

# BUILD YOUR WiFi DONGLE for JK or DALY / CLONES

Version 1.3 released on 17-08-2024

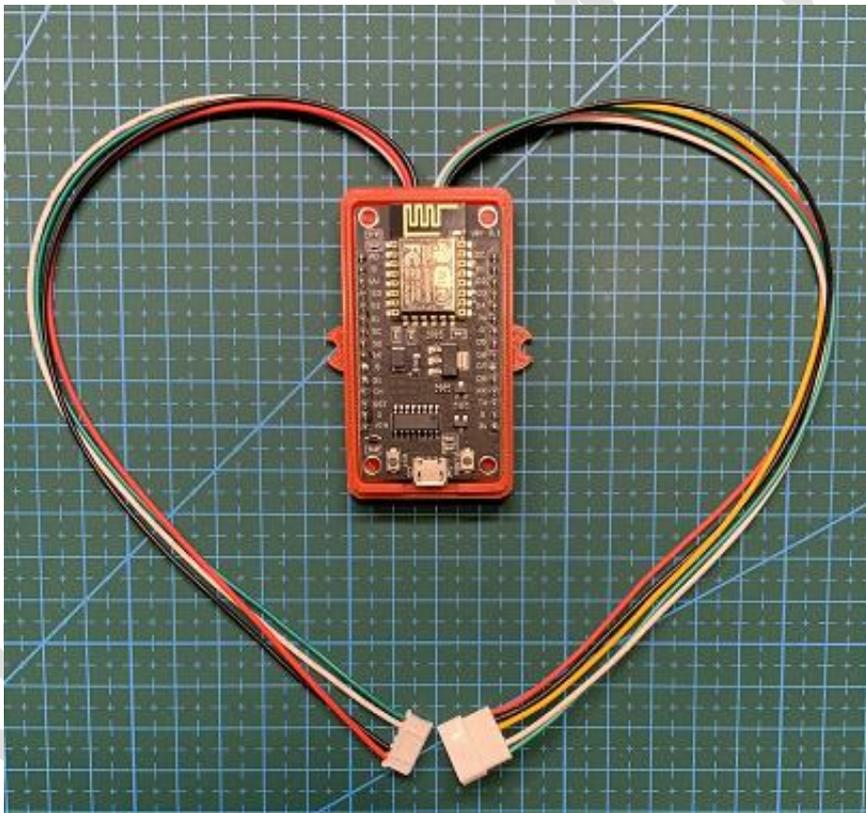
FOLLOW these instruction to build a WiFi Dongle for JK BMS or DALY ( and CLONES )

**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@dalybmswifi.com](mailto:info@dalybmswifi.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 or PC, Telegram etc !
  - Daily report sent at SunSet / SunRise / SOC 100% / Alarms info
- Works **WITH** or **WHITOUT INTERNET** connection ( Acces 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** onboard - 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 malfunctional ( MOS broken or bad wiring )
  - Each and 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 )

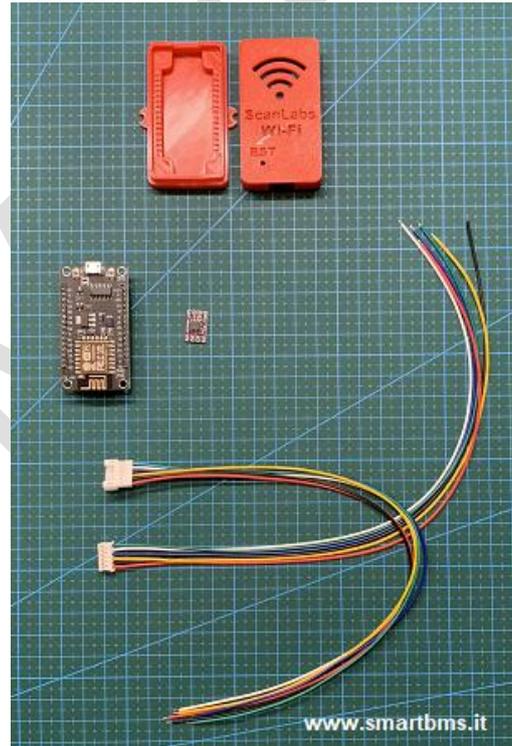
### CABLE/Connectors:

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](#)

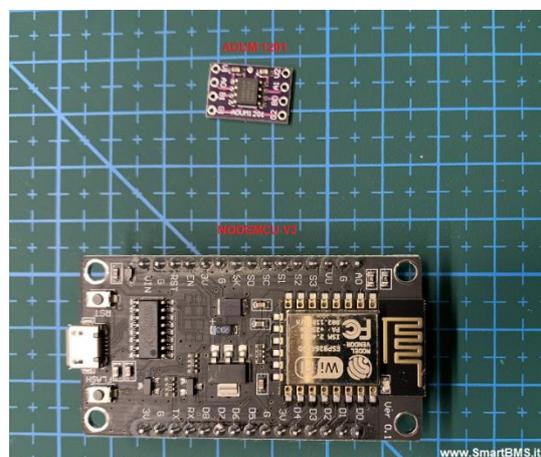
### CASE/Enclosure:

- 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.

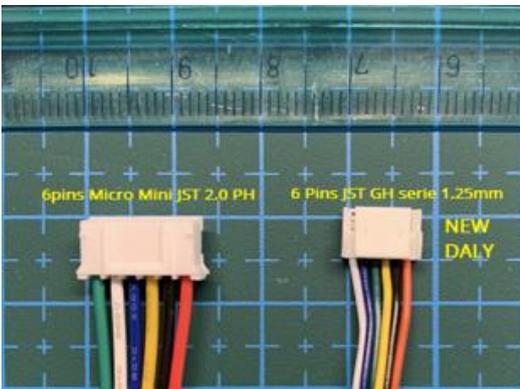


## CABLE SELECTION

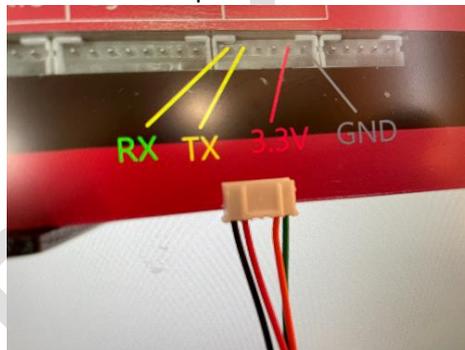
### FOR DALY BMS

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](#)

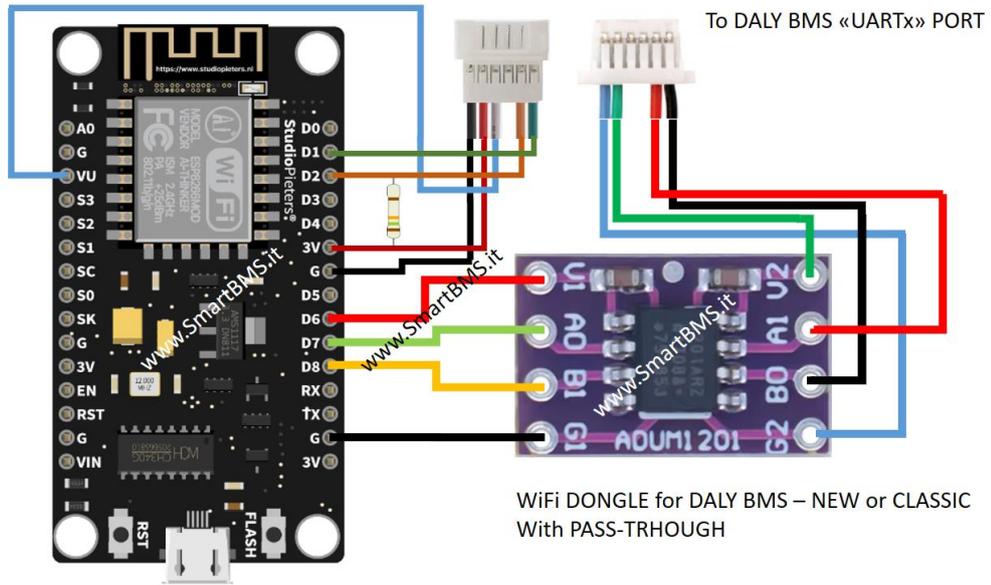
[4pin Micro JST MX 1.25](#)



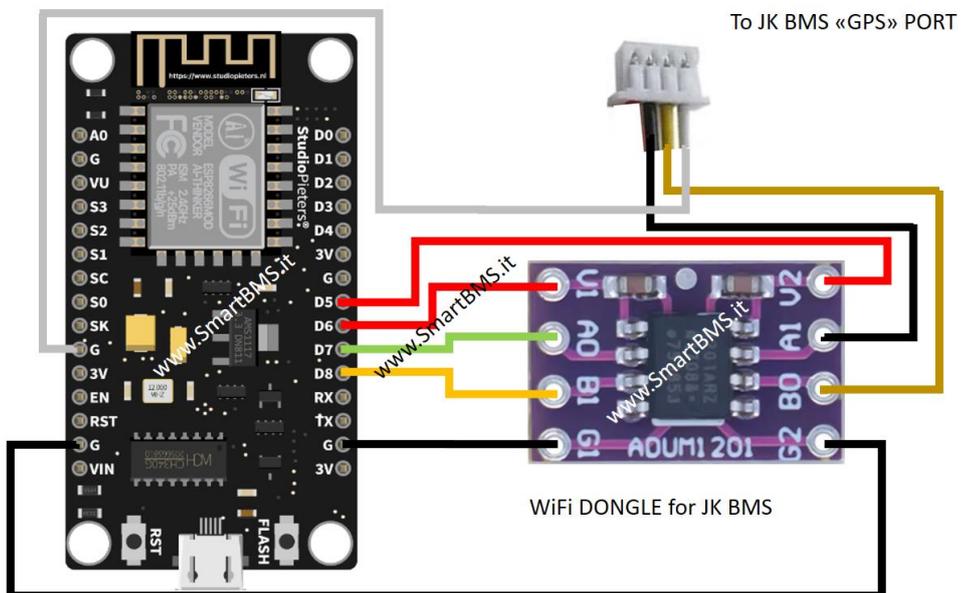
4pin Micro JST MX 1.25mm



REFERENCE DIAGRAM FOR DALY – NEW OR CLASSIC MODEL



REFERENCE DIAGRAM FOR JK – w/o PASSTHROUGH Feature



**STEP 1: ORIENTATION**



**STEP 2 for DALY: 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**

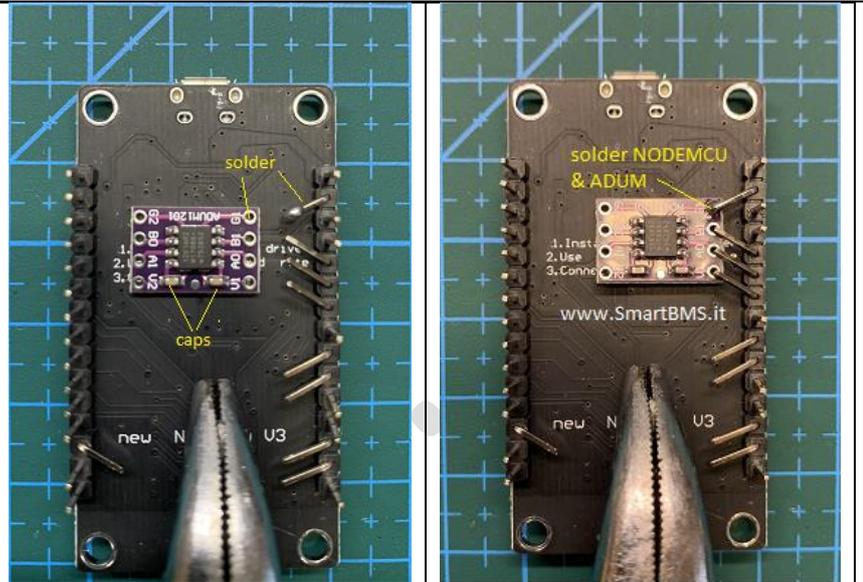
**NOTE 1:** PINS are Bended with an angle of about 45 degrees – Why? See next pictures .  
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STEP 3: ALIGN ADUM1201 and Solder IT

ADUM1201 – G1 to 2<sup>nd</sup> PIN of NODEMCU  
USE ADUM1201 CAPS to place it

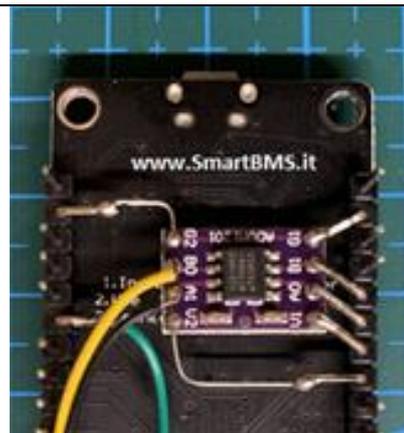


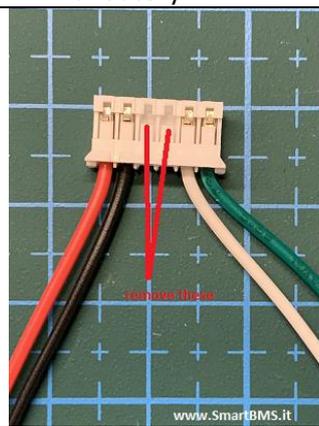
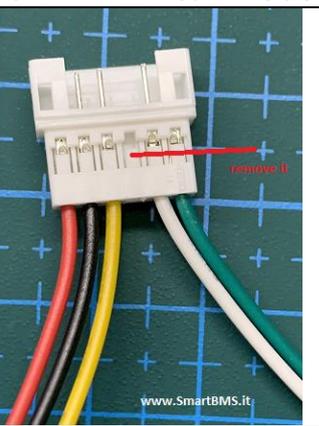
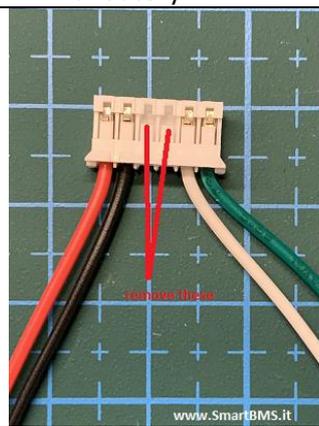
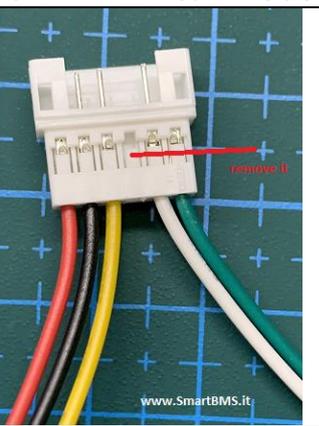
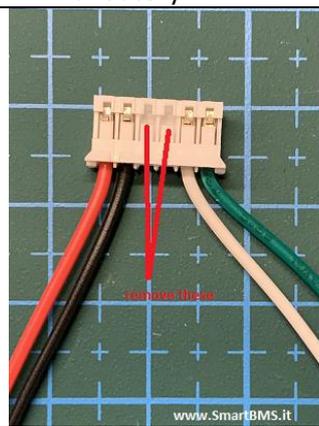
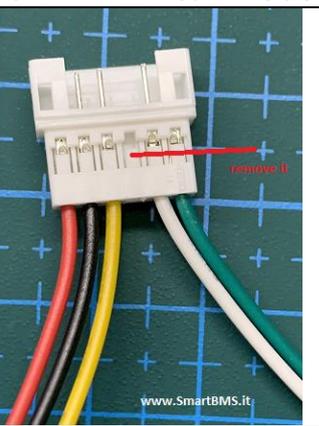
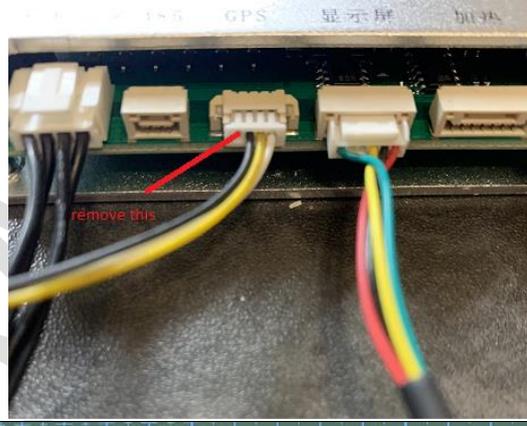
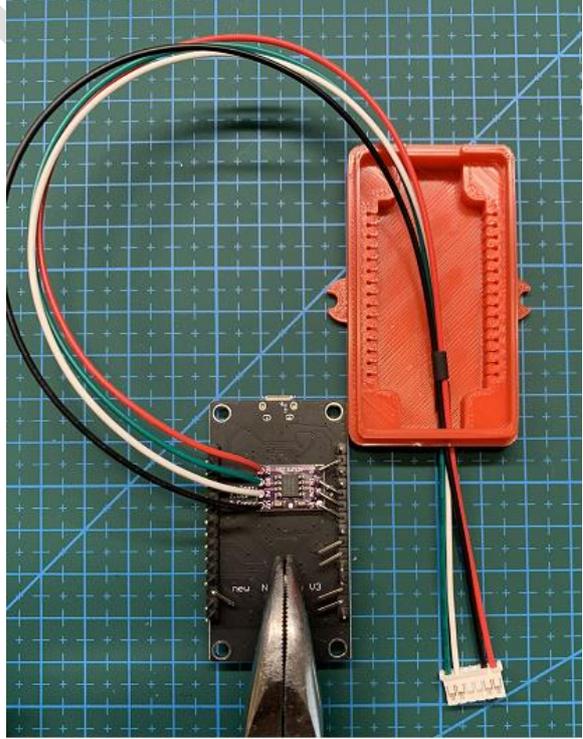
STEP 4: SOLDER ADUM1201 to NODEMCU



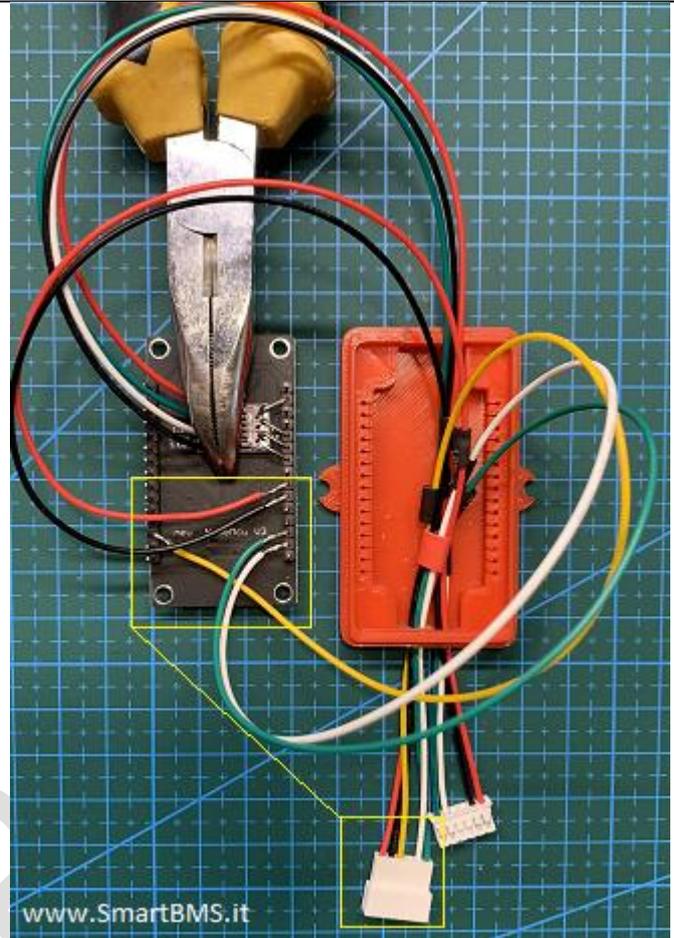
STEP 4A: **ONLY FOR JK** add Connection to GND and VCC Pin

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.



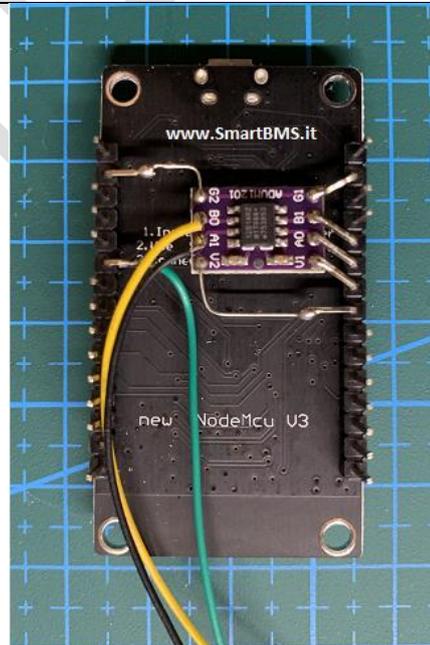
<p><b>STEP 5 DALY BMS: CONNECTORS</b></p> <p>FEMALE Connector is a MUST – WiFi Dongle “talk” with DALY BMS through this cable. Central PINs are not Needed – REMOVE THEM</p> <p>MALE Connector is OPTIONAL and Needed ONLY if you want to use the Pass Through feature</p>	<table border="1"> <thead> <tr> <th>Mandatory FEMALE</th> <th>Option MALE – PASS THROUGH-</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Mandatory FEMALE	Option MALE – PASS THROUGH-		
Mandatory FEMALE	Option MALE – PASS THROUGH-				
					
<p><b>STEP 5 JK BMS: CONNECTORS</b></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><b>STEP 6 DALY BMS: CABLING</b></p> <p>DO NOT MIX CABLES – FOLLOW THE IMAGE</p>					

STEP 6A DALY BMS: CABLING OPTIONAL "PASS-THROUGH"



STEP 6 JK BMS: CABLING

DO NOT MIX CABLES – FOLLOW THE IMAGE

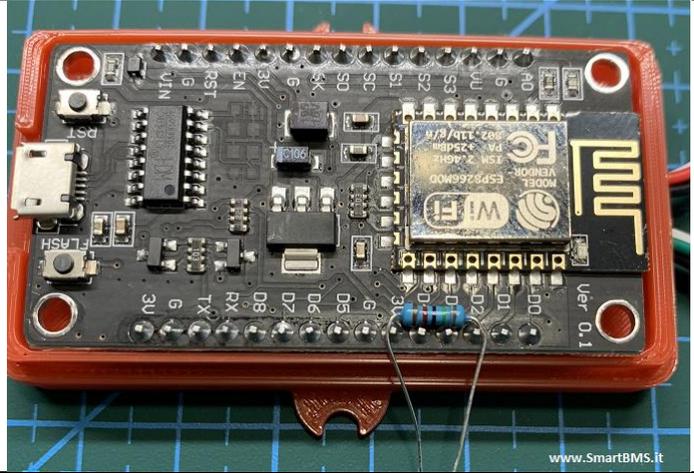


STEP 6A JK BMS: CABLING OPTIONAL "PASS-THROUGH"

TBD

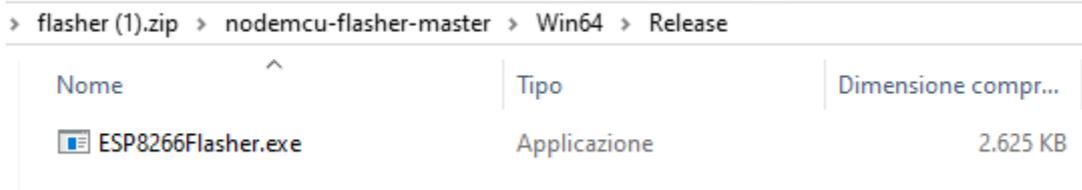
STEP 7 DALY & JK : OPTIONAL "PASS-THROUGH"

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

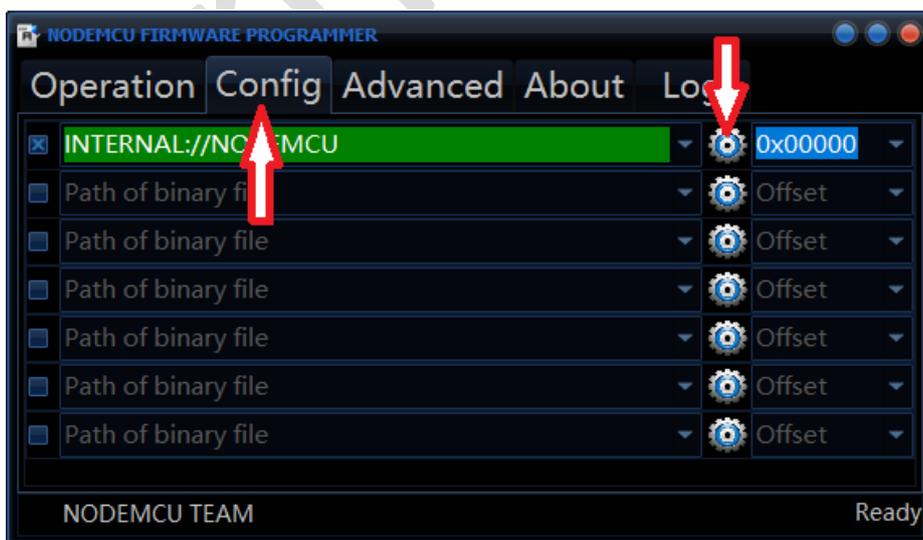


PROGRAMMING :

- 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



- 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**

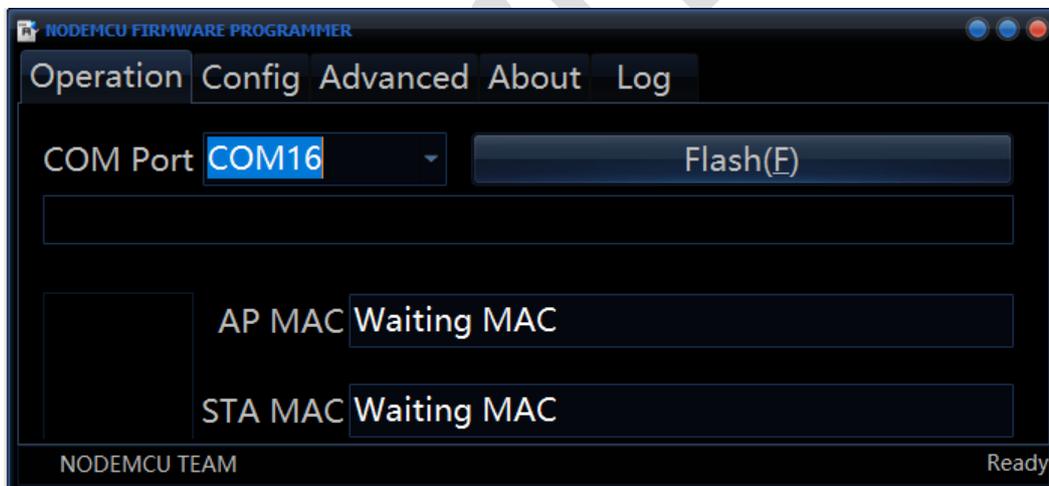
**DON'T – DON'T – DON'T – DON'T – DON'T change 0x00000**

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

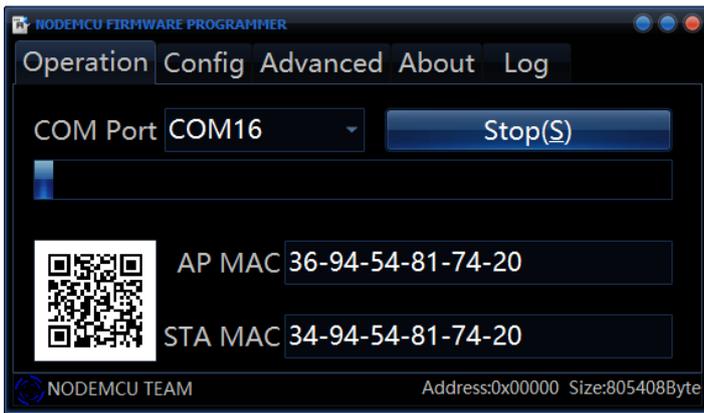


7- Go to "OPERATION"

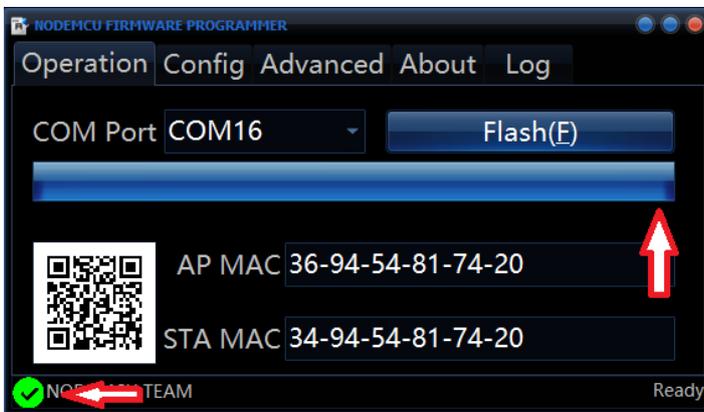
8- Select the COM port to which the dongle is connected to the PC – if NO com is listed you don't have the right driver installed – go to [Troubleshooting](#) and install the COM port drivers



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](http://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 history 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.