

# FREQUENCY CENTRAL

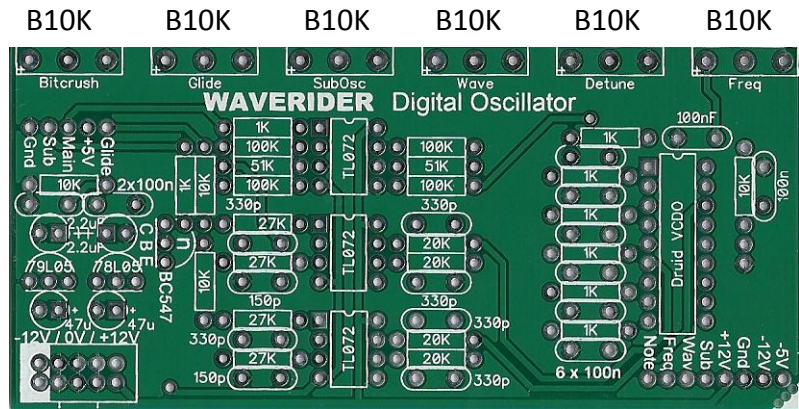
Build documentation for:

# WAVERIDER DIGITAL VCO

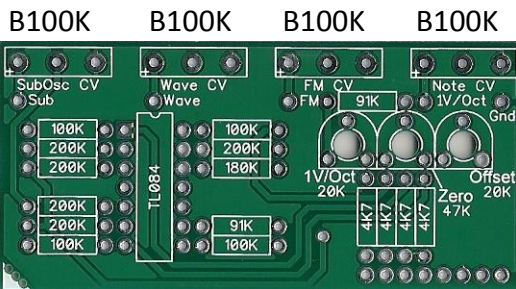
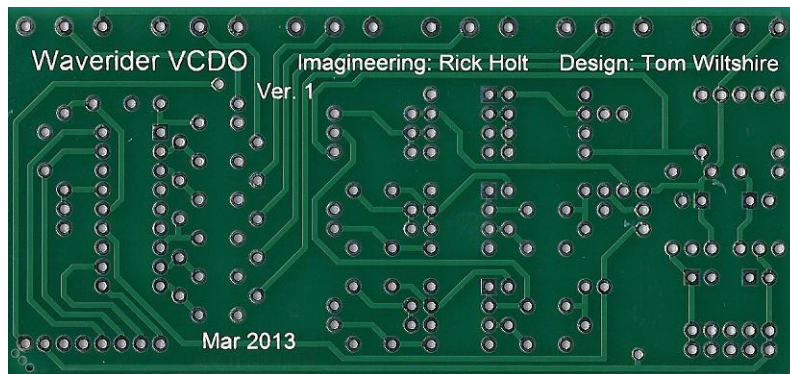
Based on the Electric Druid PIC 16F1847 VCO1:

<http://www.electricdruid.net/datasheets/VCO1Datasheet.pdf>

Ground (Gnd), Sub (output), >>>  
Main (output), +5V, Glide (in).



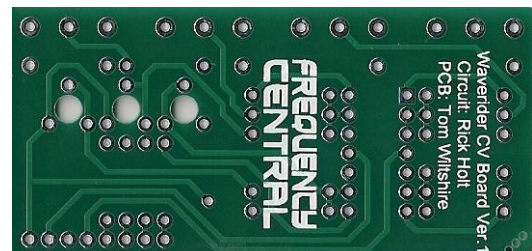
8 way ribbon



<<< Sub, Wave, FM and 1V/oct CV input pads,  
Ground pad (Gnd).

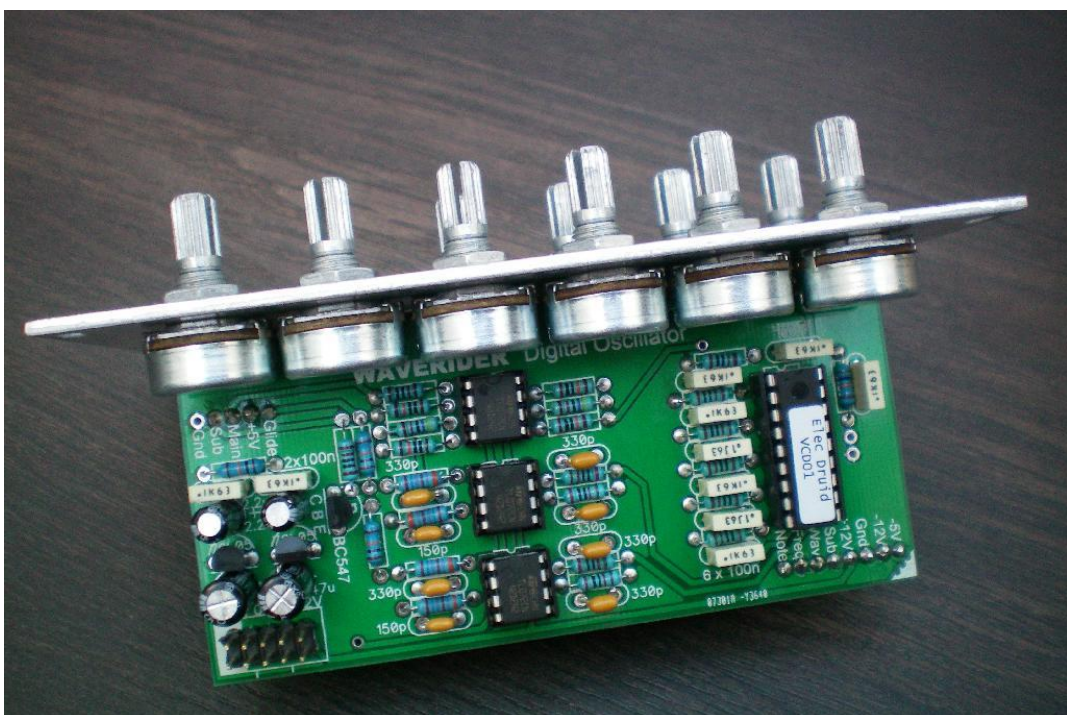
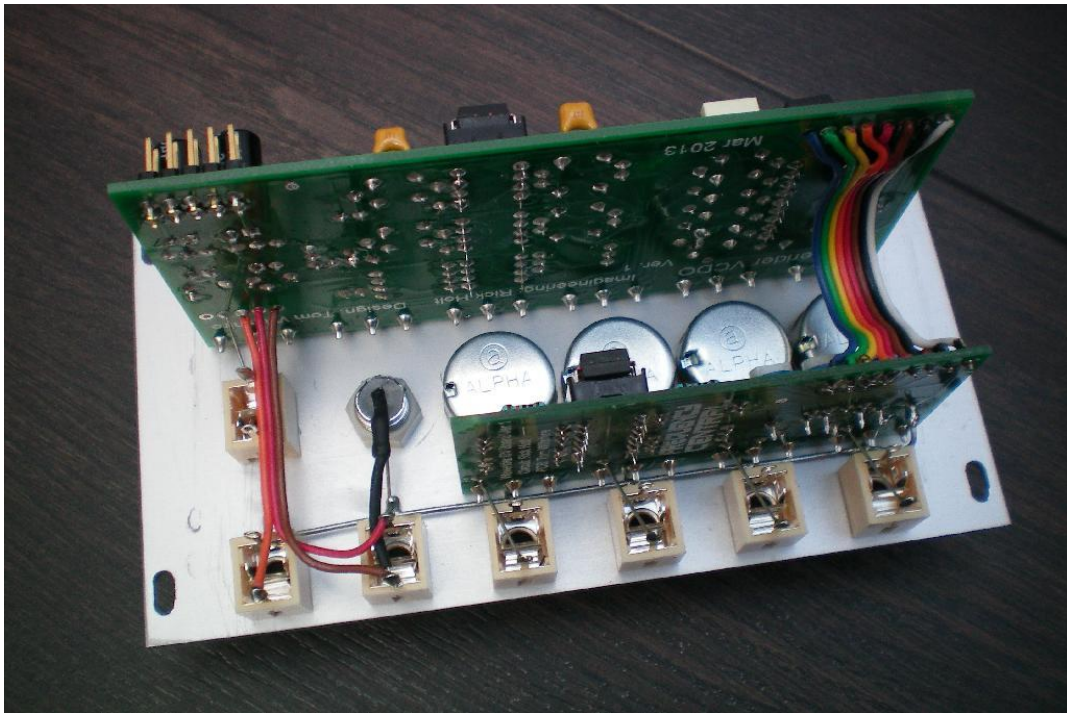
8 way ribbon

Three fat access holes for calibrating the >>>  
trimmers 'from behind' with a jeweller's  
screwdriver.



**Things to note on the photo below:**

- 8 way ribbon between the two PCBs
- Ground bus connecting all sockets and terminating in the CV PCB Gnd pad.
- CV inputs x 4, solid core to CV PCB pads.
- Glide LED, the 1K CLR (inside the black heatshrink) connects between the LED anode and the Glide input, the LED cathode connects to the ground bus.
- Sub Out, solid core from main PCB.
- Main output (orange wire).
- +5V to glide socket's normalise lug (red wire).
- Glide in (brown wire).



### Glide status LED

Glide is 'always on' providing there is no jack in the Glide input socket as the normalise lug of the socket receives +5V from connection to the Main PCB, the glide amount being determined by the Glide knob. Inserting a jack into the Glide input socket disables 'always on', and Glide will only occur when the Glide input socket receives a +5V gate signal. The Glide status LED (and a CLR/limiting resistor, I use 1K) is connected between the Glide input lug and ground.

### Tracking/calibration procedure

- Send a 1V/oct source into Frequency CV input, set the Frequency CV input attenuator fully clockwise. Set Glide fully counter-clockwise.
- On plug-in with all trimmers in the mid position you should find that the bottom notes of a 5 octave keyboard don't do anything. So, trill between bottom C and C#, and adjust the Offset trimmer until both notes sound. You've just set up the CV offset.
- Play a couple of C's an octave apart towards the middle of the keyboard, adjust the 1V/oct trimmer until they are true. Then play every note on the keyboard, listen for any trilling notes - that means the note isn't quite sure what it wants to be. Fine tune Offset trimmer and 1V/oct trimmer until everything is cool, playing octaves and finally every damned note!
- Set Detune knob to 12 o'clock, match Waverider to a known pitch source using Zero trimmer. If you have an O'Tool = even easier: play an A on the keyboard, find a note close to A4 on the Frequency pot, adjust Zero trimmer to 440Hz.
- Takes about 5 minutes...!

### **Bill of Materials**

1K x 8	150pF x 2	VCDO1 PIC x 1	B10K x 6
4K7 x 4	330pF x 6	TL072 x 3	B100K x 4
10K x 4	100nF x 10	TL084 x 1	
20K x 4	2.2uF x 2	BC547 x 1	All pots are 16mm Alpha
27K x 4	47uF x 2	78L05 x 1	
51K x 2		79L05 x 1	20K trimmer x 2
91K x 2			47K trimmer x 1
100K x 8			
180K x 1			All trimmers are 6mm (Tayda)
200K x 5			

Please observe correct polarity of the electrolytic caps, voltage regulators, transistor, ICs etc!

RDH 21/05/13

<http://www.frequencycentral.co.uk/>