KITTY EYES - Assembly Guide

snazzyfx.com

INTRODUCTION

This guide is for building **KITTY EYES** module by **SNAZZY FX**. It is good to have basic soldering skills and to be able to identify electronic components before starting this kit. However if you have never soldered before, check out this tutorial first[1]. We even included some of the best quality solder to help you solder everything faster and better.

This kit consists of just one printed circuit board (PCB). See the Bill of Materials (BOM) for detailed list of all components.

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[1] https://cdn-learn.adafruit.com/downloads/pdf/adafruit-guide-excellent-soldering.pdf

IMPORTANT NOTE: You can choose to build Kitty Eyes in the default or slow mod as you got components for both of these. Keep an attention for the notes in the resistors and capacitors section.

qty	value	part
KITTY EYES BOM		
RESISTORS		
1	sync	unpopulated
2	100R	1/4W
1	220R	1/4W
5	1k	1/4W
2	2k2	1/4W
2	10k	1/4W
2	47k	1/4W
2	100k	1/4W
1	1M/ 820k	1/4W
1	2M2	1/4W
CAPACITORS		
1	1nF	CER/FILM4
1	100nF	ceramic capacitor (slow mod)
1	220nF	CER/FILM4
1	10nf	CER/FILM4
1	1uF	ceramic capacitor (slow mod)
2	10uF	electrolytic capacitor
2	47uF	electrolytic capacitor (slow mod)
SEMICONDUCTORS		
2	1N4007	diode
1	1N4148	diode
1		LED 3 mm G D
1	LED bicolor	
1	2N3904T	transistor
1	TL074	TL074AN
POTS		
1	POT LIN B 10K	linear potentiometer
1	POT LIN B 100K	linear potentiometer
1	POT LIN B 1M	linear potentiometer
HARDWARE		
4		thonkiconn jack
1	2 x 5 pin	male pinheader
1		dip 14 socket

ASSEMBLY		
3		knob
3		big nut pots
4		nut jack
1		front panel
1		power cable 10-16
2		panel screw
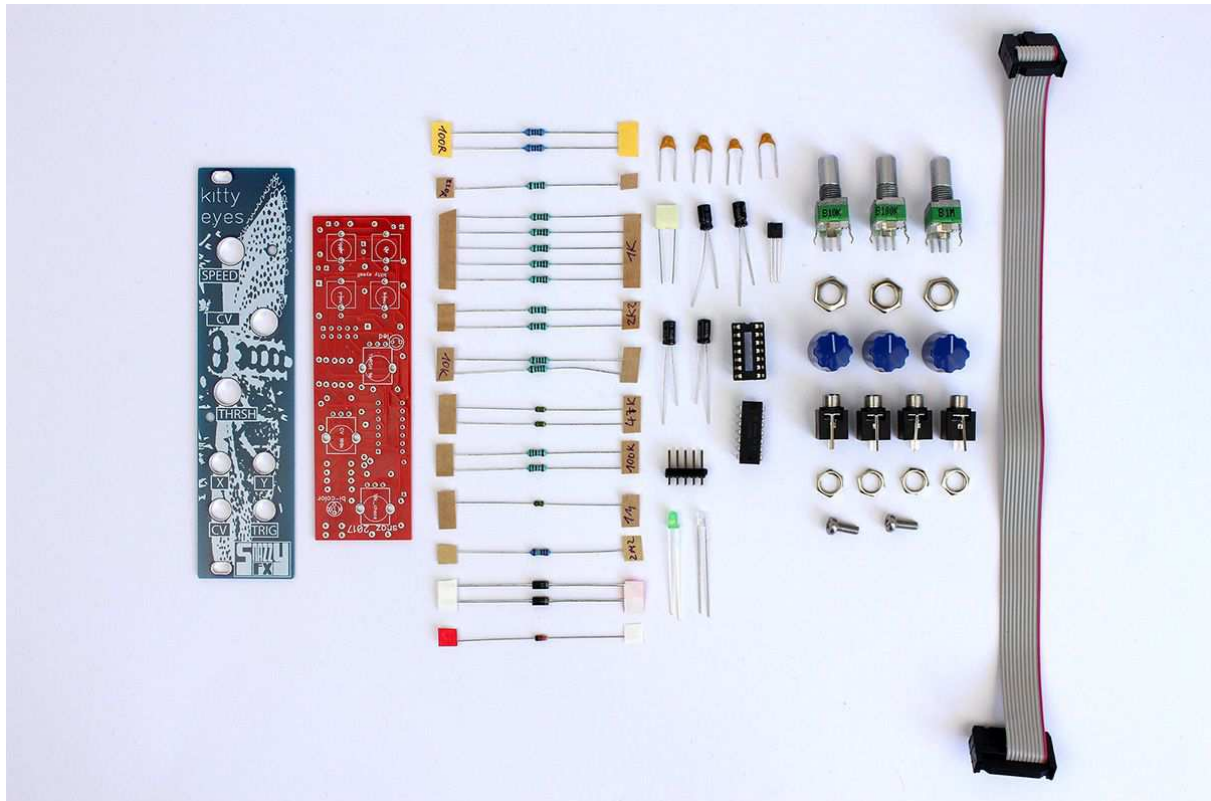
Before starting this kit, prepare the following tools:
- Soldering iron
- Multi-meter
- Flush cutters
- Phillips screwdriver
- Flat screwdriver
- Wrench No. 8
- Protective eyewear

We suggest that you work in a clean, well lit and ventilated environment to avoid accidents or losing any of the small components.

Also briefly go through this guide and make sure that you understand all the steps.
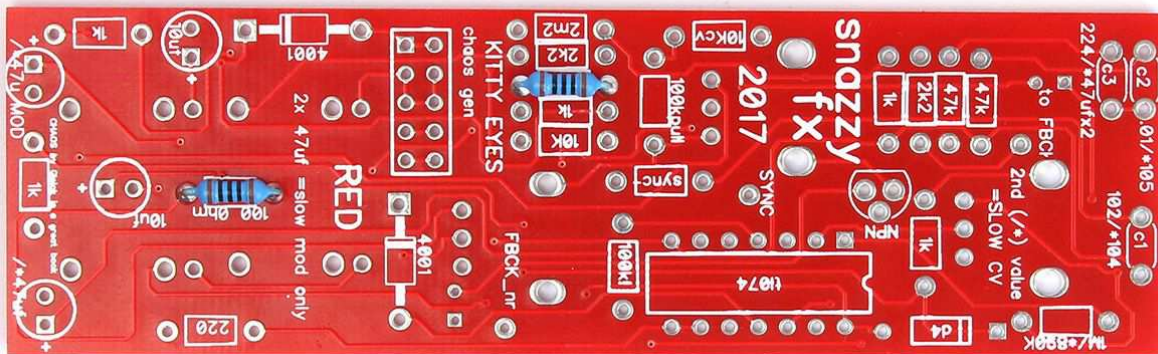
SOLDERING

Before you start soldering, take your time and find all the **resistors values** using a multimeter[2] (or you can check the color codes if you are seasoned enough).
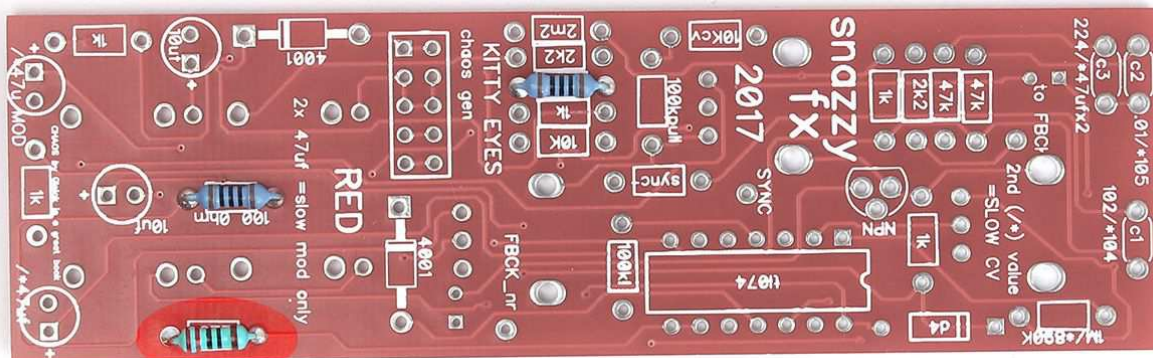
RESISTORS

There are eighteen **resistors** of different values: 2x **100R**, 1x **220R**, 5x **1k**, 2x **2k2**, 2x **10k**, 2x **47k**, 2x **100k**, 1x **1M / 820k***, 1x **2M2**). Be careful to insert these **resistors** on the right place (rectangular with appropriate value) and solder them. Then snip the overhanging leads (be sure to make this step on all remaining leads in the course of this guide).

* **IMPORTANT NOTE**: for slow mod solder the 820k resistor instead of 1M one. And to not let you get confused: the "sync" rectangular remains unpopulated.

100R resistor (2x)

220R resistor (1x)

[2] https://learn.sparkfun.com/tutorials/how-to-use-a-multimeter/measuring-resistance

1k resistor (5x)

2k2 resistor (2x)

10k resistors (2x)

47k resistors (2x)

100k resistors (2x)

1M / 820k (= slow mod) resistor

2M2 resistor (1x)

DIODES

After that solder the **diodes:** 1x **1N4148**, 2x **1N4007**. Place the latter ones in "4001" rectangular. **Be careful, diodes are polarized!** Make sure that the stripe on the diode body matches the stripe on the PCB. Check the photo below.

diodes (2x 1N4007, 1x 1N4148) watch out for the black stripe!

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IC SOCKET

Let's populate the PCB with the **IC socket** (14 pin). **Make sure that the notch on the socket matches the print on the board**.

IC socket
follow the orientation
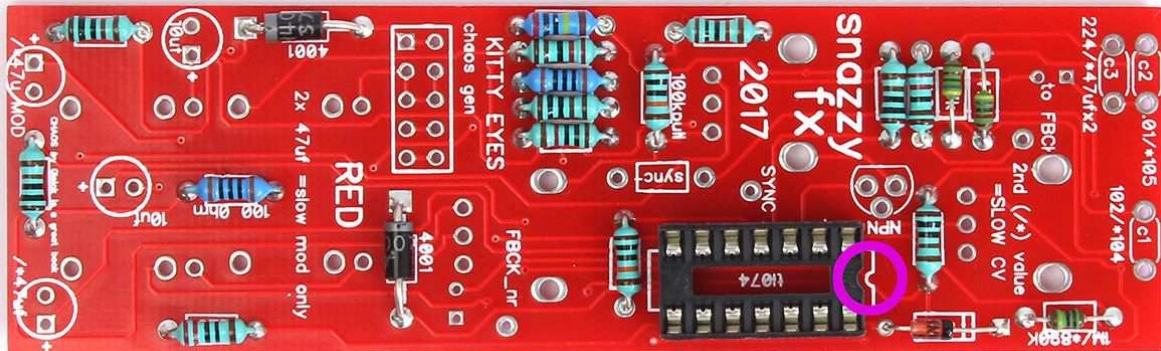
CERAMIC CAPACITORS

Now you can add the **ceramic capacitors**. There is one **1nF** (marked "102" on itself) that goes to the "c1" spot and one **10nF** (marked "103" on itself) that goes to the "c2" spot. **IMPORTANT NOTE**: for slow mod solder 100nF ("104") instead of 1nF and 1uF ("105") instead of 10nF.
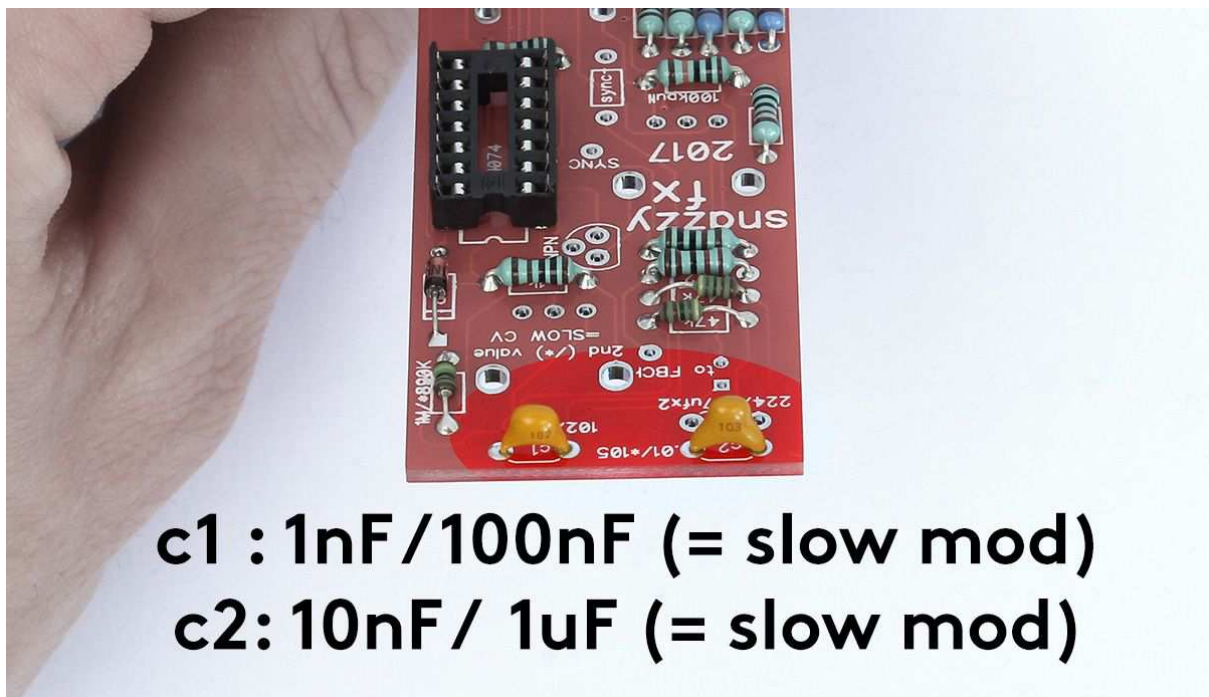
c1 : 1nF/100nF (= slow mod)
c2: 10nF / 1uF (= slow mod)

TRANSISTOR

Solder also the **2N3904 transistor**. The **flat side** has to match with the printing on the PCB.

2N3904 (watch out for the orientation)

FILM CAPACITOR

The next **capacitor** to solder is the **film** one (220nF) that goes on the "c3" spot. **IMPORTANT NOTE**: for slow mod DO NOT solder this component, leave this spot unpopulated.

220nF film capacitor

ELECTROLYTIC CAPACITOR

There are also two **electrolytic capacitors (10µF)***. These ones are **polarized!** There is a plus (+) sign on the PCB that should match the longer lead of the electrolytic capacitor (actually the minus (–) side is also marked on the body of the capacitor with a white strip).
*** IMPORTANT NOTE**: for slow mod solder also the two **47µF caps.**
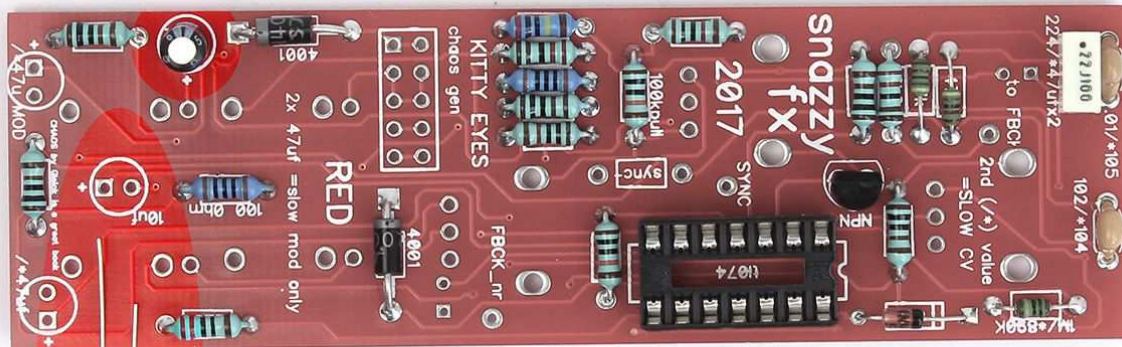
10µF electrolytic capacitors (2x)
# the longer lead = (+) sign

POWER CONNECTOR

Solder the **male pinheader** now. Be careful to solder it straight. You may first solder just one of the pin, take the board in your hand and re-heat that pin while pressing down on the header to align it (be careful, you don't want to touch the pin you are heating up). Wait for it to cool and solder the rest of the pins.


2x5 male header
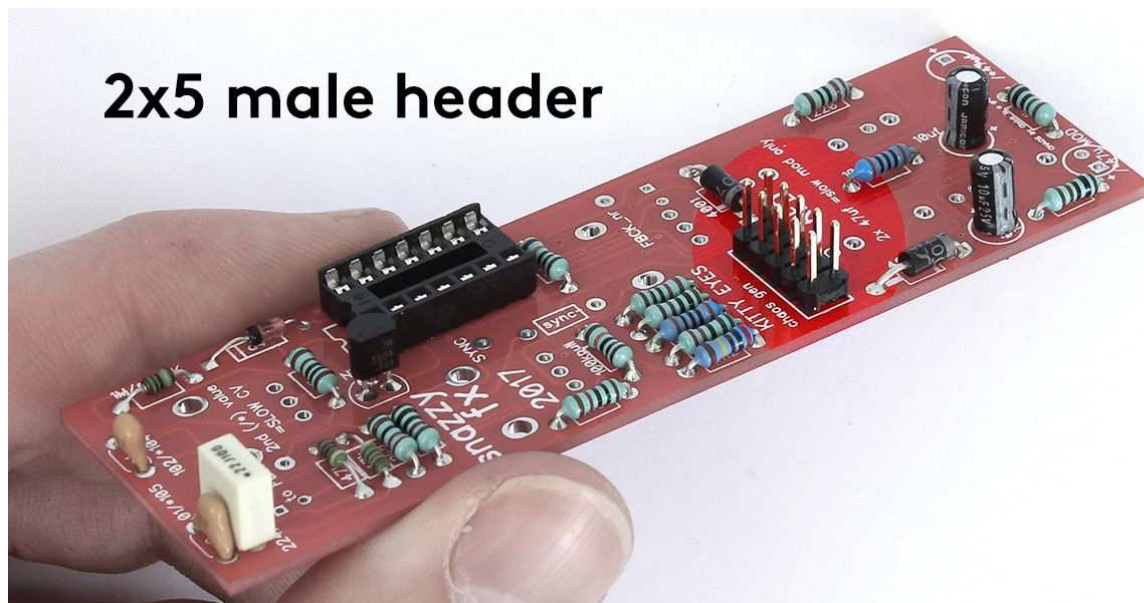
POTS, JACKS AND LEDs WITH PANEL

You are almost done. Let's do the rest of the components. Turn the PCB around and insert **jacks** (4x) and **potentiometers** (3x) of different values: **B10k, B100k** and **B1M - be sure to insert them on the right place**. Insert also the **LEDs**: the green one goes to the bottom. **Watch out for orientation**! The longer lead has to go into the square hole on PCB. **Don't solder these guys yet**!
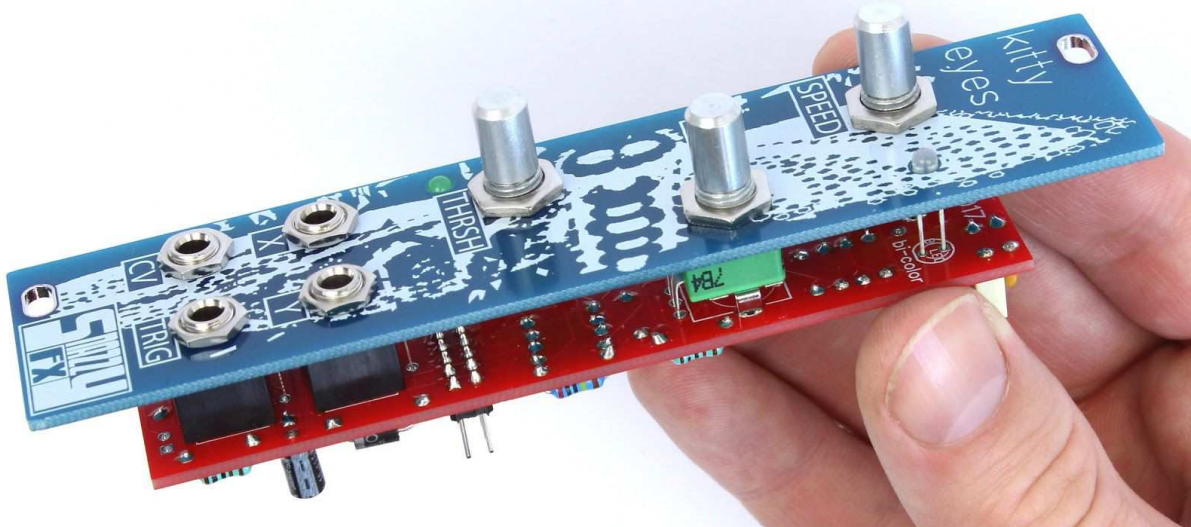

insert these guys but don't solder them yet
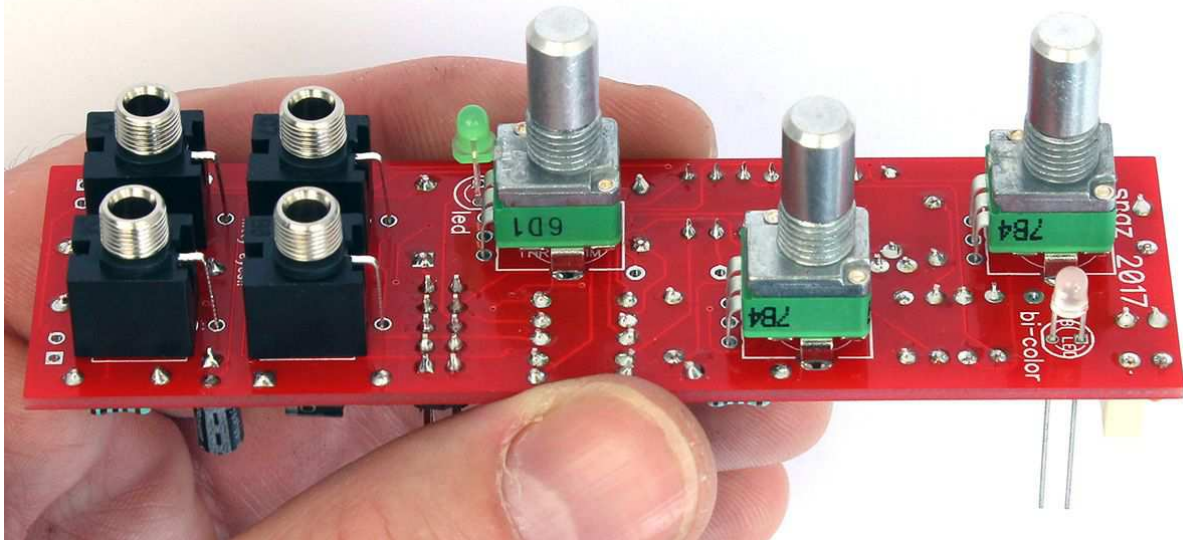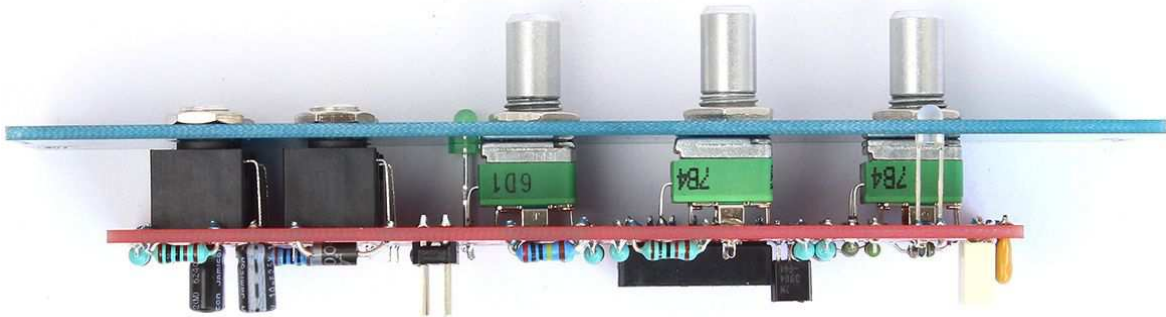

see the pots values position
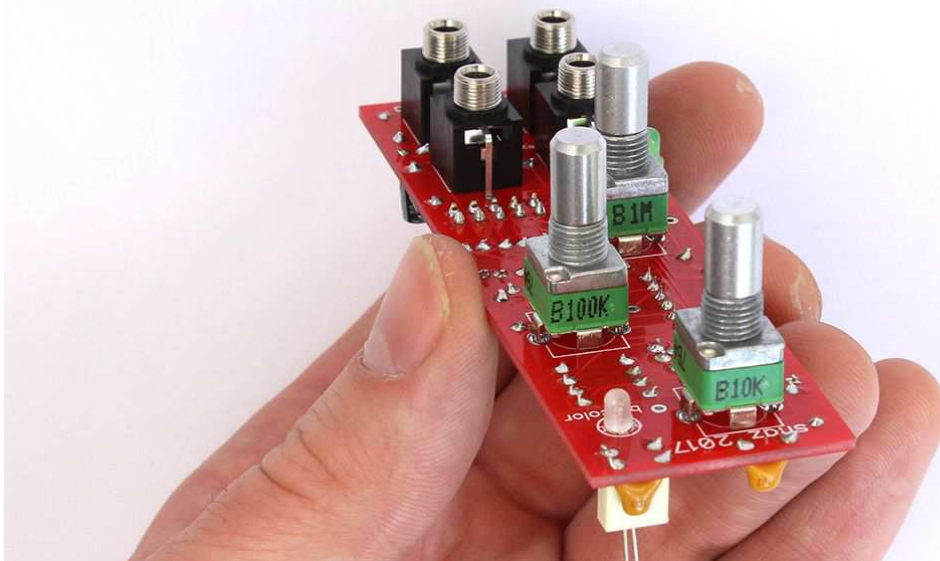
Place the **front panel** on and mount the pots with **nuts**.

place the panel and mount the nuts...

Check the position of all the parts if they are flat on the board, push the LEDs to the panel and do the soldering.

check the positions
and do the soldering

IC

Don't forget to insert the **IC** into the socket. Installing the IC can be a little tricky. The IC leads are flared out a bit wider than the socket will accept. Bend them in slightly with your fingers, and then try to press all the leads into the sockets in one shot. **IMPORTANT: the notch on ICs has to match with the notch on the socket.**

insert IC
watch out for the orientation

ASSEMBLY

Now just add the knobs and your KITTY EYES module is ready to go! Before you connect anything, make sure that your system is disconnected from power. Also double check the polarity of the ribbon cable, the red cable should match the -12V rail both on the module and on the bus board!