



# Midiverse Modular

## MVM024 – VCF

## Build Guide

Thanks for supporting Midiverse Modular! This guide provides basic instructions to build your MVM024 VCF module.

Size: 10HP

Depth: 40mm

Draws 18mA from the +12V rail and 18mA from the -12V rail

This module is recommended for experienced builders only. You must have previous experience with building DIY modules. This guide provides a list of the parts needed to complete the build and some key instructions for success, including calibration steps.

### Parts needed to complete the build:

Reference	Qty	Value	Notes
VCF Panel	1		
VCF Control Board	1		
VCF Main Board	1		BC847 & BC857 SMD transistors pre-soldered
<b>Control Board BOM</b>			
R7	1	1K	1/4W 1% Metal film resistors
R4, R6	2	10K	1/4W 1% Metal film resistors
R3	1	22K	1/4W 1% Metal film resistors
R8	1	56K	1/4W 1% Metal film resistors
R2, R5, R9	3	100K	1/4W 1% Metal film resistors
R1	1	180K	1/4W 1% Metal film resistors
VR1, VR2, VR3, VR4	4	B100K	ALPHA 9mm potentiometer, vertical
IN1, IN2, 1V, CV, OUT	5	3.5mm Jacks	THONKICONN (PJ398SM)
A, B	2	1x5 pin header	2.54mm 5 pin single row male header
Knobs	4		White, Davies (1900H)
<b>Main Board BOM</b>			
R17, R21, R25, R30	4	220R	1/4W 1% Metal film resistors
R4	1	1K	1/4W 1% Metal film resistors
R20, R23, R28, R31	4	12K	1/4W 1% Metal film resistors
R6, R7, R8, R9	4	22K	1/4W 1% Metal film resistors
R3, R12, R15	3	56K	1/4W 1% Metal film resistors
R1	1	91K	1/4W 1% Metal film resistors

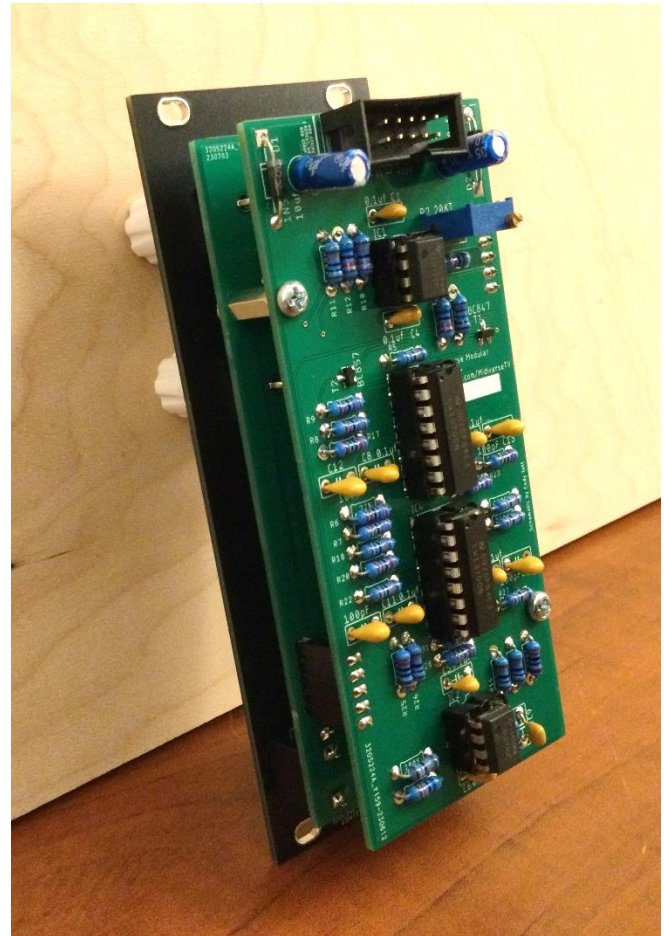
R5, R11, R14, R18, R19, R22, R24, R26, R27, R29	10	100K	1/4W 1% Metal film resistors
R13	1	180K	1/4W 1% Metal film resistors
R10	1	220K	1/4W 1% Metal film resistors
R16	1	1M	1/4W 1% Metal film resistors
R2	1	20K	Multi-turn trimmer potentiometer (3296W)
D1, D2	2	1N5817	
C1, C4, C5, C6, C7, C8, C10, C11	8	0.1uf	Multilayered ceramic capacitor
C12, C13, C14, C15	4	100pf	Multilayered ceramic capacitor
C9	1	1uf	Multilayered ceramic capacitor
C2, C3	2	10uf	Polarized electrolytic, 35V
IC1, IC2	2	TL072CP	
IC3, IC4	2	LM13700N	LM13700N/NOPB
IC Socket	2	8 pin Socket	8 Pin DIP IC Socket
IC Socket	2	16 pin Socket	16 Pin DIP Socket
A, B	2	1x5 pin header	2.54mm 5 pin single row female header
J1	1	2x5 pin header	2.54 mm 10 pin shrouded header
Screws	4		M3 Screw 6mm
Standoff	2		M3 Standoff 11mm

### Build Instructions:

The main board will come with the SMD transistors pre-soldered. Populate and solder the resistors, diodes, capacitors, IC sockets, and power header. **DO NOT** solder the jacks and potentiometers on the control board yet.

Once all the above-mentioned parts have been soldered on the control and main boards, connect the 5 pin male and female headers together, and then position them between the boards (A with A, B with B). Carefully solder in the connectors, making sure that the boards are connected evenly. I usually solder in one pin on all connectors, double check the positioning, and if everything looks good, solder in the remaining pins.

If there are anti-rotation tabs on the potentiometers, be sure to break those off now. Pull apart the two boards, populate the control board with the jacks and potentiometers, add the M3 screws and standoffs, and attach the front panel. Now solder these components, reconnect the two boards, and secure the boards with the back screws.



### Calibration:

These instructions are to calibrate the 1V/octave CV input. First, turn the resonance fully clockwise, the input and CV fully counterclockwise, and the frequency to 10 o'clock. Plug the output of the module into a frequency counter. Then, use the multi-turn trimmer on the back to set the 1V/octave scaling. If over tracking, turn counterclockwise, if under tracking turn clockwise. If calibrated correctly, the 1V/octave CV input will be accurate up to an octave or so. Due to this limited range, it might not be useful as a traditional standard VCO. However, it is quite useful for building basslines or drums.