HYPER
+ HYPO

DUAL PASSIVE HPF/LP

BUILD GUIDE

V1 - MAY 2024

HERZLICH

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INTRODUCTION

Thank you for choosing a HYPEROXIA + H
will help you in your endeavor to successfully bu
recommend you read the build guide before start
everything in the bags they came in until you are
them. Mostly because there are small parts that c
forever. Yes, forever. The HYPEROXIA + H
can avoid potential pitfalls by following and famil
before starting.

SAFETY

Building electronics is a fun and rewarding hobby
procedures while cooking, so should you practice
workshop. Below are some recommendations on

- **Your soldering iron is dangerously hot**. W
where it will not fall or roll away, and whe
and making it fall on something, or yourse

- **Be mindful of toxic chemicals and fumes.**
working in a well-ventilated area to dissipa
solder, be sure to wash your hands after s
work area.

- **Wear adequate eye-protection.** A good pa
vision, will be comfortable to wear for exte
than €9 and will, most importantly, protect
and trimmed leads can turn into projectile
damage to your eyes. Make it a habit to w

You are responsible for your own safety while w
decided squinting your eyes while trimming LED
of safety glasses and end up in the emergency ro
precautions, you can look forward to practicing y

EQUIPMENT

You will need some basic hand tools and, ideally,
successfully complete this project. If you need to
task, I recommend buying the best quality tools y
long run, and you will not have to continuously u
proves insufficient.

I have added some tool suggestions in parenthes
interest in recommending one tool over another,
they will be happy to use for years to come. You

- A temperature-controlled soldering iron
- Needle-nosed pliers (Engineer PS-01)
- Low-profile side cutter (Knipex 78 71 125 E
- Good quality lead-free solder
- Safety glasses (Bollé Silpsi)
- Cyanoacrylate glue

The following tools are not strictly necessary, but

- Knurled nut driver (~~Xicon 382-0006~~ **Herzlic**
- Socket wrenches (Bahco SL25)
- A decent multimeter
- Anti-static tweezers
- Reverse ceramic tweezers
- Solder braid and liquid flux
- Desoldering pump (Engineer SS-02)

These tools will all prove useful in countless othe
any of the tools above, try reaching out to friends
than likely be happy to lend you the tools. Alterna
you need, especially if you think you will build m

**The Xicon driver was discontinued, but fortunat
exist, including one I designed myself.*

DESIGN NOTES

Ever needed to cut some low end before passing
tame the highs on a hissy digital oscillator, or ma
filtering your drums before they hit the mix?

That all sounds great, except your super high enc
every-parameter, 28hp, multi-pole-output, styrofl
currently occupied sweeping a square wave inste
where you can't free up a filter to do some basic f
isn't enough "rackspace" or "money" to buy a ne
purposes.

Having designed 0hp "utility" filters in the past (o
well these struggles, and sought to solve them, b
finger-unfriendly designs demanded a touch-up.
but also not quite prepared to force it upon the us
effectively 1U, but easily converted to 0hp for tho
rackspace).

The lovely thing about the Hyperoxia + Hypoxia fi
independent filters – a HPF and a LPF – or, throug
Simply plug your signal into the HPF input and ou
happens, and you now have a wonderful passive

Anyway, enough chit-chat, warm up the soldering

BOM

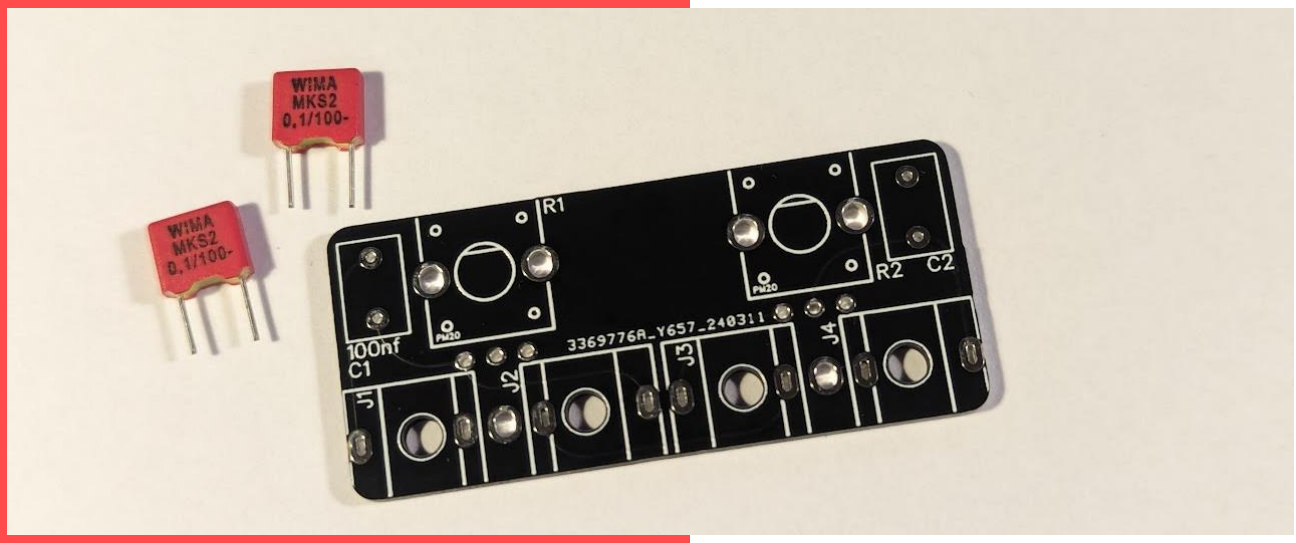
Component	Qty
50kA pot	2
3,5mm jack	4
0,1uF film capacitor (WIMA)	2
M3 brass bolt	2
M3 brass insert	2

BUILD GUIDE

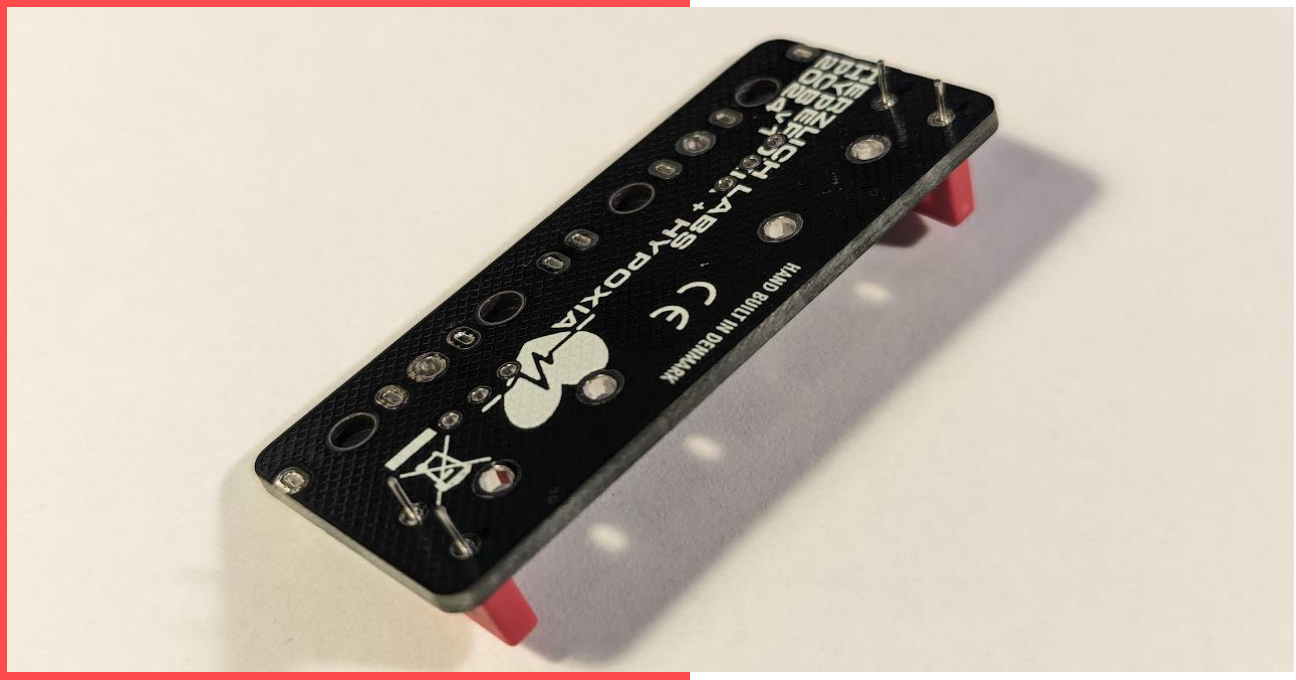
Let's build – don't worry, it's not difficult at all, I p
warn you about pitfalls to come, but it's not a diff
guide briefly before beginning, so you are familia

STEP 1: Populating the PCB

It is good practice to always populate your circuit
components first. In this case, the lowest clearanc
right in on the side of the board with the silkscree
rectangular outline of the capacitors.



By bending the leads slightly once inserted, you s
and solder the legs in place easily. Once they are
that the capacitors are nice and flush against the
board. If something isn't flush reheat the solder jo
against the board as you let the joint cool. This pr
DIY, so keep it in mind as you go!

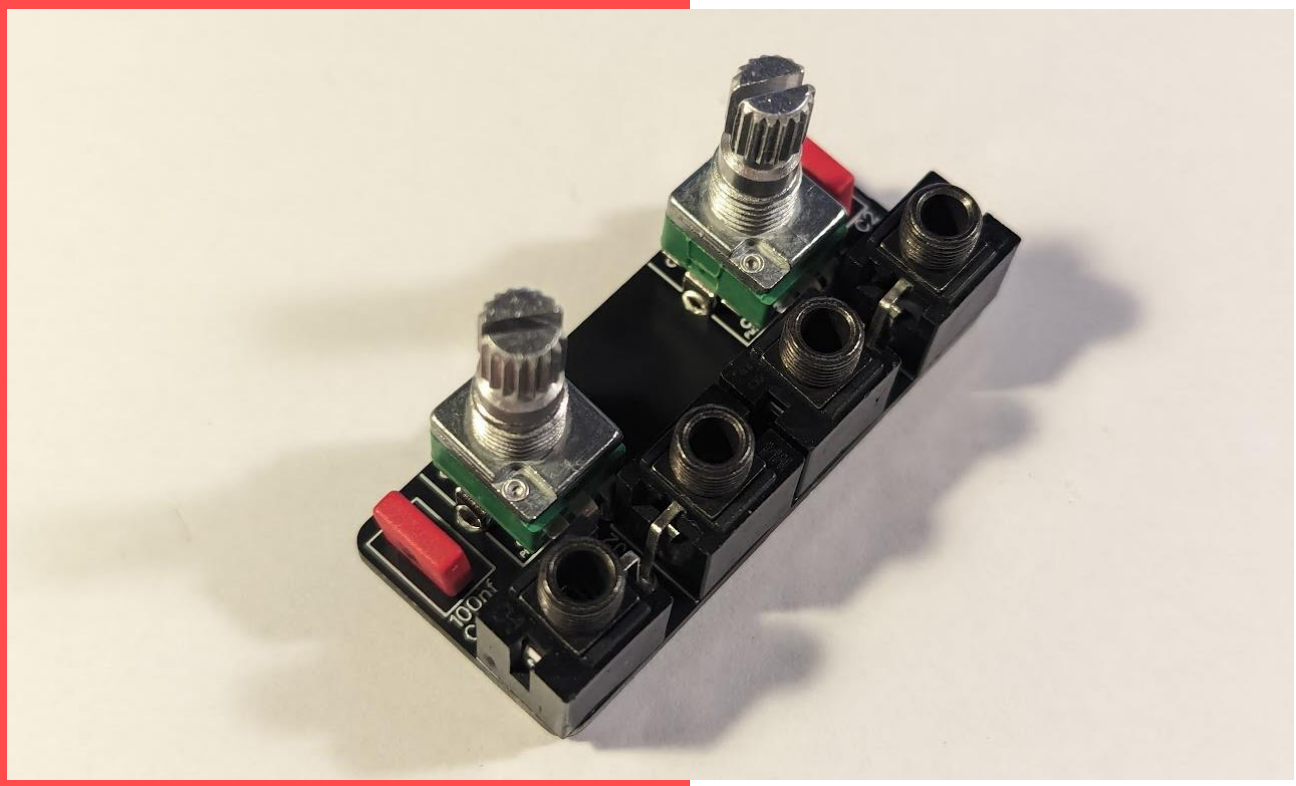


Next, install the 3,5mm jacks. Pay close attention
they share ground pins (the exposed pin) in pairs
like this before soldering, because it's going to be
You have been warned.

When soldering the jacks, it is good practice to so
turning over the board and checking that everythi
to solder the rest of the pins, otherwise, use the t
right.

Finally, insert the potentiometers – you may have
so, and it may take a bit of pressure to go in, altho
that everything is inserted correctly before proce

With that, you are done soldering, and can pat yo



STEP 2: Mechanical assembly

As you may have noticed, this device is capable o
as a 0hp in-line unit. To keep the device a 1U unit

Assembly is fortunately both simple and straightf
placing it over the components – if you have asse
Now, slip the knurled nuts over the jacks and tigh
one before tightening the rest – it is better to tigh

As for the potentiometers, there are nuts included can install them if this is an exercise you think yo the front panel is already very securely connected

Finally, press the knobs over the potentiometers. you align the knob at the 0% or 100% position, m either fully CW or CCW before you do. It is norma the knob, but if you need to use a huge amount o reseating it to get a better fit.

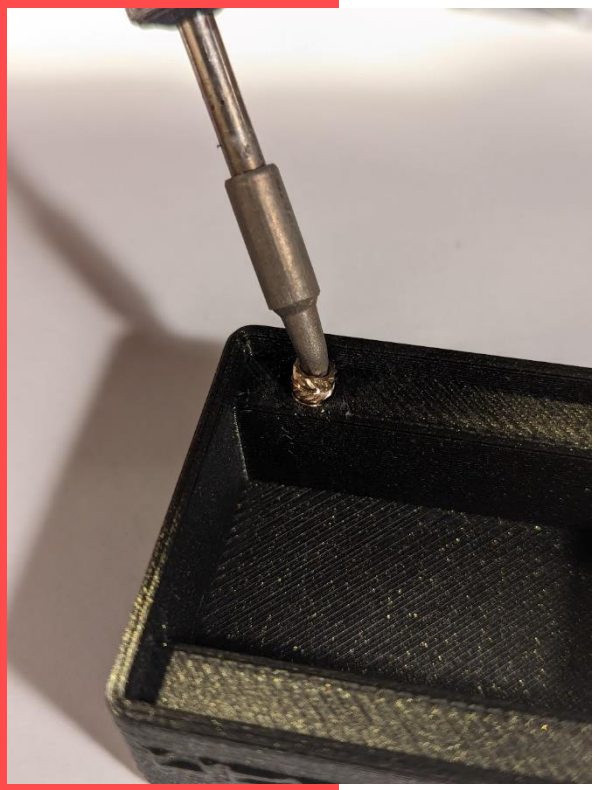
To test the device, simply patch in a harmonically
either the HPF or LPF input, and listen to either th
If something is not working as expected, try reflo

The device is now ready to use in 1U format. Con

STEP 3: 0hp assembly

Not content with using your 1U rail? Maybe you c
this thing 0hp right away. Take the 3D printed enc
knurled brass inserts. Like a weird magic trick, yo
into the holes in the enclosure.

Using a hammer may seem tempting, but you ha
your soldering iron. Place one of the nuts over th
towards the hole. Now, heat your soldering iron t
the tip to gently press the insert into the plastic.



The heat from your soldering iron will disperse in
plastic. Do *not* use more than a slight amount of
merely guiding the nut into the hole, not pressing
surface, give your iron a little twist and release th
nut should stay in place as the plastic hardens ar

Repeat this process for both inserts, and finally p
inserts will make it easy for the bolts to secure it

SUPPORT

Sometimes things go wrong - that's OK! If you ha
module, and you can't seem to get yourself out o
lb@herzlich.technology for assistance. Please ser
PCBs to help me investigate and identify the prob

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