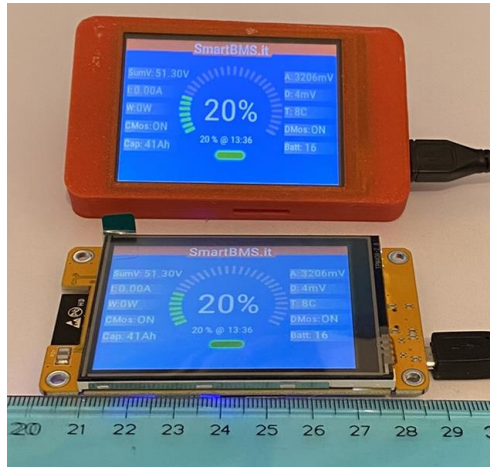# CONFIGURE OPENHASP COLOR DISPLAY with ScanLabs Dongle

Following this basic manual, you will be able to build a colour-graphic display based on the openHASP project.

The Colour Display connects via Wi-Fi and MQTT to the MQTT server you are using and will display major battery pack info.

Total project cost is about 15$ (for the display & enclosure)
Time to make it: 10 minutes (tanks to file exported by ScanLabs dongle)
Time to print stl: 2-3h (depending on you 3D printer)

What you need:

- 1 or many* ScanLabs dongle/s to extract DALY/JK BMS data and Publish to an MQTT server
- 1 or many** ESP32-2432S028r -> Colour Display based on ESP32 – 2.8inches
- 1 or many* Enclosure for the Colour Display
   - Free STL option 1
   - Free STL option 2
   - Free STL option 3

Why 1 or many?

*If you have multiple battery packs even located on different places, you can visualize all of them on multiple pages of a display. Each Battery pack needs to expose data to the same MQTT server on different **Topics**, let's say "Jsn1" , "Jsn2", "JsnN"

**Being an MQTT display you can build as many as you want, all of them will show the same info even on different places on the world or the house (where Wi-Fi connectivity to internet is available)

QUICK INTRO to openHASP is a free very cool project that make super easy creating graphical panels. Multiple display are supported, even bigger in inches. Get inspired by the "*scanlabs.jsonl*" panel configuration exported by the ScanLabs Dongle for BMS to make yours.
Add your stuffs and customize your graphics.

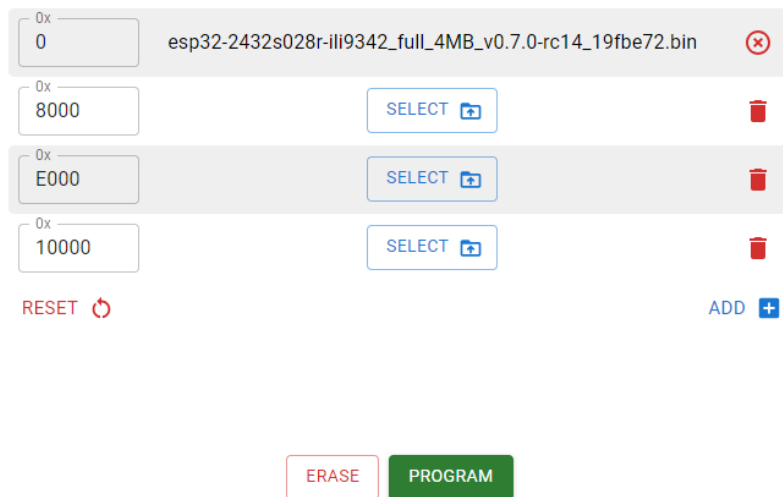Let's MAKE IT!

STEP-BY-STEP GUIDE

1- PROGRAM ESP32-2432S028r with openHASP 0.7.0 which binary I pre-build for you .
   DOWNLOAD FROM HERE
2- **Connect** the display through the ICD Port via an USB-Micro cable
3- Go to https://esp.huhn.me/ is an online tool that implement ESP32 loader.
   Press "CONNECT"
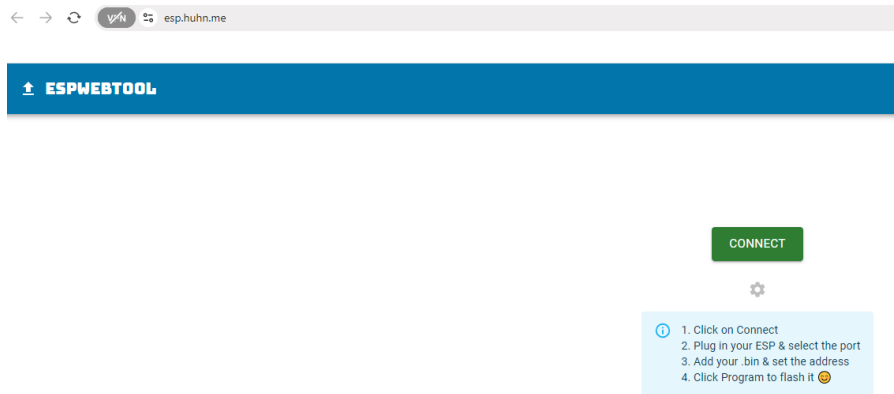
4- A pop-up box appear, select the COM port on which the display is connected
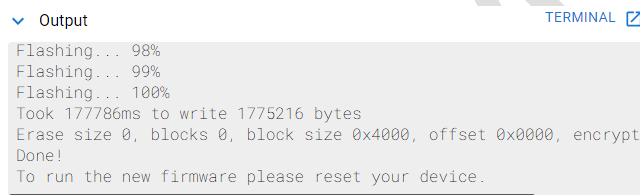   If everything is ok you should see a picture like this:
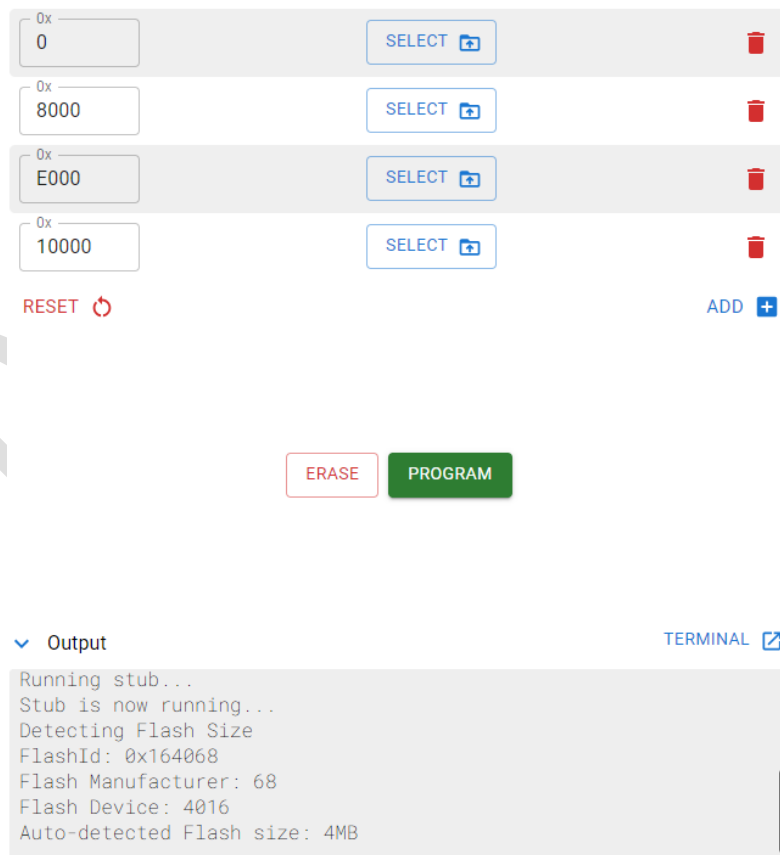
5- AT address 0x0000 Select the file esp32-2432s028r-ili9342_full_4MB_v0.7.0-rc14_19fbe72.bin

| 0x		
0	esp32-2432s028r-ili9342_full_4MB_v0.7.0-rc14_19fbe72.bin	⊗
0x 8000	SELECT 🔼	🗑
0x E000	SELECT 🔼	🗑
0x 10000	SELECT 🔼	🗑
RESET ↻		ADD ➕

ERASE   PROGRAM

6- "ERASE"
7- "PROGRAM" …. Wait all the steps , it will take about 1 minute

⌄ Output   TERMINAL ⬀
```
Flashing... 98%
Flashing... 99%
Flashing... 100%
Took 177786ms to write 1775216 bytes
Erase size 0, blocks 0, block size 0x4000, offset 0x0000, encrypt
Done!
To run the new firmware please reset your device.
```

Made with ❤ by Spacehuhn

8- Power cycle the display (unplug , wait 5s and re-plug the usb cable)

9- openHASP will Start showing a QRCODE to let you scan it and connect to the WiFi Network created
    a. SSID HASP-d56fe4 (your will be slightly different)
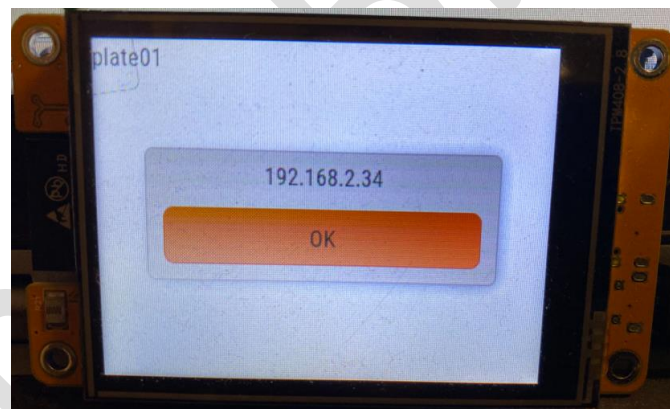   b. Password: haspadmin
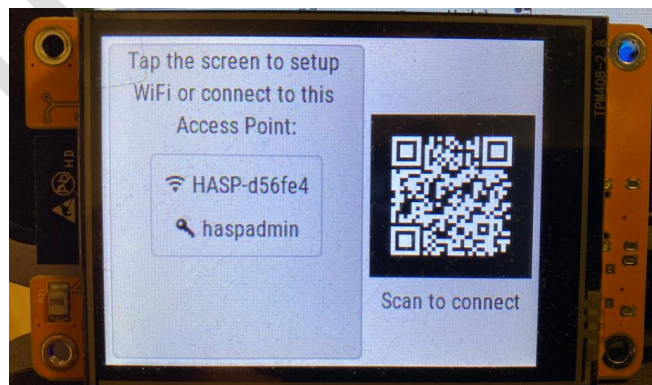
10- Once connected to the Wi-Fi, open an Internet Browser and go to page **http://192.168.4.1**
11- On the WebPage, **SET** your home Wi-Fi network **SSID** and **PWD** – "SAVE SETTINGS"
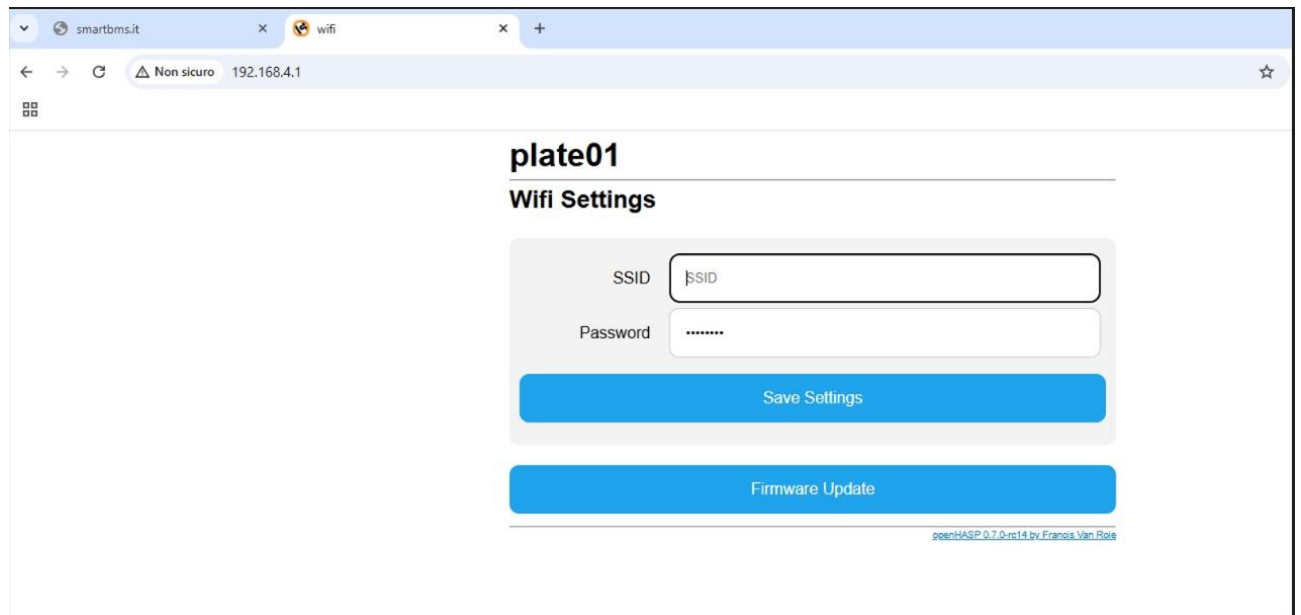
12- The Display RESTART – If you were not wrong entering Wi-Fi credentials, you will soon get a message on the display with the IP assigned. **TAKE NOTE OF IT!**


13- With your Internet Browser go to the IP address shown on the display. In this case 192.168.2.34

14- On the ScanLabs Dongle for BMS web Page "SETTINGS" -> "DISPLAY" enable "REMOTE DISPLAY" and select the Display PLATE id -> **SUBMIT** to enable the service
NOTE: If you have more than one dongle, each of them need a dedicated PLATE ID.

15- Press on "GENERATE openHASP CONFIG". 7 files will be generated with you current setup:
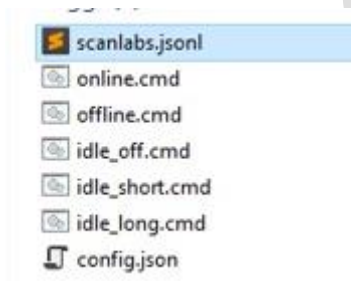
16- GO to "FILE EDITOR" the second last one on the list of the openHASP display
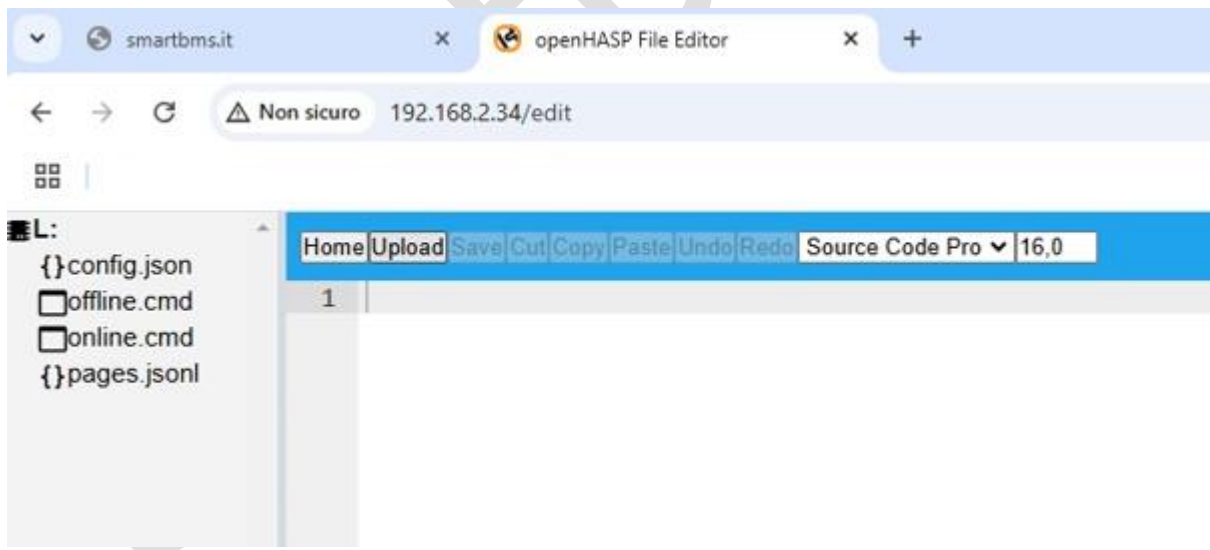
17- Select "UPLOAD" and upload all the 7 files generated by the dongle. When all the 7 files are uploaded -> unplug USB, wait 5s and plug it again.

18- Et voila' !