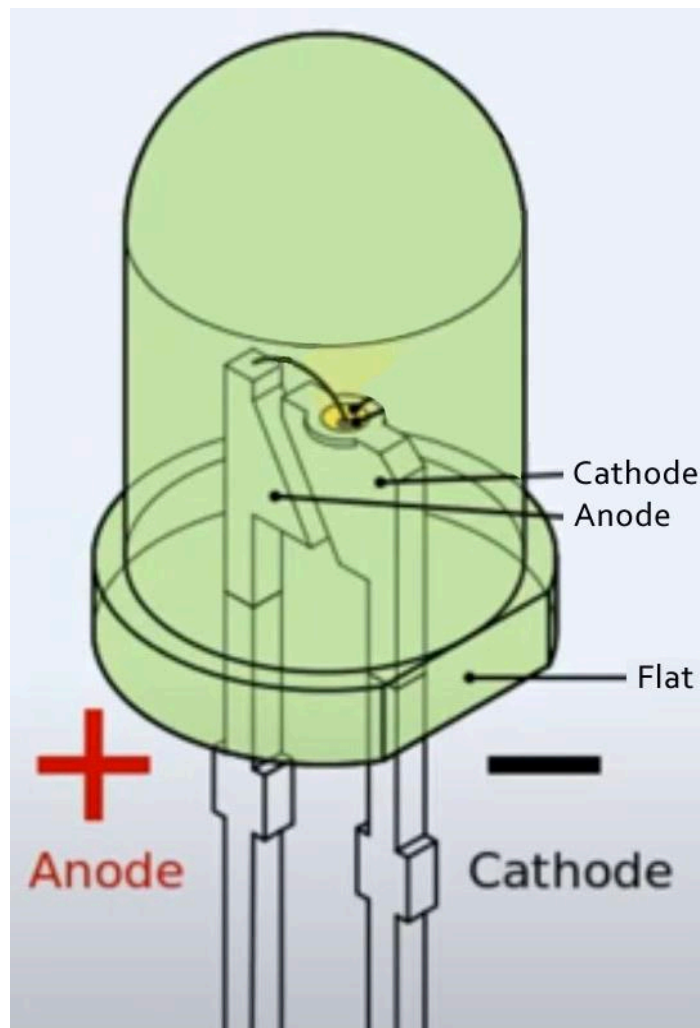


LED Display Unit Assembly Instructions

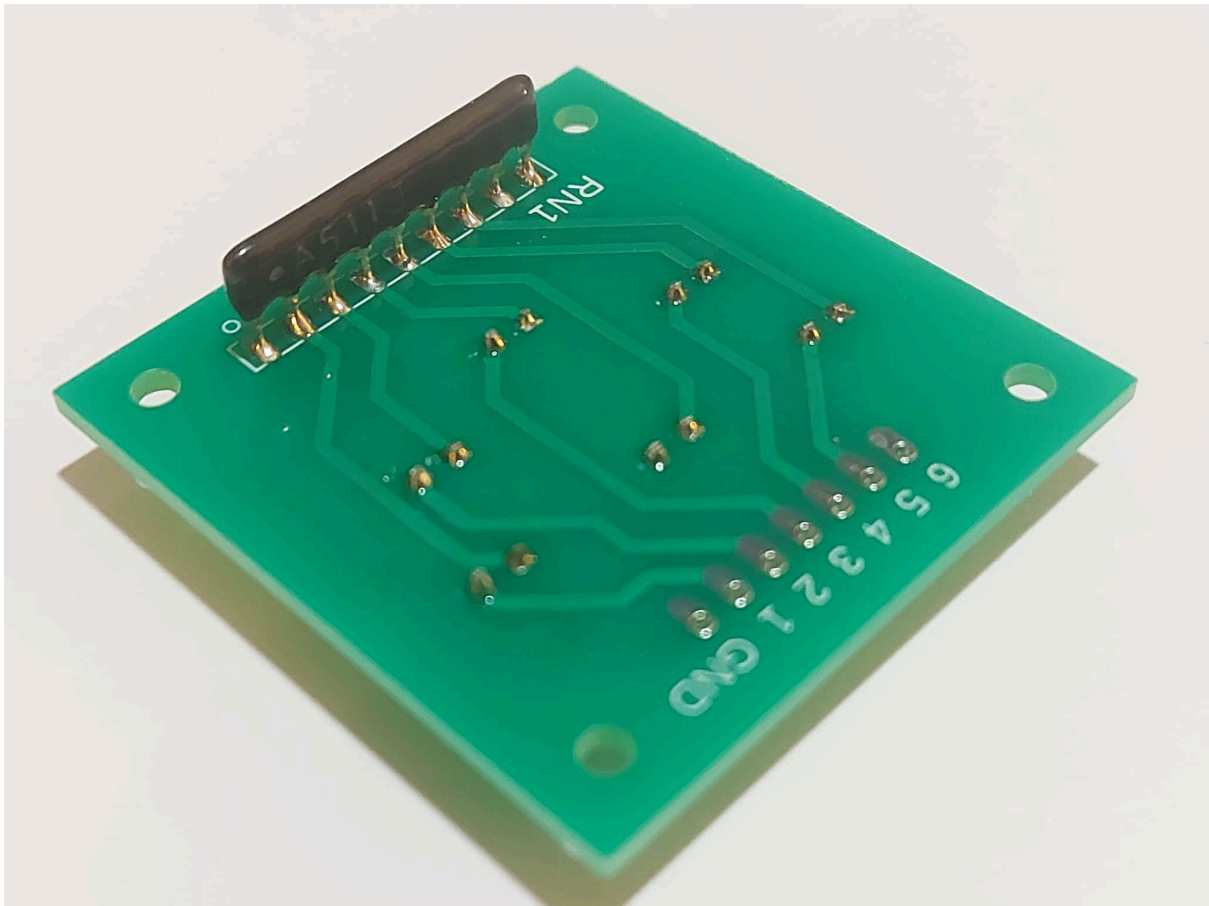
Position the six LEDs on the underside of the small circuit board (top side is marked with RN1 and GND labels), and solder them from the top side.

Be sure to orient the cathode leg of the LED to the square solder pad, and the anode leg to the round solder pad. See the image below to identify which LED leg is the cathode (short leg is cathode).

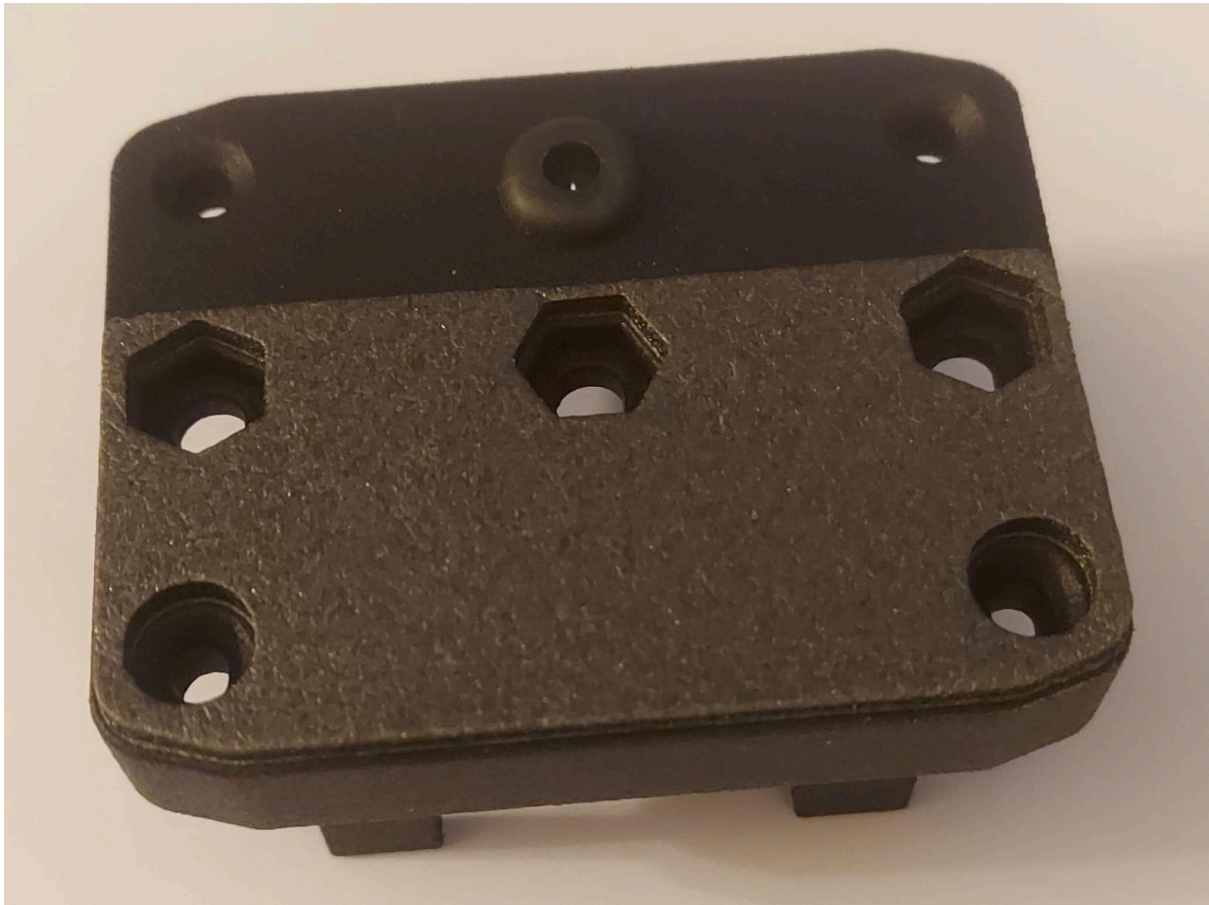


First solder one leg, then resolder the same leg while straightening the LED, using your other hand. It is important that the LEDs are flush against the circuit board and are all straight (otherwise they will not fit through the case and the luminosity will be different). Trim off the protruding legs after soldering.

Next, position the 510 ohm resistor array to RN1 on the top side of the circuit board and solder from underneath. Be sure to orient the white dot on the resistor array to the small circle on the circuit board, as shown:



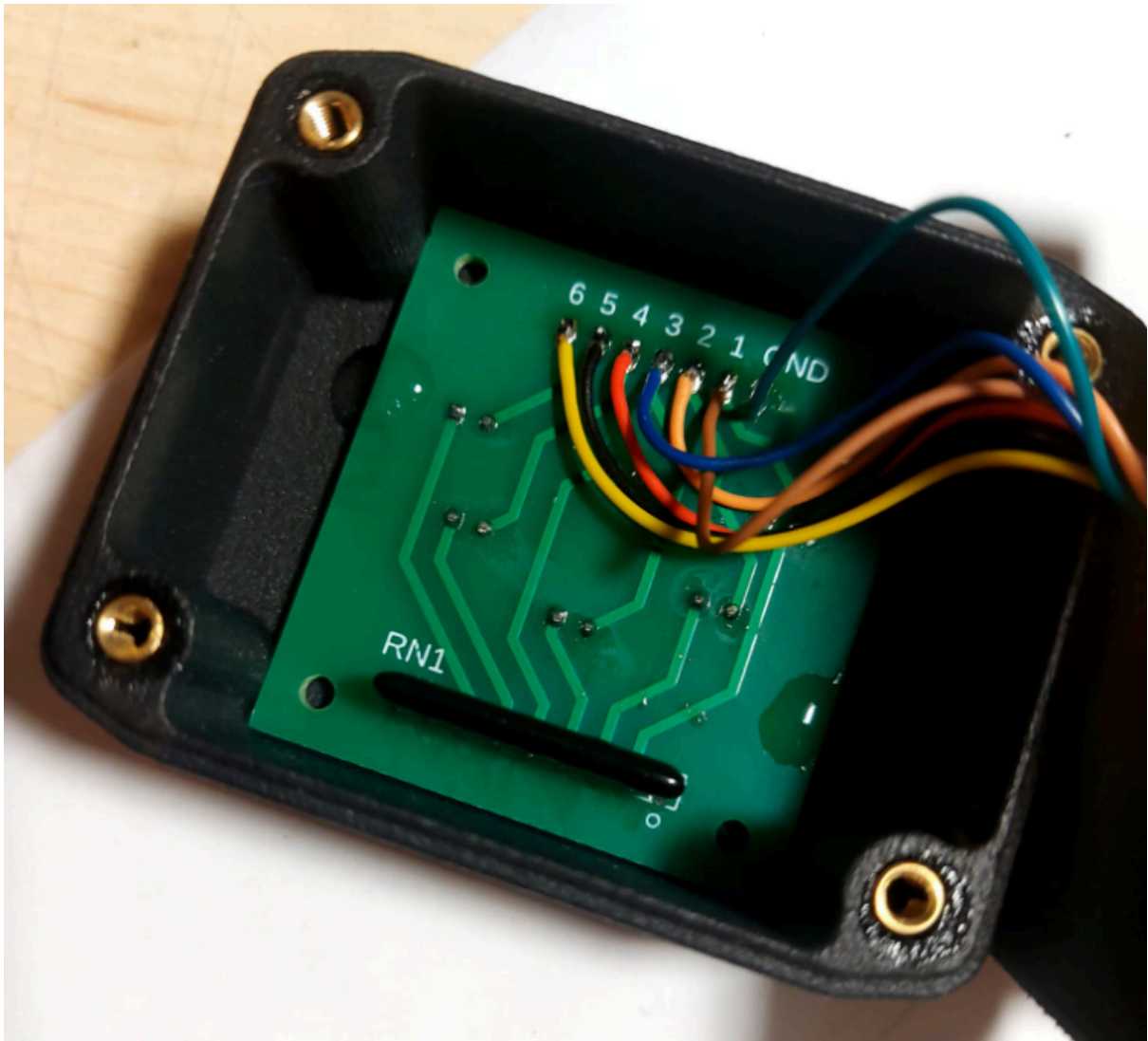
Peel the adhesive layer off the rubber pad with five holes; position and press the rubber pad onto 3D printed LED box backplate (black component with five matching holes). Then press the black rubber grommet into the top central circular hole as shown. The grommet has a cut on one side to make it easier to press into the hole. The cut edge goes inside the box.



Then pass the black cable through the grommet so that the exposed signal wires are on the inside of the black 3D printed case. This is a difficult step and requires significant force to manipulate the cable through the grommet (a small drop of mineral oil or dish soap may help). Only about one centimeter of the cable needs to protrude through the grommet.

Then solder the signal wires to the circuit board top side as follows:

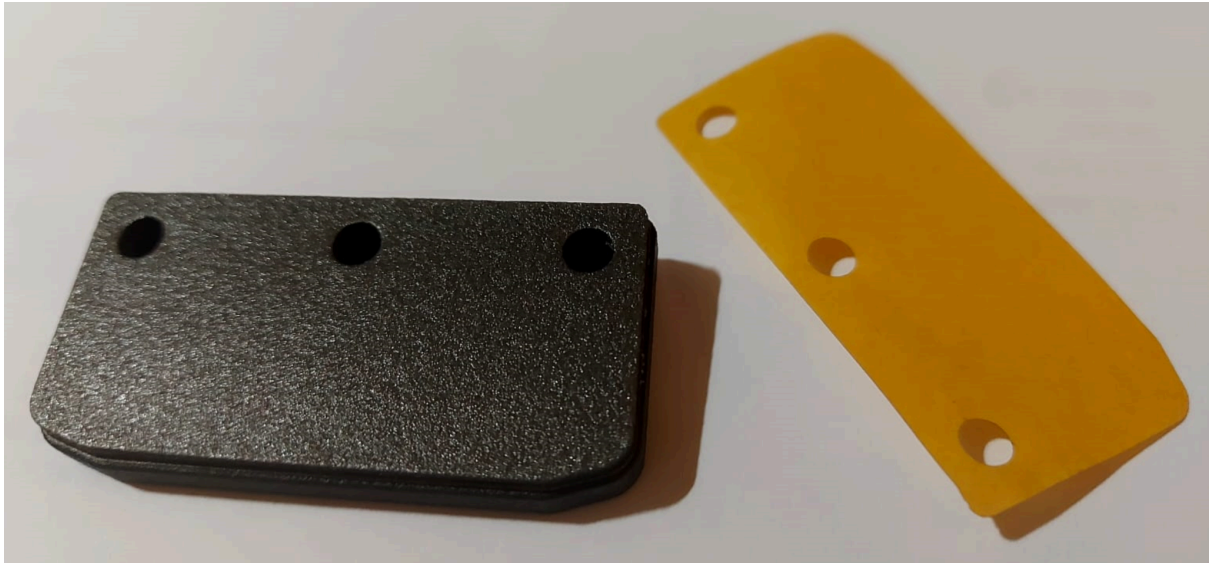
- 6: yellow
- 5: black
- 4: red
- 3: blue
- 2: orange
- 1: brown
- GND: green



Turn the circuit board over and trim any protruding resistor legs and signal wires close to the board to prevent them from creating a space between the circuit board and the 3D printed case. The circuit board should sit close to the 3D printed case. Aim for a gap no larger than 1.5mm.

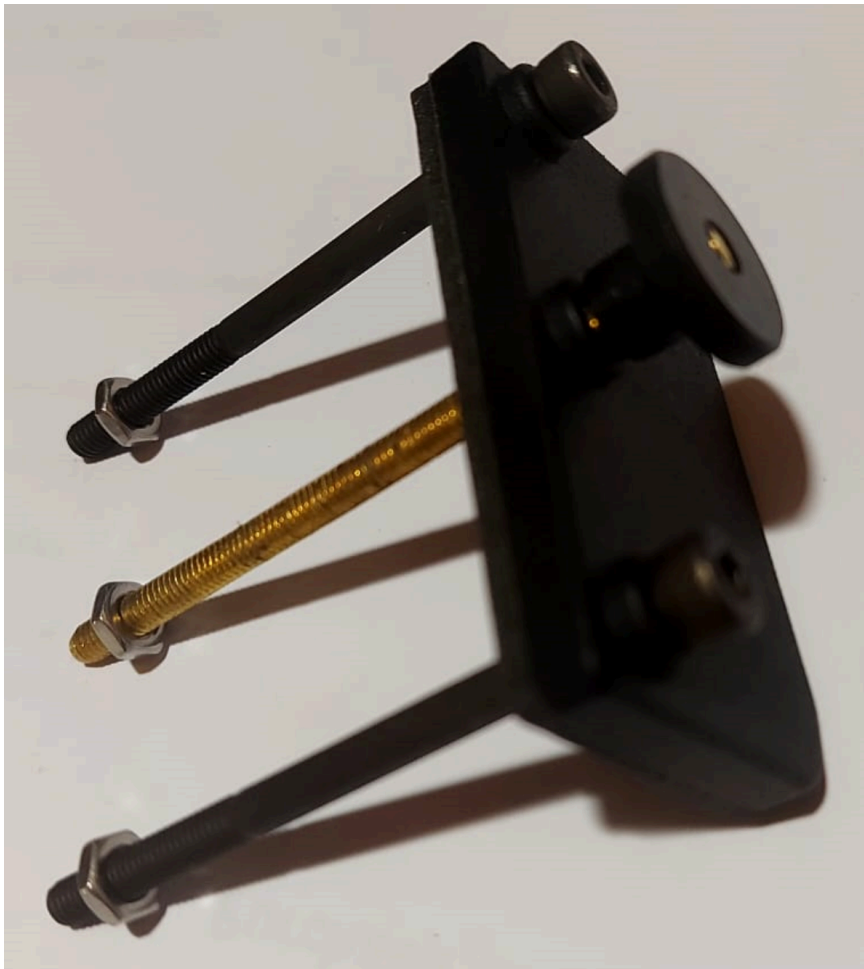
Position the four threaded brass inserts over the holes in each corner of the black 3D printed case. Using a soldering iron, carefully press the inserts into the holes until they are about 0.5mm to 1mm below the plastic surface. Try to keep the orientation of the inserts directly vertical.

Peel adhesive layer off rubber pad with three holes and carefully position and press rubber pad onto 3D printed plate (black plate with three matching holes).

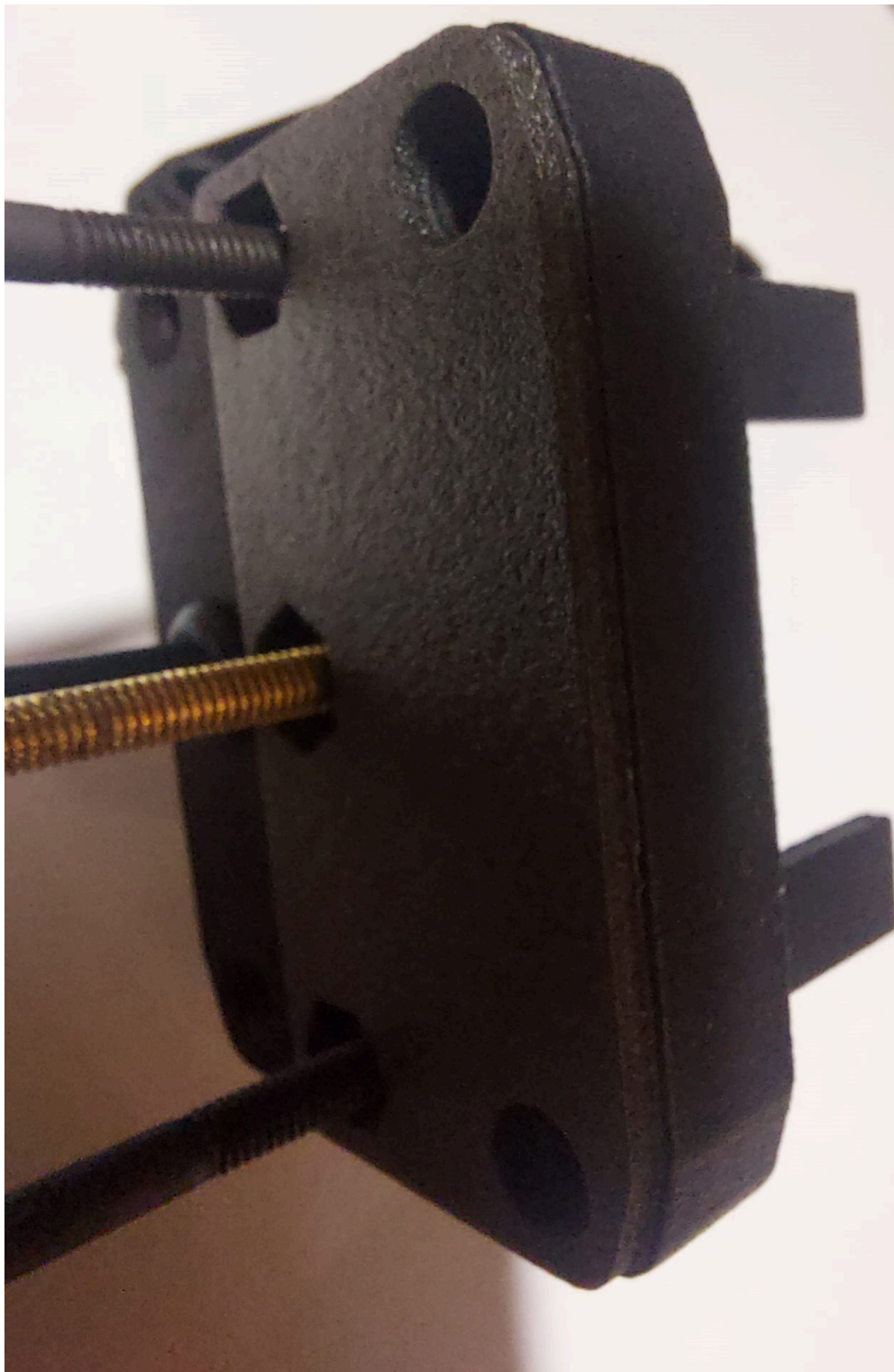


Place the two black M4 socket screws into the outer two holes (the screws are inserted from the plastic side, not from rubber side) and screw one M4 nut onto each. Leave approximately 6mm of thread exposed.

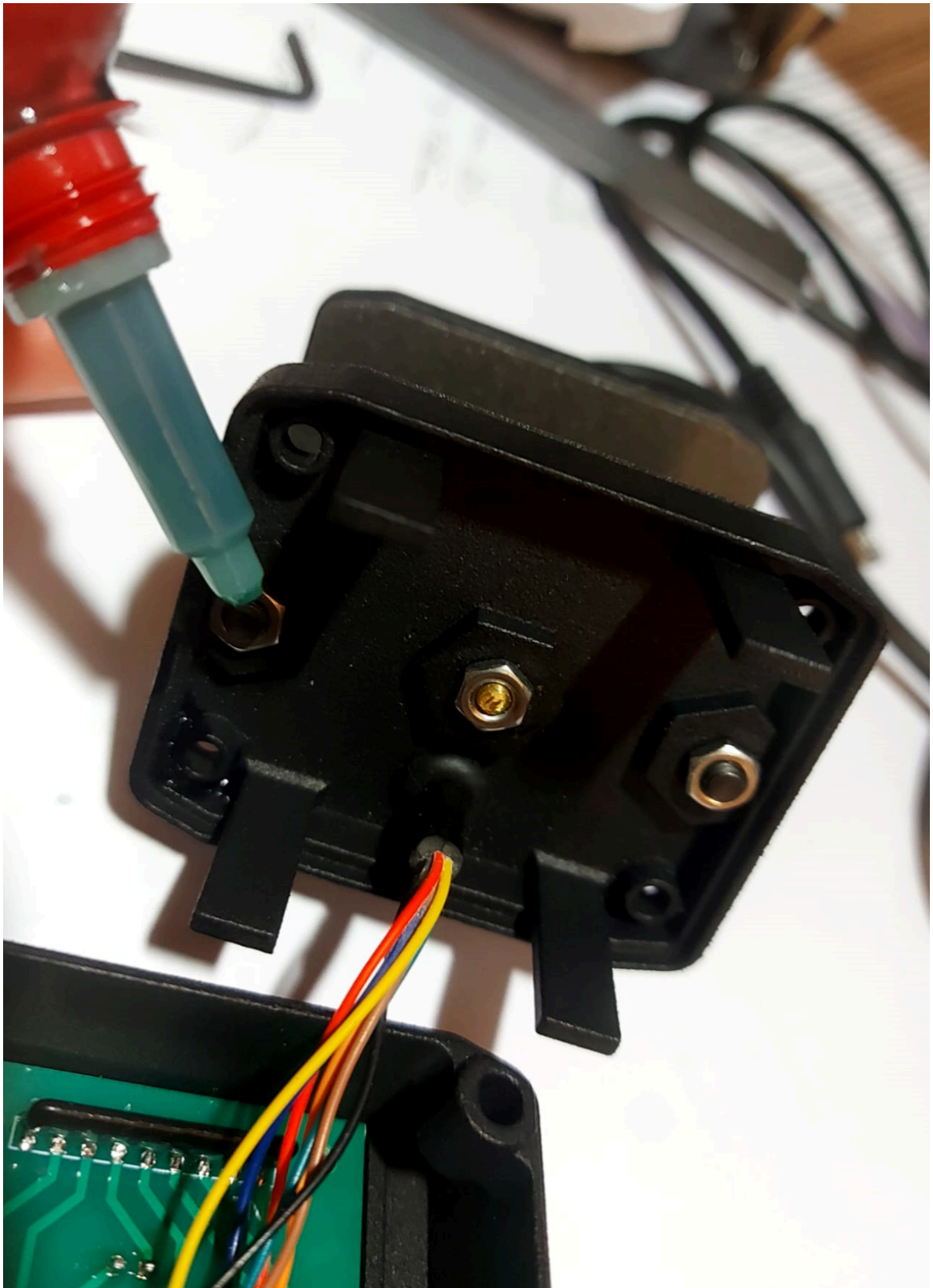
Place the M4 threaded brass rod into the middle hole; screw one M4 nut onto one end and the knurled thumb nut onto the other end, as shown:



Push the two black screws and threaded brass bar into the LED backplate as shown:



Screw M4 nuts onto exposed thread inside LED box and tighten these nuts against the first set of nuts. This is easier to do with a 3mm Allen key, and a small adjustable spanner. It is important that the nuts on the brass bar are tight. Once tightened, place a small drop of loc-tite or acrylate super glue onto the nuts inside the LED box and leave to cure.





Once the loc-tite has cured, carefully close the box, making sure that the internal signal wires are comfortable. Screw the four M3 screws into position to secure the LED box backplate. Do not overtighten.

This completes the LED Display Unit assembly.