



A *nearly* Step by step guide for building the **Sonògraf** from **Playmodes**

*written by Filippo Centenari*

Buy the components following the **Material\_list.pdf** provided by **Playmodes** on **Github**:  
<https://github.com/PlaymodesStudio/Sonograf>

In case you want a secondary **HDMI** display inside the box you can choose one like:

[https://www.amazon.it/dp/B07YJDSCR?psc=1&ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details](https://www.amazon.it/dp/B07YJDSCR?psc=1&ref=ppx_yo2ov_dt_b_product_details)

With that you also need an **HDMI Splitter** like:

[https://www.amazon.it/gp/product/B09DXXJ8YH/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.it/gp/product/B09DXXJ8YH/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1)

In the meantime start printing all the 3D parts you need for it.

***Prepare some screw.. and let's start building!***

Note | All the components needed, but add a minijack cable 'cause I forgot to put it in the picture...!



1 – Start drilling the holes for the **Neutrik** connectors and **Stereo Out** on the wooden box base:

**HDMI** (*24mm diameter*) and **Stereo Out** (*10mm diameter*) on the left side of the box.

**USB** (*24mm diameter*) on the right side of the box.

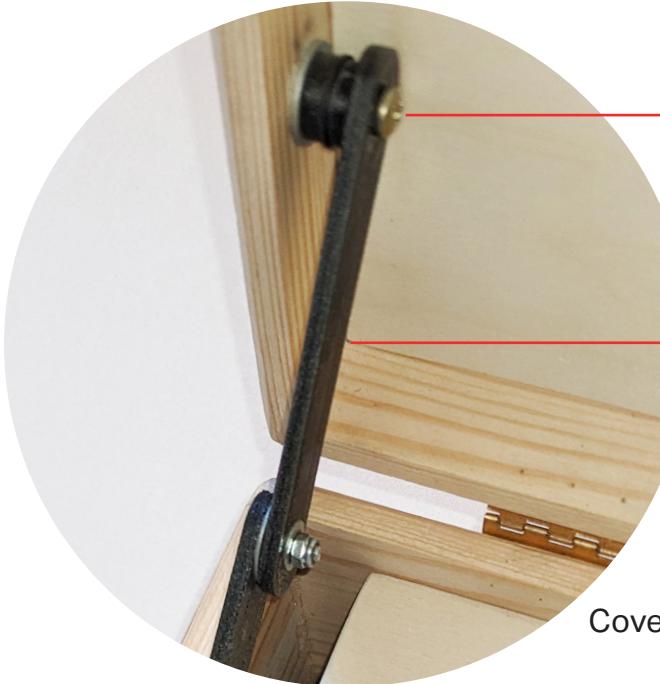
**Power Connector** on the back left side (*or near the USB connector*).

2 – Drill the holes on the wooden base for **potentiometers** and **buttons** following the original drawing file provided: **Board\_cut.ai** in CNC folder.

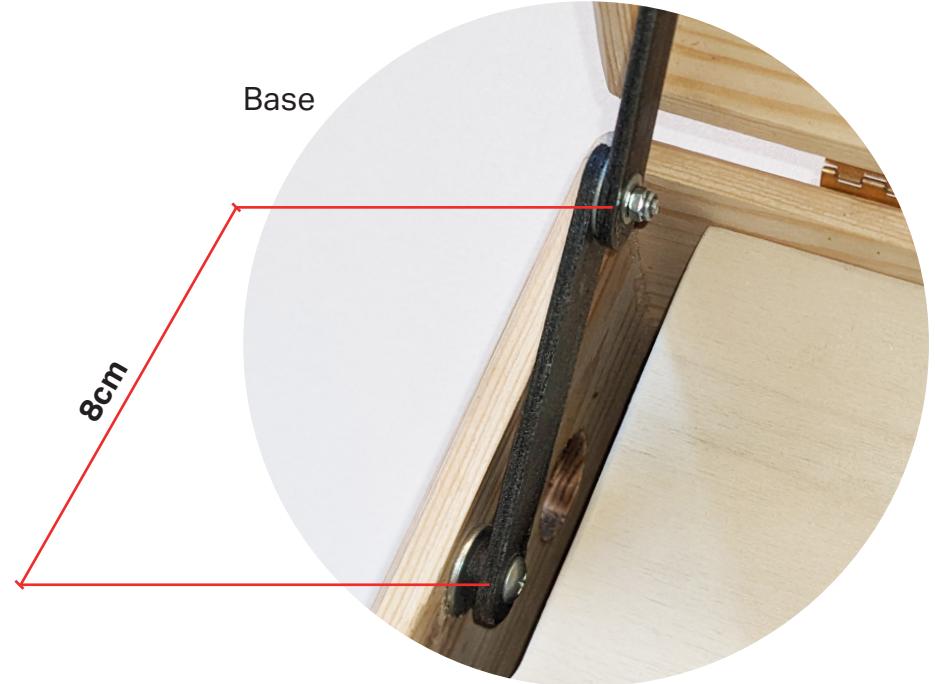
Clear the space on the left side for the 3Dprinted hinge, and cut the top right corner to pass the cables of camera and light (*and secondary display in case you mount it*).



3 – Mount the **hinge** to the box using washers and 3D printed spacers: 2 washers on the top and 1 washer to the lower case (*some metal washer can be good too to clear the space*).



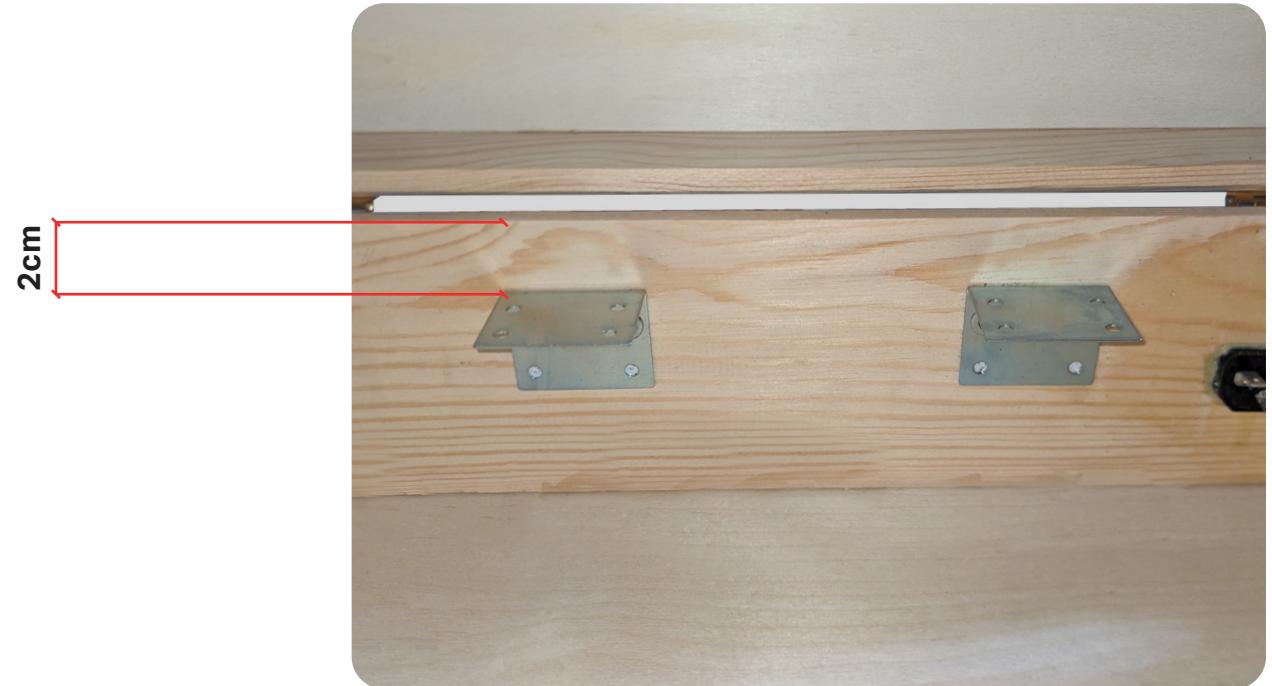
6,5cm



4 – Mount **3 or 4 brackets** inside the wooden box in order to accomodate the base.

These bracket has to be **2cm lower from the top of bottom part of the box**.

You need to find the best brackets from your local hardware shop.



5 – Add **3 or 4 magnets** (as many as the brackets) on the bottom part of the wooden base to keep it in position once in place.



6 – Mount **HDMI, Stereo Out, USB and Power connectors** to the box.



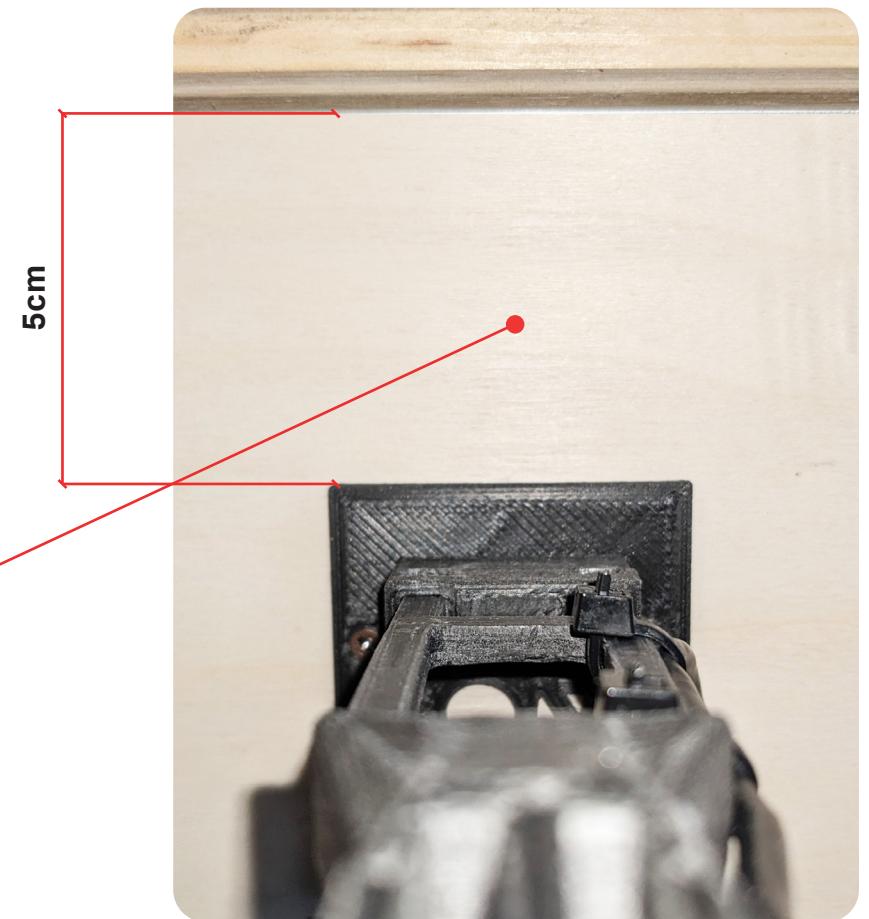
7 – Mount the **buttons** and **potentiometers** to the base following the colors: blue - red - white -orange from the top left.



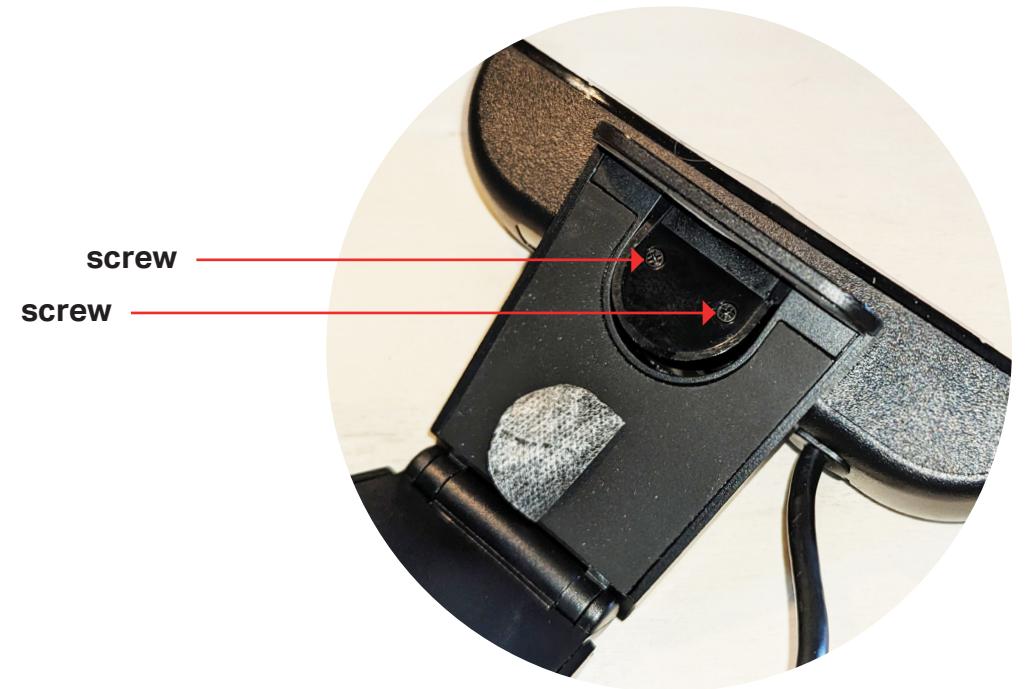
- 8 – Mount the support for the **USB Camera** to the top of the case with 4 screw  
(keep it 5cm from the top of the box).

To prevent screws goes out of the box I choosed to accomodate another wooden panel (3mm) inside the area in order to be more thiker.

Extra panel glued



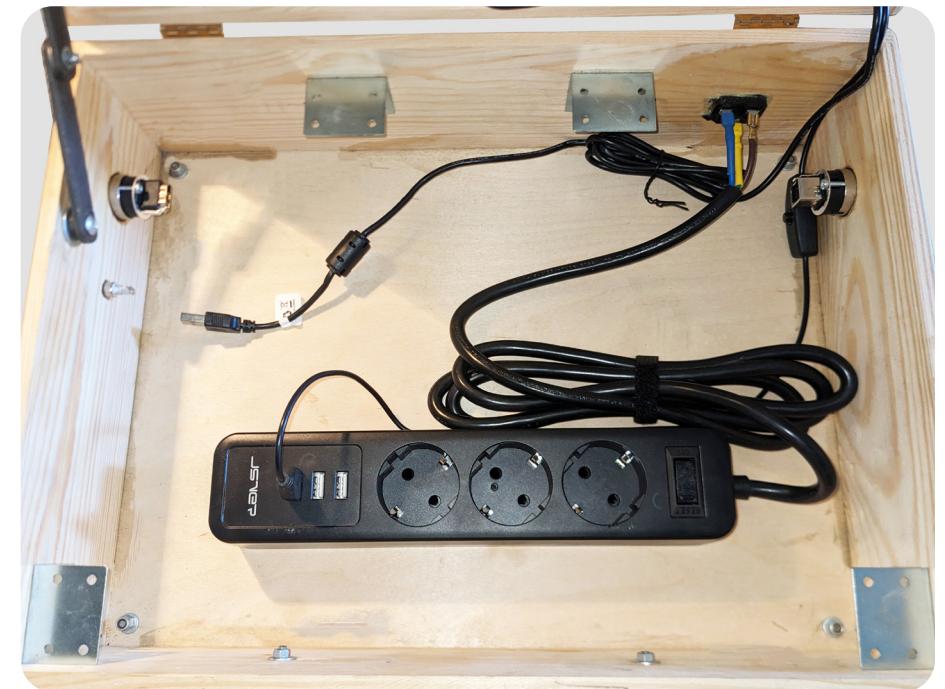
9 – Unscrew the **2 tiny screws** of the USB camera (*you need to remove the sticker to find them*) in order to mount it on the 3D printed braket with a tiny screw.



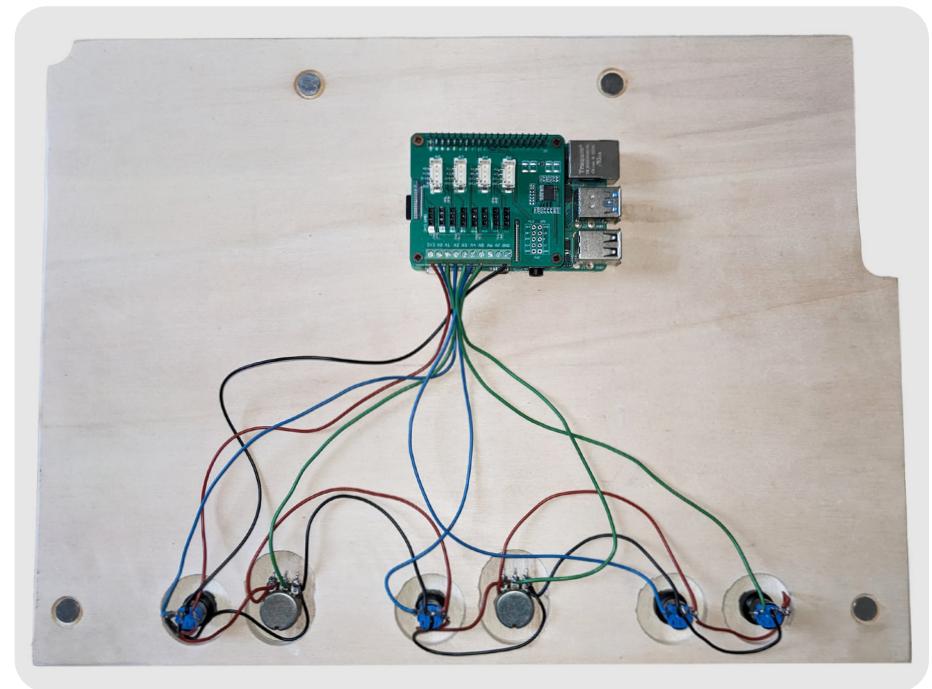
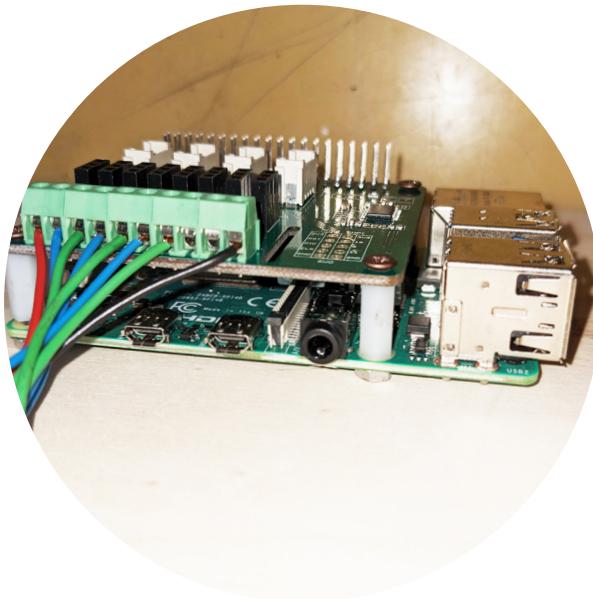
10 – Mount the **LED light** using the 3D printed parts and glue them in the corner of the box.

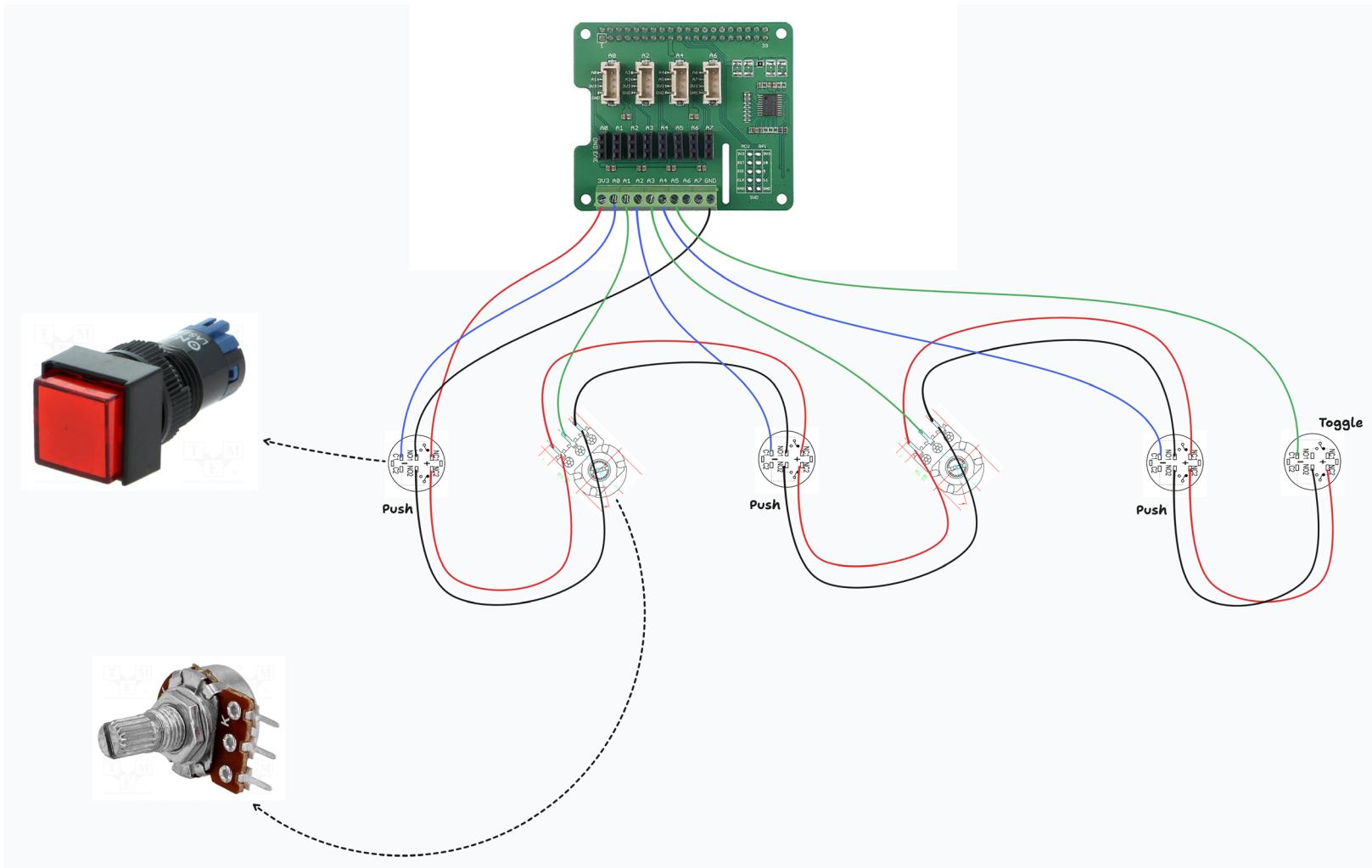


11 – Fix the **power socket** on the lower side of the box with screws. Place the power socket as in picture in order to have enough space for buttons.



12 – Mount the **Raspberry P4 and board** on the backside of the base using some long screw and spacers and follow the schematics for cable connections.





Note | Schematics for cable connections

12 – Prepare the **Audio cable (minijack)** by soldering one side to the female connector inside the box (*the other, jack, goes to the Audio card*).

Use the 2 connector for red and white wire and the lower connector for the earth.

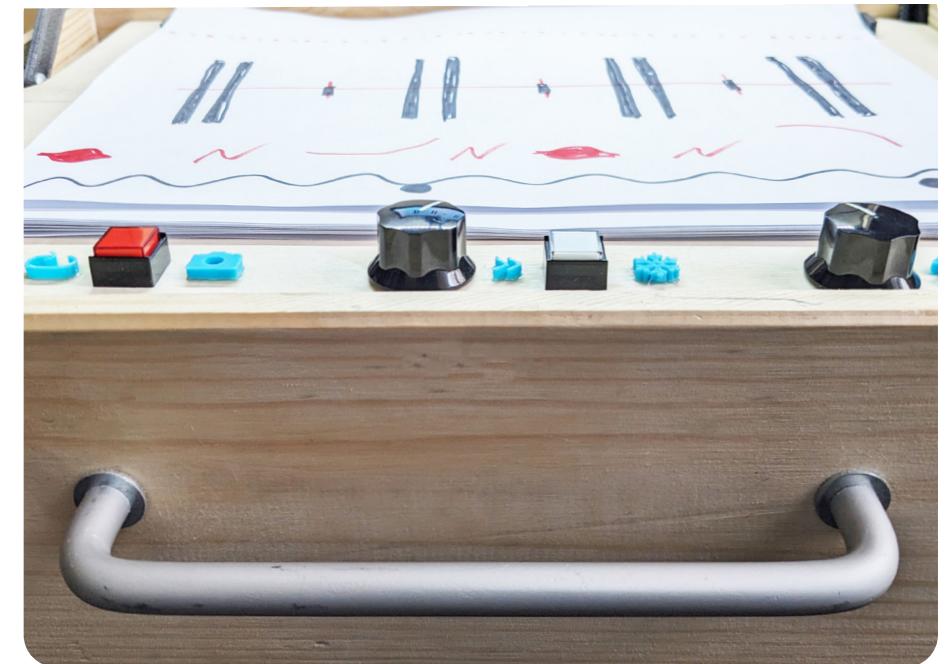


14 – Connect USB Camera to Raspberry P4, Power supply to Raspberry P4, USB cable to Neutrik USB adapter, HDMI cable to Neutrik HDMI Adapter.

Connect USB Audio card to Raspberry p4 and to the audio cable.

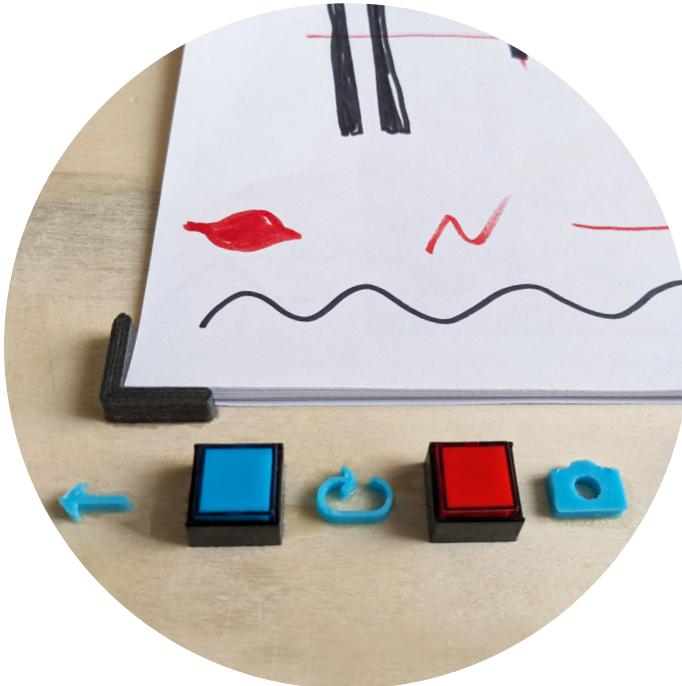
Connect the USB Led to Power socket.

Add doors latch to the sides and an handle to carry the box around the world.



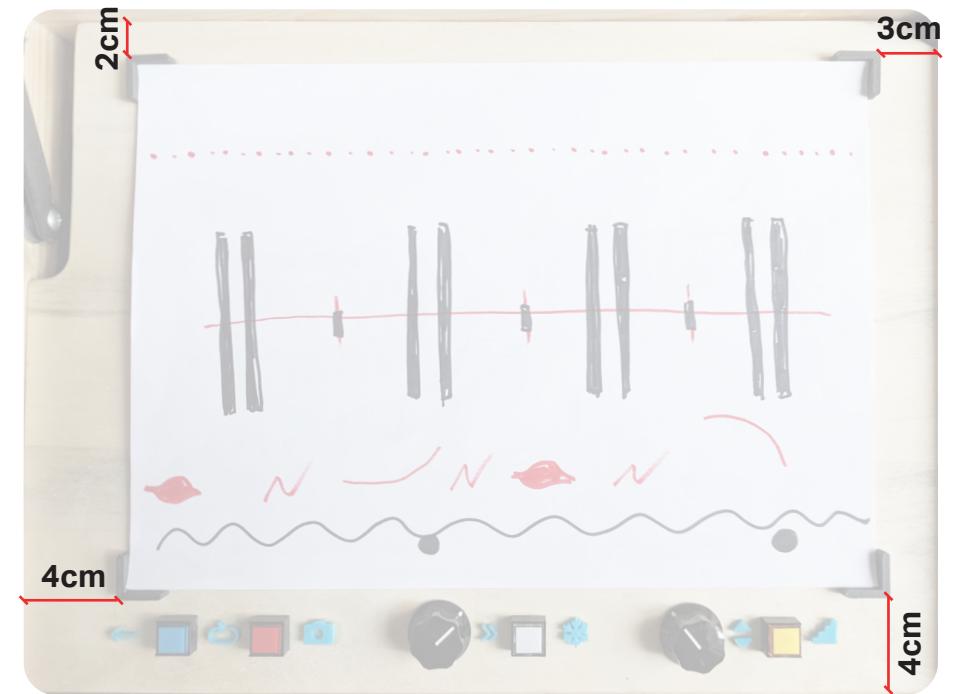
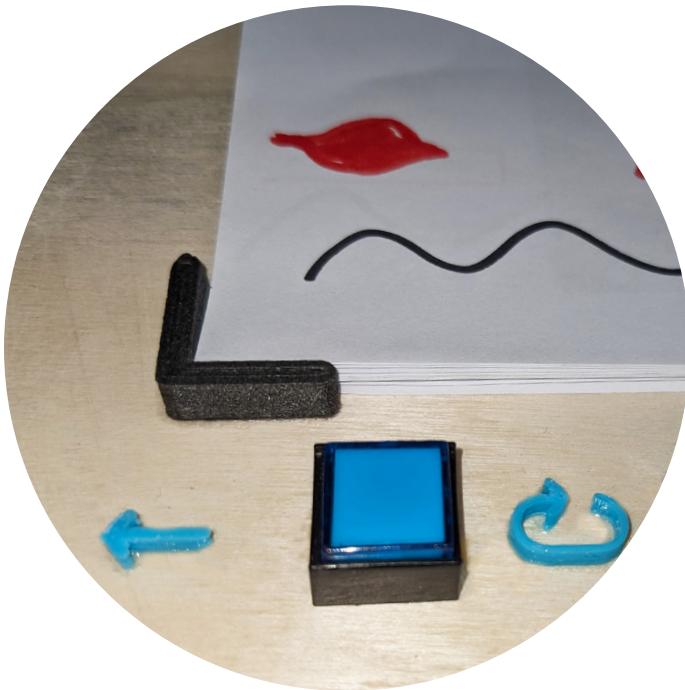
15 – In case you cannot use Laser engraving for icons near buttons and potentiometers you can print them and glue like I did using the 3D printed files.

Do the same with the 3D printed logo parts on the front of the box.



16 – Glue the 4 references on the plane to align the A4 paper.

Please use the measure as reference but verify them placing an A4 paper first on your base.



17 – Flash the SD Card using the file:

**Image Sonograf-001.img.zip**

In case it doesn't work use the uncompressed file on Github

Use the software you prefer:

**Raspberry P Imager**

<https://www.raspberrypi.com/software/>

**Balena Etcher**

<https://etcher.balena.io/>

***To learn the Sonògraf read the manual provided by Playmodes and experiment with design and objects!***

## CREDITS

Sonògraf is a project made by **Playmodes Studio -Audiovisual research**  
<https://www.playmodes.com>

This step by step guide was written by Filippo Centenari  
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