

<p>Inputs : CV FM Trig 2 x Freq modulation for filter VCA VCA modulation</p>	<p>Outputs : Main output Square or Triangle wave LFO Random noise Slewed random noise Oscillator Envelope</p>
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If you have any questions about the build do not hesitate to contact me at info@eowave.com

Building the Kit

This kit is not for beginners, you should have soldering skills and you must know in which direction to put ICs, LEDs & capacitors.

Eowave bears no responsibility for mistakes that are made during the assembly process, or for damage caused to components if they are not soldered correctly.

Read the instructions carefully before starting to solder

Use a multimeter to measure the values of resistors, or you can use this resistor code calculator from digikey <http://www.digikey.com/en/resources/conversion-calculators/conversion-calculator-resistor-color-code-4-band>

Start with the component side

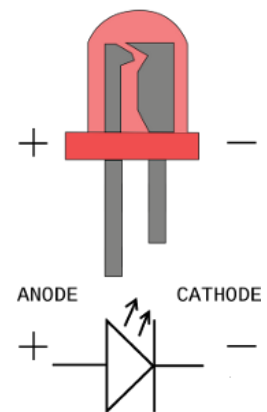
We recommend mounting and soldering in the order of the BOM below, tick off the parts as you go to keep track of your build

- diodes – read the values on the side, orientation is marked on the PCB
- resistors – measure the values and use the numberings on the PCB
- IC supports – orientation as per the notches on the PCB, don't install all the IC's yet
- capacitors – read the markings on the capacitors
- transistors – read the values written and make sure you install in the correct place
- electrolytic capacitors – install with negative polarity (shorter leg) as marked on the PCB
- trimmers – read the 104 marking of the 100k trimmer
- install 10 pin power header

Now the hardware side

Mount and solder in the order of the BOM

- jacks – install flat and solder in place
- 100k metal pot – install in centre of PCB and solder
- LEDs - **be careful with the LED orientation, the longer positive leg goes into the wider end of the triangle marked on the PCB. Don't solder yet, wait until the tall pots are installed !**
- tall pots – put into place on the PCB, don't solder straight away, place on the front panel and hand tighten a nut to the centre pot. Align the tall pots carefully, turn over and solder
- now push LEDs into the panel and solder



Tests

Once all components are mounted you can perform an electrical test before you mount the chips on IC3 and U\$1

Connect the ribbon cable to the power connector noting the orientation, power the unit from your eurorack case. Measure the voltage on pin 27 and 28 of IC3 socket, you must have a 5V reading. If yes; disconnect from power and plug the DsPic on the socket of IC3, and the LM13700 on U\$1. If you don't get 5v, check your soldering

After installing the chips, plug in again and check all functions – you should get LED feedback from the LFO, and LED feedback from the envelope when you input a trigger signal

BOM

Jumper	Use a resistor leg	R13
Diodes		
3	zener 5.1V	D4, D5, D6

	5	1N4148DO35-7	D1, D2, D3, D7, D8
Resistors			
	4	220	R1, R5, R34, R48
	1	390	R23
	1	600 – round black resistor	L1
	13	1k	R2, R3, R16, R17, R21, R26, R35, R41, R43, R44, R45, R46, R47
	2	2K	R18, R31
	4	5k1	R29, R32, R39, R40
	21	10k	R4, R6, R7, R8, R9, R10, R12, R19, R20, R24, R25, R27, R30, R33, R36, R37, R38, R49, R50, R77, R78
	8	100K	R14, R15, R28, R42, R51, R54, R56, R57
	1	150k	R22
IC Supports			
		IC Support	IC3
		IC Support	U\$1
IC			
	1		IC8
	3	TL072P	IC1, IC2, IC5
	1	dsPIC33EV64GM102	IC3 - install after voltage test
	1	LM13700	U\$1 - install after voltage test
Capacitors			
	7	100nf (marked 104)	C1, C2, C3, C4, C5, C6, C11
	1	10n (marked 103)	C15
	1	2n2	C9
	2	330pf	C20, C21
	2	4n7	C12, C14
Transistors			
	8	2N3904	Q1, Q2, Q3, Q4, Q5, Q6, Q8, Q9
	1	2N3906	Q7
Electroytic			
	6	10uf	C7, C8, C13, C16, C17, C18
Hardware			
	1	100K trimmer - marked 104	R55
	1	5K trimmer - blue	R11

1	header	POWER
<u>OTHER SIDE</u>		
Hardware		
14	301S-MINI JACK	
1	100k Pot	CUTOFF
11	Tall Pots	
LED		
2		LED5MM, LED5MM1

Calibration

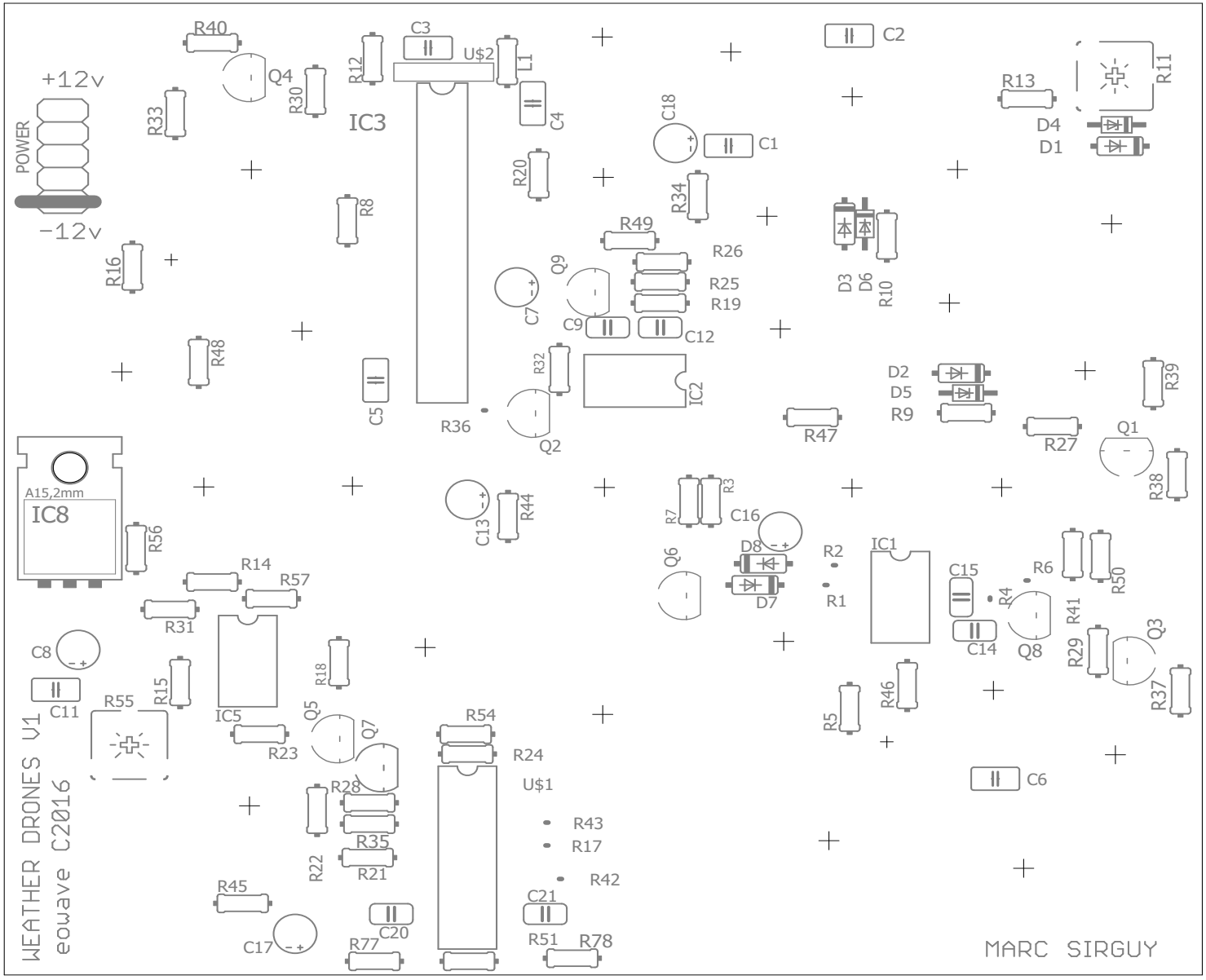
Now that you have a working module, you can calibrate either by ear or using an oscilloscope. The trimmer closest to the filter, R55, sets the low point of the filter frequency. Set the freq of your oscillator somewhere in the middle range of the pot. Turn down the spread and fold to 0. Turn feedback to 0 and the filter modulation (found under the lfo) to 0. Plug a jack into the output, and turn the cutoff knob all the way anti-clockwise. Now turn it slightly clockwise, adjust the trimmer until you can hear the oscillator just coming through. The filter should be quiet when it is all the way anti-clockwise, and start to open up as you turn it clockwise

To calibrate the VCO, connect midi-cv module to 1V/oct input, and a tuner to the output of the oscillator. Make sure spread and character is set to 0.

Play C4 on the keyboard and tune the VCO so that tuner shows C4

Play C5 on keyboard, and check the reading on the tuner. If the frequency is higher than C5, use R11 trimpot to turn the frequency UP. If it's lower than C5, use R11 trimpot to turn the frequency down.

Play C4 on the keyboard, and tune the VCO to C4. Play C5 and repeat procedure above until you have achieved tuning the module



WEATHER DRONES V1
eowave C2016

- R43
- R17
- R42

MARC SIRGUY