FREQUENCY CENTRAL
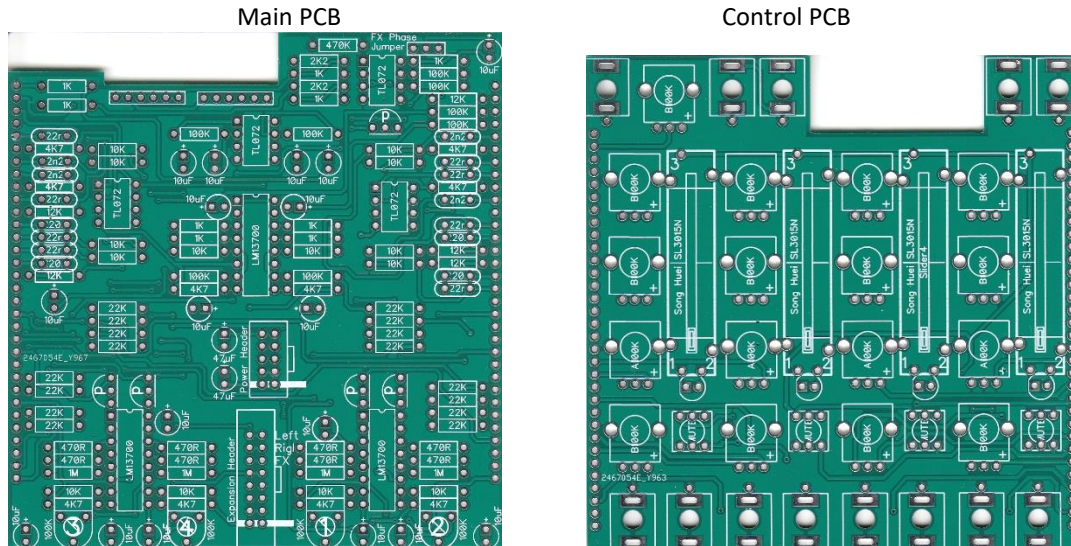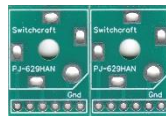
Build documentation for:

STRIPS

Expandable 4 channel VCA based stereo mixer with tone shaping and FX bus.

Main PCB

Control PCB

6.35mm jack PCBs (snap apart):

Features:

- 4 x input channels, each featuring LEVEL, HIGH, LOW, FX send, PAN, MUTE and CV control of level.
- FX send and stereo return + FX phase jumper
- Left and Right Eurorack level inputs (2 x 3.5mm sockets)
- Left and Right line level outputs (2 x 6.35mm sockets)
- Scribble strips!

Strips is also expandable! You can add a second strips, connected to the first via a 16 pin to 16 pin cable. The cable **powers the second Strips** and gives you 8 channels to play with. The second Strips accesses the first Strips FX bus. When using in expanded configuration, the FX send/return and main outputs for the second Strips are not available.

FX phase jumper – because not all FX that you might use in the FX loop are in phase with respect to their input/output. The phase jumper allows you to compensate for this and avoid weird phase cancellations.

SMD resistors on Control PCB - yeah sorry about this, but the layout would not have been possible using through hole resistors on the Control PCB. This may sound intimidating if you haven't used SMD before, but its quite easy really. We've even used larger 1206 pads to make it easier. We recommend that you use 0805 resistors. The combination of 1206 pads and 0805 resistors means that there is plenty of space to apply solder/heat around the resistor.

| Bill of Materials			
1/4 watt metal film: 470R x 8 1K x 9 2K2 x 2 4K7 x 11 10K x 14 12K x 5 22K x 16 100K x 8 470K x 1 1M x 4 **1/8 watt 0805 SMD** 4K7 x 4 10K x 8 12K x 4 100K x 8	2.2nF x 8 22nF x 16 220nF x 8 10uF x 18 47uF x 4	LM13700 x 3 TL072 x 4 BC557 x 3 3mm red LED x 4 8 pin socket x 3	B100K Song Huei x 4, 30mm sliders* Slider caps x 4** A100K Song Huei x 4*** B100K Song Huei x 13*** Push button x 4 Button caps x 4 100K trimmer x 4 3.5mm socket x 13 6.35mm socket x 4 Male 40 pin header Female 40 pin header 10 pin box header x 1 16 pin box header x 1 Jumper x 1 for FX phase
* You can also order direct from Frequency Central when you order your PCBs/panel ** Yes, these, despite the description.			

Please observe the correct polarity of the electrolytic capacitors.

Main PCB assembly

1. Solder all resistors
2. Solder all non-electrolytic capacitors, 2n2, 22n, 220n. The graphic below should help with placement.
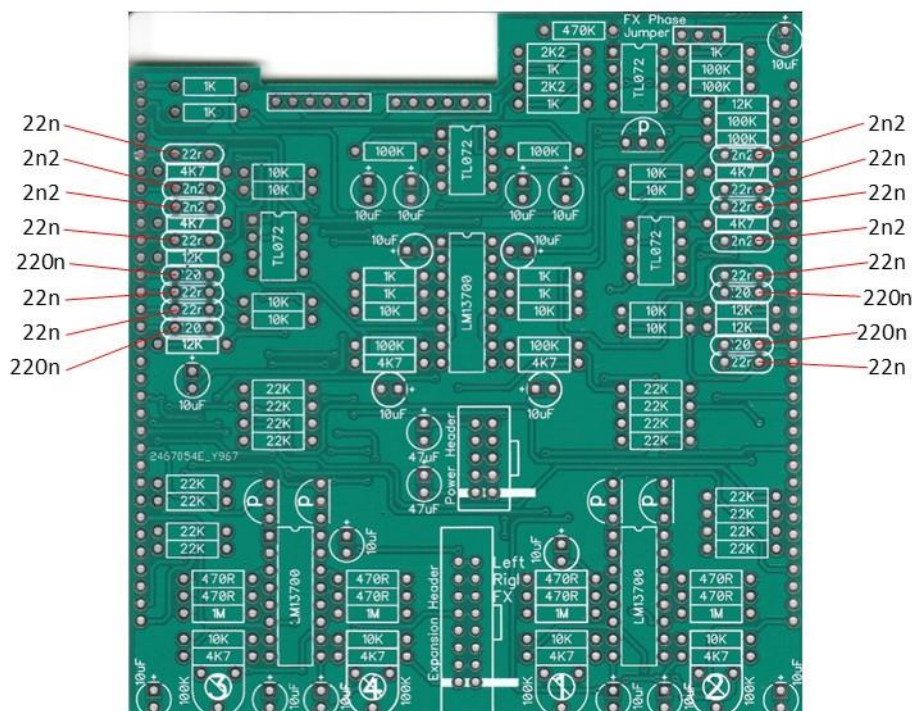

3. Solder IC sockets
4. Solder 5 x BC557 transistors – watch the polarity
5. Solder 4 x 100K trimmers
6. Solder the FX Phase jumper (cut the male header to length beforehand)
7. Solder all electrolytic capacitors (10uF and 47uF) – watch the polarity.
8. Solder male headers along the two sides of the PCB.
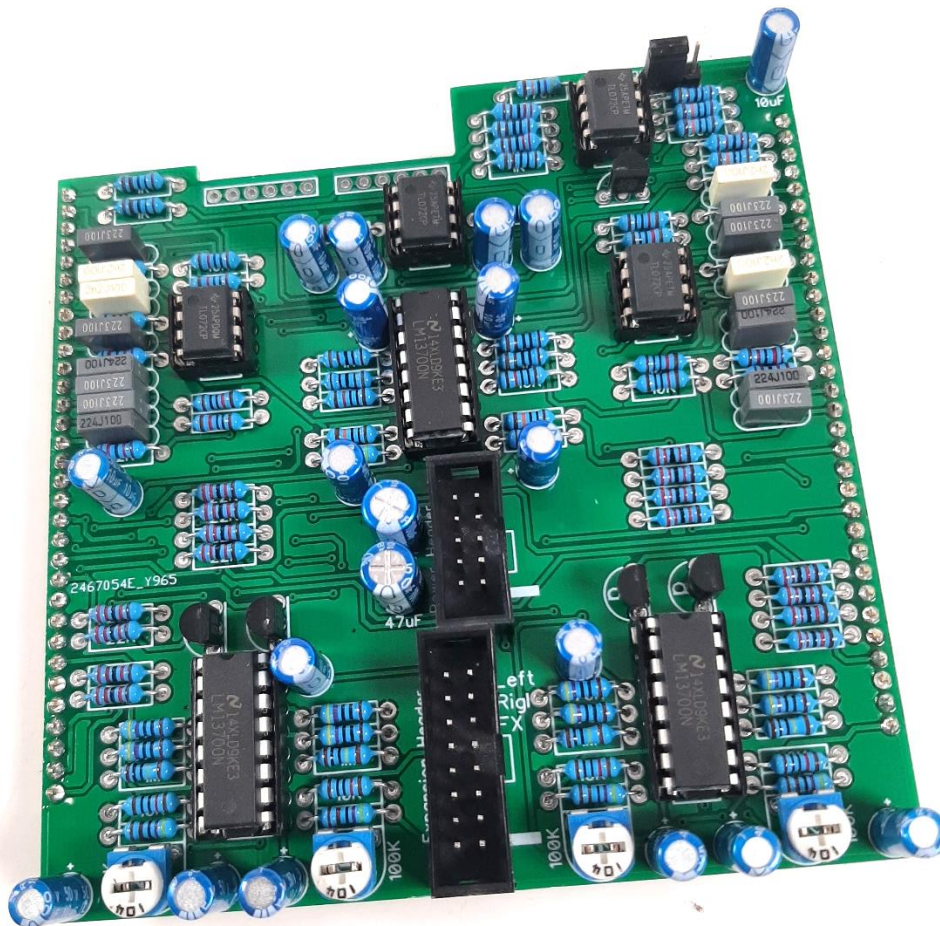
Control PCB assembly (bottom)

BEFORE COMMENCING SOLDERING PLEASE LOOK CAREFULLY AT THE PHOTO BELOW AS WELL AS THE PCB ITSELF FOR ORIENTATION OF SMD RESISTORS

1. Lightly tin all SMD resistors pads on the PCB. This means that you should use your iron to heat each pad and apply a small amount of solder.
2. Pick up a 0805 resistor with tweezers and present it to the pads. While holding the resistor in place, heat the pad. This should hold the resistor in place. Now heat the other pad to complete the process of placing this resistor.
3. Sometimes it's worth retouching both pads just to make sure!
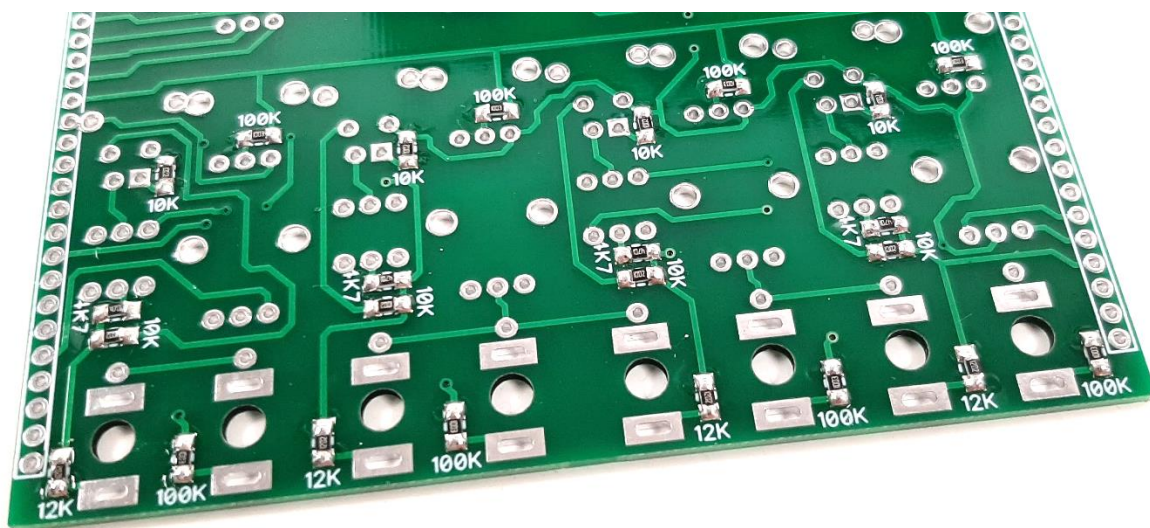
Control PCB assembly (top)

1. Place all 4 push buttons onto the PCB. Place a piece of card (or similar) over all 4 push buttons. Flip the whole lot over and solder one tab on each switch. Check that they are all seated correctly, then solder the rest of the pads.
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 17 Song Huei tall trimmers and solder into place – don't mix up the A100K with the B100K.
4. Solder the 4 x sliders, amking sue that they fit flush to the PCB.
5. Place all 4 LEDs (short leg = square pad) and solder into place.
6. Solder female headers along the two sides of the PCB.
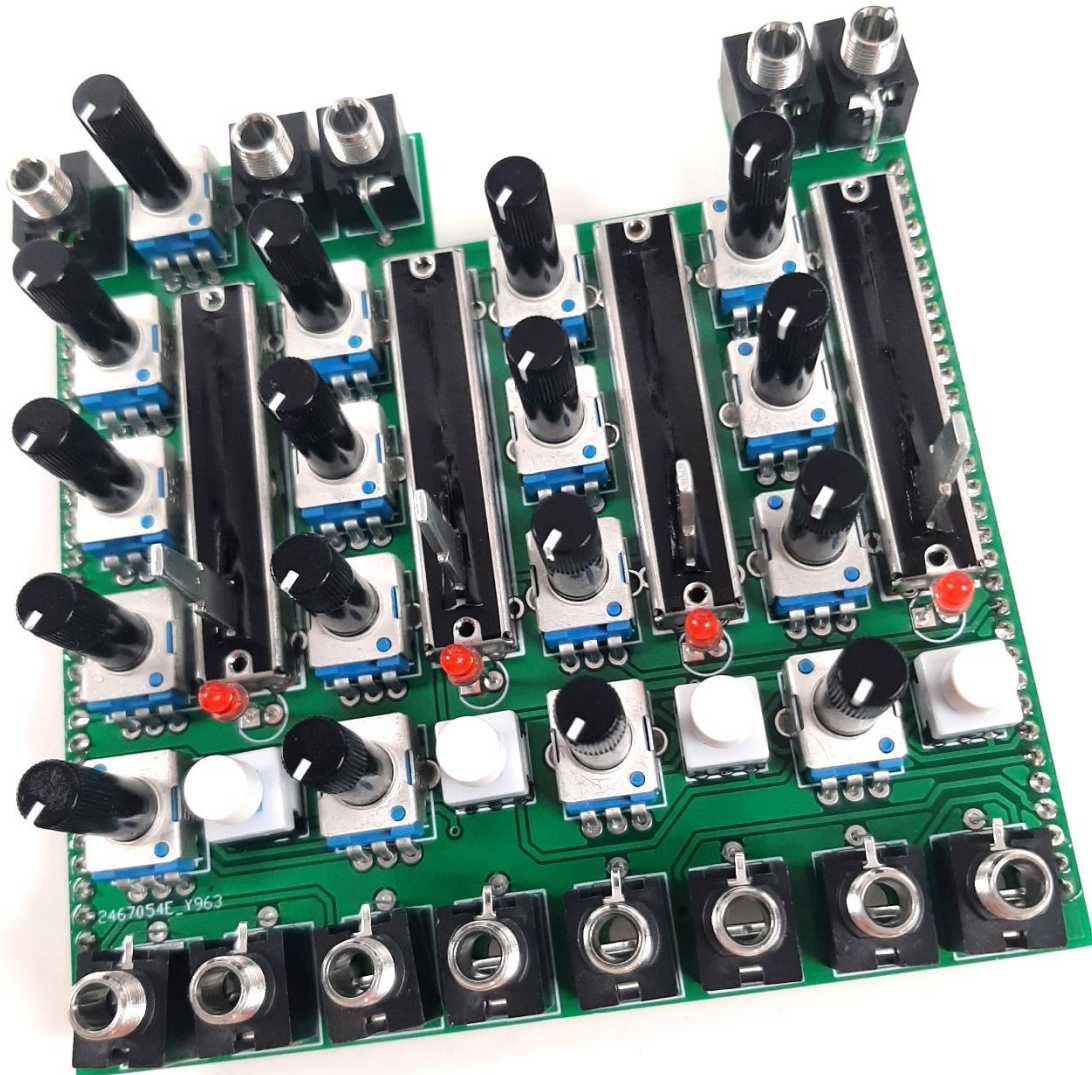
Fitting the 6.35mm sockets to the Main PCB

This is a somewhat unusual use of headers, but it works. We have to do it this way because to the relative heights of the PCB assemblies.
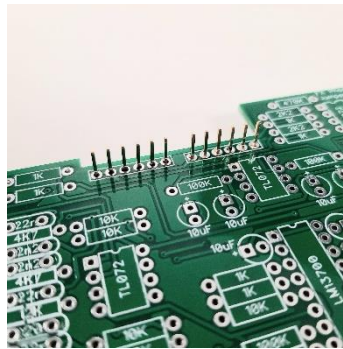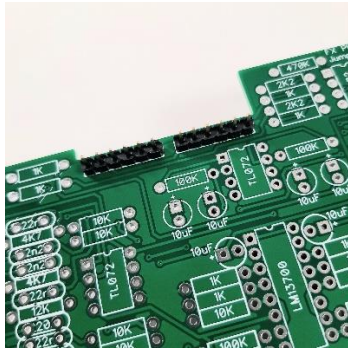
1. Place 2 x 6 pin male headers into the front of the Main PCB as shown, hold in place, turn the PCB over, then solder the headers to the back of the PCB.

2. Remove the plastic parts of the male headers. You can pry these off with pliers for example.

3. Solder the 6.35mm sockets to their little PCBs

4. Slide the socket/PCB assembly onto the headers and solder into place


Strips Version 3 error

Oh no! Mistakes were made! Don't worry, it's minor and easily fixed. The 2 x 6.35mm sockets are not grounded to the Main PCB, but can be corrected as shown.

The nearest ground is the ground pad of the left 3.5mm output. I used a resistor leg to link that to the first 6.35mm ground, then another resistor leg to daisy chain to the second 6.35mm ground.
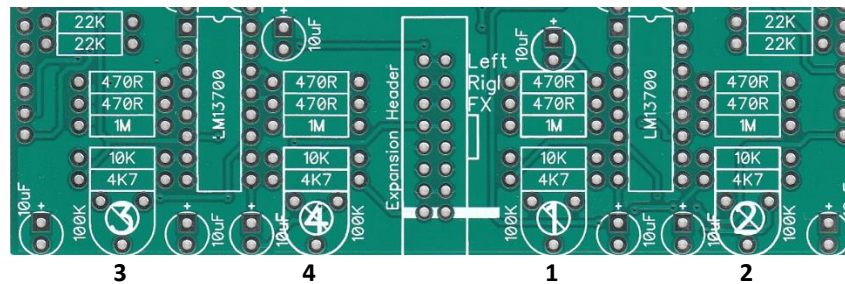
If you have Strips Version 4 or above there's no need to do this step.

Sorry about that!
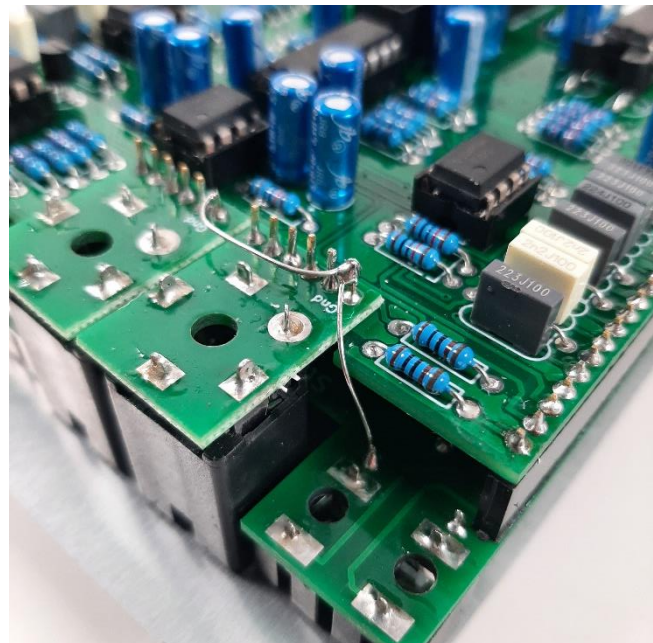
Calibration

Firstly, note the positions of the 4 trimmers. The numbers correspond to the channels:

While monitoring the audio output, patch a gate signal (or similar) into CV input #1, adjust the corresponding trimmer until no DC thunk is heard. Repeat the process for CV inputs #2, #3 and #4.

Expansion

Remove these 2 x TL072 on the second Strips. Think of them as fancy jumpers. Keep them safe to slot back in should you want to run the unit as a standalone at some future date.

RDH 21/09/23