

KNOBI

build guide

difficulty: ☆☆☆¹



Hi fellow!

Just a quick intro before starting,

what to have on hand

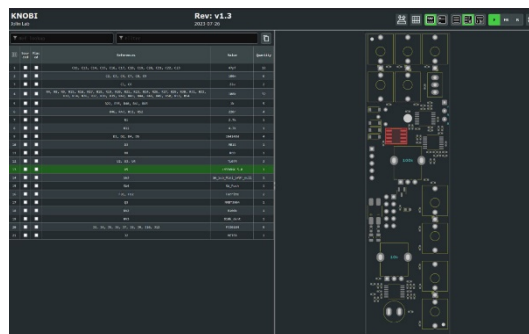
1. Soldering Iron - better with temperature control
2. Solder wire
3. A pair of tweezers
4. Cutter
5. Multimeter – optimal would be with at least 4 digits
6. Small flat head screwdriver
7. Small hex screwdriver
8. Solder sucker / wick (optional)
9. Silicone soldering mat (optional)
10. Helping hands (optional)
11. Flux (optional)

If you want to refresh yourself a bit about soldering stuff you can watch [this video](#)² by GreatScott!

A tool that can help you placing the components on the board is the interactive bill of materials.

Download the .html *ibom* file and open it with a browser. You can use it to check where a component is located on the board.

Once downloaded it works fine also offline.



On the *ibom* are listed all the KNOBI components. Most of them are already pre-soldered on the surface of the board (SMD). We just need to solder the through hole ones (THT).

BE CAREFUL NOT TO TOUCH THE SMD COMPONENTS WHILE SOLDERING THE THT ONES.

It's really easy to lose a tiny SMD resistor or capacitor. Be careful when soldering parts that are close to others already in place.

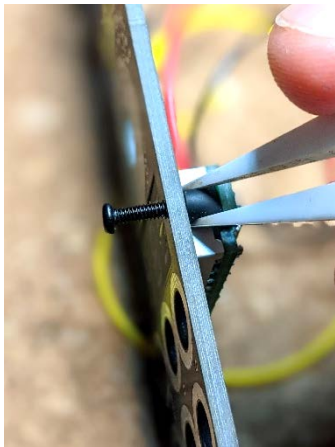
¹ Not a lot of components; the tricky part is fitting the meter in the panel aligning the nuts. The calibration process is easy but needs a multimeter, that's why the t 3/5 stars rating.

² <https://www.youtube.com/watch?v=VxMV6wGS3NY>

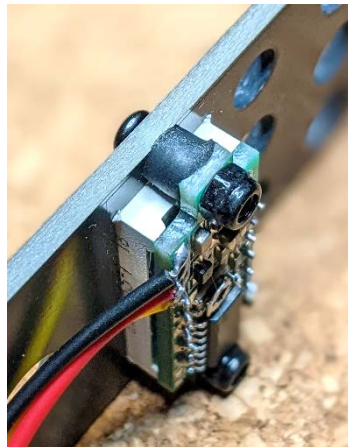
take the panel and let's start

three digits meter

1. Insert the meter in its rectangular cut in the panel. The dots should face the bottom of the panel - fig.c
2. Place the rubber spacer and the screw as shown in fig.a. Repeat on both sides.
3. Tighten the two nylock nuts – fig.b
4. To avoid the nuts sticking out from the module - check if the side of the nuts is parallel to the panel as shown in fig.d. If not align it with the help of the tweezers.



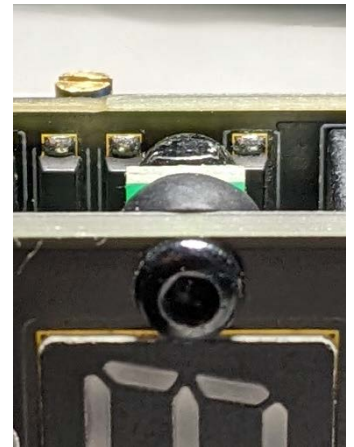
a



b



c



d

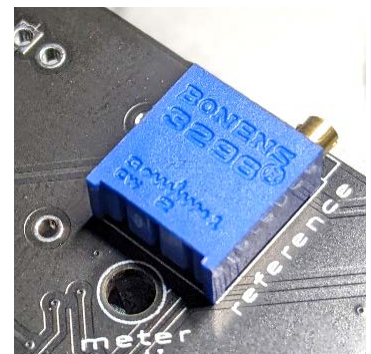
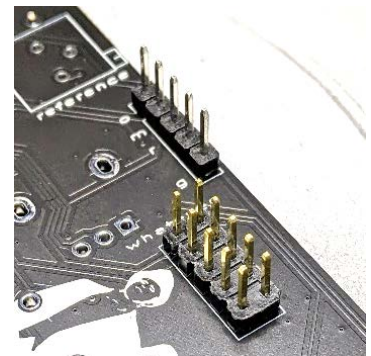
The panel is ready, let it rest on a comfortable surface.
Now the bottom layer of the main PCB – the back of the module.

eurorack power header, 1x5 pin header, trimmer

Place the socket and the header matching the drawing on the PCB. Longer pins needs to point outside. As for the trimmer follow the drawing on the pcb.

tip: solder one pin and check. If the socket is aligned with the PCB solder all the other pins.

1	J1	Conn_02x05_2.54mm
1	J11	Conn_01x5_2.54
1	RV1	B2k - trimmer



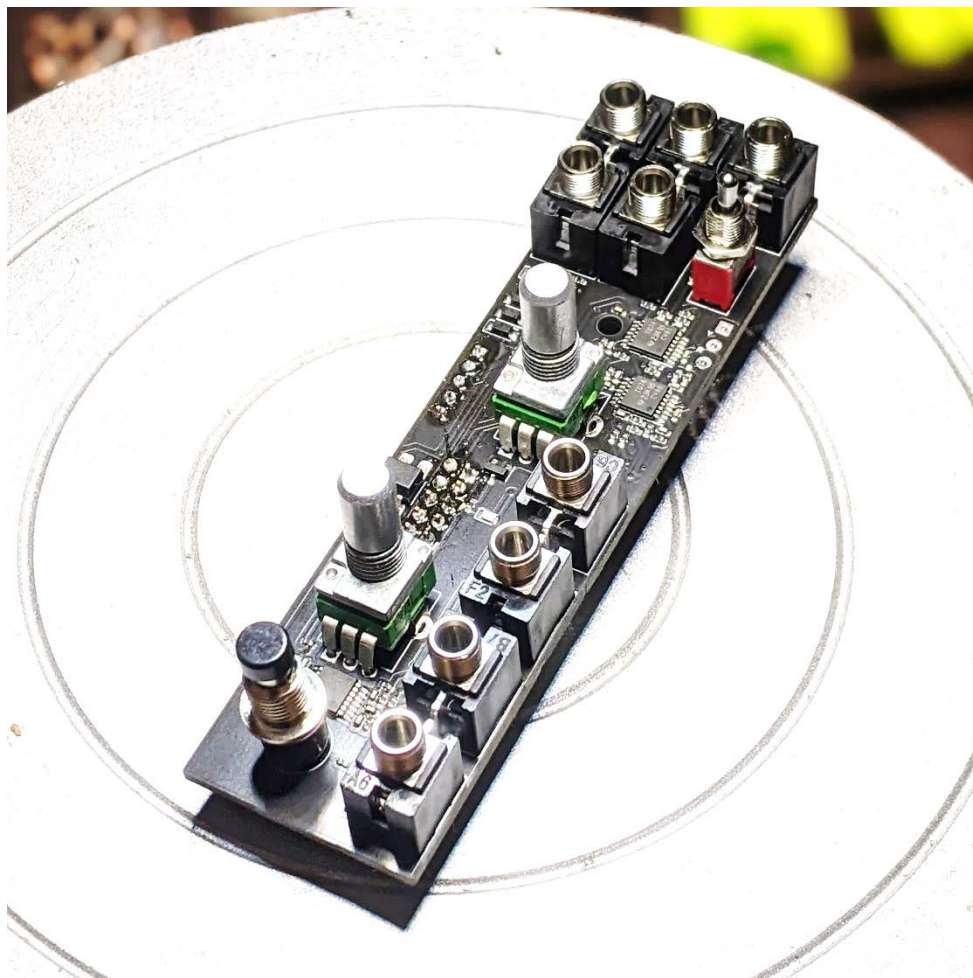
flip the board (front layer):

jack sockets, toggle switch, push button, potentiometers

do not solder them: just place all of them in the right place and move to the next step.

Toggle switch: to reduce clearance tighten one of the two nuts to the lever. You don't need the round locating ring.

1	RV2	B100k - potentiometer
1	RV3	B10k_dent - potentiometer
9	J3, J4, J5, J6, J7, J8, J9, J10, J12	PJ398SM aka "Thonkiconn"
1	SW4	SW_Push – push button
1	SW3	SW Sub Mini SPDT null – toggle switch



front panel

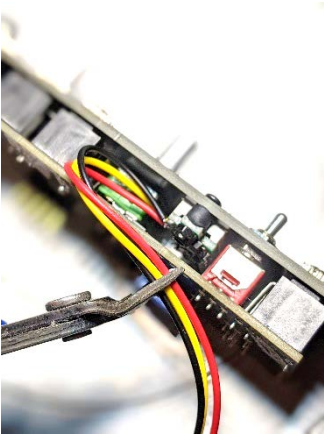
At last, put the panel on – keep the wires away, we are dealing with them later - and tighten the nuts.
Now solder all the front panel components.

tip: we are doing it now to ensure that all the mechanical parts are aligned with the panel. This reduces the stress on the components.

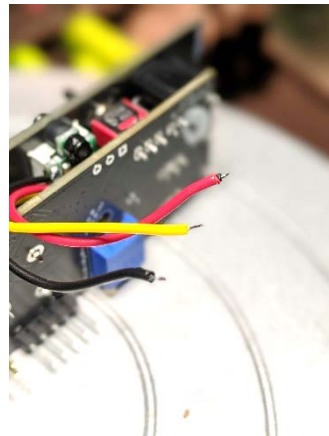
Now for the wires:

1. Cut them approximately at the same length shown in fig.e
2. Strip the plastic and tin the metal – fig.f
3. Insert each wire into its hole and solder them – fig.g
pay attention to the markings on the PCB, B (black) R (red) and Y (yellow)

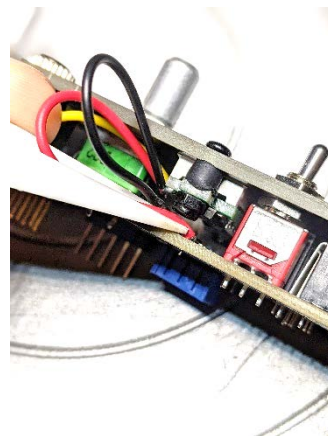
Once they are in place snuggle them inside the module carefully with the tweezers – fig.h.



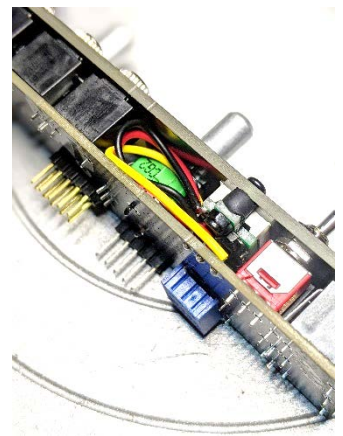
e



f



g

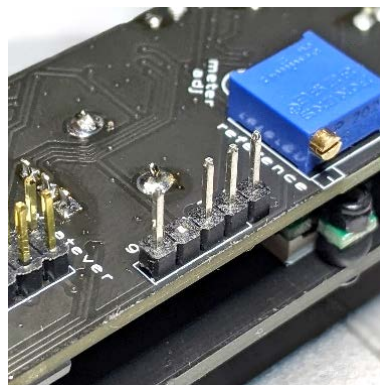


h

One last thing:

Cut the second pin from the bottom of the 5 pins header.

It's the one without any letter on its left.



check if everything is in place and properly soldered.

Place the knobs, tighten their screws and we are officially done with the build.

have a good rest.

Now the fun part, time to calibrate the thing.

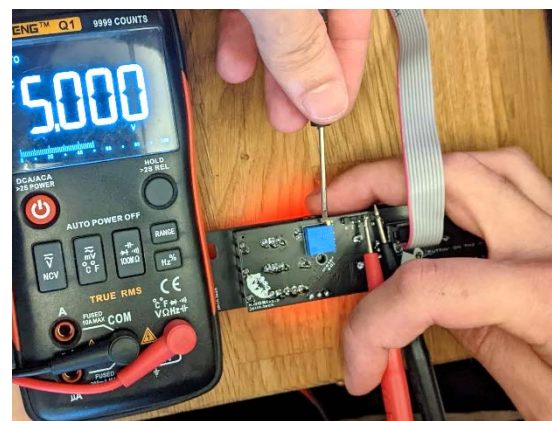
But first:

before powering it up

- It's always a good practice to check the power header for shorts with a multimeter.
tip: follow [this tutorial](#)³ by Quincas Moreira - aka SynthDiyGuy if you have any doubts on how to perform the procedure.
- Mind the polarity on the header socket of your PSU, **remember that red line is -12v**

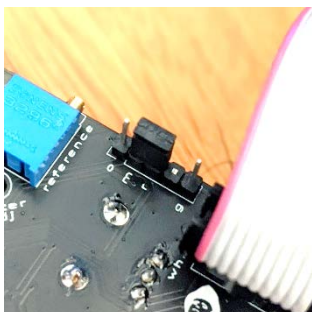
calibration

1. Let's start with the voltage reference. Turn on the multimeter and set it in voltage reading mode. Red (positive) probe on the "r" (reference) pin, black (negative) probe on the "g" (ground) - pin. Use a small flat head screwdriver to adjust the multiturn trimmer until you read 5.000v on the multimeter – fig.i
2. Time to calibrate the meter. Bridge "r" and "m" (meter) with the jumper – fig.l
3. Use a small hex screwdriver to adjust the trimmer inside the "meter adj" hole on the back of the PCB – fig.m.
The closest you can get it to 5v the better – fig.n
4. Finally move the jumper and bridge "m" and "o" (output) – fig.o

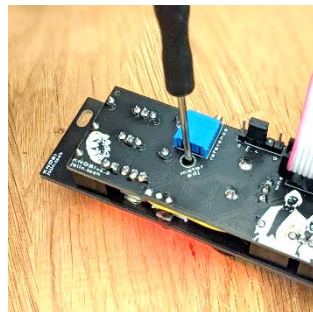


i

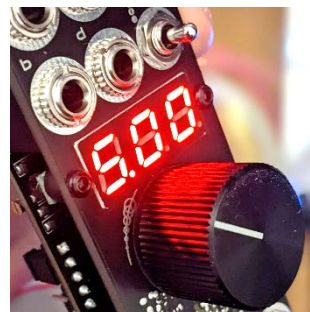
This procedure will ensure a thermally stable 5v voltage reference and a 3 digits meter with an error between 0.1-0.2v.



l



m



n



o

³ <https://www.youtube.com/watch?v=qS0SoliiQCo>



done! enjoy your new
KNOBI

find us:

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