PIP v1.1

by neutral labs

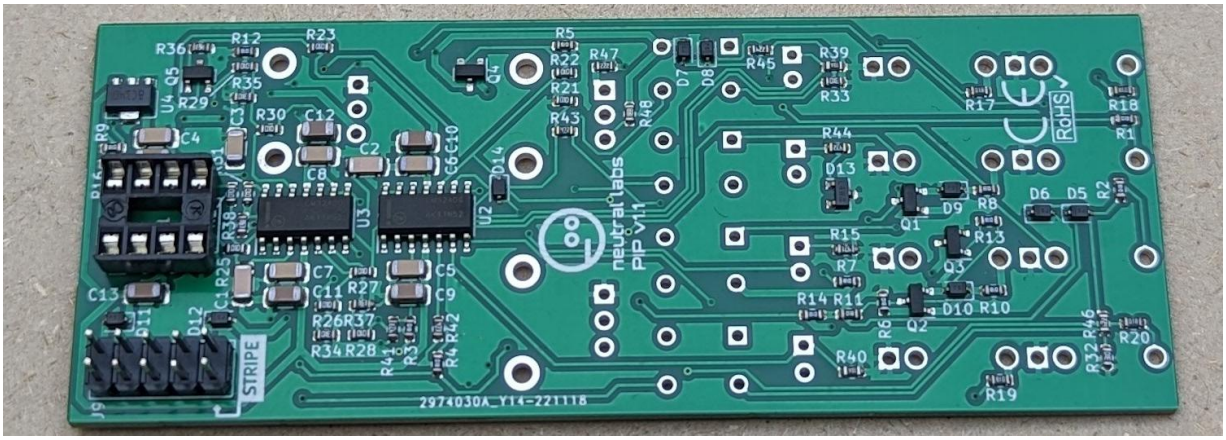
Build Guide

PIP is an easy kit to build: It comes with most of the components presoldered. You will only have to solder pots, LEDs, buttons, as well as some jacks and sockets, so there is very little room for error.

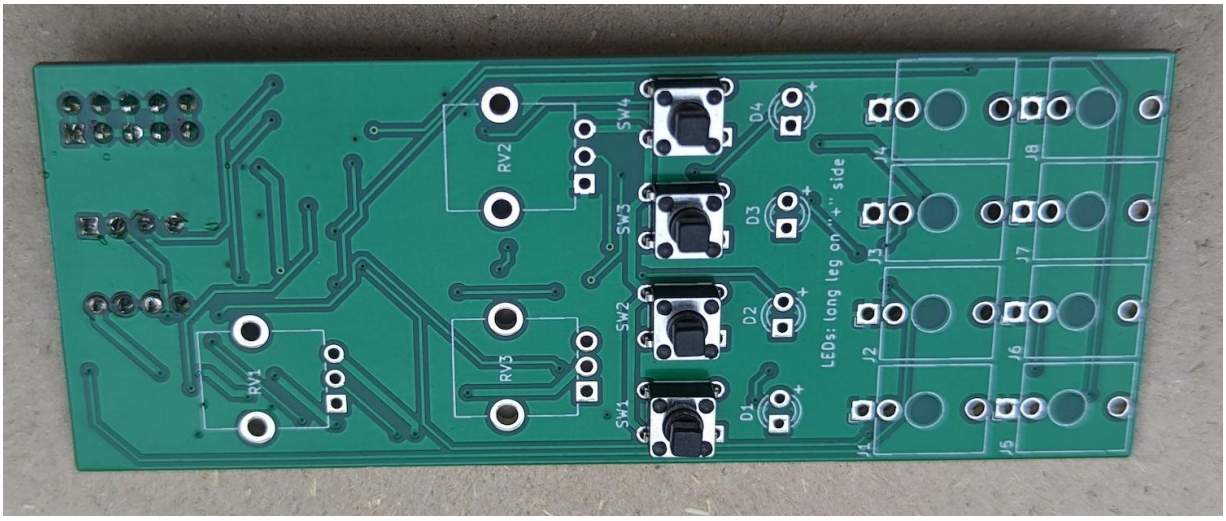
Component List

Part ID	Count	Type	Polarity matters?
J1-J8	8	Thonkiconn mono 3.5 mm switching socket + nut	-
J9	1	10-pin power header	no
D1, D4	2	LED 3 mm bicolor (red/green) 204SDRSYGW	yes
D2	1	LED 3 mm white	yes
D3	1	LED 3 mm orange	yes
SW1-SW4	4	SPST momentary button	no
RV1-RV2	2	10 kΩ linear potentiometer + nut (metal shaft)	-
RV3	1	10 kΩ linear potentiometer (plastic shaft)	-
U1	1	DIP-8 IC socket	yes
(U1)	1	ATTiny85 microcontroller (preprogrammed)	yes
_	2	button cap gray	-
_	1	button cap white	-
_	1	button cap red	-
_	1	LED holder	-
_	2	panel screw	-
_	2	knobs for RV1-RV2	-

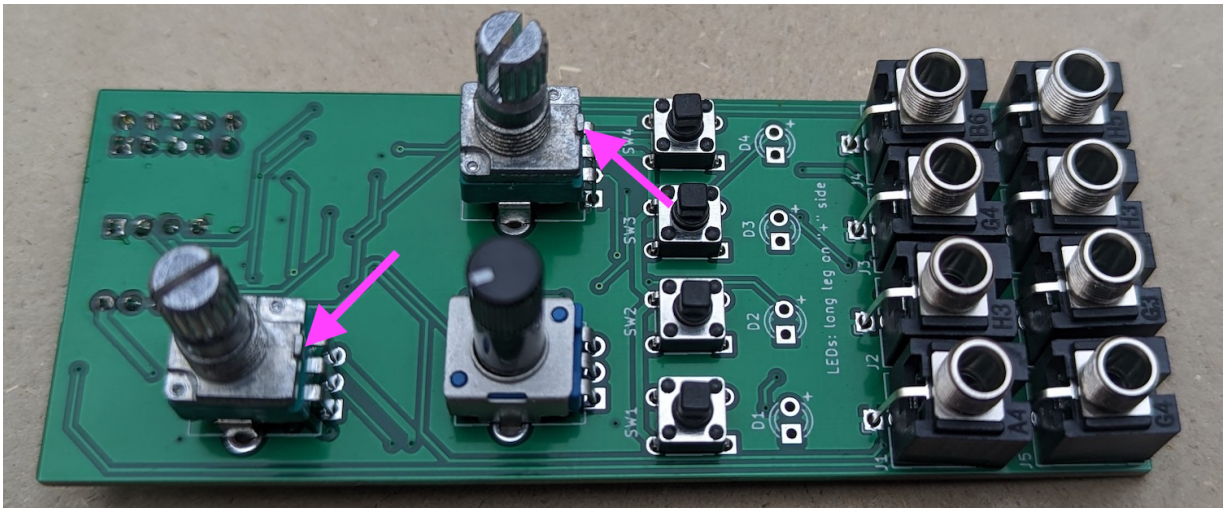
Step-by-step instructions



First, put in the 10-pin power header (J9) and IC socket (U1). The socket has a little notch that should match the notch in the U1 outline on the PCB. Solder both on the backside. For both components, it's best to solder 1 pin first, correct the angle slightly if necessary, then solder the remaining pins.

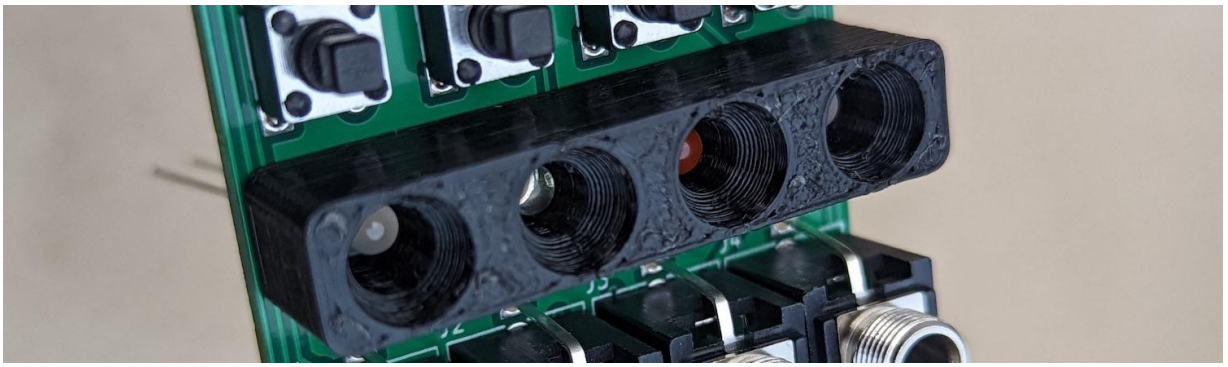


Now put in the buttons SW1-SW4. Make sure all 4 pins per button are inserted as far as possible and the buttons stick out perpendicular to the surface. **Do not solder yet!**

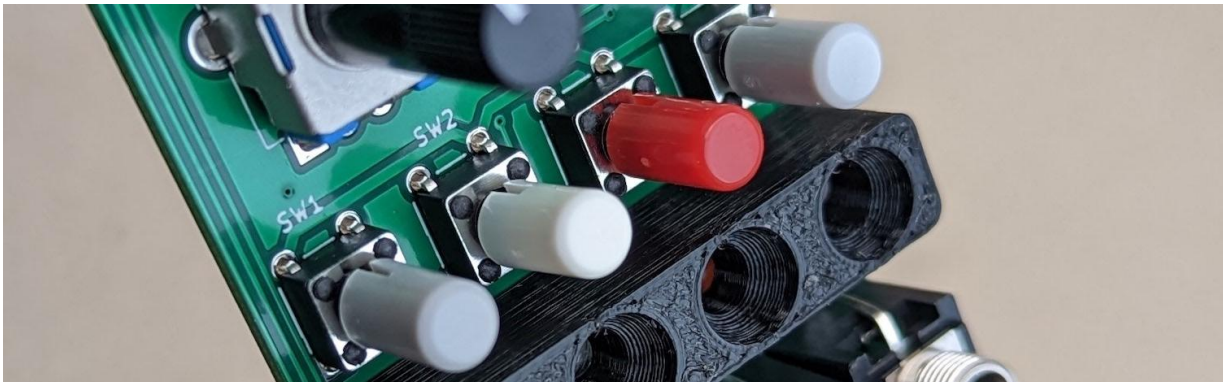


Snip off the little anti-rotation tabs near the bottom of RV1 and RV2 with a wirecutter. Put RV1, RV2, RV3 and J1 to J8 in their places as shown. **Do not solder yet!**

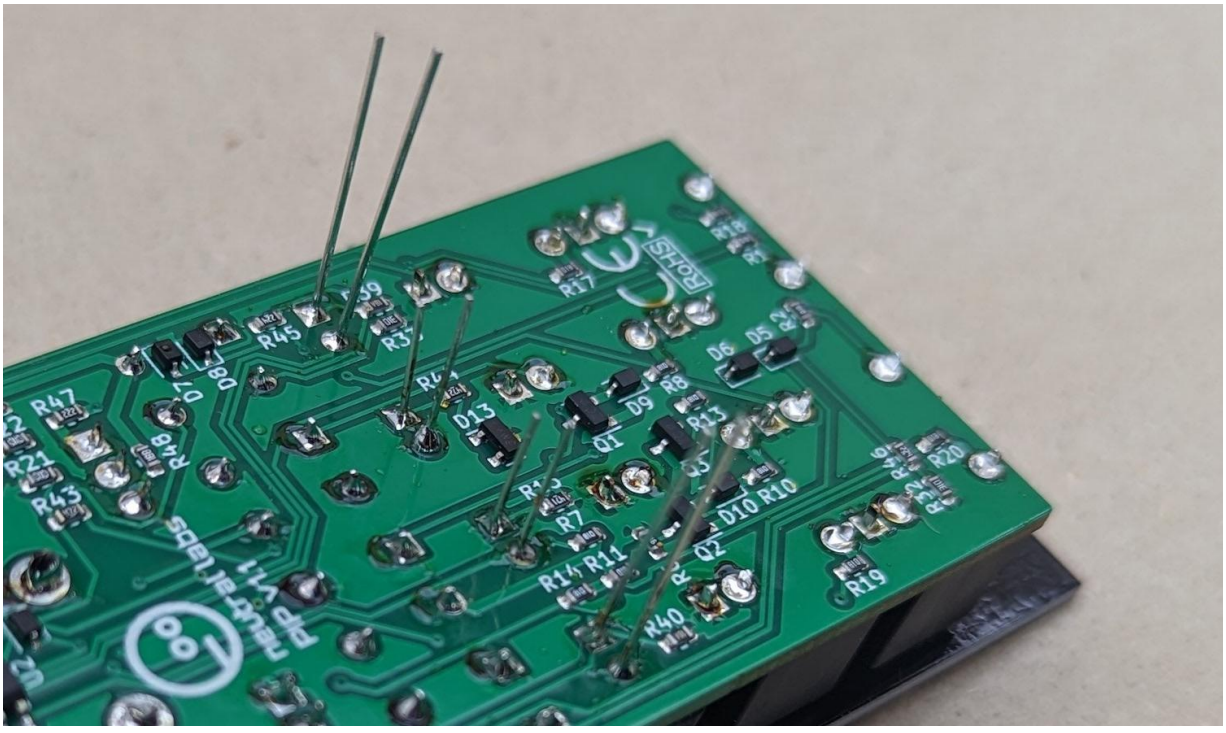
Now insert the LEDs in their holes without soldering them. D1 and D4 are the milky LEDs with longer legs. D2 is a clear white LED with shorter legs. D3 is an orange LED identifiable by, you may have guessed it, its orange color. **The long legs of the LEDs go on the side marked on the PCB with a “+”!**



Now put the LED holder over the LEDs as shown. The wide cut in the holes should be facing up, towards you. The holder is there to keep the LEDs in position and minimize light bleed from each LED to neighboring light ports on the front panel.

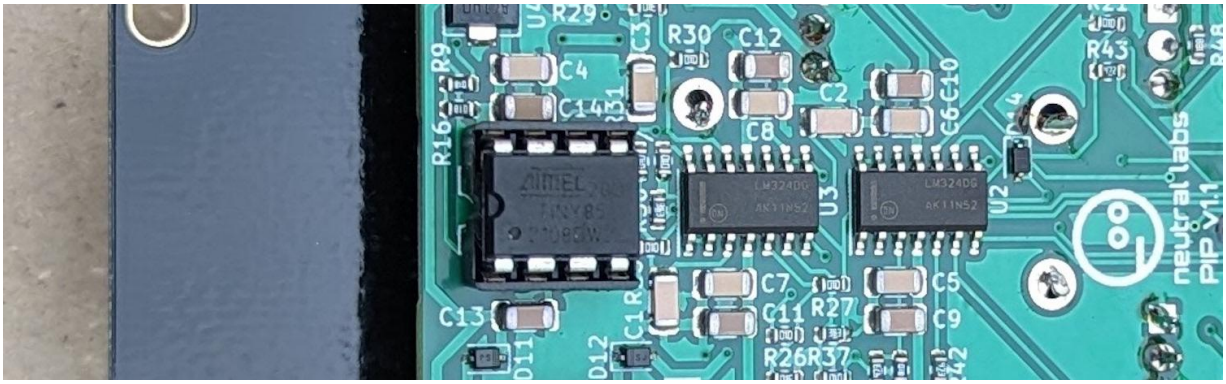


Add the button caps as shown: Gray on SW1 and SW4, white on SW2 and red on SW3. Press down on them firmly until they stay in place by themselves. Make sure they point up perpendicular to the PCB.



Now attach the front panel using the nuts for RV1, RV2 as well as the ones for J1 to J8. Lightly tighten the nuts. Test each of the buttons. Solder all the previously added components on the PCB backside. For the LEDs, press down on the legs to make sure they are

flush with the front panel. The LED legs should all point out 90 degrees before soldering, so the light sources will be directly under the light ports in the front panel. It’s easiest if you solder 1 leg per LED first, correct the angle of the LED holder if needed, then solder the other leg – and do this LED by LED. Snip off the LED legs after you’re done soldering.



Put the ATTiny85 IC in the U1 socket as shown. You may have to bend its legs inward slightly. **The notch in the IC must match the notch in the socket and the notch in the line on the PCB!**

Now plug in and test your module. Refer to the manual if needed.

If something’s not right, it may be best to unplug the module from Eurorack power immediately so as not to damage it (or the PSU).

Most problems can easily be fixed by reheating all your own solder joints so the solder can reflow. Also visually inspect joints and see if you can spot accidental solder bridges.

When everything is working correctly, you can now tighten all the nuts. If using a wrench or pliers, be careful not to scratch the front panel surface. As the final step, put the knobs on the shafts of RV1 and RV2.

If you need help troubleshooting or want to share photos, audio and/or video of your creations (please do), send a message to admin@neutral-labs.com