FREQUENCY CENTRAL

Build documentation for:

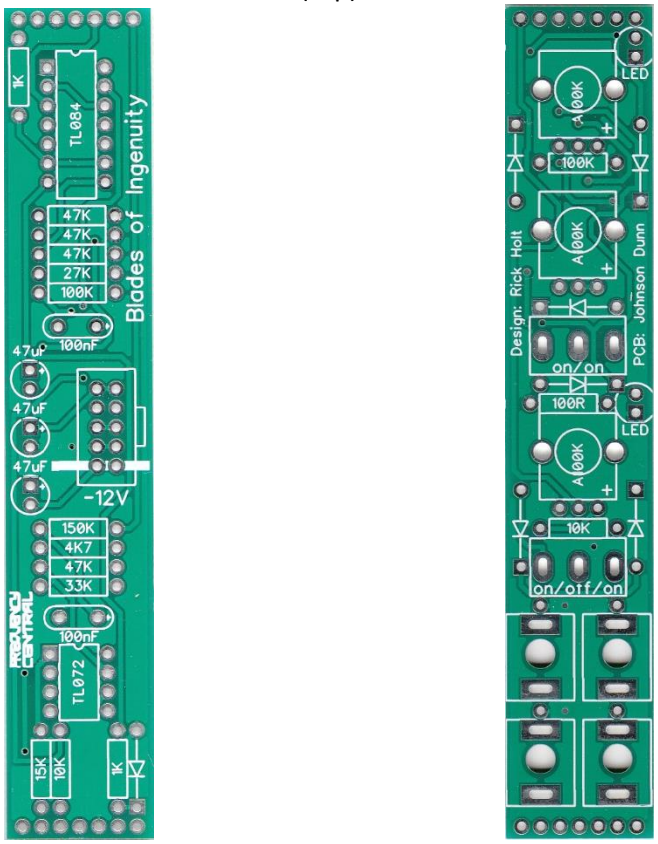
BLADES OF INGENUITY

4HP combined looping AR generator and triggerable LFO

Main PCB

Control PCB

(top)



(bottom)

Attack/Release generator

- one shot and looping modes
- looping mode range 19 Hz to 5 seconds

Low Frequency Oscillator

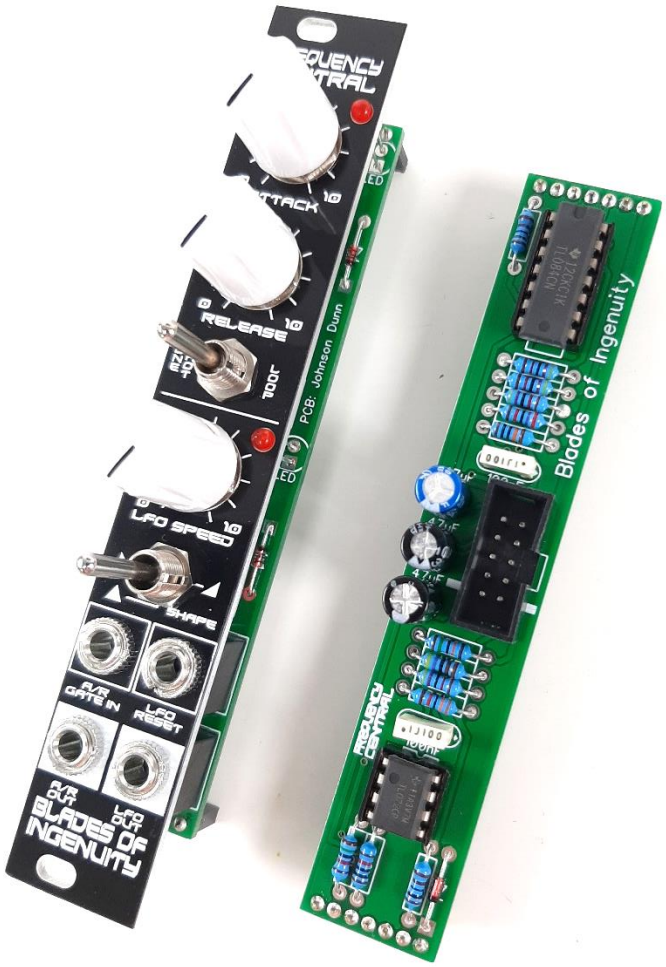
- sawtooth/triangle/ramp switch
- externally retriggerable
- range from 19 Hz to 60 seconds

Furthermore, interesting and unusual waveforms can be created by crosspatching, for example:

- A/R Out to LFO Reset (with A/R in loop mode)
- LFO Out to A/R Gate In (with A/R in loop mode)
- both of the above simultaneously

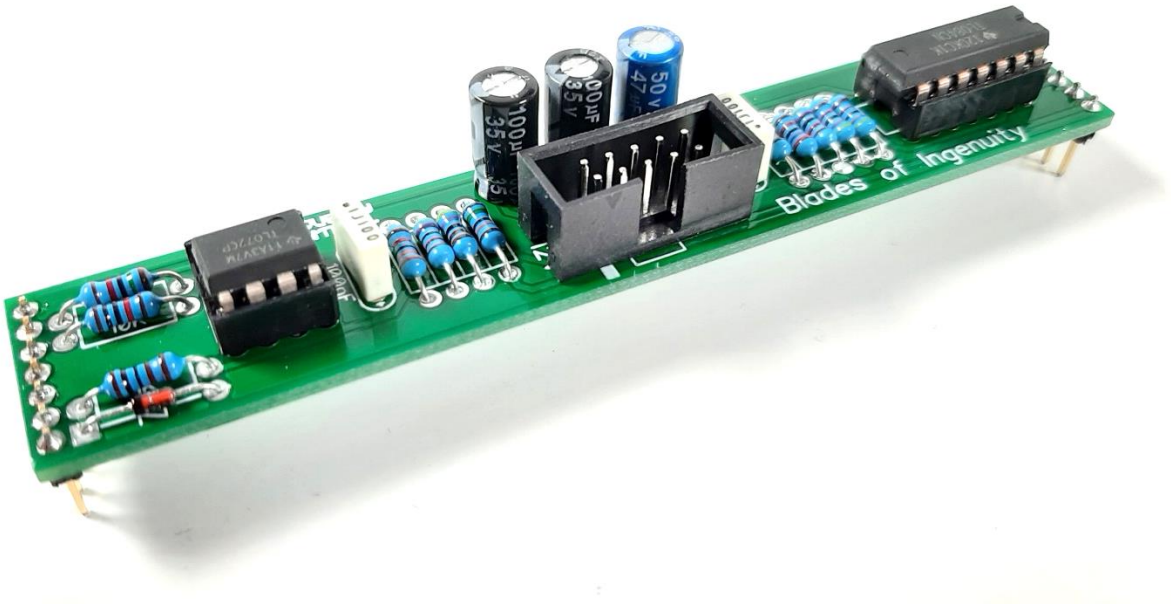
Bill of Materials			
100R x 1 1K x 2 4K7 x 1 10K x 2 15K x 1 27K x 1 33K x 1 47K x 4 100K x 2 150K x 1 All resistors ¼ watt metal film.	100nF x 2 47uF electrolytic x 3	TL084 x 1 TL072 x 1 1N4148 x 7 3mm red LED x 2 14 pin socket x 1 8 pin socket x 1	A100K x 3 SPDT toggle x 1 (on/on) (AR loop) SPDT toggle x 1 (on/off/on) (LFO shape) 3.5mm socket x 4 Male 40 pin header Female 40 pin header 10 pin box header x 1 Small knob x 3

Please observe the correct polarity of the electrolytic capacitors and diodes.



Main PCB assembly

1. Solder all diodes and all resistors.
2. Solder all IC sockets
3. Solder both non-electrolytic capacitors
4. Solder the power header – if you're using box type, observe correct polarity
5. Solder all electrolytic capacitors
6. Cut male headers to size and solder them into place. Make sure that they stick out of the bottom of the PCB.

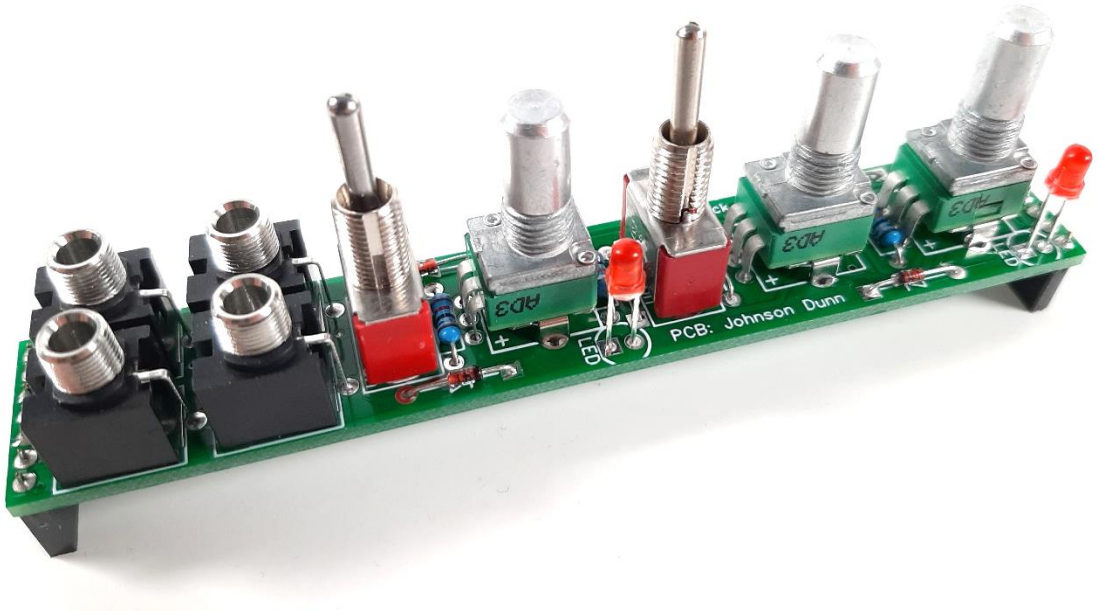


Control PCB assembly

1. Solder all resistors.
   Tip - don't mix up the 100R and 100K
2. Place all pots and the switches 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.
   SPDT on/on: AR loop
   SPDT on/off/on: LFO shape
3. 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.

4. Put the LEDs through their pads (short leg to square hole). Present the panel to the PCB, flip the whole lot over, make sure the LEDs stick though the holes in the panel, solder in place.

5. 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 **Control PCB** the right way around – see image on page 1.

Ingenuity is a small robotic helicopter operating on Mars as part of NASA's Mars 2020 mission. The name was suggested by Prof. Brian Cox!

RDH 16/02/22