

FREQUENCY CENTRAL

Build documentation for:

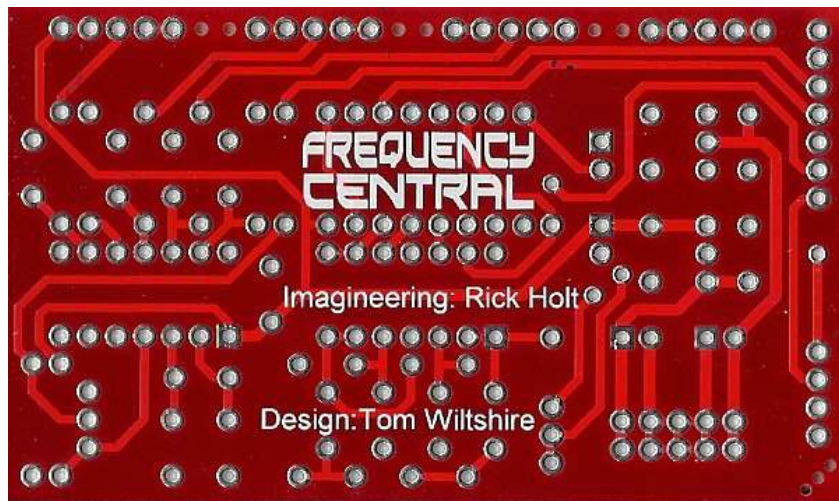
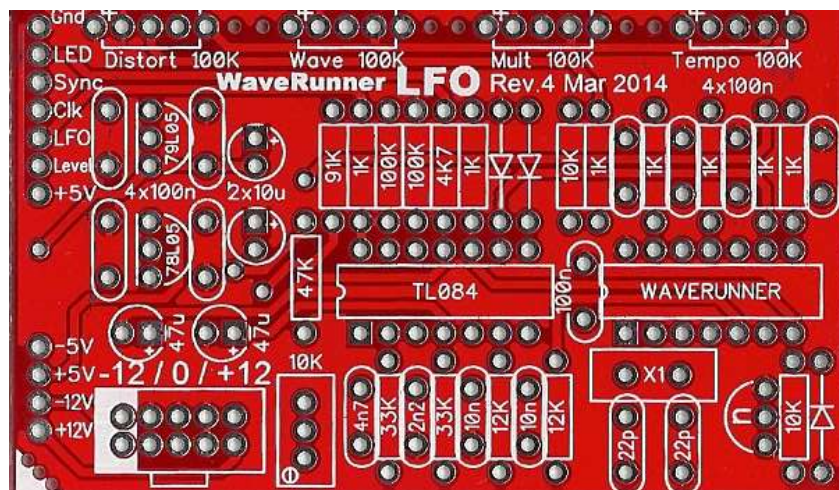
WAVE RUNNER

Powered by Electric Druid code exclusive to Frequency Central

Wave Runner is a multi-waveform sync-able LFO based on the Electric Druid TAPLFO2D family of code, but with some significant additions and improvements. The TAPLFO2D-FC PIC is not compatible with similar modules, and was developed specifically for the Wave Runner.

Please note that the Wave Runner PCB includes pads for either 9mm pots or 16mm pots. If you're using my 4HP panel you'll need to use 9mm pots. Be sure to install them into the correct pads, indicated by boxes on the PCB.

Oh yeah, you'll see on my build (below) that I used B10K pots, just because I have a metric shitload of them – Wave Runner is not fussy, you can use B10K, B50K, B100K etc. I mention this because in the past I've found that a few stores seem to be regularly out of stock of B100K.



Bill of Materials

| | | | |
|----------|-----------------------|--------------------|---|
| 1K x 7 | 22pF x 2 | WAVERUNNER PIC x 1 | B100K x 4* |
| 4K7 x 1 | 2.2nF x 1 | TL084 x 1 | *pads provided for either Alpha 9mm or Alpha 16mm pots. For 4HP panel use 9mm pots. |
| 10K x 2 | 4.7nF x 1 | BC547 x 1 | 10K trimmer |
| 12K x 2 | 10nF x 2 | 78L05 x 1 | Trimmer is multiturn, like this one. |
| 33K x 2 | 100nF x 9 | 79L05 x 1 | Sockets x 4 |
| 47K x 1 | 10uF electrolytic x 2 | 1N4148 x 3 | |
| 91K x 1 | 47uF electrolytic x 2 | 3mm red LED x 1 | |
| 100K x 2 | | 20MHz crystal x 1 | |

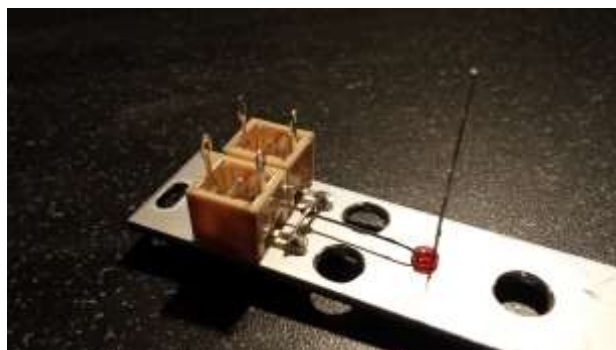
Assembly

Easy – just populate the PCB! Please observe correct polarity for all ICs, transistors, diodes and electrolytic capacitors.

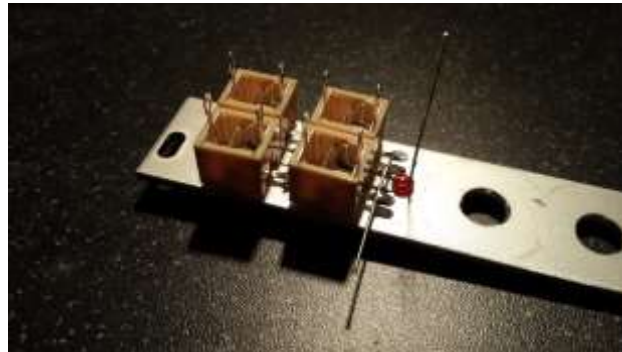


Mounting onto the panel

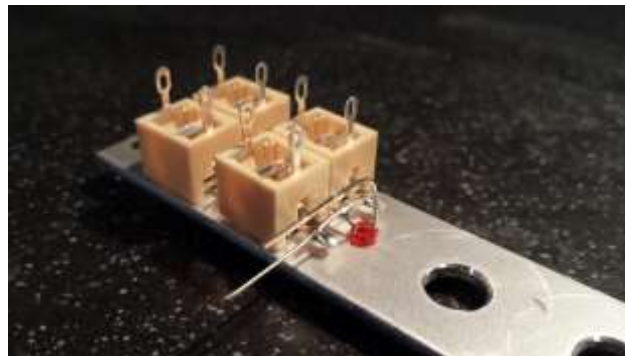
- Mount the two lowest sockets (LFO, CLOCK) onto the panel with the ground tabs pointing upwards.
- Bend the short leg of the LED by 90° and push it through it's hole. The bent leg should meet the sockets.
- Use a resistor leg to connect the two socket grounds to the bent leg of the LED.



- Mount the two highest sockets (LEVEL, SYNC) onto the panel with the ground tabs pointing upwards.
- Use a resistor leg to connect the two socket grounds to the bent leg of the LED, allowing the resistor leg to extend out from the panel by 15mm or so (see photo below)



- Gently bend over the LED leg that's sticking up by 90°, making sure it's 5mm or so above the panel (see photo below).

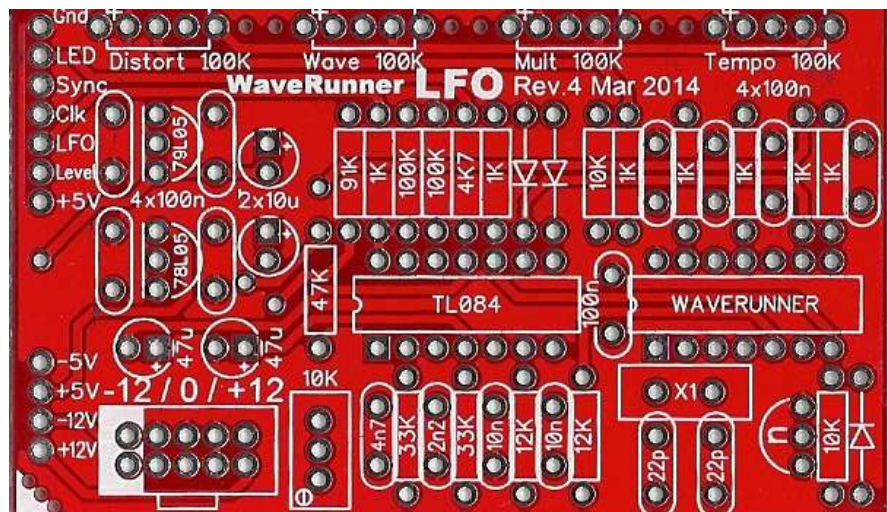


- Grab the PCB, push the ground wire (that you created from the resistor leg) through the pad marked **Gnd** on the PCB, and the LED leg through the pad marked **LED** on the PCB.
- Push the pots into their holes, and mount them with their washers/nuts.
- Take up any slack on the ground wire and LED leg, solder in place.

Wiring the PCB to the sockets

- Connect to ground wire
- Connect to LED leg
- Connect to SYNC socket
- Connect to CLOCK socket
- Connect to LFO socket
- Connect to LEVEL socket
- Connect to LEVEL switched lug

No connection for these four



Calibration

The 10K trimmer right by the power header is for Level CV zero offset. Correct set calibration ensures that the output from the LFO socket is spot-on at 0V when the Level CV input sees 0V. This is particularly important when using Wave Runner as a pitch vibrato source into a VCO with a mod wheel controlling LFO depth via the Level CV.

1. Hook up the LFO output to a DMM
2. Ground the Level CV input
3. Adjust the trimmer until your DMM reads exactly 0V

RDH 31/05/14

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