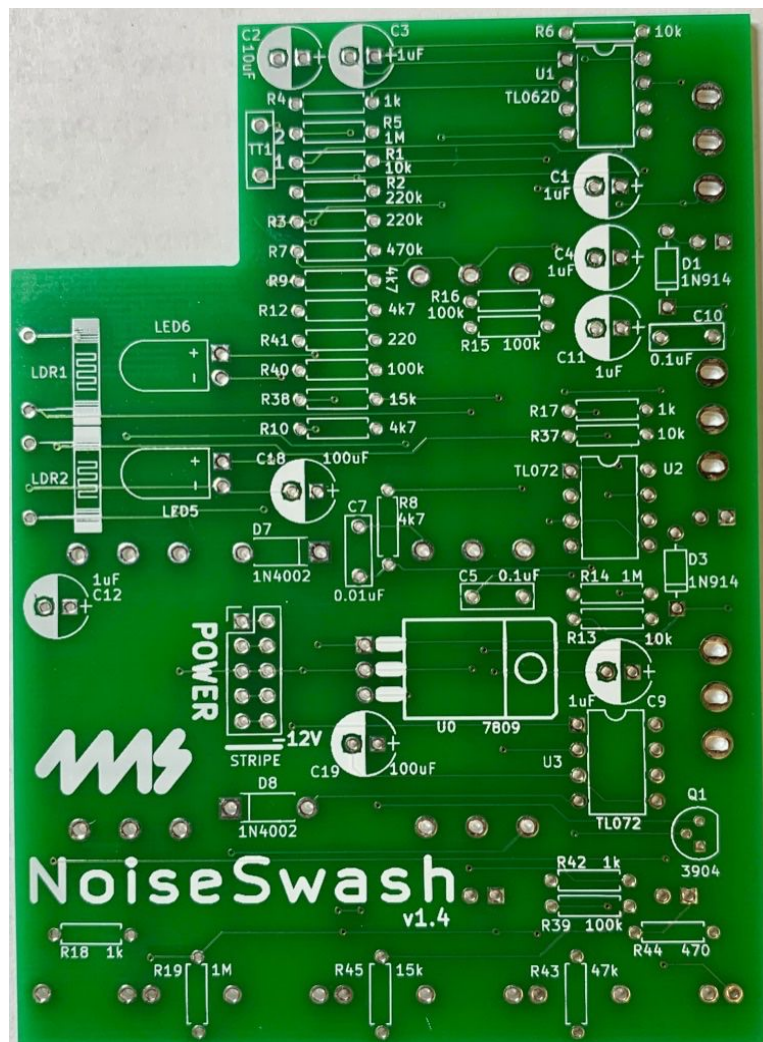


Eurorack Noise Swash Module

Kit Builder's Guide for PCB v1.4

August 22, 2019



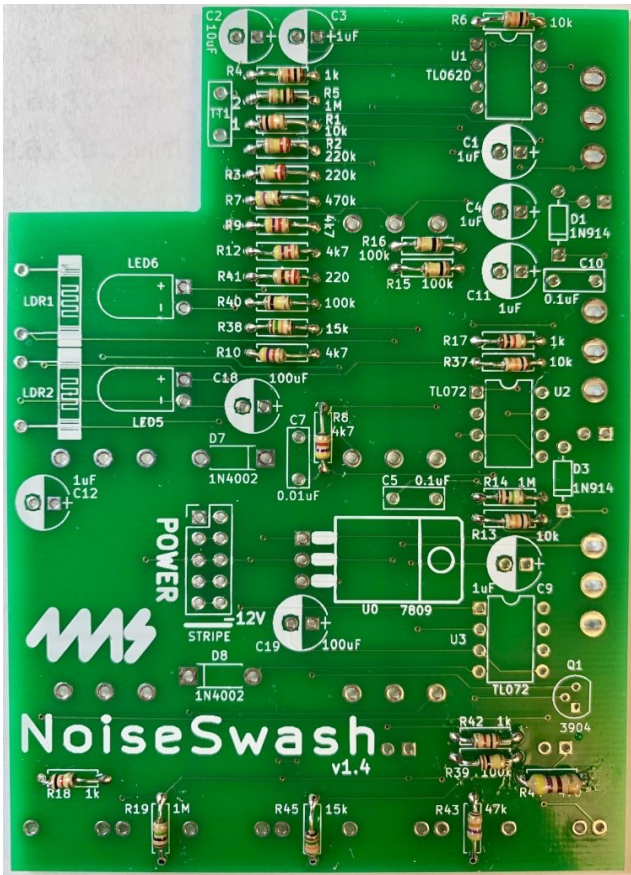
Eurorack Noise Swash Module

This guide is for building the Noise Swash module in Eurorack format. The kit includes all the parts you need. This manual can be downloaded at <https://4mscompany.com/euroswash.php>

Tools and supplies needed:

- Soldering iron and solder
- Flush snips
- Needle-nose pliers
- Wrenches or sockets for tightening panel nuts (10mm for pots, 5/16" for jacks and switches)
- Small flat-head screwdriver for knobs

Get comfortable, get all your tools together, take a deep breath... and enjoy!

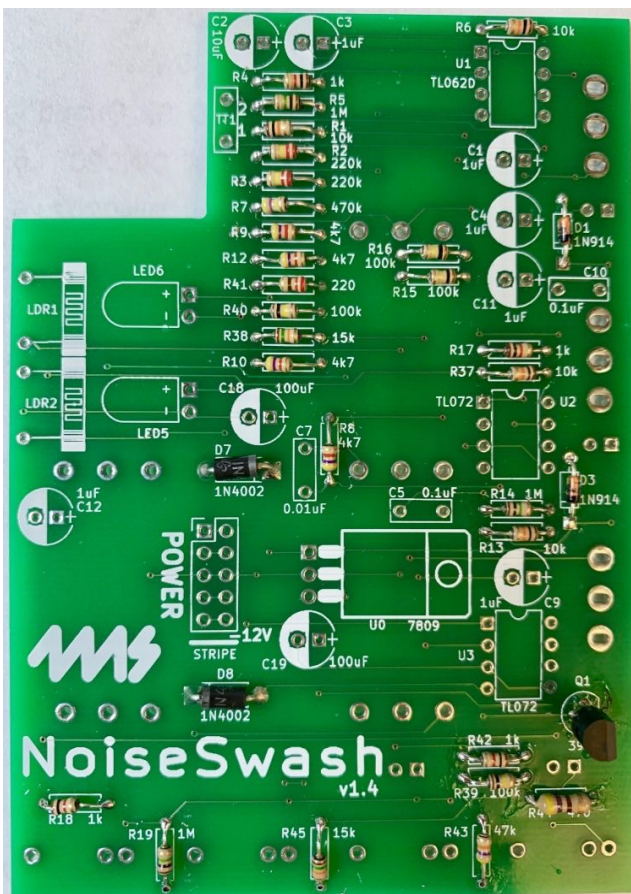


Step 1: Resistors

Insert and solder the resistors. After soldering, snip the leads nearly flush to the PCB (you'll be snipping the leads on almost all the components after soldering). Save some of the lead snippings for later steps.

Resistors:

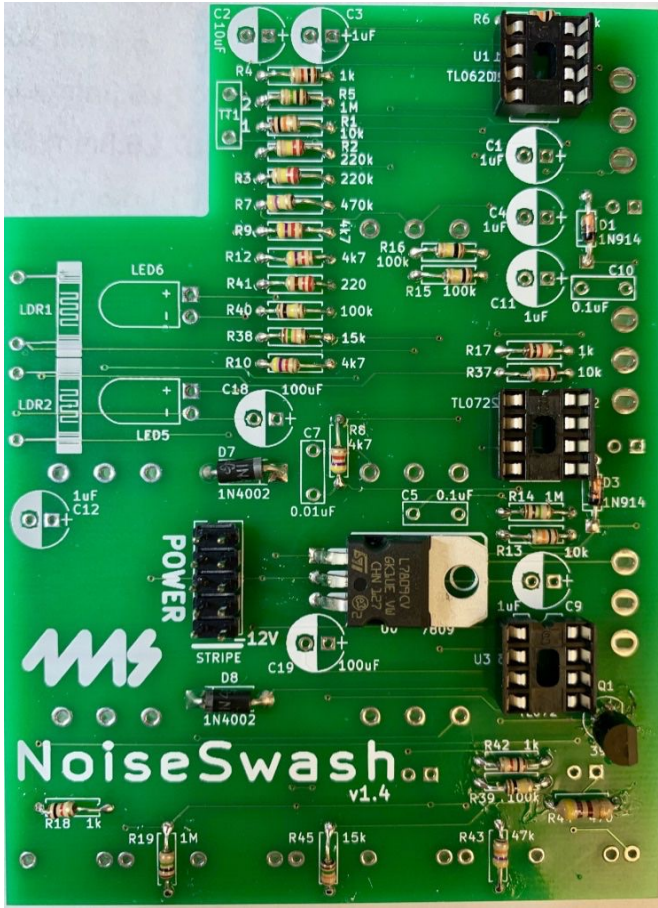
- 1M x3 (brown black green)*
- 470k x1 (yellow violet yellow)*
- 220k x2 (red red yellow)*
- 100k x4 (brown black yellow)*
- 10k x4 (brown black orange)*
- 4k7 x4 (yellow violet red)*
- 1k x5 (brown black red)*
- 220 x1 (red red brown)*
- 47k x1 (yellow purple orange)*
- 15k x2 (brown green orange)*
- 470 x1 (yellow purple brown)*



Step 2: Diodes and transistor

Insert and solder the four diodes and one transistor. The diodes have an orientation such that the end marked with a black or white band points in the same direction as the arrow on the PCB. The transistor also is orientated such that its curved and straight edges match the outline on the PCB

- 1N4002 diode (black) x2*
- 1N914 diode (red/glass) x2*
- 2N3904 transistor x1*



Step 3: IC sockets, header pins, and voltage regulator

A. Insert and solder the three 8-pin IC sockets. The notch in the sockets points up (towards the notch drawn in white on the PCB).

B. Insert and solder the Voltage Regulator (7809), and bend it down to match the white outline drawn on the PCB. Then the writing on the face of the 7809 should be visible.

C. Insert and solder the 10-pin power connector (header pins). Its orientation does not matter.

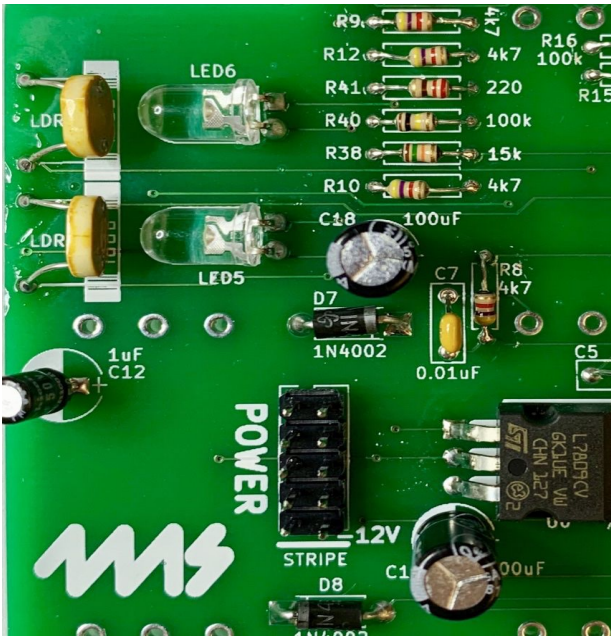


Step 4: Capacitors

Insert and solder the 12 capacitors. The 1uF, 10uF, and 100uF capacitors have an orientation such that the long lead goes in the square hole, and the short lead (marked by a black or white stripe on the body of the cap) goes in the round hole. The color and size of your capacitors might vary from what's shown in the photo.

Capacitors:

- 0.01uF ("103") x 1*
- 0.1uF ("104") x 2*
- 1uF x 6*
- 10uF x 1*
- 100uF x 2*



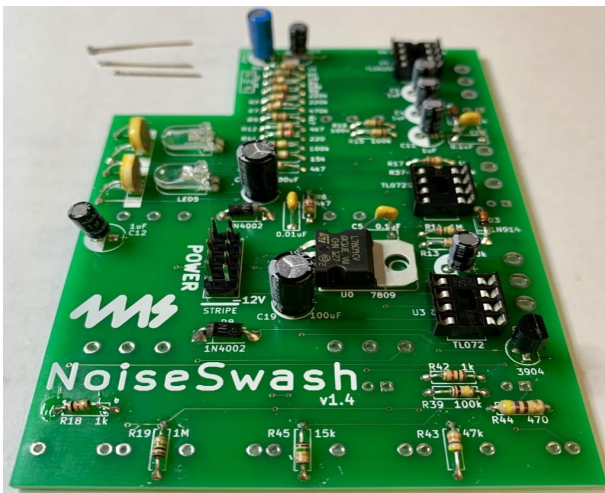
Step 5: LED and photocells (LDRs)

Insert the two large (5mm) LEDs into the PCB. The short lead of the LED is the negative and it goes in the round hole. Also, if you look down the barrel of the LED, one edge is flattened, which indicates the negative side.

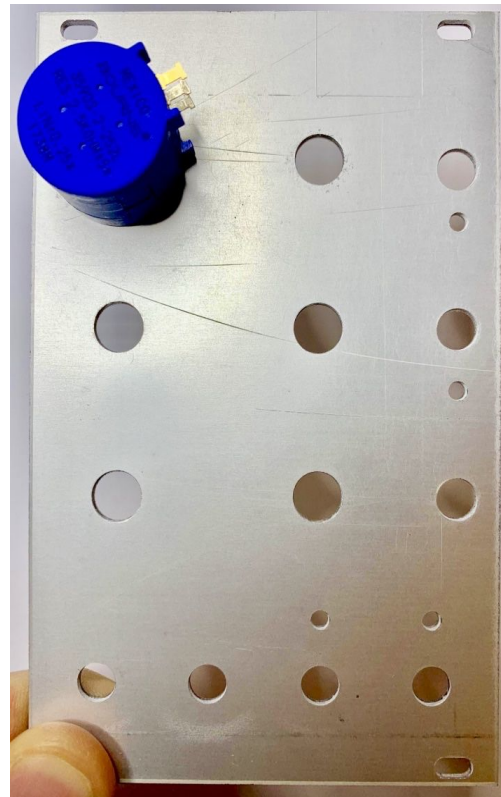
Insert the photo cells into their spots on the PCB, labelled “LDR”.

Bend the LEDs and the photocells 90 degrees so that the flat face of each photocell points at the tip of the LED (see photo).

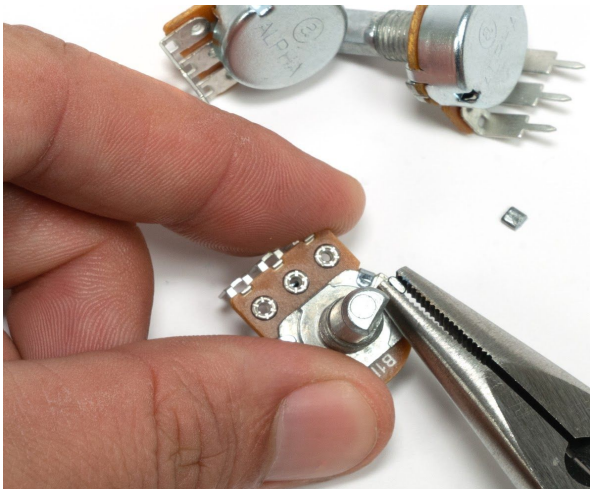
Solder all four components.



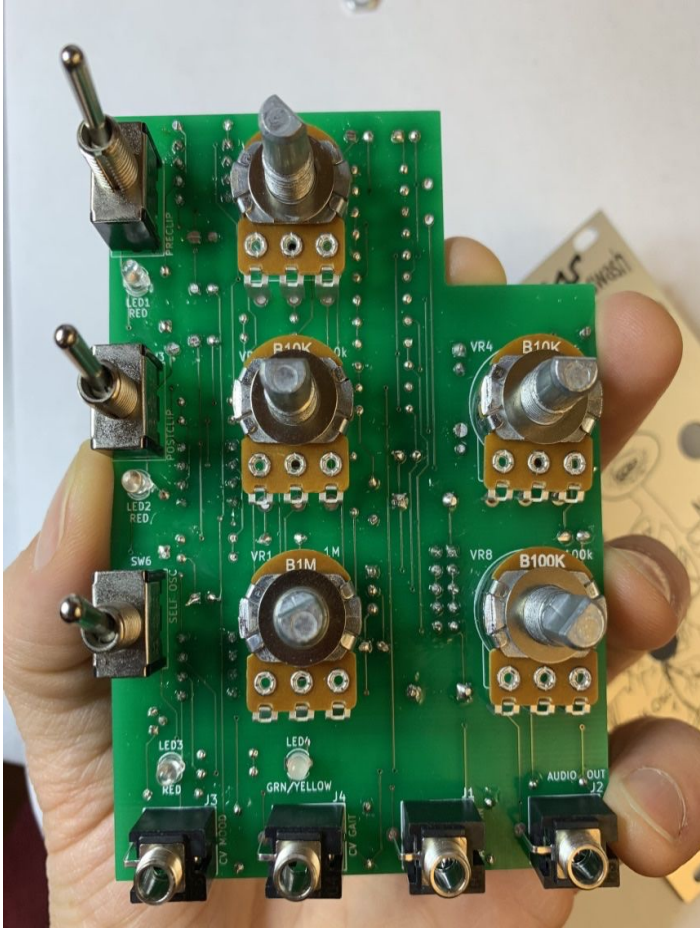
Step 6: Prepare for mounting



A. Use needle-nose pliers to snip off the side tabs on the 5 pots.



B. Mount the 10-turn pot to the panel with the orientation as shown. Tighten the nut on the top side of the faceplate by hand (finger-tight). You may need to adjust the pot slightly in a later step.



C. Place the 5 pots in the spots as marked on the PCB. Make sure to match the value marked on the pot to the value marked on the PCB. Place a washer on each pot.

1k Pot x 1
10k Pot x 2
100k Pot x 1
1M Pot x 1

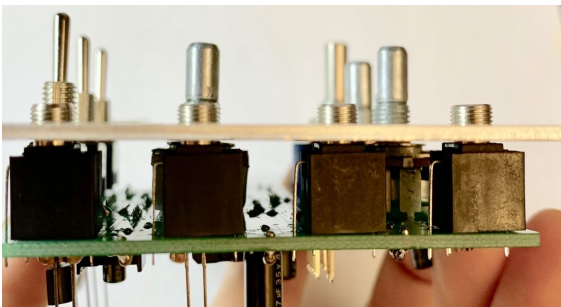
D. Remove the top nut, notched washer, toothed lock washer and bottom nut from each switch. Insert the switches into the PCB (do not solder yet).

E. Insert the four jacks into the PCB.

F. Place the three red LEDs and one Green/Yellow LED into the PCB. The long lead goes into the square hole (short lead into the round hole). If you've already snipped the LED leads, then look down the barrel of the LED and notice that one side is flattened. The flat side goes in the round hole.

Red LEDs x 3
Green/Yellow LED x 1

Step 7: Mounting

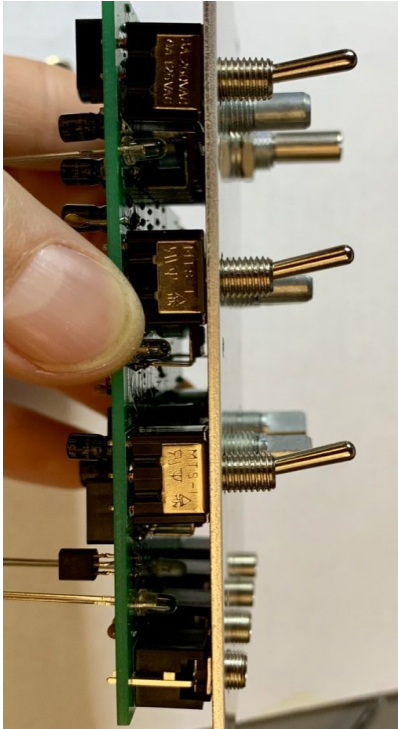


A. Put the panel on:

Holding the PCB in one hand, lower the panel onto the PCB so the holes line up with the pots, switches and jacks. Wiggle things around as you shimmy it down so that the threads of the controls push through the panel.

B. Put the nuts on:

When all the pots, switches, and jacks are fully through the faceplate, put a nut over each one. Tighten the nuts finger-tight. Make sure all the controls are roughly vertical. Now tighten all of the nuts down with a wrench, making sure the pots or switches don't rotate while you tighten. Everything should look flat from both the bottom and the side (see photos below).

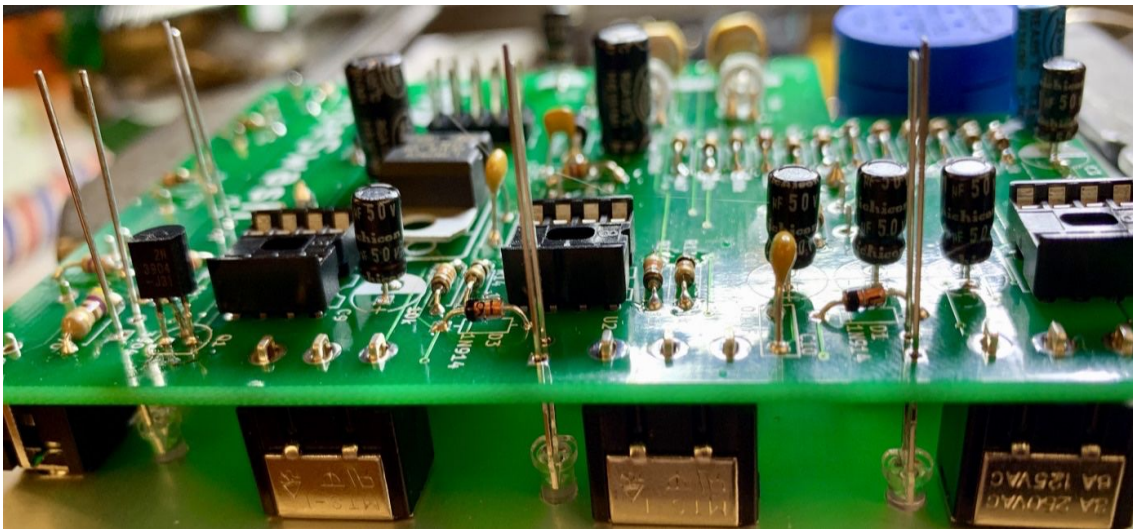


C. Check for parallel:

Flip the board over (holding the panel) and verify the PCB and faceplate are parallel. Verify that the PCB is in full contact with the bottom of each jack, switch, and knob.

D. Drop LEDs:

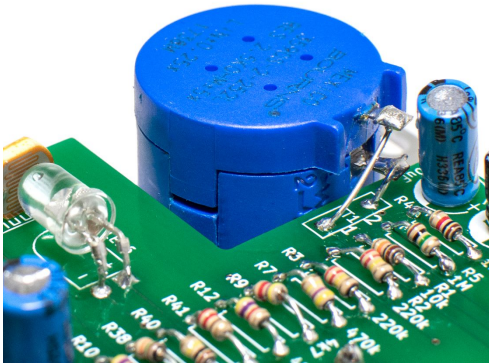
Grab each LED by its leads and push it gently into the hole in the faceplate. The LED will not fully pass through the hole (only the tip will poke through).



Step 8: Soldering the jacks and controls

A. Solder the jacks, switches, and pots

The four jacks at the bottom of the board should be flat to the PCB and flat to the panel. Solder the switch leads, pushing the PCB down *lightly* so that the leads stick out a tiny bit.



B. Solder the 10 turn pot

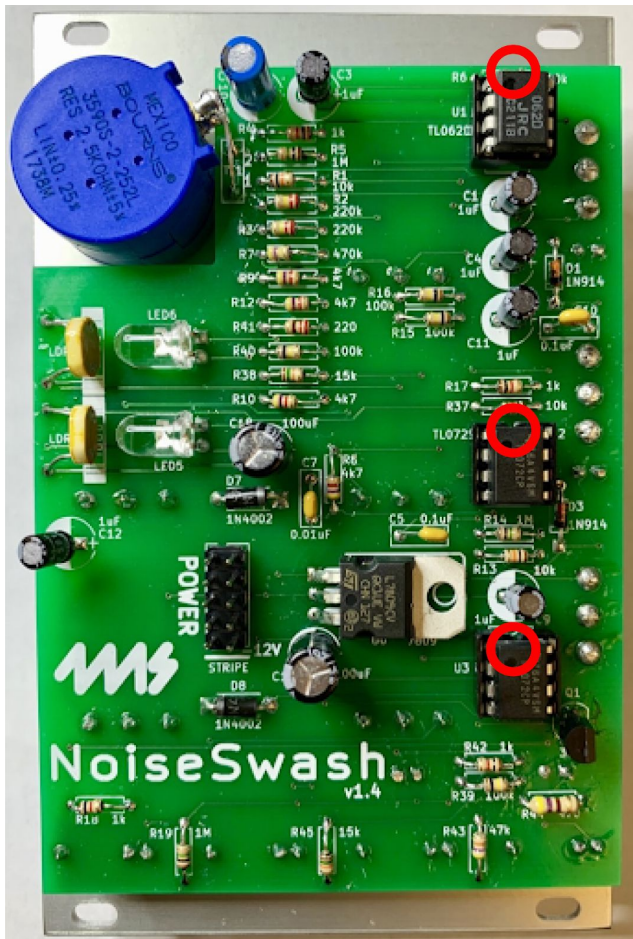
Use a piece of snipped lead from a resistor or capacitor to wire the 10-turn pot to the PCB. It doesn't matter which lead goes to which hole, but the wires must not touch each other. Solder the wires to the pot and to the PCB.

C. Solder the LEDs

Verify that each LED head is sitting in the hole in the panel. Snip the excess lead off when done.

D. Install the knobs

Flip the unit over and attach the big knob with a small flat-head screwdriver. Make sure this potentiometer is turned all the way left or right when installing the knob. Turn the opposite direction and tweak your knob position as desired. Push the other five smaller knobs on.



Step 9: Insert ICs

Each IC has an orientation, the dot or notch should be pointed towards the notch in the IC socket. Verify you didn't put the IC socket in backwards by checking that the IC notch/dot lines up with the notch drawn in white on the PCB. See photo (the red circles indicate the notch/dot). The topmost IC is the single TL062, the two below are both TL072s.

Step 10: Finish

You've now completed your very own 4ms Noise Swash. Connect power with the supplied 10-16 pin power cable and enjoy!

