In this article, we will create a custom DMD.

The result

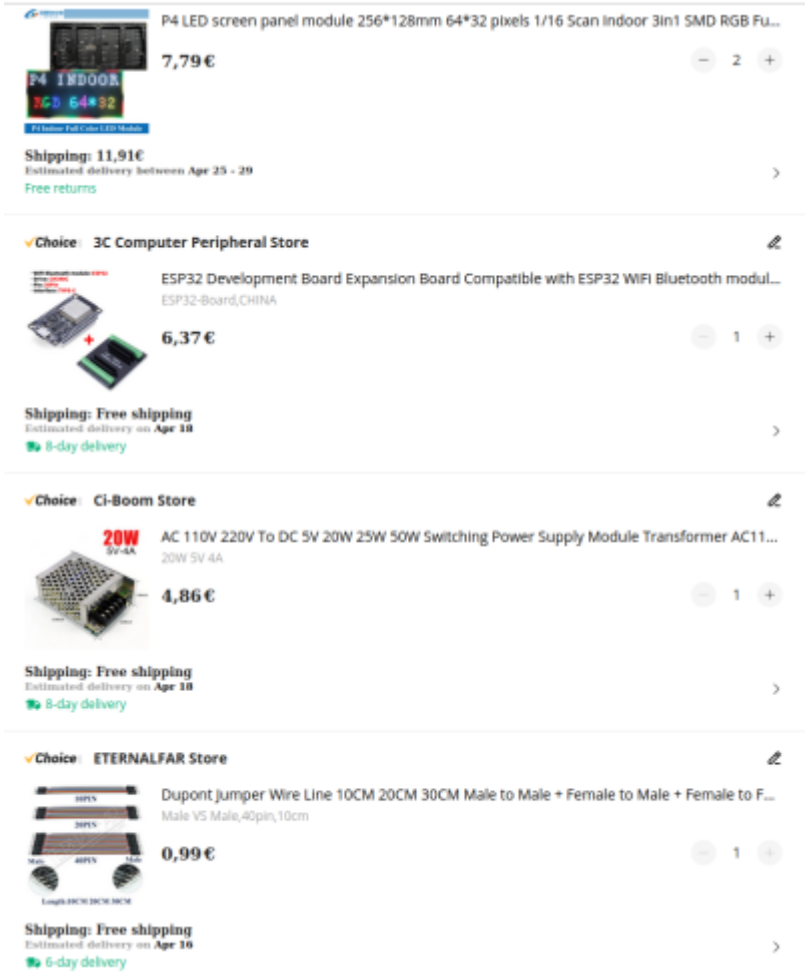


Step 1 : buy the hardware

The list :

- 2 dmd pannels (don't forget to choose 2 of them) DMD Panels
- 1 esp32 and its shield ESP32+shield
- 16 male/male 10cm jumpers Jumpers
- 1 power supply Power supply
- 1 plug Plug

You probably already have a plug at home. Total price including shipping : 39€ (on 2024 april 8).



Step 2 : plug the hardware

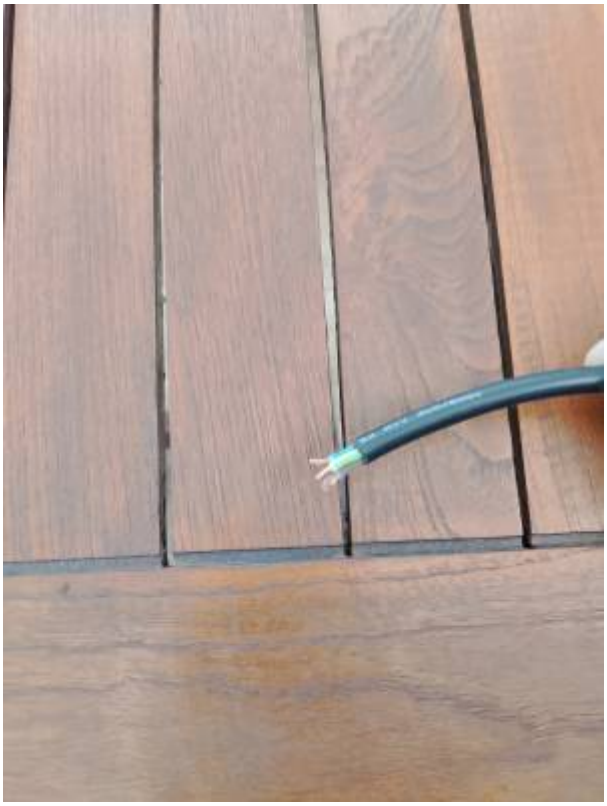
Step 2.0 - external links

- ZEDMD project
- Original tutorial (en)
- Original tutorial (fr)

The original tutorials are not related to batocera.linux, but may be very usefull to get some informations. The hardware part is the same for batocera. Just configuration actions/software at the end changes.

Step 2.1 - Cut and prepare the power wire

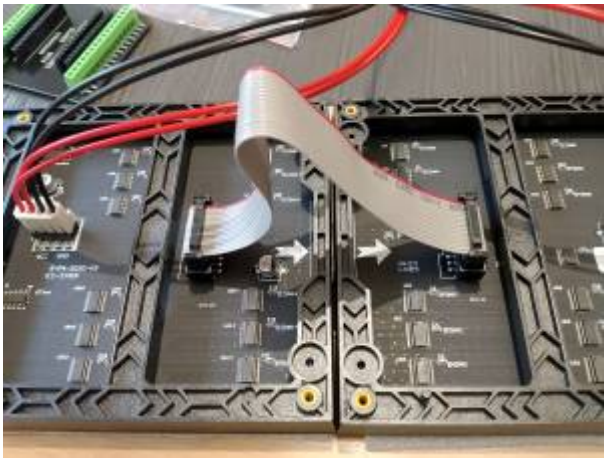


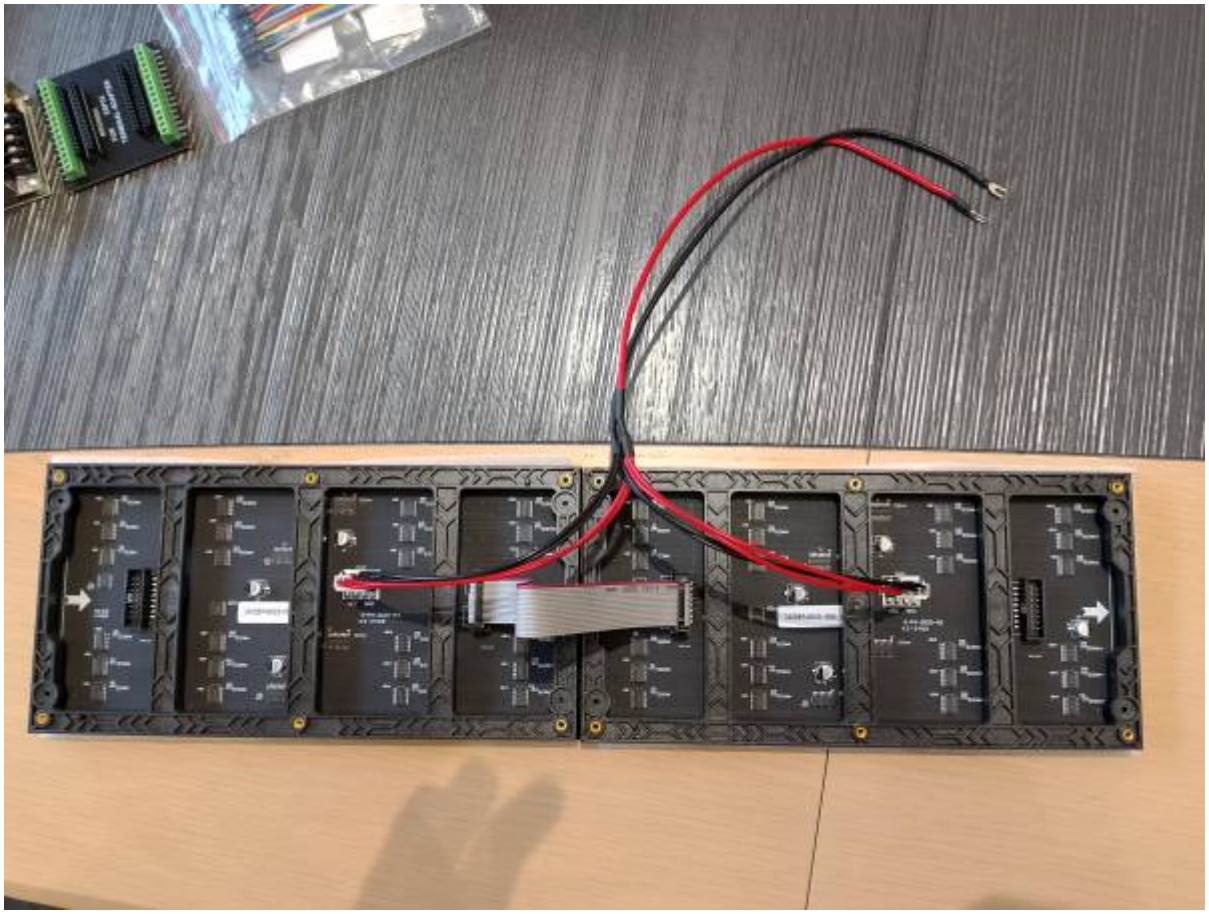


Step 2.2 - Plug matrices together with data and power wire

The data and power wire for the matrices are delivered with the matrices. Just plug them. Note that white arrows must go from left to right.







Step 2.2 - Plug the power

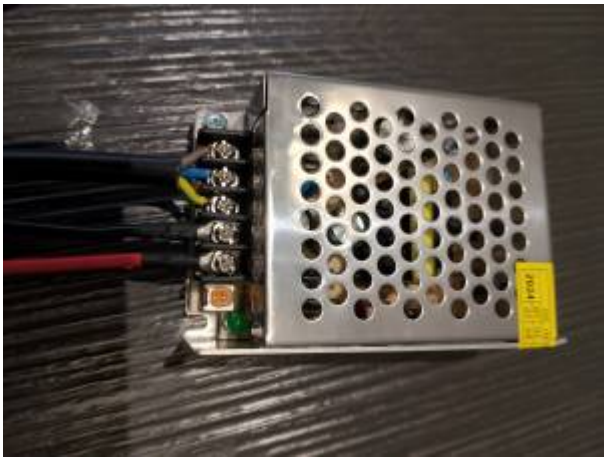
Plug the 220V power on the AC. Take care of colors. Phase (brown) / Neutral (blue) / Mass (yellow/green).

Plug the 5V. Take care of colors.

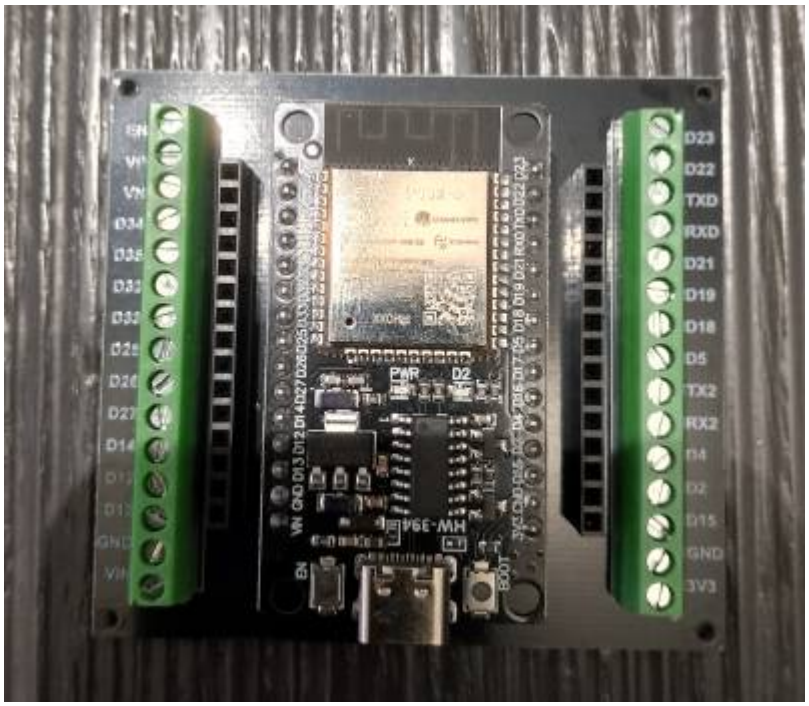
The orange screw on right can be used to adjust the 5V voltage. It is usefully in case the image is not perfect. Too much voltage make the image not perfect.







Step 2.3 - Microcontroller



Plug the esp32 in its socket.

Before plugin the esp32 on the computer (ideally under batocera.linux), run the following command :

```
ls /dev/ttyUSB*
```

The result can be an error (no such file or directory) or a list of files (/dev/ttyUSB0 or /dev/ttyUSB0 /dev/ttyUSB1 or ...)

Plug it on a computer (ideally under batocera.linux) with a usb-c cable.

Rerun the command and identify the name the esp32 took.

```
ls /dev/ttyUSB*
```

in general, you'll get the error “no such file” before plugin, and “/dev/ttyUSB0” once plugged. This mean that the esp32 can now be identified as file /dev/ttyUSB0.

In case you had /dev/ttyUSB0 before plugin, you'll get /dev/ttyUSB0 /dev/ttyUSB1 after. This mean that esp32 can now be identified as file /dev/ttyUSB1.

Execute the following command by adapting ttyUSB0 to ttyUSB1 if necessary.

```
wget https://github.com/PPUC/ZeDMD/releases/download/v3.6.0/ZeDMD-128x32.zip
unzip ZeDMD-128x32.zip
wget
https://github.com/espressif/esptool/releases/download/v4.7.0/esptool-v4.7.0
-linux-amd64.zip
unzip esptool-v4.7.0-linux-amd64.zip
chmod a+x ./esptool-linux-amd64/esptool
```

```
./esptool-linux-amd64/esptool --port /dev/ttyUSB0 --chip esp32 write_flash 0x0 ./ZeDMD.bin
```

The first line downloads the zedmd firmware for 128×32 matrix.

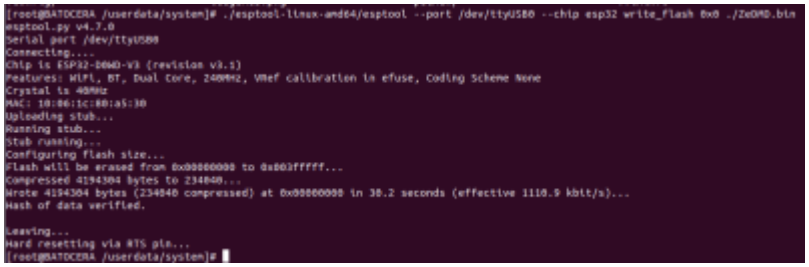
The second line unzip it.

The 3rd line downloads the tool used to flash the firmware.

The 4th line unzip the tool.

Th 5th line make the tool executable.

The last line flash the firmware on the device /dev/ttyUSB0.



to be continued

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