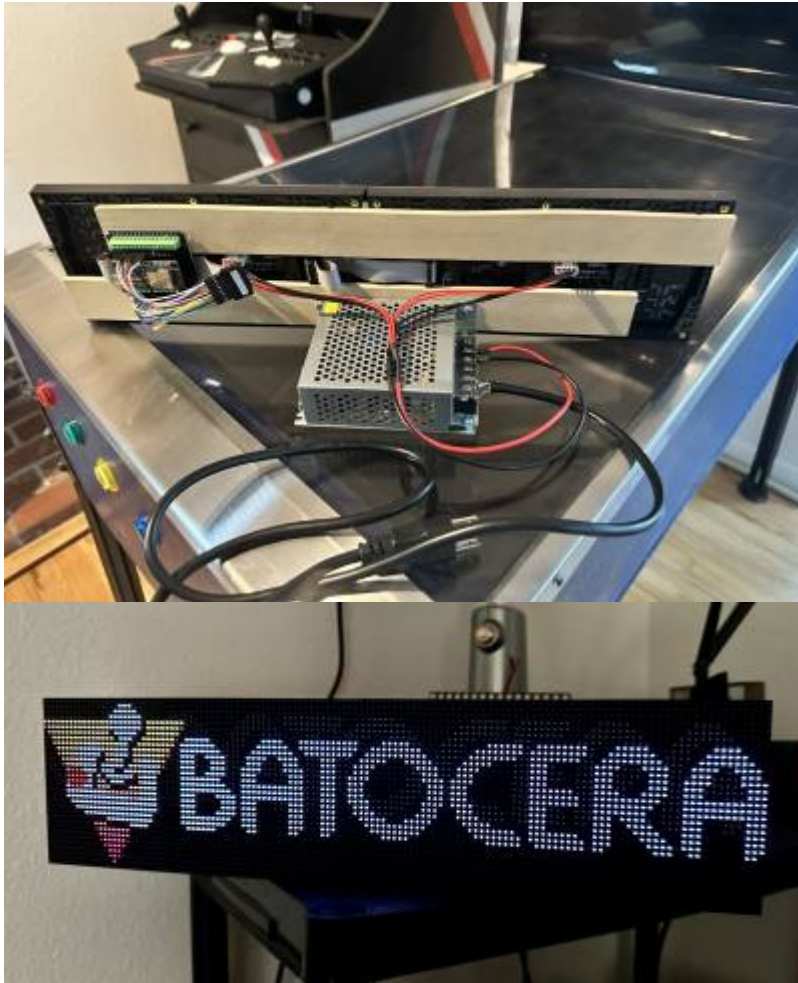


In this article, we will create a custom DMD.

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).

P4 LED screen panel module 256*128mm 64*32 pixels 1/16 Scan Indoor 3in1 SMD RGB Fu...
7,79 €
Shipping: 11,91€
Estimated delivery between Apr 25 - 29
Free returns

Choice 3C Computer Peripheral Store
ESP32 Development Board Expansion Board Compatible with ESP32 WIFI Bluetooth modul...
ESP32-Board,CHINA
6,37 €
Shipping: Free shipping
Estimated delivery on Apr 18
3-day delivery

Choice Ci-Boom Store
20W AC 110V 220V To DC 5V 20W 25W 50W Switching Power Supply Module Transformer AC11...
20W 5V 4A
4,86 €
Shipping: Free shipping
Estimated delivery on Apr 18
3-day delivery

Choice ETERNALFAR Store
Dupont Jumper Wire Line 10CM 20CM 30CM Male to Male + Female to Male + Female to F...
Male VS Male,40pin,10cm
0,99 €
Shipping: Free shipping
Estimated delivery on Apr 18
6-day delivery

Step 2 : plug the hardware

Step 2.0 - external links

- [ZEDMD project](#)
- [Original tutorial \(en\)](#)
- [Original tutorial \(fr\)](#)

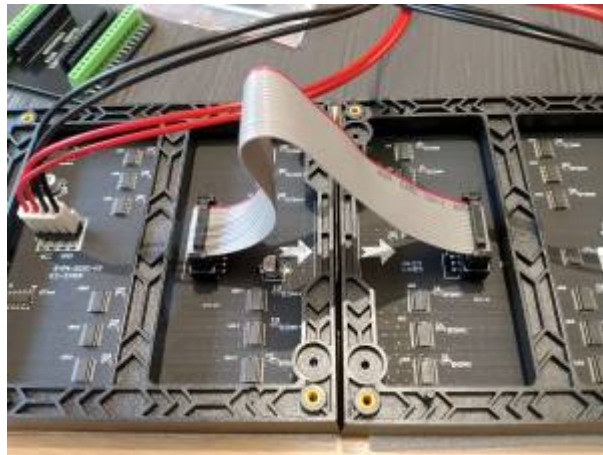
The original tutorials are not related to batocera.linux, but may be very usefull to get some informations. The hardware part is the same for batocera. Just configuration actions/software at the end changes.

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.



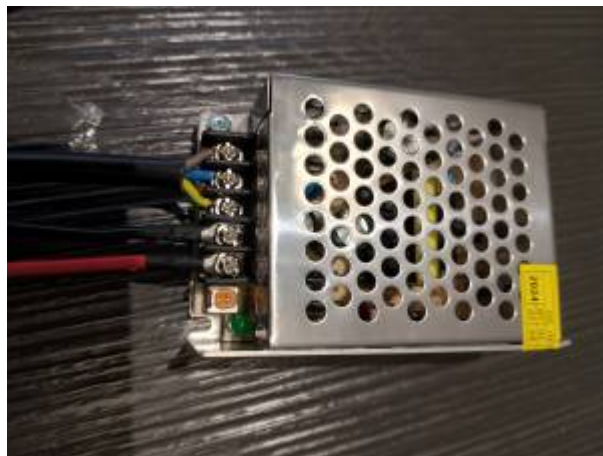


Step 2.2 - Plug the power

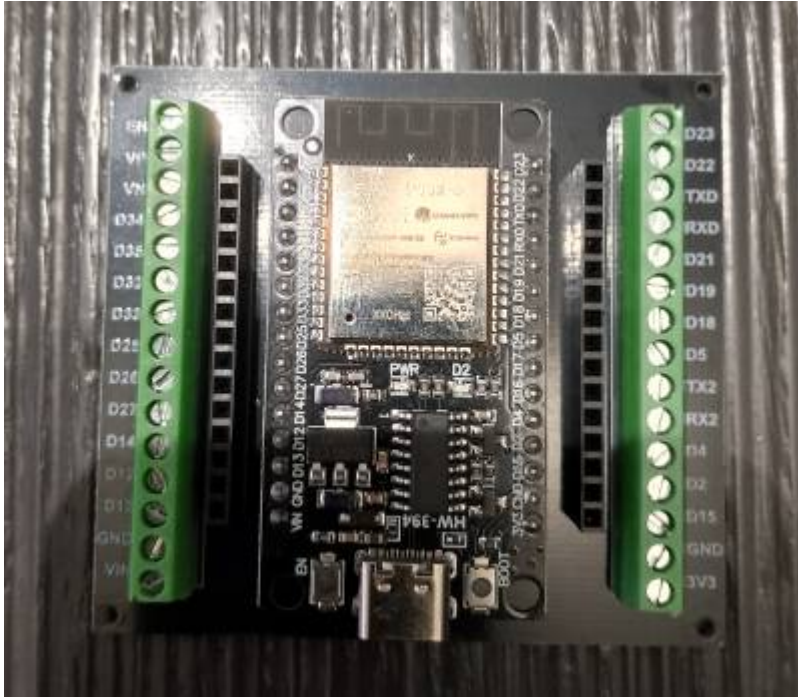
Plug the 220V power on the AC. Take care of colors. Phase (brown) / Neutral (blue) / Mass (yellow/green).

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 128x32 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.

```
[root@BATOCERA /userdata/system]# ./esptool-linux-amd64/esptool --port /dev/ttyUSB0 --chip esp32 write_flash 0x0 ./ZeDMD.bin
esptool.py v4.7.0
Serial port /dev/ttyUSB0
Connecting...
Chip is ESP32-0660-V3 (revision v3.3)
Features: WiFi, BT, Dual Core, 240MHz, VREF calibration in efuse, Coding Scheme None
Crystal is 40MHz
MAC: 18:74:1c:14:a5:30
Uploading stub...
Running stub...
Stub running...
Configuring flash size...
Flash will be erased from 0x00000000 to 0x001fffff...
Compressed 2194394 bytes to 234840...
Wrote 4194304 bytes (234840 compressed) at 0x00000000 in 38.2 seconds (effective 1110.9 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...
[root@BATOCERA /userdata/system]#
```

to be continued

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