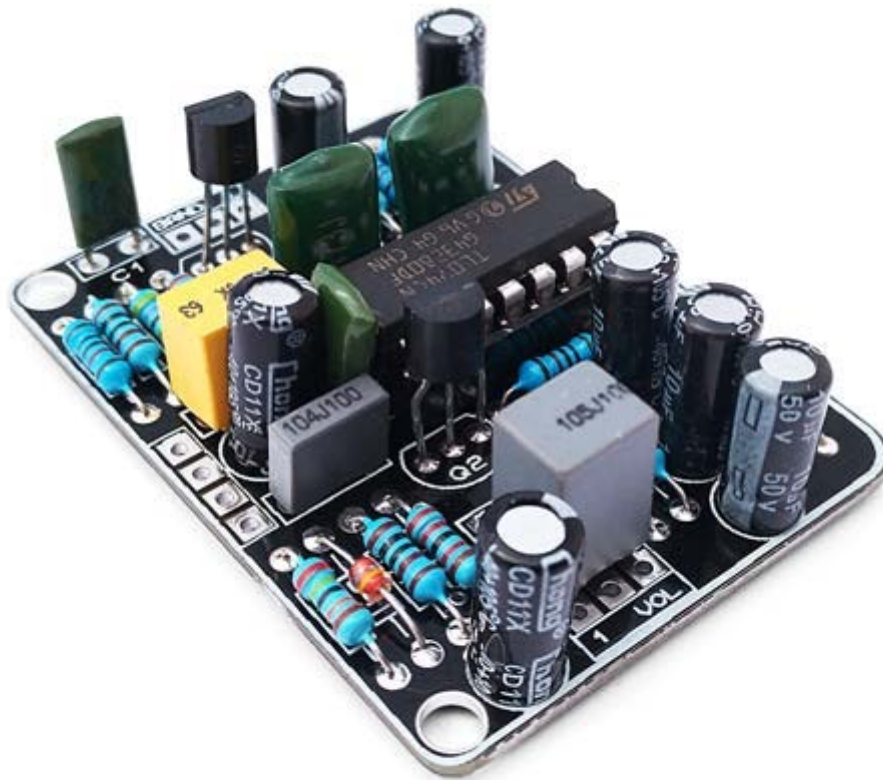


# **Harmonic Energizer Kit Building Manual**














# Effect Pedal Kits:

## Harmonic Energizer

The Harmonic Energizer Kit lets you build your own Systech Harmonic Energizer <sup>™</sup> replica. The Harmonic Energizer is a wide range notch filter: this pedal lets you dial ultra-narrow and resonant filtering, way beyond the range of most wahs. With extreme settings, the Harmonic Energizer even produces some overtones in weird ways well worth experimenting with. Another use of this versatile envelope filter is the “stuck wah”, useful if you want to boost some frequency of your instrument into high resonance. You can hear some examples of the sounds that can be achieved with the Harmonic Energizer in Frank Zappa ‘s “Shut Up and Play yer Guitar”.

Besides of the three knobs present in the original Harmonic Energizer, we’ve added an external Volume knob to easily set the output, as with different filter options the output volume can change slightly. The Bandwidth knob changes the sharpness of the frequency notch filter. Wide settings will deliver a more classic sound, while a narrower filter will produce a more aggressive tone. With Frequency and Gain you can set the gain and frequency to boost. If you want an incredibly fun to play effect pedal, we highly recommend you the Harmonic Energizer Kit!

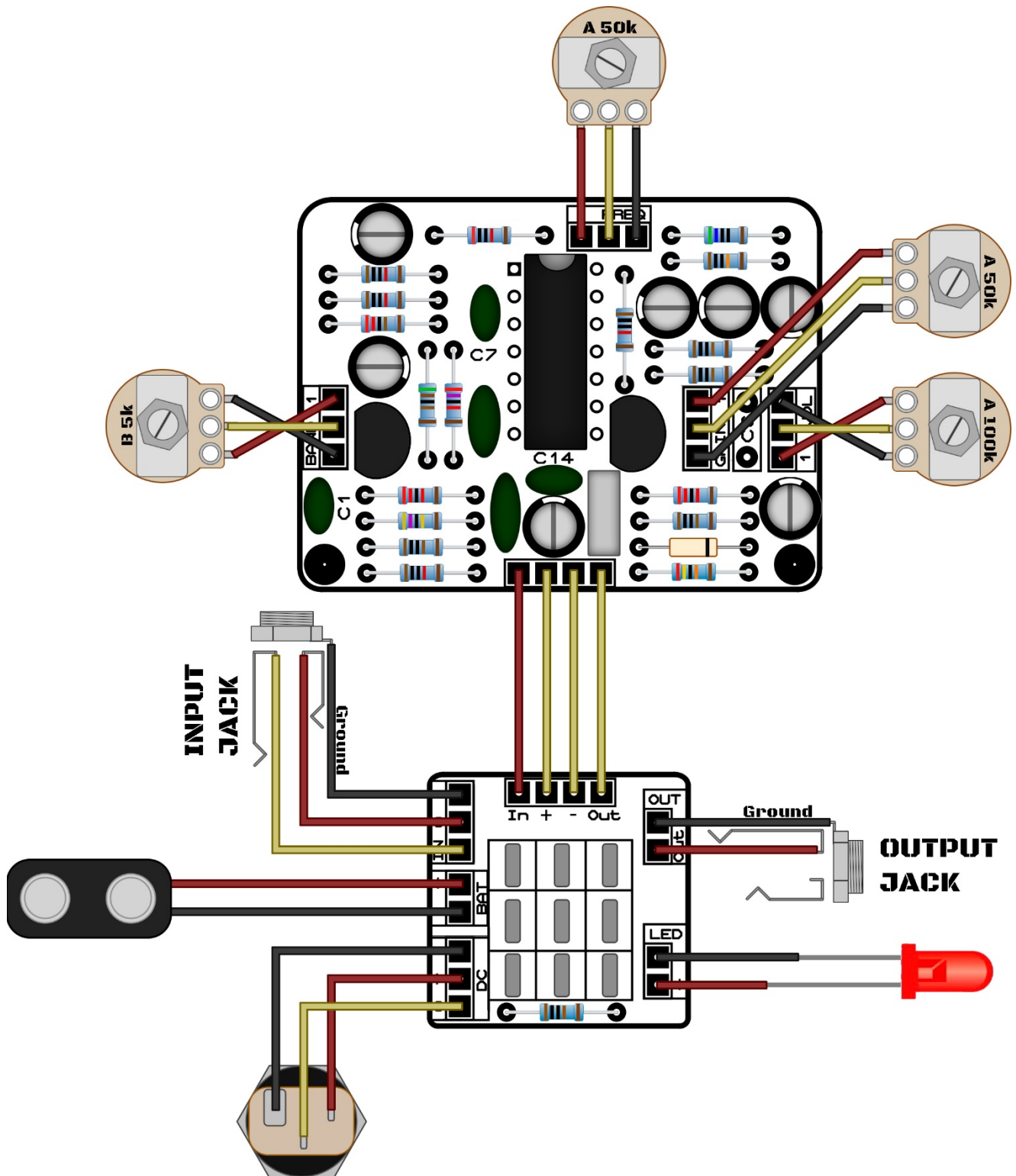
# BOM (1/2)

Resistors (18)				Capacitors (14)		
4	R1, R7, R8, R16	1k		1	C1	2.2n
1	R2	4.7M		2	C2, C6	1u (electrolytic)
4	R3, R9, R14, R15	10k		2	C3, C7	47n
2	R4, R17	22k		6	C4, C5, C8, C9, C12, C13	10u (electrolytic)
1	R5	27k		1	C10	100u (electrolytic)
1	R6	5.1k		1	C11	100n
1	R10	20k		1	C14	10n
1	R11	2.2k				
1	R12	560				
1	R13	100k				
1	R18	240k				

# BOM (2/2)

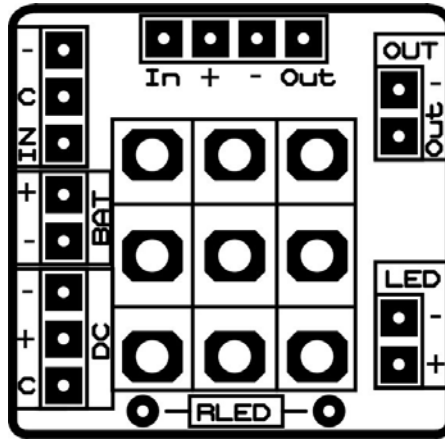
Diodes, Transistors and ICs			Generic Parts and Potentiometers		
1	U1	TL074	1	Battery clip	
1	Q1	J113	1	DC Jack	
1	Q2	2N5088	1	RLED	1k LED resistor
1	D1	1N914	1	LED Bezel	
			1	3PDT	
			2	IN, OUT	6.35mm Jacks
			1	5k Linear (B) Potentiometer	Band
			2	50k Logarithmic (A) Potentiometer	Freq, Gain
			1	100k Logarithmic (A) Potentiometer	Vol

# Component Placement

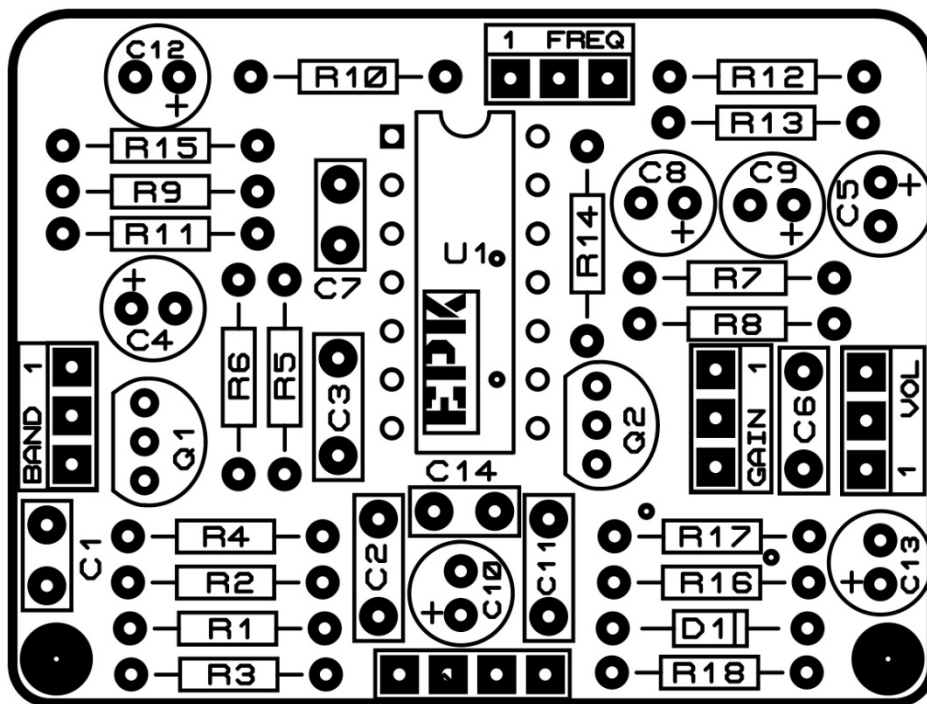


## Board Layouts

## 3PDT PCB

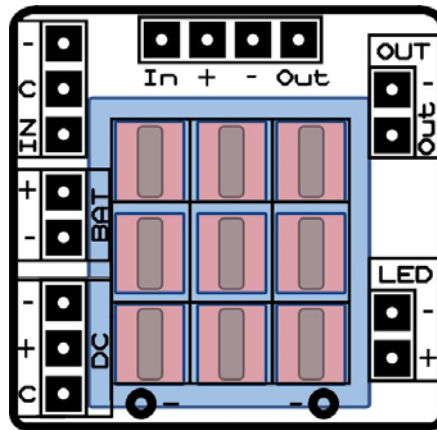


## Effect PCB



# Building Tips

- 1- Pay attention to the **orientation of the 3PDT**! In the following picture you can see how the 3PDT pins should be positioned (inserting the pins in the holes can be a bit tight to avoid movement while soldering):



- 2- For a proper soldering you just have to apply the **right amount of solder wire**. A right solder joint should have a concave shape around the joint and look like this:

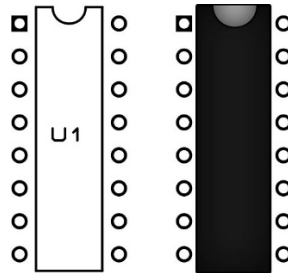


- 3- Don't apply too much heat! When soldering, the time you hold the solder iron against the joint should be **as short as possible** to avoid damaging any part (a few seconds should be enough). If you can't get a solder joint right, **let it cool** a bit before trying again.
- 4- If having troubles with the building, checking the schematic in the last page will help you find **where the audio signal stops**. When you find the spot, check out that **everything around that joint is ok** (components placed at their right place, solder joints...).

# Building Tips

5- Pay attention to the **parts that have a polarity** and make sure they are connected as in the component placement picture:

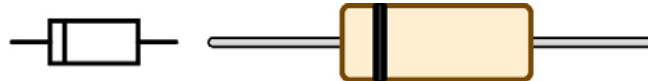
- **ICs** (they have a small dot or indication that must fit the indication in the board)



- **Electrolytic capacitors** (longer pin is connected to the “+” hole):



- **Diodes** (check for the mark and make it fit with the one in the PCB):



- **Leds** (longer pin is connected to the “+” hole)



- **Transistors** (inserted to fit the drawing in the PCB)



To avoid any issue, check the latest building manual. Use the pictures only as a reference! Colors/shapes can change slightly, always check the part polarity, resistor values, potentiometer placement... before soldering.



# Schematic

