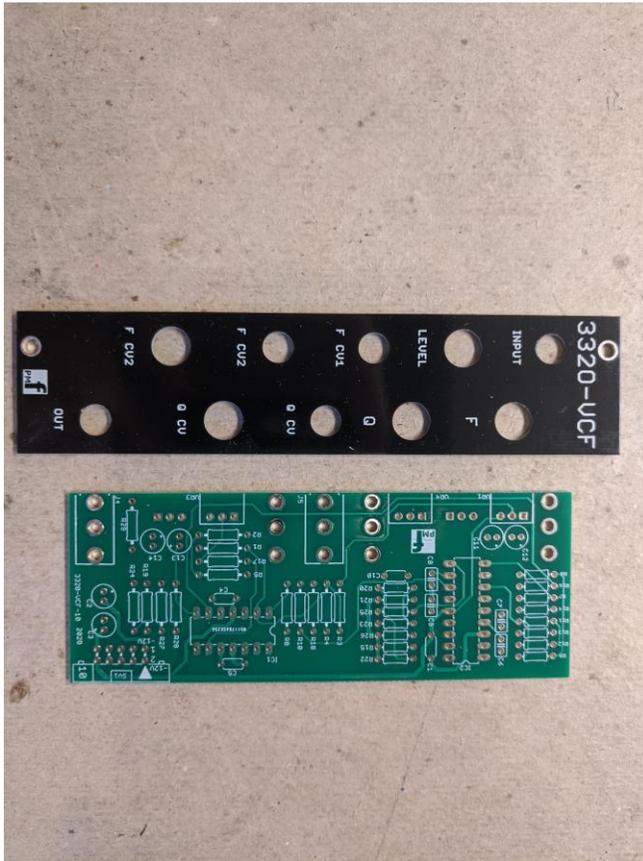# 3320-VCF v1.0 – Assembly Guide

Thank you for purchasing this module! This is a reasonably easy build. 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 **Eurorack** 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 should follow the order of assembly as described below since some components will be soldered underneath other components.

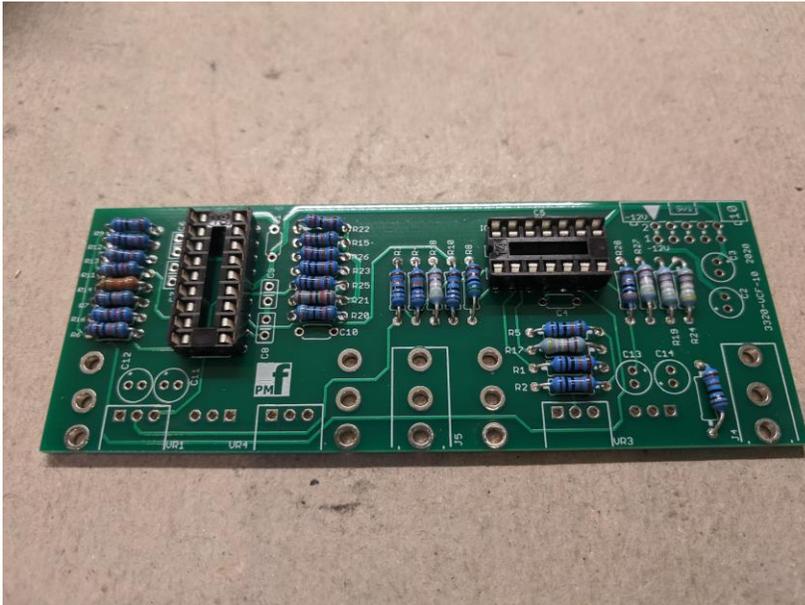## Constructing the board

1. Resistors

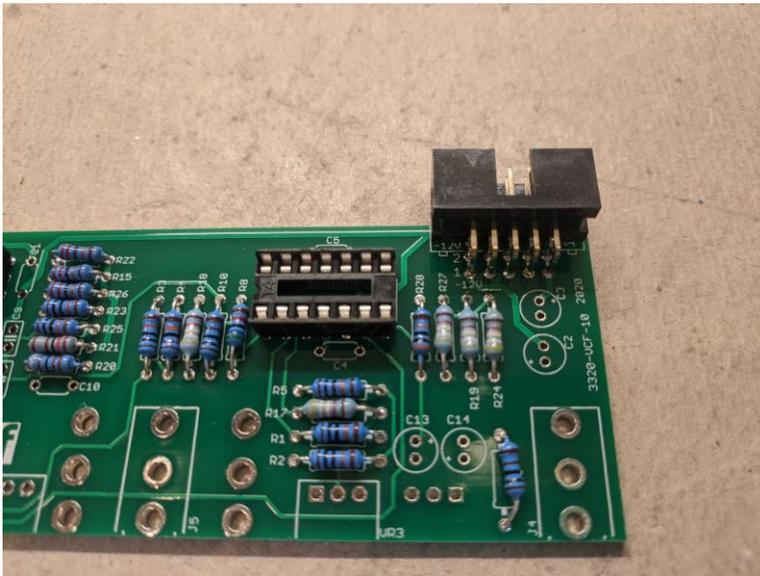Install the flat resistors on the TOP of the board. Solder and clip the leads.
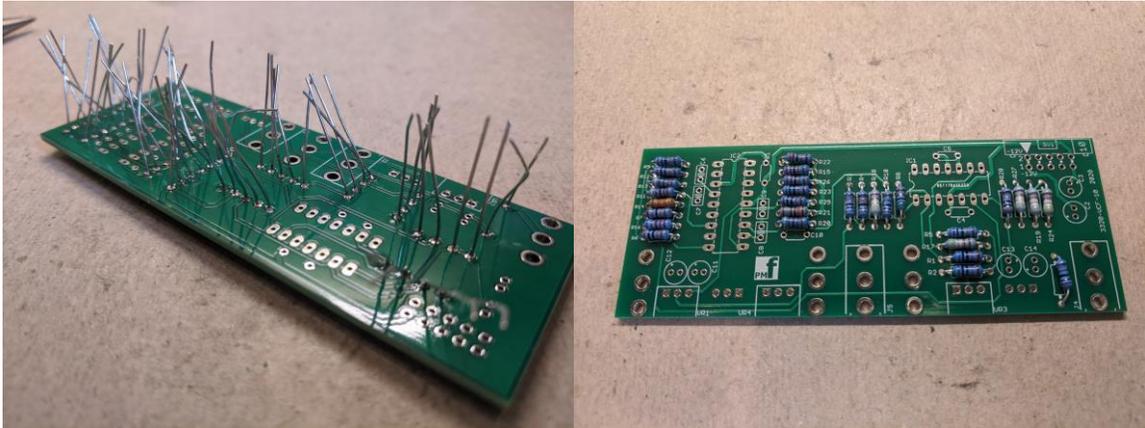
2. IC Sockets

Now Install the sockets for ICs 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.
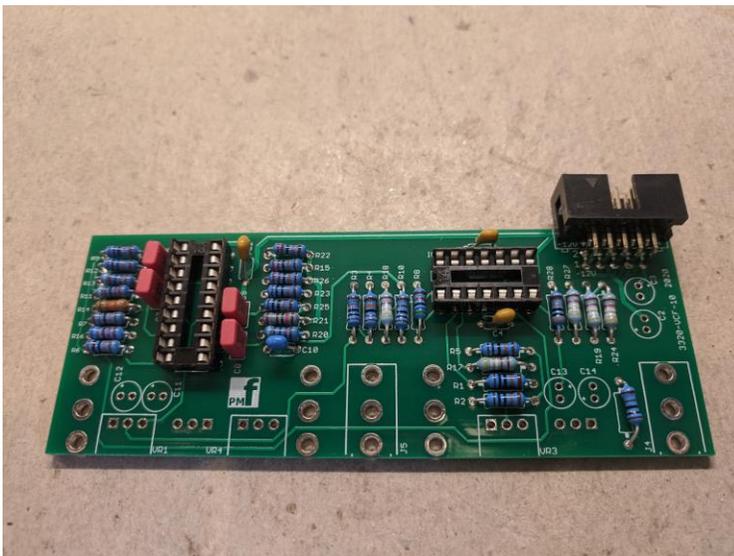
3. Power socket

   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.


4. Ceramic/film/polypropylene capacitors

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

5. 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.
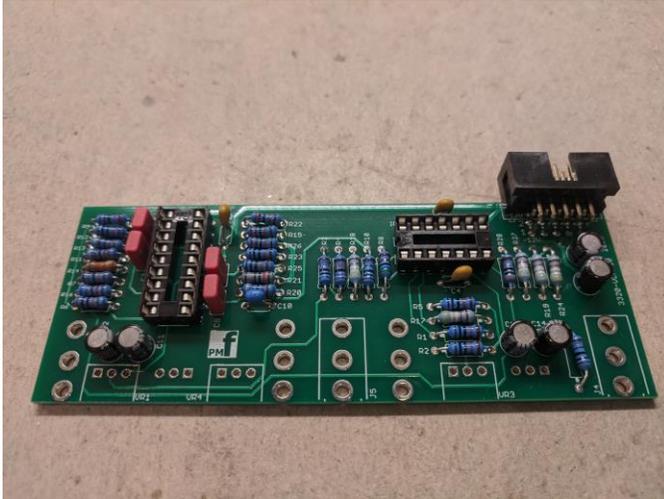
6. Potentiometers

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 SOME pots on the top and SOME on the BOTTOM. Check the values since the pots are not all the same.

Tack one pin only with solder. These will be finalized later. Please ensure they are on the CORRECT SIDE OF THE BOARD. See Photo.
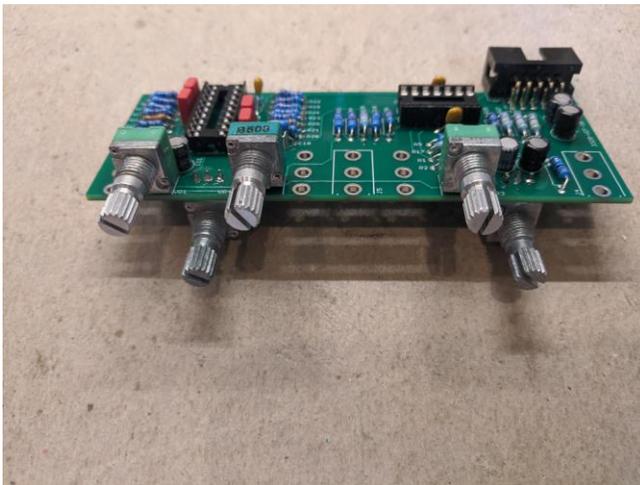
7. 3.5mm Jack Sockets

   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.

8. Alignment
   a. Place a washer over each pot shaft.
   b. Place the front panel over the board so that the pots and 3.5mm jacks align with the holes in the panel.
   c. Put nuts on the jacks and pots and FULLY TIGTEN all of them. Do not overtighten!
   d. Now fully solder as many pins as you can reach of each jack and pot.
   e. Remove the front panel and solder all the remaining pins on the jacks and pots.

9. 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 4 approx = +12V
    b. At IC1 pin 11 approx = -12V
    c. At IC1 pin 3, 5, 10, 12 = 0V
    d. At IC1 pin 2 approx = -2V to +2V as F is swept
    e. At IC2 pin 14 approx = +12V
    f. At IC2 pin2 = -9V
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.