

# **So you want to build my thing?**

Well you've come to the right place.

**Lemon Foxmere**

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# Parts Needed

- **3D printed parts**

- Base Plate
- Base Lid
- Clip B & F
- Main Frame
- Glass Panes (x4)
- Cap
- Fixture Clamp
- Handle

- **Hardware**

- M4\*10\*6 Inserts (x16)
- M3\*4\*4.2 Inserts (x5)
- M4\*6 Hex Socket Screws (x4)
- M4\*8 Hex Socket Screws (x12)
- M3\*6 Hex Socket Screws (x5)
- [Leviton 61-W 660W 125V Outlet-to-Lampholder Adapter](#)
- [18 AWG Stranded Wires](#)
- [Death Cable](#)
- [Toggle Switch](#)
- [Lever Nuts \(x2\)](#)
- Heat Shrink Tubing
- Lightbulb (Any of reasonable size works. I used a Nanoleaf A19 Essential)

- **Tools**

- CA Glue / Superglue
- Soldering Iron
- Hex Screwdriver

## ⚠ Safety Preface ⚠

Since you're working with grid power here, you need to be especially careful with your wiring and cable choices. I used 18 AWG wires for all my connection, and for most of you that should be fine — 18 AWG is rated for up to 5A at 120VAC, or 600W. You can technically go with thinner wires if you wanted to, just make sure that your wires can handle the amount of current you'll be putting it under.

e.g. If your light is 60W and runs on 120VAC, the current draw is  $\frac{60W}{120V} = 0.5A$ . Your cable should be able to handle **AT LEAST** that amount, but for safety you should be putting in a comfortable safety margin — in this case maybe something like 2A.

You should also be mindful of grounding exposed metal parts (particularly the switch, if you do decide to include that.) And make sure you provide ample slack on the cables such that even if a cable got tugged or pulled on, it won't get damaged.

## Printing Tips

You can print all the parts in whatever material you want. For my build, I used ASA for all components. However, for the thin glass panes, I recommend using PLA. This is because the panes must be printed with the flat side facing down, and PLA is less prone to warping compared to materials like ASA. Furthermore, if you want your lantern to have good RGB capabilities, use **white**-colored filaments for the best diffusion effects.

And yes — the glass panes have both a flat and a textured side. **Always print with the flat side down!**

For the best results, set your layer height to **0.2mm** when printing the glass panes. This will ensure the pixel texture stacks up nicely.

# Assembly Process

## Step 1: Paint everything

If you decide to spray paint, do it now while you can. However, avoid painting any parts that will be slotted or fitted together, as these areas have tight tolerances (0.2 mm), and paint may interfere with assembly. You can paint your lantern in any style you like. For example, I used a metallic black for the body and a slightly lighter metallic grey for the vertical beams. To ensure a clean and distinct line between colors on the beams, use masking tape to cover the body while painting, and paint the beams first before the body. It's easier to mask that way, and the result comes out much cleaner.

## Step 2: Get the handle onto the cap

Take the cap and the handle you've printed and join them together. The tolerances are designed to be fairly tight, so the handle shouldn't fall out. But if it doesn't fit perfectly, you can sand it down and/or use CA glue to fix it in place.

## Step 3: Get the inserts in

Grab your soldering iron and start installing the M4 and M3 inserts in the correct locations.

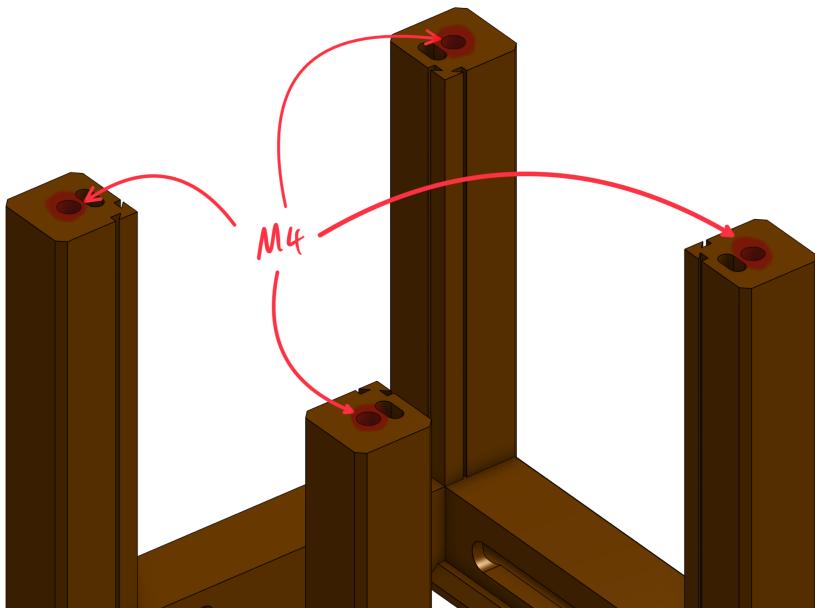
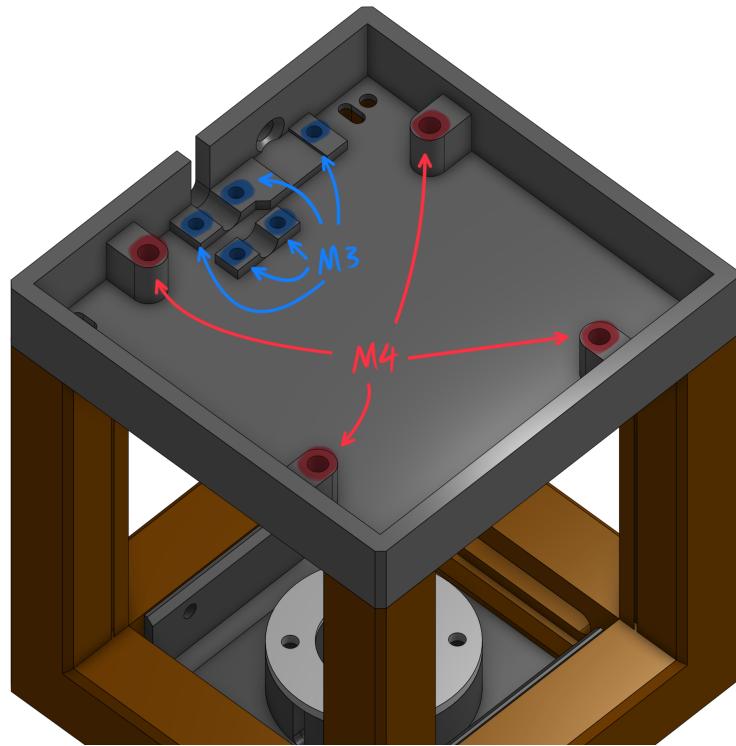
- **M4 Inserts:**

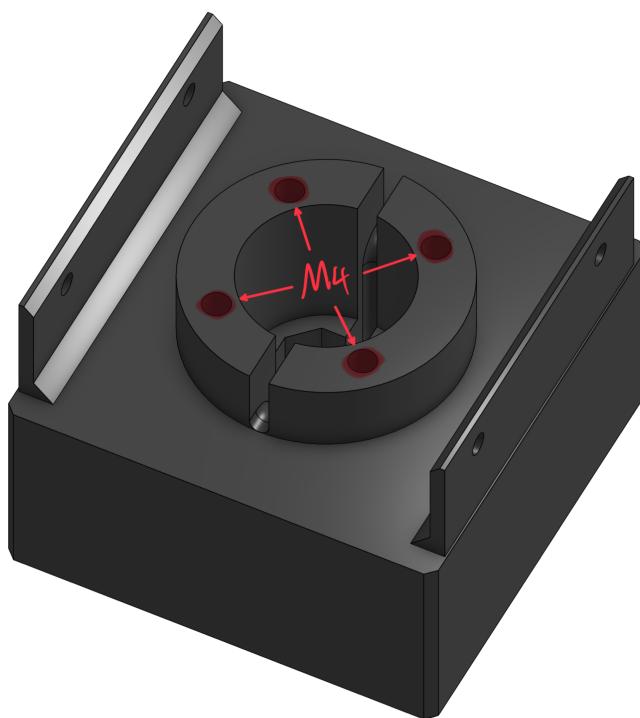
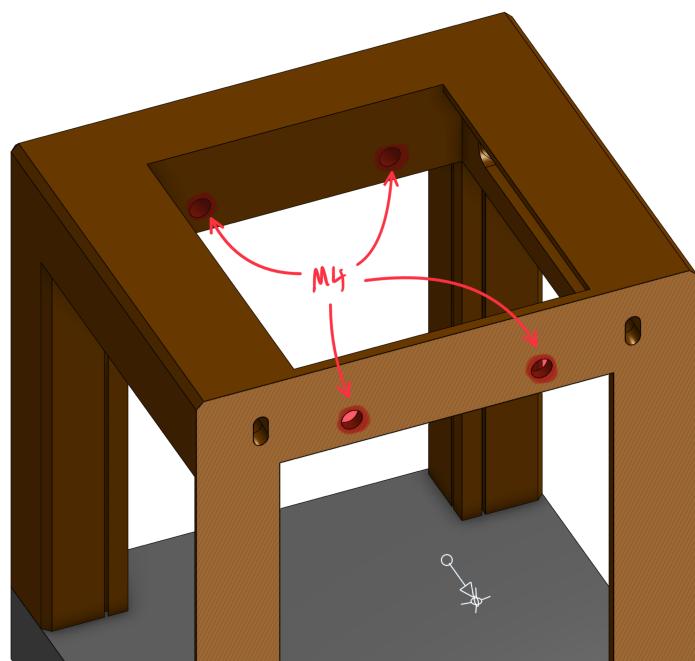
- 4 on the cap
- 8 on the main frame (4 on the inner top side and 4 on the bottom)
- 4 on the base

- **M3 Inserts:**

- All 5 should go on the base plate

If you're unsure about the placement, refer to the images below:





## Step 4: Wire up the light socket

### 1. Try dry fitting the adapter into the cap

Place your outlet-to-lamp socket adapter into the slot on the cap. It should fit snugly, with a small portion of the plastic lip sticking out at the top. Since not every adapter is created equal, yours might fit too tightly or stick out too much. If needed, sand down some of the adapter's plastic to adjust the fit. Just make sure that a bit of the plastic lip remains exposed, as it will secure the socket in place later. After you've done that, take the adapter out for the next steps.

### 2. Solder the wires

Strip and solder a generous length of 18 AWG wire to each prong of the adapter. Make sure the wires are running **toward** the socket, and make sure to note down the live and neutral connections.

In North America, the **neutral prong** is usually thicker than the live prong. You should mark this on the wire with either different-colored wires or a piece of electrical tape.

***For added safety, weave the wire through the prong holes and twist it around the prongs before soldering to make sure the connection won't come loose.***

**Soldering Tip:** Because outlet prongs aren't typically designed for you to solder to, it helps to sand the prong surface slightly and apply some flux to remove the oxidation layer. This will improve the solder's binding and create a more secure connection.

### 3. Insulate everything

After you're done soldering, insulate the connections with some heat shrink tubing or electrical tape to the joints. The result should look something like this:

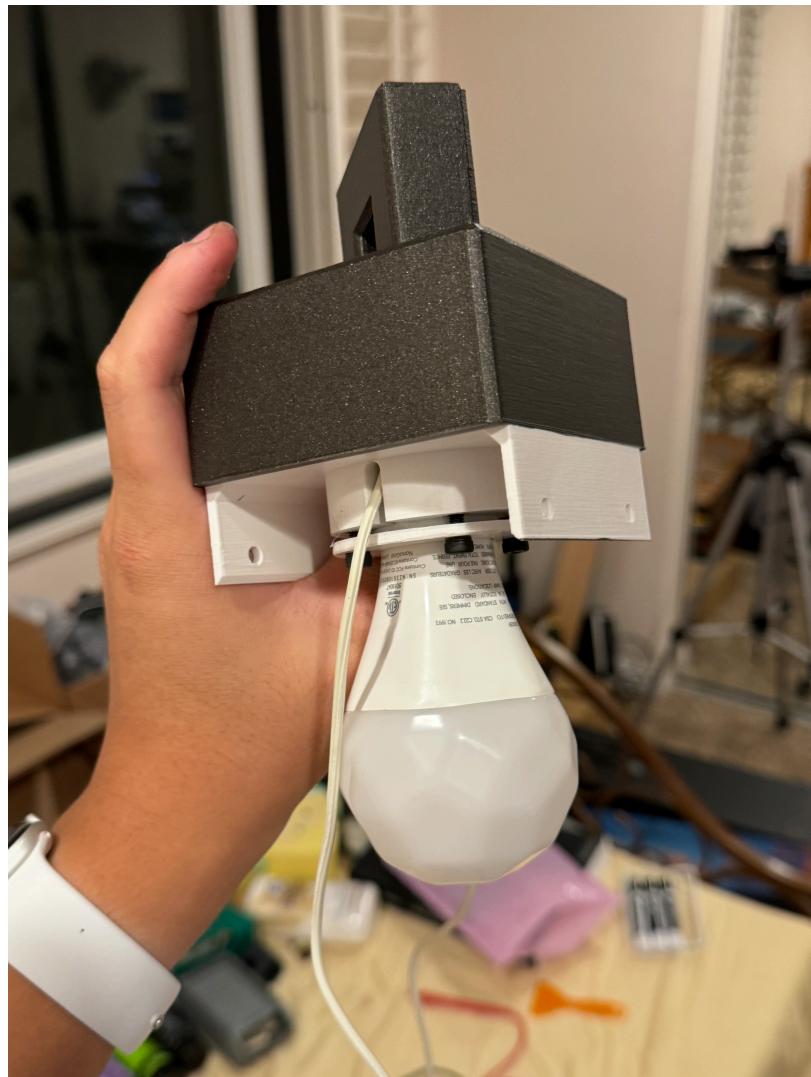


#### 4. Install the socket

You can slot the soldered light socket back into the hole on the cap. There are two channels on either side of the hole to route the wires, so you shouldn't need to use too much force to get it in.

Next, grab your Light Fixture Clamp (the large washer-looking piece) and four M4 screws. Use these to bolt the socket down in place. Make sure the **beveled edge** of the clamp is facing down.

Once everything is secured, try fitting in a light bulb. If it wiggles around, you either need to tighten the clamp more or you sanded down the adapter a bit too much. Your end product should look something like this:



## Step 5: Wire the base connections

This is the last difficult step in the assembly process. You're almost there. :)

### 1. Wire up the switch and the power cord

First, double-check that your switch is rated for at least **120VAC** (or your whatever your city voltage is). Some switches that look identical are only rated for **12VDC**, and those will blow up the moment you flip them on.

Cut and strip a short bit (~10cm) of 18 AWG wire, get your death cable, and solder:

- The **LIVE** line to the **COM** pin on the switch.
- The **18 AWG wire segment** to the **OUT** pin on the switch
- The **GROUND** line to the **BODY** of the switch
  - Only do this if your switch has a metal body. For safety, do a continuity test to ensure the body isn't already shorted to one of the pins. If it is, **the switch is broken and must be replaced**.

Make sure to insulate the solder joints on the switch pins with some heat shrink tubing or electrical tape.

**Soldering Tip:** Avoid overheating the switch while soldering. Too much heat can melt the plastic internals, making the switch less clicky at best — or short out your breakers at worst.

### 2. Attach the lever nuts

You should now have two wires sticking out: the neutral line and the 18 AWG wire segment. Strip the ends and connect each to a lever nut, ensuring no exposed metal is visible.

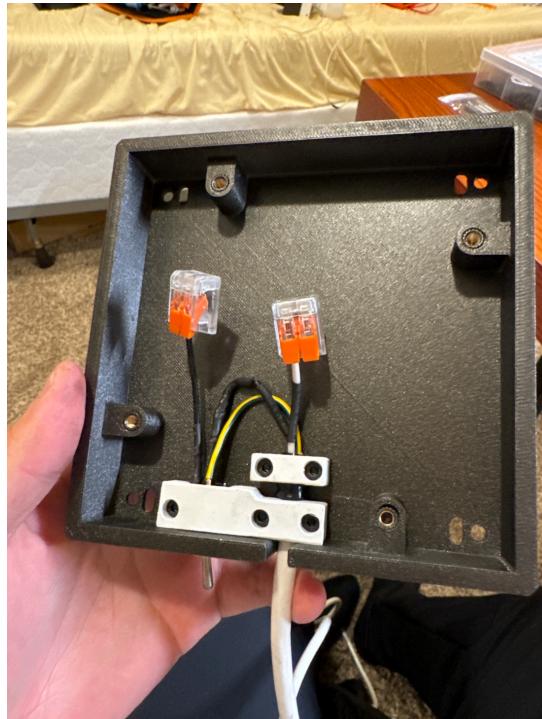
### 3. Install the switch

With everything wired up, install the switch. Remove any washers or nuts on the switch, then push the toggle switch through the hole on the base plate (there is only one sensible hole for the switch). The threads on the switch shaft should now be exposed. Use the washer and nut you removed earlier to secure it in place.

### 4. Install the death power cable

With the switch installed, route your power cable into the slot that's on the base plate. Once in place, secure it using the two printed clips and some M3 screws. If the cable feels too loose, wrap it with electrical tape to increase its thickness so the clips can grip it tightly and hold it securely.

Your final result should look something like this:

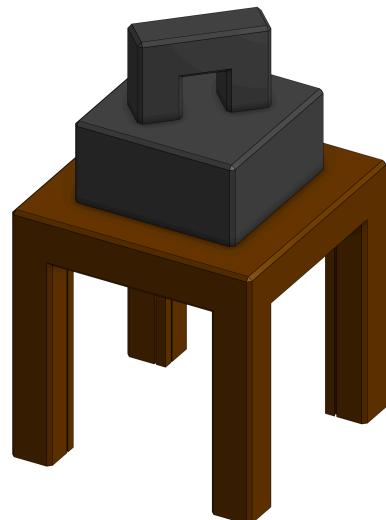


## Step 6: Assemble everything

This step is fun. Just grab a bunch of M4 screws, and you're ready to go.

### 1. Install the cap onto the main frame

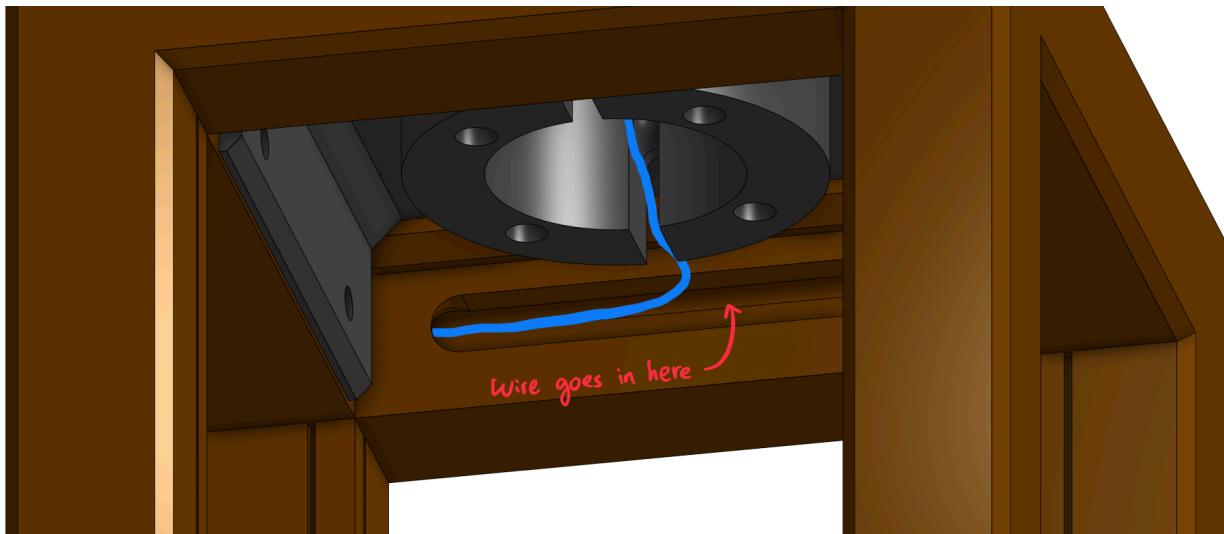
The cap should slot snugly into the top of the main frame. The four holes should line up, allowing you to secure it with four M4 screws. You may want to use an Allen wrench or pliers for this step.



## 2. Route the light wires through the main frame

There should be two very long slots on either of the inner side of the main frame — those are for you to route the wires through the lantern frame internally. Push the wires into the slots and guide them through until they emerge from one of the legs at the bottom.

**⚠ DO NOT CRAM BOTH WIRES INTO ONE LEG ⚠**



## 3. Install the glass panes

This one's simple enough: Slot the glass panes into the channels on the main frame. Make sure the **smooth side** is facing **outwards**. The panes should slide in easily and sit flush with the frame's legs. If they don't fit perfectly, sand them down slightly for a snug fit.

## 4. Install the base plate

Feed the wires dangling from the bottom of the main frame through the **pill-shaped holes** in the base plate. Check that the orientation is correct, and bolt the pieces together with four M4 screws in the **circular holes**.

**⚠ DO NOT OVER TIGHTEN ⚠**

*The glass pane may start flexing and bending in weird ways that look ugly.*

## 5. Connect the wires together

Trim and strip the wires, leaving a generous amount of slack. Use the lever nuts in the base plate to connect the wires: **LIVE to LIVE** and **NEUTRAL to NEUTRAL**.

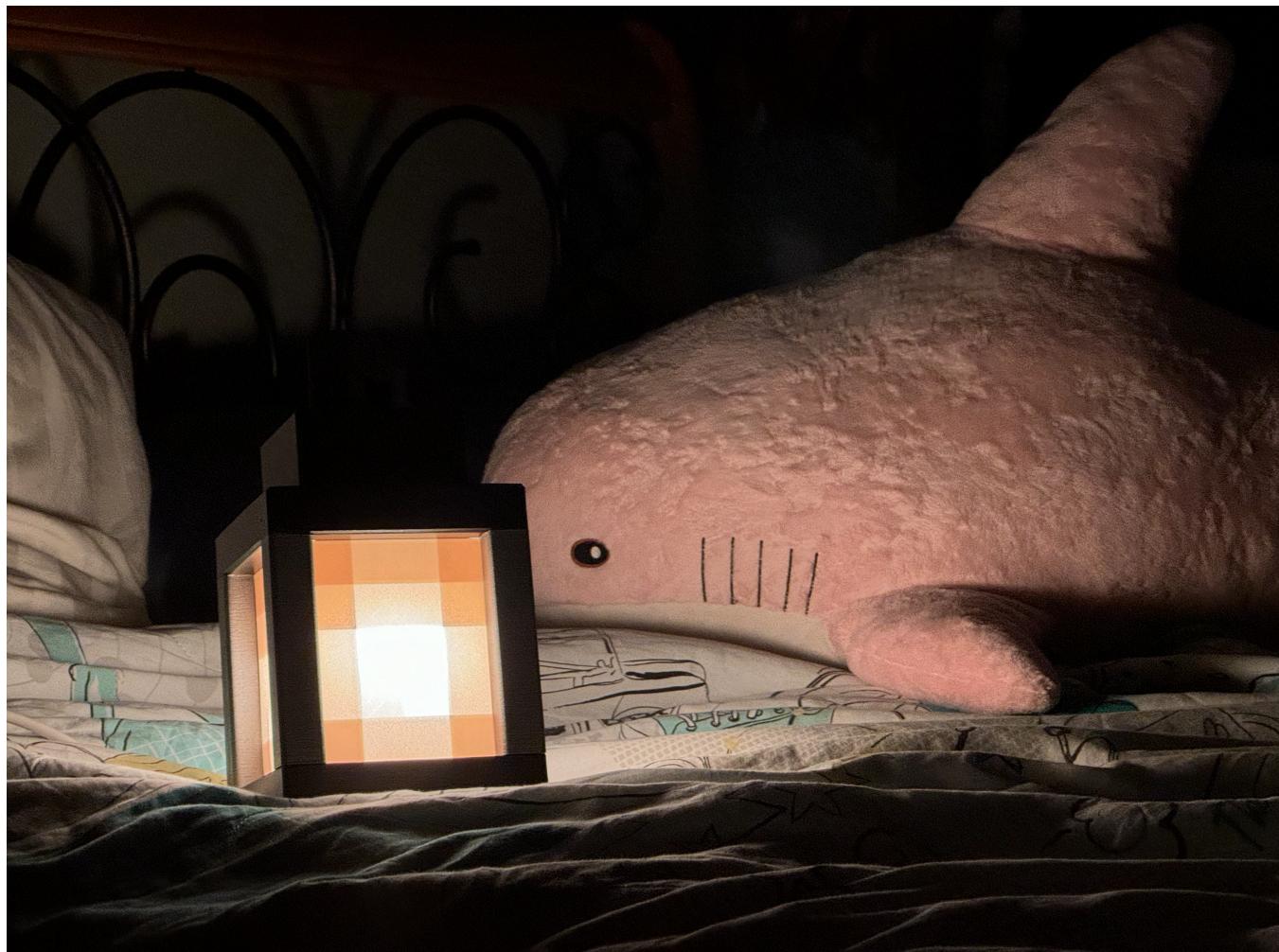
## 6. Final checks and close it up

Use a multimeter to do some final continuity tests, making sure your wiring is safe and all exposed metal components are properly grounded.

Once everything checks out, close the base with the lid and secure it using four (shorter) M4 screws.

### Step 7: Test it out

You can now plug it in and pray your wiring doesn't blow up. If everything goes correctly, you should have a nice bedside lamp that's in the shape of a Minecraft lantern.



## Some Final Notes

### For hot light bulbs

If you choose to use an incandescent light bulb or something that generates a lot of heat, make sure the plastic components — especially the glass panes — can withstand high temperatures. Otherwise, they may warp or deform.

Also, double-check that your wiring can handle the extra current drawn by these light bulbs. You do not want your bedside lamp melting and turning into a fire hazard.

### When things break down

Since you've printed and assembled everything yourself, it should be pretty straightforward to fix things if something breaks. If you're unsure, just refer back to this guide for help.

*Happy Printing :)*