Assembly guide: solder fume extractor

Parts list

The following items are required to put together the solder fume extractor. Note: It is implied, that you have some knowledge of soldering electronics and have a soldering iron and some basic tools for electronics.

#	Item	Quantity	Link	Notes
1	18650 Lithium Ion Battery	1	-	You can salvage those batteries out of nearly anything battery driven. Also available from amazon or aliexpress.
2	18650 battery holder	1	Link	
3	TP4056 Charging Module	1	Link	
4	12V Step Up Converter	1	Link	
5	Switch	1	Link	
6	Wires		Link	I used 24 AWG (0,2mm^2) wires, its also possible to use different ones
7	M2 Nut	1	Link	The items in the link are a collection of some basic screws, washer and nuts
8	M2x8 Scew	2		See link above
9	M2x12 Screw	2		See link above
10	M3x12 Screw	4		See link above
11	120mm PC Fan	1	Link	I used some old fan i had laying around
12	5x2mm Magnets	4	Link	
13	M3 Brass Melt Fittings	4	Link	
14	M2 Brass Melt Fittings	4	Link	
15	Activated Charcoal Filter mat	1	Link	

Print instructions

I recommend printing this whole thing in either PLA or PETG, no need for any fancy material. I printed the model with 2 different colors, but you can just use one if you like.
Open the print profile which comes with the model. There should be a **print pause** already set up on layer 122.
While the printer pauses at this layer, drop a M2 nut in there, it should fit with no need to press it in. After dropping it in, continue the print.

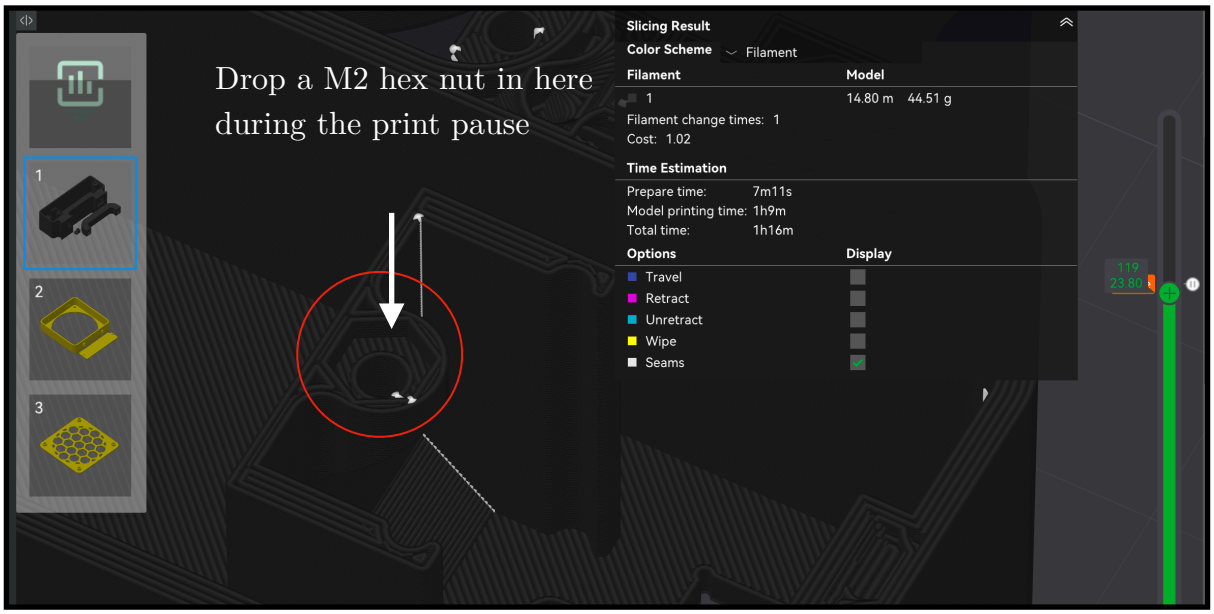

Figure 1: print pause

Preparing the assembly

When the print is finished, the fun part can begin!
We start by putting the magnets into the sockets of the base cover, use some super glue to fix them in place.

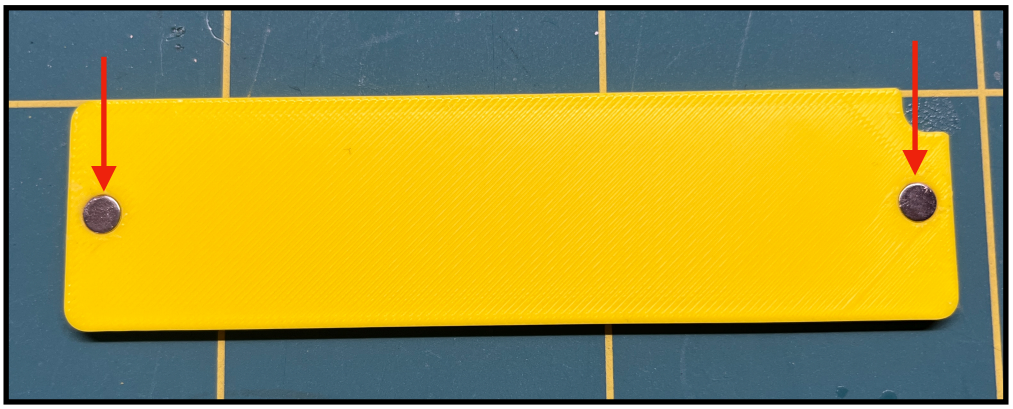

Figure 2: put the magnets into the base cover

Repeat the process on the designated holes in the base (see Fig. 3). Be careful to orient the magnets in the right polarity, you do want your lid to close!

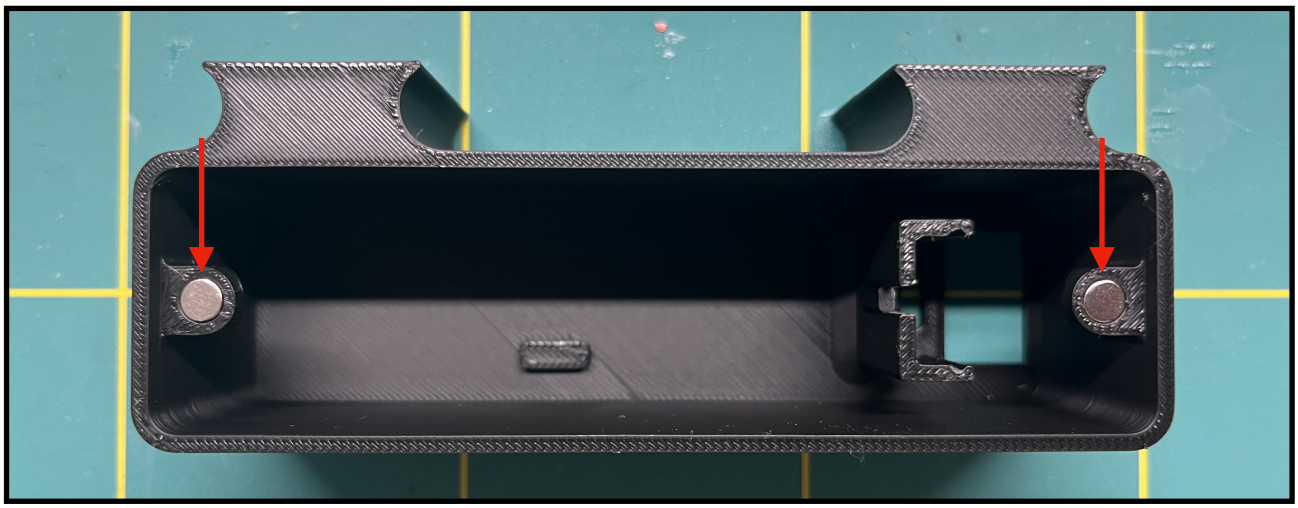

Figure 3: installation of the base magnets

Next up are the brass fittings, take your soldering iron and melt the M3 fittings into the 4 holes of the filter cover.

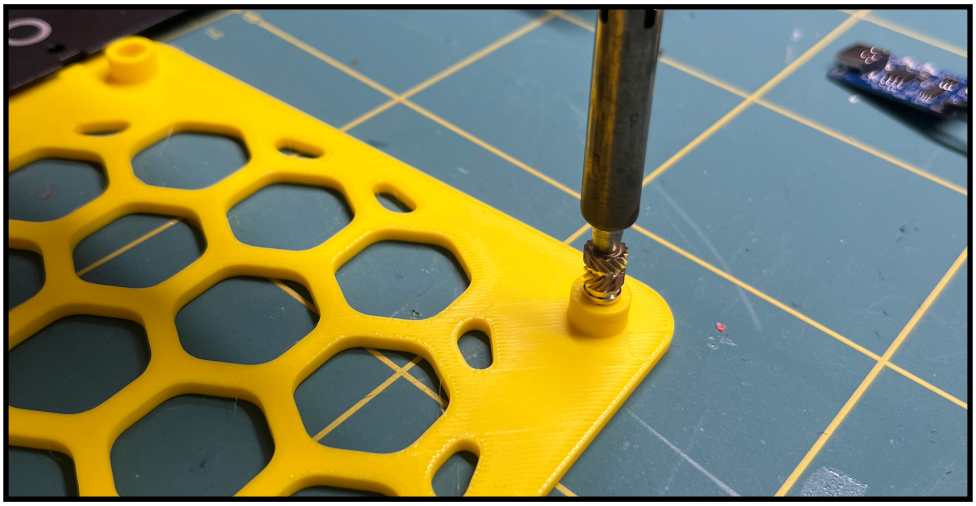

Figure 4: Brass fittings for the filter cover

Two M2 fittings go into the top of the body, providing the threads necessary to tighten town the hold (Fig. 5).
The last two M2 fittings go into the base, as you can see in Figure 6.
Take some scissors and cut small rectangles into the edges of the filter mat. You can just eyeball it, doesn't need to be perfect (Fig. 7).

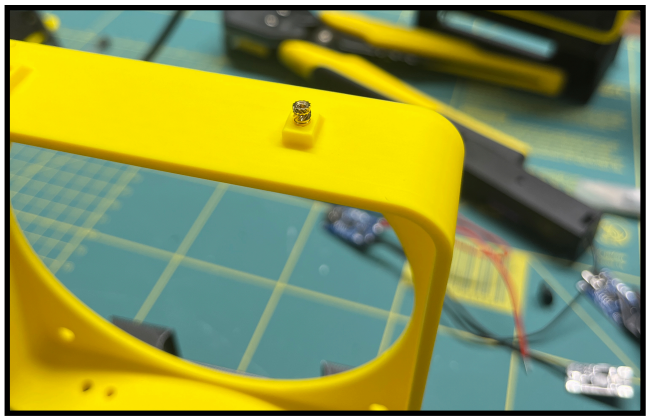

Figure 5: Fittings for the hold

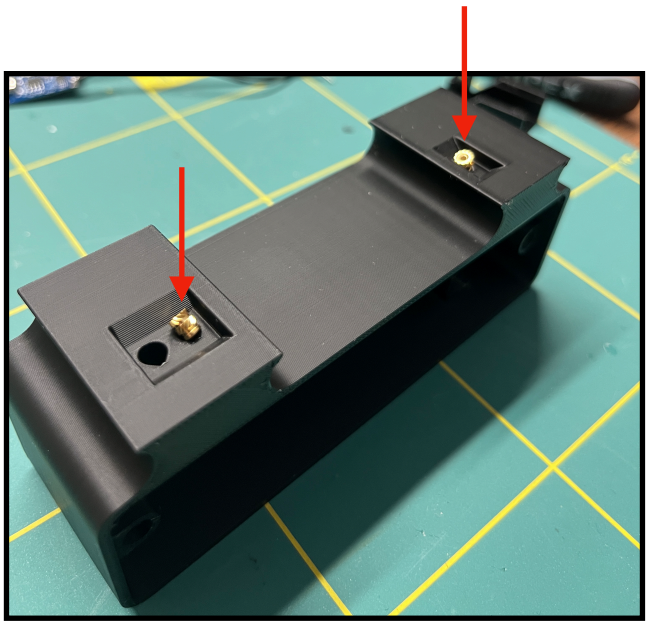

Figure 6: Fittings for the base

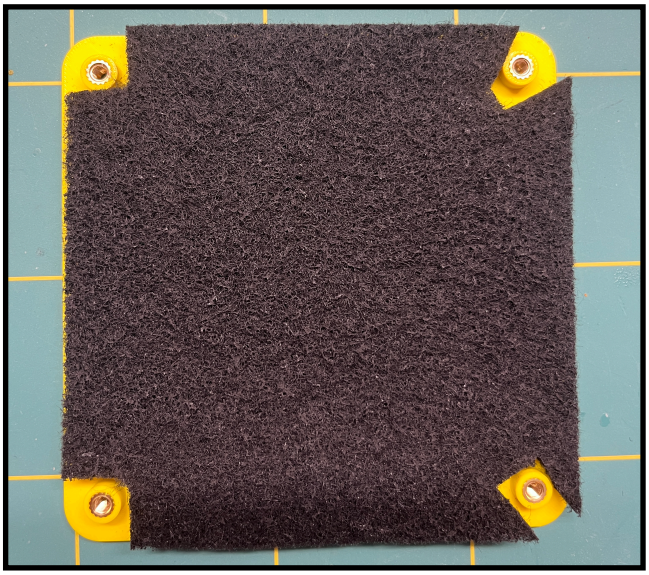

Figure 7: filter mat cut out

Mechanical assembly

Use two M2x8 screws to tighten down the hold on top of the case. Use two M2x12 Screws to connect the fan case to the base.

Figure 8: mounting the hold

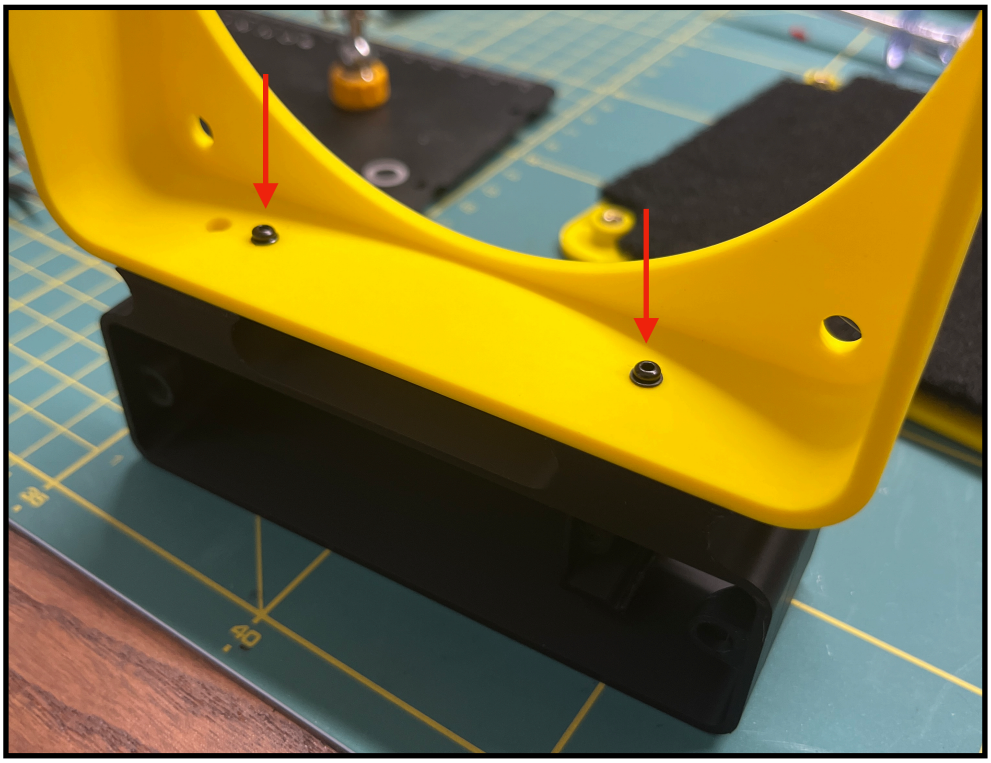

Figure 9: Screwing on the base

Thread the fan cable through the hole at the bottom and into the base (Fig. 10).

Figure 10: threading the cable

Before you put the fan inside the fan case, drop four M3x12 bolts in there (Fig. 11). Putting the fan into the casing requires some finagling, you have done it correctly if the bolts stick out the other side of the casing (Fig. 12).

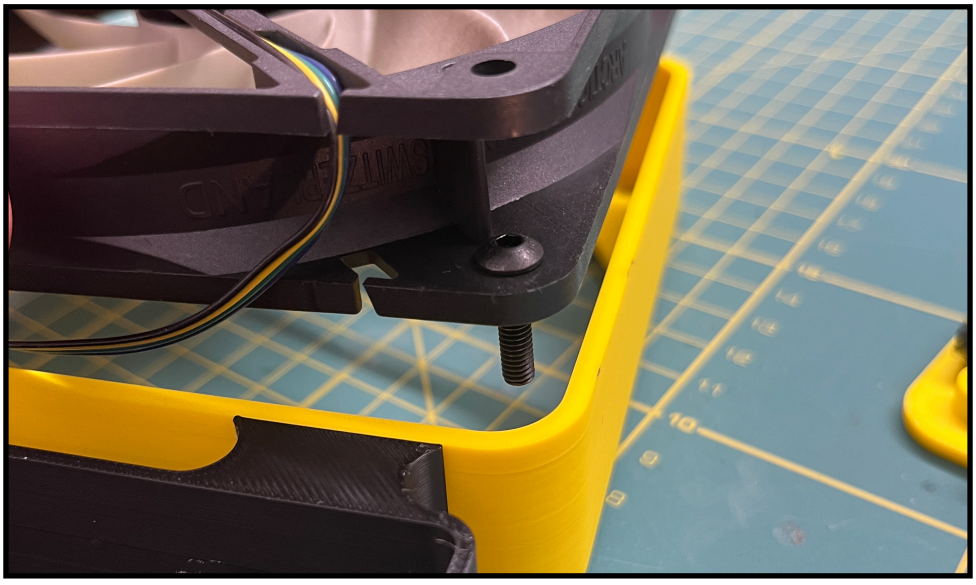

Figure 11: filter cover bolts

With these 4 screws you should be able to screw on the filter cover (Fig. 13). Nice! You have finished the mechanical assembly!

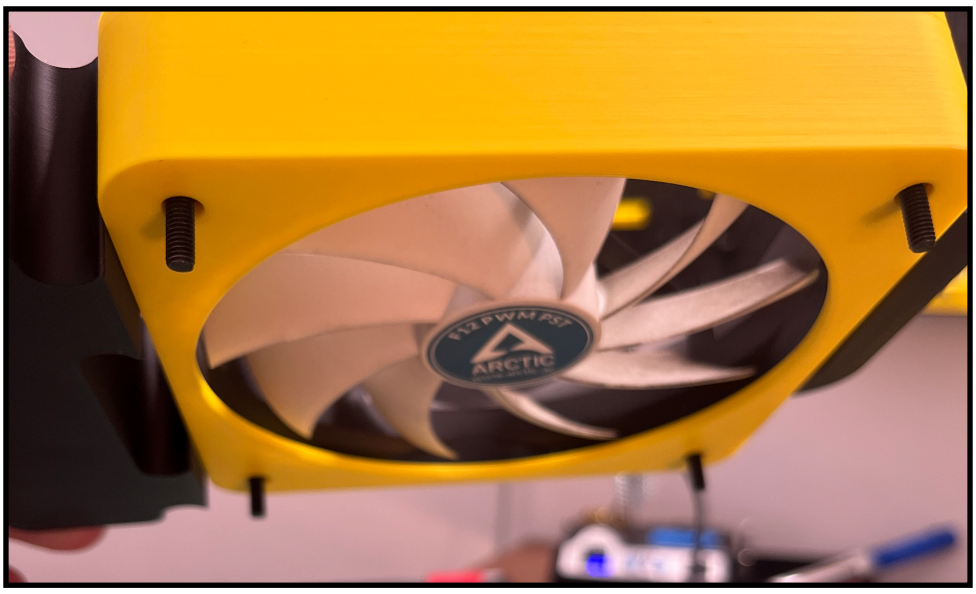

Figure 12: casing bolts

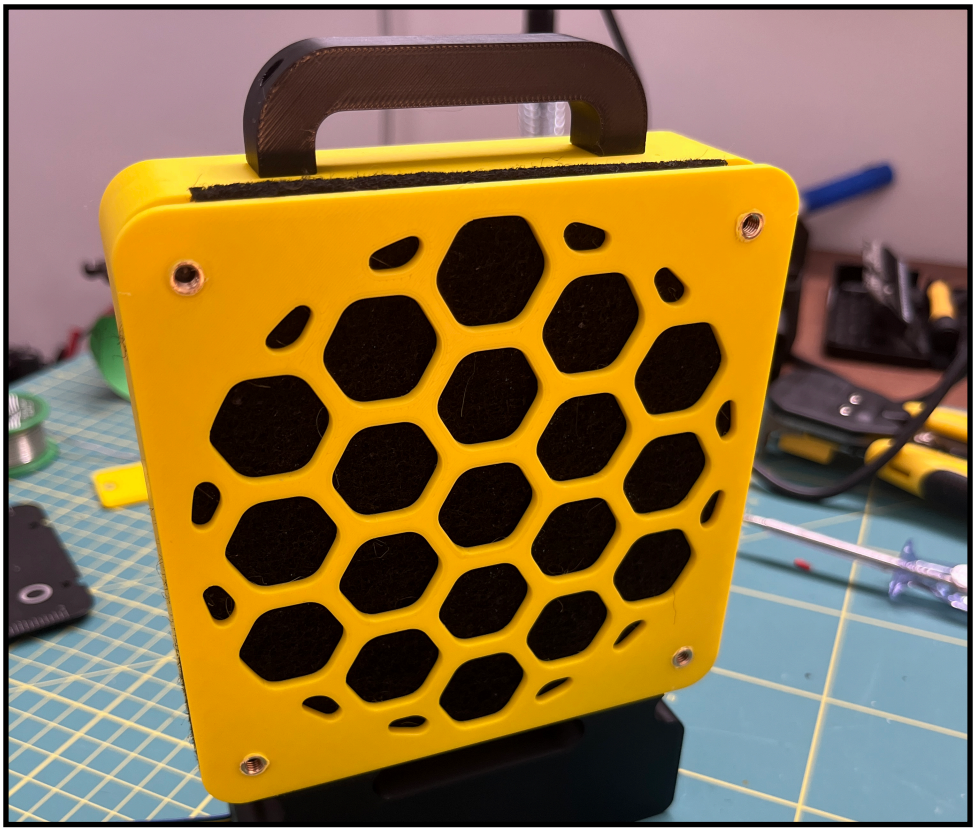

Figure 13: finished mechanical assembly

Electronics

You can find the general schematic on how to solder together the parts in the schematics.pdf. To get a better understanding I recommend looking at that, it's not difficult and you should be able to do this with basic soldering skills.
Before soldering on the switch, be sure to thread the cables through the hole in the base (Fig. 14).
The part in Figure 16 is used to hold the TP4056 charging chip in place. Fix it in place with a M2 screw. If you have everything soldered together, you can put it in the base and close the magnetic lid.

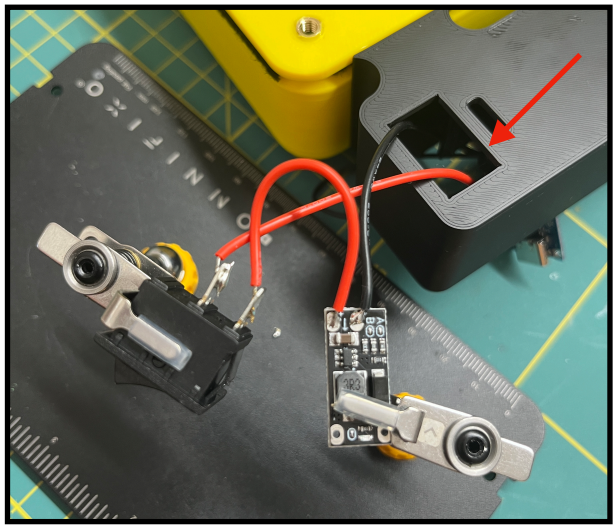

Figure 14: connecting the boost converter to the switch

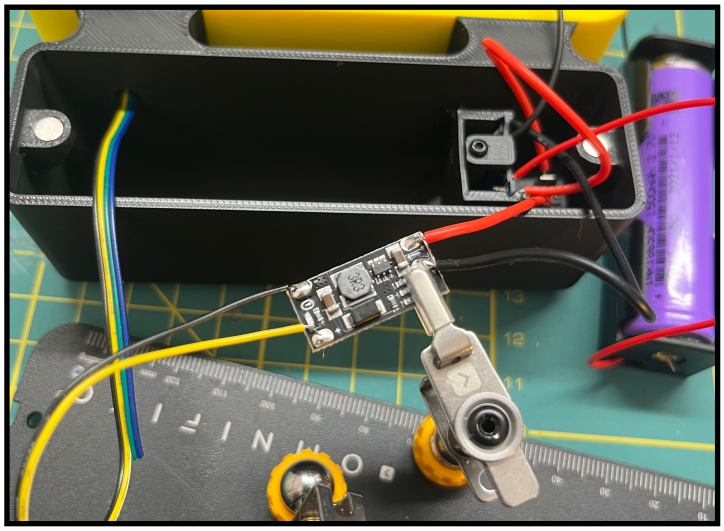

Figure 15: connecting the fan to the boost converter

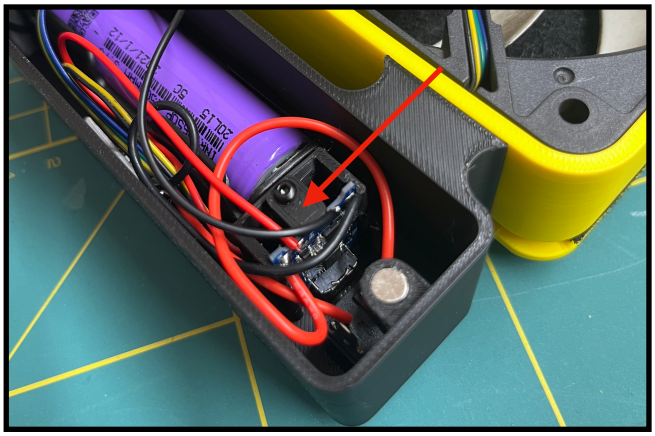

Figure 16: charging chip holder

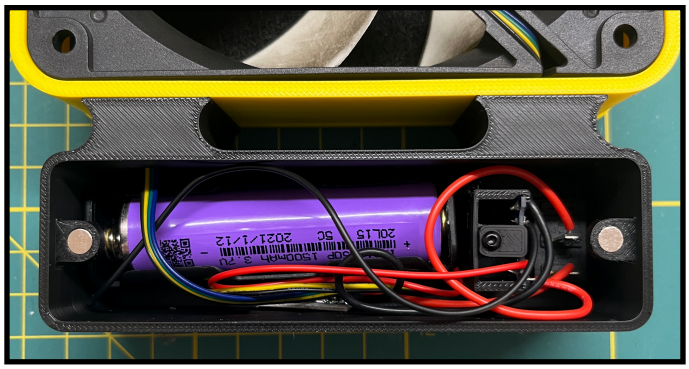

Figure 17: finished electronic parts inside the base

I recommend fixing the 18650 battery holder in place with some hot glue. The boost chip is so small that its fine to just cram it in there. I hope you found this guide helpful! If you did, be sure to leave a like and a comment on the makerworld page!

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