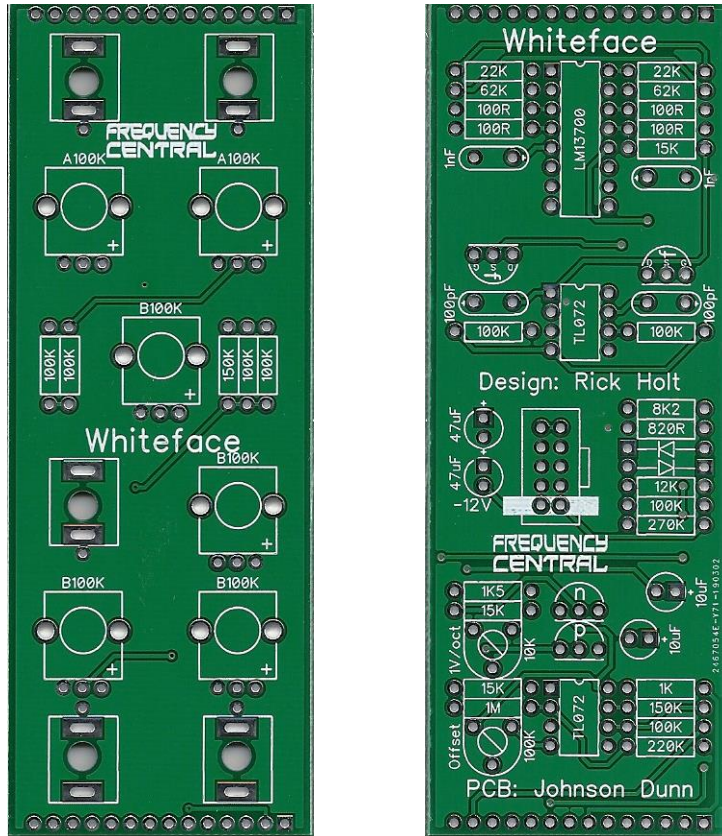


FREQUENCY CENTRAL

Build documentation for:

WHITEFACE

Based on the legendary ARP 4023 VCF often found within "whiteface" ARP Odyssey Mk1.



I've engineered out the rare parts and the need for matched transistors for the CV input section by using a Roland style circuit there instead, no change to the vibe though! The audio path remains pure ARP, with one exception. Built stock from the schematic, the resonance would clip like a motherfucker above 3 o'clock, in a way which is neither musical or desirable. I've come across a couple of other versions which have this *'don't turn it up past 8'* trait. I've engineered that out - a single resistor values change. Now resonance is usable and musical over the entire range. As we're bringing part of a hardwired synth to modular, it's also necessary to buffer the output. I've used an inverting buffer, which also adds a bit of gain to bring it up to modular levels. A nice side effect of the inverting buffer is that if you mix the input signal with the filter output, and find the sweet spot, you can do highpass filtering too!

Key to PCB screen print:

n: This signifies NPN BC547 transistors. Note the correct pinout as shown by the half circles.

p: This signifies PNP BC557 transistors. Note the correct pinout as shown by the half circles.

f: This signifies 2N5485 FET. Note the correct pinout as shown by the half circles.

The PCB shows the correct orientation for BC547/BC557/2N5485. Other transistor types can be used (eg 2N3904/2N3906), but please observe the correct pinout.

Please observe the correct polarity of the electrolytic capacitors.

Bill of Materials

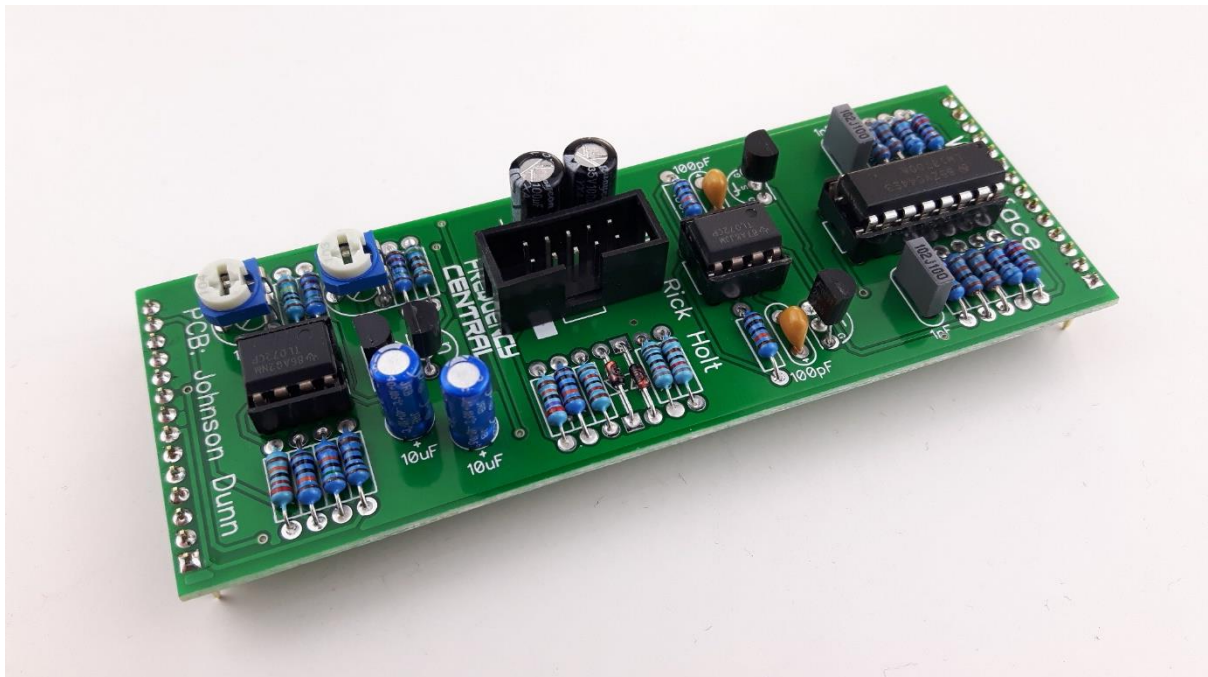
100R x 4 820R x 1* 1K x 1 1K5 x 1 8K2 x 1 12K x 1 15K x 3 22K x 2 62K x 2 100K x 8 150K x 2 220K x 1 270K x 1 1M x 1 All resistors ¼ watt metal film.	100pF x 2 1nF x 2 10uF electrolytic x 4 47uF electrolytic x 2	TL072 x 2 LM13700 BC547 x 1 BC557 x 1 2N5485 x 2 1N4148 x 2 8 pin socket x 2 16 pin socket x 1	A100K x 2 (or these)** B100K x 3 (or these)** B100K x 1 10K trimmer x 1 100K trimmer x 1 3.5mm socket x 5 Male 40 pin header Female 40 pin header 10 pin box header Big knob
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* If you want ugly, unmusical clipping use 470R instead.

** I prefer the Song Heui tall trimmers because they have a longer shaft and a white notch.

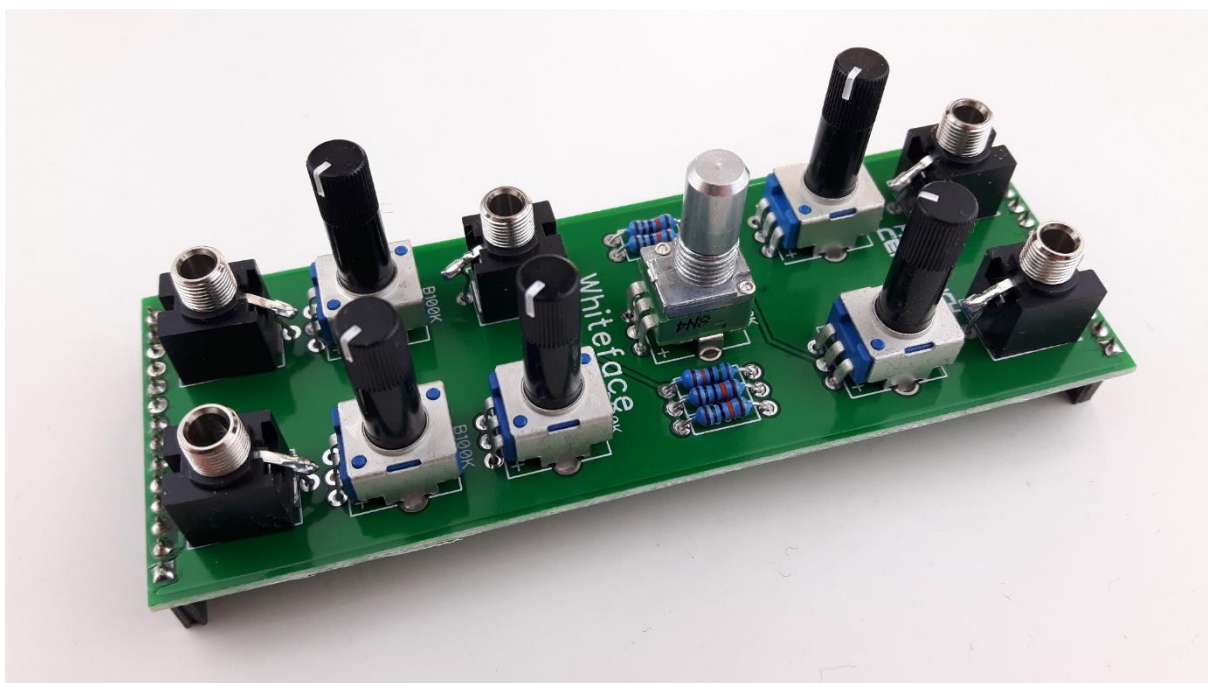
Main PCB assembly

1. Solder both diodes and all resistors.
Tip - don't mix up the 100R and 100K
2. Solder all IC sockets
3. Solder all non-electrolytic capacitors
4. Solder all transistors
5. Solder the power header – if you're using box type, observe correct polarity
6. Solder all electrolytic capacitors
7. Cut male headers to size and solder them into place. Make sure that they stick out of the bottom of the PCB.



Pots 'n' sockets PCB

1. Solder all resistors
2. Place all sockets on the PCB, making sure the ground tabs line up with the PCB's ground pads, then place the panel over them. This will assure that the sockets are correctly positioned. Flip the whole lot over and solder the sockets into place.
3. Place all pots on the PCB, and fold over their mounting tabs at the rear of the PCB, then place the panel over them. This will assure that they are correctly positioned. Flip the whole lot over and solder the pots into place.
4. Cut female headers to size and solder them into place. Make sure that they stick out of the bottom of the PCB.



Note: Not all pots and sockets are equal in height. Providing you use the ones in the links provided, everything will line up perfectly.

Make sure that you plug the **Main PCB** into the **Pots 'n' sockets PCB** the right way around – Frequency Central logo should be the right way up.

Calibration

1. **1V/Oct trimmer:** turn Resonance all the way to self oscillation. Patch a 1V/oct source into CV input 1, with the attenuator fully clockwise. Play octaves and adjust the V/Oct trimmer until they are spot on.
2. **Offset trimmer:** you want to tweak this so that the filter is fully open when the Cutoff pot is fully clockwise.



RDH 09/03/19

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