

2Q12-VCF v1.0 – User Guide

This is the setup and user guide. The unit is designed for a monophonic Analog synthesizer.



The module is designed and sized for **Euro rack** systems. You will need a 16-10 pin **Euro rack** power ribbon connector with $-12/0/+12$ which is connected to a synth power supply. You will also need a trimmer adjustment tool, a digital volt meter, a frequency counter and, if possible, an oscilloscope.

If you bought PCBs or a kit, you should only need to calibrate the unit once. If you bought a pre-built and tested unit, you can skip this section. Power up the device and allow it to warm up for 15 minutes.

Calibrating the RESONANCE circuit

1. The resonance circuit is needed to calibrate the rest of the VCF so this is done first.
2. If you are using the fixed R47 27k resistor instead of the R48 trimmer, the resonance circuit will self oscillate at some point as the Q control is turned. This point is not adjustable when the fixed resistor is installed.
The remainder of this calibration procedure is dependent on the R48 trimmer being installed.
3. Disconnect all CV sources from the inputs.
4. Set the level control to 0.
5. Set the F control to the center.
6. Set the Q control to FULL.
7. Connect the LP output to an oscilloscope and/or an audio system and observe or listen to the resulting sine wave.
8. Turn R48 counter clockwise until the sine wave is 10V peak to peak (-5 to +5) .
9. This sets the self resonance amplitude of the self reonance.
10. You can continue turning the trimmer counter clockwise until the sine wave is 0 amplitude. The VCF will then not self resonate as the Q control is turned up.You can set the trimmer between these two points to fine tune the amplitude of the self resonance.
11. If you cannot get the resonance to operate to your requirements, the R25 trimmer can be used to set the Volts/Q ratio.

Calibrating the FREQUENCY tracking

1. Disconnect all CV sources from the inputs.
2. Set the level control to 0.
3. Set the F control to the center.
4. Set the Q control to FULL.
5. Set the V/OCT trimmer R23 to its center position and the HF trimmer R34 (if using) is fully CCW if you did not already do this before soldering.
6. Connect the LP output to a frequency counter and an audio system and observe and listen to the resulting sine wave.
7. Supply 0V to one of the FCV inputs from a keyboard controller or other voltage source.
8. Adjust the F panel control until the frequency is 100Hz.
9. Supply 2V to one of the FCV inputs from a keyboard controller or other voltage source.
10. Adjust the trimmer R23 until the frequency is 400Hz.
11. Reduce the FCV input voltage back to 0V.
12. Now readjust the F panel control until the frequency is 100Hz.
13. Repeat steps 7 to 12 until the frequency doubles for each 1V increase in FCV input without needing to adjust the F control or the trimmer.

14. You can also try $3V = 800\text{Hz}$, $4V = 1600\text{Hz}$, $5V = 3200\text{Hz}$. Try and get the best tracking across the voltage range.
15. You can turn the HF trimmer R34 (if installed) to get better tracking at the higher frequencies.