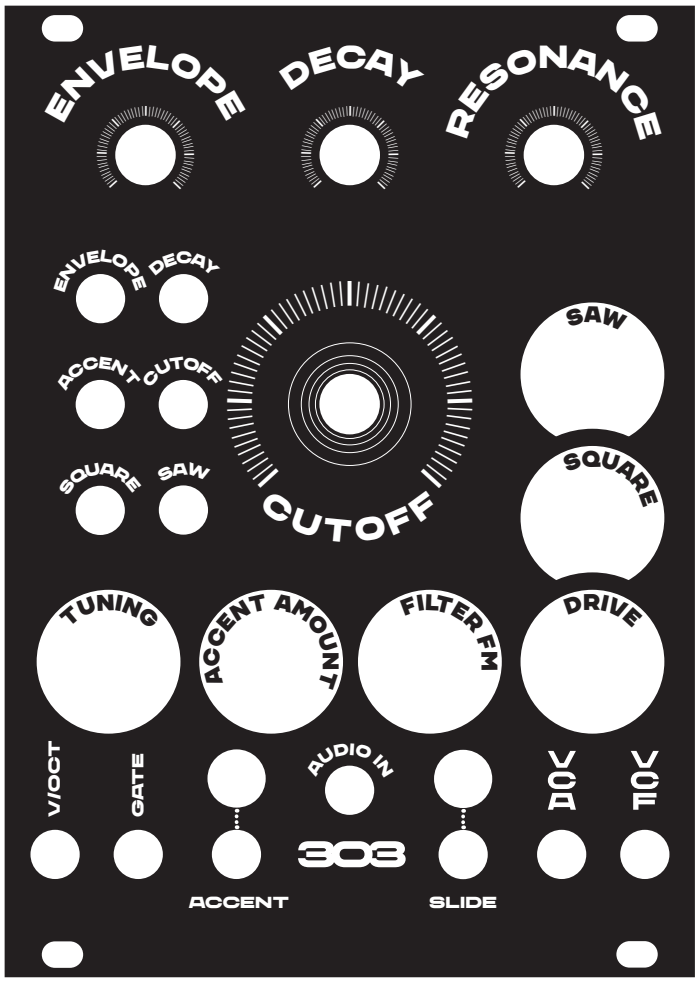
303 eurorack interface
for x0x-hearth
REV3 - january 2024
assembly guide



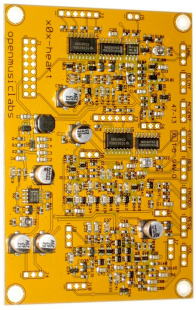
Interface for the openmusiclabs x0x-heart motherboard
based on the openmusiclabs x0x-heart pacemaker schematic

Difficulty level : medium to high.
Not recommended if your don't have advanced skills on
assembling and testing DIY projects.

Designed by jeanpri
instagram.com/jean.pri
I will not provide any support for the assembly
or for the hardware tests.

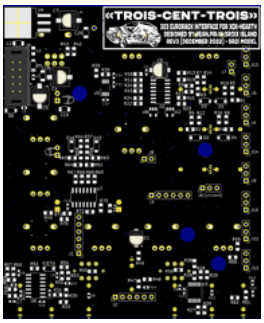
Download the complete open source project : https://github.com/jeanpri

List of materials:



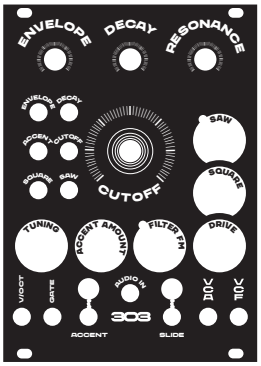
PCB of the x0x-hearth, SMD populated

The motherboard, generating the sound.
Order it here: synthcube.com/cart/open-music-labs-x0x-heart
(order only option “PCB, POPULATED W/SMT”)
More info about this item: openmusiclabs.com/projects/x0x-heart



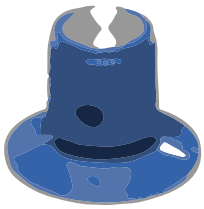
PCB (double sided) of the 303 interface with SMD assembled

The human-machine interface, that will control the motherboard and interface the CV/GATE levels.
You can order the PCB and the SMD components assembly on JLCPCB or any other PCB website. You will find the gerber files and the BOM on the github.



PCB of the 303 interface front panel

The eurorack panel of the 303 interface.
You can order this PCB on JLCPCB or any other PCB website.
This faceplate can be made in Aluminium or FR-4.
You will find the gerber files on the github.



Through-hole components and knobs

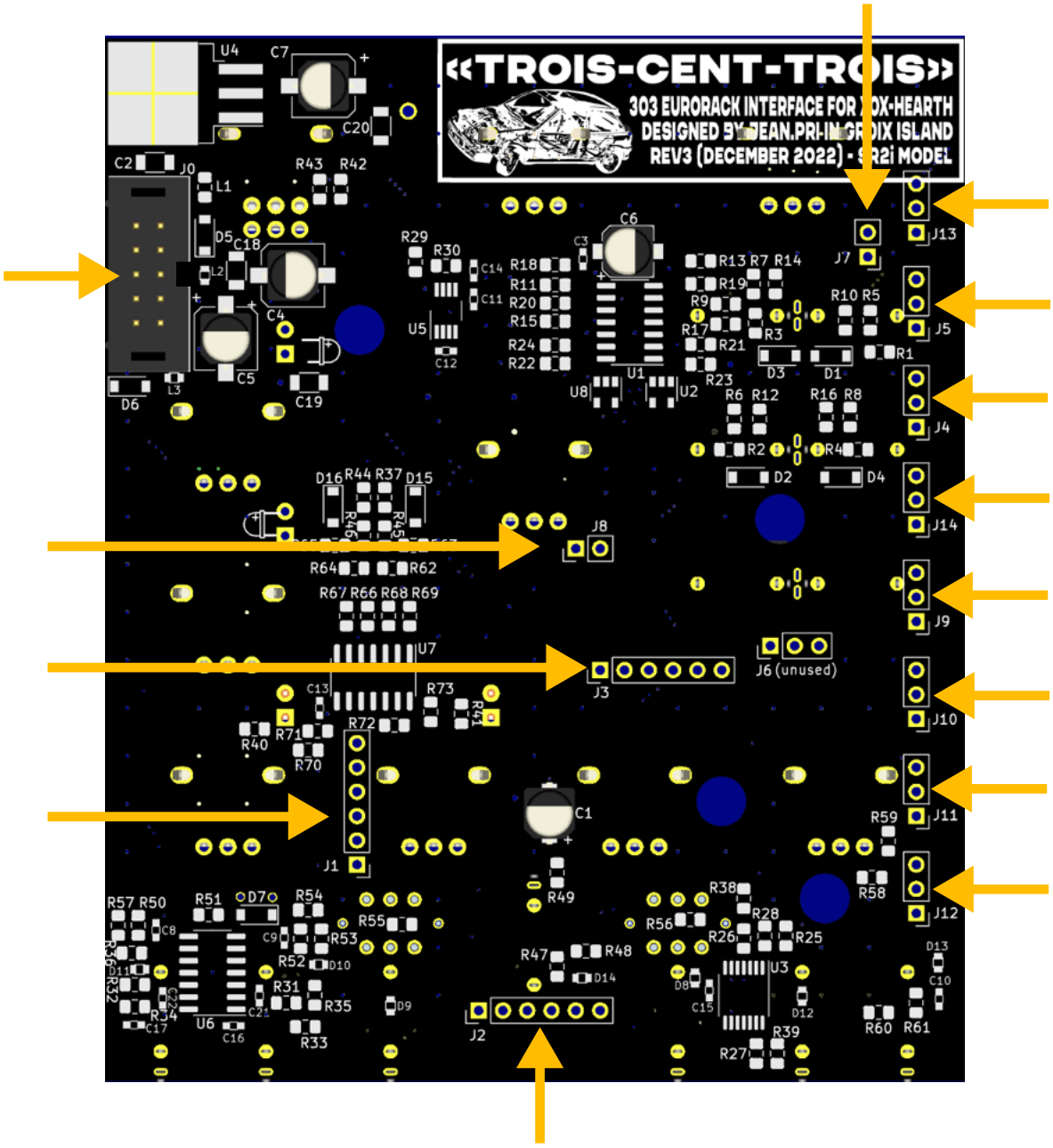
Some components need to be hand-soldered.
Order the components online.
You will find the BOM on the github >> **BOM through-hole.xls**

Tools

- A good soldering iron.
- A cutting plier to detach male and femalle connectors.
- Micro-hex screwdrivers for mounting the knobs on the pots.
- For the calibration of the x0x-heart : an oscilloscope, a voltage multimeter, a set of cruciform micro-screwdrivers.

303 interface - TH assembly (bottom)

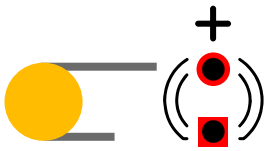
Hand soldering:
- Femelle connectors reference : 801-87-010-10-001101 (x13)
- 10-pin eurorack power reference : 30310-6002HB (x1)

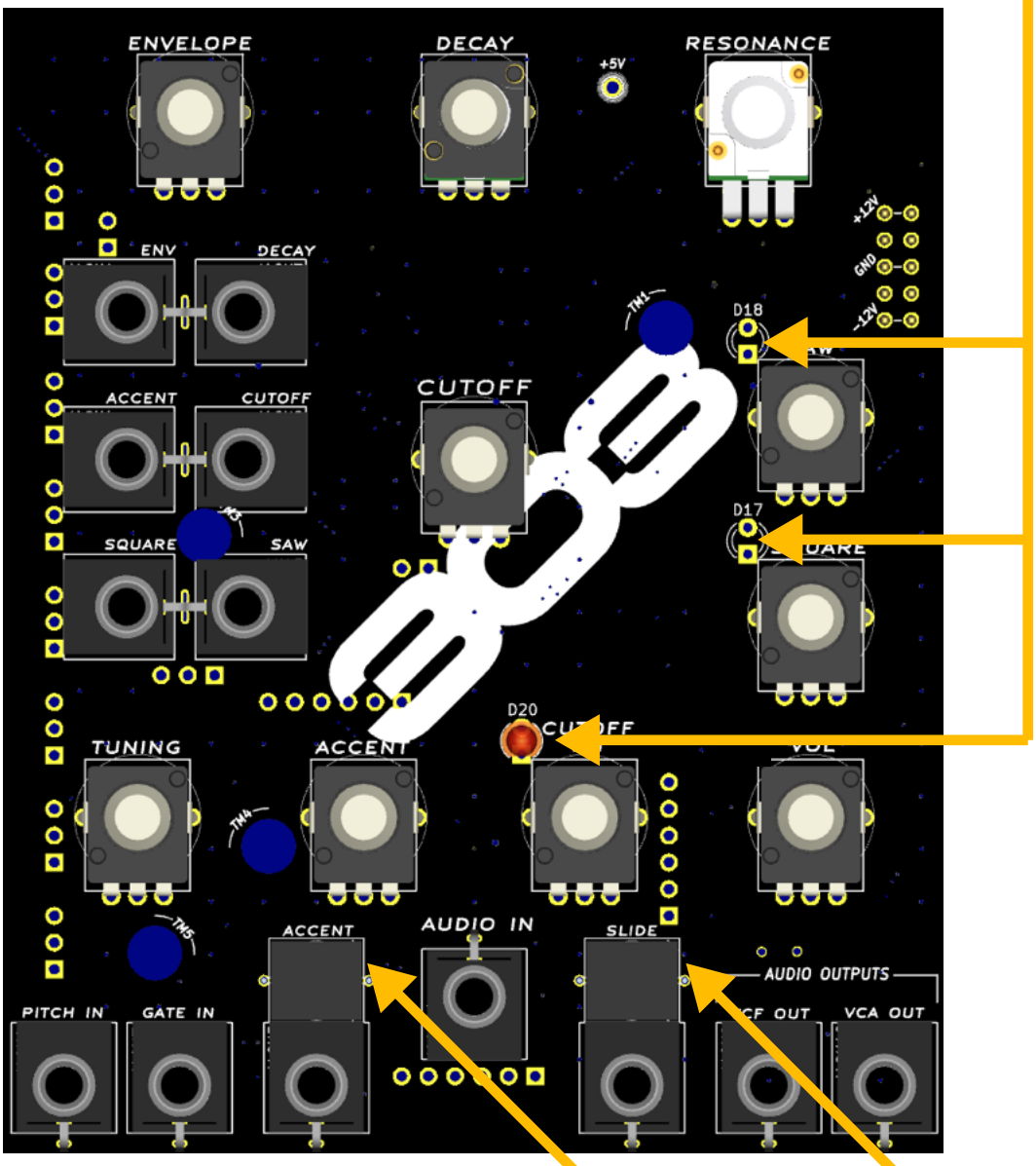


303 interface - TH assembly (top)

Hand soldering:
- Mono jack connectors : THONKICONN (x13)
- Switches : LP4EE1PBCTY (x2)
- Leds orange : WP424EDT (x3)
- Alpha pots : see next page (x10)

All leds must be mounted this side:
(tip: place the PCB front panel on the interface PCB to adjust the led height, before soldering)

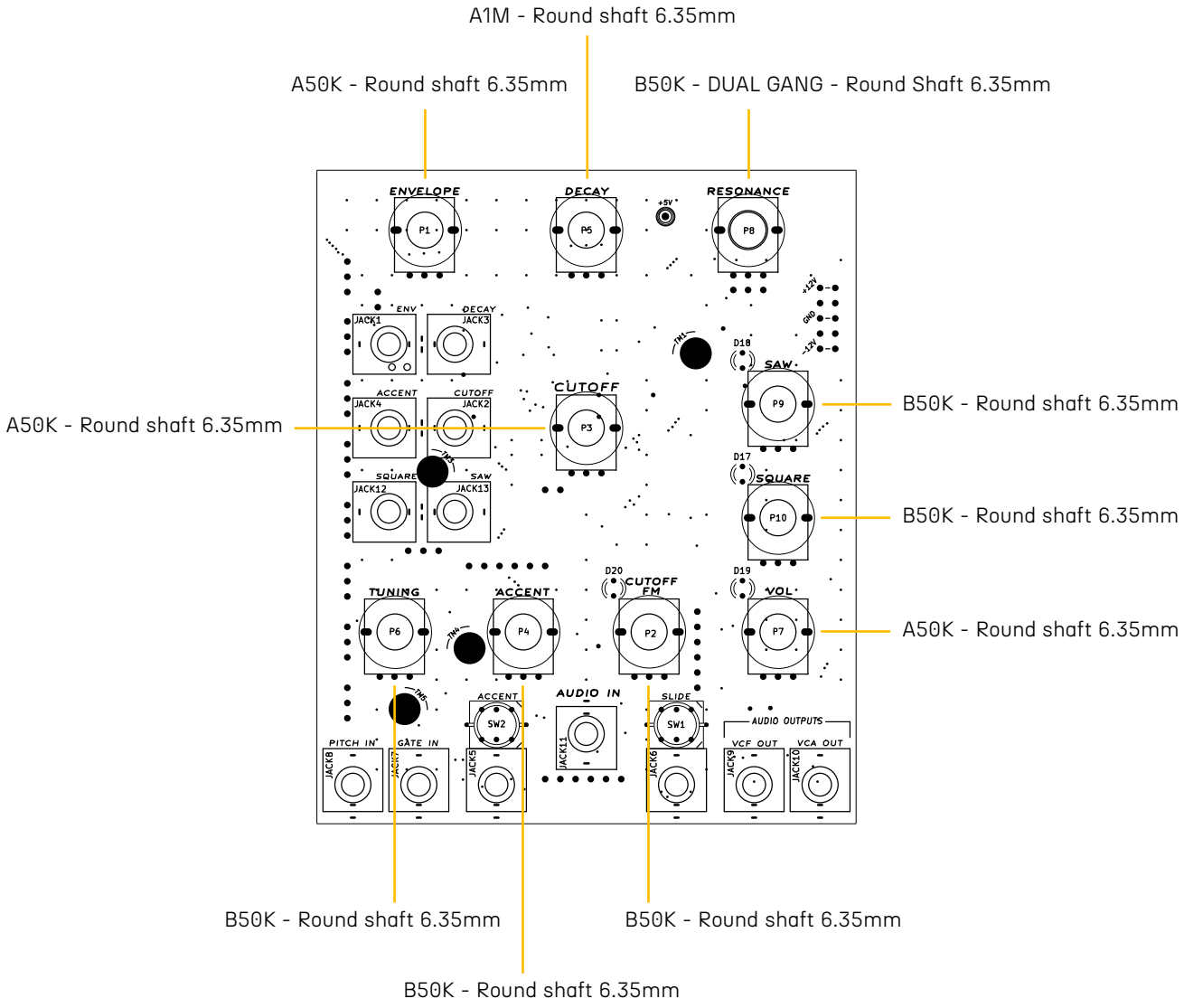




Switches : colored dot this side

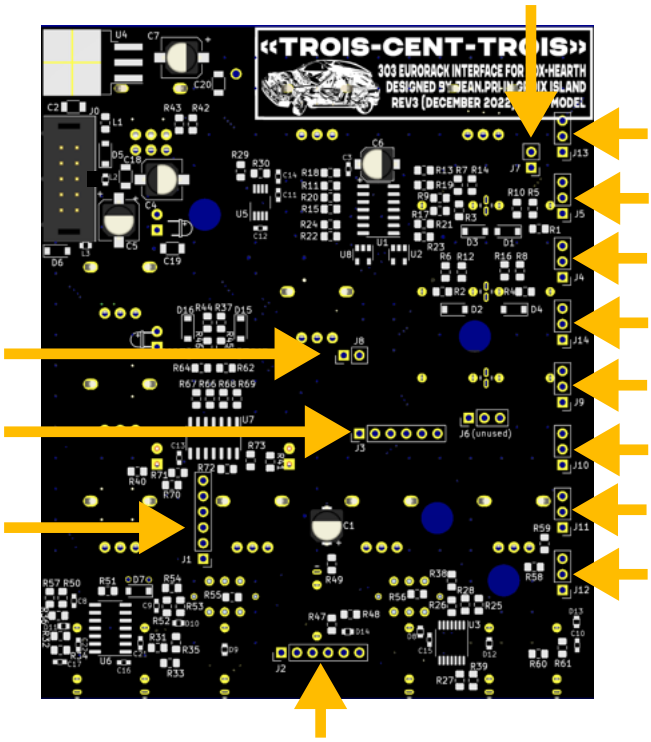
303 interface - TH assembly (top)

Hand soldering:
- Alpha pots (x10)

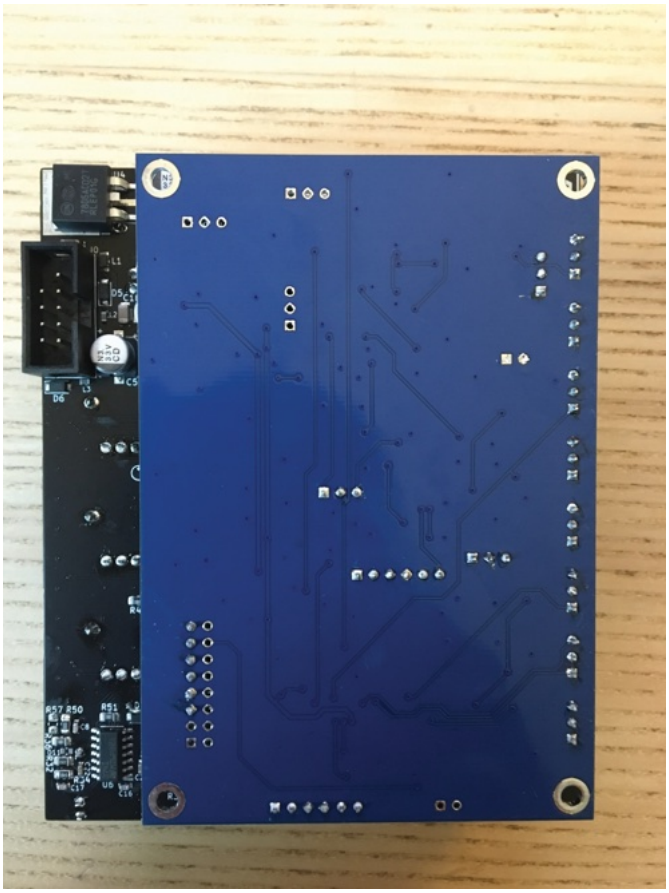


Connecting the 303 interface and the x0x-hearth

On the femelle connectors you precedently soldered on the 303 interface, detach and plug the male connectors (ref M20-9992046):



Then, place the x0x-hearth board on this 303 interface, the male connectors will guide you. Finnaly, solder these male connectors on the back of the x0x-hearth:



x0x-hearth calibration

This is a quick guide to calibrate the openmusiclabs x0x-hearth. More information on the official website : **http://wiki.openmusiclabs.com/wiki/x0x-heart?action=AttachFile&do=view&target=x0xheartmanual.pdf**

Use an eurorack PSU and a ribbon cable to supply the 303 interface (and the attached x0x-hearth).

Calibration 1

Trim TM1 to adjust 5.333V on this pin

Calibration 2

TUNING pot in center position.

Alternate between a 1V and 2V at the CV input (thanks to a sequencer or a any voltage source)

Patch a cable inside the VCF output.

Monitor the VCF output and adjust TM5 until the 1V and 2V signals produce tones that are exactly 1 octave apart.

Calibration 3

Next, adjust the CV offset by turning TM4 until a 2V signal produces a note 2 octaves below middle C (65.4Hz).

Calibration 4

Set the CUTOFF knob to center, the waveform to saw.

RESONANCE knob full clockwise,
ENVMOD, DECAY, ACCENT knobs full counterclockwise.

Apply a 2V CV to the VCO (65.4Hz) and monitor the VCF output on an oscilloscope.

Adjust TM3 : the ripples on the saw wave should be spaced at 2ms.

Final assembly

- Place the PCB front panel on the interface PCB
- Screw the jack nuts
- Place the knobs on the potentiometers and screw them