Drone & Drama v2
Build document

The instrument is made of several boards. See the diagrams for component placement.
Note the pad markings for power, audio input and output and potentiometer or switch
connections. Some of the pads have symbols (+/-) to represent positive or ground/negative
connections.
With each PCB begin with the smallest (lowest profile) components and work up to the
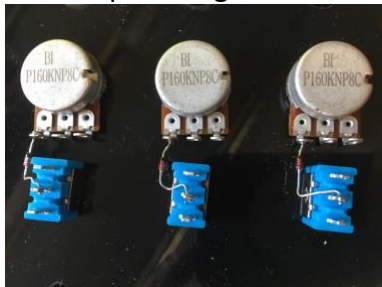largest:
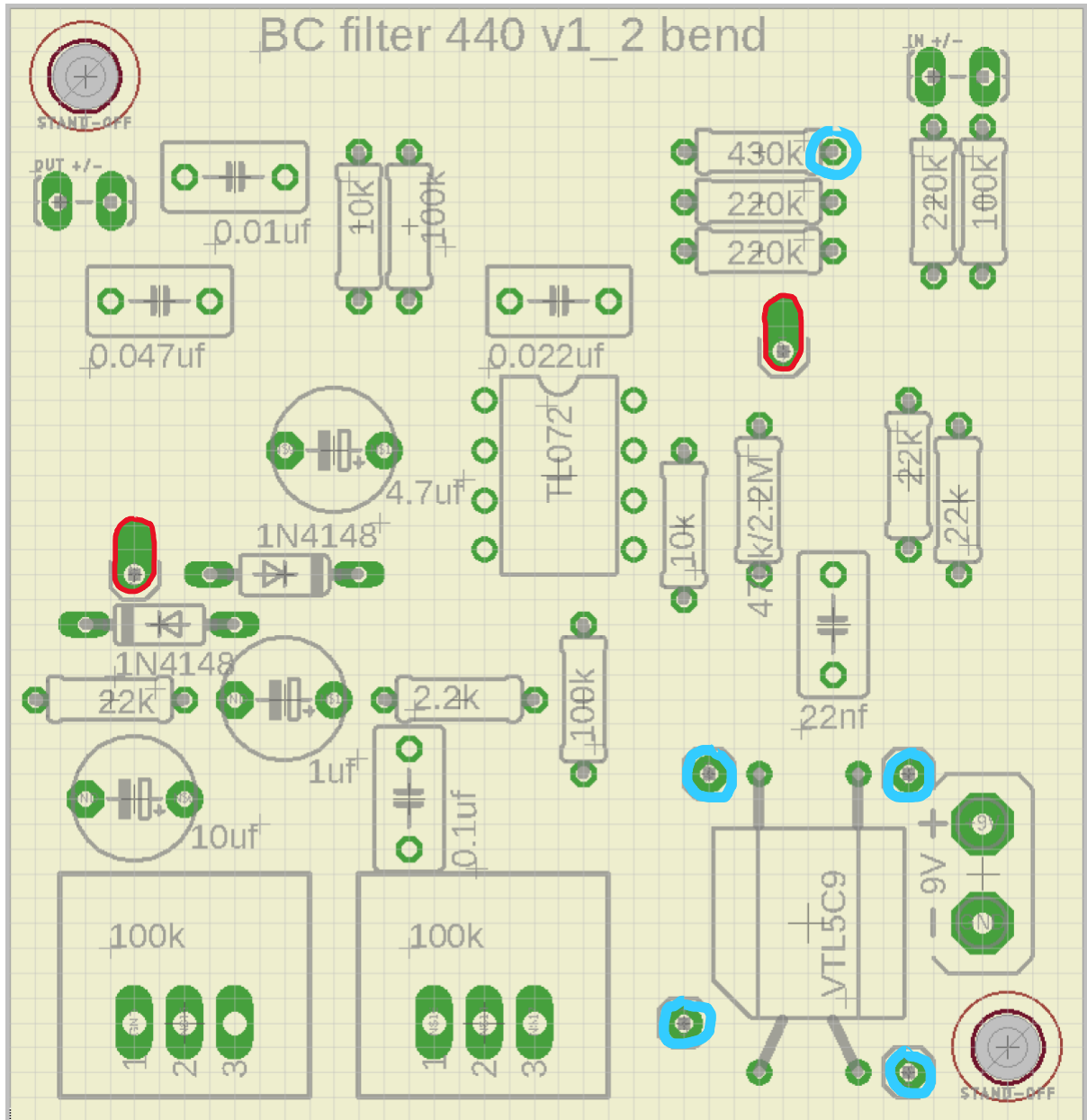Resistors & diodes / Capacitors / IC socket & IC / Vactrol / Connecting wire.
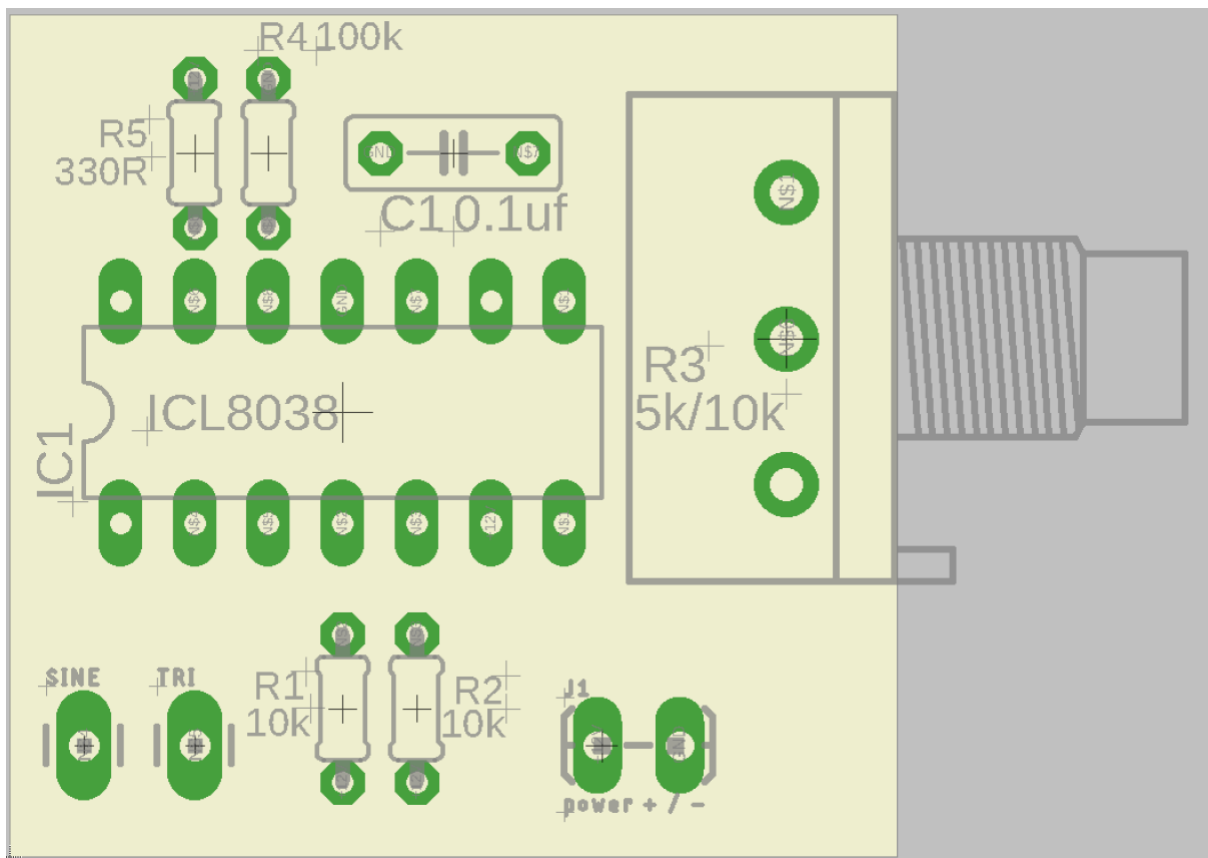
8038 Function Generator v1_1
The SINE & TRI pads should be connected to the outer lugs (1 & 3) of a three pin SPDT toggle
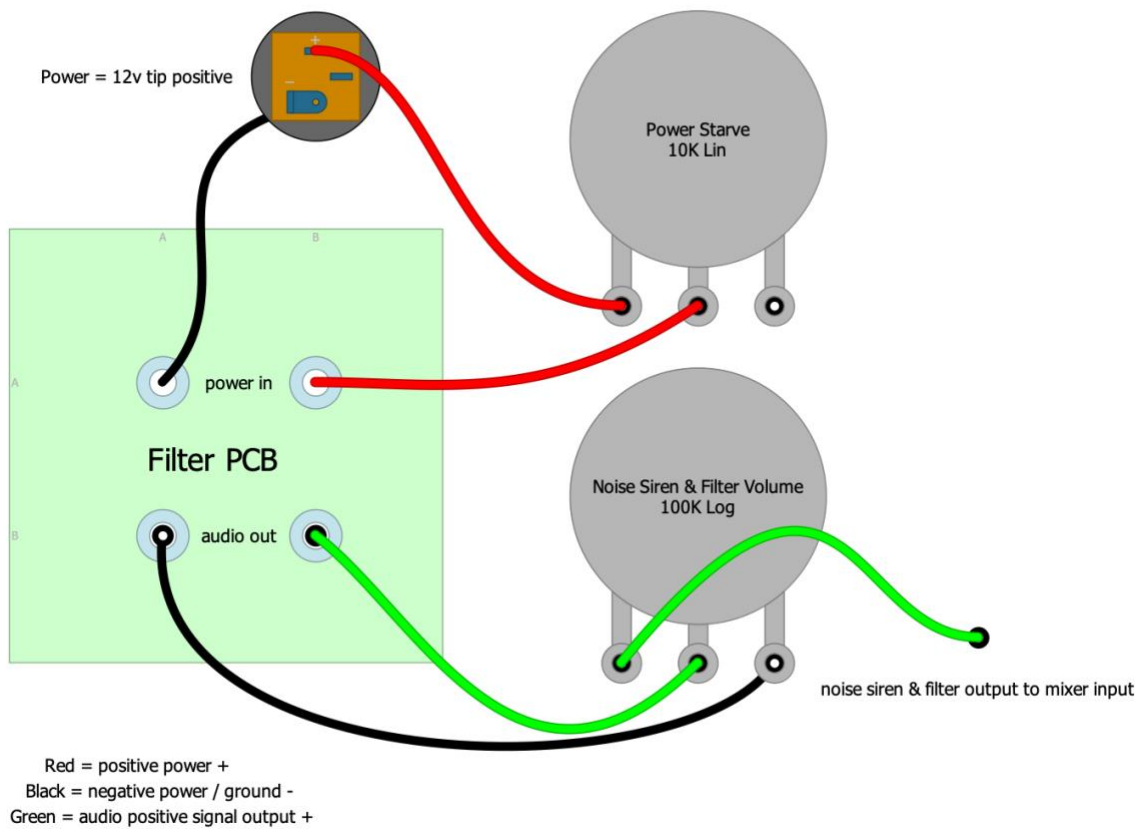switch.
The centre lug of the toggle switch (2) should be connected to the outer lug (3) of the
volume pot using a 1N4148 diode. Negative towards the pot.

Tone shaper / Filter v1_2
The two large unnamed pads, outlined in red, are to connect lugs 1 & 2 of a toggle switch to activate extra bent sounds. The pads outlined in blue (above) are not connected in the main build but have potential for creating extra bends. Explore.

Power = 12v tip positive

Power Starve
10K Lin

Filter PCB

power in

audio out

Noise Siren & Filter Volume
100K Log

noise siren & filter output to mixer input

Red = positive power +
Black = negative power / ground -
Green = audio positive signal output +

The above diagram shows the connection for the power starve and output volume pots for the filter.

100k   10k   10k   1k   AB9V

GND

+ 9V −

1M

470k

4046N

OUT −/+

1M

1uF

10uF

100uF

0.001uF

555

GND
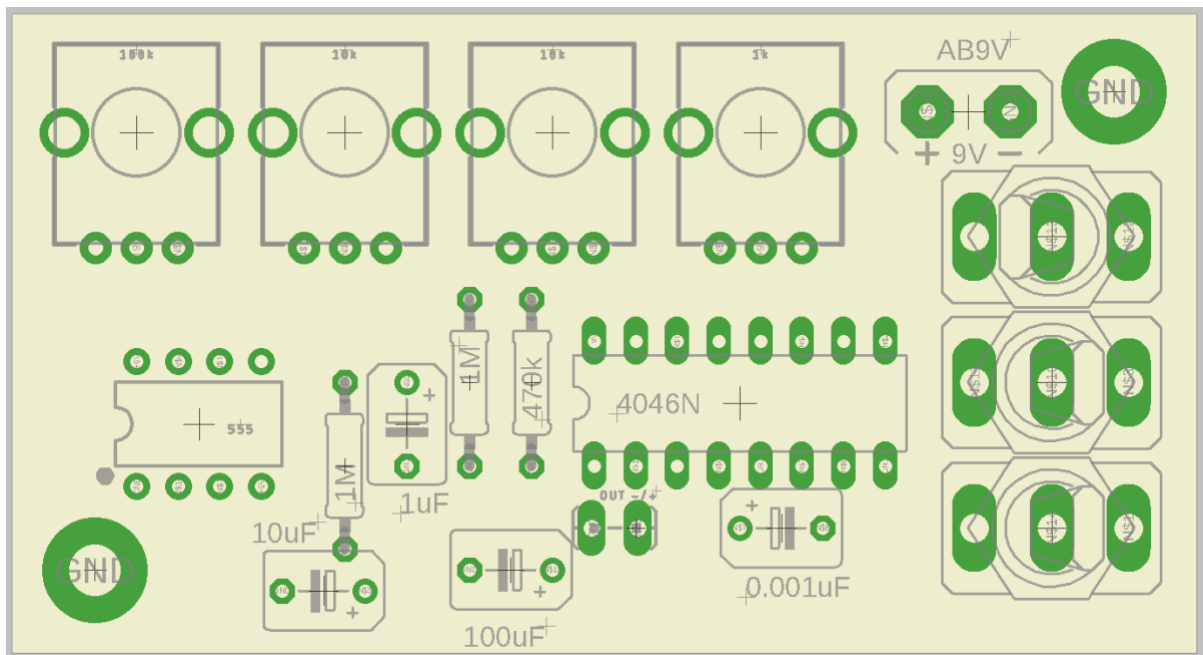
Noise Siren v2_3
Note orientation of output pads: - / +
Note on the right of the diagram – three SPDT toggle switches.
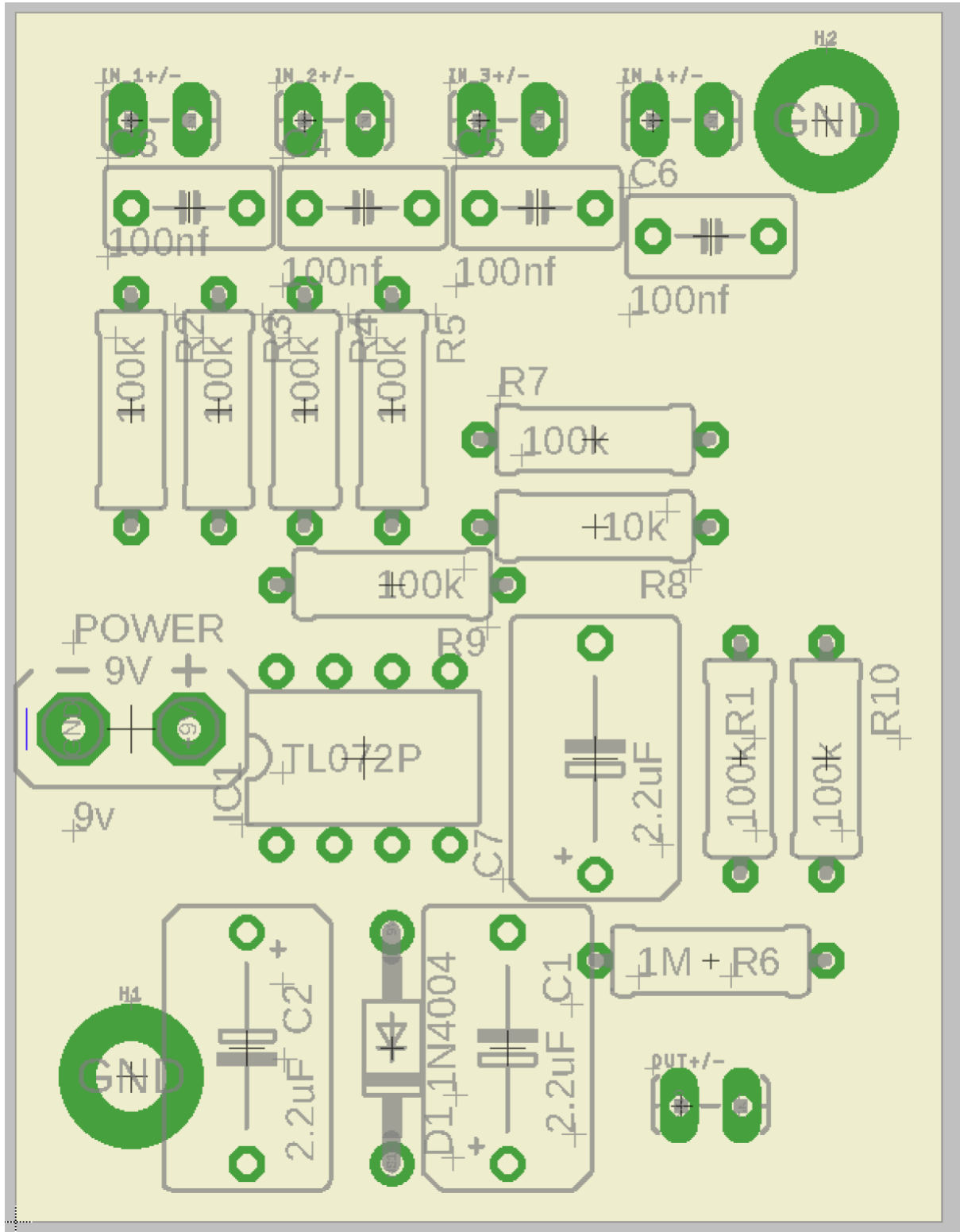
4 Channel Mixer v1

Some components are mounted on the panel. Here the volume controls are soldered together and connected to the ground of both the power and audio output jacks. Attach panel mounted components according to the diagram.
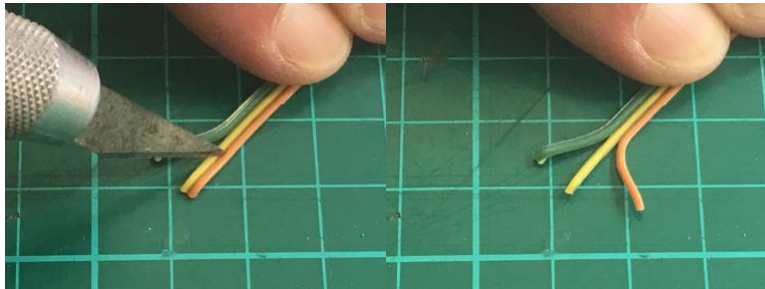

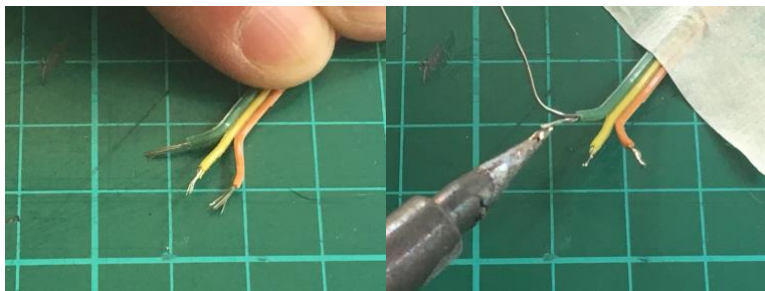Note the values of the potentiometers.

Quite a number of connecting wires are required to connect the PCBs.
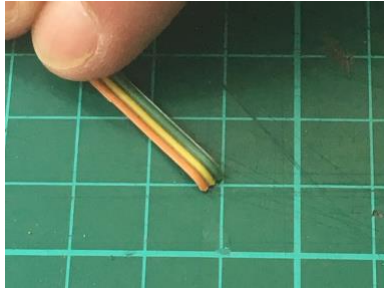
Rainbow coloured 'ribbon' cable can be very useful.

Make two-centimetre-long cuts between the strands.
Separate the number of strands required.

Strip away the plastic shield.
Tin the wires.
Tinning is melting a small amount of solder to a wire or component as a way of preparing it to be joined to another part.

Populate all the PCBs with the components as per the diagrams above.
Then prepare connecting wires to join the modules to one another and the interface hardware.

Here are suggested lengths and quantities to prepare wires for the main boards :

| Connection	Wire length (cm)	Quantity
Power to drone	10	1
Power to mixer	18	1
Power to filter	18	1
Power to noise siren	20	1
Drone to mixer	8	3
Mixer to output	18	1
Noise to filter	20	1
Noise to banana jacks	10	2
Filter to mixer	20	1
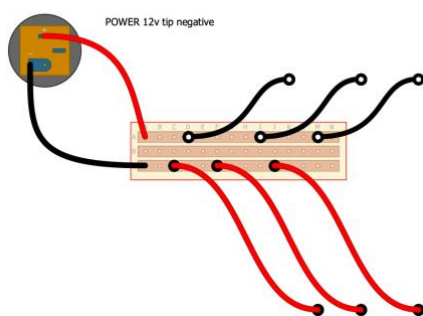
In order to make connecting each PCB to the power socket a little easier, I added a small section of vero board with a positive and negative/ground strip as per the illustration above.

When all of the PCBs are attached to their control hardware and one another, there is one more step. Connect the following pins of the CD4049 ic of the Noise Siren to the six banana jack sockets. See below the standard version with the wires soldered to the bottom of the PCB.
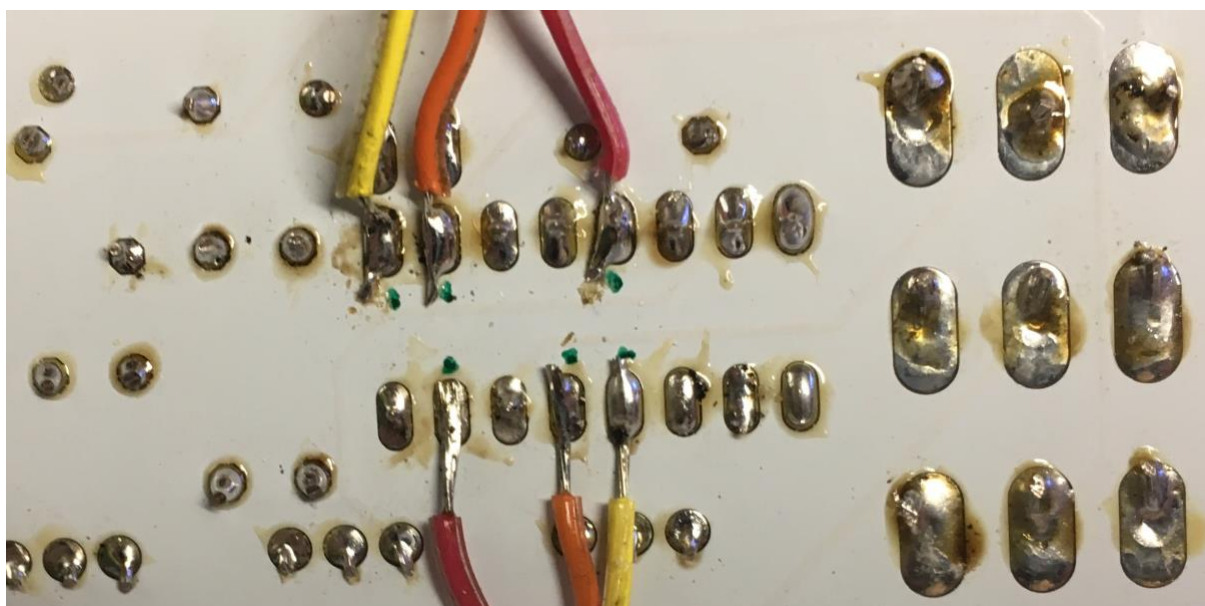
A panel, faceplate or enclosure for the controls is needed along with wire to connect the parts. An SVG or PDF file to laser cut two Perspex plates to form a 'sandwich' style enclosure can be downloaded from <mark>github/here</mark>.

Please ensure that the stroke width of the lines is set to the correct width to ensure clean cuts and engraving as per the laser machine you use.
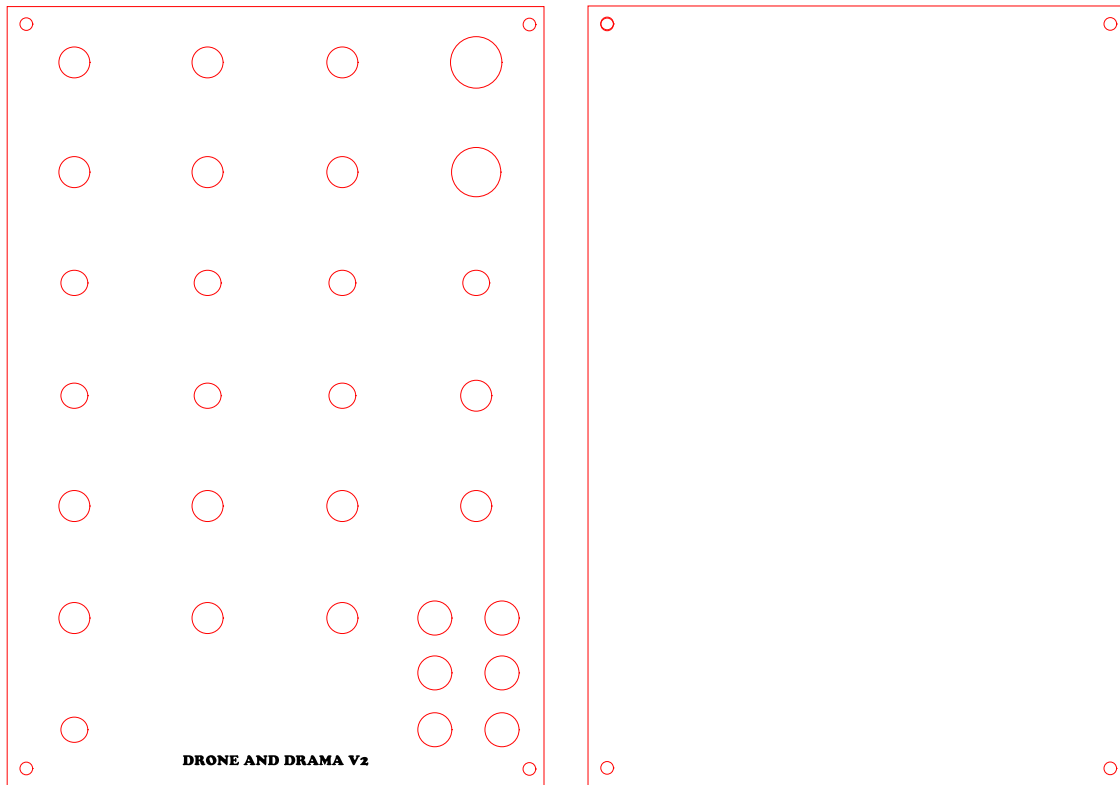
Drone & Drama v2 top and bottom plates to create 'sandwich' enclosure. The top and bottom plates are held together using hex standoffs. There should be around 3.5cm clearance between the two plates to ensure there is ample space for the interface hardware, connecting wires and PCBs.

You can organise the controls anyway you feel. The standard version is organised as below.
Yellow = Drone
Frequency, volume and waveform toggle.
Red = Noise Siren
Unpredictable speeds, gains and rates.
Blue = filter
Tones, power starve and gain.