

BUILD YOUR Wi-Fi
BMS DATA EXTRACTOR
&
REMOTE COLOR DISPLAY
for
JK or DALY / CLONES

Version 3.4.1 “*The dongle Bible*” released on 22-Dic-2025

FOLLOW the instruction to build a Wi-Fi Data Extractor for
JK-PBx , JK-Bx , DALY and CLONES – Hi / 100Balance etc.

AND
A TASMOTA or OPENHASP Remote Wi-Fi Colour Display

No Rocket science expertise needed
Bill of Material is about 10\$ - time to build is about 20-30minutes

Feel free to get in touch with me Paolo @ -> info@dalybmswifi.com



[DISCORD](#)

BUILD YOUR BMS DATA EXTRACTOR Wi-Fi	4
FEATURE SET.....	5
COMPATIBILITY LIST	7
CAMPARISSON DALY WIFI DONGLE vs ScanLabs BMS Smart data Extractor	8
BUILD IT FOR for DALY or JK-Bx	9
BILL OF MATERIAL	9
CABLE SELECTION	10
REFERENCE DIAGRAM FOR DALY – NEW OR CLASSIC MODEL – WITHOUT DCDC	11
REFERENCE DIAGRAM FOR JK – w/o PASSTHROUGH Feature and w/o DCDC	11
BUILD IT STEP BY STEP DALY & JK-Bx.....	12
BUILD IT FOR JK-PB1x & JK-PB2x	17
BILL OF MATERIAL for JK-PBx	18
JK-PBx - RJ45 Wiring	19
ADDING A DCDC to let the DONGLE be POWERED FROM BMS.....	21
USING NODEMCU WITH I2C OLED DISPLAY	25
FIRST PROGRAMMING NODEMCU	28
METHOD 1: PROGRAMMING NODEMCU FOR DUMMIES.....	28
METHOD 2: PROGRAMMING NODEMCU FOR DUMMIES++.....	29
LICENSED vs NOT LICENSED.....	32
HOW TO CONFIGURE YOUR BMS SMART DATA EXTRACTOR	33
Method 1 – SETUP the dongle via WEB PAGES	33
ADD YOUR HOME ACCESS POINT CREDENTIALS	34
RESTORE TO ACCESS POINT MODE	35
RESTORE TO FACTORY ACCESS POINT MODE.....	35
Method 2- SETUP Via AT Commands	36
CONNECTING CABLES	41
BROWSING WEB PAGES	44
ADDITIONAL SETTINGS	47
FEATURES EXPLAINED.....	49
CONFIGURE MQTT and IoTMQTT Panel APP.....	50
CREATE AN ACCOUNT WITH BROKER MQTT PROVIDER	51
LIST OF BMS PARAMETERS AVAILABLE VIA MQTT	60
BMS PASS-THROUGH.....	61
UART TUNNEL.....	62

MODBUS TCP SERVER.....	65
MODBUS TCP CLIENT.....	69
VIRTUINO APP: HOW TO CONFIGURE for SmartPhone and PC.....	70
HOME ASSISTANT	71
INSTALL MOSQUITTO MQTT BROKER.....	72
EDIT YOUR CONFIGURATION.YAML	74
EDIT YOUR CONFIGURATION.YAML	75
CREATE YOUR SMART BMS DASHBOARD	76
TASMOTA COLOR DISPLAY with ScanLabs BMS Data Extractor	80
One BMS – Internet Connection – 1 or More colour Display MQTT	81
MULTIPLE BMS – Internet Connection – 1 or + colour Display MQTT	82
CARAVAN – BOAT – CHALET – WITH INTERNET CONNECTIVITY	83
CARAVAN – BOAT – CHALET – WITHOUT INTERNET CONNECTIVITY.....	84
BUILD IT STEP-BY-STEP GUIDE	85
CONFIGUATION OF THE DISPLAY for MQTT USERS.....	94
CONFIGUATION OF THE DISPLAY for MODBUS USERS.....	96
ANNEX A HOW TO SETUP MULTI-PAGES DISPLAY	99
ANNEX B HW MODIFICATION.....	100
ADDING 4MB PSRAM.....	100
FIXING DISPLAY BRIGHTNES SENSOR	104
ANNEX C.....	105
DISPLAY TROUBLESHOOTING	105
DISPLAY ROTADED or STRANGE COLOR SCHEME.....	105
LARGER DISPLAY 480x320	105
OPENHASP COLOR DISPLAY with ScanLabs Dongle.....	106
STEP-BY-STEP GUIDE.....	107
NOTIFICATION SERVICES TO MOBILE / PC / INSTAGRAM	111
CONFIGURE PUSHSAFER.....	112
CONFIGURE PUSHOVER.....	116

BUILD YOUR BMS DATA EXTRACTOR Wi-Fi

BMS DATA EXTRACTOR JK or DALY / CLONES

FOLLOW the instruction to build a Wi-Fi Data Extractor for
JK-PBx , JK-Bx or DALY (and CLONES – Hi / 100Balance etc.)

Your target on the On the Image!
No Rocket science expertise needed
Bill of Material is about 10\$ - time to build is about 20-30minutes

In the next section I will refer to *the ScanLabs Smart BMS data Extractor* as
SSBdE , the dongle, the accessory etc ..

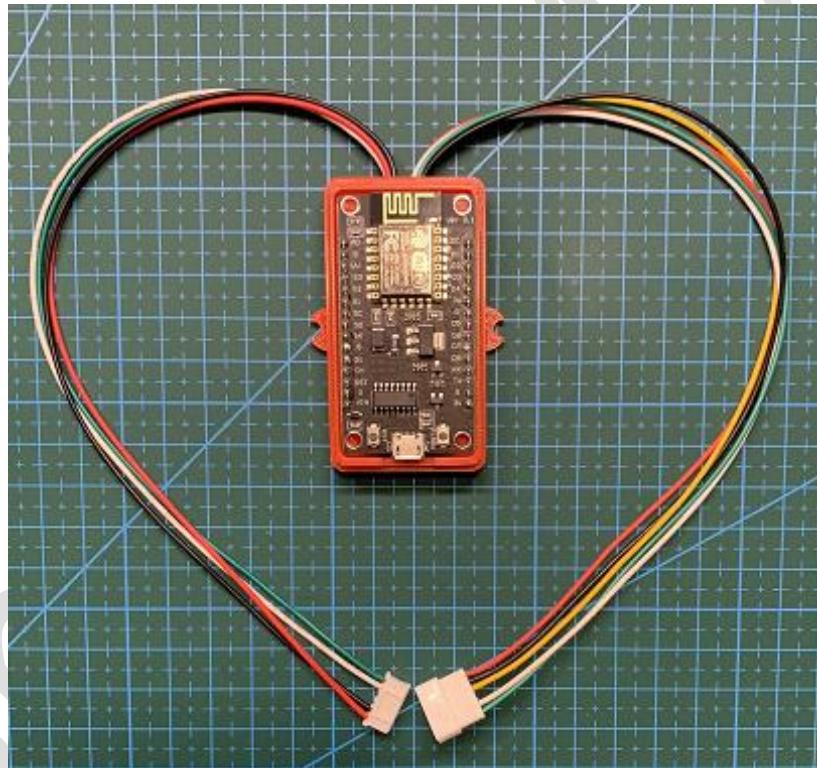


Figura 1 This dongle refers to DALY former connector

FEATURE SET

- Works with **JK-PBx BMS** having RS485A via RJ45(Ethernet) connector ([compatibility list here](#))
- Works with **JK BMS** having UART or GPS interface ([compatibility list here](#))
 - Works with the listed JK having GPS connector Micro JST MX 1.25
- Works with every **DALY** and [Hi](#) / 100Balance BMS (DALY Clone) with UART/RS232 interface
 - NOTE: original DALY Wi-Fi dongle, works ONLY with BMS from July 2023 !
 - Works with **NEW DALY** with smaller connector **JST GH Series 1.25mm**
 - Works with **FORMER DALY** with standard connector **Micro Mini JST 2.0 PH**
- **SETUP** in 2 minutes !
 - Dongle starts as Access Point – you connect via WiFi and configure
 - Optional AT serial command interface for first provisioning available as well
- **MQTT Client (Publish)** (TLS & JSON) to export main battery pack parameters and alarms
 - publish time can be set as little as 5 seconds
 - select which parameters you want to publish
 - Exports auto-generated .json config file for [IoTMqttPanel](#) mobile app
 - export multiple JSON-format or raw-format
 - BROKER tested:
 - <https://www.hivemq.com/> (TLS)
 - Mosquitto on Home Assistant (TLS / unencrypted)
 - [MQTTHQ](#) (unencrypted)
 - [Home Assistant](#) (Mosquitto) compatibility proven
- **MODBUS TCP Server**
 - Perfect for Home Assistant MODBUS Users
 - Perfect for Smartphone APPs like “[Virtuino](#)”
 - Perfect for Point-to-Point remote wifi COLOR display (Tasmota)
- **MODBUS TCP CLIENT**
 - Connect to a MODBUS TCP Server to publish BMS Data
 - Fully configurable via json file
- **PUSHSAFER & PUSHOVER Client**
 - Send push Notifications to your Mobile, PC, Telegram etc !
 - Daily report sent at SunSet / SunRise / SOC 100% / Alarms info
- Works **WITH** or **WITHOUT INTERNET** connection (Access Point or Station)
 - Perfect when you don't have Internet connection – Like on Boat, Cottage ...
 - almost All the features set are available on both AP and STA mode

- **COLOR DISPLAY** Support TASMOTA and OPENHASP projects to build a local / Remote MQTT/MODBUS COLOR DISPLAY
 - Script – instruction etc released to build a WiFi colour Display based on both the platforms.
 - OPENHASP works as MQTT only (no TLS no MODBUS)
 - TASMOTA works as MQTT (TLS supported) or MODBUS or both in parallel
- **6++ months of daily storage** on-board - Monitor your batteries 24/7 with –
 - Auto setup depending on how many batteries are on the pack (up to 16)
 - Each battery is monitored , graph ease the way to detect anything is wrong
 - tired batteries - battery under / overcapacity specs
 - balancer malfunction (MOS broken or bad wiring)
 - Every anomaly on you battery pack you find in a second!
 - SOC is monitored as well and synchronized with battery status
- **WEB PAGES** CHARGE-DISCHARGE current [I] cycles - SOC – and main BMS parameter
- **PASS-THROUGH**
 - DALY Smart Bluetooth WiFi / BLE dongle – original display, can be connected too and works in parallel
 - JK extensions connected to GPS Port can be used as well (work in progress)
- **PACKET SNIFFER** between Bluetooth LE Dongle and DALY Smart BMS
 - Possibility to inject command to DALY/Hi & JK Smart BMS via web page
 - NOTE for memory needs this feature is disabled on the std SW – ask for a special SW release when needed
- **Virtual UART** (over TCP) to use BMS Original PC Software via Internet
 - the dongle allows to use DALY BmsMonitorVx.x.x PC software or JK-BMS-MONITOR to fully manage your BMS parameter even if you are NOT directly connected to the BMS – for security reason this feature must to be enabled under password protected pages , and auto-close for activity.
 - Manage advanced parameters using DALY / JK SW wherever you are !
- **WEATHER FORECAST** and SunRise/SunSet based on your coordinates
 - TimeZone detection based on your coordinates
- **UPGRADABLE** platform for improvement – and I release many

COMPATIBILITY LIST

- DALY – NEWER & FORMER Models with UART(1) Interface are supported
- Hi and 100Balance reported as functional on UART-GPS
- JK-BD6AxxS-10P / JK-BD6AxxS-12P / JK-BD6AxxS-15P/ JK-B1AxxS-15PJK-B2AxxS-15P/ JK-B2AxxS-20P
- **JK-PB1x / JK-PB2x via RS485-A**

SmartBMS.it

CAMPARISON DALY WIFI DONGLE
VS
ScanLabs BMS Smart data Extractor

Feature	DALY Wifi Module NOT AVAILABLE FOR JK	ScanLabs DALY & JK BMS WiFi Module DATA EXTRACTOR
Compatibility	works only with BMS released from July 2023 onward	works with every DALY Smart BMS with UART interface that supports the Bluetooth or WiFi original Dongle WORKs WITH NEWER and FORMER (different connectors)
Power Supply	Self-powered from BMS	Self-Powered (2025 model) or via USB micro-B power source
works without internet	yes – it switches to Bluetooth mode when wifi is not available	yes – configurable to work as Access Point or WiFi Station as AP up to 4 Stations
Log data w/o Internet	NO	yes – data logging is always active
Real Time data	yes – when connected to cloud exports data every 3 minutes. Only current snapshot available – no history except failures-	yes – data refresh down to 5s , real time graph of all the batteries – SOC and Amps
Logging BMS data	partial – it logs only alarms via databms.com	yes – it logs 24/7 with 6 months data storage of each and every battery on the package and SOC
Data Export	NO	yes – it exports daily -all batteries data- as .CSV
HOME ASSISTANT	NO COMPATIBILITY	FULL COMPATIBILITY THANKS To MQTT or MODBUS TCP Bridges
MQTT	NO	yes – MQTT (/s) Json export for iotMqtt Panel app
MODBUS TCP	NO	yes – Server available on port 502 yes- Client fully configurable
REMOTE COLOR DISPLAY	Only LOCAL	yes – via MQTT or MODBUS as many you need EACH Display can monitor MULTIPLE BMS
NOTIFICATIONS	PARTIALLY	yes – SunSet/SunRise reports/Failures/100% SOC etc.
PCMMaster remote connection	NO	yes – connect to BMS through PCMMaster via Internet – UART over TCP Same feature for JK coming soon
Bluetooth Passthrough	NA – Daly wifi dongle switches from WiFi to Bluetooth LE if AP is not available	yes – ScanLabs WiFi dongle support passthrough feature allowing Bluetooth Daly dongle to be used in parallel – or DALY Monitor
Dimensions	37 x 34 x 7	67 x 37 x 1.9 YES Mine is bigger ;-)

BUILD IT FOR for DALY or JK-Bx

BILL OF MATERIAL

Building for JK or DALY (New or Classic connector) the process is almost the same. Of course, you have to purchase different cables as listed below.

There are two main steps – You want to Power the dongle via USB OR you want to power the dongle via the BMS (not valid for JK-PBx where no power PIN is available at the connector)
Dedicated sections are provided to build with or without an integrated DCDC.

MAIN COMPONENTS:

- Dongle's Main core is a [NodeMcu-CH340-V3](#).
- Insulator [ADUM1201](#)
(not strictly needed for JK but I will use on this guide)

CABLE/Connectors:

1x Female + 1xMale (optional - only if [Pass-through](#) functionality is needed)

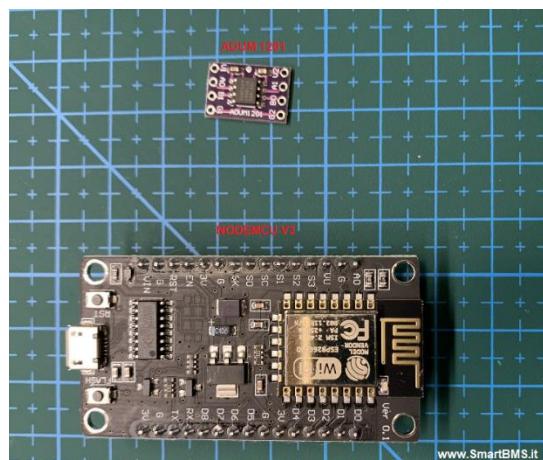
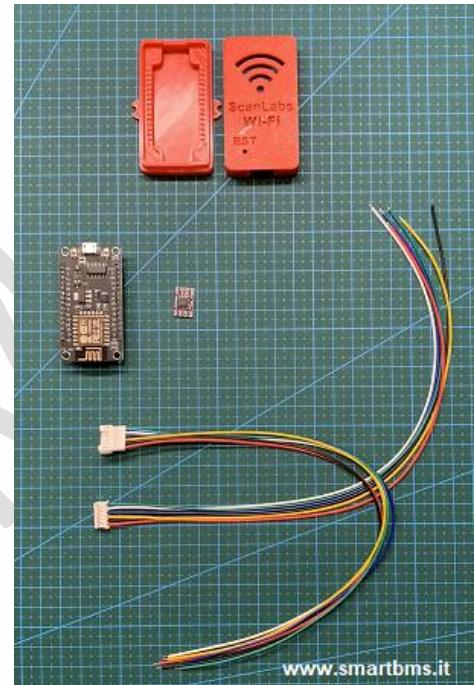
- DALY NEW (little 8mm)
[6pins JST GH Series 1.25](#)
- DALY CLASSIC (larger 13mm)
[6pins Micro Mini JST 2.0 PH](#)
- JK BMS (GPS Port)
[4pin Micro JST MX 1.25](#)

CASE/Enclosure:

- Free .STL are available looking for NodeMCU V3 STL such as [THIS](#)

DETAILED VIEW of NODEMCU V3 and ADUM 1201.

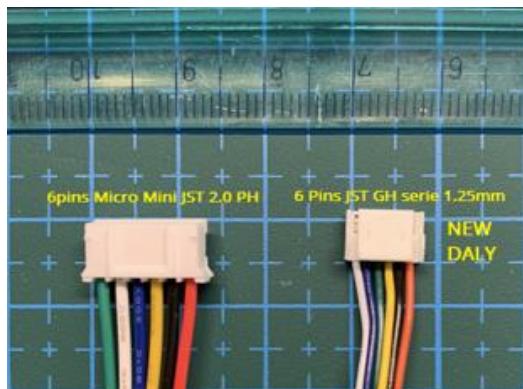
NOTE: NODEMCU comes with different USB-UART chipset. It does not matter which Transceiver you have OR if it is MICRO-USB or USB-Type C as long as you are able to program the binary file provided.



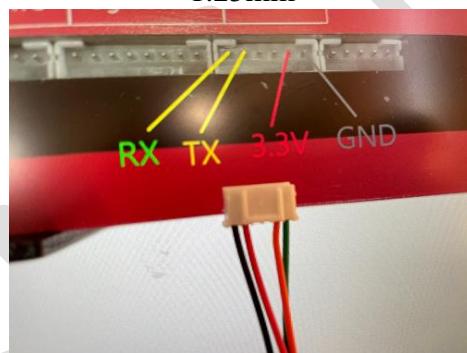
FOR DALY BMS

Daly BMS come with two kind of connectors.

- **DALY NEW** (little 8mm)
[6pins JST GH Series 1.25](#)
- **DALY FORMER** (larger 13mm)
[6pins Micro Mini JST 2.0 PH](#)



NEW DALY 6pins JST GH
1.25mm



CLASSIC DALY 6pins Micro Mini
JST 2.0 PH

FOR JK BMS (NO JK-PBx)

Supported Models works via GPS Interface
[4pin Micro JST MX 1.25](#)
[4pin Micro JST MX 1.25](#)

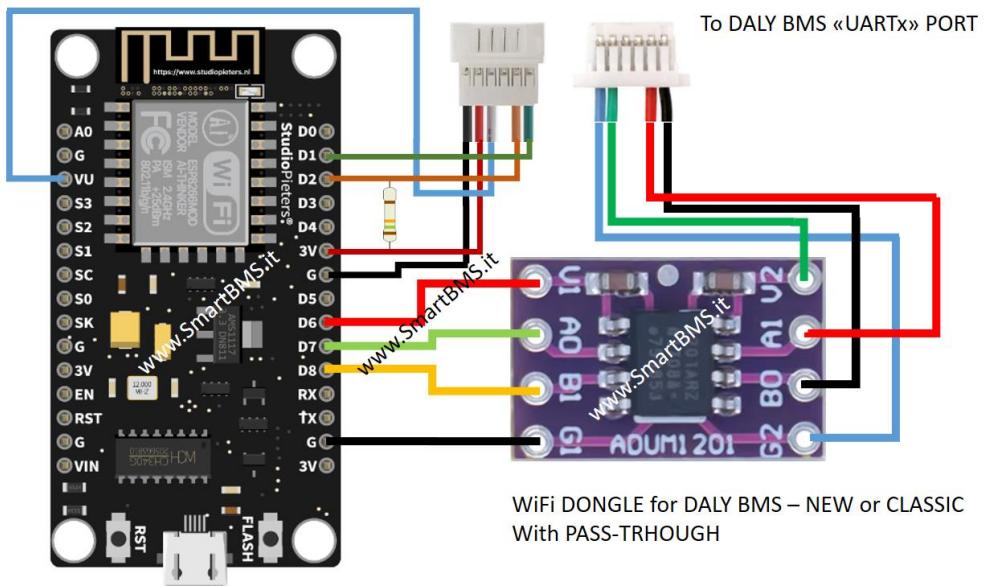


4pin Micro JST MX 1.25mm

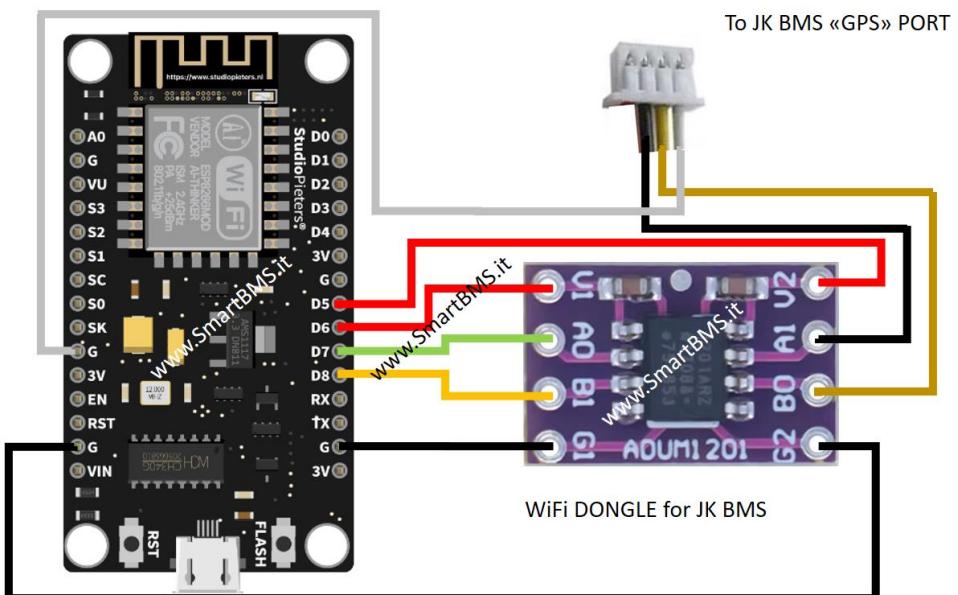


NOTE: It does not exist on the market a Male cable JST MX 1.25 . If you need Pass-through feature, you need to build your own male cable.

REFERENCE DIAGRAM FOR DALY – NEW OR CLASSIC MODEL – WITHOUT DCDC



REFERENCE DIAGRAM FOR JK - w/o PASSTHROUGH Feature and w/o DCDC



BUILD IT STEP BY STEP DALY & JK-Bx

STEP 1: ORIENTATION



STEP 2 for DALY BMS: BEND THE NEEDED PINs

NOTE 1: PINs are bended with an angle of about 45 degrees – Why? See next pictures . This is NOT a must to do, is simply a way to speed up the mounting process

NOTE 2: if Pass-Through feature is not needed - you can SKIP to bend pins 9-10-13-14 (ref. Pin 1 is top right on the image) and pin 13 on the left strip line



STEP 2 JK BMS: BEND THE NEEDED PINs

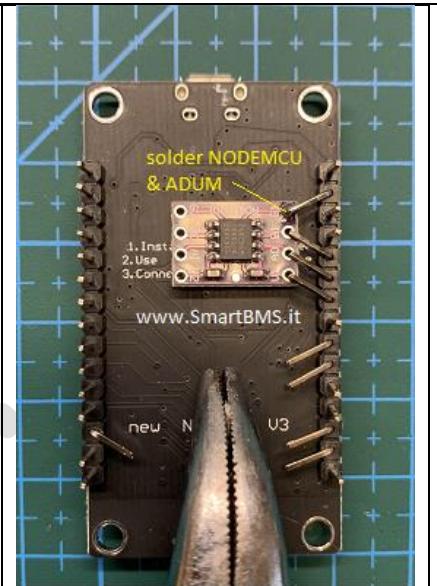
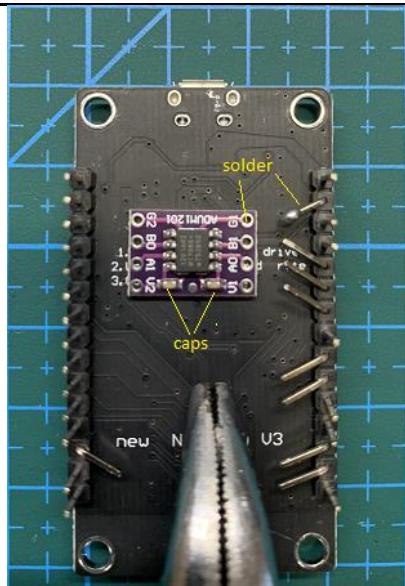
NOTE 1: PINs are Bended with an angle of about 45 degrees – Why? See next pictures . This is NOT a must to do, is simply a way to speed up the mounting process

NOTE 2: if Pass-Through feature NOT supported for JK

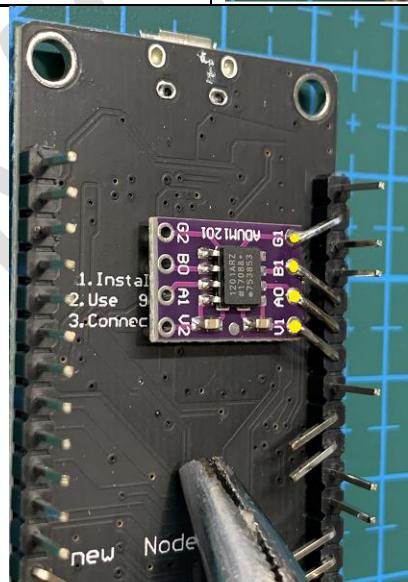


STEP 3: ALIGN ADUM1201 and Solder IT

ADUM1201 – G1 to 2nd PIN of NODEMCU
USE ADUM1201 CAPS to place it



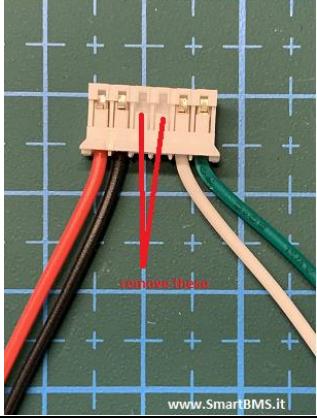
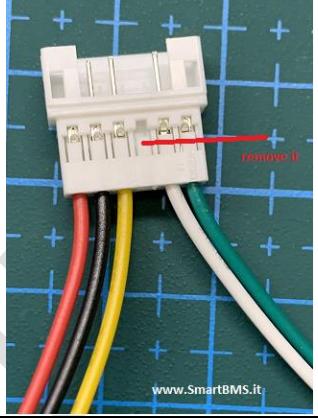
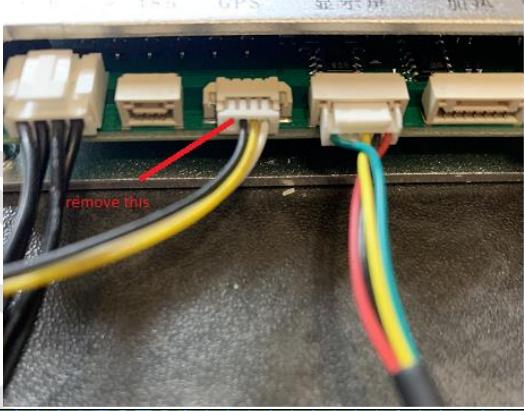
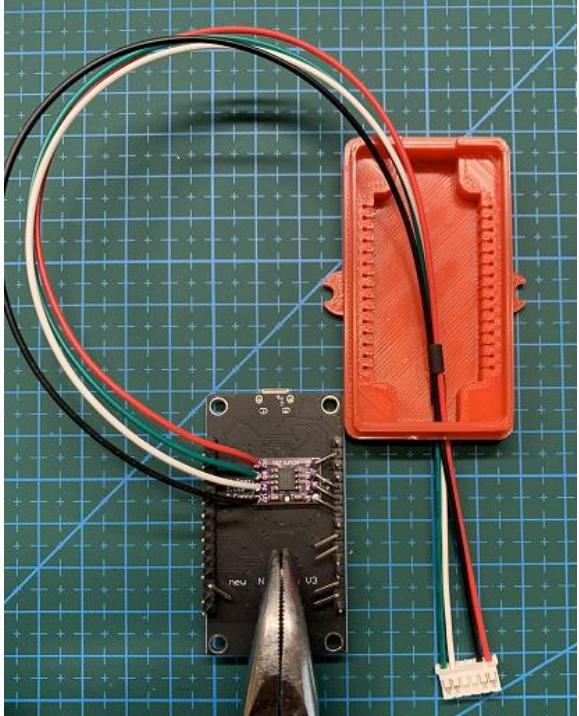
STEP 4: SOLDER ADUM1201 to NODEMCU



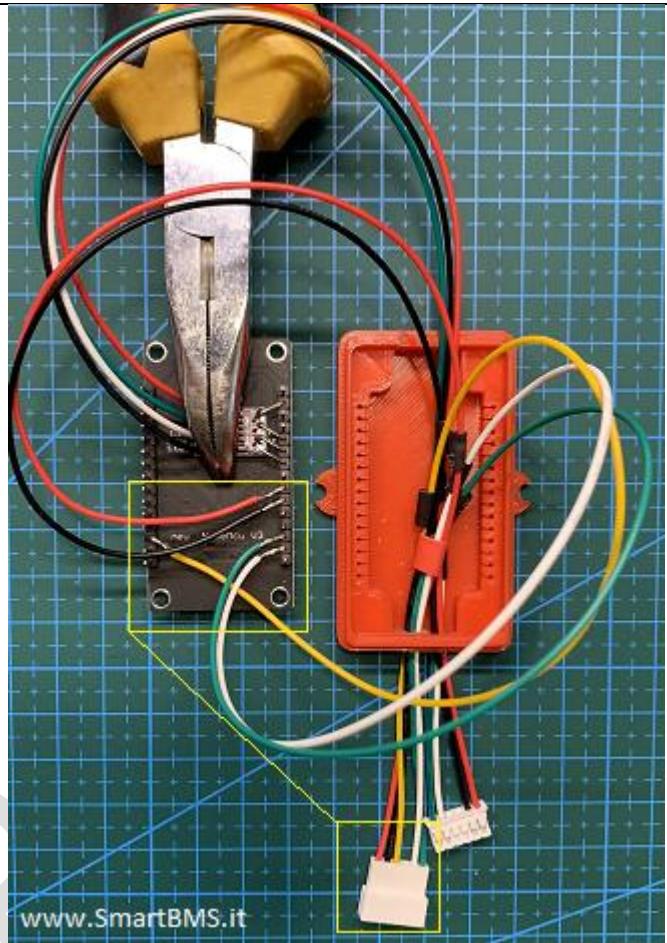
STEP 4A: ONLY FOR JK add Connection to GND and VCC Pin

NOTE : Agree – in this case ADUM is not really Isolating – or – is partially Isolating . This is the quickest way to cabling and let NodeMCU to boot.



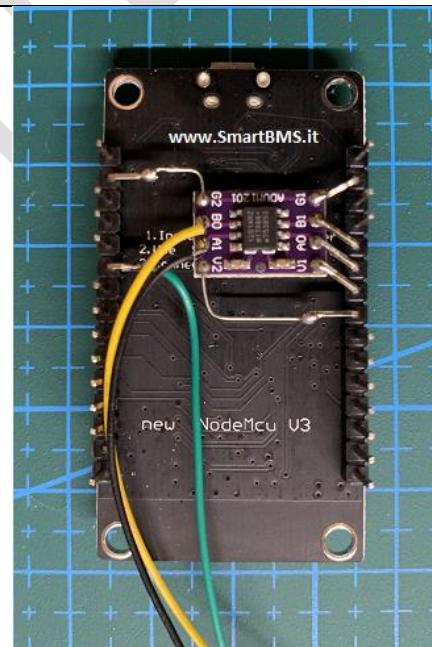
<p>STEP 5 DALY BMS: CONNECTORS</p> <p>FEMALE Connector is a MUST – WiFi Dongle “talk” with DALY BMS through this cable. Central PINs are not Needed – REMOVE THEM</p> <p>MALE Connector is OPTIONAL and Needed ONLY if you want to use the Pass Through feature</p>	<p>Mandatory FEMALE</p> 	<p>Optional MALE – PASS THROUGH-</p> 
<p>STEP 5 JK BMS: CONNECTORS</p> <p>ATTENTION! PIN SHOWN in Figure is a VBAT voltage (on a 16s is around 50v) You cannot use it unless you know what you are doing . Better to remove ;-)</p>		
<p>STEP 6 DALY BMS: CABLING</p> <p>DO NOT MIX CABLES – FOLLOW THE IMAGE</p>		

**STEP 6A DALY BMS: CABLING
OPTIONAL “PASS- THROUG”**



STEP 6 JK BMS: CABLING

DO NOT MIX CABLES – FOLLOW THE IMAGE

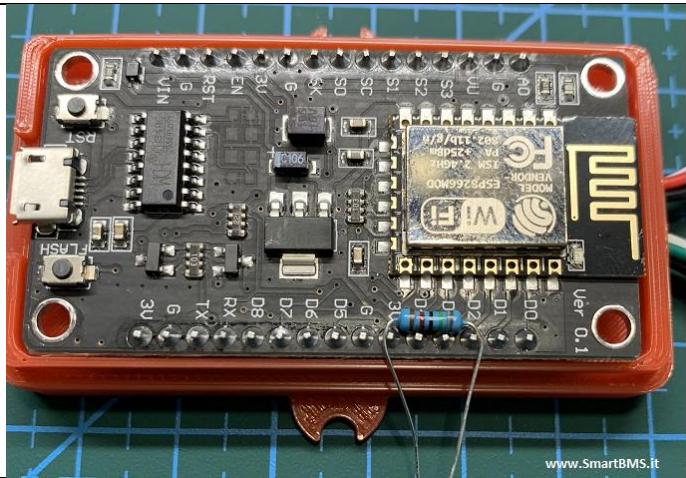


**STEP 6A JK BMS: CABLING OPTIONAL
“PASS- THROUG”**

TBD

STEP 7 DALY & JK : OPTIONAL “PASS-THROUGH”

Add a 10Kohm to 15kohm resistor between 3V and D2 NODEMCU Pin



BUILD IT FOR JK-PB1x & JK-PB2x

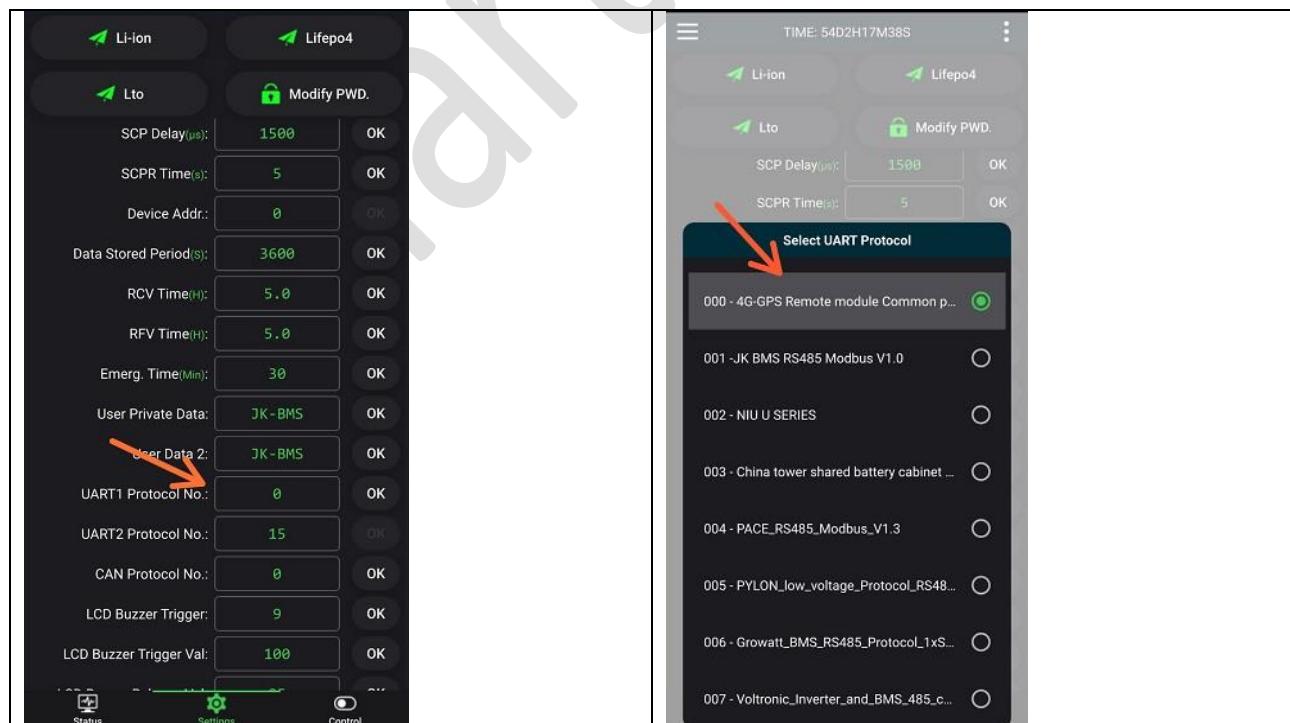
JK-PB1x & JK-PB2x models are supported ONLY via **RS485A** port (the closest to the dipswitches , on the left of the CAN connector – see the image below)

UNFORTUNATELY, it looks that RS485B & RS485C ports cannot be used because those are meant for internal communication between multiple JK BMS, btw ... work in progress



IMPORTANT

You need some JK-PBx BMS settings on UART1 port – apply the following via Bluetooth to be sure to enable the RS485A port to expose the right protocol



BILL OF MATERIAL for JK-PBx

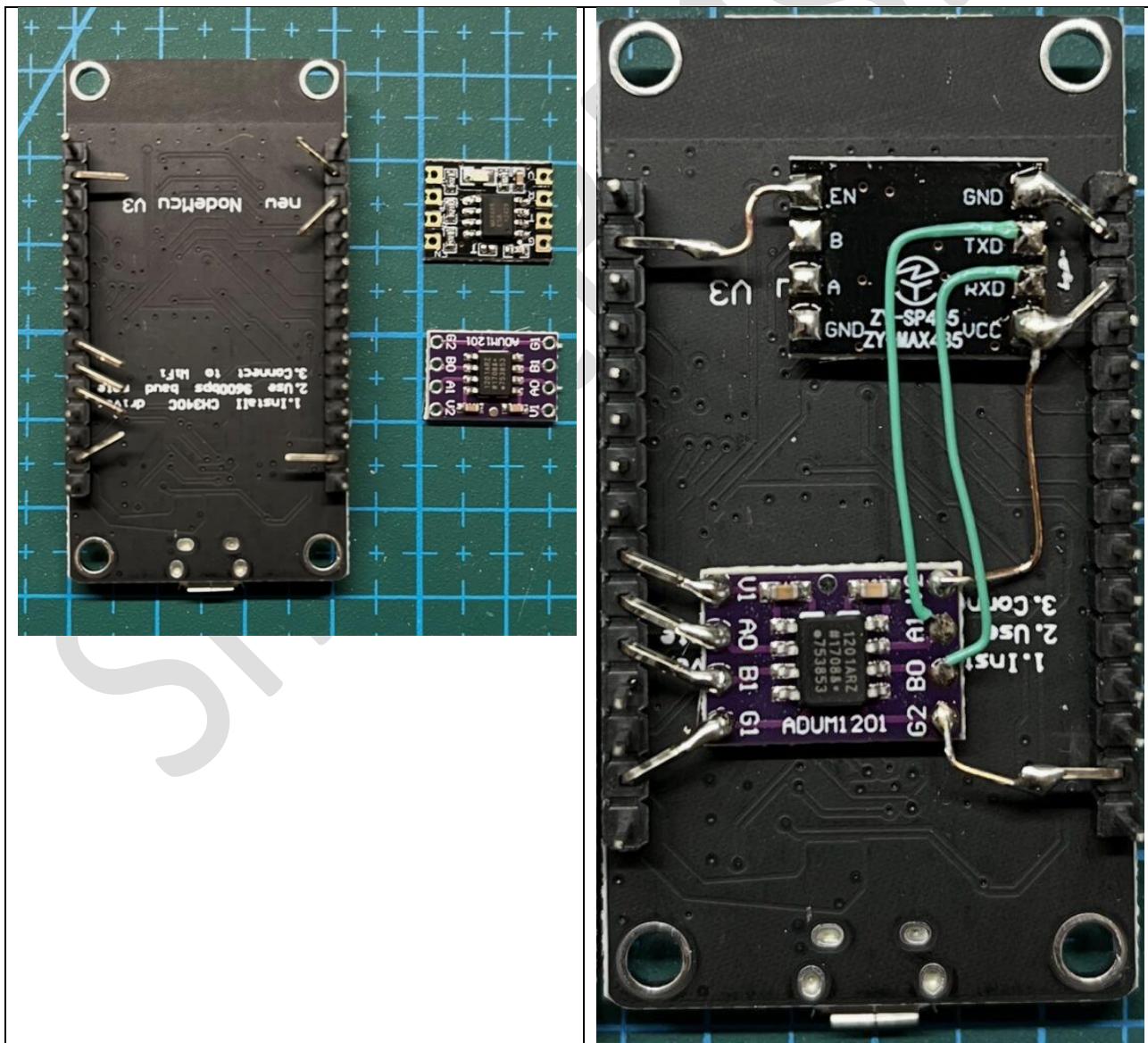
- 1- NODEMCU V3 (ESP8266) – [Aliexpress Link](#) –
- 2- ADUM1201 – [Aliexpress Link](#) – **OPTIONAL**
- 3- RS485 to TLL – [Aliexpress Link](#) –
- 4- An Ethernet Cable to be sacrificed
- 5- [Latest ScanLabs SW release](#)

NOTE: Aliexpress Links are SIMPLY a suggestion; you can buy where you want

NOTE: ADUM1201 is not strictly needed with the suggested RS485 to TTL converter, other RS485<->TLL will instead need it.

NOTE: the Bottom-right PIN on the image below is used as TX-RX switch needed by the selected RS485<->TTL , some converter doesn't need any TX-RX commands – in this case simply do not connect this pin.

PREPARE THE STUFFS

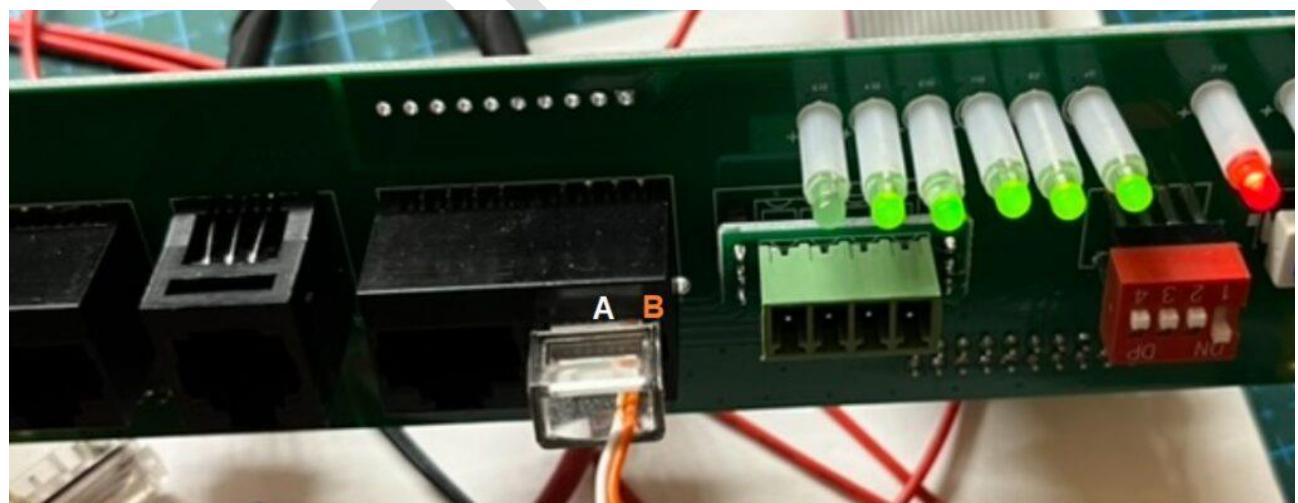
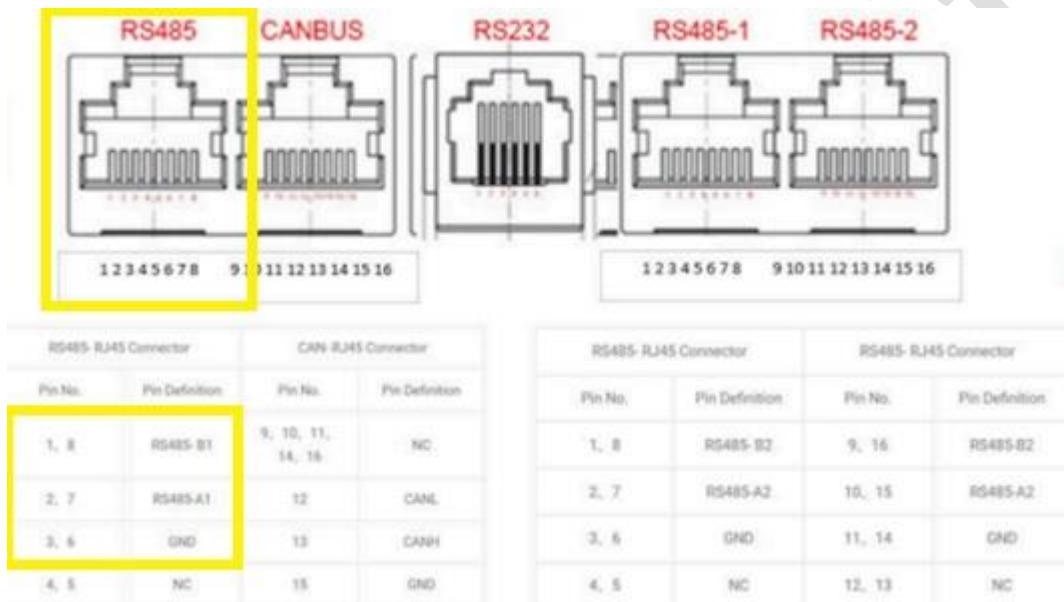


JK-PBx - RJ45 Wiring

We will use ONLY
 1 or 8 -> RS485 B
 2 or 7 -> RS485 A
 3 or 6 -> RS485 GND **

(***optional and **NOT** recommended needed only for long ETH cable or other transceivers)

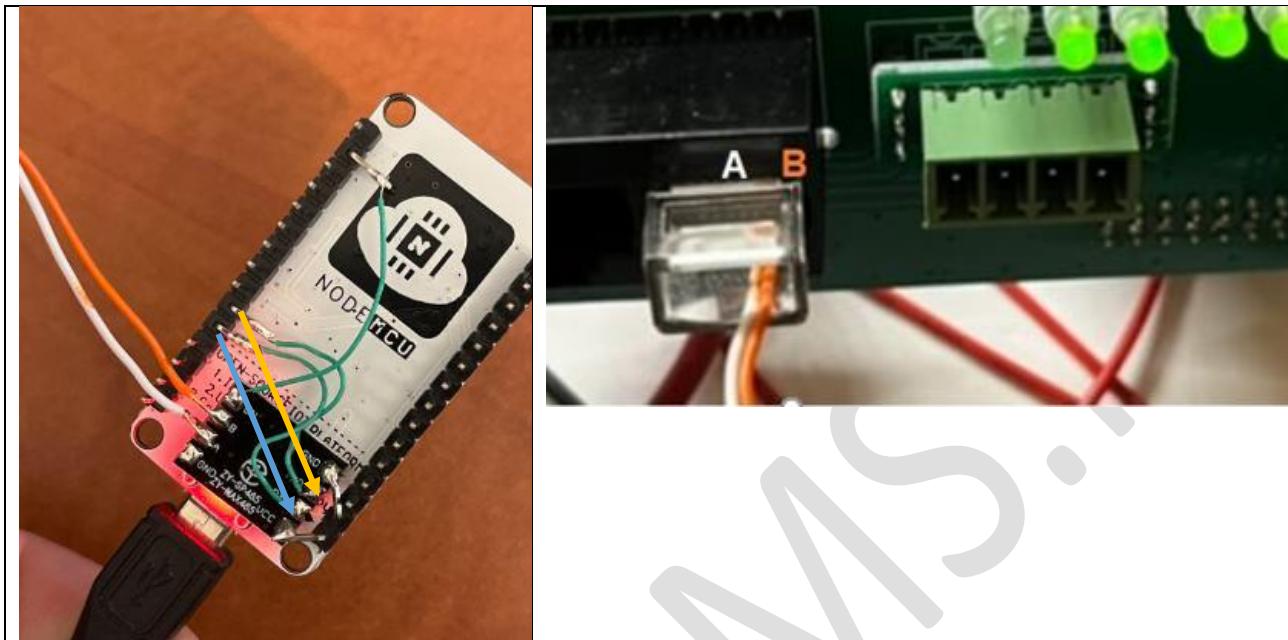
To avoid any trivial question ... YES you understood well , RJ45 1 OR 8 goes to B pad on the RS485 converter, RJ45 2 OR 7 goes to A pad and IF GND is needed , RJ45 3 OR 6 goes to GND Pad



NOTE: Some RS485<->TTL need GROUND as well. If you do not use the suggested converter, you have to perform your tests.

SOLDERING without ISO (not mandatory if RS485<->TTL provide isolation)

EXAMPLE OF MINI NODEMCU WITH RS485 Transceiver ONLY (no ISO)

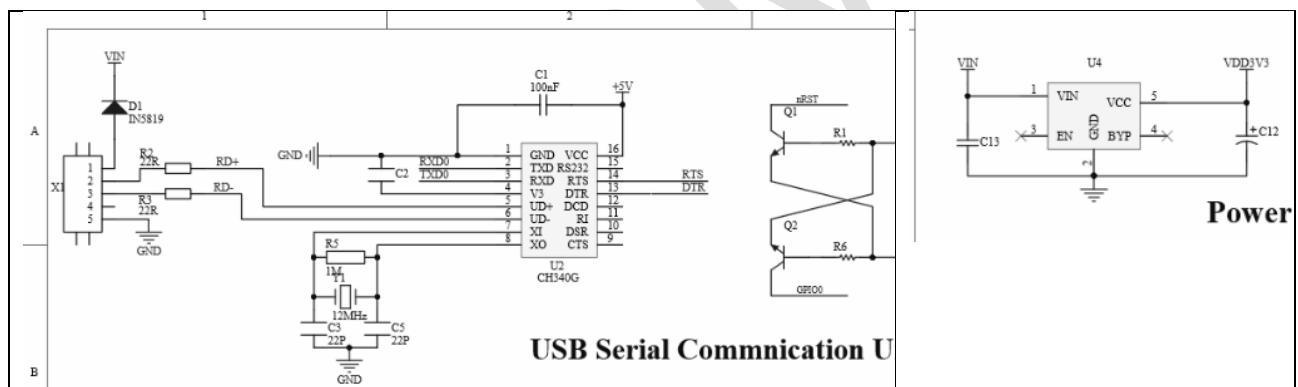
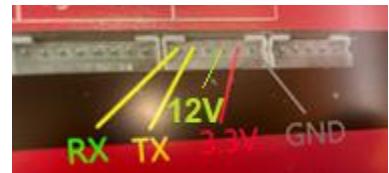


ADDING A DCDC to let the DONGLE be POWERED FROM BMS
- NOT SUITABLE FOR JK-PBx series -

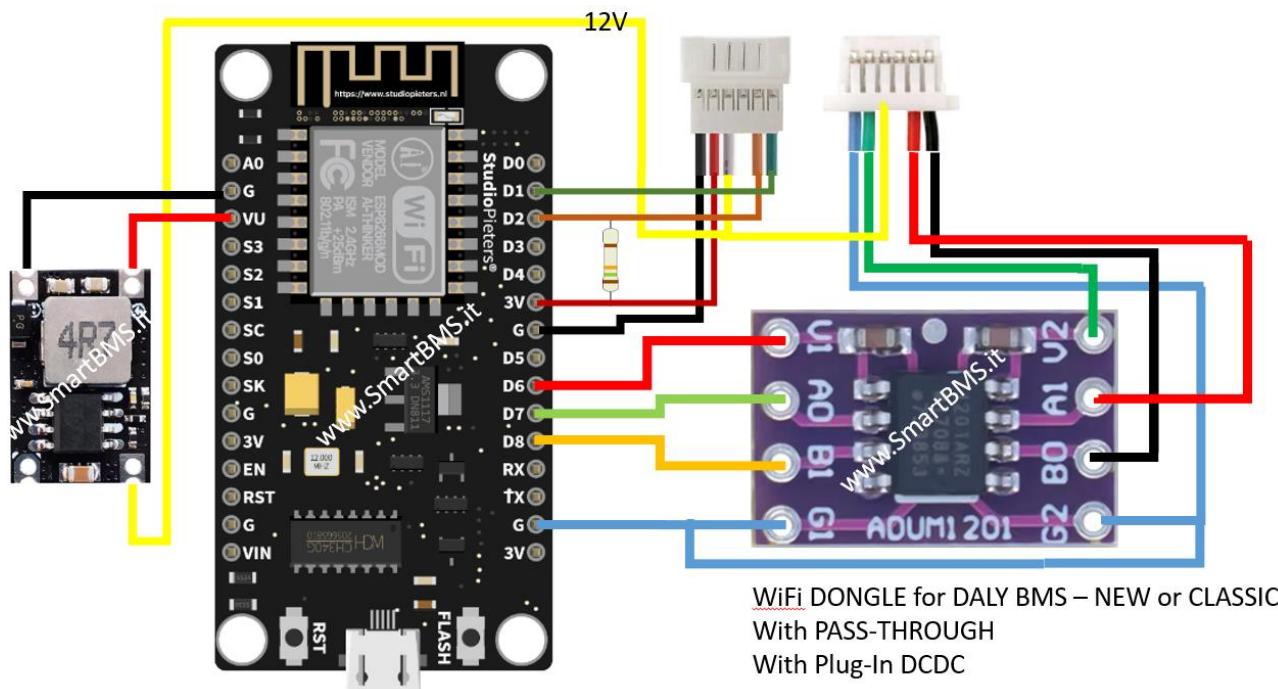
NOTE: LASTEST NODEMCU V3 schematic is reported on the images below.

PIN 1 of X1 (USB connector) is routed to VU pin (13) . This connection could not be available on old NODEMCU model. If connecting the DCDC on VU pins (13) is not powering up the NodeMCU, please use VIN pin (1) instead.

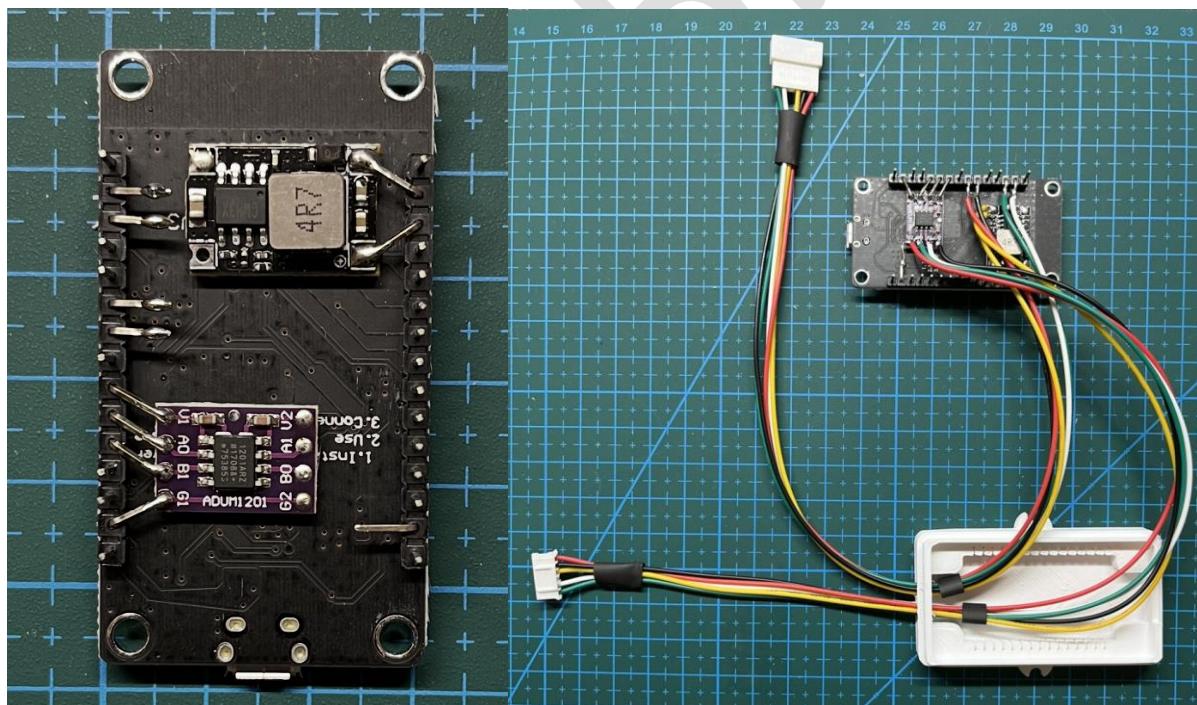
Theoretically U4 (AMS1117 Voltage regulator) can manage as much as 20V – so you could connect it directly to the 12V pin of Daly – I DO NOT Suggest this , I had different NodeMCU burn out because low thermal dissipation of it



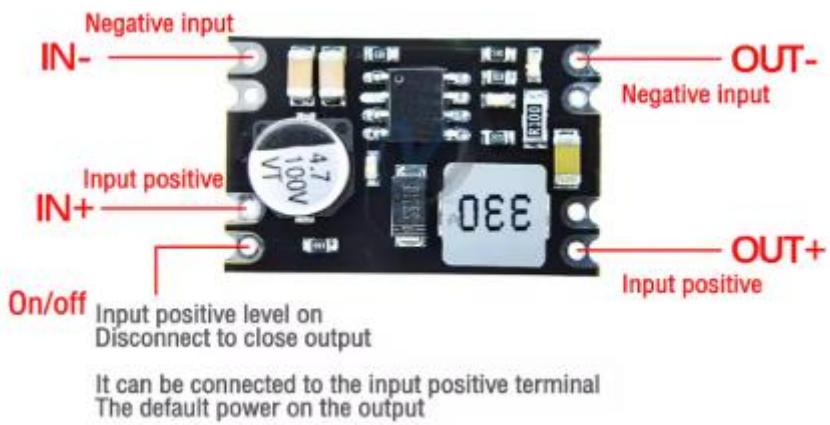
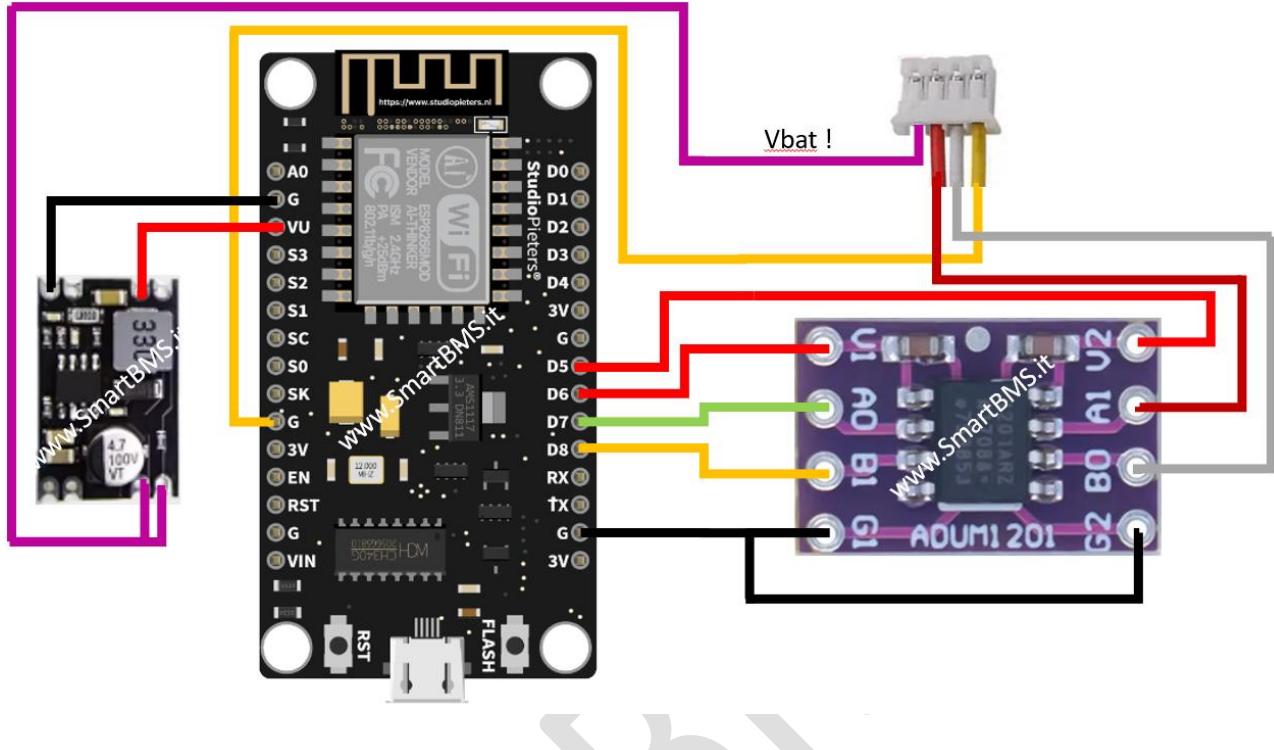
1- DALY / Hi / 100BALANCE need a **20Vin+ DCDC to 5Vout** like this : [Aliexpress Link](https://www.aliexpress.com/item/4000076000000.html)

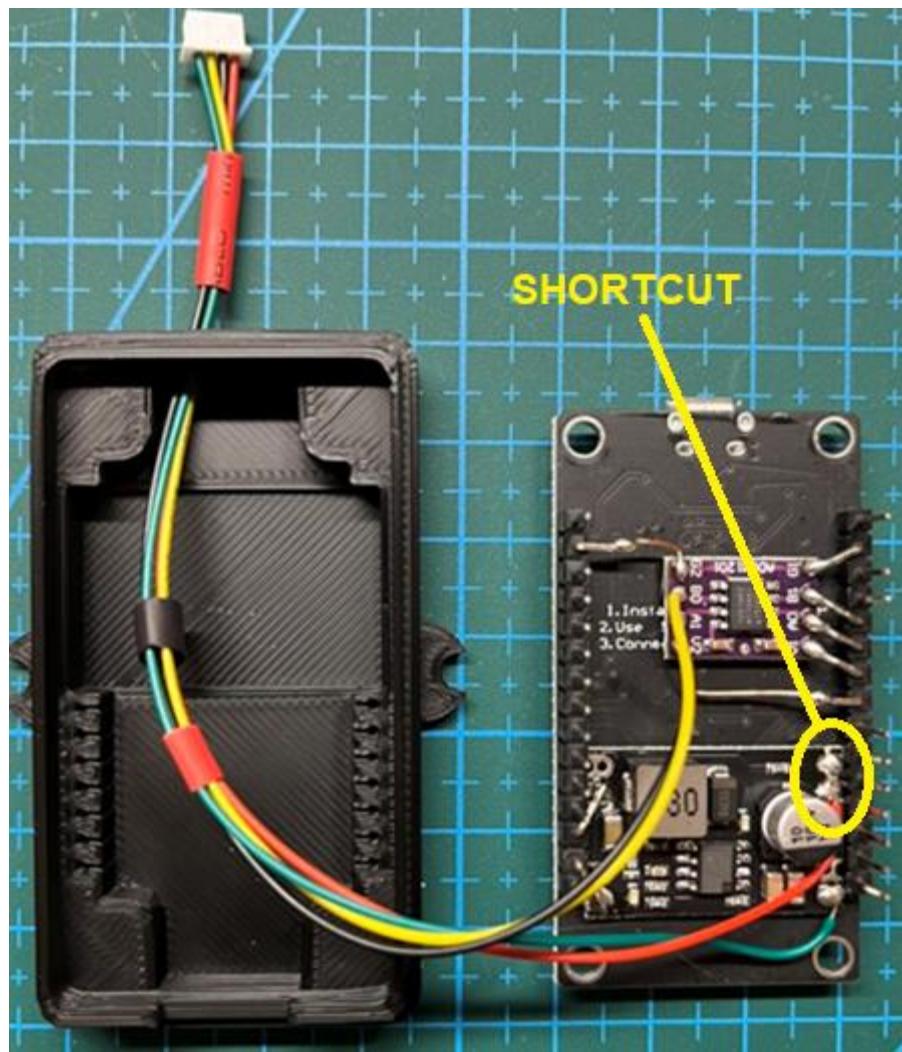


NOTE: ADUM1201 is needed to provide the right signals to let NodeMCU Booting



2- JK BMS with GPS port needs a DCDC up to the Vbat down to 5V – I suggest a **DCDC 100Vin ->5Vout** like this one: *Aliexpress link*





NOTE: DCDC – RED CABLE – SHORTCUT IN+ and ON/OFF PINs



USING NODEMCU WITH I2C OLED DISPLAY

From ScanLabs BMS Smart data Extractor fw 3.3.0 , the support of NODEMCU with OLED display is added.

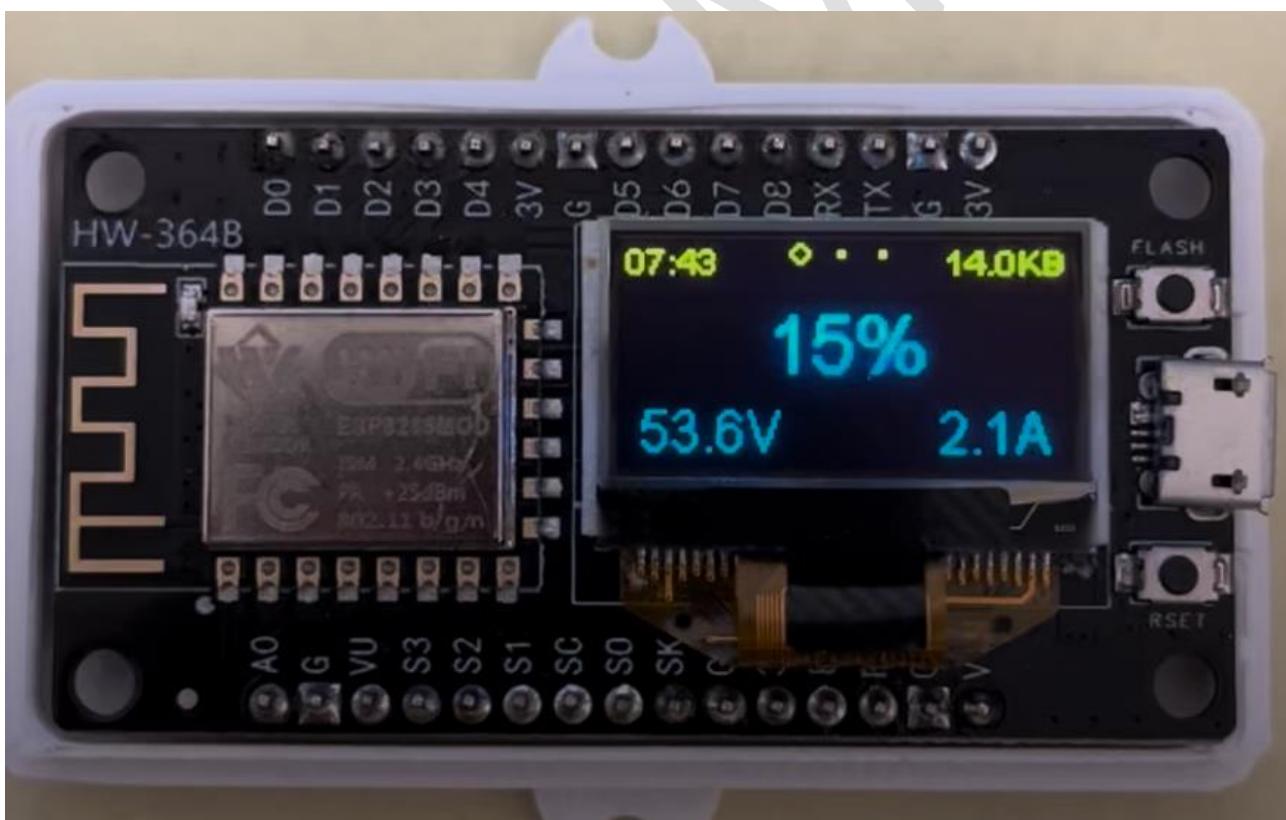
Fortunately, only few Pins used to power the ADUM 1201 Insulator need to be re-routed.

NodeMCU with OLED display can be bought from [Aliexpress](#)

Information shown on rolling screen are :

- SOC
- Battery V & I
- Power
- Each Batteries status / Vdelta
- Clock , free Memory
- Alarms
- Dongle IP and Port assigned
- Work in progress:
- Active Services (Mqtt – ModBus, Notifications, Display)

THIS SECTION is now WORK IN PROGRESS



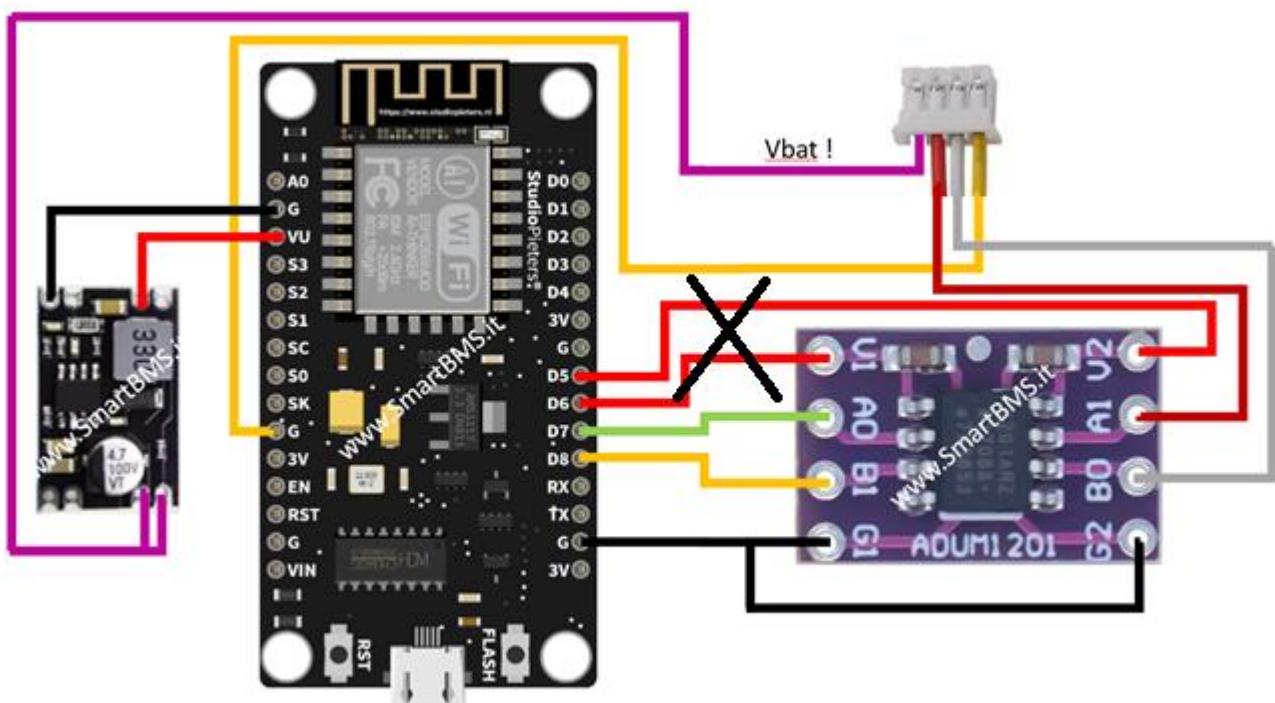
A simple HW modification is needed to support NodeMCU with OLED display.

Signals D5 and D6 must to be kept free for the display.

DO NOT use NodeMCU D5 and D6 pin.

Route ADUM1201 V1 to 3V pin

When NodeMCU D5 pin is used, instead of it – use any 3V Pin



SOME OLED SCREENSHOTS

On this view, all the batteries of the pack are shown. The middle point is the average reported on the top right. Bar down means that battery is below the average, bar up means that battery is above the average.

A sign + close to one battery means that battery has the highest delta mV vs the average

A sign - close to one battery means that battery has the lowest delta mv vs the average.

Batteries al listed starting from Left with Batt #1



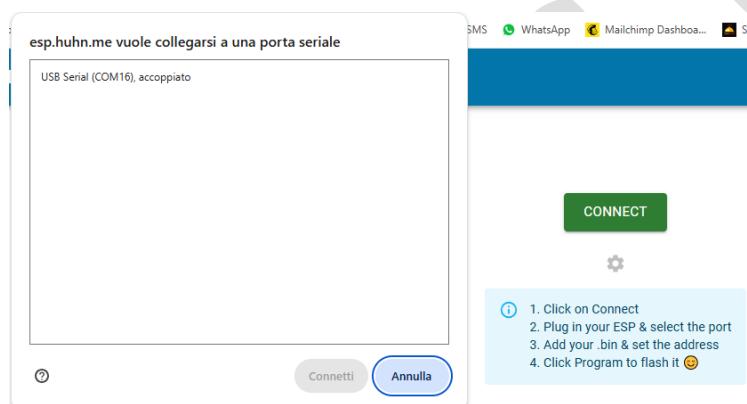
SmartBMS.it

FIRST PROGRAMMING NODEMCU

There are two methods, first is for dummies and second is for dummies++
When the first method does not work use the second.

METHOD 1: PROGRAMMING NODEMCU FOR DUMMIES

- 1- Go to <https://esp.huhn.me/>
- 2- Connect the dongle to PC via USB (Data Cable)
- 3- Click on green box “CONNECT”
- 4- Select the “USB Serial” port the dongle exposes.
 - a. If you don't see any COMxx, it means you are using a NON DATA USB data cable



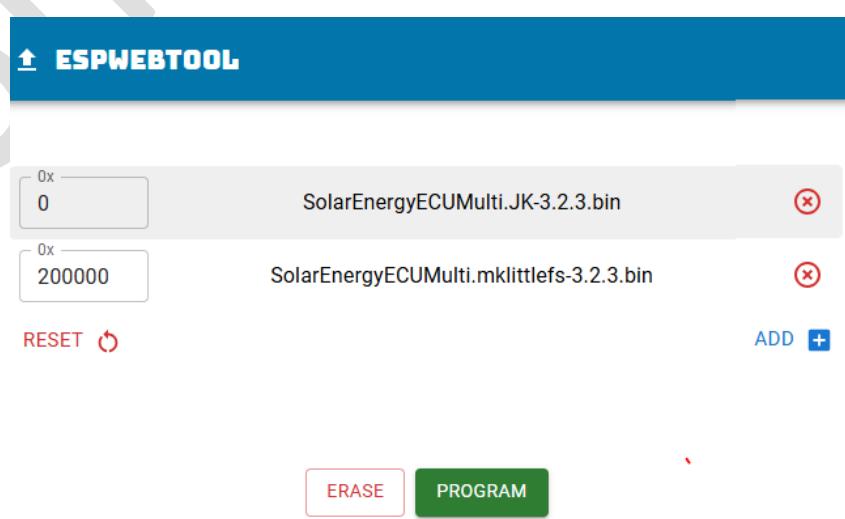
- 5- Select the right FWs to load depending on your BMS

- a. SolarEnergyECUMulti.JK-3.2.3.bin at address **0x0000**
- b. SolarEnergyECUMulti.DALY-3.2.3.bin at address **0x0000**
- c. SolarEnergyECUMulti-3.2.3.mklittlefs at address **0x20000**

NOTE: YES! If you are building a dongle for DALY you use the DALY version , if it is for JK ...

NOTE: You select either for DALY or for JK

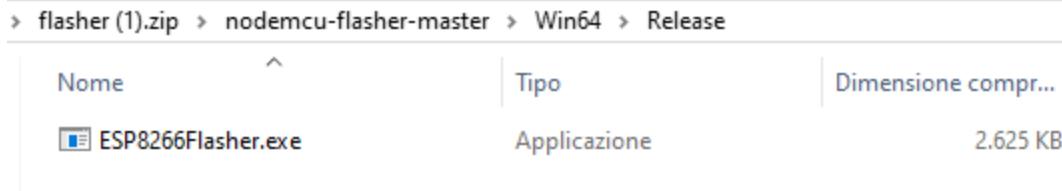
NOTE: 3.2.3 is the FW version; I do suggest using the latest available [HERE](#)



- 6- Check the file Names and the Programming offset (0x0000 and 0x200000)
 - 7- Press on “PROGRAM” -> “CONTINUE”
 - 8- When programming is done, power cycle the dongle
 - 9- Being the first time Dongle breathes, it will start as “Access Point” and in Factory default.
 - 10- First step is to join the WiFi Access Point “SmartBMS.it”.
 - 11- Browse to page <http://192.168.0.1> for configuring it
- Follow the instruction on “smartbms.it” to configure, section “MANUALS”.
- NOTE:** when asked, default webpage username and password are respectively: “admin” and “admin!”

METHOD 2: PROGRAMMING NODEMCU FOR DUMMIES++

- 1- [download NODE-MCU-FLASHER here](#)
- 2- unzip the content where you want
- 3- [find the .exe file ESP8266Flasher.exe](#) it is under “nodemcu-flasher-master” / Win32 or Win64



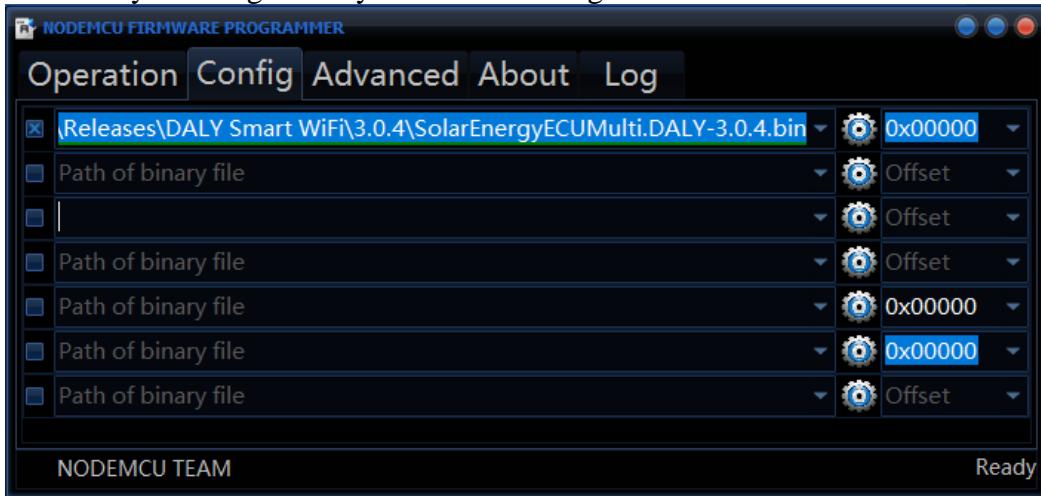
- 4- [download the latest ScanLabs dongle FW from here](#)
- extract the zip – at this point we need only the .bin image
- 5- open ESP8266Flasher.exe -> CONFIG -> Gear Icon



- 6- Select the .bin file for JK or DALY/Hi – do not worry – if you are wrong at this step, you can re-flash using the right binary image.

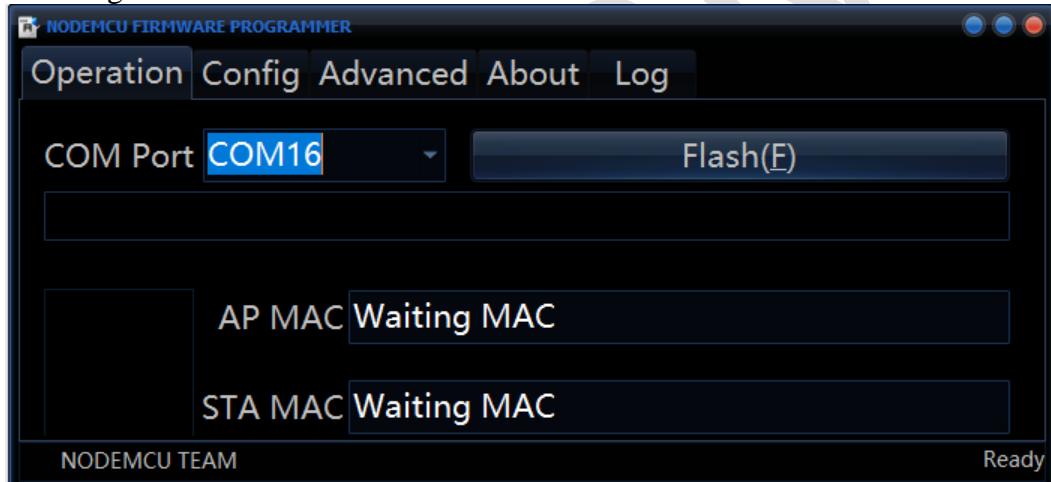
**DON'T use binary images from others – I won't help further then
DON'T – DON'T – DON'T – DON'T – DON'T change **0x00000****

>>>> if you change it -> you waste the dongle <<<<<<

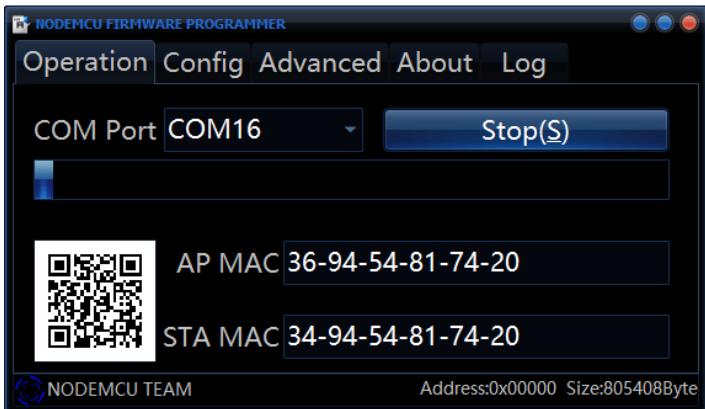


7- Go to “OPERATION”

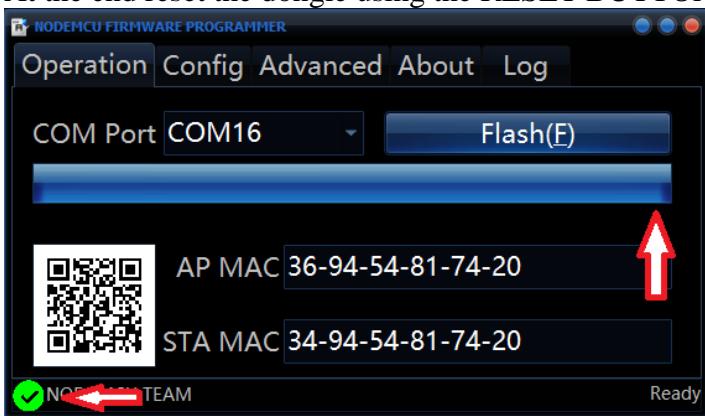
8- Select the COM port to which the dongle is connected to the PC – if NO com is listed, you don’t have the right driver installed – go to [Troubleshooting](#) and install the COM port drivers OR you are not using a USB DATA Cable.



9- This is the moment to pray – Flash procedures starts – if everything is ok you will see AP MAC and STA MAC Populated, a QR CODE and a progressing BAR



9- Dongle takes about 1-2 minutes to complete the process. WAIT until full Bar .
At the end reset the dongle using the RESET BUTTON



10- Being the first time Dongle breathes, it will start as “Access Point” and in Factory default .
First step is to join the WiFi Access Point “SmartBMS.it”.

Browse to page <http://192.168.0.1/upload>

Upload the “web-X.Y.Z.all” set of webpages you find in the zip file downloaded.

11- At this point you downloaded FW and Webpages . Follow the instruction on “[smartbms.it](#)” to configure, section “MANUALS”.

NOTE: when asked, default webpage username and password are respectively: “**admin**” and “**admin!**”

NOTE: un-licensed FW is **fully functional** – BMS / MQTT and MODBUS polling/publishing time have low limits and only current month of data battery logs are available. If you want to purchase a full SW license follow the page and instruction by clicking on the “ACTIVATE” link when it appears.

Details about Licensed vs free software are reported on next page.

LICENSED vs NOT LICENSED

Unlicensed sw is **FULLY-functional** with some little limitations typically NOT needed by the most.

Want a FULL LICENSE for FREE ?

Publish comments/experience/videos and **links** to this project on your social channel(s), send evidences via email to me ;-)

[SHARE AND GET YOUR LIFETIME FREE LICENSE](#)

With licensed SW, you have access to the **full-featured release**

1. **BMS Update** rate down to **1s**
2. **Battery Graphs**, 6 months visibility , CSV download
3. **MQTT Publish** time down to **5s**
4. **MODBUS-TCP SERVER** all registers refresh time is **1s**
5. **MODBUS-TCP CLIENT** all registers refresh time is **configurable**
6. **PUSH SERVICES** full featured ; push services , all Reports, all failures
7. **HOSTNAME** fully customizable
8. **COLOR DISPLAY DASHBOARD ID** free DashBoard ID and Name
9. **UART TUNNEL** Full featured with 90s inactivity timeout window
10. **CHARGING/DISCHARGING MOS** You can decide to manage them via WEB pages or MQTT

Unlicensed sw is FULL-functional with some limitations :

1. **BMS Update** the quickest Polling rate is **60s**
2. **Battery Graphs** are all stored but only the **current month** is visible - **no CSV** download
3. **MQTT** the quickest Publish time is **90s**
4. **MODBUS-TCP SERVER** the quickest full register-set Update time is **90s**
5. **MODBUS-TCP CLIENT** the quickest Update time is **90s**
6. **PUSH SERVICES** sunrise/sunset Report are sent - **no Alarms** sent
7. **HOSTNAME** fixed to "SmatBMS"
8. **COLOR DISPLAY DASHBOARD ID** fixed to DashBoard ID = 1 without DashBoard Name -> ONLY one BMS can be shown on the display
9. **UART TUNNEL** Full featured with 10s inactivity timeout window
10. **CHARGING/DISCHARGING MOS** management Not Supported either via WEB and MQTT

Want to try a FULL LICENSE for FOUR WEEKS for FREE ?

Request your **four weeks free license** for testing the platform from the "ACTIVATE" page on the dongle.

Want to support this giant effort with a donation ?

Full-featured SW at only **9.99eu** forever to support this project

HOW TO CONFIGURE YOUR BMS SMART DATA EXTRACTOR

*ScanLabs BMS Smart Data Extractor (SSBDE)
the following description is focused on fw rel.>= 3.4.1*

It is suggested to configure the dongle WHILE it is NOT connected to the BMS.

Power up the SSBDE via an USB cable.

TWO configuration methods are supported:

Method 1 – SETUP the dongle via WEB PAGES

ScanLabs BMS Smart data Extractor starts as **Access Point** after a Restore to Factory or at the very first boot. In “Factory Access Point” mode the blue LED blinks quickly.

With your PC or Mobile, SCAN for WiFi Access Points and connect to **SSID : “SmartBMS.it”**
Since release 3.4.2 – no password is required.

From rel 3.4.1 a CAPTIVE Portal is added, your Mobile Phone or your PC should be redirect to configuration page. If this will not happen automatically, on web browser type: <http://8.8.8.8/>

A basic configuration page is provided for first/basic config

Dongle FACTORY Config

WiFi Mode: AP (WiFi Access Point "SmartBMS.it")

STATUS: AP

SSID:

PASSPHRASE:



WiFi Power [dBm]: 15

HostName: smartbmsA6

Static IP:

IP Address

Subnet

Default GW

NOTE: if you are asked for webpage username and password use :
username "**admin**" , password "**admin!**" with a final exclamation mark "!"

ADD YOUR HOME ACCESS POINT CREDENTIALS

1. Press the “**SCAN**” button, let the dongle to Search for the Access Points in the range
2. Click on your Home Access Point Name on the list provided
 1. Automatically the SSID Name is populated and the AP flag is removed
3. Add your WiFi PassPhrase if any
 1. Note that there's a check button to hide or unhide your secrets.
4. Take note of your HOSTNAME “**smartbmsXY**” - where **XY** is the most important to take note.
5. Optionally and if you know what you are doing – you can FIX the IP of the dongle depending on your network setup
 1. Be sure you are selecting the right and free IP / Subnet / Gateway, being wrong here will not let the dongle to be connected to your network

-> **SUBMIT & REBOOT** to apply the new changes.

NOTE: when changing from AP (default) to Station mode, you need to verify which IP address is assigned to the dongle by your Home-Router

Follow one or more of the hereunder steps to find which IP your dongle has:

1. depending on your PC operating system / Mobile type and versions ... from your browser try **http://smartbmsXY.local** or **http://smartbmsXY**
2. on Windows/Linux DOC/Shall console type: **ping smartbmsXY** or **ping smartbmsXY.local** (*for windows this works from w11*)
3. from the AT Serial Console you can verify which IP has been assigned , the info are shown at every boot or by typing AT+STAT? (see next session for more details)
4. from your Router webpages you can verify your dongle IP searching for a wireless entity called **smartbmsXY**
5. download any mdns APP for your mobile like “[Fing](#)” , scan the network and look for the IP assigned entity with mdns Name **smartbmsXY**

NOTE: **XY after smartbmsXY** vary from dongle to dongle – you must have taken it from the configuration page or from the AT Console.

NOTE:

-if hostname “**smartbmsXY**” does not work try with “**smartbmsXY.local**”

-**Windows** support also <http://smartbmsXY> but only from W11++

-**iOS** supports ONLY <http://smartbmsXY.local>

-**Android** , only latest versions supports mDNS to resolve “smartbmsXY.local” , if you have an old version the quicker way to check the dongle IP is to open the “AT USB command”

NOTE!!! if you were wrong entering the WiFi AP Credentials you MUST switch back the dongle to **Factory mode** OR use the AT Command Mode to set the right credentials.

RESTORE TO ACCESS POINT MODE

You can switch always back to Access Point mode to reconnect to the dongle and reconfigure.

This Method is NOT going to cancel your configuration, it will simply switch from STATION Mode to AP Mode. Is highly recommended to use the AT Serial Command method to watch for what is happening.

Two methods: 1- Hardware Method, 2- Via AT Serial Commands

Hardware Method:

Push the Reset button 3 times following EXACTLY the hereunder instructions:

– After each press – YOU MUST WAIT – till the BLUE LED stops blinking very quickly.

This is the moment to Press AGAIN the RESET BUTTON.

Repeat this process 3 Times – the dongle will switch to Access point Mode.

AT Command console Method:

follow the instructions on “Method 2- SETUP Via AT Commands”

In Short, typing AT+WMODE=AP , the dongle will switch to AP mode.

Access Point Name , password, IP etc are shown on the console.

Using one of the two methods the dongle is now in AP mode:

Scanning for WiFi , you will find the AP “**SmartBMS.it**” , the password is kept the same as the one used before if any.

Connect via WiFi and on the web browser go to page <http://192.168.1.2> -> move to Settings web page and apply again your settings settings.

RESTORE TO FACTORY ACCESS POINT MODE

Restore to factory will CANCEL all your configurations and set the dongle in Virgin Factory Mode

Two methods: 1- Hardware Method, 2- Via AT Serial Commands

Hardware Method:

Push the Reset button 6 times following EXACTLY the hereunder instructions:

– After each press – YOU MUST WAIT – till the BLUE LED stops blinking very quickly.

This is the moment to Press AGAIN the RESET BUTTON.

Repeat this process 6 Times – the dongle will switch to Access point Mode Factory mode.

NOTE: Last less than 1 minute between pressing RESET button, otherwise the reset counter is reset and the restore to AP or restore to factory default procedure is stop.

AT Command console Method:

follow the instructions on “Method 2- SETUP Via AT Commands”

In Short, typing AT+WMODE=FACTORY , the dongle will be restored in factory mode.

Access Point Name , password, IP etc are shown on the console.

Method 2- SETUP Via AT Commands

Any HyperTerminal works – I prefer to use “Tera Term”, if you have Arduino terminal this is good as well

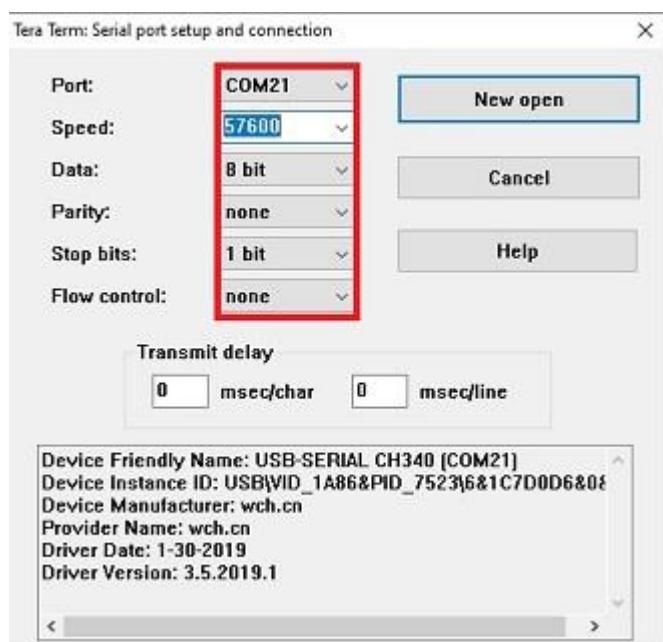
(Tera Term ZIP rel 4.106 download from here)

- connect the Smart BMS Wi-Fi dongle via a USB **data**-cable to your PC
- discover which COM/TTY port is has been assigned

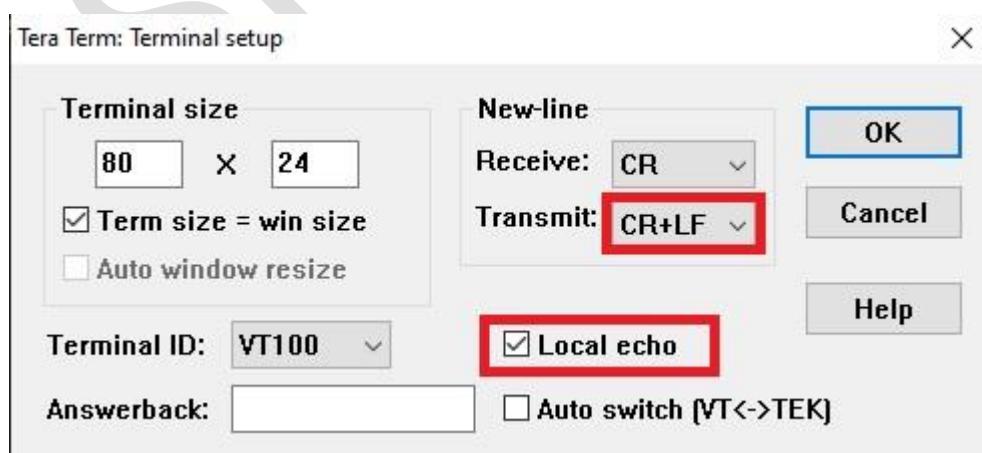
NOTE: If your operating system does not assign any COM/TTY port, maybe sw drivers are not installed properly OR you are using a NON USB **DATA** cable.

GO to troubleshooting page to find drivers and instructions how to install them

- Setup the Serial port: **57600,8,N,1**



- Select **Local echo** and set New-line->Transmit as **CR+LF**



- RESET Smart BMS WI-FI accessory by pressing the button on the left as shown on the following image

- RESET Smart BMS WI-FI accessory by pressing the button on the left as shown on the image



- After few seconds, on the HyperTerminal console you will see the message:
“Init completed!”

- type **AT+CMD** + ENTER to access to the list of all AT available commands

COM16 - Tera Term VT

File Edit Setup Control Window Help

a„,0%ééKÁÜé...^TYÖöß...HÝTP è!øKä«aPYH¥íiH,,Üö
aqATså...ÈTQÖ||...HµiÂfúa\KŞ@...aÑñaFÀ''SAY
L..Ü;ù•%d
E«ëiÜæMßä- DOPVi^qHjá

[AT Console] Init completed ! fw: 3.2.3_REPC for JK BMS [RST 1]

***** Wifi ACCESS POINT mode *****

Soft-AP SSID: SmartBMS_it
Soft-AP Passphrase: 123456789
Soft-AP IP address: 192.168.0.1
Soft-AP MAC addr: A6:CF:12:F0:B0:69

Ready for AT command : type AT+CMD for complete list (remember! terminator NL&CR)

AT+CMD

***** SUPPORTED_AT_COMMANDS *****
3.2.3_REPC *****

AT+WMODE="AP", "STA" :Set the dongle as Access Point or Station
AT+WMODE? :Current Wifi mode
AT+SCAN? :Scan AP in the range
AT+SSID? :GET AP SSID
AT+SSID=APSSID :SET AP SSID
AT+PWD? :GET AP's passphrase
AT+PWD=APPwd :SET AP passphrase
AT+STAT? :GET WiFi Connection Status + IP and MAC
AT+WPORT=port :SET WebServer HTTP Port default port 6789
AT+WPORT? :GET WebServer HTTP Port
AT+WPWR :SET WiFi power in dbm 0-20
AT+WPWR? :GET WiFi power in dbm
AT+SYSUSR=httpUser :SET Protected Pages username default="admin"
AT+SYSPWD=httpPwd :SET Protected Pages password default="admin!"
AT+SYSMNR=0/1 :Enable or disable Platform midnight Reboot
AT+SYSMNR? :GET Platform midnight Reboot setting
AT+SAR :COMMAND : Save and Reboot
AT+FACTORY :COMMAND : Restore to factory defaults
AT+CMD :COMMAND : List all the available commands

LIST END

- ## • SUGGESTED PROCEDURE

- o AT+SCAN? -> to scan all the Access Points in the range . If you don't see your AP may be it has a weak signal or it is set on 5Ghz .

Smart BMS Wi-Fi accessory supports 2.4Ghz AP only

The screenshot shows a terminal window titled "COM16 - Tera Term VT". The menu bar includes File, Edit, Setup, Control, Window, and Help. The command history and output area show the following:

```

File Edit Setup Control Window Help
AT+SYSPWD=httpPwd      :SET Protected Pages password default="admin!"
AT+SAR                 :COMMAND : Save and Reboot
AT+FACTORY              :COMMAND : Restore to factory defaults
AT+CMD                  :COMMAND : List all the available commands
LIST END
OK
AT+SCAN?

Scanning WiFi AP ----

11 network(s) found
1: ACCORHOTELS-GUESTS, Ch:1 (-75dBm) 50% open
2: ACCORHOTELS-GUESTS, Ch:1 (-65dBm) 70% open
3: WOJO, Ch:1 (-65dBm) 70% pwd
4: ACCORHOTELS-SERVICES, ch:1 (-65dBm) 70% pwd
5: WOJO, Ch:1 (-76dBm) 48% pwd
6: ACCORHOTELS-SERVICES, ch:1 (-75dBm) 50% pwd
7: ScanLabsWiFiHotSpot, Ch:6 (-35dBm) 100% pwd
8: ACCORHOTELS-GUESTS, Ch:11 (-50dBm) 100% open
9: WOJO, Ch:11 (-50dBm) 100% pwd
10: ACCORHOTELS-SERVICES, ch:11 (-43dBm) 100% pwd
11: ACCORHOTELS-SERVICES, ch:11 {-80dBm} 40% pwd
OK

```

- AT+SSID=myAccessPointPreferredNetwork
- AT+SSID? -> check you entered the right AP name
- AT+PWD=myAccessPointPassphrase
- AT+PWD? -> check you entered the right Passphrase
- AT+WMODE=STA -> to set dongle as Client wifi and save and reboot

OPTIONAL :

It is recommended to adjust the output power of the dongle depending on the strengthens of the Accedes Point Signal, use the following table as an indication:

AT+WPWR :SET WiFi power in dbm 0-20
 AT+WPWR? :GET WiFi power in dbm

Access Point Signal strength [%]	AT command power set
< 25	15-20
25<50	10-15
50<75	5-10
75<100	0-5 note: 0 is a suitable set

These settings can be applied before the AT+WMODE=STA command or after.
 The command has an immediate effect, check if connection is stable after each setting.

NOTE: NODEMCU use an old WiFi chipset, there are some Interoperability Issues already found on the market and some limitations too

- 1- NODEMCU does not work well with some AP – id you experience that the only way to work around is to set the Wireless AP in B/G ONLY mode - no N mode.
- 2- NODEMCE works only with AP set as 2.4Ghz – NO 5Ghz.



```

COM16 - Tera Term VT
File Edit Setup Control Window Help
AT+PWD=myAPPwd :SET AP passphrase
AT+STAT? :GET WiFi Connection Status + IP and MAC
AT+SYSUSR=httpUser :SET Protected Pages username default="admin"
AT+SYSPWD=httpPwd :SET Protected Pages password default="admin!"
AT+SAR :COMMAND : Save and Reboot
AT+FACTORY :COMMAND : Restore to factory defaults
AT+CMD :COMMAND : List all the available commands
LIST END
OK
AT+SSID?
Tenda_Extender
OK
AT+PWD?
OK
AT+SSID=ScanLabsWiFiHotSpot
OK
AT+PWD=[REDACTED]
OK
AT+SAR
[CONSOLE] Save & Reboot ...
OK
X
Ã...DF-dx@` []

```

- WHEN the dongle is ready for commands check the connection status
 - AT+STAT? -> if Smart BMS Wi-Fi accessory reports is connected, take note of the IP address assigned



```

COM16 - Tera Term VT
File Edit Setup Control Window Help
AT+STAT?
Connected to SSID: ScanLabsWiFiHotSpot
IP Address: 172.20.10.2 [REDACTED]
MAC Addr : 34:94:54:81:73:57
OK

```

OPTIONAL 1:

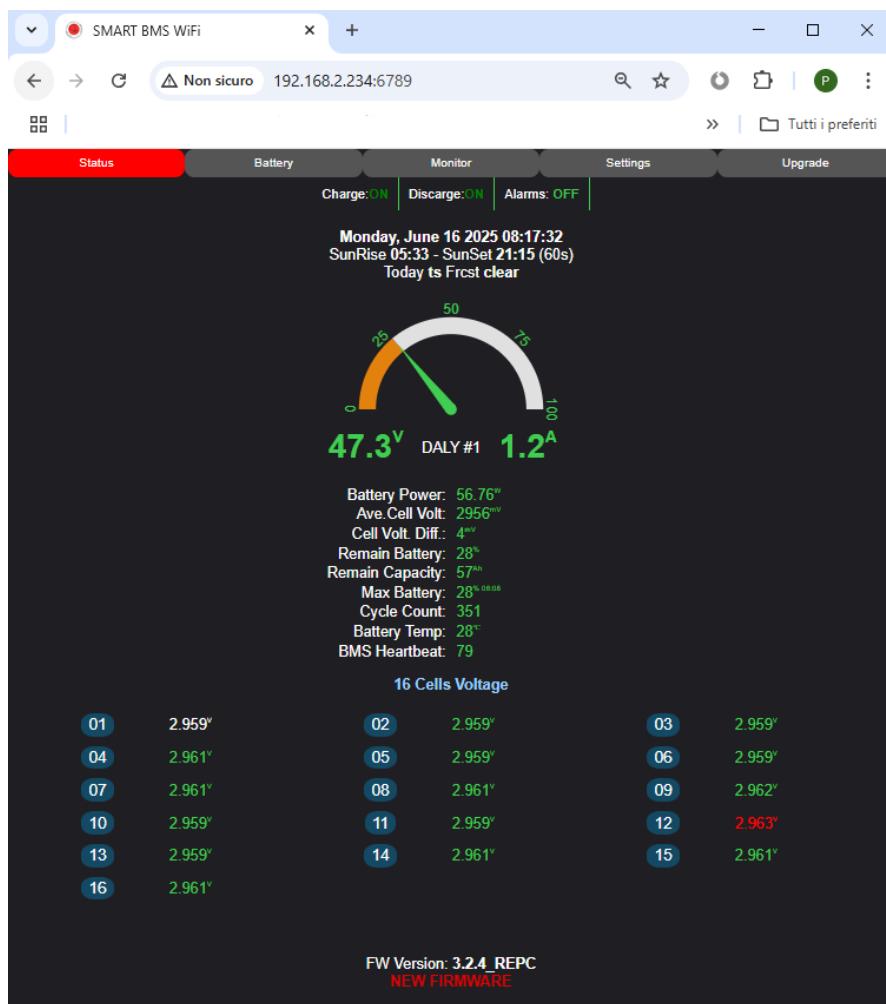
It is recommended to adjust the output power of the dongle depending on the strengthens of the Accedes Point Signal.

The Dongle start opening a Web Page at the port 6789, you can change the port via AT command as

AT+WPORT=port :SET WebServer HTTP Port default port 6789
 AT+WPORT? :GET WebServer HTTP Port

If you set port = 80 you won't need to add any additional port on the URL of the dongle

- Open your preferred browser, type the IP you have just got assigned.
- ADD the needed PORT to Smart BMS Wi-Fi accessory: **6789*****
NOTE: If you changed the Port with the procedure before, you have to set the port accordingly.
If you have set port 80, you DON'T need to add any “:xxx” info after the IP
*****NOTE: Since rel. 3.4.0 DEFAULT PORT is 80**



- Now the Smart BMS Wi-Fi accessory is connected to your AP and you have the IP assigned, it's time to unplug from USB and wiring to BMS

NOTE 1: Smart BMS Wi-Fi accessory is still not connected to BMS -> you will get the message “*bms data error*”

NOTE 2: If you want to access to the Smart BMS Wi-Fi accessory from outside your home network you need to create a PORT forwarding rule on your router for ports 6789 and 6790** (**optional – only if you use PCMaster passthrough feature)

Tipical port forwarding setting :

External IP	External Port	Internal IP	Internal Port
ANY	6789 (or any other > 1024)	YOUR dongle IP (in my case 192.168.2.234)	80 (or the port you have assigned)

CONNECTING CABLES

ScanLabs BMS Smart Data Extractor (SSBDE)

- Smart BMS Wi-Fi accessory exposes 1 or 2 connectors on the TOP + USB micro or Type C at the Bottom



1- WIRING FOR DALY NEW & FORMER

- TOP of the Dongle
 - to “**BLE**” : OPTIONAL
this is a female 6 pin connector which you can connect your DALY^{*} Smart BMS Bluetooth LE accessory or to JK accessory like display (not available for JK-PBx via RS485 or CAN)
 - to “**BMS**”: MANDATORY
this is a male connector that goes to the BMS :
 - DALY^{*} / Hi Smart BMS Serial Port (UART / RS232) , the same where today you connect your DALY^{*} Smart Bluetooth LE accessory
- BOTTOM of the dongle
 - “**USB**”: MANDATORY / OPTIONAL
If you have built the dongle with internal DCDC – use USB only for configuration while it is NOT connected to the BMS
 - If you have built the dongle without internal DCDC, this is a mandatory connection to power up the dongle

NOTE: You can use a standard smartphone micro USB 5V power supply

NOTE: unplug the USB power while wiring the DALY^{*} Smart BMS Wi-Fi accessory – when all connections are made, power the accessory via USB



2- Hi BMS / 100Balance and DALY clones in general

Hi BMS or 100Balance are the entry level version of DALY! follow the same instructions provided for Daly Depending on the version – you can find NEW or FORMER connector, be sure to have selected the right connector first



3- Wiring for JK-Bx & JK-PBx (RS485)

List of supported JK is [HERE](#)

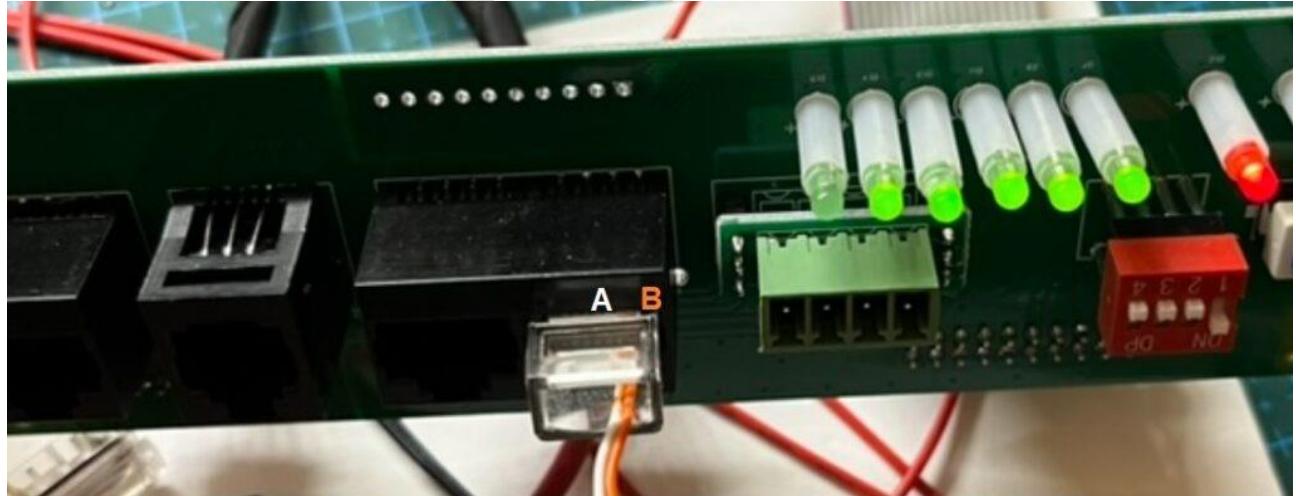
- Smart BMS Wi-Fi accessory exposes 1 on the TOP + usb on the Bottom
 - "USB": OPTIONAL / MANDATORY (for JK-PBx)
 - if you have built the dongle without the 100V DCDC - USB is MANDATORY to power up the dongle
 - if you have built with internal 100V DCDC , DONT use USB when the dongle is connected to the BMS !
 - to "BMS": MANDATORY
 - this is a male connector that goes into the :
 - **JK-Bx GPS** (4 wire JST port)
 - **JK-PBx** goes to **RS485A** port or CAN (work in progress for CAN)



2 JK-Bx -> GPS port

NOTE: without internal DCDC - unplug the USB power while connecting the ScanLabs Smart BMS Wi-Fi accessory – when all connections are ready, power the accessory via USB

JK-PB1/2 using RS485A connector, the dongle MUST be powered via USB. Use the following image to locate where RS485-A port is – use the green connector as reference.



3 JK-PB1 & JK-PB2 -> RS485A

BROWSING WEB PAGES

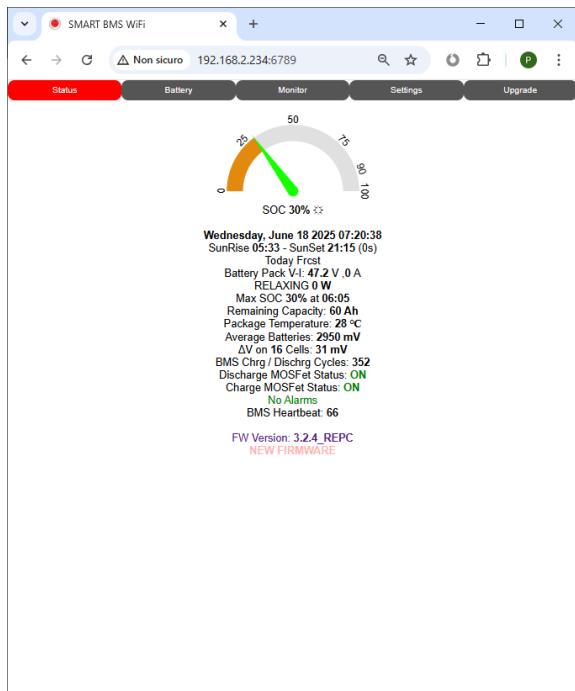
ScanLabs BMS Smart Data Extractor (SSBDE)

You can reach the data extractor dongle's webpages at:

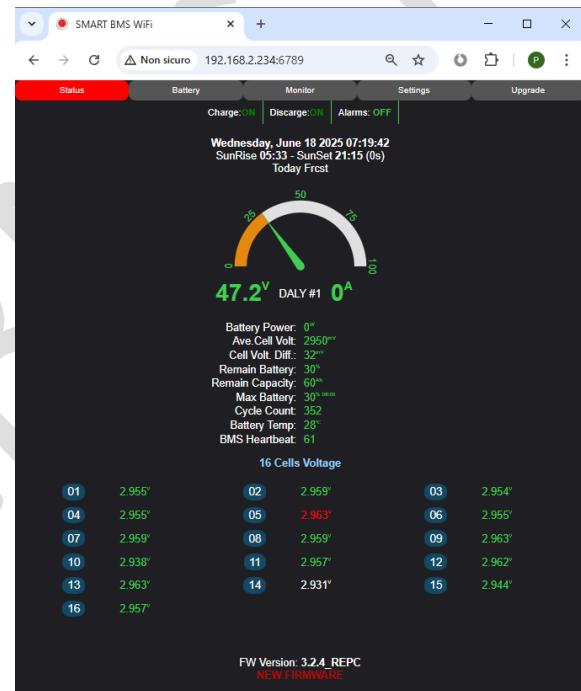
http://smartbms.local or **http://smartbms** (when the dongle is in STATION MODE)
http://192.168.1.1 (when the dongle is set in Access Point MODE)

Welcome page is as follow - Simple view of your BMS data.

NOTE: There are two layouts available – DALY or JK STYLE – images below for your reference
Users can select which layout they like from “Settings” -> “Misc” -> “JK Layout”



4 DALY Style



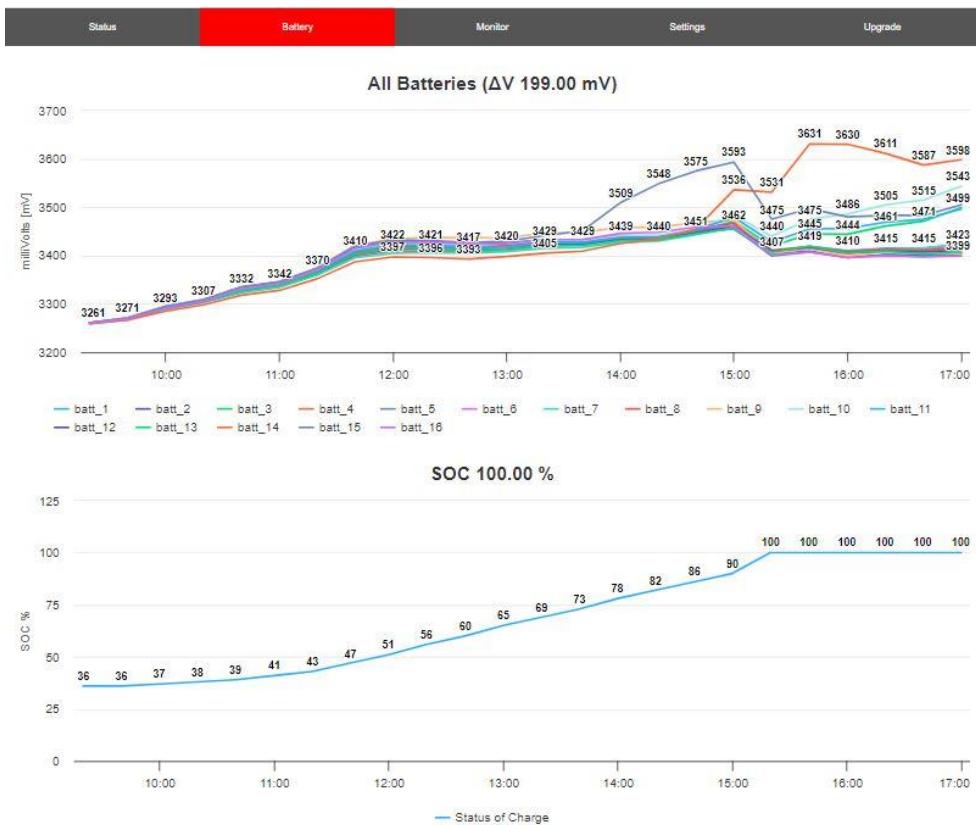
5 JK Style

NOTE: FIRST BMS data set are acquired 30s after the power up – simply wait -

NOTE: If you read “**BMS data error**” after 30s there’s a problem on the wiring to the BMS – please check your connections.

NOTE: If the BMS goes in Sleep or StandBy mode, no info can be shown – it is suggested to set the Sleep pr StandBy mode in the range of 10h – tipically enough to avoid the BMS go in Sleep Mode.

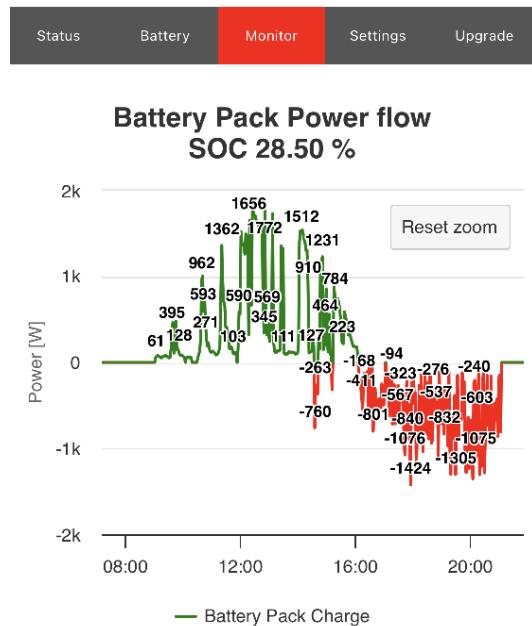
- Go to the "BATTERY" tab to watch your batteries over the last rolling 24h period
You can **isolate** each battery simply clicking on the " batt_ " title on the bottom.
You can **ZOOM IN/OUT** as usual to focus on critical moments



NOTE: as you can see on the image above - is clear that on this Battery pack, batt_14 (red) has less capacity than all the other batteries and it is somehow limiting the whole capacity of the pack

NOTE: the graphs are populated every 20 minutes – simply wait for the first samples to be shown

- GO to the "MONITOR" tab to watch the CHARGING-DISCARGING phases of your battery pack over the 24h rolling period



- SIX MONTHS HISTORICAL BATTERY VIEW

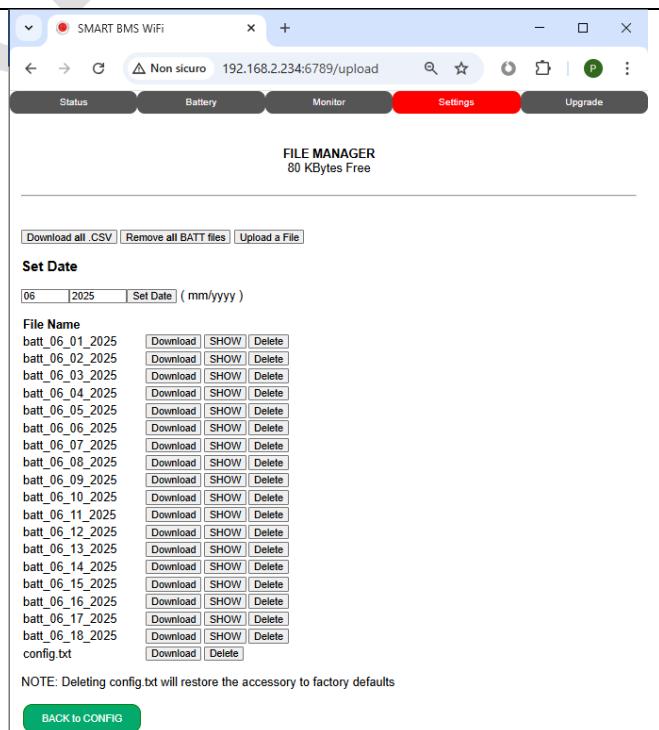
GO to “Settings” -> “LOG&FILES”

- ONLY ONE MONTH is listed on the page – to change the reference Month simply use “SET DATE”
- You can DOWNLOAD as .CSV format
- You can WATCH with SHOW
- You can DELETE the file

NOTE: It is suggested to periodically Backup YOUR “config.txt” file which contains your dongle configuration.

If you need to clone your dongle configuration on another one, simply download the “config.txt” file from the source and UPLOAD the “config.txt” on the new dongle.

To make the new config.txt files be effective, and hard reboot is needed = power cycle the dongle.



ADDITIONAL SETTINGS

On the “**Settings**” tab you can find additional optional settings.

HostName: this is the MDSN name used to quickly PING or get access to the webpages without knowing the IP address. You can customize – this is needed when more than one dongle are deployed on the same network

<p>Current IP: 192.168.2.234 HTTP Port: <input type="text" value="6789"/></p> <p>HostName: <input type="text" value="dongle"/> Static IP: <input type="checkbox"/></p> <p>Latitude: <input type="text" value="45.675800"/> Longitude: <input type="text" value="9.168000"/> Google maps</p> <p>Thursday, June 19 2025 06:58:15 --- Sync with PC</p> <p>Time Zone GMT+: <input type="text" value="2"/></p> <p>Time 24h format: <input checked="" type="checkbox"/></p> <p></p> <p><input type="button" value="Submit"/></p>	<p>HTTP Port: if set as 80 – you simply type the dongle IP or the Hostname on the URL</p> <p>HostName: MDNS name used to quickly PING or get access to the webpages without knowing the IP address. Needed when more dongles are deployed on the same network</p> <p>Static IP: by default the dongle uses a dynamic IP (DHCP) – if you need static use this option. Instead of fixing IP here- I suggest to create a rule on your router .</p> <p>Latitude & Longitude: Optional and needed only to get SUN Rise-Set , Time and GMT</p> <p>Time 24h: Either 24 or 12h format if not checked</p>
--	---

On the “*Settings*” -> “**MISC**” there are some additional settings

<p>MidNight SYS Reset: <input checked="" type="checkbox"/></p> <p>BMS Reset: <input type="checkbox"/></p> <p>Wireless SYS Reset: <input checked="" type="checkbox"/></p> <p>Enable Reset button: <input type="checkbox"/></p> <p>Auto Upgrade: <input checked="" type="checkbox"/></p> <p>JK Layout: <input checked="" type="checkbox"/></p> <p>Set MOS: <input type="checkbox"/></p> <p>Daly New Protocol: <input checked="" type="checkbox"/></p> <p>BMS Passthrough: <input checked="" type="checkbox"/></p> <p>UART Tunnel: <input type="checkbox"/> []</p> <p>BMS Data Refresh [s] <input type="text" value="10"/></p> <p>Current SOC <input type="text"/> <input type="button" value="set SOC"/></p> <p><input type="button" value="Submit"/></p>	<p>MidNight SYS Reset: when checked , the dongle reboot at midnight to keep its memory fresh. OPTIONAL – I’m not using it ;-)</p> <p>BMS Reset: at each Dongle Reboot – the BMS is reset – OPTIONAL depending on your setup</p> <p>Wireless SYS Reset: If WiFi connection is missing, dongle Reboots</p> <p>Enable Reset button: if checked, the Reset button is used to restore to AP or restore to factory. OPTIONAL – I keep disable because it could happen that quick power outage can be triggered as intentional action to reset.</p> <p>JK Layout: Fix the webpages following the JK layout – when not checked the layout is the DALY one.</p> <p>Set MOS: Enable setting Charge an Discharge MOS from both WEB and MQTT – APP</p> <p>Daly New protocol: available only for DALY users – I suggest to use this option – if it does not work uncheck and test the old protocol</p> <p>BMS Pass-through: Enable the pass-through feature (go to the dedicated section)</p> <p>UART TUNNEL: Enable the UART over TCP tunnel to use PC Software for DALY and JK from remote (go to the dedicated section)</p> <p>BMS Data Refresh [s]: Seconds between two consecutive BMS polling data requests.</p> <p>CURRENT SOC [%]: for DALY only, set the current SOC</p>
--	--

FEATURES EXPLAINED

- **MQTT SUBSCRIBER**
 - **IoT MQTT PANEL APP** -> Monitor your BMS wherever you are via MQTT
 - **VIRTUINO**
 - **HOME ASSISTANT** -> Link your BMS to your Home Assistant platform
- **PASSTHROUGH**
- **UART TUNNEL**
- **MODBUS TCP**
 - **SERVER**
 - **CLIENT**

CONFIGURE MQTT and IoTMQTT Panel APP

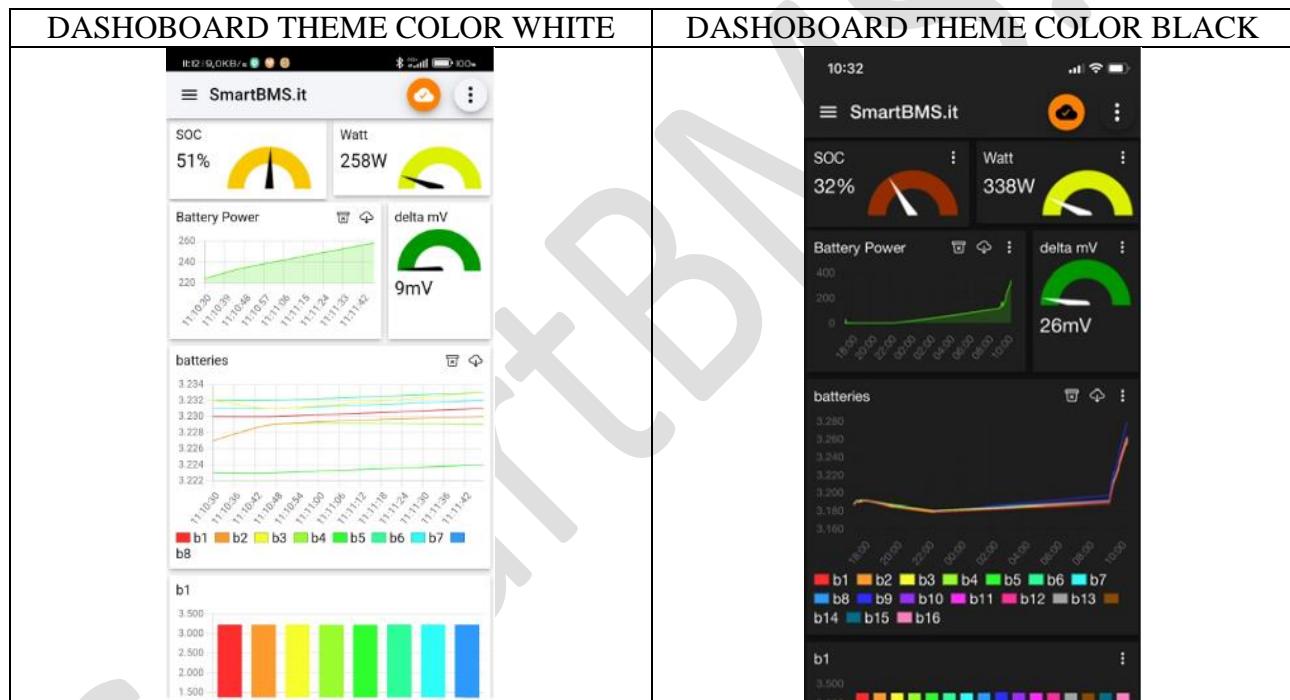
TARGET: Use a nice SmartPhone APP to watch your Battery(s) pack data wherever you are in the world

The **ScanLabs Smart BMS Data Extractor** export a configuration file ready to be imported into the **IoT MQTT Panel** mobile APP – to grant an almost ZERO config experience.

What you will enjoy on your mobile Android or Apple is shown on the images below.

NOTE: you can customize the layout as you wish – this is a simple example -

NOTE: Via MQTT and apps like IoT MQTTPanel you can COMBINE multiple battery packs in only one global view



Download the IoTMQTT Panel app on your SmartPhone – check if your phone is compatible
To download the app go to your reference Store, the app is available for both Android and iOS
Developer's website is www.snrlab.in

The app currently does not require any payment or registration to work properly.

CREATE AN ACCOUNT WITH BROKER MQTT PROVIDER

On this tutorial I will use HiveMQ – “Serveless” plan for non professional users.

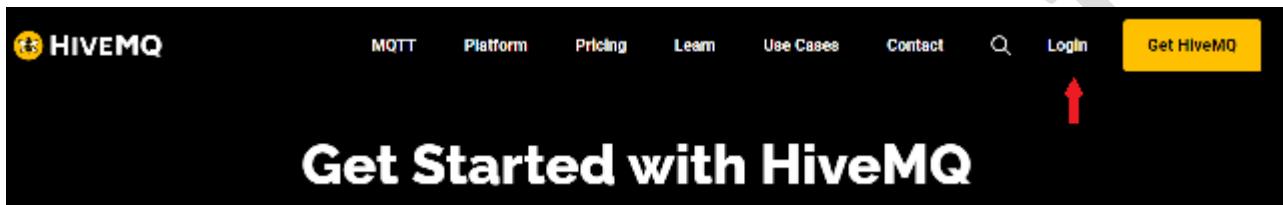
It is far more than what we need to monitor our battery packs, but is free so we like it !

So far tested with up to 20 Battery packs in parallel publishing data every 10s.

NOTE: HiveMQ is simply an example – if you are an HOME ASSISTANT user, you can install Mosquitto and use your personal MQTT broker. Up to you

SETUP an HiveMQ Serveless Account

- 1- GO to link: <https://www.hivemq.com/products/mqtt-cloud-broker/>
- 2- “Login”



- 3- “Login” or “Sign Up”
LOG IN WITH GOOGLE is straight forward.

A screenshot of the HiveMQ Cloud login page. On the left, there is a logo for 'HIVE MQ CLOUD' featuring a yellow bee icon. Below the logo, the text 'Unleash the Potential of IoT with HiveMQ Cloud.' is displayed, followed by the subtext 'HiveMQ Cloud is a fully-managed service for your IoT messaging needs.' To the right of the subtext, there is a list of four green checkmark icons with corresponding text:

- ✓ Start for Free: Kickstart your IoT journey by connecting up to 100 devices for free.
- ✓ Unrestrained Integration: Boost your use cases with seamless data integration with third-party services.
- ✓ Scalability with Ease: Upgrade as needed. HiveMQ Cloud offers reliability and security, irrespective of scale.
- ✓ Total MQTT Support: Leverage our complete support for the MQTT specification for adaptable and efficient IoT solutions.

On the right side of the page, there is a login form with fields for 'yours@example.com' and 'your password'. Below the password field is a link 'Don't remember your password?'. At the bottom right of the form is a yellow 'Log In >' button.

- 4- Select the “Serverless FREE” plan -> click on “Get Started”

Select the HiveMQ Cloud plan you need

Plan	Description	Price	Features
Serverless	A basic MQTT broker for learning and experimenting with MQTT.	FREE	No credit card required
Starter <small>RECOMMENDED</small>	Complete MQTT platform for testing and small-scale production.	\$0.34/hour + \$0.80/million messages \$250/month*	15 day trial - no credit card required
Professional	Production-ready, complete MQTT platform for scalable workloads.	Contact Sales	

- 5- Click on “CREATE”

Create Cluster

Configure your HiveMQ Cloud plan

Your Selection

Create

Serverless

- 6- Take notes about “**MQTT Server Name**” and “**MQTT Port**”

We will use those info to setup the dongle.

MQTT Server

MQTT PORT

Serverless
FREE

URL
98 *****s1.eu.hivemq.cloud

Port (TLS)
8883

Started
Tue, Apr 2

MANAGE CLUSTER

- 7- Click on “**MANAGE CLUSTER**”

MANAGE CLUSTER

- 8- Click on “**ACCESS MANAGEMENT**”

Cluster Details

OVERVIEW **ACCESS MANAGEMENT** **INTEGRATIONS** **NEW**

Cluster Details

Cluster Information

Current Plan: Serverless
Current Tier: FREE

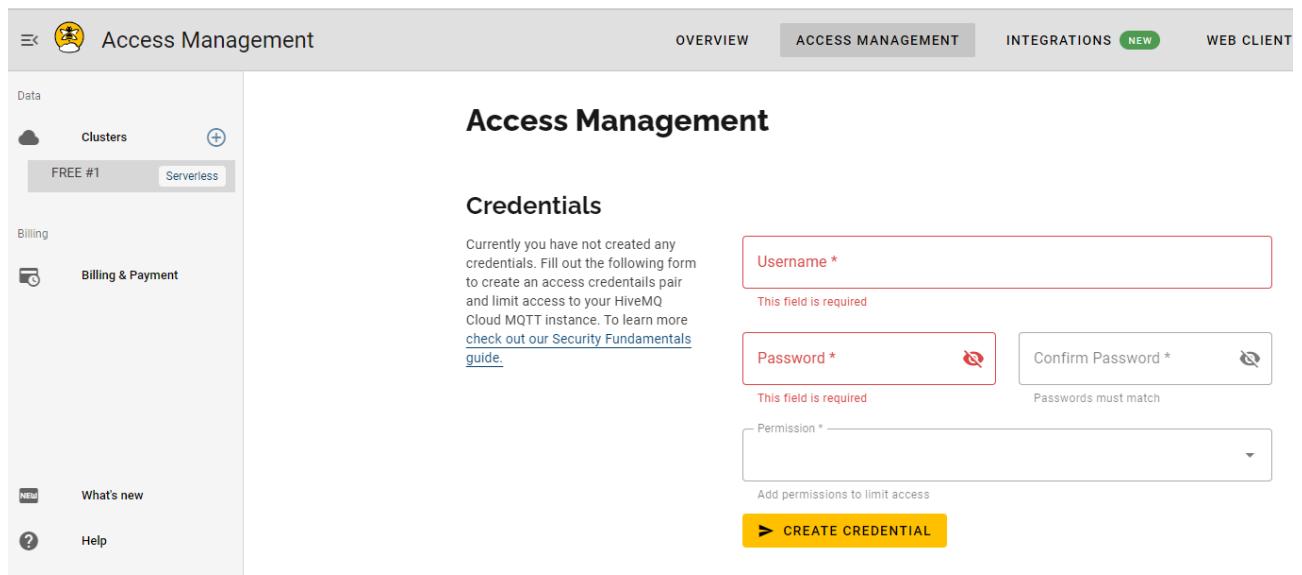
Name: 98 *****
Cloud Provider: aws

▶ What is included in my plan?

Cluster URL: 98 *****s1.eu.hivemq.cloud

Port: 8883

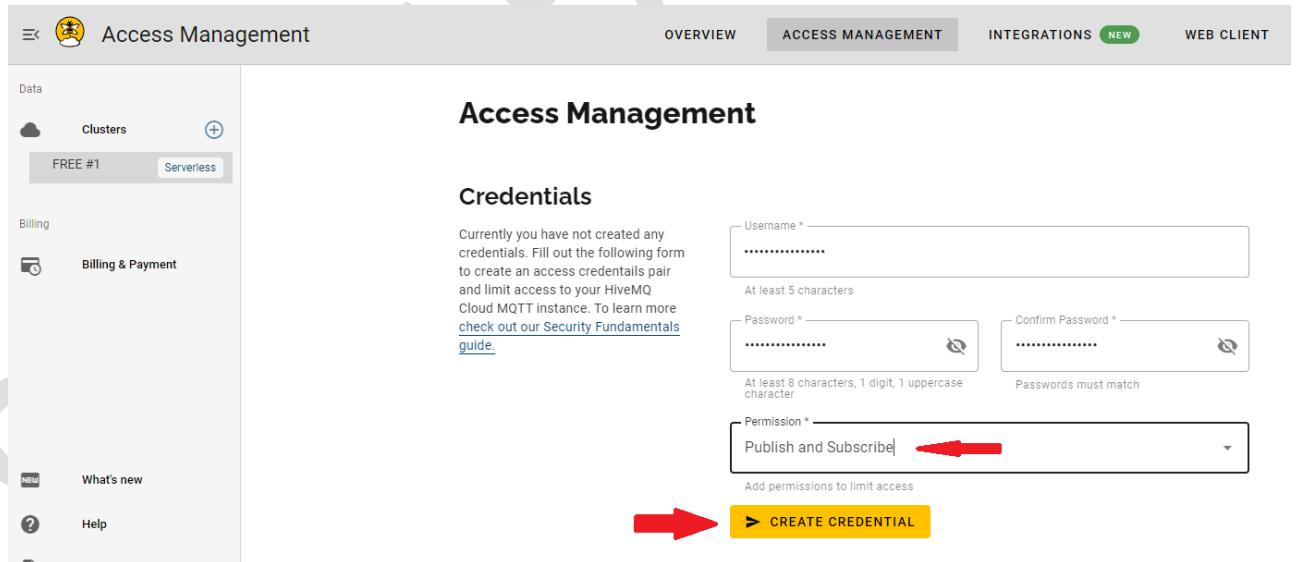
- 9- Set your own credentials for this MQTT server
 – USERNAME e PASSWORD will be used to set the **ScanLabs Smart BMS data Extractor**



The screenshot shows the 'Access Management' interface with the 'ACCESS MANAGEMENT' tab selected. On the left sidebar, there are sections for Data (Clusters, FREE #1, Serverless) and Billing (Billing & Payment). The main area is titled 'Access Management' and 'Credentials'. It displays a message: 'Currently you have not created any credentials. Fill out the following form to create an access credentials pair and limit access to your HiveMQ Cloud MQTT instance. To learn more check out our [Security Fundamentals guide](#)'. The form fields include 'Username *' (marked as required), 'Password *' (marked as required), 'Confirm Password *' (marked as required and matching the password), and a dropdown for 'Permission *' which is currently set to 'Add permissions to limit access'. A yellow button labeled 'CREATE CREDENTIAL' is at the bottom.

10- On field “PERMISSION” , select “**PUBLISH and SUBSCRIBE**”

11- Click on “CREATE CREDENTIAL”



This screenshot is identical to the one above, showing the 'Access Management' interface with the 'ACCESS MANAGEMENT' tab selected. The 'Permissions' dropdown is now set to 'Publish and Subscribe'. A large red arrow points to the 'CREATE CREDENTIAL' button at the bottom of the form.

- 12- Check the just added credentials are active – if they are, they will be shown on the bottom of the page

The screenshot shows the HiveMQ Access Management interface. On the left sidebar, there are sections for Data (Clusters, Serverless), Billing (Billing & Payment), and User Management (What's new, Help, Documentation, Feedback, Logout). The main area is titled "Access Management" and has a sub-section "Credentials". It includes fields for "Username" (with validation "At least 5 characters"), "Password" (with validation "At least 8 characters, 1 digit, 1 uppercase character") and "Confirm Password" (with validation "Passwords must match"). A dropdown for "Permission" is shown with the option "Add permissions to limit access". A yellow button labeled "CREATE CREDENTIAL" is at the bottom. Below these fields is a table with columns "Username", "Permission type", and "Actions". A single row is present in the table, showing "*****" in the Username column, "Publish and Subscribe" in the Permission type column, and a "DELETE" button in the Actions column. This row is highlighted with a red box.

AT THIS POINT YOU ARE DONE WITH HIVEMQ BROKER SETUP

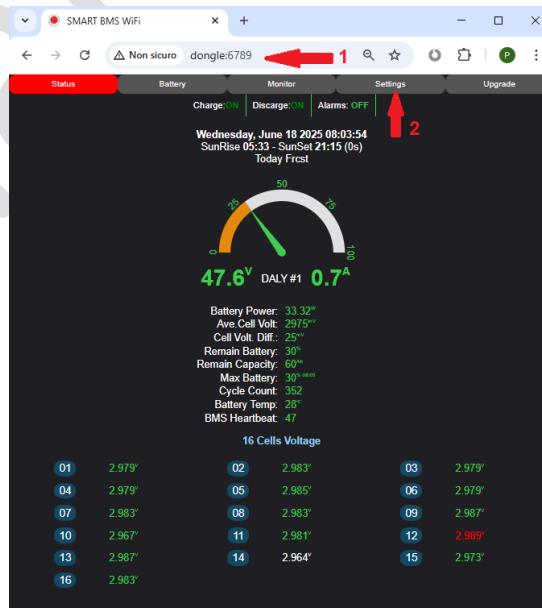
NOW LET's WORK ON THE “ScanLabs SMART BMS DATA EXTRACTOR”

- 13- Go to your dongle's web page go to -> “*Settings*” TAB

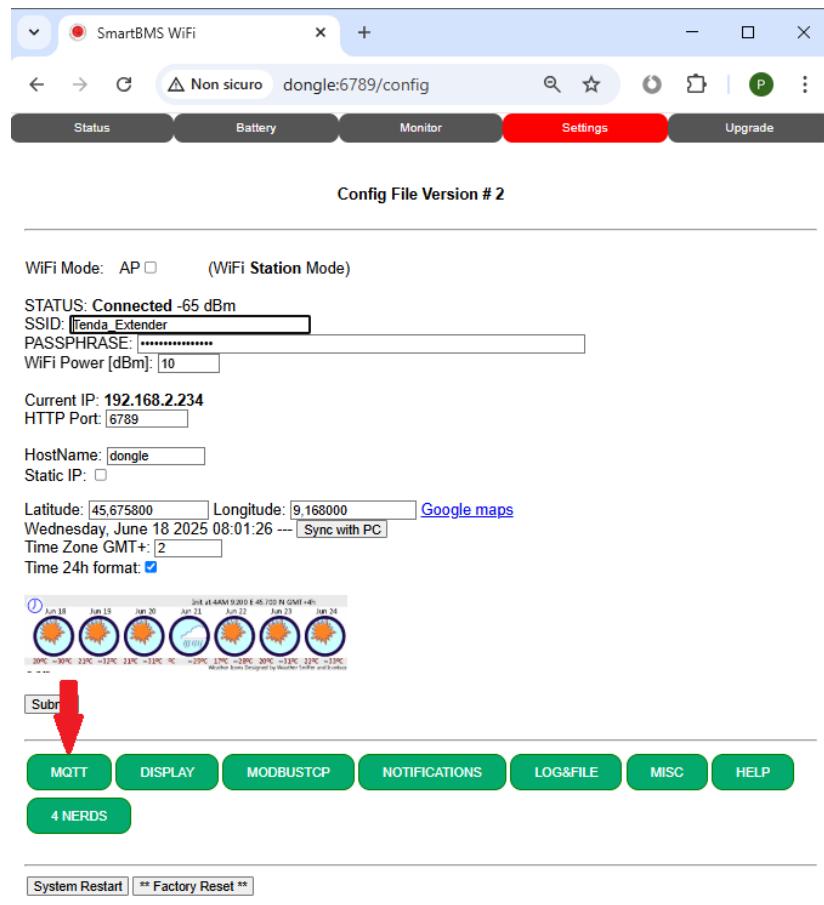
<http://smartbmsXY> or <http://smartbmsXY.local> or by typing the dongle IP.

NOTE: change the MDNS name if you have customized it via AT Commands or Webpages –

NOTE : in the following image you can notice I changed from MDNS default name “*smartbms*” to “*dongle*” and added a port 6789



14- Click on “**MQTT**”



15- SETUP the dongle MQTT client web page with the data setuo get during the HIVEMQ setup (Steps 1-3 on this chapter)

NOTA: MQTT Client ID is the UNIQUE ID of this dongle – can be any numeric or alphanumeric ID – BUT --- must to be unique !

Having more than one dongle publishing on the same MQTT broker, each of them MUST have its own unique ID.

- 1- Configure the dongle CSubscriber MQTT with the HIVEMQ credentials as shown on the figure
- 2- CLONE the settings of the “checkmarks” in the figure
- 3- “SUBMIT”
- 4- When the page reload, press on “TEST MQTT”
If all went fine you will read “MQTT Server: **CONNECTED**”

MQTT CONFIG

MQTT Server **DISCONNECTED**

MQTT Server: Test MQTT **3**

MQTT PORT: 8883 Use TLS:

MQTT User Name:

MQTT Password:

MQTT Client ID:

Enable MQTT:

Export as Json: type1 type2

Publish Refresh [s]: 60

Publish Pack BATT:

Publish Pack SOC:

Publish Pack W:

Publish Pack V:

Publish Pack I:

Publish Pack ΔV:

Publish Batt Average V:

Publish Pack Temp:

Publish BMS Alarms:

PUBLISHED JSON Topic: Jsn

```

"bat": {
    "0": 2947,
    ...
    "15": 2949 ==> milliVolts
}
"SOC": 27, ==> Status of Charge [%]
"PWT": 42, ==> Battery Pack Watt [W]
"PMV": "47.10", ==> Pack Volts [V]
"PMA": "0.90", ==> Pack Current [A]
"PDV": 6, ==> Delta mVolts between cells [mV]
"AMV": "2946.00" ==> Average mVolts on cells [mV]
  
```

Cluster Details

Cluster Information

Current Plan: Serverless Current Tier: FREE

Name: 98 *****5 Cloud Provider: aws

What is included in my plan?

Cluster URL: 98 *****5.s1.eu.hivemq.cloud Port: 8883

Access Management

Credentials

Currently you have not created any credentials. Fill out the following form to create an access credentials pair and limit access to your HiveMQ Cloud MQTT Instance. > learn more check out our Security Fundamentals guide.

Username: At least 5 characters

Password: At least 8 characters character

Permission: Publish and Sub Add permissions to I

> CREATE CRED

BACK to CONFIG **IoTMQTT Panel**

MQTT CONFIG

MQTT Server **CONNECTED**

MQTT Server: Test MQTT

MQTT PORT: 8883 Use TLS:

MQTT User Name:

MQTT Password:

MQTT Client ID:

Enable MQTT:

Export as Json: type1 type2

Publish Refresh [s]: 60

Publish Pack BATT:

Publish Pack SOC:

Publish Pack W:

Publish Pack V:

Publish Pack I:

Publish Pack ΔV:

Publish Batt Average V:

Publish Pack Temp:

Publish BMS Alarms:

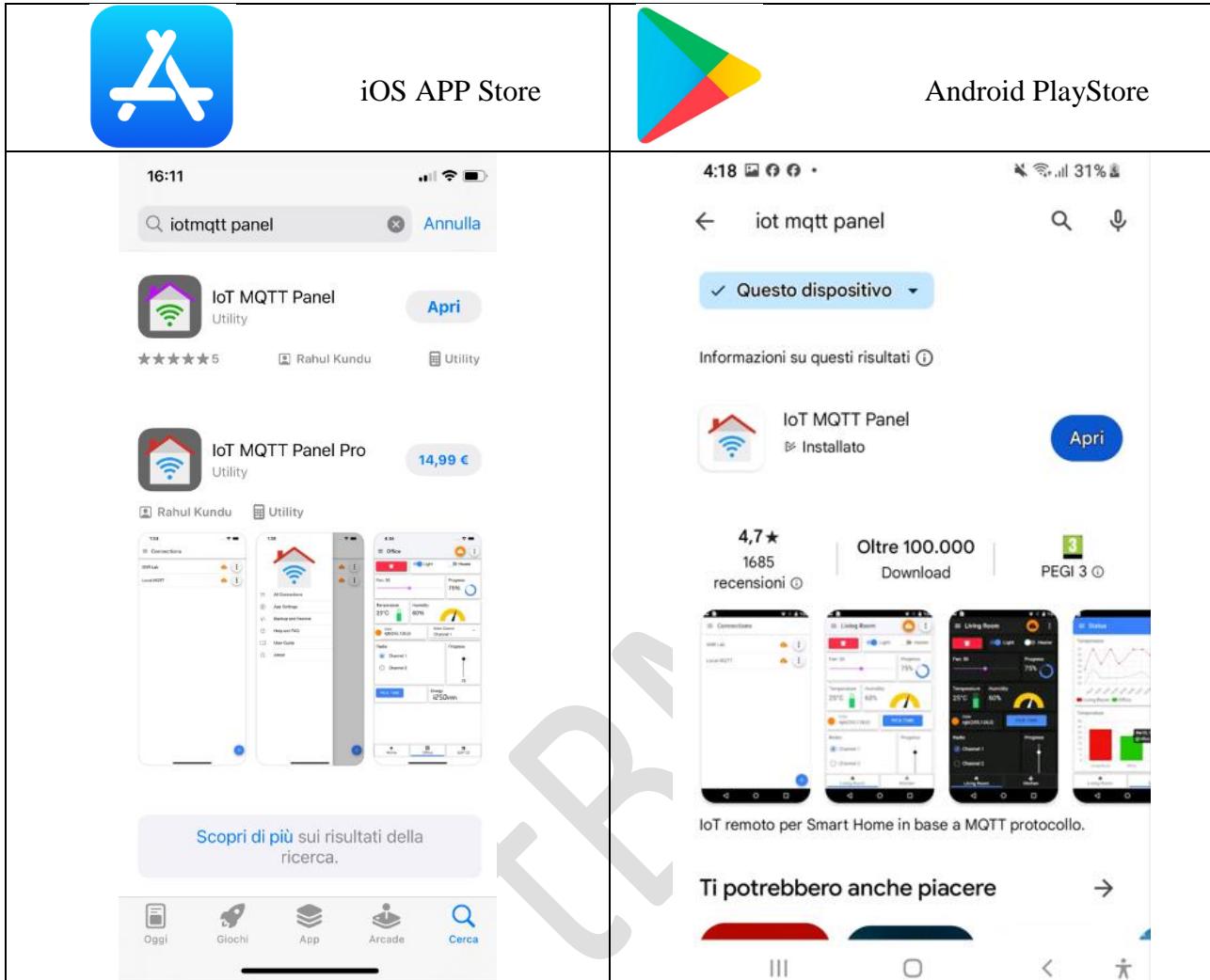
PUBLISHED JSON Topic: Jsn

```

"bat": {
    "0": 2947,
    ...
    "15": 2949 ==> milliVolts
}
"SOC": 27, ==> Status of Charge [%]
"PWT": 42, ==> Battery Pack Watt [W]
"PMV": "47.10", ==> Pack Volts [V]
"PMA": "0.90", ==> Pack Current [A]
"PDV": 6, ==> Delta mVolts between cells [mV]
"AMV": "2946.00" ==> Average mVolts on cells [mV]
  
```

Submit

16- Install “IoTMQTT Panel” on your smartphone – chose the free version



17- Go to the dongle Webpage via your smartphone

With iOS and on the latest Android the dongle url is : <http://smartbmsXY.local>

NOTE: if you have changed the MDSN “smartbms” name and the default PORT “80”, you have to type yours

On former Android version, you need to use the dongle IP rather than the MDSN name.

To get your dongle IP, either you use the USB console or you try to discover via your Router
See the section about how to Configure the dongle.

```

COM22 - Tera Term VT
File Edit Setup Control Window Help
57600,8,N,1
dJATG PpjdxS H%J,P@wNz
`B0Z Hj12DUAXA;* PP@% Xw(@G'LDU,' \B`N|
dXD+e.D0%dx@ ys+f

[AT Console] Init completed ! fw: 2.0.7_REPO
***** Wifi STATION mode *****
Connected to AP SSID: ScanLabsWiFiHotSpot RSSI: -54dBm
IP Address: 192.168.2.186 PORT: 6789 -----
MAC Addr: 34:94:54:81:74:09

Ready for AT command : type AT+CMD for complete list (remember! terminator NL&CR)

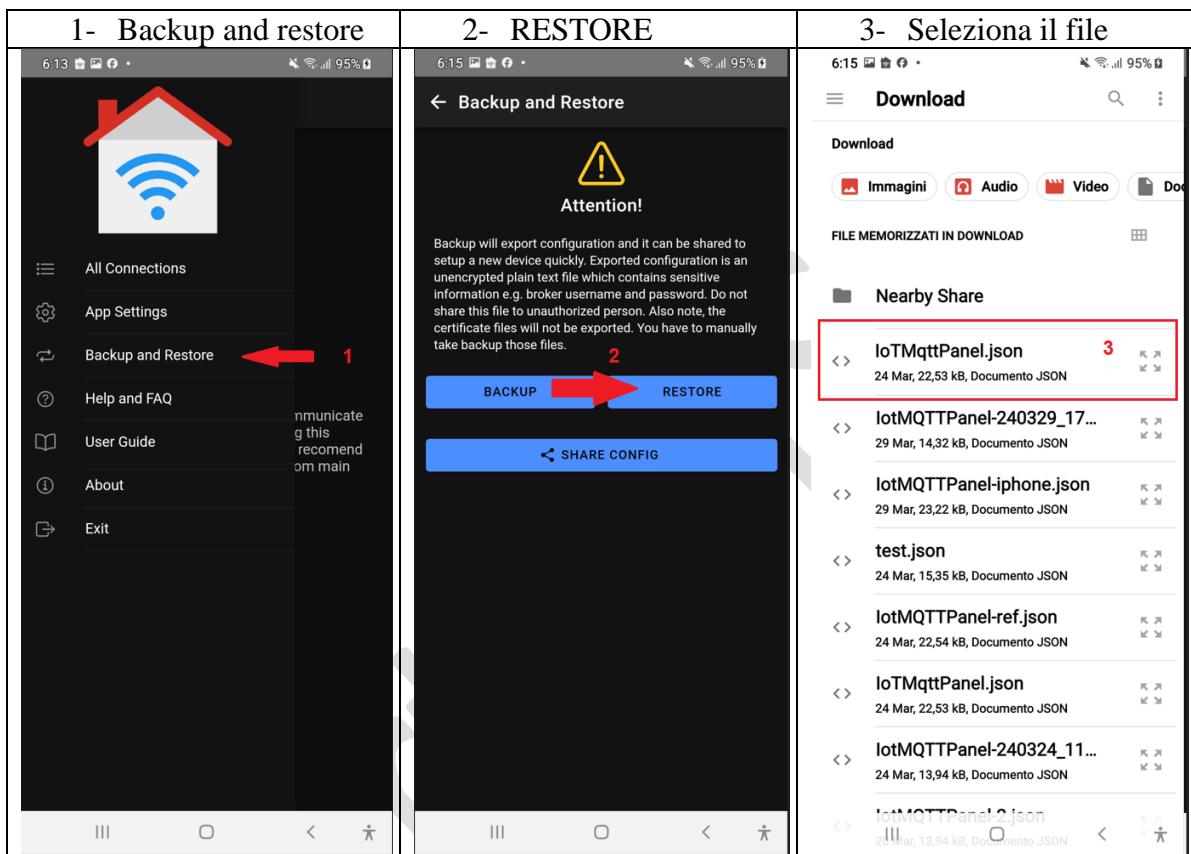
```

18- GO to “Settings” -> “MQTT” -> “IoTMQTT Panel” -> “GENERATE”

A “*IoTMqttPanel.json*” file with all the needed config is generated by the dongle

Download the generated file “*IoTMqttPanel.json*”

19- Open the app “IoTMQTT Panel”, click on the 3 lines on TOP-SX , follow steps 1-2-3



20- YOU ARE DONE !

LIST OF BMS PARAMETERS AVAILABLE VIA MQTT

When MQTT is configured and enabled the following packet is published independently from the BMS activities.

```
{"Status":1,"ts":"12/22/25 13:12:47","cnt":2535,"mem":11696}
```

JSON Name	Possible Values	Comments
Status	0,1	0: BMS unreachable 1: BMS active
ts	12/22/25 13:12:47	Time Stamp of the last MQTT frame sent
Cnt	0-65535	Seconds till boot
mem	0-20000	Free Platform Memory [Bytes]

The following MQTT frames are published ONLY if there's a communication with BMS

```
{"SCM":27,"MIC":2938,"MAC":2929,"RCP":84}
```

JSON Name	Possible Values	Comments
SCM	0-100	MAX SOC reached today
MIC	0- Max Cell Voltage	Minimum Cell Voltage
MAC	0- Max Cell Voltage	Maximum Cell Voltage [mV]
RCP	0- Max Battery Capacity	Residual Capacity [Ah]

```
{"bat":{"0":2927,"1":2956,"2":2957,"3":2951,"4":2957,"5":2944,"6":2956,"7":2956,"8":2955,"9":2957,"10":2957,"11":2956,"12":2937,"13":2956,"14":2956,"15":2945}, "SOC":27, "PWT":292, "PMV": "47.20", "PMA": "6.20", "PDV": 30.00, "AMV": 2951, "TMP": 12, "ALM": "0,4,0,0,0,0,0", "ALMF": 1, "DMS": 1, "CMS": 1}
```

JSON Name	Possible Values	Comments
{"bat":{"0":2927,..."15":2945}}	0- Max Cell Voltage	Json2 format [mV]
{"b0":2936,...,"b15":2953,	0- Max Cell Voltage	Json1 format [mV]
SOC	0- Max Cell Voltage	Status of Charge [%]
PWT	0- Max Battery Pack Watt	Battery Pack Watt [W]
PMV		Pack Volts [V]
PMA		Pack Current [A]
PDV	0- current delta	Delta between cells [mV]
AMV	For LifePo4 around 3200	Average mVolts on cells [mV]
TMP		Pack temperature in [C]
ALM	0,4,0,0,0,0,0	Alarms byte stream
ALMF	1= Alarms 0= No Alarms	Alarms Flag 1=ALARMS 0=NO ALARMS
DMS	1= Enabled 0= Disabled	Discharge MOS status
CMS	1= Enabled 0= Disabled	Charge MOS status

BMS PASS-THROUGH



PASSTHROUGH feature, allows the ScanLabs Smart BMS data Extractor (SSBdE) to let original BMS gadget to work in Series with the dongle sharing the same BMS physical port.

Tipically used for DALY WiFi, Bluetooth Dongle , for JK / DALY display.

NOTE – this feature is not suitable for JK-PBx

SmartBMS.it

UART TUNNEL



UART Tunnel feature allows to use PC Software for BMS like

- DALY BmsMonitor -> **PCMaster**
- or
- JK **JK-BMS-MONITOR** (work in progress, available soon)

UART Tunnel is established via Internet or local LAN - from any remote sites and until you have an internet connection and a ScanLabs Smart BMS Data Extractor connected to your BMS – you can Virtualize a Direct UART connection with the BMS

How it works ? Basically thanks to a mix of tools and feature exposed by the SSBD-E you can ‘Simulate’ having a local UART CABLE connected to the BMS and the PC.

This “Virtual UART” is tunneled via internet/Local LAN till your BMS

What you need to use from local LAN ? no special configuration is needed on your router

What you need to use from INTERNET ? there’s a main constrain ... SSBD-E must be exposed to internet, meaning your router has a public IP and you created a PORT FORWARD to local SSBD-E port 6790

The rule looks like the following

External IP	External Port	Internal IP	Internal Port
ANY	6790 (or any other free port > 1024)	YOUR dongle Internal IP	6790

This Port Forwarding rule simply says that all the traffic from internet coming on External port 6790 is routed to dongle IP port 6790 where the UART TUNNEL Server is.

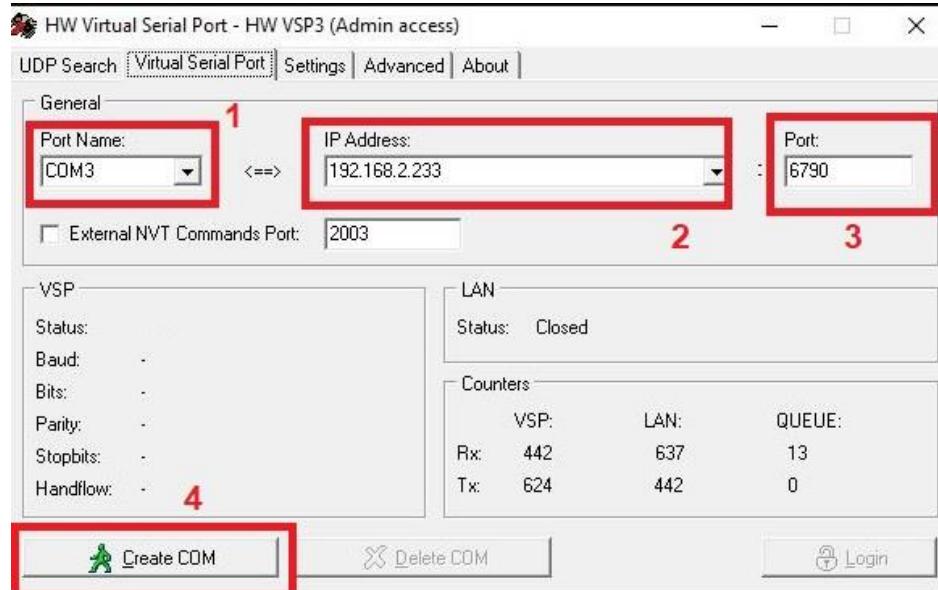
Don’t be worried about hacking attack, UART TUNNEL is a feature that must be intentionally enabled from misc page and that auto-expires after 90s for inactivity

What you need to install on your PC ?

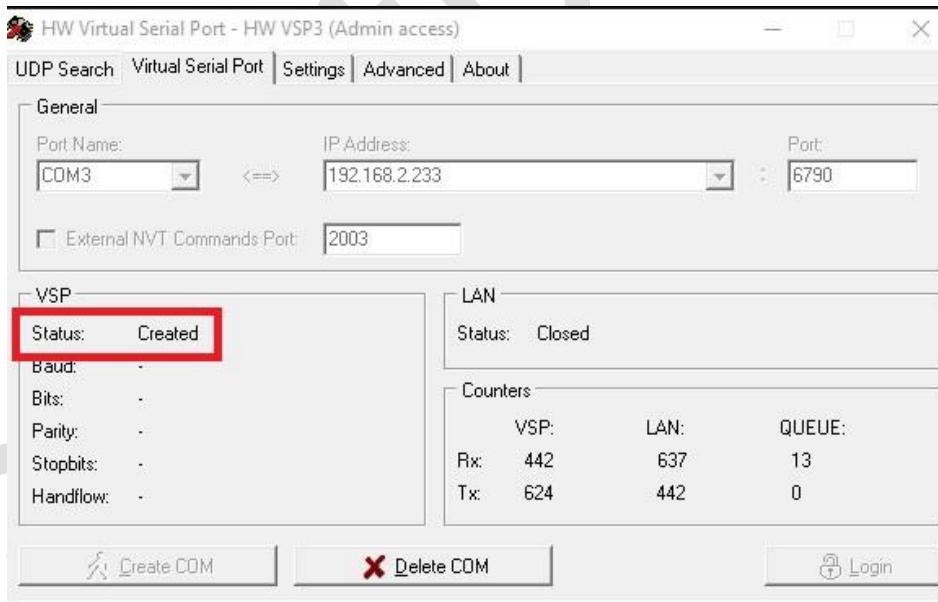
To Virtualize an UART over Internet , I use “**HW Virtual Serial Port**” from <https://www.hw-group.com/>

1- Configure “HW Virtual Serial port”

- 1- Select the COM port Number to be created
- 2- Local or Public IP of the ScanLabs Smart BMS data Extractor
- 3- Local or Public PORT of the SSBdE
- 4- Create the COM



2- If all good you will read – Status Created



- 3- Go to SSBdE web pages, Settings -> MISC -> Enable “UART TUNNEL” & Submit

Status Battery Monitor **Settings**

MISC CONFIG

heap 13816 Bytes

MidNight SYS Reset:

BMS Reset:

Wireless SYS Reset:

Enable Reset button:

JK Layout:

Set MOS:

UART Tunnel: [88s] 88s 

BMS Data Refresh [s]

Submit

BACK to CONFIG

Submit

The [Count Down] shows the time left before auto-closing the Tunnel, the [Count Down] is reset during data traffic

- 4- Open your BMS PC Software, setup it to use the Just created COM Port and connect to the BMS as you do locally

MODBUS TCP SERVER

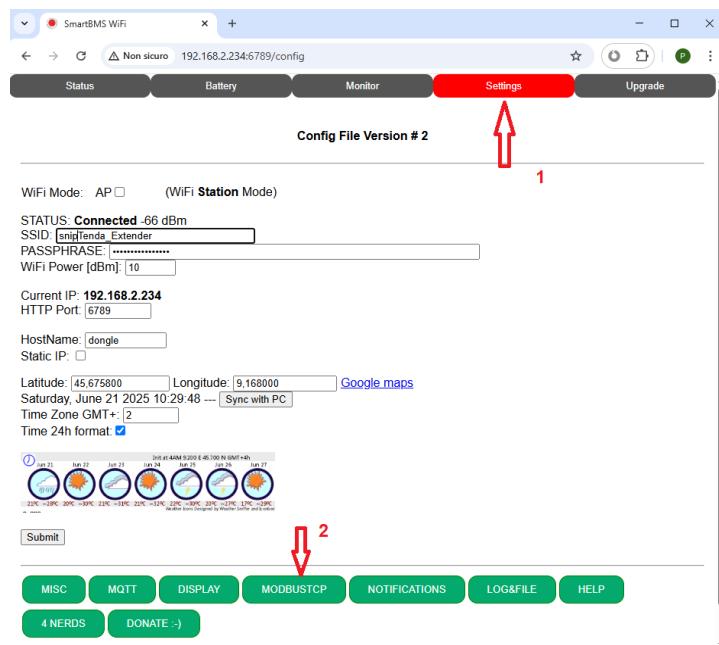
Hardware REG (Function **03**)

BASE address **100** - Server PORT **502**

Float Little Endian

Function	Unit	Offset	Type	Description
SOC	%	0	U16	Status of Charge
Pack Volts	V	1	U16	Battery Pack Volts
Pack Amps	A	2	S16	Battery Pack Amps
Pack Power	W	3	S16	Battery Pack Power
Batts mv-Delta	mV	4	U16	Batteries max delta
Batts mv-Average	mV	5	U16	Batteries Average
Temp	C/F	8	Float	Temperature Avg
Pack Volts	V	10	Float	Battery Pack Volts
Pack Amps	A	12	Float	Battery Pack Amps
Pack Power	W	14	Float	Battery Pack Power
DISCHARGE MOS	Status	17	U16	0-OFF 1-ON
CHARGE MOS	Status	18	U16	0-OFF 1-ON
Battery 1	mV	20	U16	Battery 1 mV
Battery 2	mV	21	U16	Battery 2 mV
...	mV
Battery 16	mV	35	U16	Battery 16 mV
Num of Batts		40	U16	Number of Batteries
Max SOC	%	41	U16	daily MAX SOC
Max SOC	hours	42	U16	daily MAX SOC @ hour
Max SOC	minutes	43	U16	daily MAX SOC @ minutes
Capacity	mAh	44	U16	Current Capacity
Failure Flag	Status	45	U16	0-No Failure 1-Failures
Sys Heap	bytes	50	U16	Free Heap Memory
Sys Counter	#	51	U16	Monotonic 1s Counter
TZ	#	52	S16	Time Zone
DID	#	53	U16	Color Display this Dashboard ID
DISPLAY1	reg	54	U32	byteWise 0x A'A BB CC DD: A'=Number of Dashboards A&0x2=auto Rolling A&0x1=auto Brightness ON/OFF BB=level_Max CC=level_Avg DD=level_Min
DISPLAY2	reg	56	U32	byteWise 0x AA BB BC CC: AA=AutoScreen Rolling_Sec BBB=Seconds_at_level_Max CCC=Seconds_at_level_Avg

MODBUS TCP Server is not active by default - enable it
 GO to "**Settings**" -> "**MODBUS CONFIG**"



Enable MODBUS TCP Server
 Click on the check button and "**Submit**" (no reboot needed)

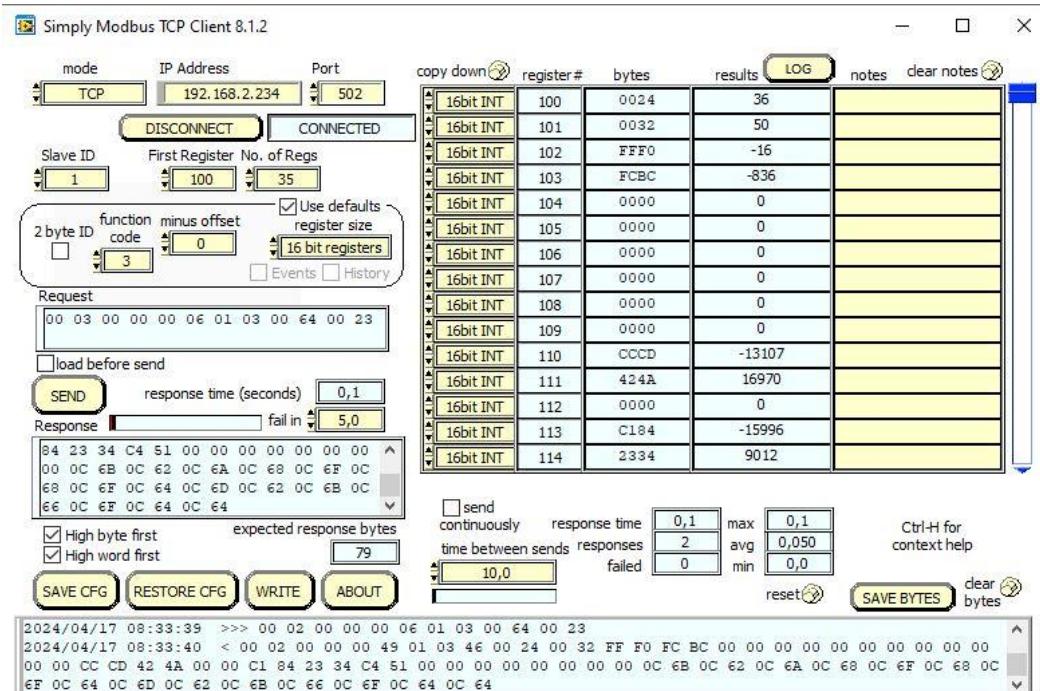
NOTE : due to limited resources it is NOT suggested to have MODBUS TCP and MQTT working in Parallel

MODBUS TCP SERVER: <input type="checkbox"/>	STATUS: Sleeping	ModBus REGISTER MAP
MODBUS TCP CLIENT: <input type="checkbox"/>	STATUS: Sleeping	ModBus CLIENT Json
<input type="button" value="Submit"/>		
<input type="button" value="BACK to CONFIG"/>	<input type="button" value="MODBUSTCP MANUAL"/>	

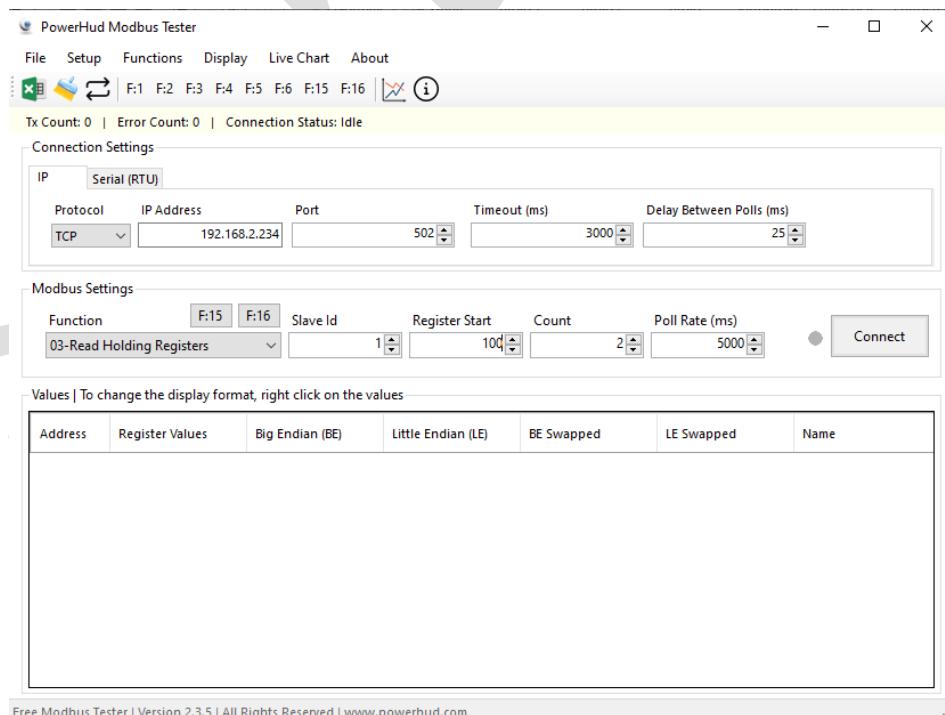
STATUS flag will show the current Server or Client statuses

How to TEST the dongle MODBUS TCP Server with **PC**?

Any Standard MODBUS TCP Client is fine - for quick test you can use "[Simply MODBUS TCP Client](#)"



[PowerHud ModBus tester](#) is good and fully free (<https://www.powerhud.com/en/>)



How to TEST MODBUS TCP Server with ***SmartPhone*** ?

There are multiple ways , one project I like and I would like to see it increasing the number of users is **Virtuino**

- 1- Install "**Virtuino**" APP on your mobile
- 2- download **THIS** configuration file
- 3- Open the Virtuino App -> "My projects" -> "Import project" -> select the ".vrt7" configuration file provided
- 4- from the three dots -> "My Connection or Devices" -> "Modbus TCP/IP" -> URL -> customize with your LAN or WAN IP address.

What you need to use MODBUS Server from INTERNET ? there's a main constrain ... SSBdE must be exposed to internet, meaning your router has a public IP and you created a PORT FORWARD to local SSBdE port 502

The rule looks like the following

External IP	External Port	Internal IP	Protocol type	Internal Port
ANY	502 (or any other free port > 1024)	YOUR dongle Internal IP	ANY	502

This Port Forwarding rule simply says that all the traffic from internet coming on External port 502 is routed to dongle IP port 502 where the MODBUS Server is.

MODBUS TCP CLIENT

From SBMDE software version 3.3.0, a MODBUS Client feature is available.

You can push data from the dongle to your local/remote Modbus Server.

STEPS to setup MODBUS client :

- 5- Build a file named "**ModBusClient.json**" on your PC via notepad or similar – you can download a template from [here](#)

JSON FORMAT	DESCRIPTION	NOTES
<pre>{ "IP": "XXX.XXX.XXX.XXX", "PORT": 8101, "sID": 1, "Tm": 10, "BASE": 200, "MAP": { "Bat": 0, "PV": 32, "PI": 34, "PW": 38, "mVA": 40, "mVD": 36, "SOC": 37, "Cap": 39, "TC": 41, "Heap": 29, "MonC": 30 } }</pre>	IP: MODBUS SERVER IP PORT: MODBUS SERVER PORT sID: THIS DONGLE SLAVE ID [typical 1] Tm: Time [sec] for pushing data to Server <i>NOTE:</i> if Tm < BMS Polling Time, the latter wins BASE: BASE offset registers address MAP: Contains Pairs DATA : OFFSET <i>NOTE:</i> each selected DATA is published at OFFSET+BASE Bat: ALL the batteries are published starting from this address [mV] <i>EG:</i> 16-Batteries are published till OFFSET+BASE+16-1 PV: Battery pack Voltage [mV] PI: Battery pack Ampere [10mA] PW: Battery pack Watts [W] mVA: Battery pack average [mV] mVD: Battery pack Delta [mV] SOC: Status of Charge [%] Cap: Residual Capacity [Ah] TC: Temperature [C] Heap: System Memory [Bytes] MonC: Monotonic 1s Counter	NOTE 1: each data uses uint16 register NOTE 2: Current are in 10mA - must be used as int16 max +/- 327A NOTE 3: PARTIAL json are accepted (containing only the info you need) NOTE 3: json file must be named ModBusClient.json and loaded into file system from LOG&FILE session

- 6- Customize the **ModBusClient.json** file depending on the parameters you want to expose to the Server, the ModBus Server IP / PORT etc

- 7- UPLOAD the **ModBusClient.json** file on the SSBDE dongle via the "**LOG&FILE**" tab -> **Upload**

- 8-** Check the Flag "MODBUS TCP CLIENT" -> Submit

The STATUS Flag will give info about the Client status

Status
Battery
Monitor
Settings
Upgrade

MODBUS TCP CONFIG

MODBUS TCP SERVER: <input type="checkbox"/>	STATUS: Sleeping	ModBus REGISTER MAP
SWAP FLOAT: <input type="checkbox"/>		
MODBUS TCP CLIENT: <input type="checkbox"/>	STATUS: Sleeping	ModBus CLIENT Json
<input type="button" value="Submit"/>		

[BACK to CONFIG](#) [MODBUSTCP MANUAL](#)

VIRTUINO APP: HOW TO CONFIGURE for SmartPhone and PC



TARGET: Use Virtuino APP using MODBUS
Link with me directly if you are interested on this

SmartBMS.it

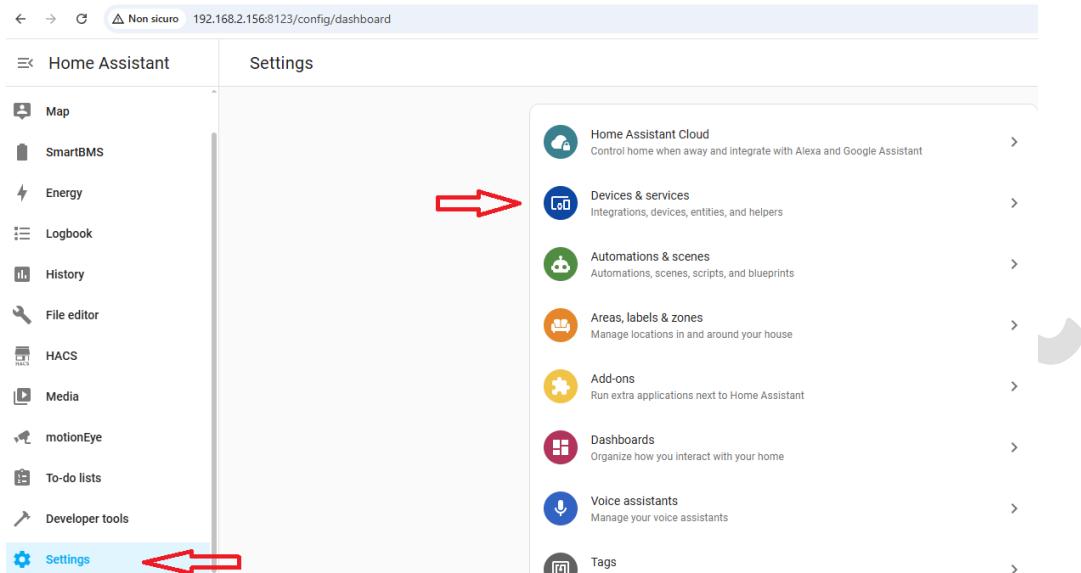
HOME ASSISTANT

Home Assistant provides a professional way to monitor and perform actions based on events / scenarios. ScanLabs BMS data Extractor is fully compatible with HA, hereunder an example of a DashBoard you can build.



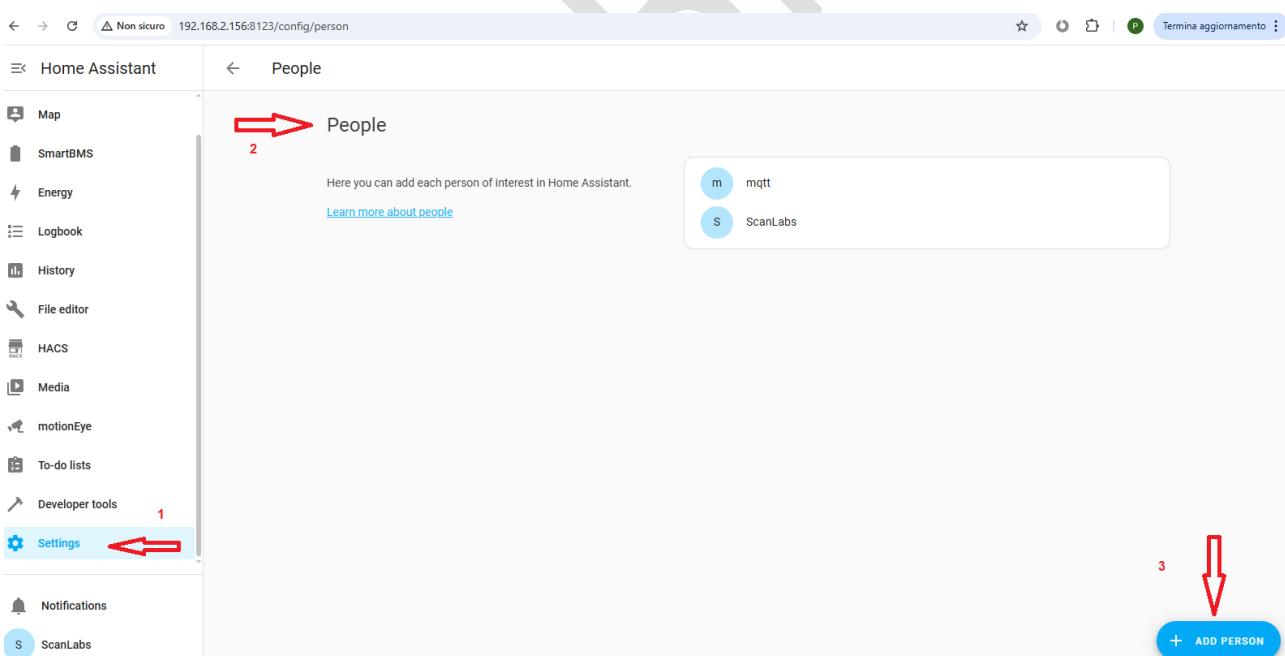
INSTALL MOSQUITTO MQTT BROKER

Go to “Settings”-> “Devices & Services” , search for Mosquitto, install it – run at the start-up



If still not available, create a new account to let the ScanLabs BMS Smart data Extractor to publish the BMS data.

Go to “Settings”-> “People” -> “+ ADD PERSON”



- 1- Define a “Name”
- 2- “Allow login”
- 3- Customize “username” & “password”
- 4- CREATE

New person

Name*
UserMqtt 1

Add user

Username*
username

Password* 3
.....

Confirm password* 3
.....

Local access only
Can only log in from the local network 2

Administrator
Administrators can manage users, devices, automations and dashboards 2

The user group feature is a work in progress. The user will be unable to administer the instance via the UI. We're still auditing all management API endpoints to ensure that they correctly limit access to administrators.

4 CREATE

The new created credentials will be shown on the People panel

Non sicuro 192.168.2.156:8123/config/person

Home Assistant

Map

SmartBMS

Energy

Logbook

History

File editor

People

People

Here you can add each person of interest in Home Assistant.

[Learn more about people](#)

m	mqtt
S	ScanLabs
U	UserMqtt ←

NOTE: YOU MUST configure the ScanLabs BMS smart data Extractor MQTT client accordingly with the HA Mosquitto setup:

MQTT Server: IP or Name of your Home Assistant device

MQTT Port: either 1833 no TLS OR 8883 with TLS – depending on your mosquito configuration

NOTE: Ports could be different if you have customized them

MQTT User Name: Is the User -> username just added

MQTT Password : id the User -> password just added

MQTT Client ID is a RANDOM field that must be different for each client connecting to your MQTT Broker

**NOTE: as MUST to use the configuration-addon.yaml template is to setup
Export as -> JSON2**

Status Battery Monitor **Settings**

MQTT CONFIG

MQTT Server **CONNECTED** [Test MQTT](#)

MQTT Server:
MQTT PORT: Use TLS:
MQTT User Name:
MQTT Password:
MQTT Client ID:

Enable MQTT:
Export as:
Flat1 Json1 **Json2**
Publish Refresh [s]:
Publish Pack BATT:
Publish Pack SOC:
Publish Pack W:
Publish Pack V:
Publish Pack I:
Publish Pack ΔV:
Publish Batt Average V:
Publish Pack Temp:
Publish BMS Alarms Stream:

PUBLISHED JSON Topic:
"b0": 2947,
...,
"b15": 2949 ==> milliVolts
"SOC": 27, ==> Status of Charge [%]
"PWT": 42, ==> Battery Pack Watt [W]
"PMV": "47.10", ==> Pack Volts [V]
"PMA": "0.90", ==> Pack Current [A]
"PDV": 6, ==> Delta mVolts between cells [mV]
"AMV": "2946.00" ==> Average mVolts on cells [mV]
"TMP": 10, ==> Pack temperature in [C]

[Submit](#)

[BACK to CONFIG](#)

[GENERATE IoTMQTT Panel CONFIG](#)

[MQTT MANUAL](#)

EDIT YOUR CONFIGURATION.YAML

Get the file : “*configuration-addon.yaml*”.

From ScanLabs BMS data Extractor version 3.2.5 is part of the SW release on the folder “HA”, or you can directly download from here: [configuration-addon.yaml](#)

Open the file, you will find a section “**mqtt**” where we define a new “sensor” type.

Each “**sensor**” is composed by multiple “**entities**” (-name: section on the yaml file)

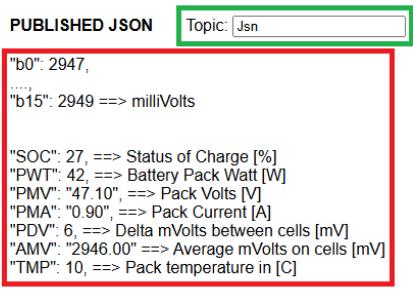
Each “**entity**” has a “name” and a “**state_topic**” field among the others

As MUST to do, configure each “**state_topic**” to match what you have set on the ScanLabs BMS data Extractor.

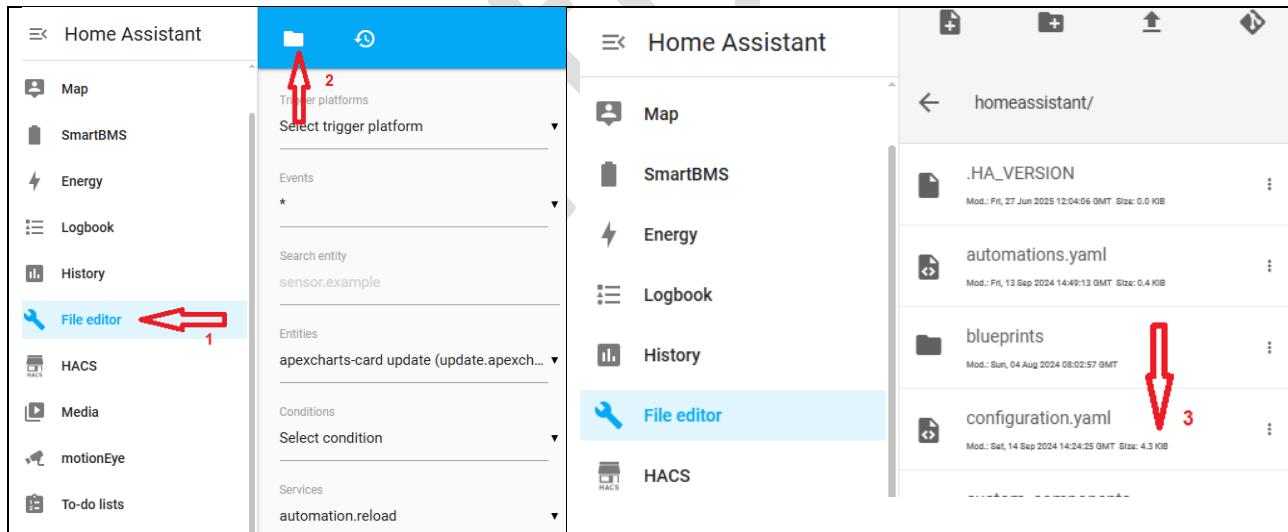
If you have multiple battery packs you MUST :

- 5- CLONE the “sensor:” for each Battery Pack you have

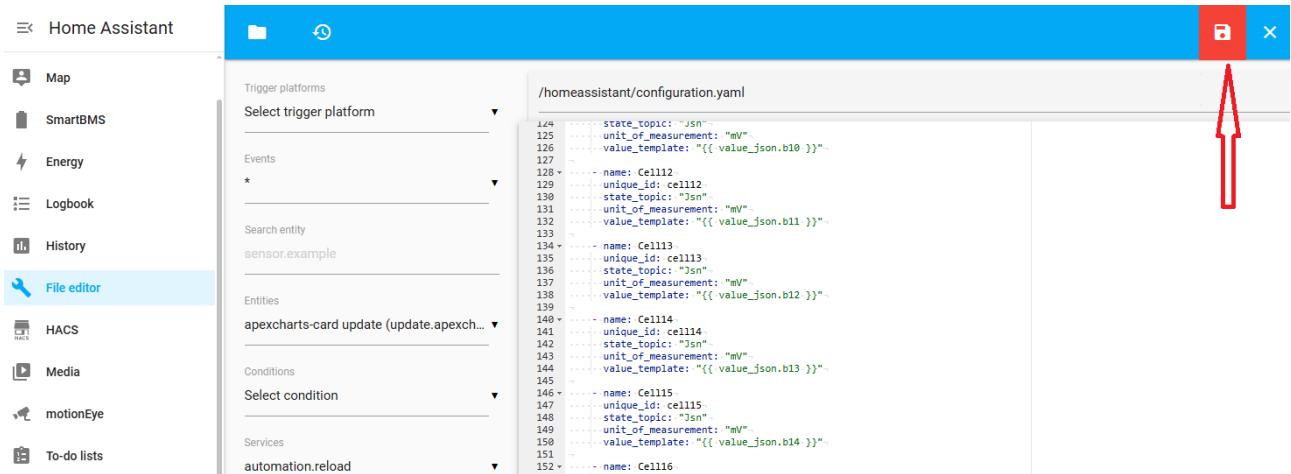
- 6- EDIT each “sensor”->“entity” ->“state_topic” to match the S.B.D.E “Published JSON Topic” available on the MQTT dongle’s page .

<pre> mqtt: sensor: - name: Status of Charge unique_id: status_of_charge state_topic: "Jsn" unit_of_measurement: "%" value_template: "{{ value_json.SOC }}" - name: Average mVolts on Cells unique_id: average_mvols_on_cells state_topic: " Jsn " unit_of_measurement: "mV" value_template: "{{ value_json.AMV }}" } { - name: Pack Volts unique_id: pack_volts state_topic: " Jsn " unit_of_measurement: "V" value_template: "{{ value_json.PMV }}" } </pre>	<p>Cut & Paste the “configuration-addon.yaml” content into you configuration.yaml file.</p> <p>As you can notice: HA state_topic: “Jsn” == Dongle PUBLISHED JSON Topic HA value_json.XXXX == Dongle Published fields</p>  <pre> PUBLISHED JSON Topic: Jsn "b0": 2947, ... "b15": 2949 ==> milliVolts "SOC": 27, ==> Status of Charge [%] "PWT": 42, ==> Battery Pack Watt [W] "PMV": "47.10", ==> Pack Volts [V] "PMA": "0.90", ==> Pack Current [A] "PDV": 6, ==> Delta mVolts between cells [mV] "AMV": "2946.00" ==> Average mVolts on cells [mV] "TMP": 10, ==> Pack temperature in [C] </pre>
--	---

EDIT YOUR CONFIGURATION.YAML



COPY the modified “*configuration-addon.yaml*” into your HA configuration.yaml file
 Press on Save Icon when done



CREATE YOUR SMART BMS DASHBOARD

GO to “Settings”->“Dashboard” -> “+ ADD DASHBOARD”

The screenshot shows the Home Assistant Settings page with the 'Dashboards' section selected. A red arrow labeled '1' points to the 'Settings' icon in the sidebar. Another red arrow labeled '2' points to the 'ADD DASHBOARD' button at the bottom of the list. A third red arrow labeled '3' points directly at the 'ADD DASHBOARD' button. The list of dashboards includes:

Title	Configuration method	Ad...	Show...
Overview	UI controlled	-	✓ OPEN
Energy	UI controlled	-	✓ OPEN
Map	UI controlled	-	✓ OPEN
SmartBMS	UI controlled	-	✓ OPEN

→ “Default dashboard”

Edit the 1- Dashboard Title, 2-the Icon and finally CREATE

The fresh new Dashboard is added on the left column of HA console

Click on the Dashboard Name and to the pen-icon to start editing

Add a New Section



AS EXAMPLE, select a GAUGE CARD to visualize a BMS parameter

X Add to dashboard

By card By entity

Search cards
gauge

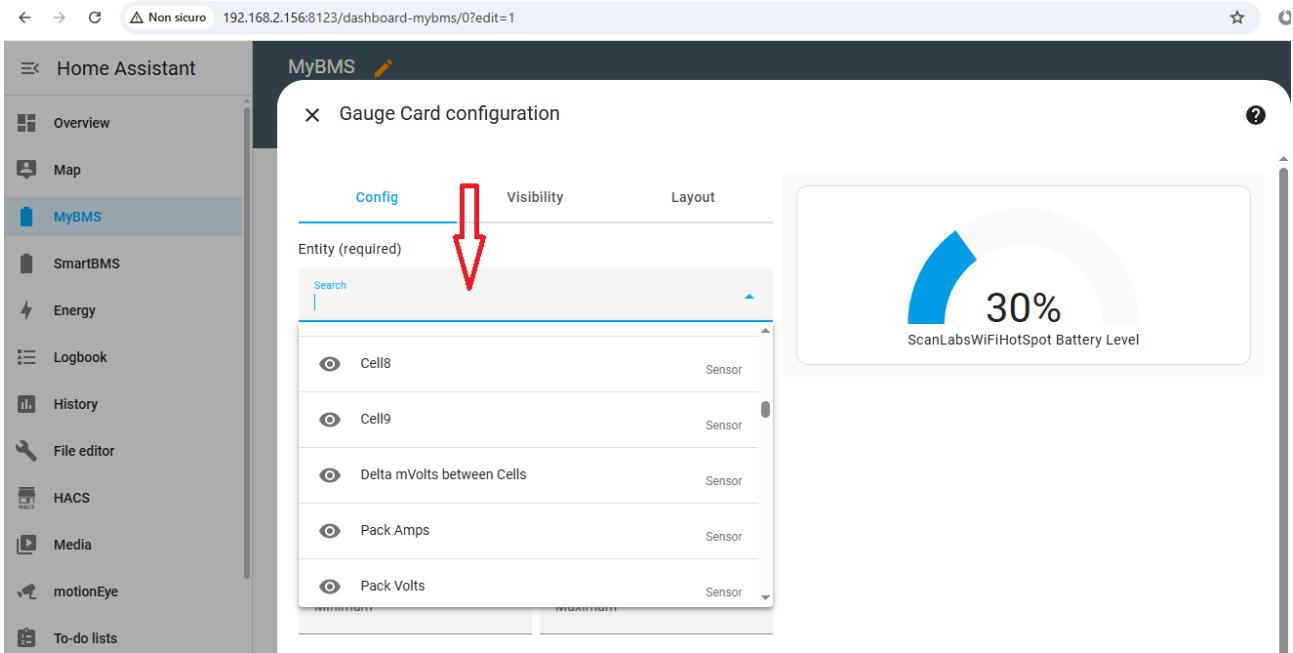
Gauge

30%

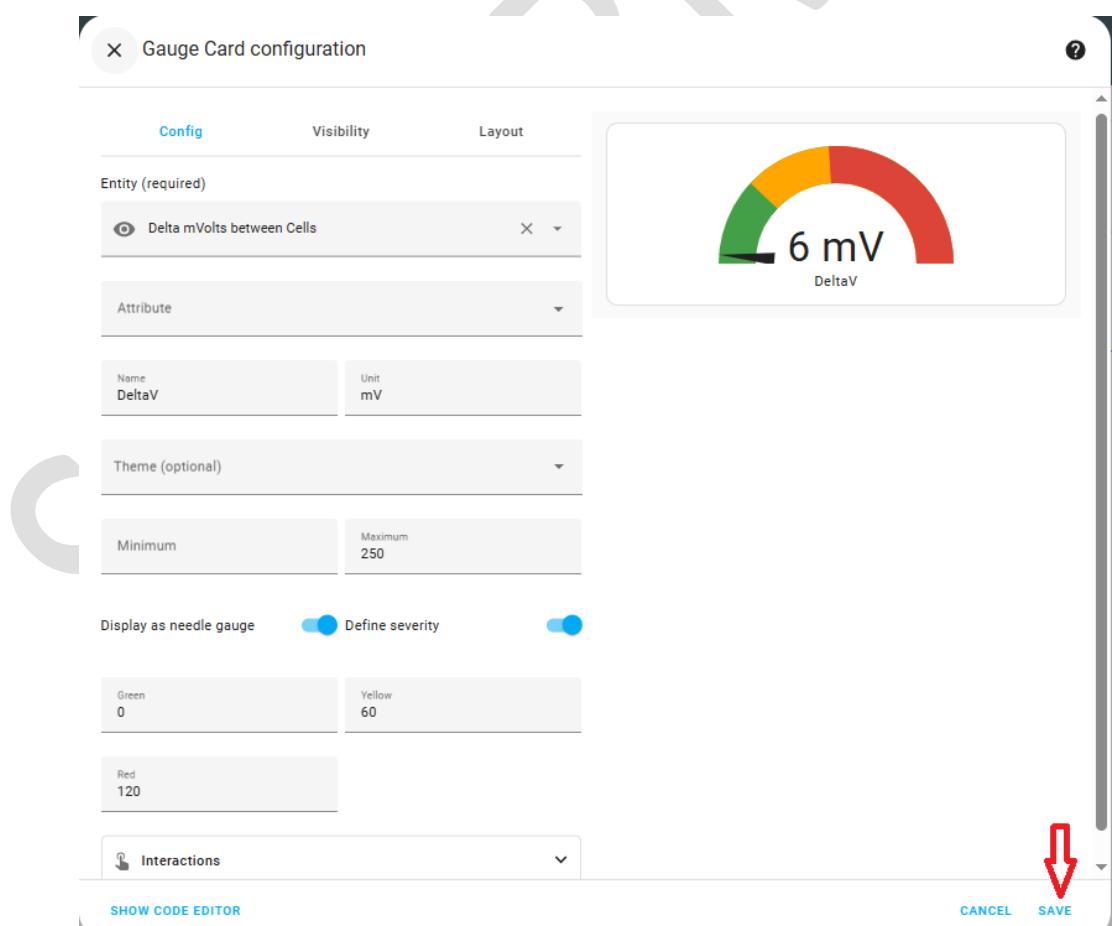
ScanLabsWiFiHotSpot Battery Level

A screenshot of the 'Add to dashboard' search interface. It shows two tabs: 'By card' and 'By entity'. Under 'By card', a search bar contains 'gauge'. Below it, a 'Gauge' card is displayed, showing a blue arc gauge with '30%' and the text 'ScanLabsWiFiHotSpot Battery Level'. A red arrow points to the '+ Add card' button in the previous screenshot, indicating where to click to add this card to the dashboard.

On the “Entity” fields you must to search for the same names added via the configuration-addon.yaml file



EXAMPLE showing “Delta mVolts between Cells” via a GAUGE CARD
When setup is done – click on SAVE



TASMOTA COLOR DISPLAY with ScanLabs BMS Data Extractor

v3.0 31-10-2025

Following this basic tutorial, you will be able to build and configure a colour-graphic display based on the [TASMOTA](#) project.

From config files version >=3.0, the Colour Display connects via **Wi-Fi and MQTT(s)** to the MQTT broker and/or via **MODBUS TCP** directly to the ScanLabs Dongle when MODBUS Server is enabled.

With the color display you can monitor one or many battery packs info.



Total project cost is about 15\$ (for the display & enclosure) + 2\$

Time to make it: 10 minutes (if you follow this tutorial ;-))

Time to print stl: 2-3h (depending on your 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
 - **ESP32-3248S035** -> Colour Display ESP32 -3.5inches ([Link](#))
- 1 or many* Enclosure for the Colour Display (2.8inches – 3.5” on the way)
 - [Free STL option 1](#) 2.8”
 - [Free STL option 2](#) 2.8”
 - [Free STL option 3](#) 2.8”

Why 1 or many?

*One display can show multiple Battery Packs on multiple Dashboards (pages on the display) . Each battery pack has its own **DashBoard ID**. BMS could also be located on different cities and from different type/vendors.

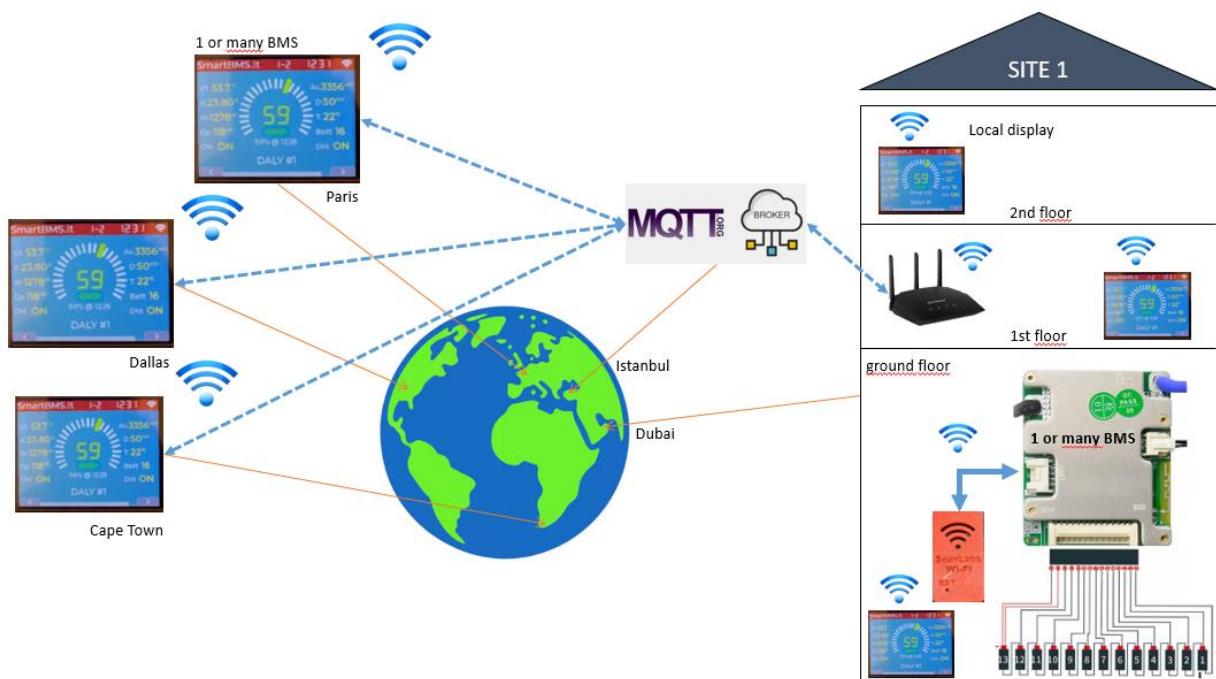
**Being an MQTT based display you can build as many as you want, all of them will show the same info even on different places of the world or the house (where Wi-Fi connectivity to internet is available)

** Using MODBUS connectivity I can estimate that max 3 Displays can be directly connected to one ScanLabs Dongle. MODBUS is typically used for local Point to Point WiFi link even without Internet connectivity.

One BMS – Internet Connection – 1 or More colour Display MQTT

One dongle monitors one BMS, the dongle in Wi-Fi connected to the AP able to reach internet. Via MQTT you can install as many display you needs located everywhere there is an internet Wi-Fi connection.

(locations reported hereunder were randomly selected just for the sake of the explanation)

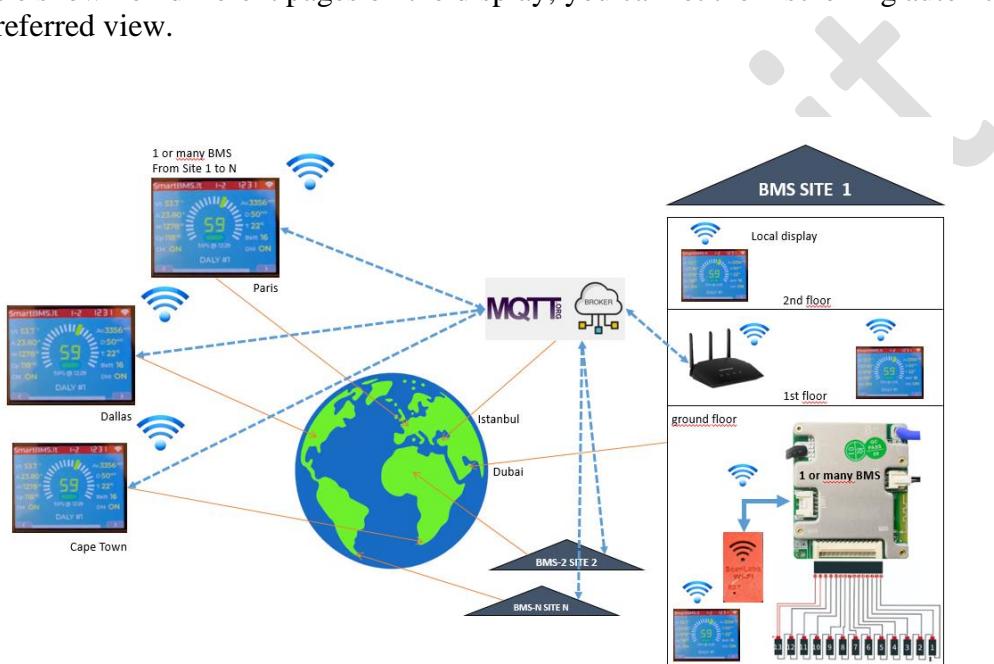


MULTIPLE BMS – Internet Connection – 1 or + colour Display MQTT

Multiple BMS – same model or from different vendors, same or on different locations , does not care.

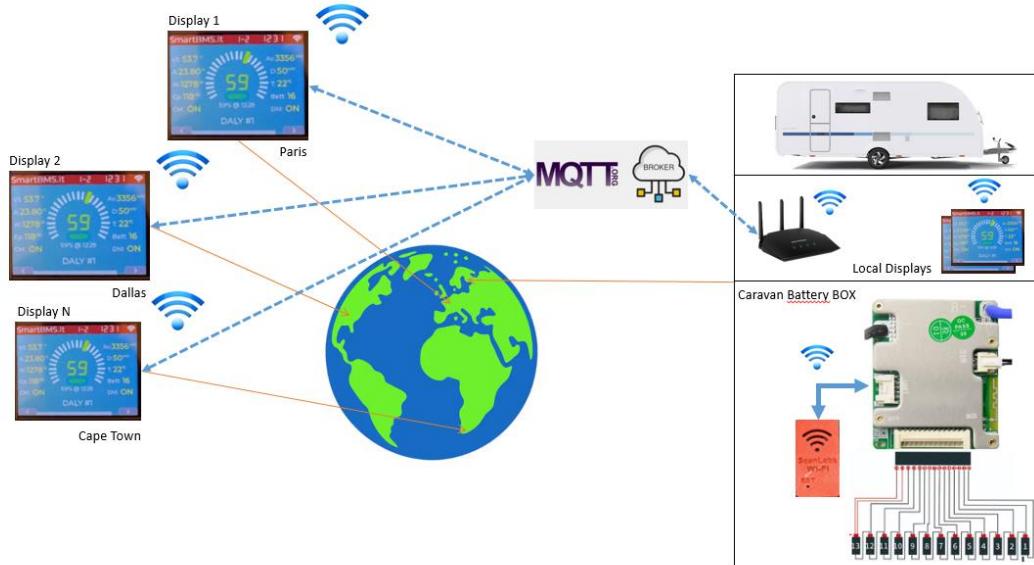
Each BMS access Internet via the ScanLabs Smart BMS data extractor to the SAME MQTT Broker.

You can install as many display you need located everywhere there is an internet WiFi connection. Multiple BMS are shown on different pages on the display; you can let them scrolling automatically or select your preferred view.



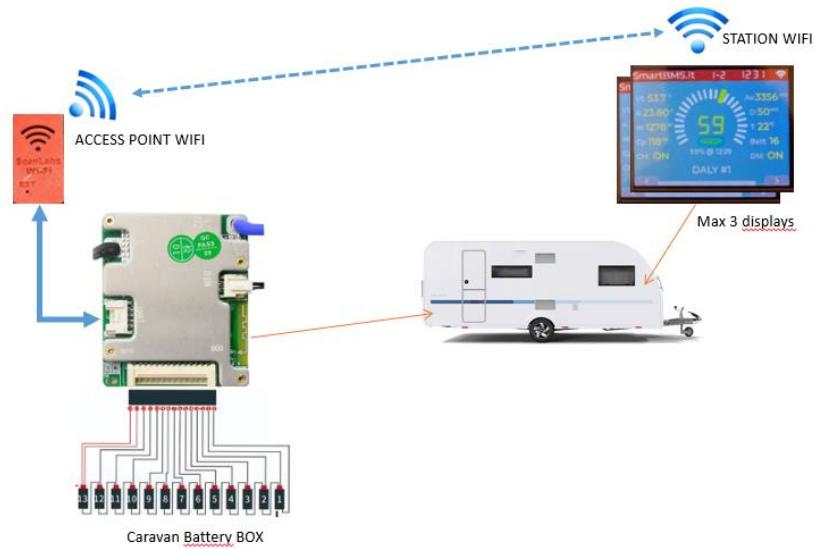
CARAVAN - BOAT - CHALET - WITH INTERNET CONNECTIVITY

Same comments as for scenario 1



CARAVAN - BOAT - CHALET - **WITHOUT INTERNET CONNECTIVITY**

If you do not have Internet connectivity OR you don't want to use an MQTT broker you can configure the ScanLabs BMS Smart data Extractor as a WiFi Access Point, let 1 to 3(MAX) display connect to it using MODBUS TCP direct connection.



QUICK INTRO to [TASMOTA](#) is an open source project that allows creating graphical Dashboard. Multiple display are supported, even bigger in inches. You can adapt this job to different panels. What you need is to be inspired by the “*pages.jsonl*” dashboard configuration and by the “autoexec.be” Berry script file for unpacking MQTT and show the data. Add your stuffs and customize your dashboard. Let us MAKE IT!

BUILD IT STEP-BY-STEP GUIDE

BEFORE TO START: the display [ESP32-2432S028r](#) is very nice and cheap BUT is missing of enough RAM to manage more than 1 BMS Dashboards . Adding 4MB PSRAM is very easy and highly recommended.

Moreover, the display has a trivial mistake on the light sensor. If you want to let the brightness of the display according to the ambient light, you need a basic modification. For Both the HW modification goes to APPENDIX B.

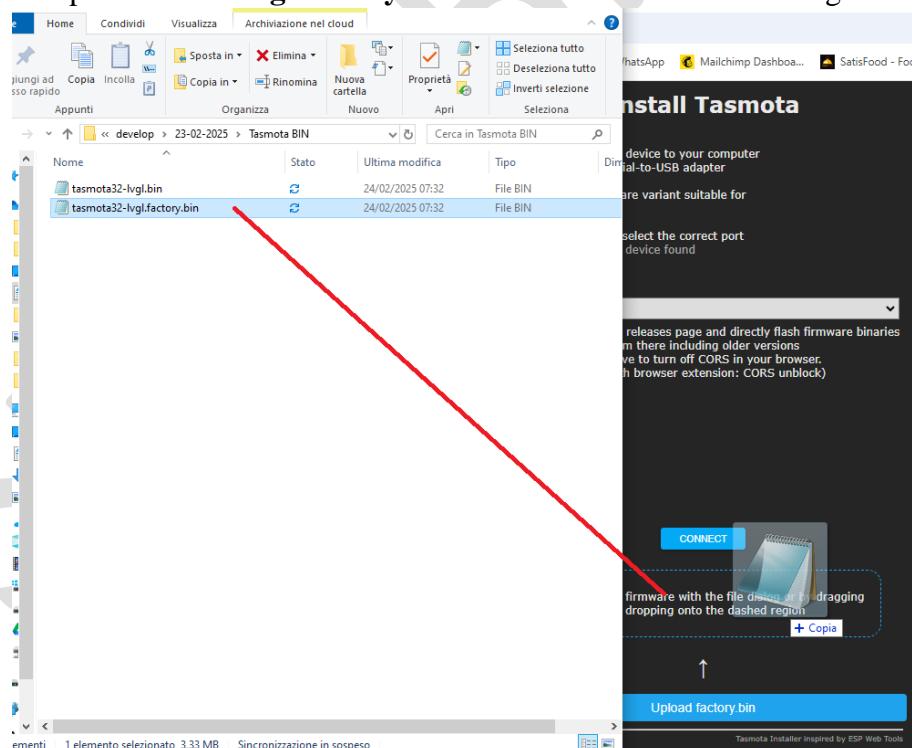
We need **TASMOTA LVGL** graphic libraries for this project.

Even if you can download the [TASMOTA](#) binaries from <http://sidweb.nl/tasmota32/> and rebuild, you need to enable some compilation flags.

You can use this binary already built : [ScanLabs Eng. Tasmota build \(14.6.0.2 – lvgl-haspmota \)](#)

1- Open <https://tasmota.github.io/install/>

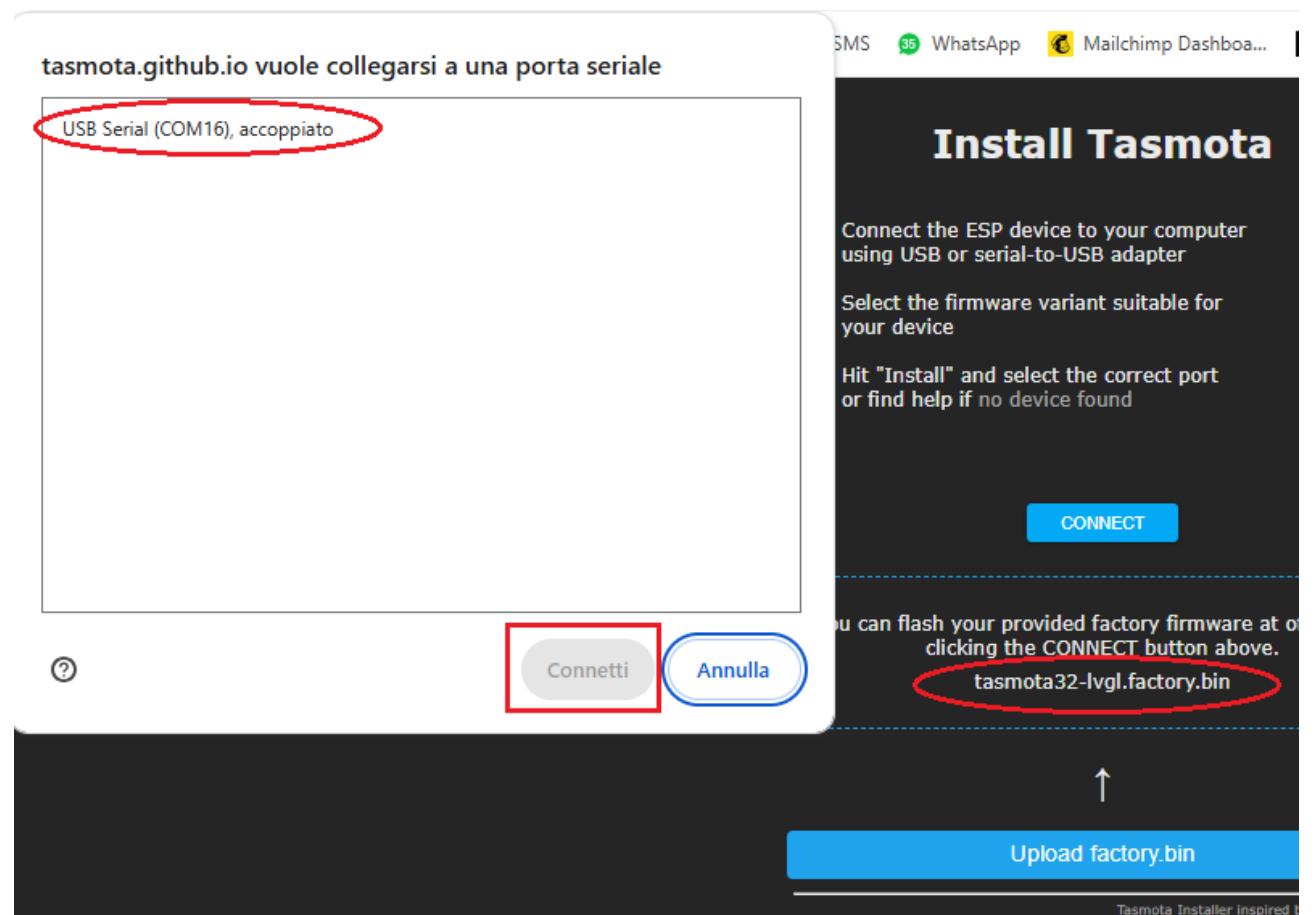
2- Drag & drop **tamosta32-lvgl.factory.bin** into the BOX like in the image



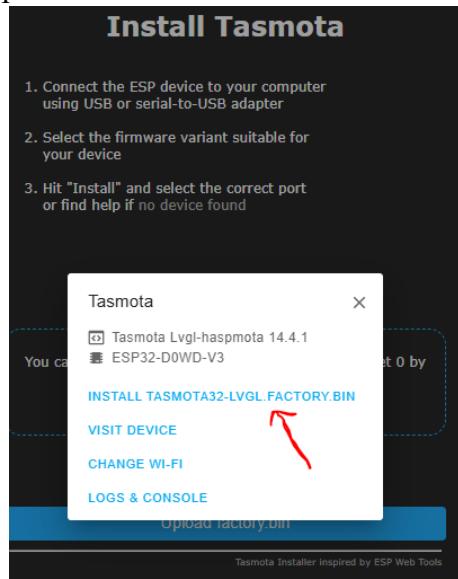
3- connect [ESP32-2432S028r](#) via USB type B or C to your computer

4- Press on “CONNECT” on the [TASMOTA](#) WebPage

- 5- A popup open with the list of the COM Port detected.
- Select the one belonging to the display.
 - Press on “Connect”



6- When the next popup appears select “INSTALL TASMOTA32-LVGL.FACTORY.BIN”

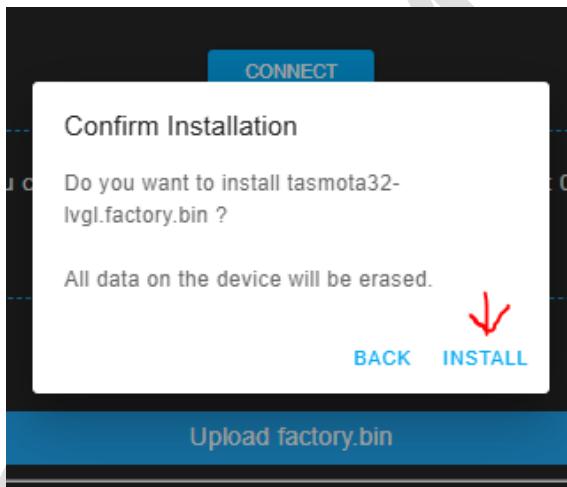


Select “ERASE ALL”

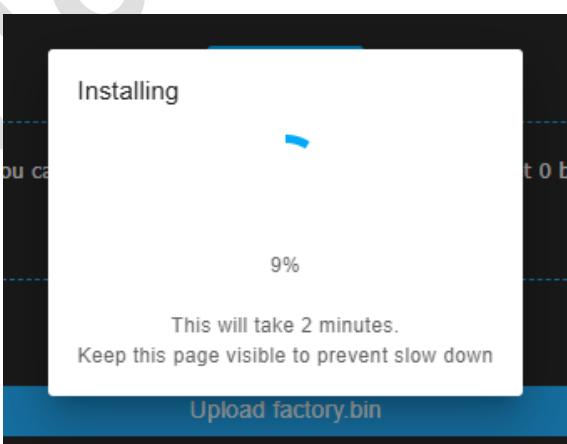
7- Select “NEXT”



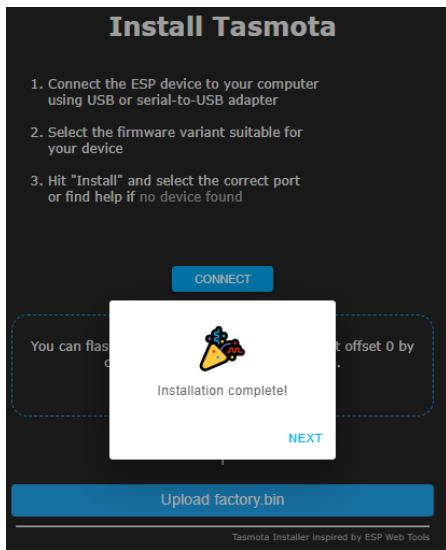
8- Click on “INSTALL”



9- Be patient, it takes about 2 minutes to upload the firmware on the display

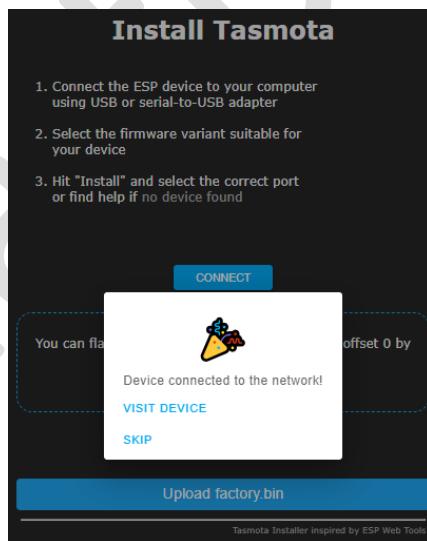


10- If all goes right you'll land here – Press “NEXT”



11- You will asked for your WiFi SSID and Password. Enter it

12- If everything was ok adding your wifi credentials the following message is show: “Device connected to the network !”
Click on “VISIT DEVICE”



NOTE: If you were wrong with WiFi Settings, you can follow these steps :

- 1- Power Cycle the Color Display
- 2- With your PC or mobile Scan for WiFi networks looking for “tasmota-XXXXXX-XXXX”

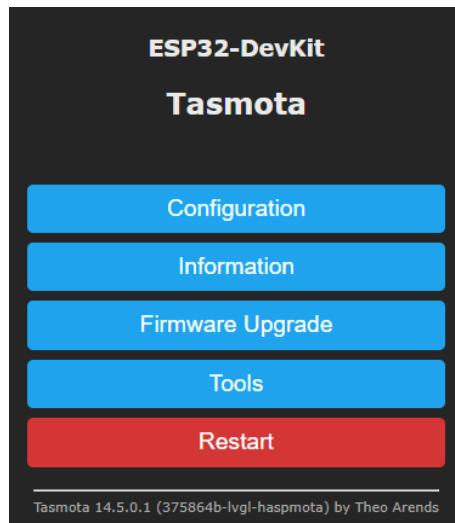
For instance – like this



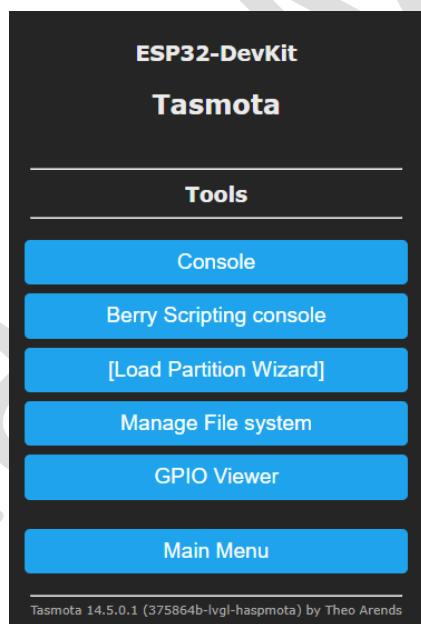
- 3- Once connected go with your PC to the <http://192.168.4.1>

13- The following web page open

Take note of the Display IP Address assigned by your router on the top of the web page
Click on “TOOLS”



14- Click on “Manage File system”

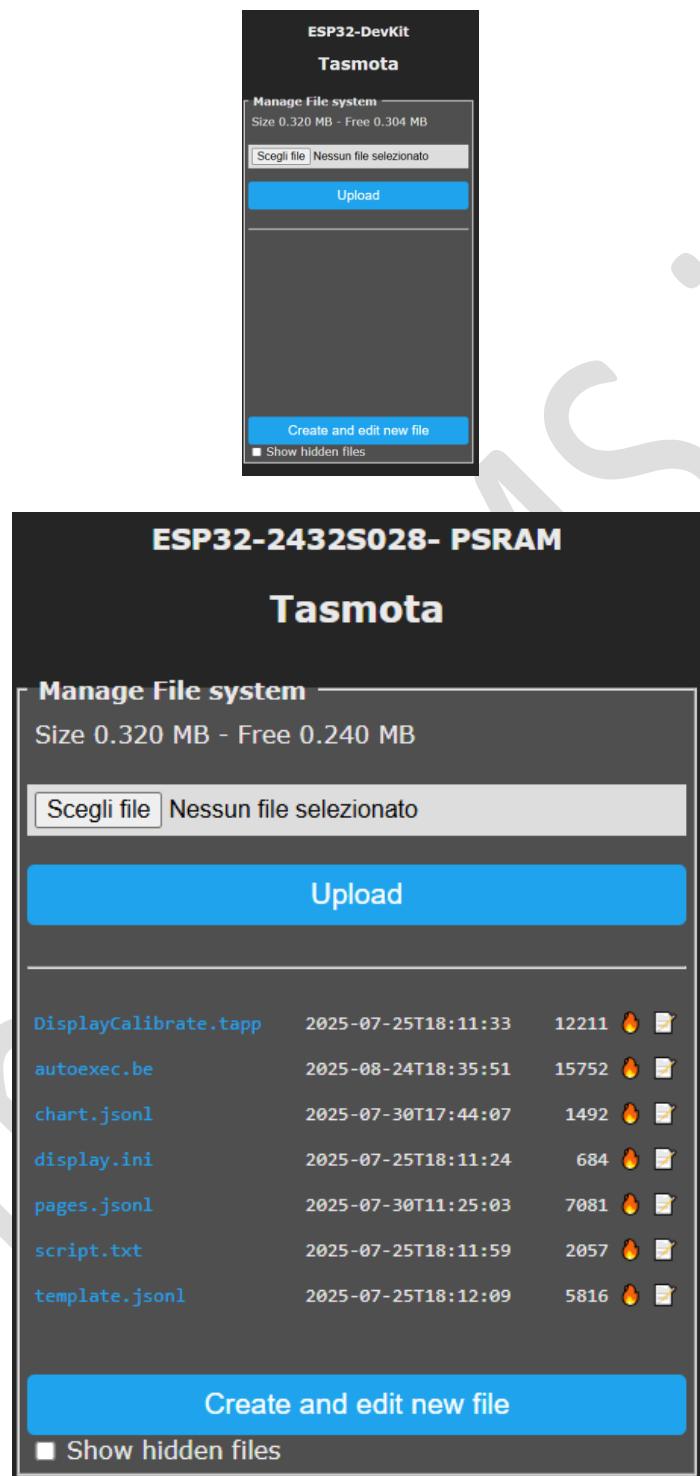


15- From [HERE](#) download the file “**ScanLabs Tasmota.zip**” unzip it .

NOTE: The same package is on the dongle FW package

in /configuration/ NOTE: select the folder corresponding to your display type/size	“autoexec.be” “display.ini” “pages.jsonl” “template.jsonl” “DisplayCalibrate.tapp” “script.txt” “chart.jsonl”	-> Main file doing the dirty job -> Initialization of the display -> Main dashBoard Layout -> Template for generating the BMS dashboard -> File for touch calibration -> MODBUS file descriptor -> Chart Dashboard builder
---	---	---

16- Upload on the display file system ALL the files in “configuration” folder .
“Select File” for each of them and “Upload” one by one



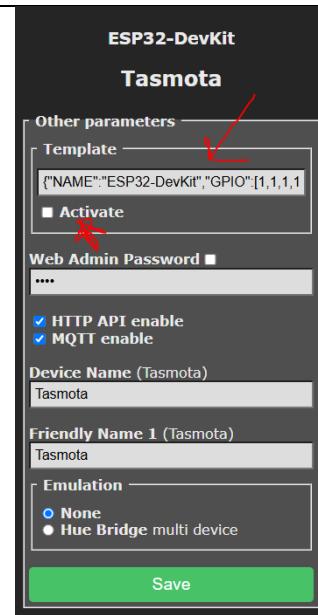
17- Go to : “Tools -> Main Menu -> Configuration -> Other”

a. COPY the following:

- i. 2.8" display if you **DO NOT HAVE** extra PSRAM
{"NAME":"ESP32-2432S028","GPIO":[6210,1,800,0,448,0,1,1,672,704,736,768,449,1,1,1,0,992,1,1,0,737,48,0,1,0,0,0,705,10944,4704,1,11008,0,0,673],"FLAG":0,"BASE":1}
- ii. 2.8" display if **YOU HAVE** added extra PSRAM (ANNEX B)
{"NAME":"ESP32-2432S028-PSRAM","GPIO":[6210,1,800,0,448,0,1,1,672,704,736,768,1,1,1,0,992,1,1,0,737,480,1,0,0,0,0,705,10944,4704,1,0,0,0,673],"FLAG":0,"BASE":1}
- iii. 3.5" display if you **DO NOT HAVE** extra PSRAM
{"NAME":"esp32-3248S035C","GPIO": [0,1,800,6210,320,1,1,1,672,704,736,768,321,322,1,1,0,0,1,1,0,1,1,992,0,0,0,0,608,640,1,1,1,0,1,1],"FLAG":0,"BASE":1}
- iv. 3.5" display if **YOU HAVE** added extra PSRAM (ANNEX B)
{"NAME":"esp32-3248S035C-PSRAM","GPIO": [0,1,800,6210,320,1,1,1,672,704,736,768,1,1,1,0,0,1,1,0,736,1,992,0,0,0,0,704,10944,1,1,11008,0,1,672],"FLAG":0,"BASE":1}

- b. Place the string on the “Template” box
c. Click on “Activate”
d. Click on “SAVE” at the bottom

A display reboot will be issued automatically.



18- At this point, rebooting the display you should be able to see the DASHBOARD.
If not repeat points from pt 16.

NOTE: I have found different displays on the market looking the same but with some differences.

If after the reboot you see wrong colors , mirrored screen or even rotated screen or with corrupted lines ... you can try to use the alternative display.ini file on the “other” folder available on “**ScanLabs Tasmota.zip**”

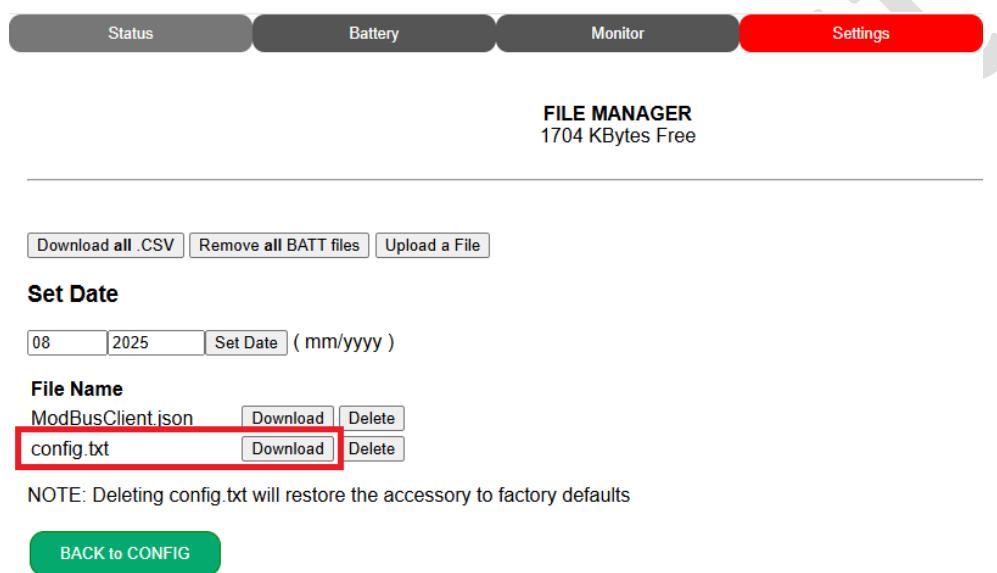
IF you still have problem, link with me via [DISCORD](#), I will help.

NOTE 2: Many are asking for larger displays, there's no limit indeed . display.ini and the page templates needs to be fixed in order to adapt them to the size and resolution.
Please link with me to build a collection of setup file.

CONFIGURATION OF THE DISPLAY for MQTT USERS

NEWS: From Display configuration file (autoexec.be) version 5.0 you can follow this alternate way for configuring MQTT.

- 1- Go to the dongle -> Settings -> “LOG&FILES”, on the list of file detect the file “config.txt” and **DOWNLOAD** it

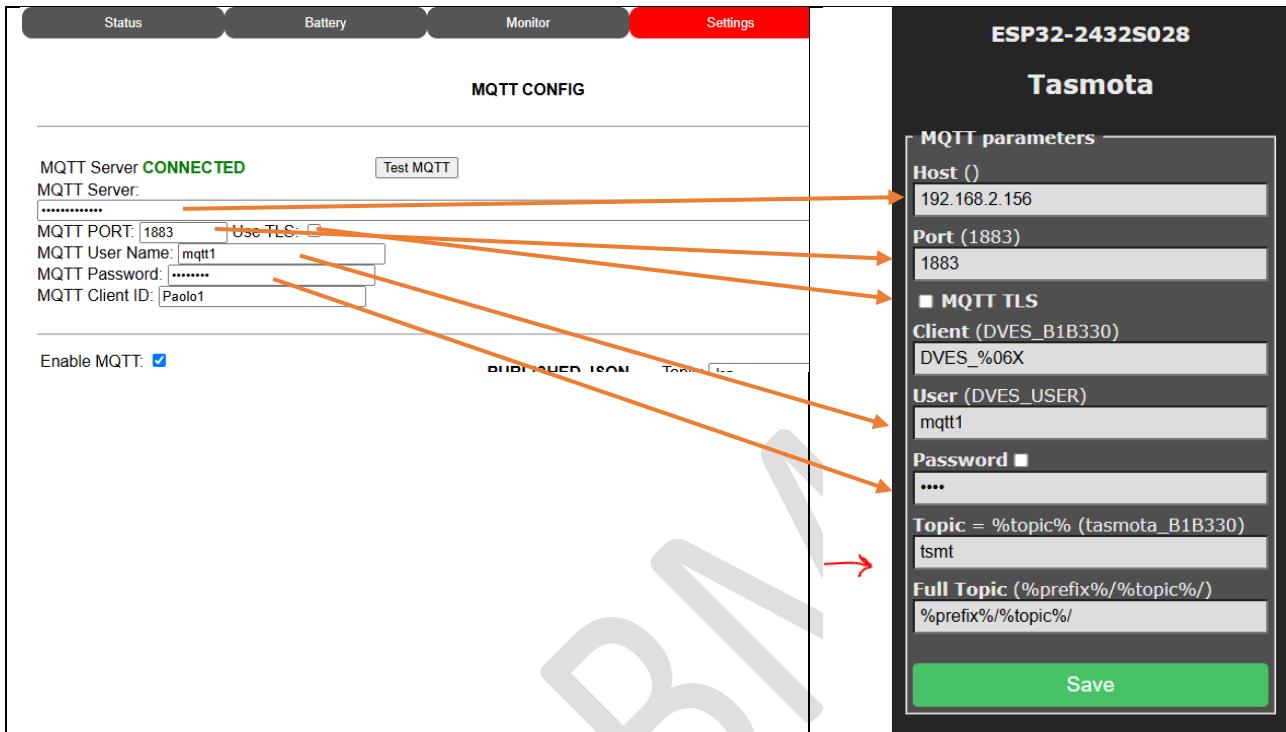


- 2- Upload “config.txt” file to the DISPLAY “Tools” -> “Manage File System”
- 3- Reboot the display. If I did a good job , after the reboot your display will self-config with the same info stated on the “config.txt” file

IF YOU WANT TO CONFIGURE MQTT MANUALLY:

- 1- From MAIN menu click on “**CONFIGURATION**” -> “**MQTT**”

Here you need to copy EXACTLY the data you have added into the [ScanLabs](#) dongle.



- 2- In the “**Topic**” field set “tsmt”
- 3- Save

CONFIGURATION OF THE DISPLAY for MODBUS USERS

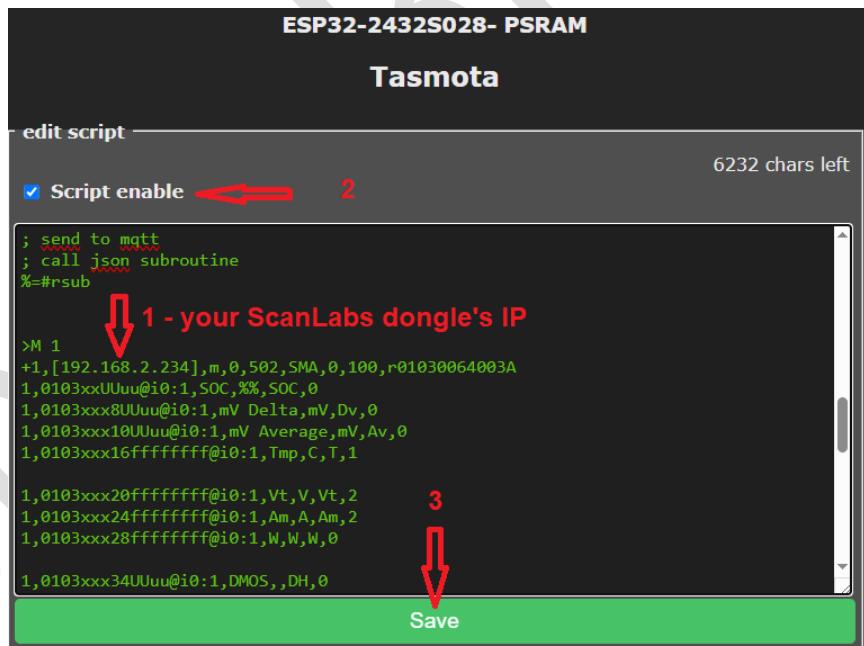
A configuration file called “**script.txt**” is given to make your life easier ;-)
The only thing you need to do is to set your MODBUS Server IP and PORT
MODBUS Server IP could be the ScanLabs dongle itself (if you have enabled the ModBus Server on it) OR Any Other MODBUS Server exposing the data like the ScanLabs MODBUS Server does and like the script is looking for and like.

- 1- Go to “**Tools**” -> “**Edit Script**” find the line on the script as follow
REPLACE “192.168.2.234” with your ScanLabs dongle IP address.

```
>M 1
+1,[192.168.2.234],m,0,502,SMA,0,100,r01030064003A
```

NOTE: if you have set the **SSBdE** as AP, the default IP address is **192.168.0.1**

NOTE: **SSBdE** expose an MODBUS Server on Port **502** – if your Server uses a different port – fix it accordingly



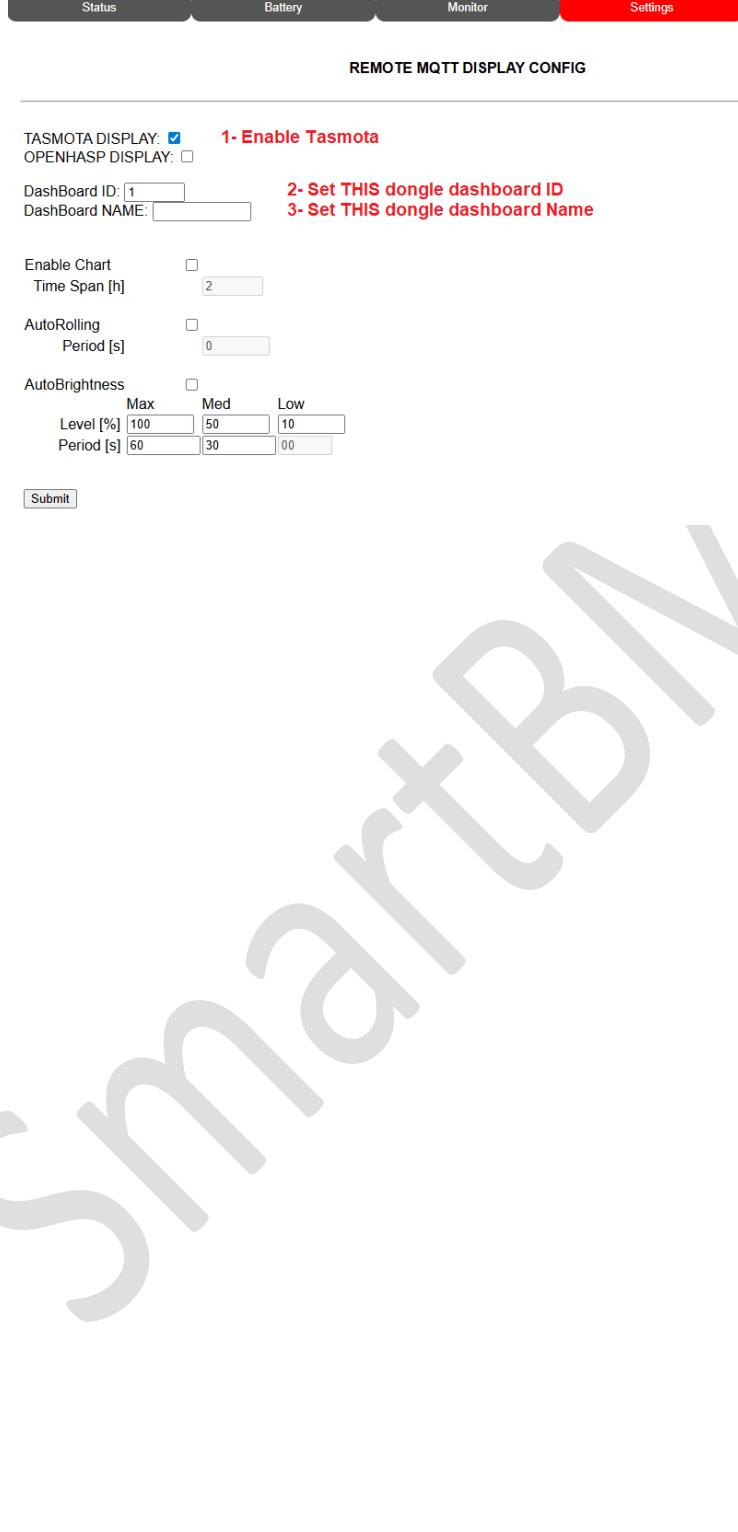
- 2- Click on “**Script enable**”

- 3- Click on “**Save**” button

When / if the Smart Meter Script is activated and running, on the TASMOSTA main Web Page you will find

ESP32-2432S028- PSRAM	
Tasmota	
Analog1	454
SMA SOC	61 %
SMA mV Delta	3 mV
SMA mV Average	2950 mV
SMA Tmp	26.0 C
SMA Vt	47.20 V
SMA Am	0.90 A
SMA W	42 W
SMA DMOS	1
SMA CMOS	1
SMA Num	16
SMA Max Soc	61 %
SMA Max hh	8 h
SMA Max mm	42 m
SMA BCap	122 Ah
SMA Fail	0
SMA CN	3150
SMA TZ	2
SMA Dashboard	1
SMA Display1	274356826
SMA Display2	168017950

21- On the [ScanLabs](#) dongle : “SETTINGS” -> “DISPLAY” enable “TASMOTA DISPLAY” + “SUBMIT”

 <p>The screenshot shows the “REMOTE MQTT DISPLAY CONFIG” page. At the top, there are tabs for Status, Battery, Monitor, and Settings (which is highlighted). Below the tabs, the title is “REMOTE MQTT DISPLAY CONFIG”. Underneath, there is a section for “TASMOTA DISPLAY” with a checked checkbox labeled “1- Enable Tasmota”. Below this, there are fields for “DashBoard ID” (set to 1) and “DashBoard NAME” (empty). To the right of these fields, three red instructions are listed: “2- Set THIS dongle dashboard ID”, “3- Set THIS dongle dashboard Name”. There are also sections for “Enable Chart” (checkboxes for “1” and “2”), “AutoRolling” (checkbox for “Period [s]” set to 0), and “AutoBrightness” (checkbox for “Level [%]” with three sliders: Max (100), Med (50), Low (10) and “Period [s]” sliders at 60, 30, 00). A “Submit” button is at the bottom.</p>	<p>Each Display can show MULTIPLE BMS . Each BMS has its own</p> <ul style="list-style-type: none"> • DashBoard ID • DashBoard Name <p>Each ScanLabs dongle needs to export different DashBoard ID</p> <p>ONLY the ScanLabs dongle exporting the DASHBOARD ID = 1 has the task for configuring the display behaviour for</p> <ul style="list-style-type: none"> • Show Chart • Auto-Rolling • Auto-Brightness <p>Show Chart: Display can show chart on selectable time window. NOTE Display with extra PSRAM are highly suggested especially if “Time Span” is larger than 1.</p> <p>Auto-Rolling: is a way to let the display moving through the different Dashboards sequentially after <i>Period</i> seconds.</p> <p>Auto-Brightness: when set, enable the lux sensor on the display to adjust automatically the display brightness. When DISABLED, the 3 Brightness levels on the table are considered</p> <p>NOTE: Auto-Brightness needs display HW modification – See ANNEXA</p>
---	---

22- Et voila’ – you are DONE !

ANNEX A

HOW TO SETUP MULTI-PAGES DISPLAY

NOTE: [ESP32-2432S028r](#) has not enough RAM to manage large haspmota – pages.json configuration file.

If you want to have more than one Dashboards on your display OR if you want to add CHARTs it's a MUST to **add 4MB PSRAM** – it requires an almost trivial HW modification – See ANNEX B

From ScanLabs-TASMOTA configuration files version 3.0 -> every time a new battery pack is detected – it is automatically added to the Display DASHBOARDS.

REMEMBER: You also have to configure each [ScanLabs](#) BMS data Extractor to export a different Dashboard ID .

Dashboard ID == Page ID

REMEMBER: Dongle with DashBoard ID = 1 is the master – only this dongle set the other parameters like display brightness behaviour or DashBoards rolling pages behaviour.

REMEMBER: Each ScanLabs Dongle MUST use the same MQTT broker (same mqtt setup) to let the TASMOTA display to show multiple BMS
See a Video [here](#) :-)

ANNEX B

HW MODIFICATION

ADDING 4MB PSRAM

Thanks and applauses goes to [hexeguitar](#). Reported hereunder are the results of his work.

NOTE: There are different HW around, the one on the image is very old – please go till the end of this description, I add my 2 cents to hexeguitar job to make it applicable modern display.

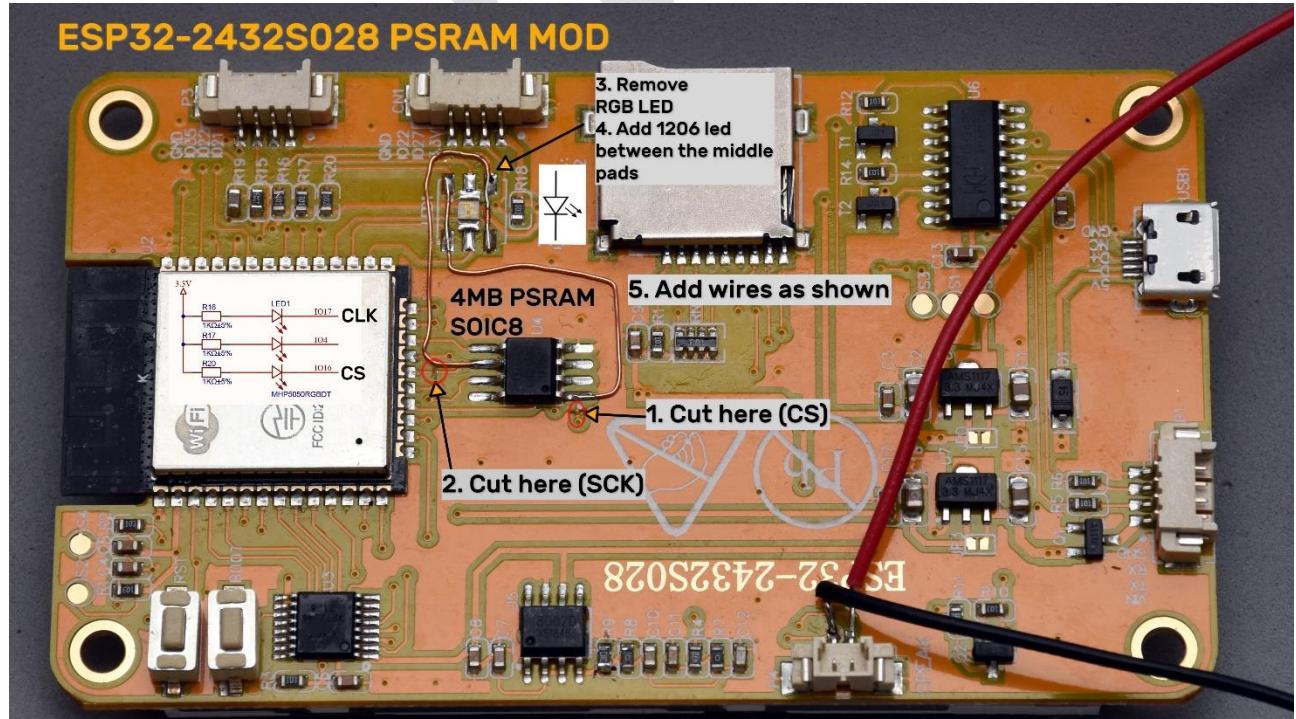
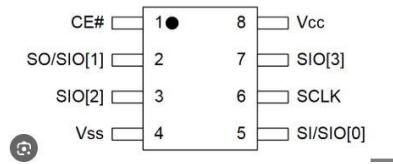
PSRAM MODELS

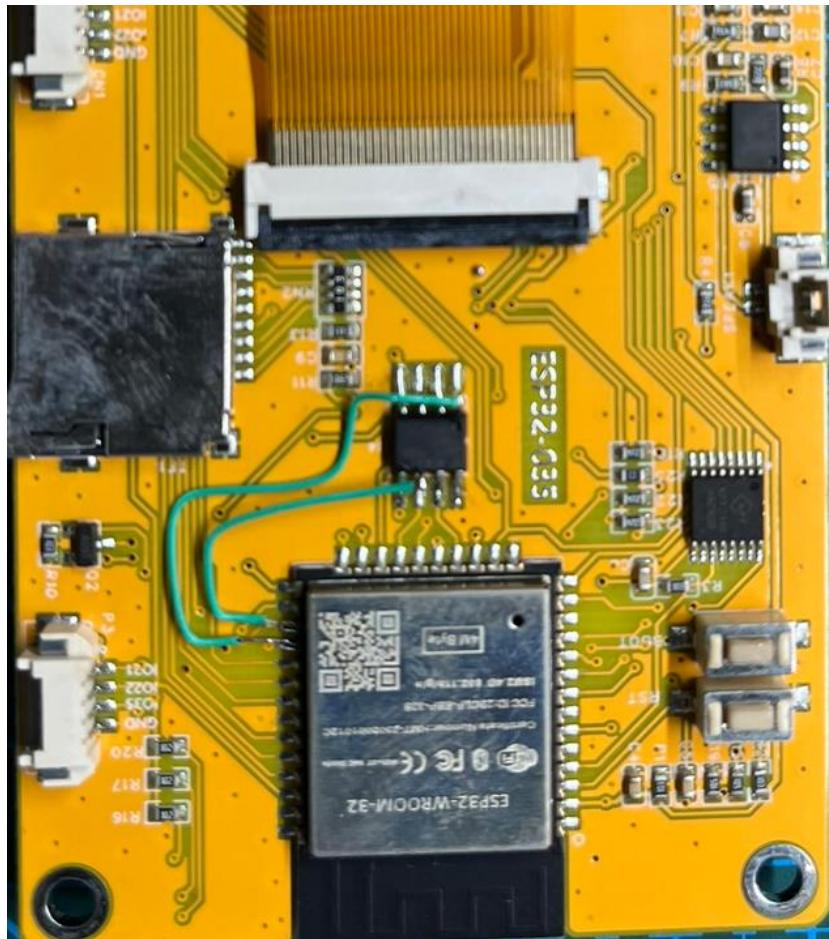
Suitable PSRAM chips:

- APS6404L-3SQR-SN - 64Mbit (8MB) version, ESP will map only half of it. (Mouser# 878-APS6404L-3SQR-SN)
- APS1604M-3SQR-SN - 16Mbit (2MB) version, probably enough for audio streaming and decoders. (Mouser# 878-APS1604M-3SQR-SN)

Important! - it has to be the **3SQR** version. Models without **3** are 1.8V ones. Won't work in the Display.

APS6404L-3SQR-SN [Aliexpress Link](#)





When Extra PSRAM is added, Tasmota should automatically detect it **provided you have modified the CONFIGURATION file to add the missing signals.**

Cut and Paste on **DISPLAY -> Configuration -> Other** the following configuration:
Activate and Save

For 2.8" display

```
{"NAME":"ESP32-2432S028-PSRAM","GPIO":[6210,1,800,0,448,0,1,1,672,704,736,768,1,1,1,0,992,1,1,0,737,480,1,0,0,0,0,705,10944,4704,1,0,0,0,673],"FLAG":0,"BASE":1}
```

For 3.5" display

```
{"NAME":"esp32-3248S035C-PSRAM","GPIO":[0,1,800,6210,320,1,1,1,672,704,736,768,1,1,1,0,0,1,1,0,736,1,992,0,0,0,0,704,10944,1,1,11008,0,1,672],"FLAG":0,"BASE":1}
```

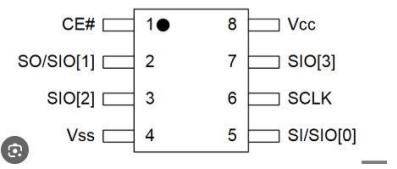
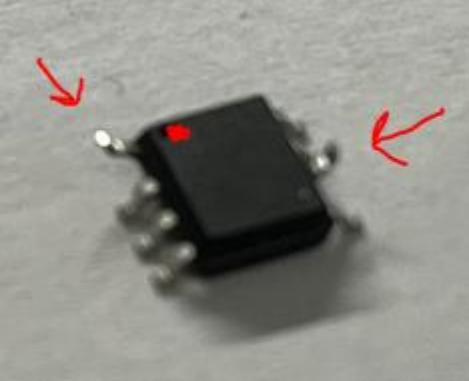
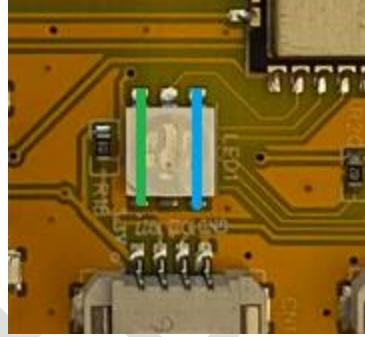
On the main TASMOTA webpage click on **information**, you should find PSRAM like here

Hostname	tasmota-0BB000-4096
IPv6 Local (WiFi)	fe80::8a13:ffff:fe0b:b000%st1
MAC Address	88:13:BF:0B:B0:00
IP Address (WiFi)	192.168.2.80
Gateway	192.168.2.1
Subnet Mask	255.255.255.0
DNS Server1	192.168.2.1
DNS Server2	0.0.0.0
HTTP API	Enabled
MQTT Host	
MQTT Port	1883
MQTT TLS	Disabled
MQTT User	DVES_USER
MQTT Client	DVES_0BB000
MQTT Topic	tasmota_%06X
MQTT Group Topic 1	cmnd/tasmotas/
MQTT Full Topic	cmnd/tasmota_0BB000/
MQTT Fallback Topic	cmnd/DVES_0BB000_fb/
MQTT No Retain	Disabled
Emulation	None
mDNS Discovery	Disabled
ESP Chip Id	765952 (ESP32-D0WD-V3 v3.1)
Flash Chip Id	0x1660C4 (DIO)
Flash Size	4096 KB
Program Flash Size	4096 KB
Program Size	2516 KB
Free Program Space	363 KB
Free Memory	149.6 KB (frag. 26%)
PS-RAM Memory	4096 KB
PS-RAM free Memory	4080 KB
Partition safeboot	832 KB (used 93%)
Partition app0*	2880 KB (used 87%)
Partition fs	320 KB
Main Menu	
Tasmota 14.5.0 (release-lvgl-haspmota) by Theo Arends	

If you do not see this section on the Information page either you were wrong on the HW modification itself or you have not applied the new configuration string.
Please check both

YOUR DISPLAY PCB LOOKS DIFFERENT?

If your display PCB looks a bit different from the images OR you don't want to cut any line on the PCB I can suggest this easy-easy way :

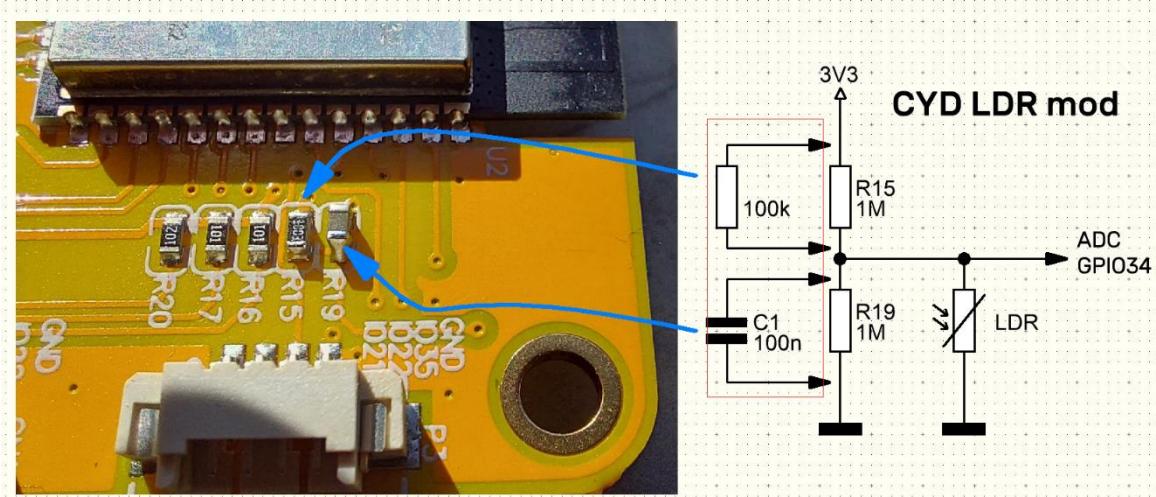
 <p>CE# 1 SO/SIO[1] 2 SIO[2] 3 Vss 4</p> <p>8 Vcc 7 SIO[3] 6 SCLK 5 SI/SIO[0]</p>	<p>ONLY Pins 1 and 6 require an HW modification.</p> <p>Instead of cutting the tracks on the PCB you can simply – gently lift up the PINS 1 and 6 to let them don't touch the PCB pads while you will solder the PSRAM</p>
	<p>RGB Led can be left where it is at the cost of shorting pins on one side with the corresponding on the other side like in the image. The central pair can be left as is.</p> 

FIXING DISPLAY BRIGHTNESS SENSOR

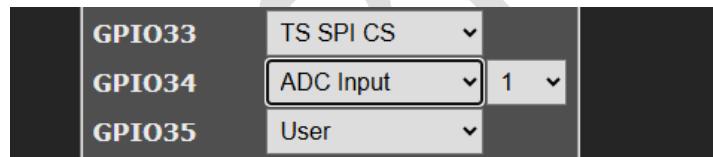
Thanks and applauses go to [hexeguitar](#). Reported hereunder is the result of his work.

The fix consist on adding at least a 100Kohm resistor in parallel to R15 because 1Mohm mounted gives a wrong signal dynamic.

C1 100nF ceramic, even suggested is NOT mandatory because a kind of low pass filter is made in SW.

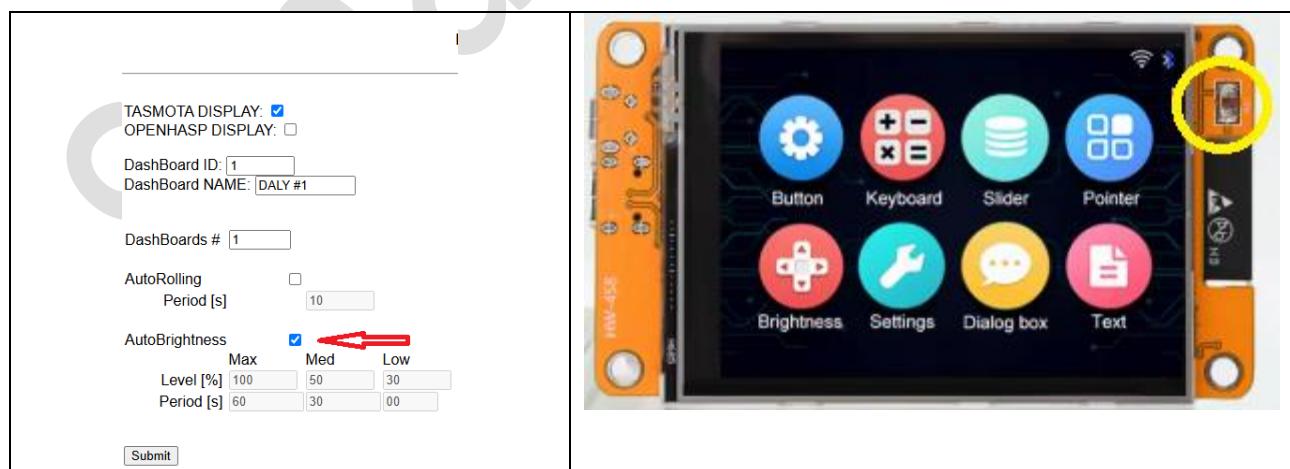


TASMOTA template file has to be fixed like this: **GPIO34 -> ADC Input 1**



To let the display using Auto brightness you need

- 1- From ScanLabs dongle enable the feature
- 2- Let the Light sensor of the display be exposed to the light



ANNEX C
DISPLAY TROUBLESHOOTING

DISPLAY ROTADED or STRANGE COLOR SCHEME

If your display looks rotated and/or with a different colour scheme try to modify your "display.ini" by changing the following lines

```
:H,ILI9341,240,320,16,SPI,1,,,,,*,40  
:r,1  
:R,36  
:0,40,00,00,05  
:1,20,00,00,01  
:2,80,00,00,06  
:3,E0,00,00,00
```

For any other display issue, better to link with me and or support community via DISCORD



LARGER DISPLAY 480x320

Larger display are partially supported, still some fixing (you could complete yourself ;-))
Configuration files released as Beta version on the Fw package

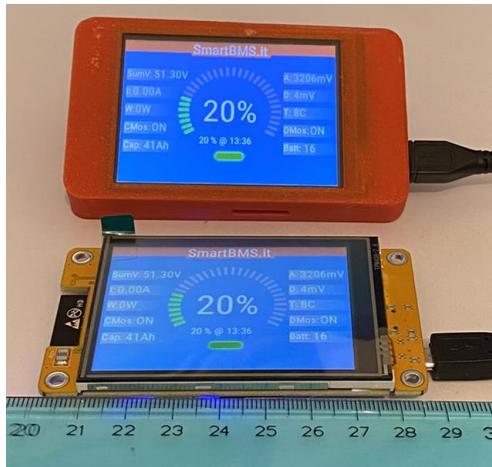
OPENHASP COLOR DISPLAY with ScanLabs Dongle

v1.1 02-25-2025

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 broker you are using and will display major battery pack info.

NOTE: [openHASP](#) project does not support MQTT over TLS , if TLS is needed use [TASMOTA](#) project



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 your 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?

*One display can show multiple Battery Pack on multiple Dashboards. Configure each battery pack to publish data on a dedicated Dashboard

**Being an MQTT based 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 makes super easy creating graphical panels.

Multiple displays are supported, even bigger in inches. Get inspired by the “*scanlabs.jsonl*” dashboard configuration exported by the [ScanLabs Dongle for BMS](#) to make yours.

Add your stuffs and customize your dashboard.

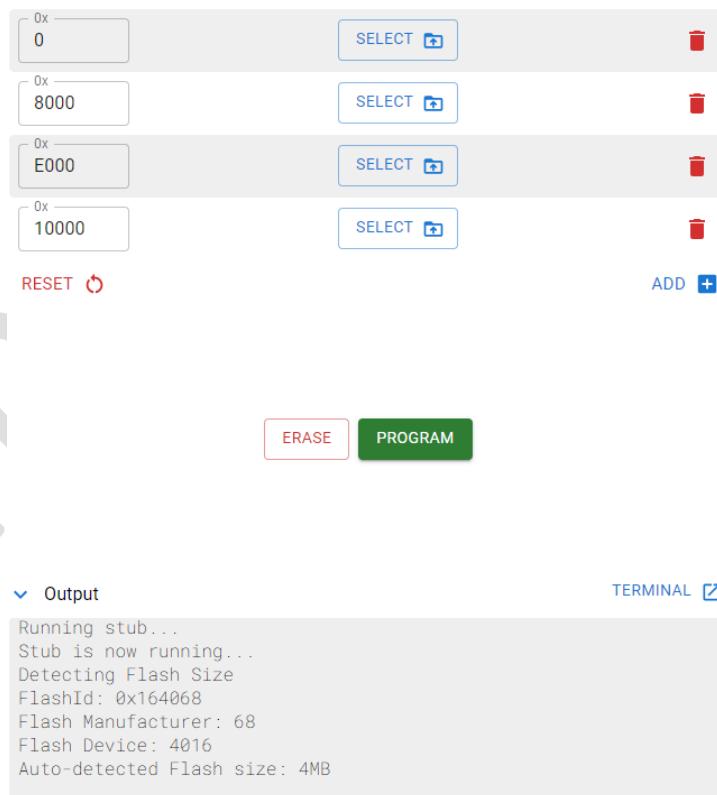
Let us MAKE IT!

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”



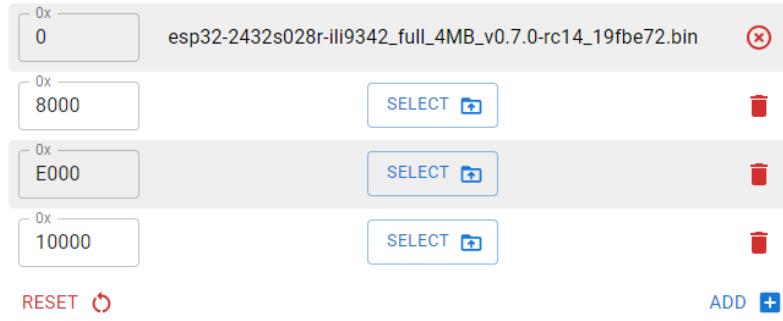
- 4- A pop-up box appear, select the COM port on which the display is connected
If everything is ok you should see a picture like this:



Made with ❤ by Spacehuhn

- 5- AT address 0x0000 Select the file [esp32-2432s028r-ili9342_full_4MB_v0.7.0-rc14_19fbe72.bin](#)

107



6- “ERASE”

7- “PROGRAM” Wait all the steps , it will take about 1 minute

▼ Output TERMINAL

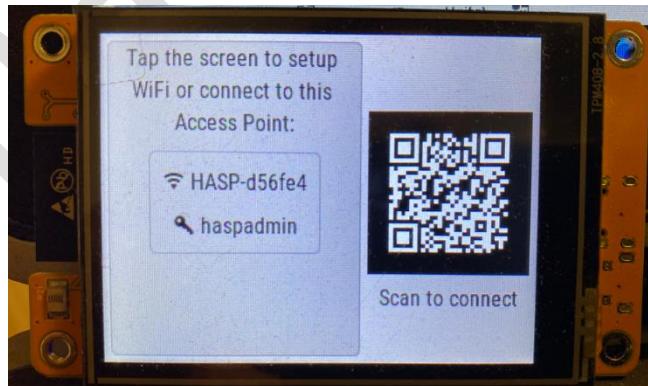
```

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.

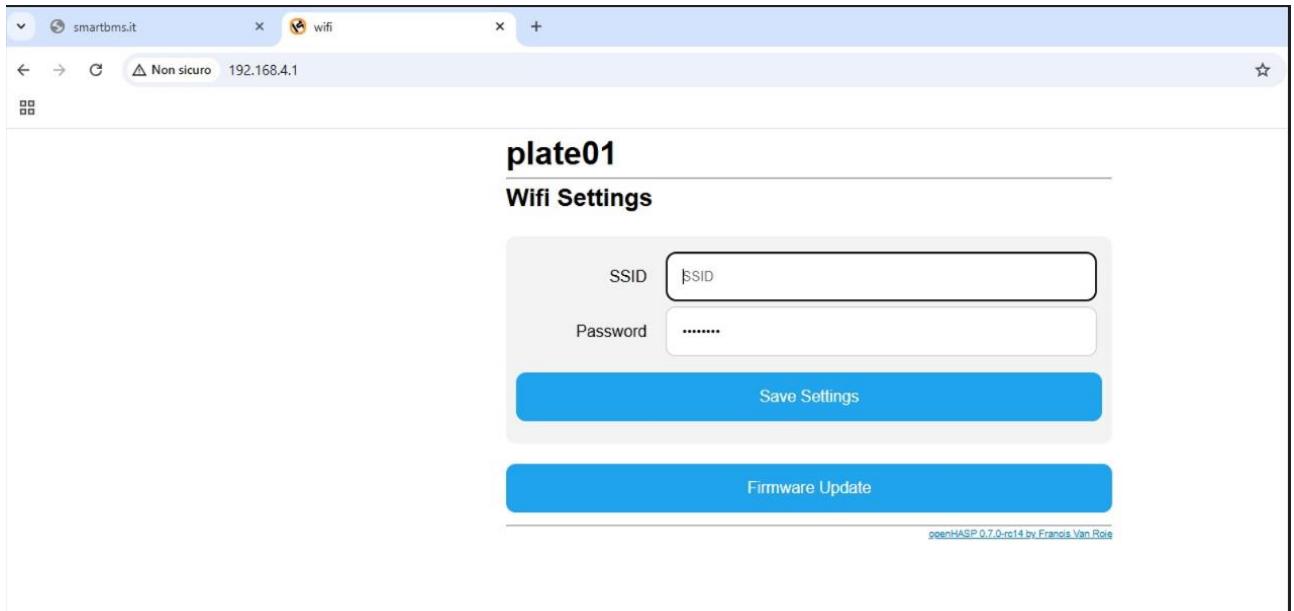
```

Made with ❤ by Spacehuhn

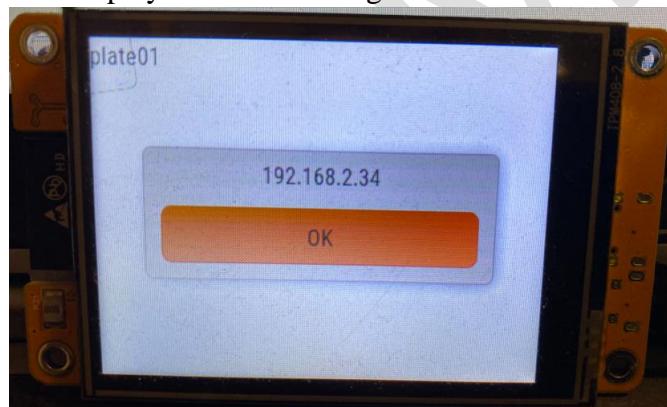
- 8- Power cycle the display (unplug , wait 5s and re-plug the usb cable)
- 9- openHASP will Start showing a QR CODE to let you scan it and connect to the WiFi Network created
 - a. SSID HASP-d56fe4 (your will be slightly different)
 - b. Password: haspadmin



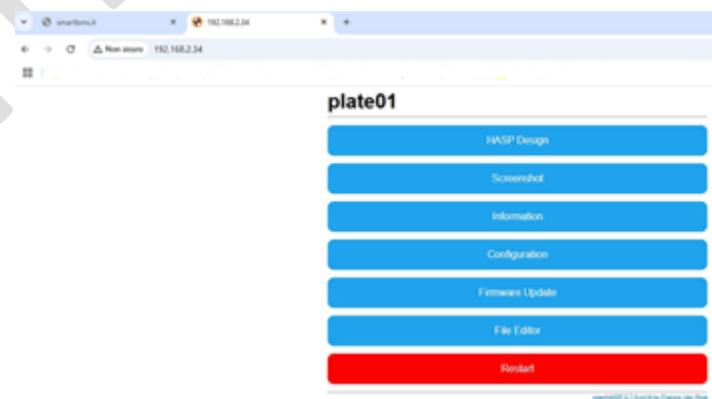
- 10- Once connected to the Wi-Fi, open an Internet Browser and go to page <http://192.168.4.1>
- 11- On the WebPage, SET your home Wi-Fi network **SSID** and **PWD** – “SAVE SETTINGS”



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.

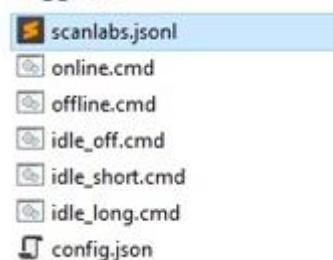
Status Battery Monitor **Settings**

OPENHASP REMOTE DISPLAY CONFIG

REMOTE DISPLAY: <input checked="" type="checkbox"/>	DISPLAY PLATE: 1
<input type="button" value="Submit"/>	

[BACK to CONFIG](#) [GENERATE openHASP CONFIG](#) [REMOTE DISPLAY MANUAL](#)

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

The image shows a browser window titled "openHASP File Editor" with the URL "192.168.2.34/edit". On the left, there's a sidebar with a file tree showing "config.json", "offline.cmd", "online.cmd", and "pages.jsonl". The main area is a code editor with a toolbar at the top containing "Home", "Upload", "Save", "Cut", "Copy", "Paste", "Undo", "Redo", "Source Code Pro" (set to 16,0), and a font size dropdown.

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’ !

NOTIFICATION SERVICES TO MOBILE / PC / INSTAGRAM PUSHSAFER and PUSHOVER

PUSHSAFER and **PUSHOVER** are third party services meant to receive push notification on mobile phones and/or computers generated by devices.

From fw release 2.1.1, ScanLabs WiFi Dongle is enhanced with this new service aim to send push notifications in one or more of the following conditions:

- Daily Report Sent when SunSet comes
- Daily Report Sent when SunRise comes
- Report when battery reaches 100% SOC
- Report when one or more Alarms is/are detected

Pushsafer it comes with a very interesting offer, as of today 0.99€ for 1000 notifications or 1.99€ for 2200 notifications ! looks nice don't you ?

For the sake of testing , Pushsafer offers 50 notifications for free, it's just a matter to create an account - install Pushsafer app on your mobile(s) and or PC(s) - setup the ScanLabs dongle accordingly and you are done.

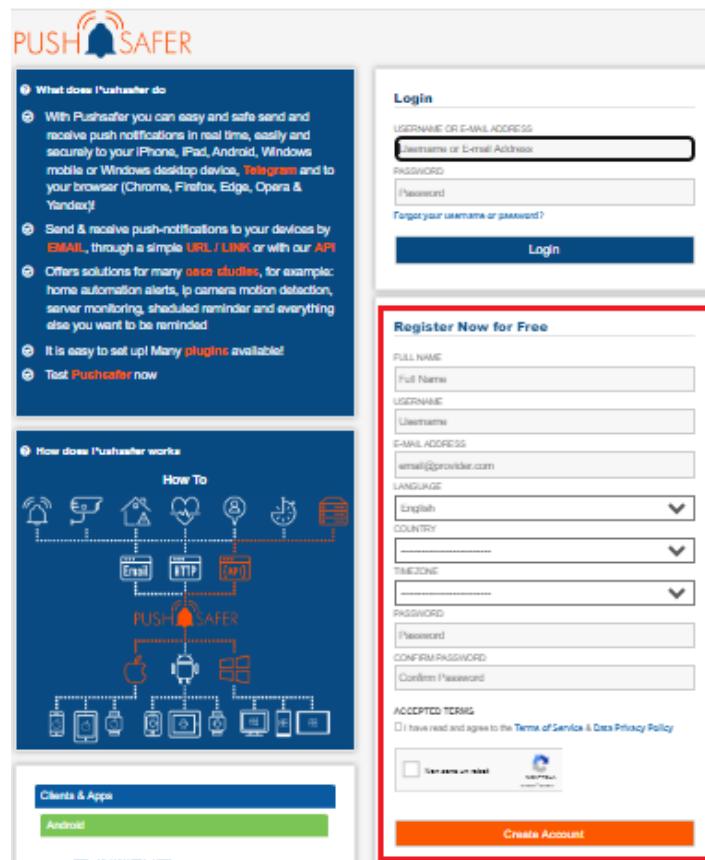
Pushover offers as well free notifications for 30days after the activation and a 1 time cost of \$4.99 for up to 10K notifications/month.

FIRST STEP for you is to choose which service you want to use between Pushsafer and PushOver.
Up to You

Let's follow these steps to enable and test the Pushsafer and PushOver services

CONFIGURE PUSHSAFER

Create your free account on pushsafer.com you will have 50 free push to test the service



Login, on the main dashboard, copy "YOUR PRIVATE KEY"

The screenshot shows the Pushsafer dashboard. The left sidebar includes 'Dashboard', 'Private Key' (which is highlighted with a red box), 'Device Groups', 'Email Alias', 'Account Profile', 'API-Log', 'Clients & Apps', 'API', 'Examples & Plugins', 'Tools', 'DIY', 'FAQ', 'Support / Forum', 'ChangeLog', 'Customer Reviews', 'Language (English)', and 'Logout'. The main area has sections for 'Your private key' (containing a long string of characters), 'Your private subkey' (containing a shorter string), and 'Your Devices' (showing 0 entries). To the right, there's a 'Parameter' section with detailed explanations for various notification parameters like Device ID, Sound, Icon, and URL/Link. A 'Telegram' button is visible at the bottom of the dashboard.

Go to your ScanLabs SmartBMS WiFi Dongle "Settings" web page

Select NOTIFICATIONS Service

The screenshot shows the 'Settings' tab selected in the top navigation bar. Below it, the 'NOTIFICATIONS' tab is highlighted in green. The main content area displays various configuration options:

- WiFi Mode:** AP (WiFi Station Mode)
- STATUS:** Connected -70 dBm
- SSID:** Edna_Extender
- PASSPHRASE:**
- WiFi Power [dBm]:** 10
- Current IP:** 192.168.2.234
- HTTP Port:** 6789
- HostName:** dongle
- Static IP:**
- Latitude:** 45,675800 **Longitude:** 9,168000 [Google maps](#)
- Time Zone:** June 26 2025 18:51:37 --- Sync with PC
- Time Zone GMT+:** 2
- Time 24h format:**
- Weather Forecast:** A weekly forecast from Jun 26 to Jul 2 is shown, indicating weather icons and temperatures (e.g., 21°C ->30°C).
- Submit** button

Below the main form are several green buttons for other services: MISC, MQTT, DISPLAY, MODBUSTCP, NOTIFICATIONS, LOG&FILE, HELP, 4 NERDS, and DONATE :-).

Setup the dongle with [Pushsafer](#) credentials (follow steps 1-5 on the image)

- 9-Enable PUSHSAFER
- 10- Paste your [PushSafer](#) "PRIVATE KEY"
- 11- Setup your friendly message each push will report
- 12- Select the group of receivers. "a" for all my devices
- 13- Select which kind of push you want to get every day
- 14- Enable Time filter to avoid multiple notifications are set. The same notification will not sent within the windows in minutes defined.
- 15- SUBMIT the settings

The screenshot shows the 'PUSHSAFER CONFIG' section of the web page. It includes the following fields and controls:

- PUSHOVER:**
- PUSHSAFER:** 1
- User ID:**
- Private KEY:** 2
- Message:** 200Ah Battery Pack 10KWh 3
- Send to:** a 4
- API Credits 0**
- SunSet Report:** 5
- SunRise Report:**
- 100% SOC Report:**
- Alarm Report:**
- Alarm Filter:** 30 6
- Submit** 7
- Send TEST Daily Report NOW**
- Send TEST Alarm Report NOW**

At the bottom are two green buttons: **BACK to CONFIG** and **PUSH SERVICE MANUALS**.

Using the QR CODE and Links offered on the main page of PushSafer.com, install the app on one or more iOS, Android, Windows , Telegram etc
 login on each instance with the [PushSafer](https://PushSafer.com) credentials you have created

Android



Windows 10 (UWP)

Windows 10/11 Universal App for Smartphone, Tablet & Desktop



iOS (iPhone, iPad, iPod Touch)



You are now ready to TEST if a push Notification reaches your device/s

Status

Battery

Monitor

Settings

Upgrade

PUSHSAFER CONFIG

PUSHOVER:

PUSHSAFER:

User ID:

Private KEY:

Message: 200Ah Battery Pack 10KWh

Send to: [a]

SunSet Report:

SunRise Report:

100% SOC Report:

Alarm Report:

Alarm Filter: [30]

Submit

API Credits 0

[Send TEST Daily Report NOW](#)

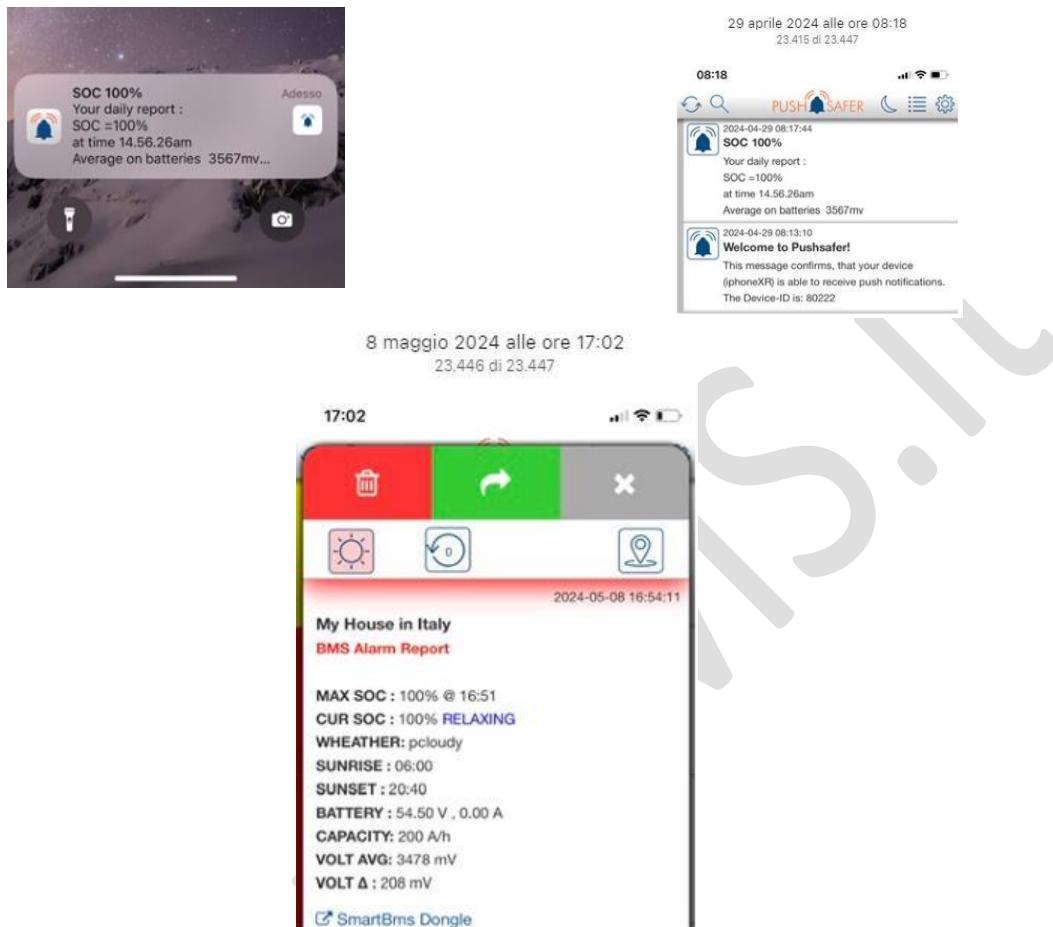
[Send TEST Alarm Report NOW](#)

[BACK to CONFIG](#)

[PUSH SERVICE MANUALS](#)

NOTE: After the first Push sent, API Credits should update with the number of Push left

AT THIS POINT YOU SHOUL BE HAPPY ;-)



CONFIGURE PUSHOVER

TBD

SmartBMS.it