



**Macropod** Variable Bandwidth VCF Assembly Instructions - 4U format  
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Hello and thank you for building the Macropod Variable Bandwidth VCF DIY kit. We hope you will find its tones most pleasing!

## Assembly Instructions:

1. Install surface mount components on the rear of the PCB. We recommend using No-Clean liquid flux on the board before applying quality solder paste such as Chip-Quik SMD291SNL, tweezing components onto the board, and reflowing with a hot air station or oven. However, the size of these components (0805) means they can likely be hand-soldered by anyone with reasonable soldering experience.

Please note that R61, which controls the taper of the Audio In A Gain pot, should be 6.8k for a B50k pot and 15k for a B100k pot to provide a nice Audio taper.

2. Solder rear through-hole parts: Resonance trimmer and MTA-156 power header.

3. Prepare the panel: banana jacks and M3 spacers should be fastened securely to the panel.

4. Insert all frontal hardware and the LED into the other side of the PCB, but **do not solder these parts yet**. Double check minor details, such as that proper potentiometer values are used for each footprint. If your potentiometers have solder tabs, be sure to break them off with a soldering iron. **Note that with all LEDs, the square pin indicates the LED's cathode, or short leg.**

5. Place the panel over the hardware and hand-tighten the appropriate nuts over the potentiometers and switch. Use M3 screws to fasten the PCB to the panel via the four corner spacers.

Note for v1.0 pcb: the Resonance potentiometer footprint has a slight offset from its front panel hole so make sure its front panel nut is affixed securely and the pot is fully vertical/parallel with the other pots before soldering.

6. With the PCB facing up and panel facing down, double check that all hardware is properly seated in the appropriate PCB holes. If it is, position the front LED so it sits in the front panel hole and solder one leg. Double check its position, then solder the other leg. Once the LED is set up, solder the potentiometers and switches in place.

7. Fill each pad labeled for use with banana jacks with solder, then insert a resistor leg or wire so proper connection is made. Solder the other ends to each corresponding banana jack.

8. Double check your work. Make sure all components have properly flowed and that all hardware is properly soldered to the PCB. If everything looks good...

8. Plug in your Macropod. Patch audio into either Audio Input (don't forget to turn Input A up) and listen to each audio input, adjusting the Frequency and Bandwidth settings to ensure audio will pass. There should be no "unusual" behavior from any output apart from VBW B, which will effectively mute with a quiet audio output and may contain audible power supply noise at some settings.

9. **Calibrate your Macropod.**

Calibration of the Macropod is simple and should be done by ear. Patch a triangle-wave VCO within the audible frequency range (probably 1kHz or so is best) into "Audio In B" and turn the Resonance control fully CW. Monitor VBW Out A and adjust the rear trimpot until maximum Resonance doesn't cause self-oscillation (added frequencies besides the input). However, if you like the way the self-oscillation sounds, turn up the trimmer and go with it!

10. Enjoy your new filter!

*Thank you for building the Macropod!*