

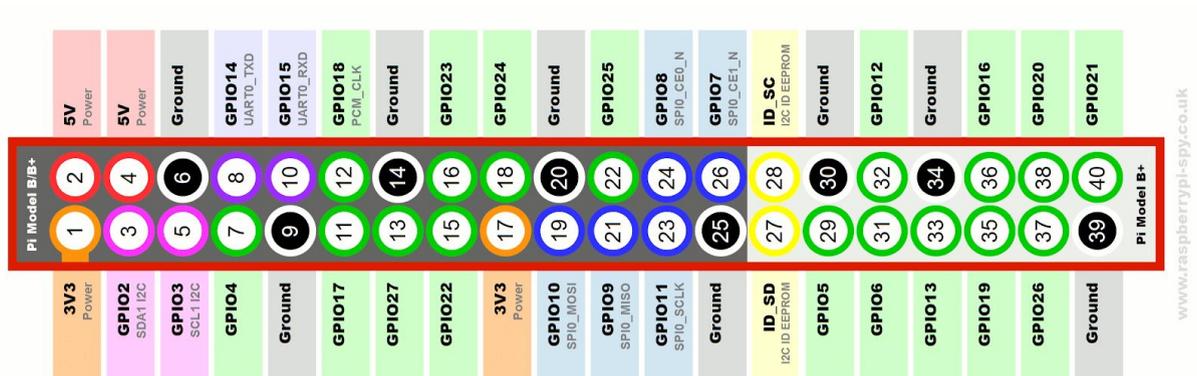
To follow this guide, you'll need several parts given in the "things" list on the Hackster page, concerning the Wireless Module.

Make sure you have an soldering iron, regulated at 400°C. You should choose the smallest iron tip, you should have a multimeter to see if everything is alright after each step. You should print the box before doing the tutorial, this will make you save time. The '.stl' files are in the attachments.

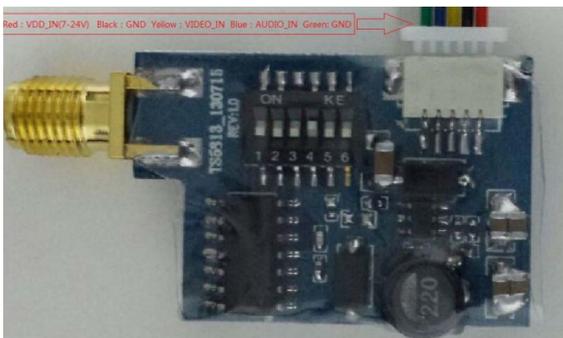
List of things :

Raspberry Pi Zero (with its SD Card), EM 506 GPS, TS5823 Emitter, Pololu U3V12F12 12V booster, and optionally, a 22uF capacitor.

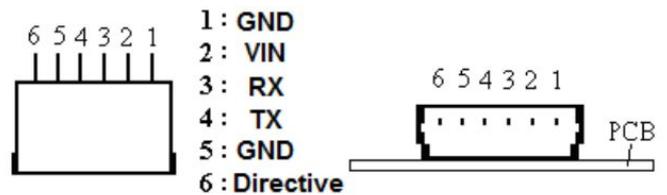
You'll find here some information about the pin layout of some of the components :



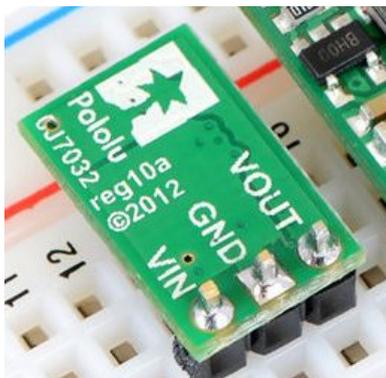
Raspberry GPIO diagram



TS5823 out of the box, cable layout on the top right corner.

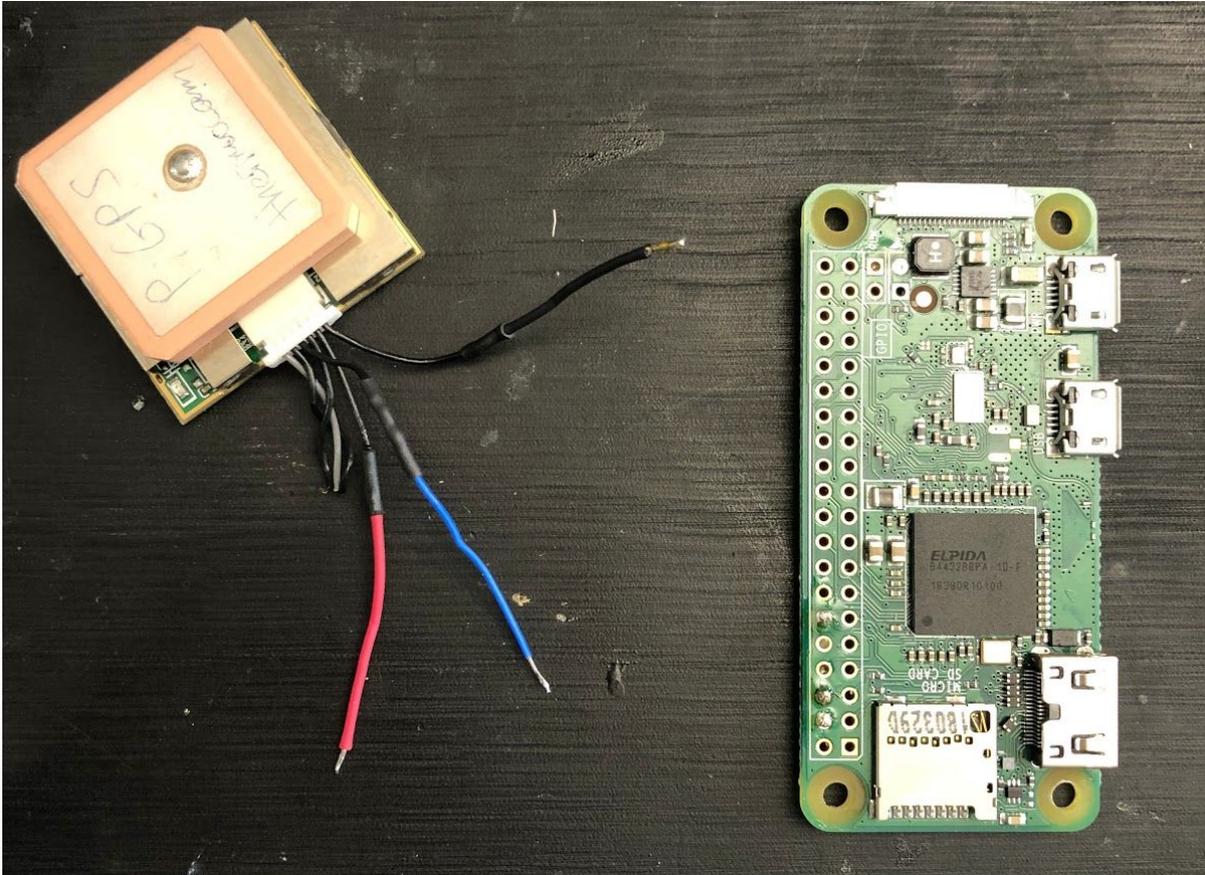


GPS Pinout



Pololu U3V12F12 12V boost

1 st step : Take the GPS and the Raspberry Pi Zero.



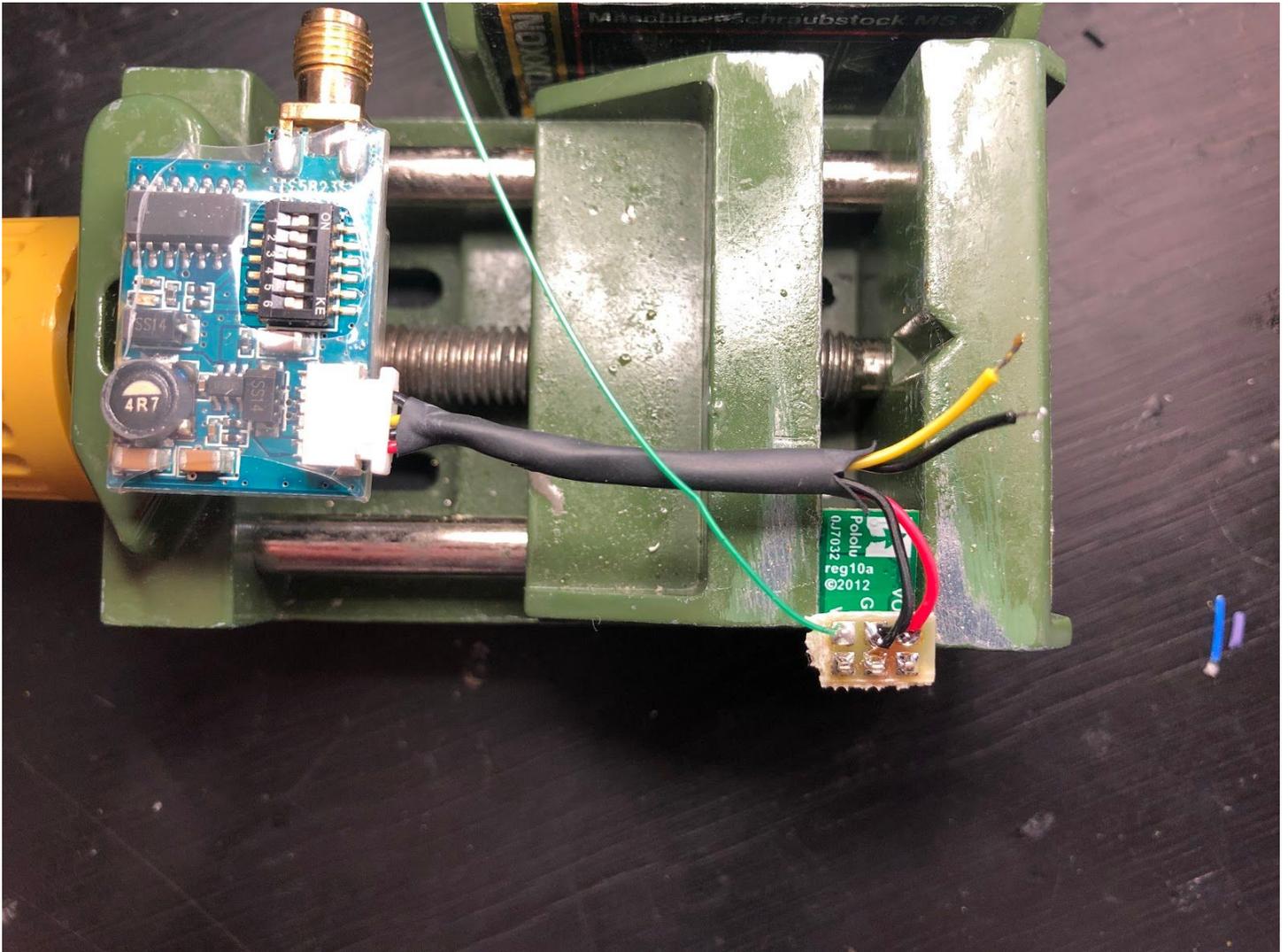
You'll have to weld GND of GPS to the GND pin just below GPIO18. (any GND pin will do the trick, but you'll gain some wire length).

Then, weld the VIN pin to the any of the 5V output of the Raspberry.

Weld the TX pin of the GPS to the GPIO18.

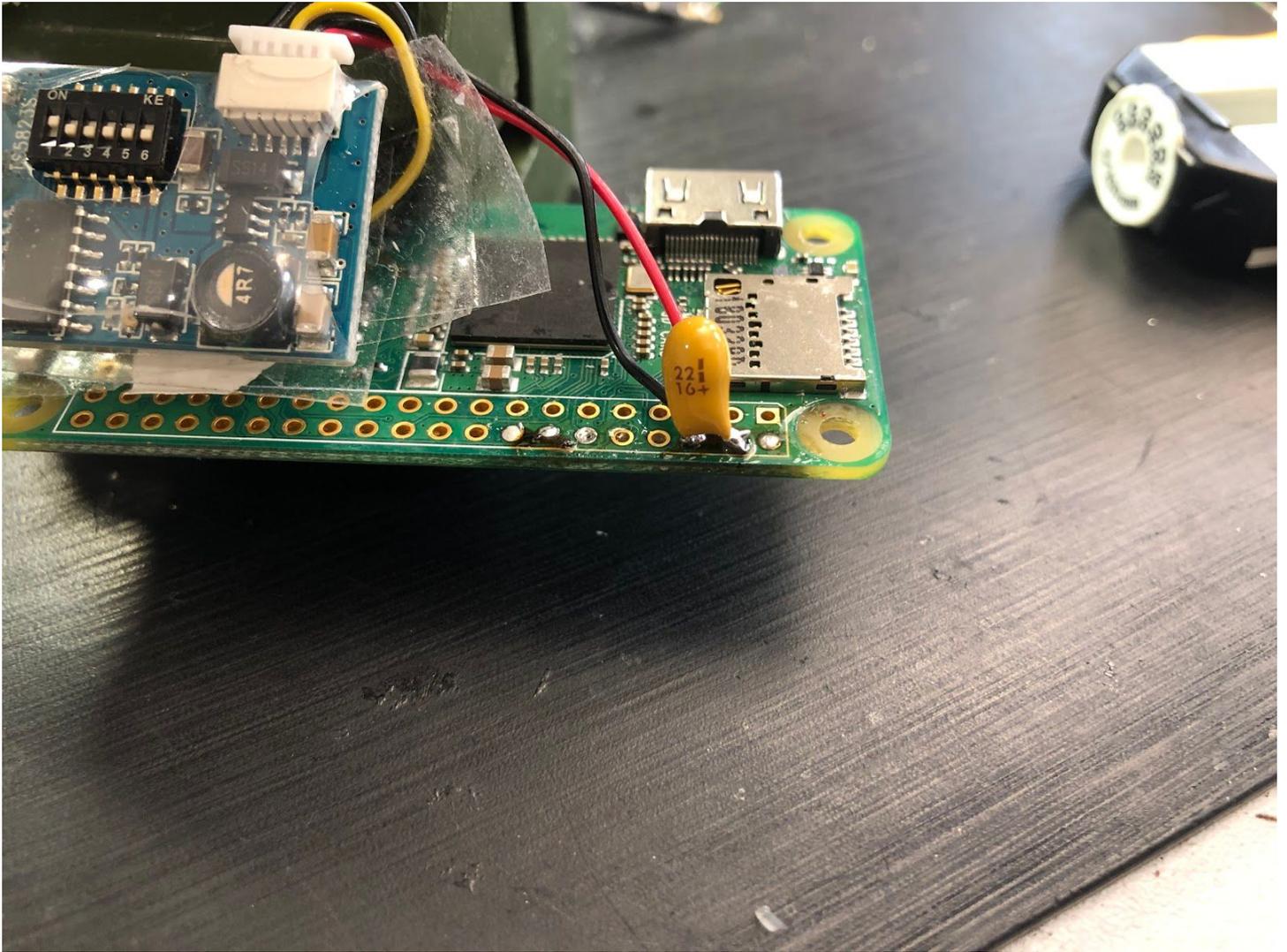
2. Welding the antenna :

You need to grab the 12V booster, and weld VIN, and ground pins of the emitter on the Vout and GND of the booster.



You can take off the cable dedicated to the sound from the emitter, by firmly pulling it out.

3rd step : Welding the emitter to the Raspberry Pi Zero.



You can add optionally a capacitor if you have one. This will preserve your emitter from current spikes, and make it last longer.

For that, first you'll have to weld the VIN pin of the Booster to the 5V output on the RPi. Then GND of the booster to the ground of the RPi, and after this you can weld on top the capacitor between the last two pins. Be aware of the polarity : as you can see on the image it is marked by the "+" symbol, sometimes the capacitor's + pole has a longer lead.

You then have to weld the video signal to the analog output of the RPi as seen here :



4th step : Putting everything inside the box.

When you've finished to print the box, you can put everything inside it.

First, put the RPI inside it, plug in a micro USB cable and the mini HDMI connector so the card stays still.

After this you can mount the GPS and the emitter :



Once done, you can close the box with the top cover, and mount the antenna :



5 th step : load the disk image.

Once everything concerning the hardware is done, you'll have to deal with the software part. Grab your SD Card, and plug it to your computer. You'll have to download this raspbian image from this link : https://drive.google.com/file/d/1rvlQ0oI01_E-kF0HROnigNR9tRLmwZh/view?usp=sharing

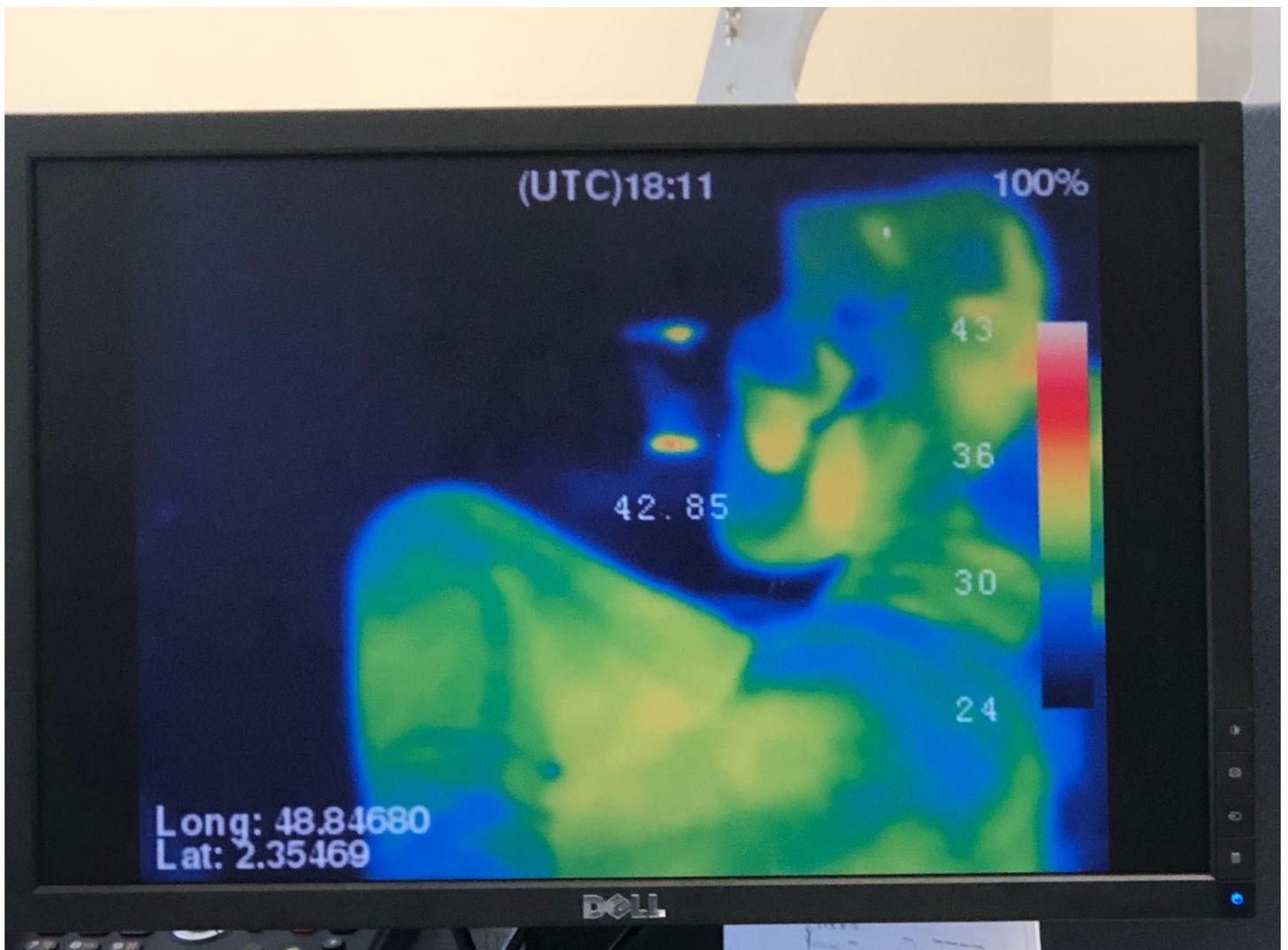
Then you need to mount this image to the SD Card. You can use Win32 Disk imager to do so. This step will take you around 8-10 minutes, and when it is done, just plug the SD card to the Raspberry.

After this, your wireless module is ready to work.

6 th step : Connecting the camera to the wireless module.

Fully charge your camera, then power it up. When it booted, flick the slide switch on the right to the bottom position. This will power the Wireless module. You can then plug a micro usb cable between the camera and the wireless module.

You'll see a pop up on the camera screen saying it detected serial connection, this means that the camera is going to send the video to to wireless module.



Plug a 5.8 GHz receiver to a screen, and you'll see the image coming from the camera.