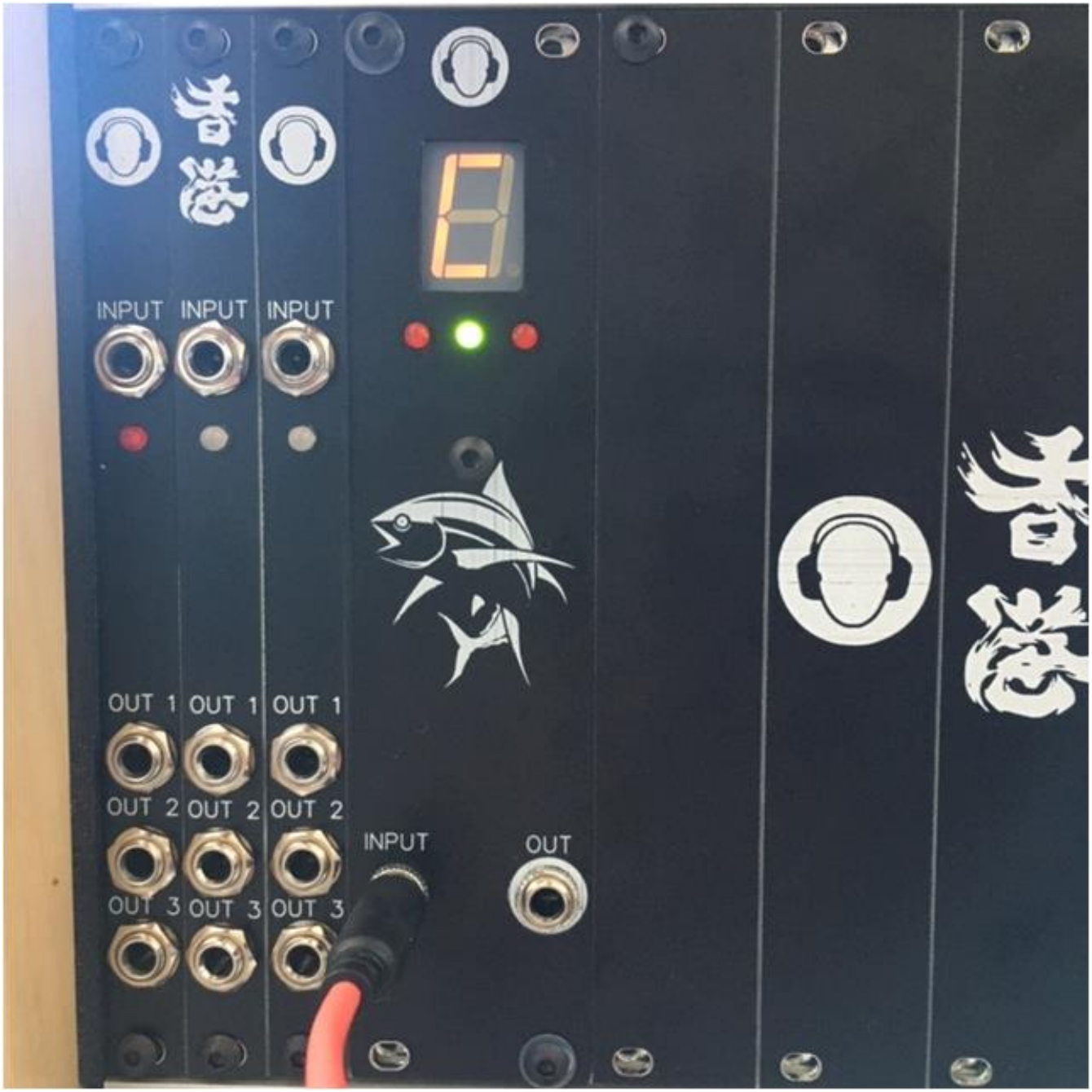
Tuna v1 – Eurorack tuner



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Assembly

Place all resistors on the front side of the PCB.

1. R1, R2, R3 – 2K determine the brightness of the 3 front panel LED's. I used 2K on breadboard with LiteOn LED. They Tayda LED are pretty bright with these.
2. R4 – 100R
3. R5-R12 – 2K determine the brightness of the 7 segment display.
4. R13, R14 – 100K
5. R15 – 10K

2. Place the two 1N4148 diodes.
3. Solder all these components down.
4. Install the L7805 flat against the board. Secure with M3 screw and nut. Make sure your screw is not to long so it doesn't create a volume conflict with the Arduino later.
5. Solder if positioning feels right.
6. Place and solder the IC socket for the TL072. Or the IC if you don't like sockets.
7. Place and solder the 32 pin IC socket on the back of the PCB. You will need to disable two of the legs on one of ends of the socket, to avoid missplacement of the Arduino. **This socket is not optional. The Arduino needs some space to clear the hardware sticking through the PCB.**
8. Place and solder the 10 pin boxed header. Mind the orientation.
9. Place and solder the three 0.1uF capacitors.
10. Install the 10uF electrolytic capacitors. Mind the polarity!
    1. I use low profile versions, that can be placed straight between PCB and front panel.
    2. If you use >9mm height capacitors, place them on the backside of the board, or lay them flat.
11. Place, but not solder all front panel components.
    1. The 7 segment display
    2. The 3 LED
    3. The 2 Thonkiconn jacks
    4. Fix the spacer with an M3 screw to the PCB.
12. Place the front panel.
    1. Tighten the nuts on the jack sockets
    2. Tighten the Panel to the spacer using the last M3 screw
13. Flip the whole assembly
    1. Stick the LED through the panel
    2. Align the 7 segment display with the hole
14. Solder all panel components.

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Power up and calibration

First power on

15. Check the power header for shorts with a multimeter
16. Connect to a power supply
17. Check the power at the Opamp
    1. Should be +12V on pin 8
    2. Should be -12V on pin 4
18. Check the power for the Arduino.
    1. Should be +5V on the pin that says +5V on the silkscreen.
19. Remove from power supply.
20. Install TL072 in the socket. Mind the orientation.

Prepare the Arduino

1. Download the code from Jos Bouten's GitHub https://github.com/josbouten/Tune-O-Matic
2. Do the Arduino magic. If you're unfamiliar with Arduino, check Google, YouTube, etc. It's not that hard.
    1. Make sure that the right display is set. Tuna needs Common Cathode
    2. Jos wrote a nice bit of test code. It's commented during normal operation, but you can use it for initial testing.
    3. Compile the code and upload to the Arduino.
3. Remove the USB cable
3. Place the Arduino in the socket on the back of the PCB.
4. Connect the module to the PSU.

The module should be working now. No calibration required.

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