

DIY-Thermocam V3 Assembly Guide

To assemble your DIY-Thermocam V3, you need the following tools: A soldering iron, some solder, a cutting pliers, a nippers, a screwdriver and a multimeter.

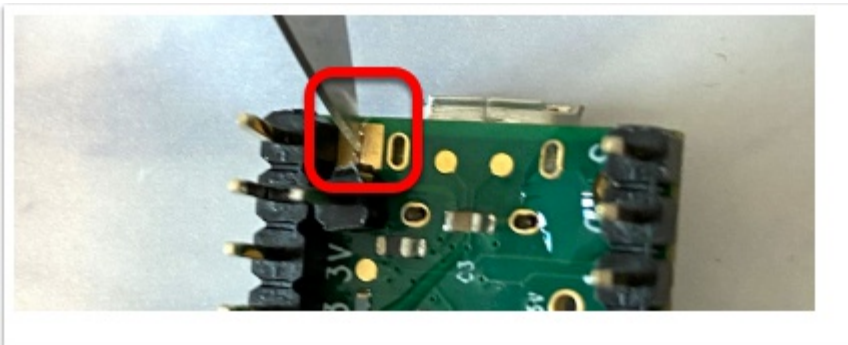
1.

Solder two 24-pin male headers to the backside of the Teensy. Solder one 5-pin male header in the middle of those two headers and one 1-pin male header to the right side inside the VUSB pin:



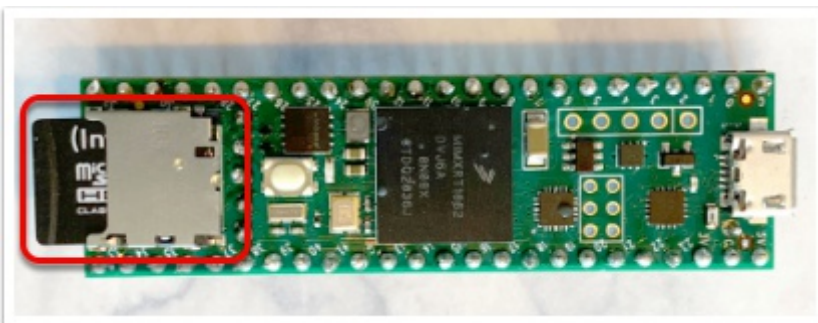
2.

Cut the connection between the two pads on the top of the Teensy with a sharp knife. Use a multimeter to check that they are really separated:



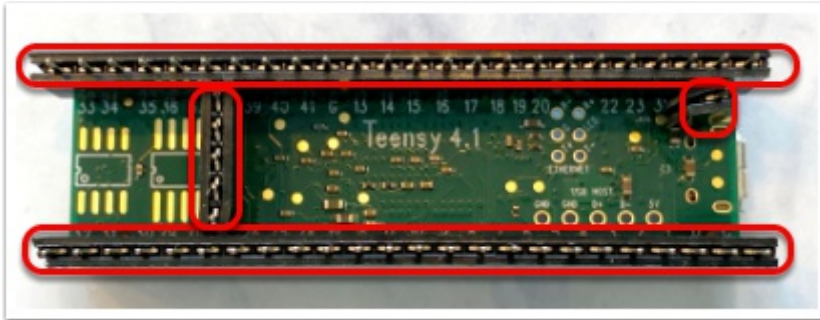
3.

Insert a microSD card into the top side of the Teensy. It will be used as an internal storage and can be accessed via a PC as mass storage over the USB connection:



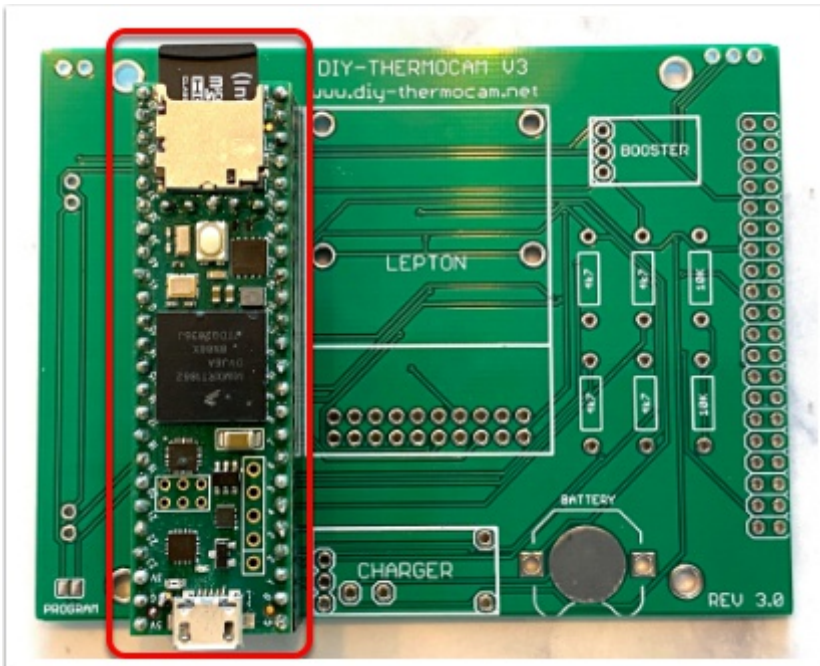
4.

Stack four female headers on top of all the male headers from step 1. This avoids soldering the Teensy directly to the PCB and therefore simplifies any repairs or later adjustments:



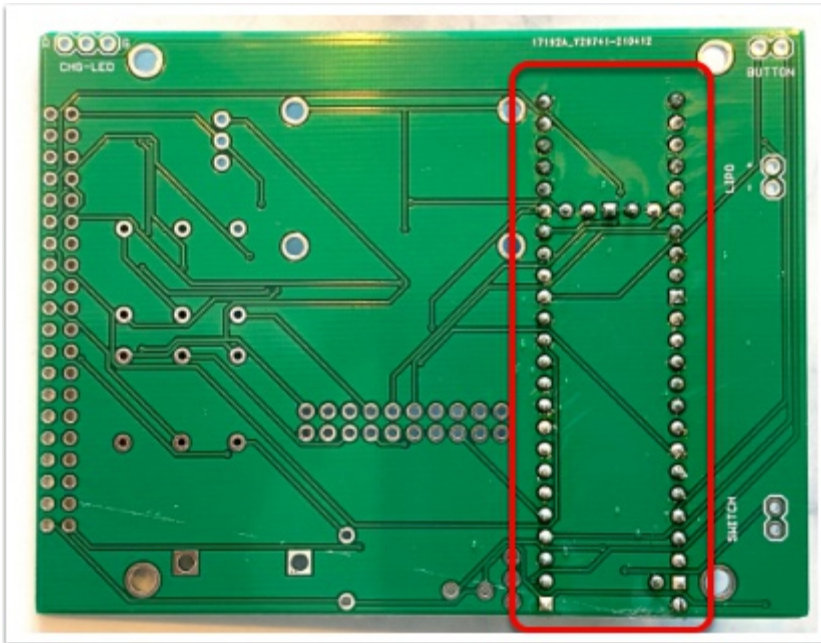
5.

Solder the Teensy with the female headers to the PCB. This is how it should look on the front:



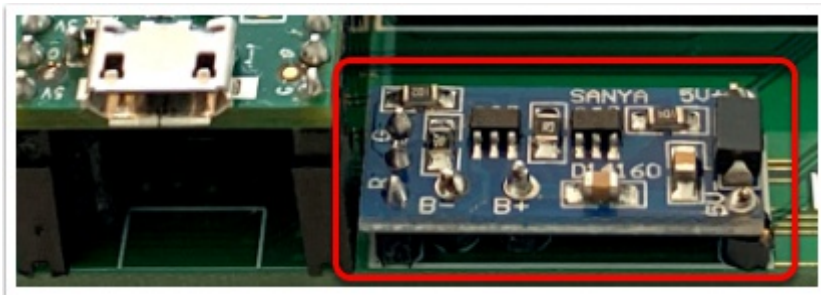
6.

And on the back where the solder connections are:



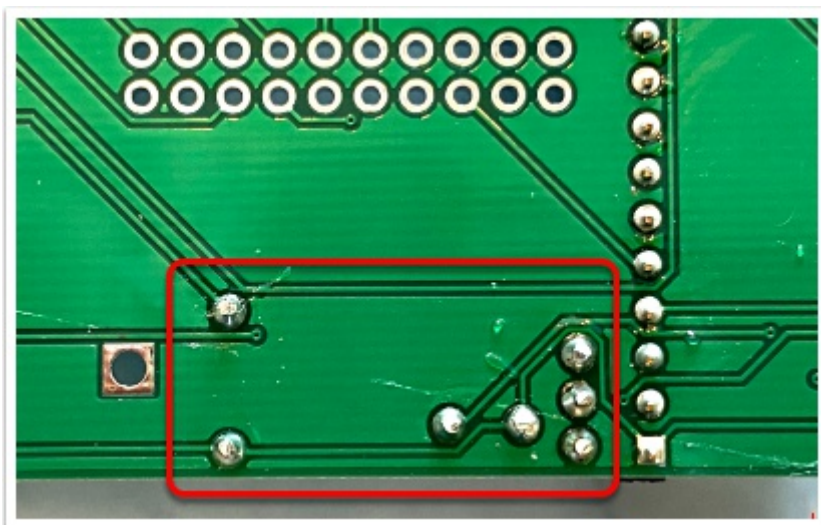
7.

Put male headers into the charging module and solder it right to the Teensy. This is how it should look on the front:



8.

And on the back:



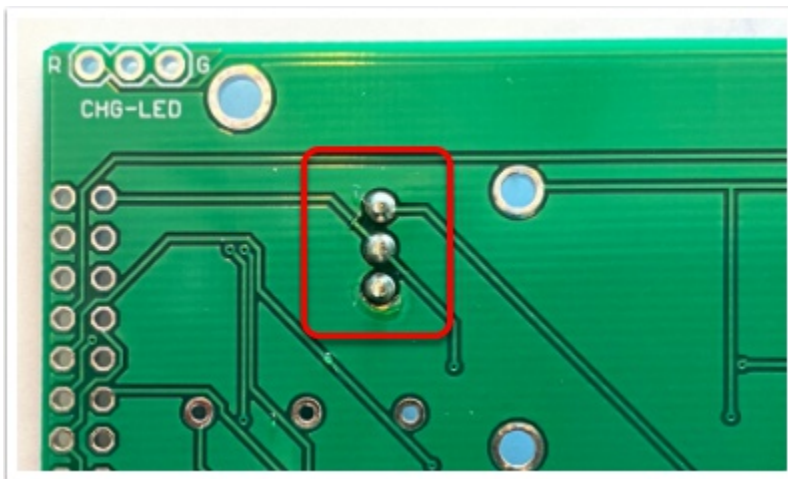
9.

Solder the 5V Booster module to the top right of the PCB. This is how it looks on the front:



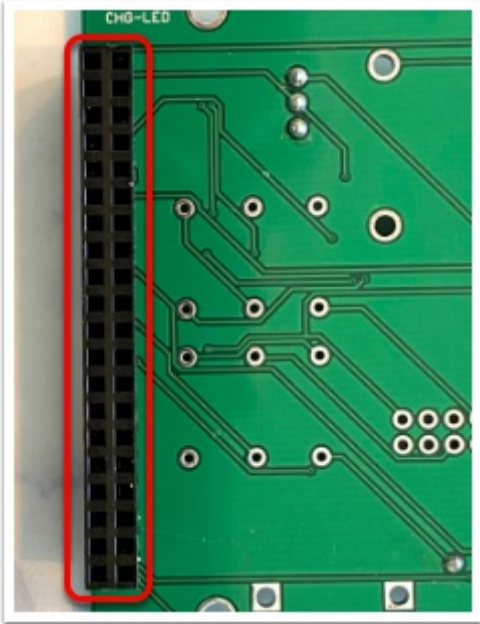
10.

And on the back



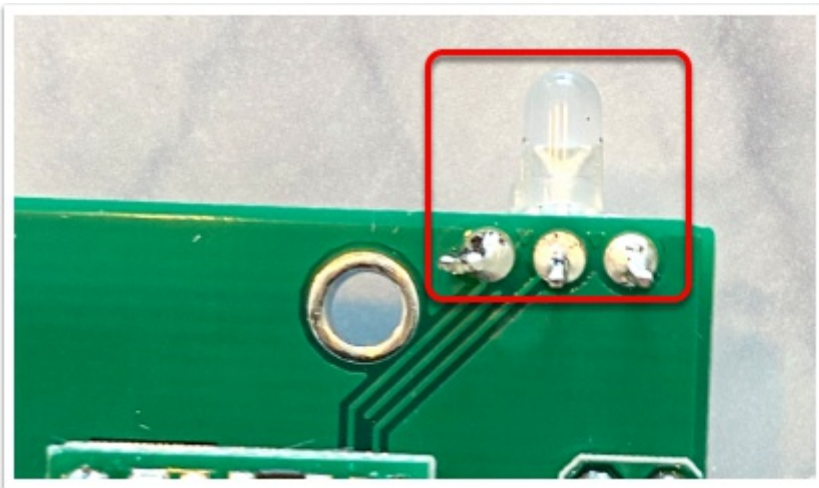
11.

Solder the 2x20 pin display header to the left of the PCB:



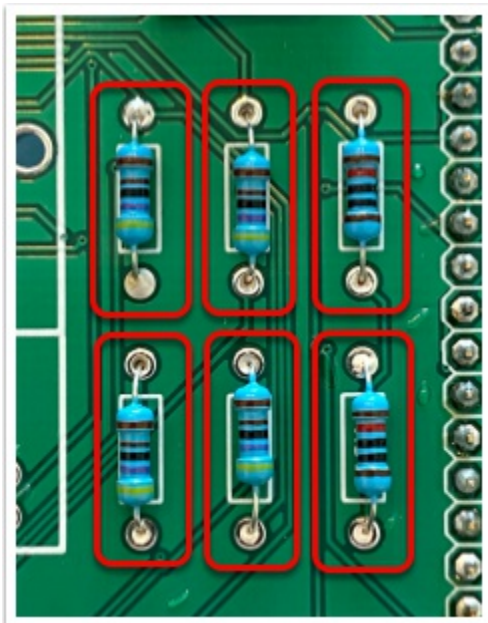
12.

Solder the charging LED to the top right of the PCB with the short leg inside the hole "G":



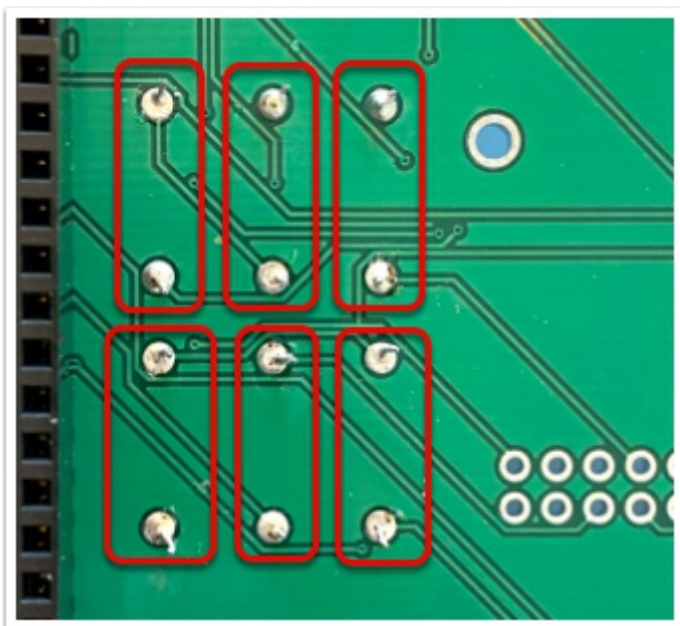
13.

Solder the six resistors into their respective place. This is how it looks on the front:



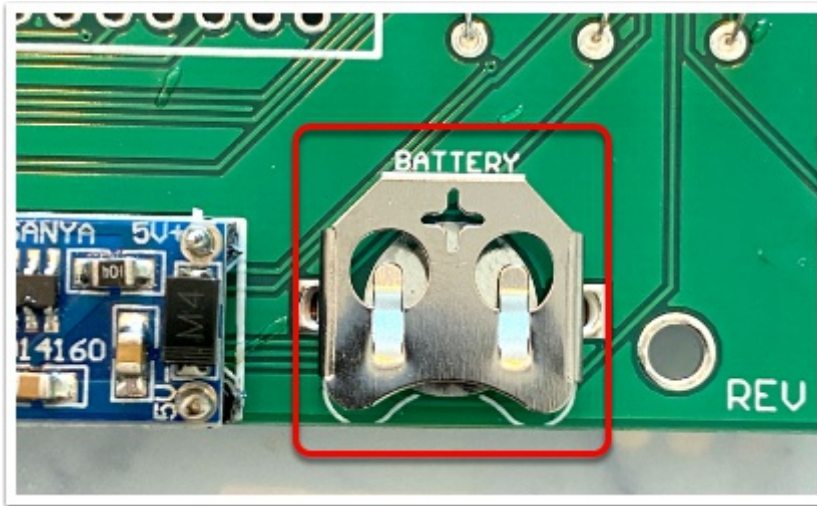
14.

And this how it looks on the back:



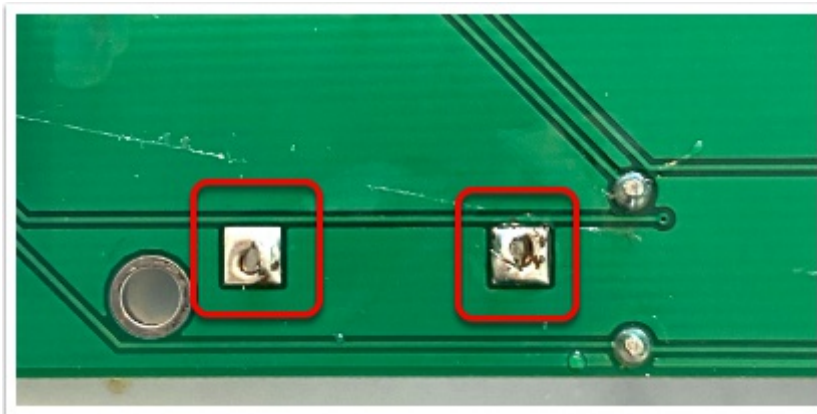
15.

Solder the coin cell holder to the bottom of the PCB, next to the charging module. Do not put in the battery yet. This is how it looks on the front:



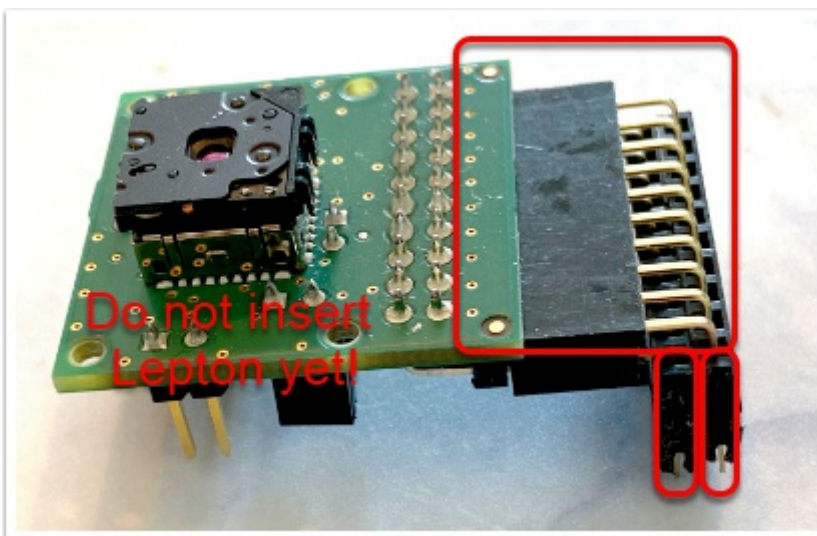
16.

And on the back:



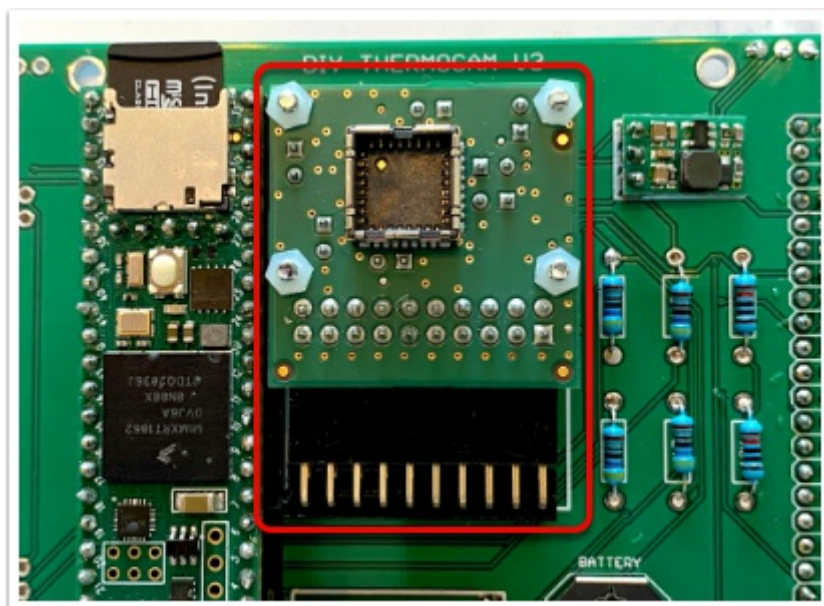
17.

Attach the left angle 2x10 pin header and stack two 10-pin female header into the bottom. Do not insert the Lepton yet, as it could be damaged by the follow steps:



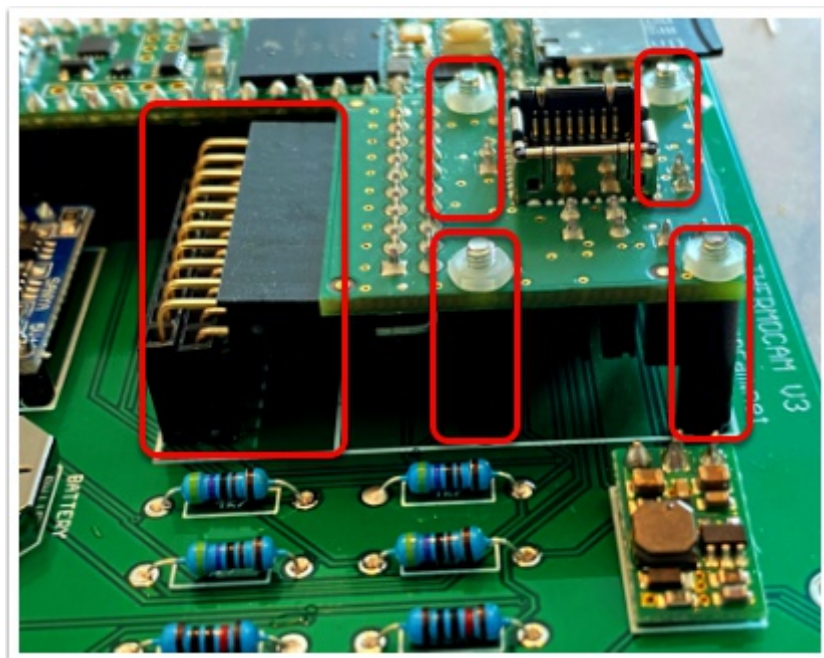
18.

Put the headers into the PCB and solder them to the backside. Use the long four long spacers, screws and the plastic nuts to attach the Lepton Module to the PCB:



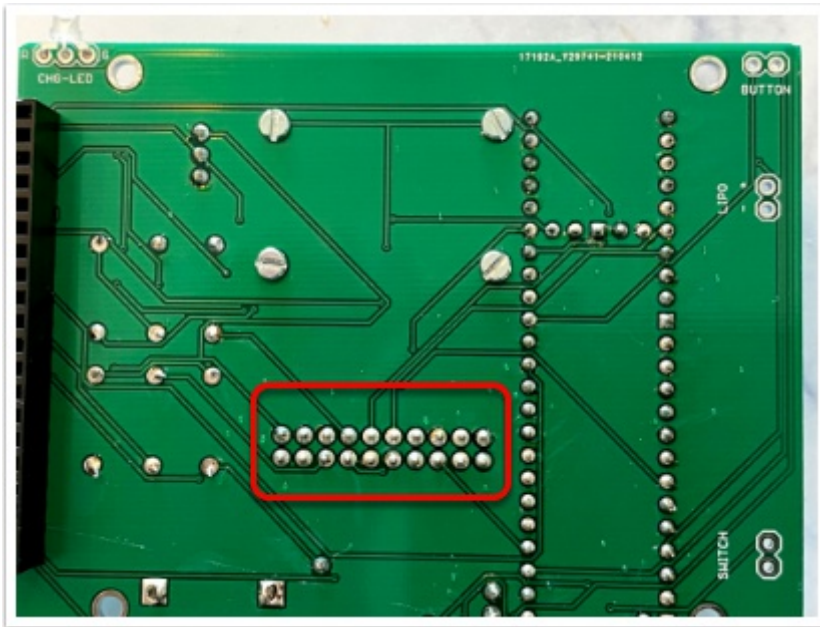
19.

This image shows how it looks from the side:



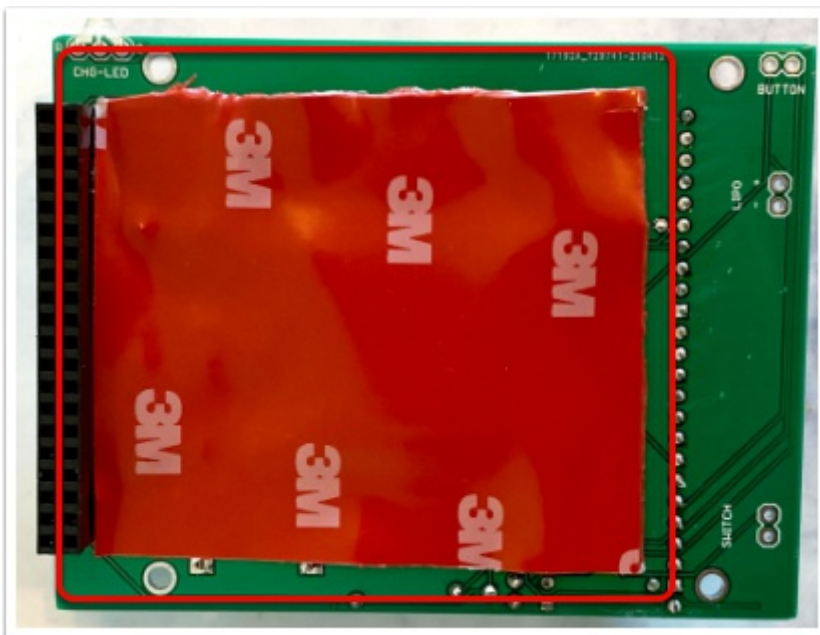
20.

This is how the soldered pins look from the bottom:



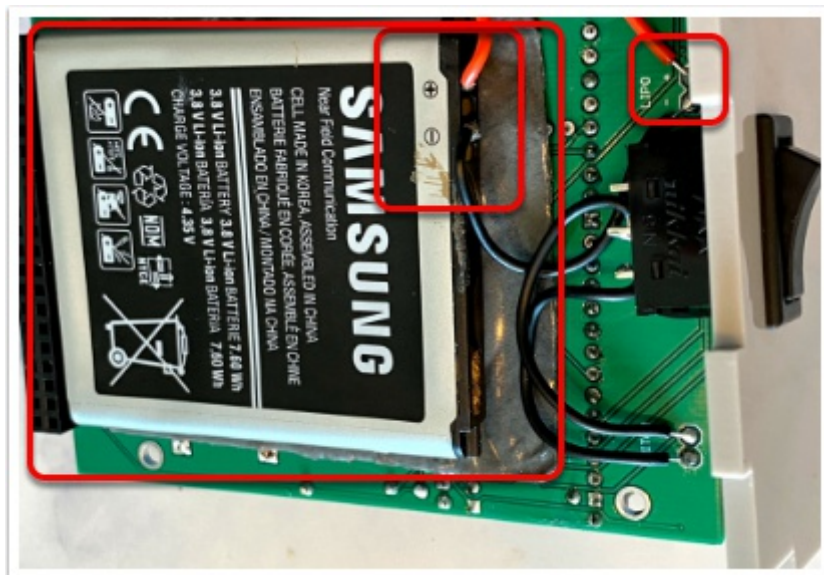
21.

Remove one foil from the Lipo protector and press it against the backside of the PCB:



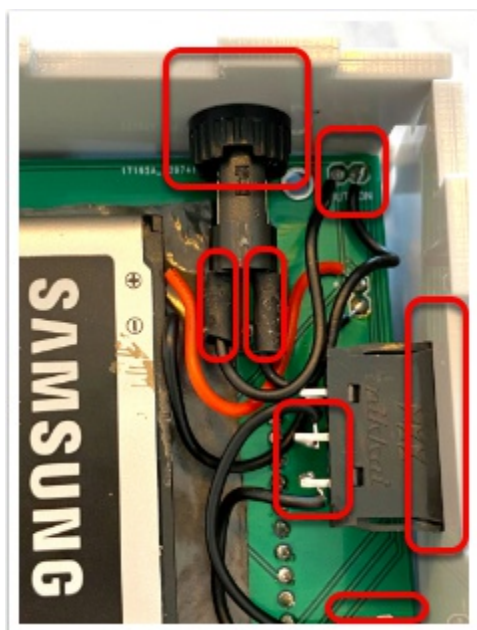
22.

Remove the other side as well and put the Lipo on top of it. Then solder two cables to the plus (red) and minus (black) contacts of the Lipo and the other sides to the PCB position labeled "Lipo". Make sure plus is connected to plus and minus to minus:



23.

Remove the protection foil from the two parts of the enclosure used in this step and put the push button and the power switch into their positions. Then connect the button with two cables to the marked position on the PCB (direction does not matter) and the middle and one outside connection of the power switch to the other connection points on the PCB:



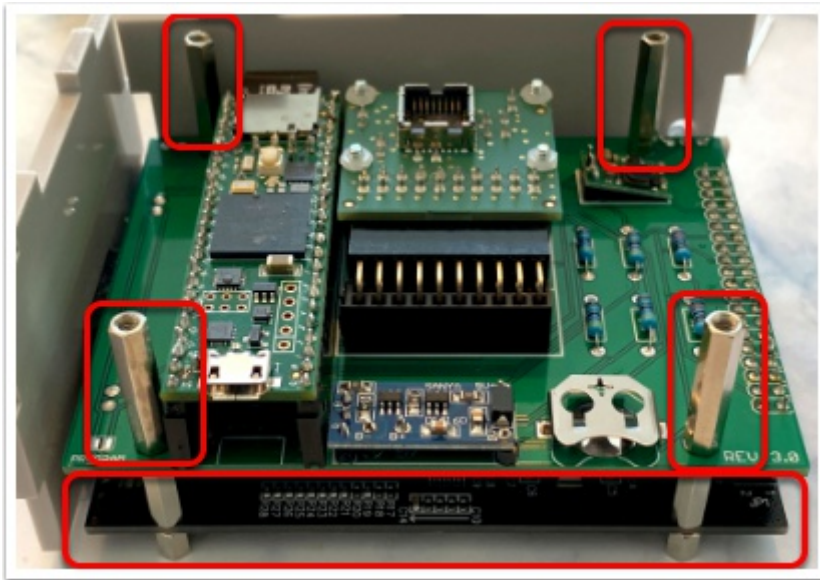
24.

Grab the display module and insert the small and the medium spacers into the four positions:



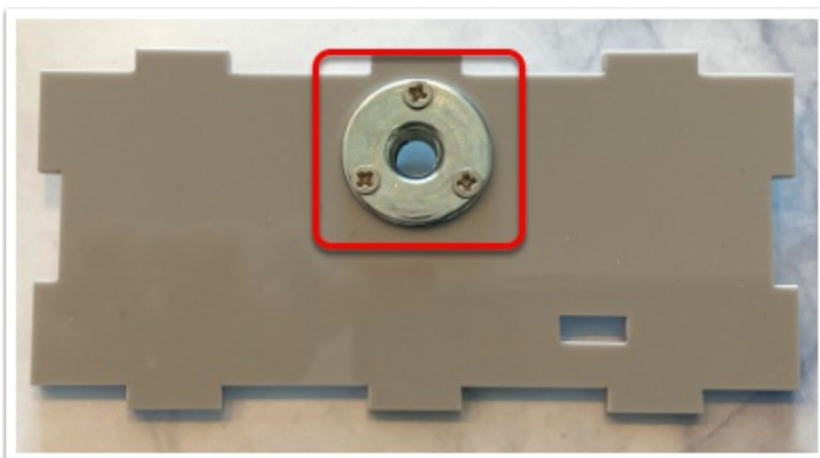
25.

Put the display module on top of the PCB and insert the long distance spacers into the four marked positions:



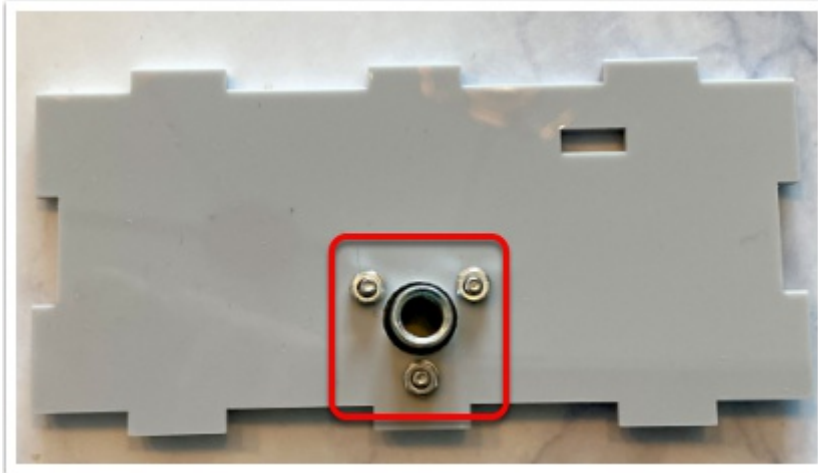
26.

Use three screws, the small spacers and the nuts to connect the tripod socket to the enclosure. This is how it looks from one side:



27.

And from the other:



28.

Carefully insert the Lepton2.5 or Lepton3.5 inside the Breakout Module. Make sure it clicks on both sides, so the Lepton is really connected properly:



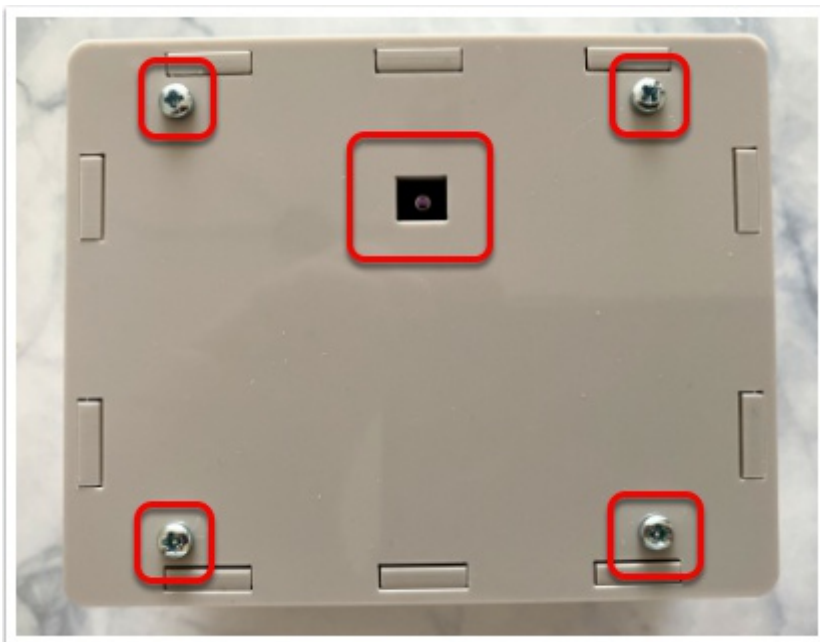
29.

Insert the remaining two sides of the enclosure:



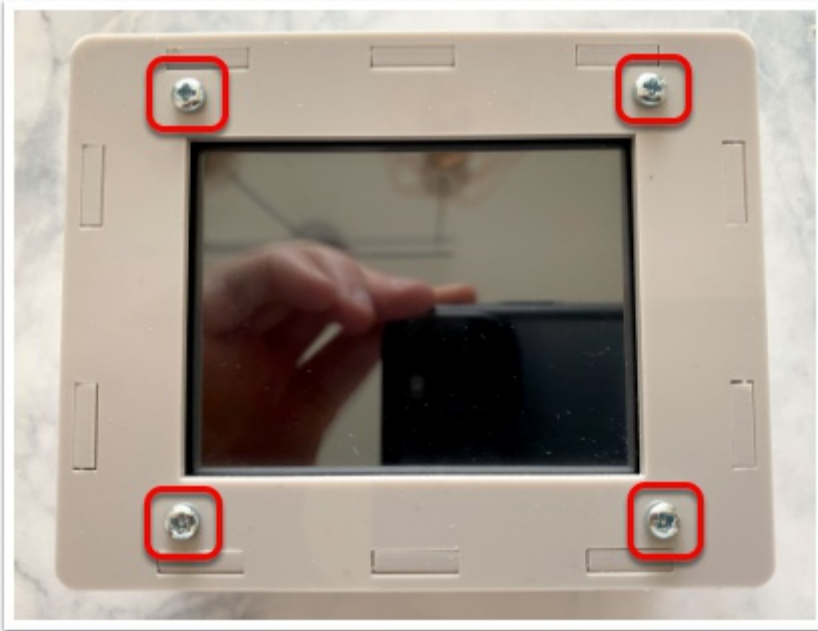
30.

Then put the backside on top and secure it with four screws. Flip the side again if the Lepton cutout does not align well, it is not centered:



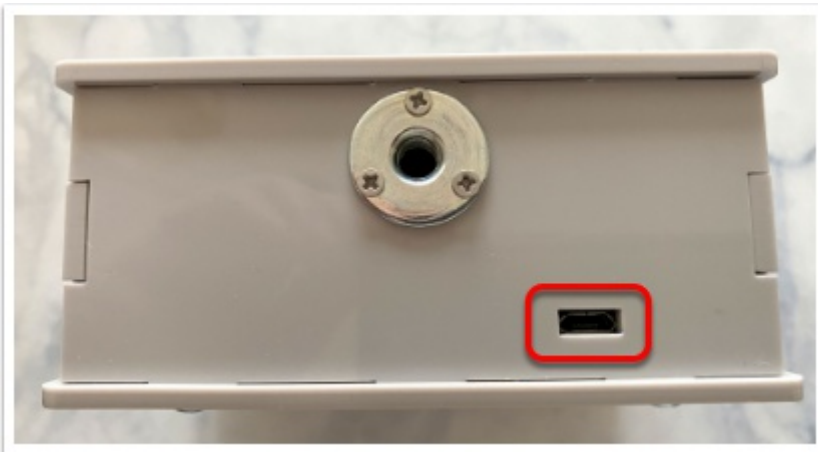
31.

Turn the device around and insert the front side, secure it with four screws as well:



32.

Make sure the USB port of the Teensy is inside the cutout on the bottom of the device:



33.

You can attach the tripod now. This is how the final device looks on the front:



34.

And on the back:



35.

Congratulations, you have assembled your own thermal camera! Check out www.diy-thermocam.net for information how to flash the newest firmware to the device.