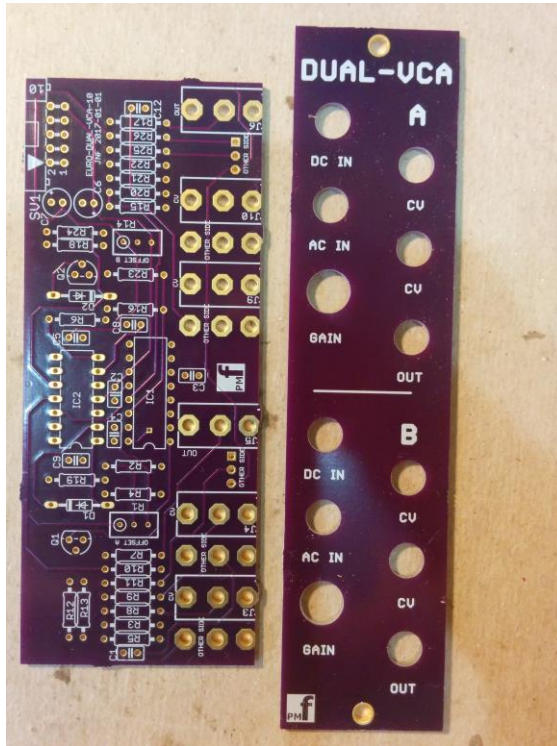


Dual VCA v1.2 – Assembly Guide

Thank you for purchasing this module! This is a reasonably simple build with a small number of components.



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.

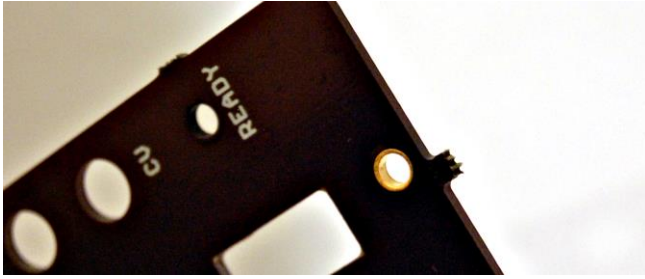
There are components installed on BOTH sides of the boards. Please ensure that you place the components on the correct side. When referring to the TOP of a board we mean the side with the **pmF** logo. The BOTTOM has no logo.

You may need to clean up the board edges with wire cutters and/or a file to remove the remains of the tabs from the fabrication process. This is particularly important for the edges containing the jacks. These edges will need to mate flush with the 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. Clean board edges with wire cutters and/or file to remove the manufacturing tabs.



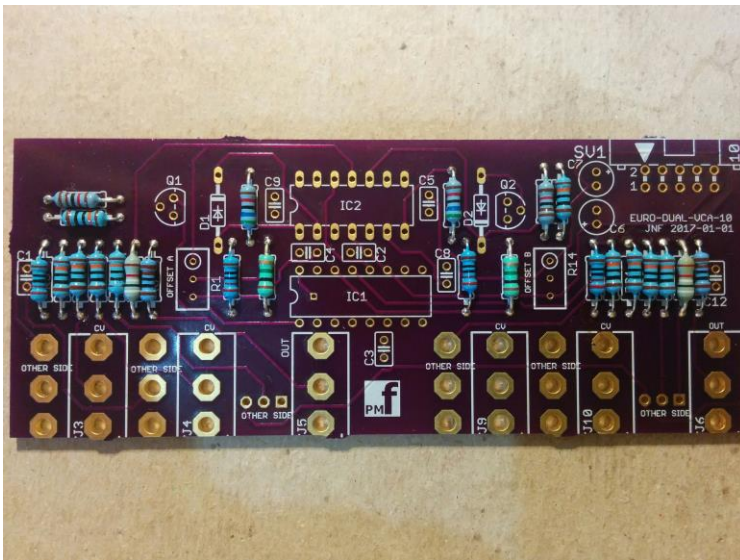
2. Range adjustment resistors

Using the included R10/R26 (75k) resistors, the VCA shuts off when the initial gain panel control is just above 0. If you prefer a VCA which shuts off completely at just below the mid point of the panel control, install wire links in place of R10 and R26. This is often necessary to combat offset errors in some other manufacturers' envelope generators. You can also install other values for R10/R26 (between 0 and 100k) to customize the range of the VCA further.

Install the two resistors R10 and R26 or the wire links in the positions for R10 and R26 on the TOP of the board. Solder and clip the leads.

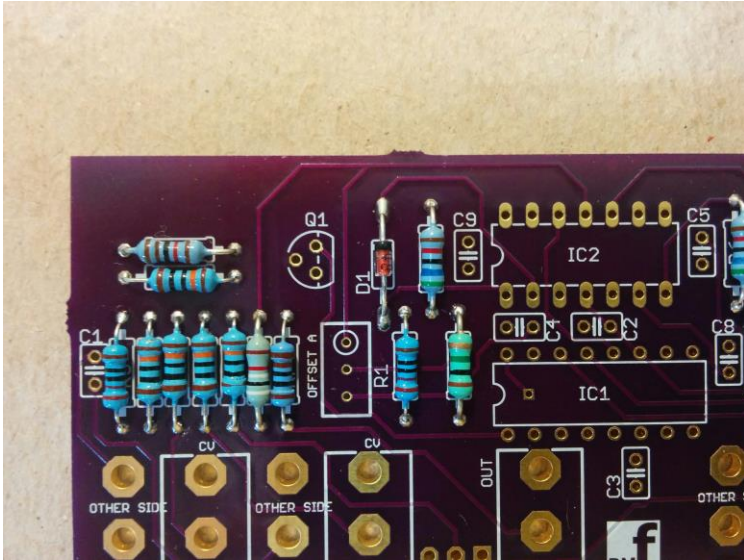
3. Remaining Resistors

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



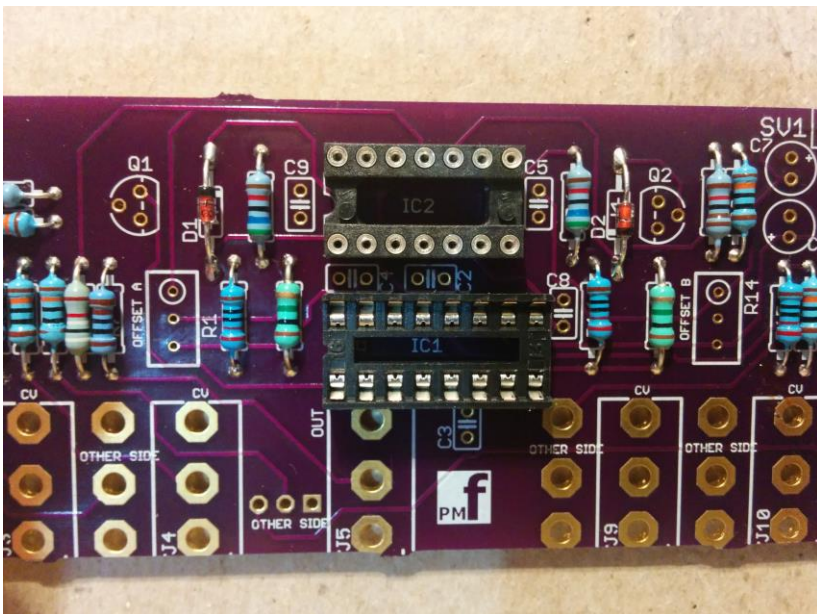
4. Diodes

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.



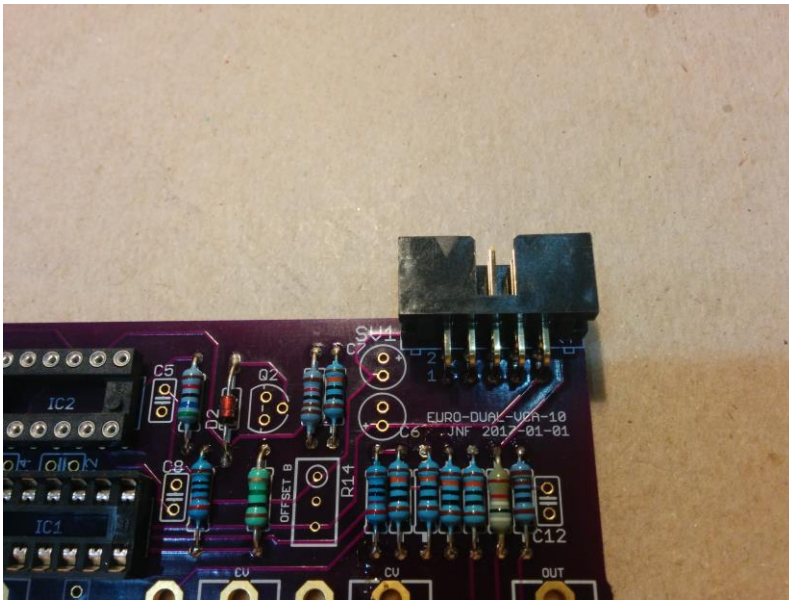
5. IC Sockets

Install the sockets on the TOP of the board. Observe the notch or mark on the sockets and align with the notch or mark on the board. Solder.



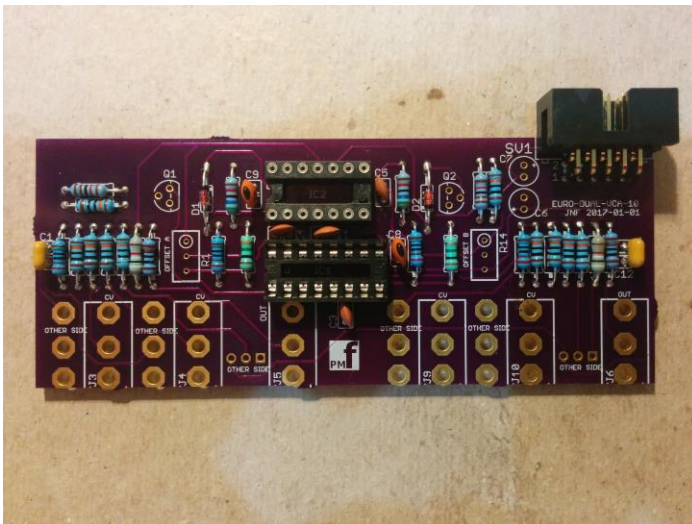
6. Power socket

Install the 10 pin power socket on the TOP of the board. The opening in the right angle socket should face OUT from the board as shown in the photo. Solder.



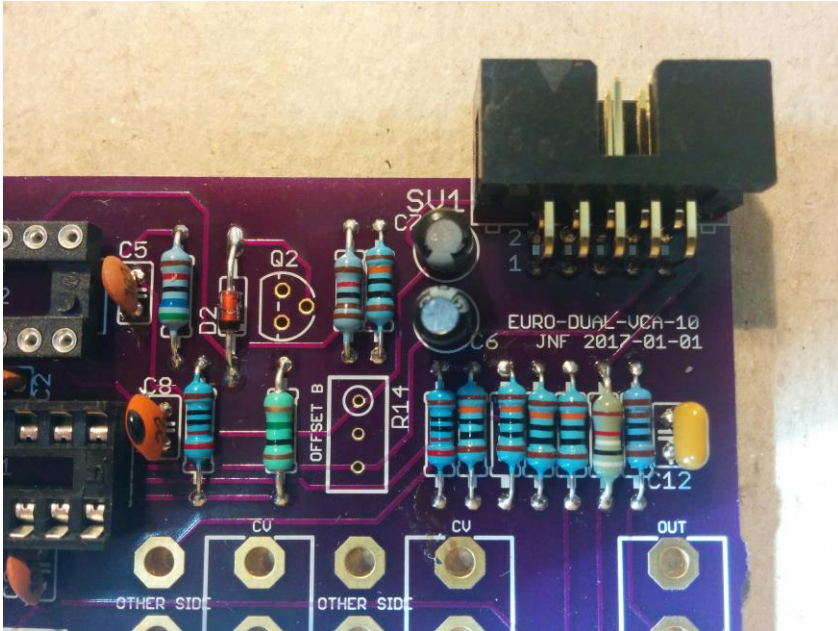
7. Ceramic/film

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



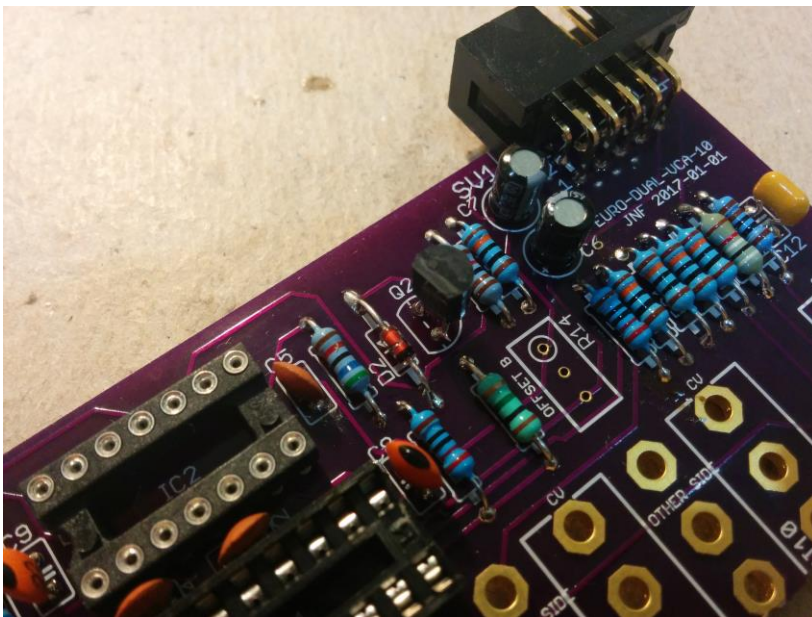
8. Electrolytic capacitors

Install these on the TOP. Make sure you orient these capacitors correctly. The longer lead and/or the lead marked with a + needs to be inserted into the hole that has the "+" marking near it. Leads marked with "-" go in the board hole WITHOUT the "+". Solder and clip the leads.



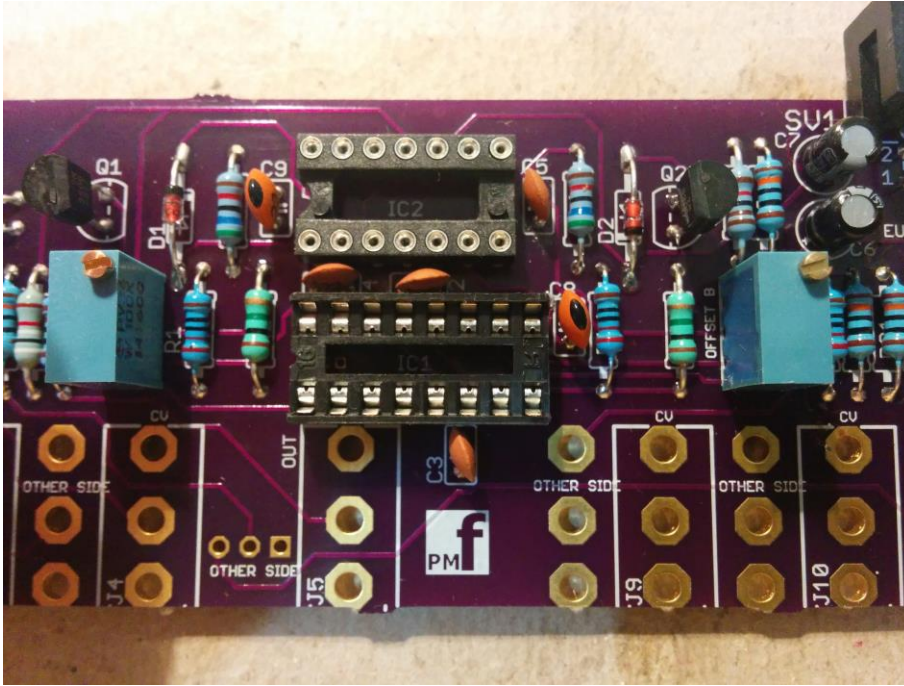
9. Transistors

Install the transistors on the TOP of the board. These are polarized components. Align the outline with the outline on the board. Solder and clip the leads.



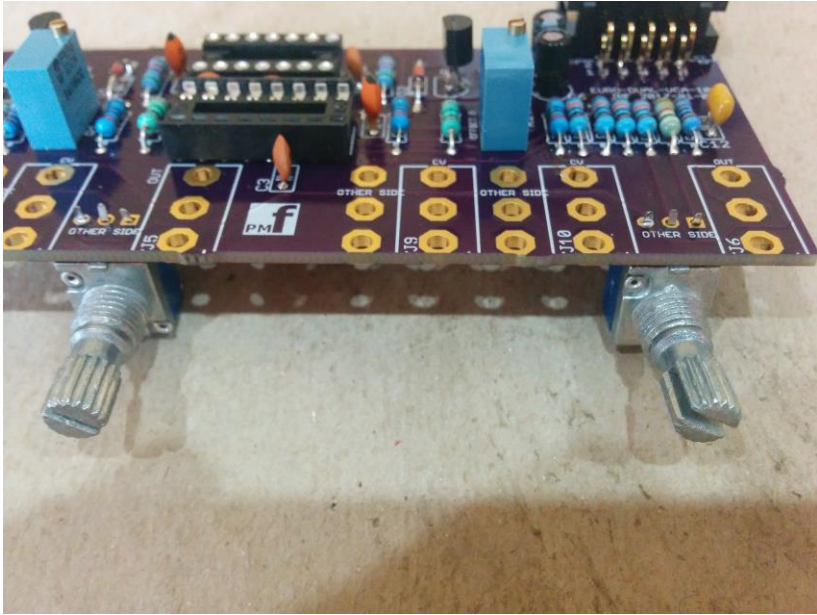
10. Trimmer resistors

Now populate the trimmer pots on the TOP of the PCB. Make sure they are oriented so that the screw is above the circle on the silk screen.



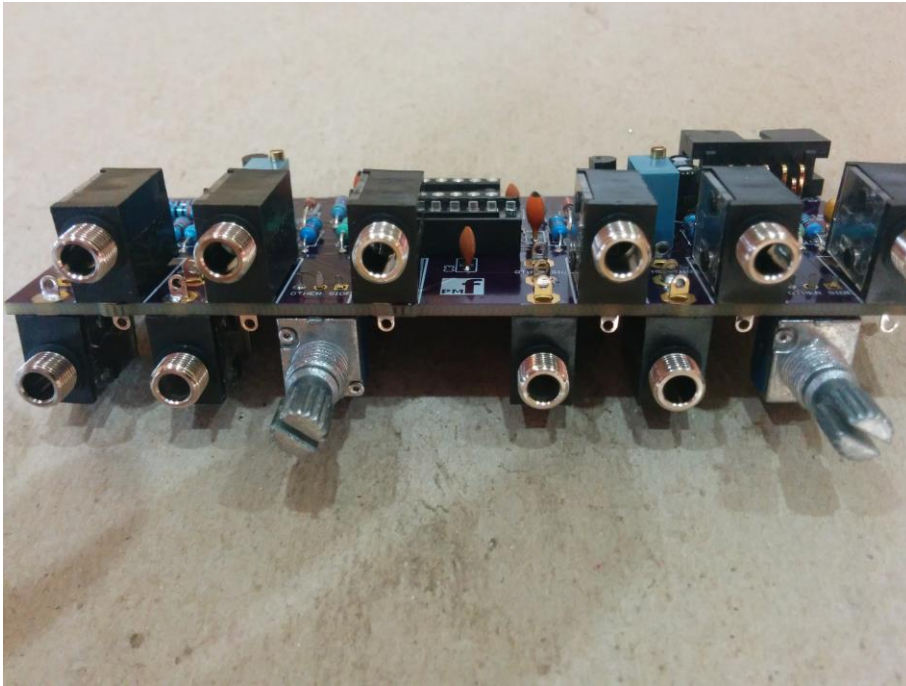
11. Potentiometers

If the pots have 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. Install pots on the BOTTOM of the board. Tack one pin only with solder. These will be finalized later. Please ensure they are on the CORRECT SIDE OF THE BOARD. See Photo. There is a "other side" marking to help remind you.



12. 3.5mm Jack Sockets

Install **SOME** jacks on the top and **SOME** on the **BOTTOM**. Tack one pin only with solder. These will be finalized later. Please ensure they are on the **CORRECT SIDE OF THE BOARD**. See Photo.

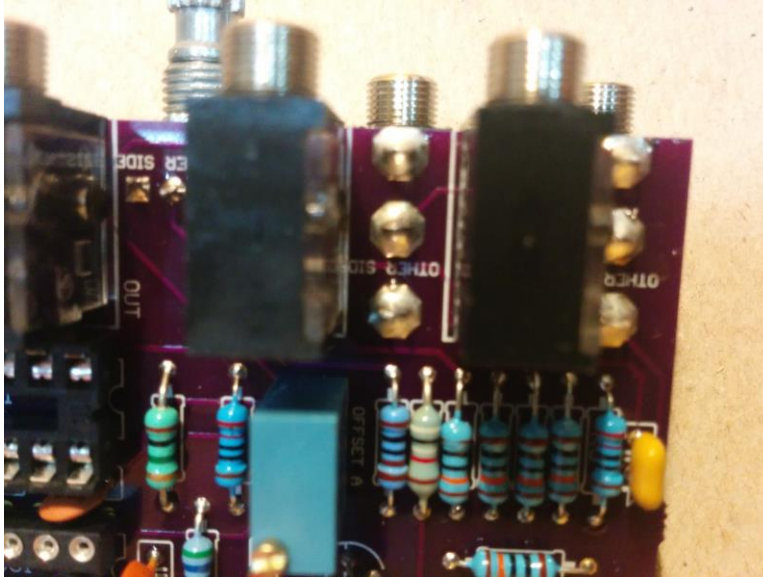


13. Alignment

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



5. Remove the front panel and solder all the remaining pins on the jacks and pots.



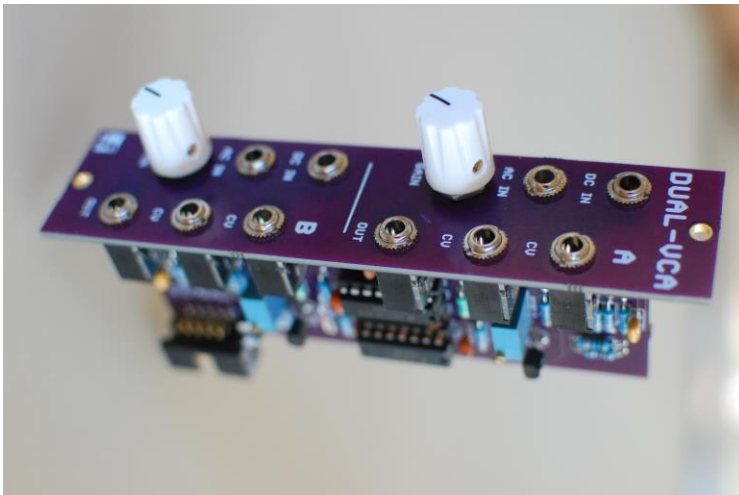
14. Do not install the ICs until the voltage tests are complete.
15. If you do not trust all your soldering and connections, carry out the voltage tests below before installing the ICs

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 11 approx = +12V
 - b. At IC1 pin 6 approx = -12V
 - c. At IC2 pin 4 approx = +12V
 - d. At IC2 pin 11 approx = -12V
 - e. At IC2 pin 3, 5, 10, 12 = 0V
 - f. You should see a voltage change between ~0 and ~6V on pin 2 as you turn the "A" gain panel control. Likewise for pin 9 and the "B" panel control.
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.
2. Place a washer over each pot shaft.
3. Place the front panel over the board so that the pots and 3.5mm jacks align with the holes in the panel.
4. Put nuts on the pots and jacks and fully tighten.
5. Install the knobs.



6. **NOW READ THE USER GUIDE.**