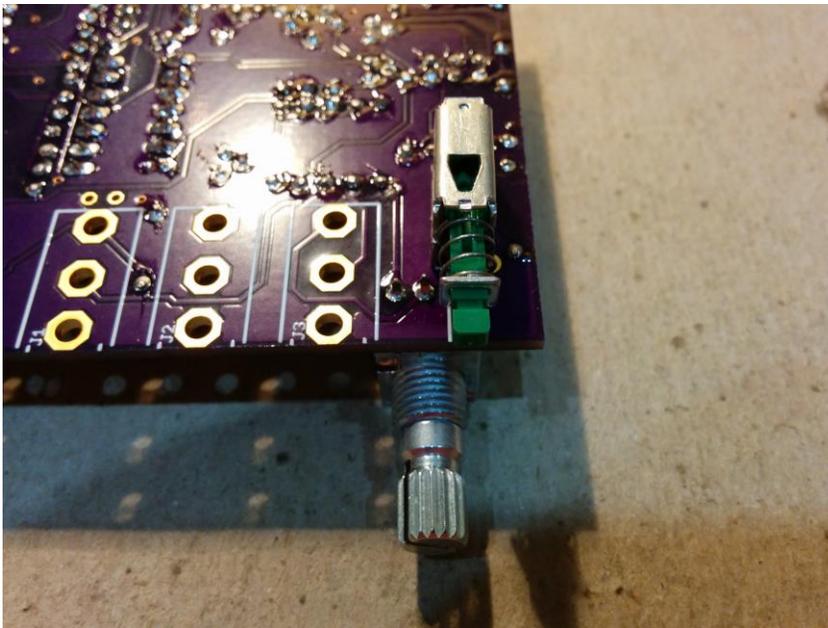


8. Electrolytic capacitors

There are no electrolytic capacitors that need to be installed. Earlier boards had space for them but they are not required.

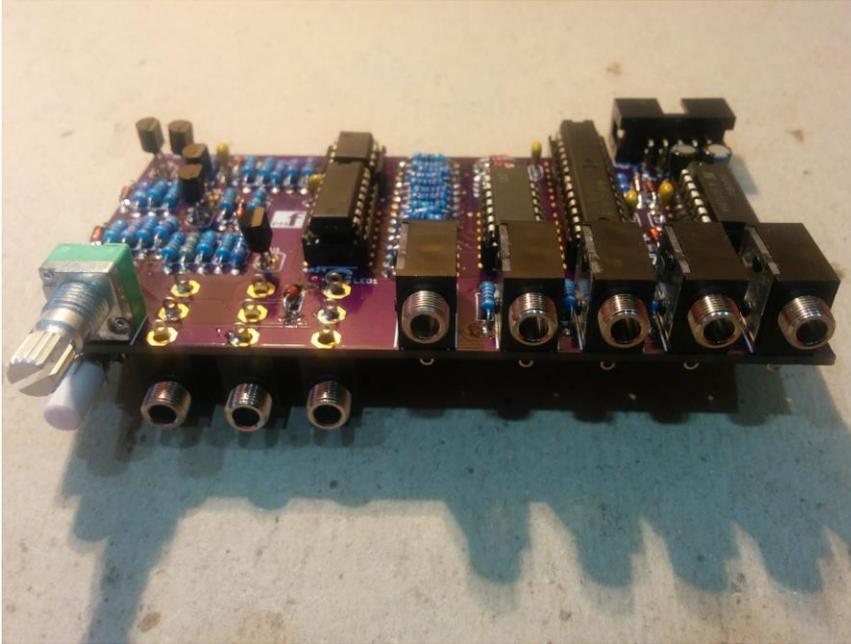
9. Switch

Tack one pin of the switch, align with the front panel, then solder all the remaining pins and the locating lugs.



10. 3.5mm Jack Sockets

Tack one pin of each only with solder. These will be finalized later. Please ensure they are on the CORRECT SIDE OF THE BOARD.



11. Alignment

1. Place the front panel over the board so that the 3.5mm jacks and pot align with the holes in the panel.
2. Put nuts on the jacks and pot and FULLY TIGHTEN all of them. Do not overtighten!
3. Now fully solder as many pins as you can reach of each jack and switch.
4. Remove the front panel and solder all the remaining pins on the jacks and switches.

12. LEDs

Bend the pins of the LEDs as shown in the photo. The bend is at 14mm (5/8") from the underside of the LED. Note the location of the longest lead.

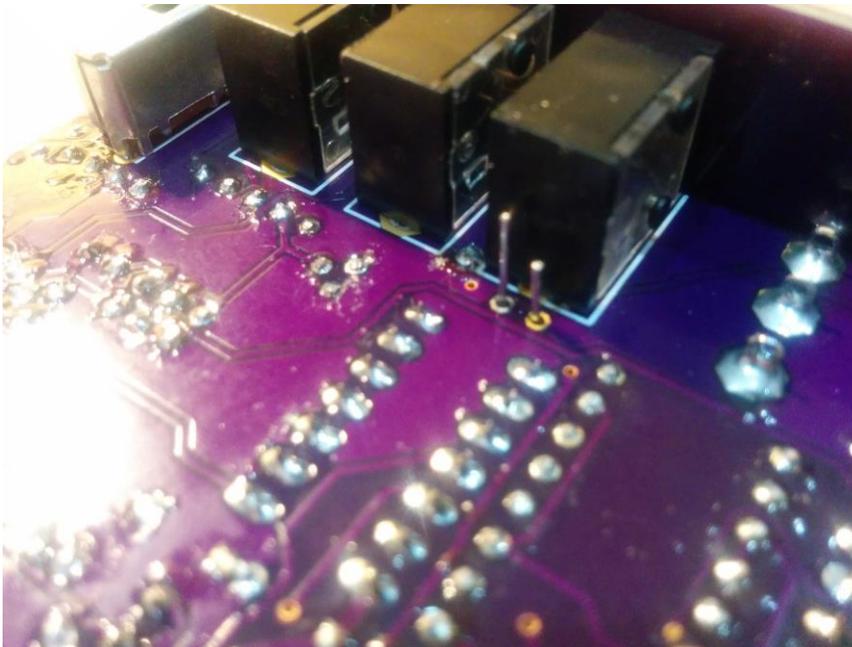


Use the panel to guide the position of the LEDs.

Green: Insert from the top and solder on the bottom.

Red: Insert from below and ALSO SOLDER ON THE UNDERSIDE only. You cannot reach the pins on the other side of the board! Be careful not to bridge onto the jack pins.

Clip the leads if you can.





13. If you do not trust all your soldering and connections, carry out the voltage tests below before installing the remaining ICs

Voltage tests

1. You do not have to do these tests if you are completely happy with your soldering and are sure there are no bridges or incorrectly placed components. However, these tests will ensure that the correct power supplies are sent to the IC pins to ensure they will not be damaged on power up.
2. Plug in the power supply and connect the $-VE$ probe of a multimeter (set to the 20V DC range) to one of the GROUND pins of the jacks. The GROUND pin is nearest to the edge of the board.
3. Check the voltage at the following points on the board:
 - a. At IC1 pin 14 approx = +12V
 - b. At IC1 pin 7= 0V
 - c. At IC2 pin 7 approx = +12V

- d. At IC2 pin 4 approx = -12V
 - e. At IC2 pin 2 approx = +1V
 - f. At IC3 pin 14 approx = +12V
 - g. At IC3 pin 7= 0V
 - h. At IC4 pin 3 approx = +12V
 - i. At IC4 pin 12= 0V
 - j. At IC5 pin 14 approx = +12V
 - k. At IC5 pin 7, pin 1 = 0V
 - l. At IC6 pin 9, pin 14 approx = +12V
 - m. At IC6 pin 3 approx = -12V
 - n. At IC6 pin 15= 0V
 - o. All other pins should not show anything close to +12V or -12V
4. If any of these tests fail to match the readings given, you should check the components and soldering before progressing

Final Assembly

1. Place the ICs in place by aligning the notch with the notch graphic on the PCB Silk Screen and notch on the sockets. IC4 and IC5 are very close together. You have to align these carefully so that all the pins seat in the sockets.
2. Put the caps on the switches by pushing each cap until it clicks.
3. Position the knob so that the pointer spans the 0, 1, 2, 3 and 4 on the panel when the pot is rotated.
4. If you are not able to get all four steps working consistently with the manual control then your voltage reference U1 may not be supplying at least 5.00V. If this is the case, you may need to reduce the value of R13 to 1.5K. R13 is shown in the photo below:

