

BUILD YOUR WiFi DONGLE for JK or DALY / CLONES

Version 1.4 released on 06-10-2024

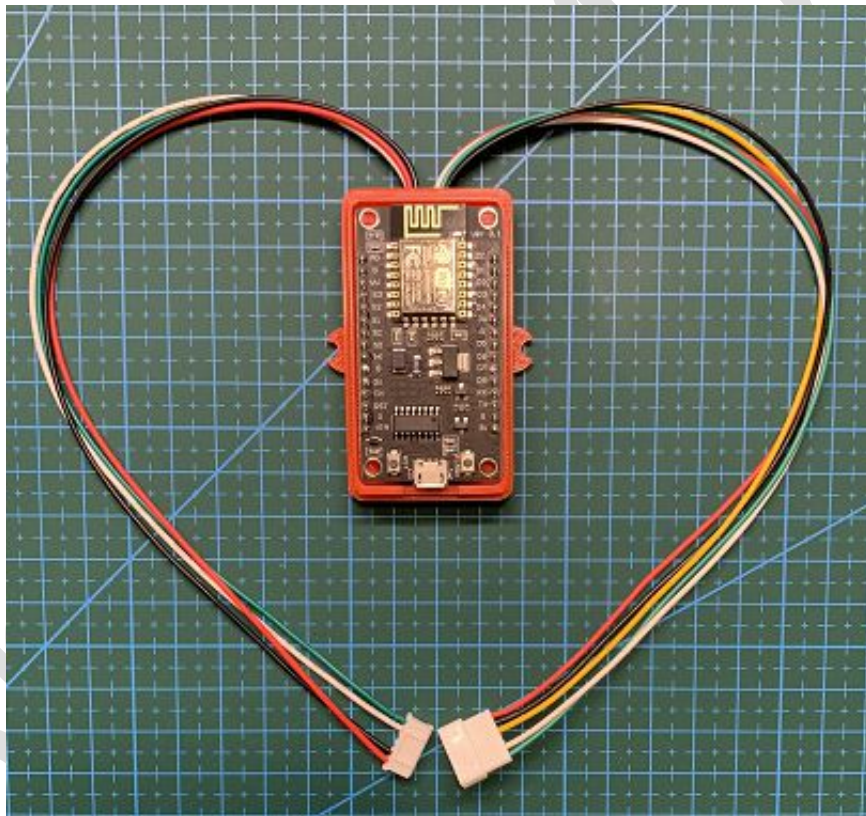
FOLLOW these instruction to make a WiFi Dongle for JK BMS or DALY (and CLONES)

This is your target!

BOM is about 10\$ - time to build is about 20-30minutes

Feel free to get in contact with me

Paolo @ -> info@dalybmawifi.com



Feature set :

- 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](#) BMS (DALY Clone) that has an UART/RS232 interface
 - NOTE: original DALY WiFi-Module , works ONLY with BMS from July 2023 !
 - Works with **NEW DALY** with smaller connector **JST GH Series 1.25mm**
 - Works with **CLASSIC 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
 - Simple 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 from 5 seconds to hours
 - select which parameter 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](#)"
- **PUSHSAFER Client**
 - Send push Notification 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 feature sets are available on both AP and STA mode .
- **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
- CHARGE-DISCHARGE current [I] cycles shown daily
- **PASS-THROUGH**
 - DALY Smart Bluetooth WiFi or BLE dongle, can be connected too and works in parallel
 - JK extension connected to GPS Port can be used as well*
- **PACKET SNIFFER** between Bluetooth LE Dongle and DALY Smart BMS
 - Possibility to inject command to DALY/Hi & JK Smart BMS via web page
- **Virtual UART** (over TCP) to use BmsMonitorVx.x.x or JK equivalent sw via internet
 - 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 & CLASSIC Models with UART(1) Interface are supported and reported as working
- JK-BD6AxxS-10P / JK-BD6AxxS-12P / JK-BD6AxxS-15P/ JK-B1AxxS-15PJK-B2AxxS-15P/ JK-B2AxxS-20P

WHAT YOU NEED :

To build for JK or DALY (New or Classic connector) the process is about identical . Of course, you have to purchase different cables as listed below

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)

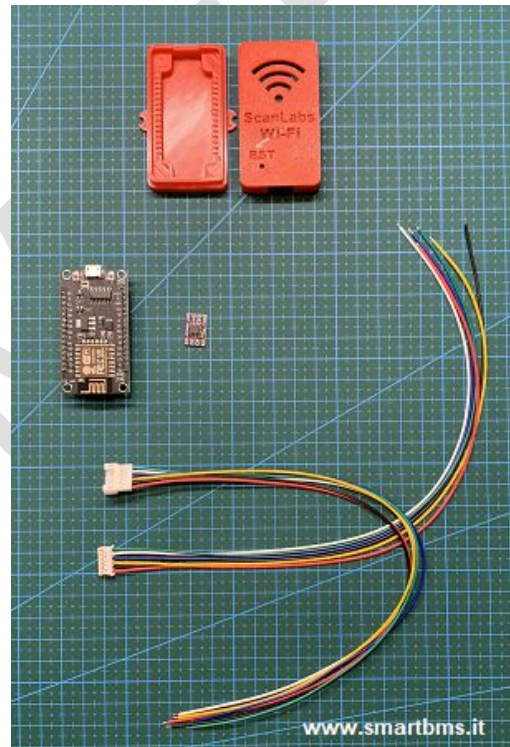
CABLE/Connectors:

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](#)

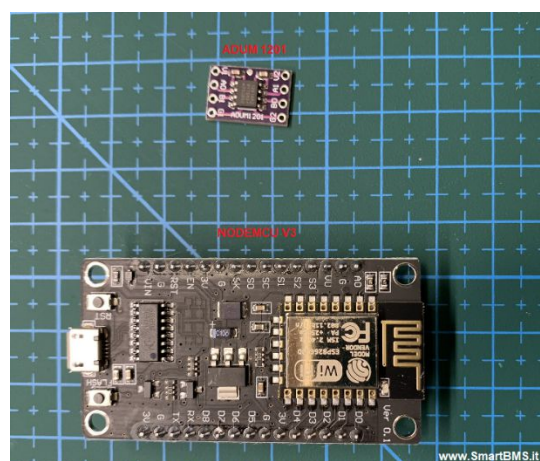
CASE/Enclosure:

- Purchasing the full SW licence you will get the .STL file to 3D print the dongle enclosure yourself



DETAILED VIEW of NODEMCU V3 and ADUM 1201.

NOTE: NODEMCU comes with different USB-UART chipset . It does not matter which Transceiver you have as long as you are able to program the binary file provided.

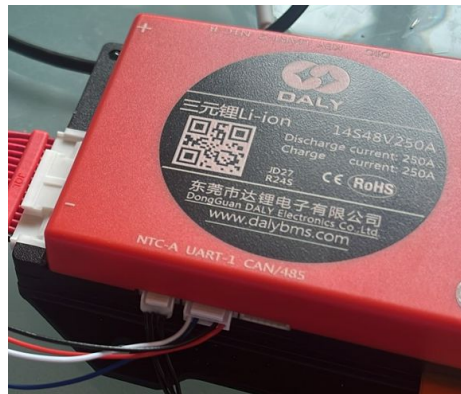
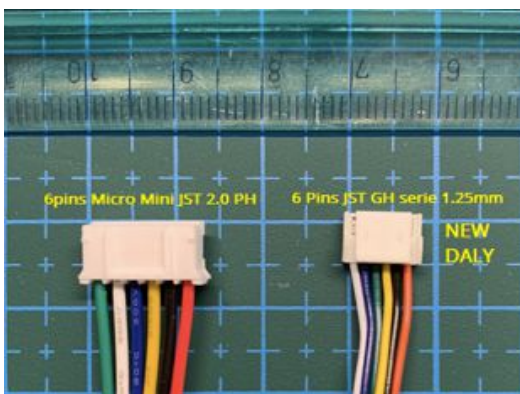


CABLE SELECTION

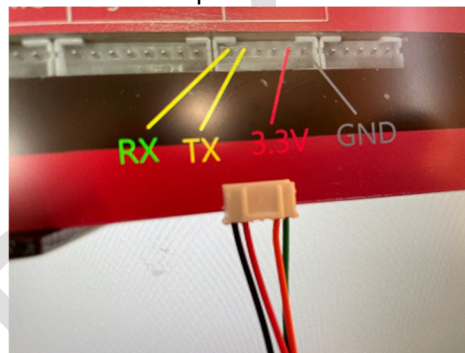
FOR DALY BMS

Daly BMS come with two kind of connectors.

- **DALY NEW** (little 8mm)
[6pins JST GH Series 1.25](#)
- **DALY CLASSIC** (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

Supported Models works via GPS Interface

[4pin Micro JST MX 1.25](#)

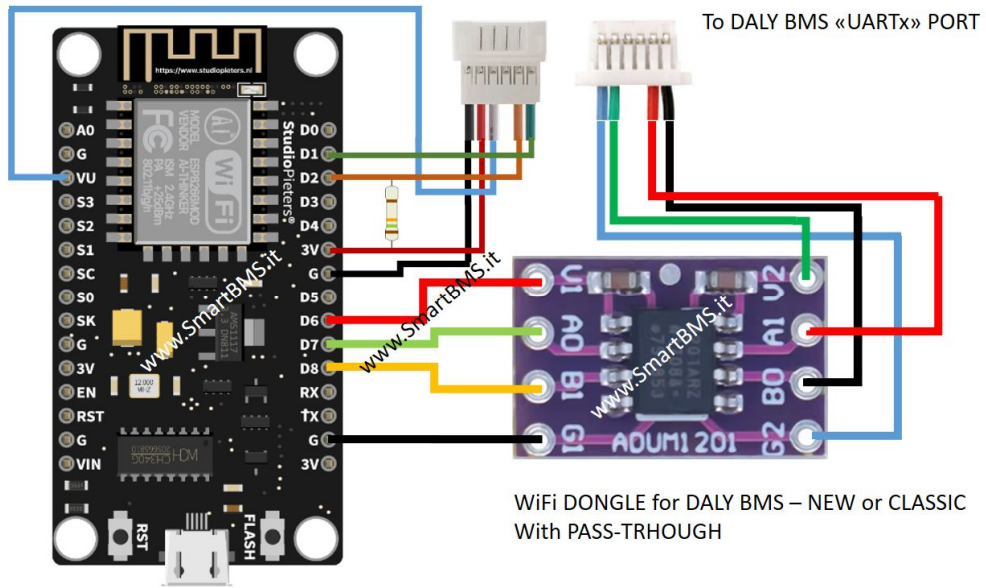
[4pin Micro JST MX 1.25](#)



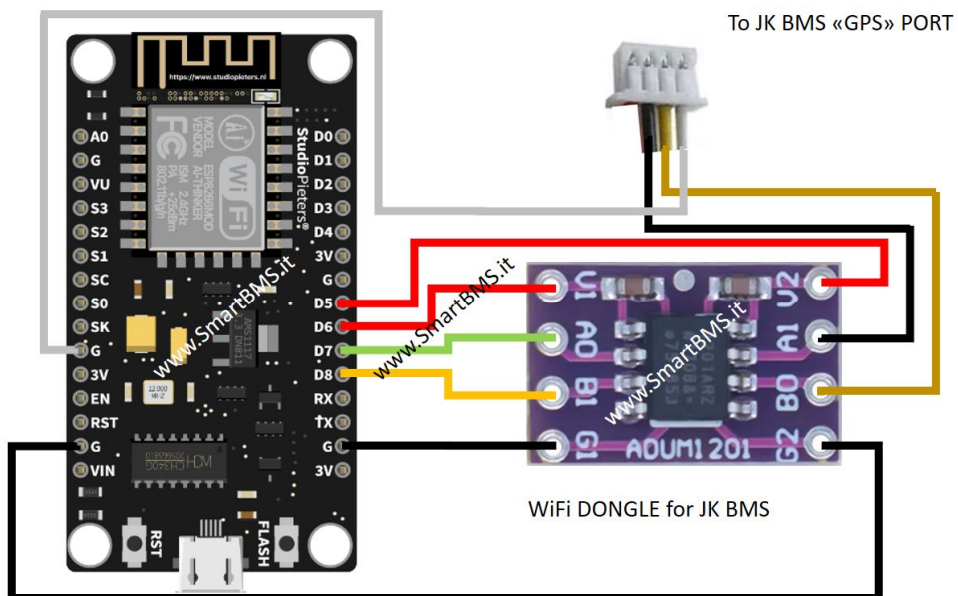
4pin Micro JST MX 1.25mm



REFERENCE DIAGRAM FOR DALY – NEW OR CLASSIC MODEL



REFERENCE DIAGRAM FOR JK – w/o PASSTHROUGH Feature



STEP 1: ORIENTATION

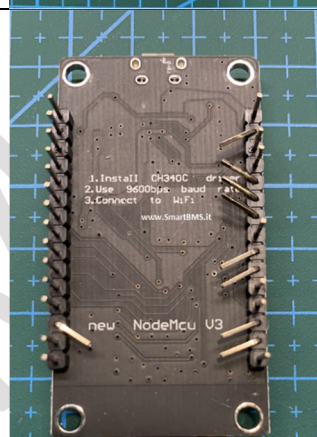


STEP 2 for **DALY BMS**: BEND THE NEEDED PINS

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



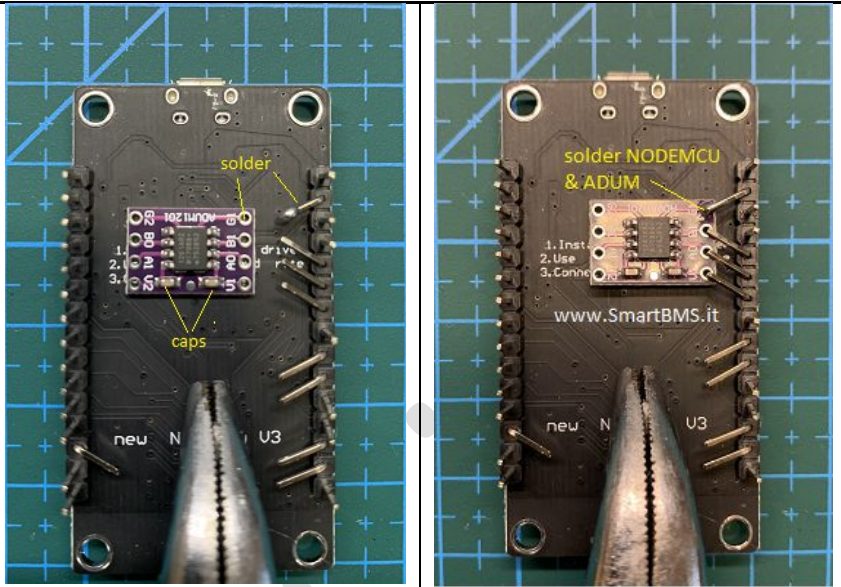
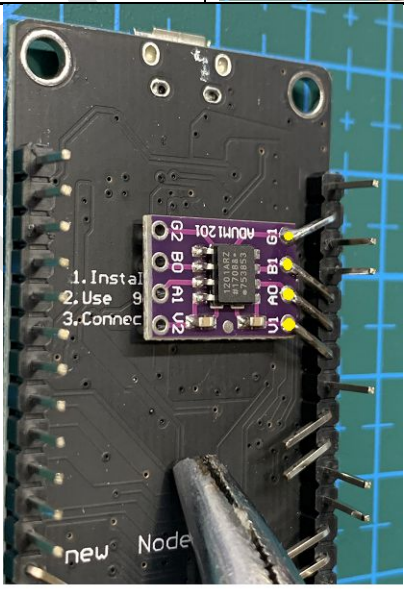
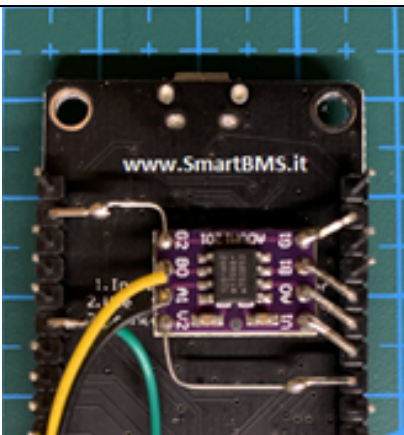
STEP 2 **JK BMS**: BEND THE NEEDED PINS

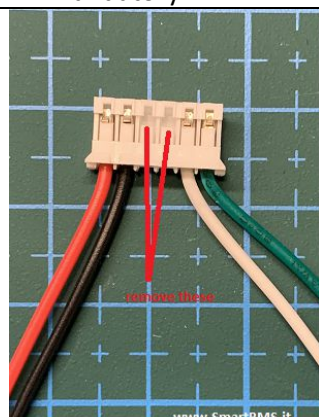
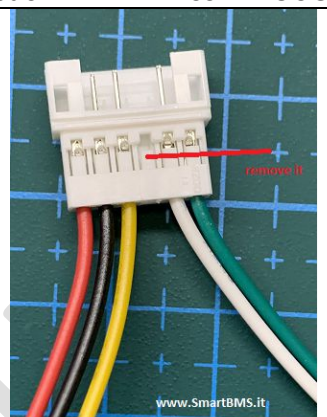
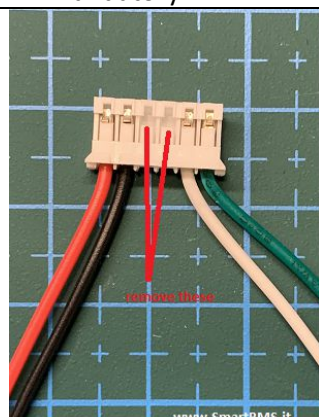
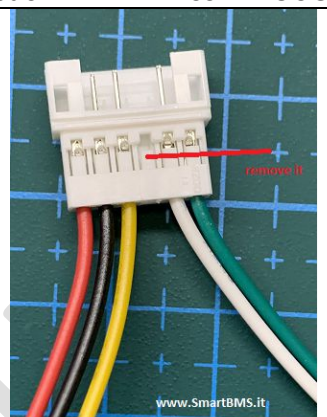
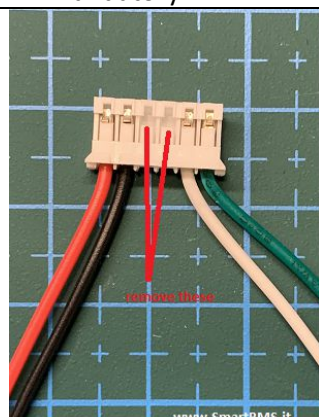
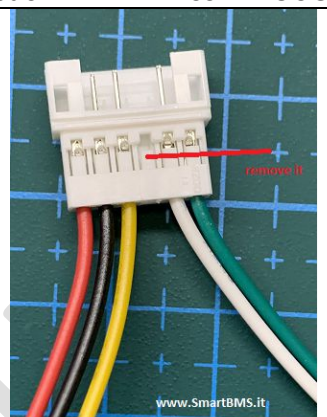
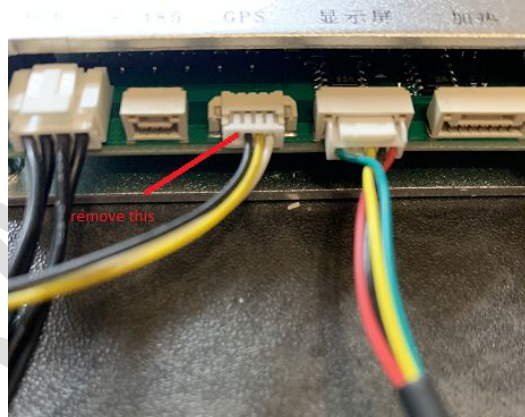
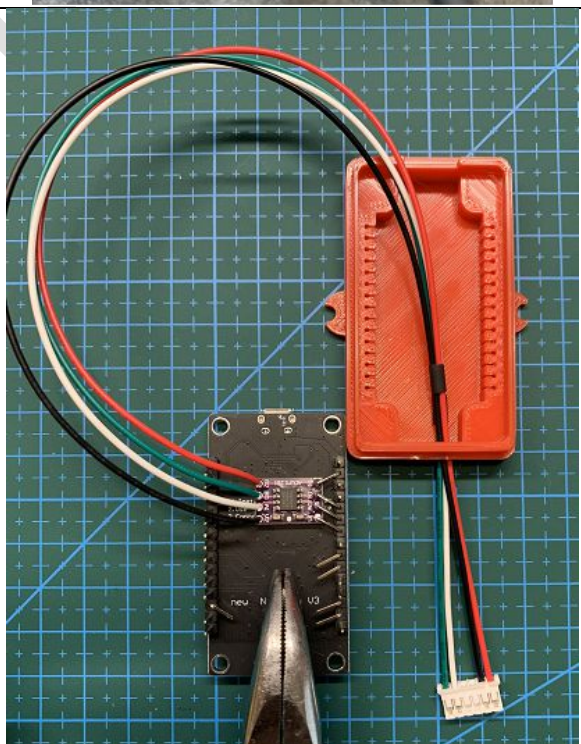
NOTE 1: PINS are Bended with an angle of about 45 degrees – Why? See next pictures .

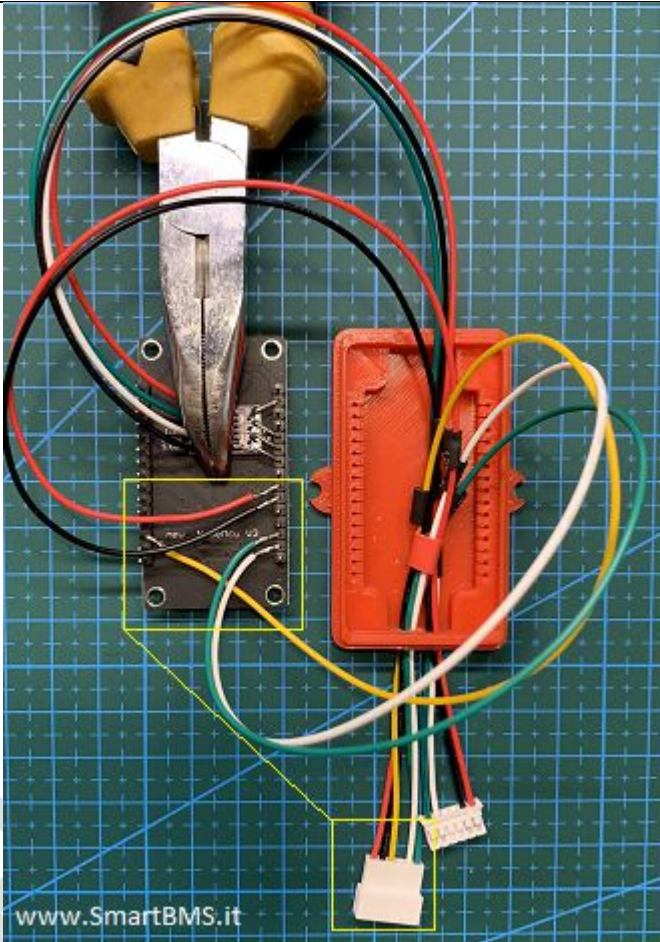
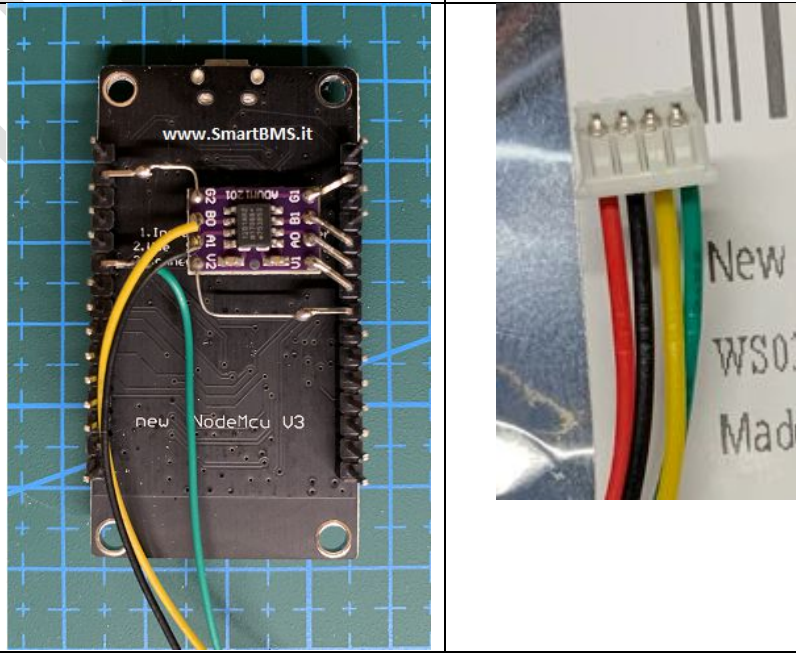
This is NOT a must to do, is simply a way to speed up the mounting process

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



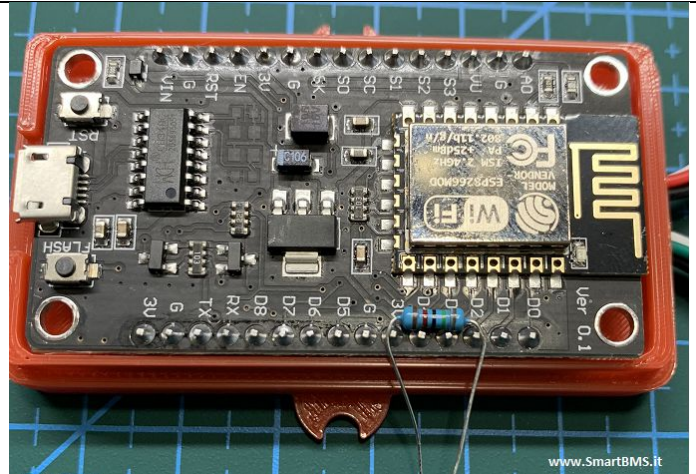
<p>STEP 3: ALIGN ADUM1201 and Solder IT</p> <p>ADUM1201 – G1 to 2nd PIN of NODEMCU USE ADUM1201 CAPS to place it</p>	
<p>STEP 4: SOLDER ADUM1201 to NODEMCU</p>	
<p>STEP 4A: ONLY FOR JK add Connection to GND and VCC Pin</p> <p>NOTE : Agree – in this case ADUM is not really Isolating – or – is partially Isolating . This is the quickest way to cabling and let NodeMCU to boot.</p>	

<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>	<table border="1"> <thead> <tr> <th data-bbox="694 224 1125 257">Mandatory FEMALE</th><th data-bbox="1125 224 1548 257">Option MALE – PASS THROUGH-</th></tr> </thead> <tbody> <tr> <td data-bbox="694 257 1125 672">  </td><td data-bbox="1125 257 1548 672">  </td></tr> </tbody> </table>	Mandatory FEMALE	Option MALE – PASS THROUGH-		
Mandatory FEMALE	Option MALE – PASS THROUGH-				
					
<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>					

<p>STEP 6A DALY BMS: CABLING OPTIONAL “PASS-THROUGH”</p>	
<p>STEP 6 JK BMS: CABLING</p> <p>DO NOT MIX CABLES – FOLLOW THE IMAGE</p>	
<p>STEP 6A JK BMS: CABLING OPTIONAL “PASS-THROUGH”</p>	<p>TBD</p>


STEP 7 DALY & JK : OPTIONAL "PASS-THROUGH"

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

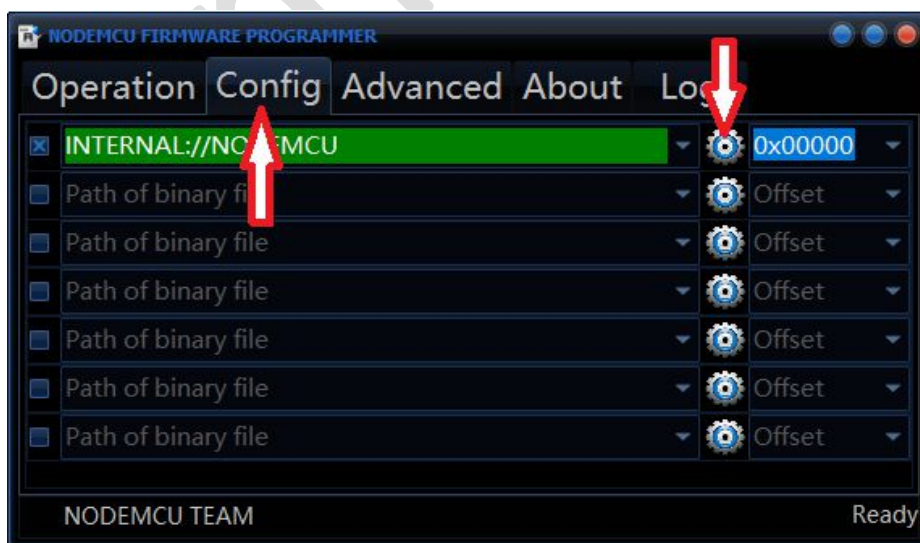


PROGRAMMING :

- 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

> flasher (1).zip > nodemcu-flasher-master > Win64 > Release		
Nome	Tipo	Dimensione compr...
 ESP8266Flasher.exe	Applicazione	2.625 KB

- 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

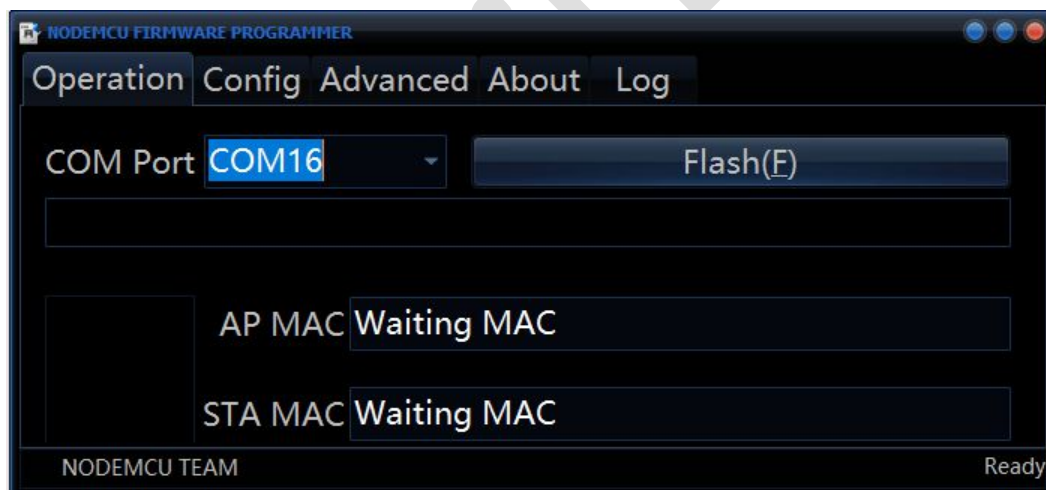
DON'T – DON'T – DON'T – DON'T – DON'T change 0x00000

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

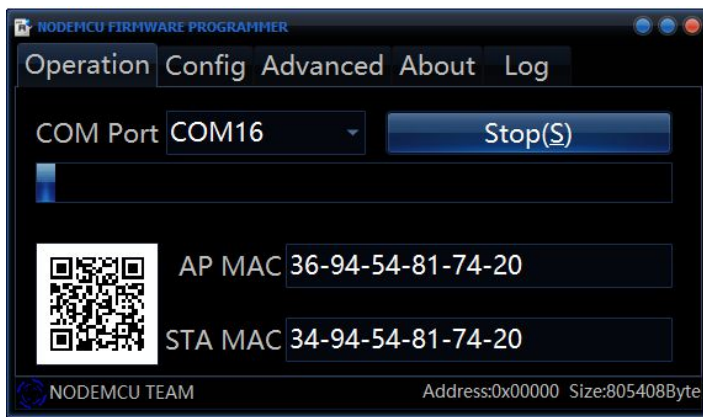


7- Go to "OPERATION"

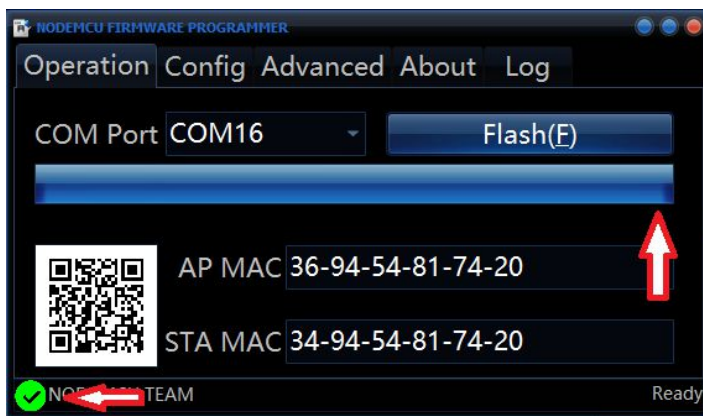
8- Select the COM port to which the dongle is connected to the PC – if NO com is listed you don't have the right driver installed – go to [Troubleshooting](#) and install the COM port drivers



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

NOTE: un-licensed FW is full-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 “UNLICENSED” link when it appears.