BUILD YOUR WiFi DONGLE JK or DALY / CLONEs

Version 1.0 released on 10-08-2024

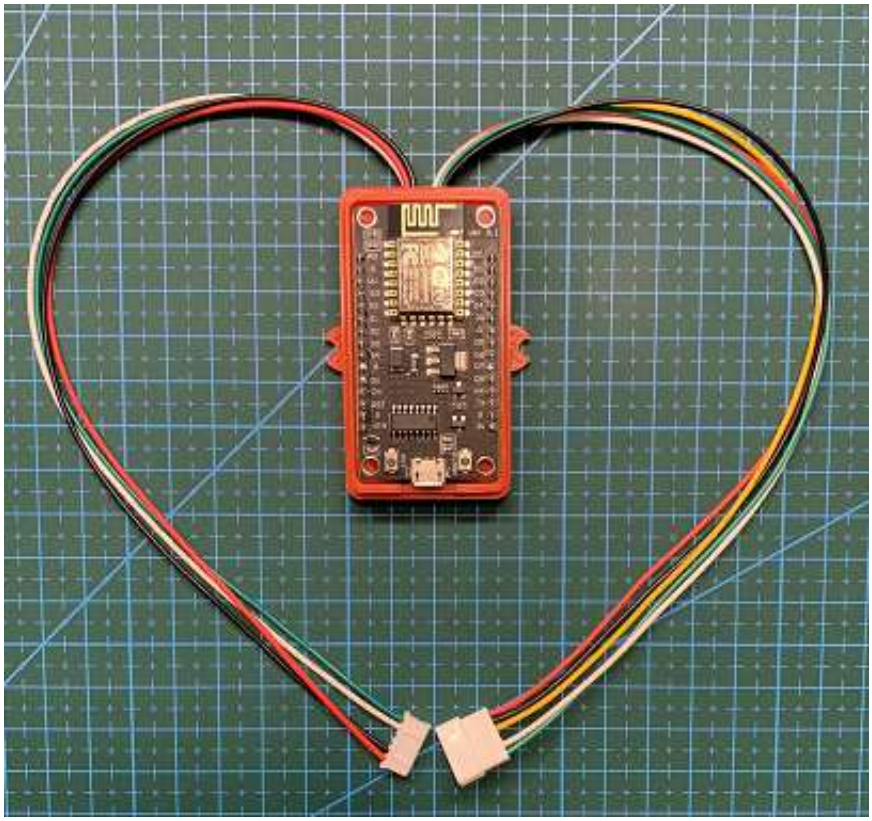
FOLLOW these instruction to build a WiFi Dongle for JK BMS or DALY (and CLONES)

This is your target!

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

Feel free to get in contact with me Paolo@

info@dalybmswifi.com



Feauture 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
    - 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 former DALY with standard connector Micro Mini JST 2.0 PH
- Deploy it 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 (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
    - export auto-generated .json config file for IoTMqttPanel mobile app
    - export multiple JSON-format or raw-format
        - tested with
            - https://www.hivemq.com/ (TLS)
            - Mosquitto on Home Assistant (TLS / uncrypted)
            - MQTTHQ (uncrypted)
        - Perfect with Home Assistant
- MODBUS TCP Server
    - Perfect for Home Assistant MODBUS Users
    - Perfect for Smartphone APPs like Virtuino (see mqtt session)
- PUSHSAFER Client
    - Send push Notification to your Mobile or PC, Telegram etc !
        - Daily report sent at SunSet / SunRise / SOC 100%
        - Push containing Alarms info
- Works with or without 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 .
- Monitor your batteries 24/7 with – 6++ months of daily storage onboard
    - 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 / over capacity specs
        - balancer working bad (MOS broken or bad wiring)
    - Each and every anomaly on you battery pack you find in a second!
    - SOC is monitored as well and syncronized with battery status
    - CHARGE-DISCHARGE current [I] cycles shown daily
- DALY Smart Bluetooth LE dongle, can be connected too and works in parallel
    - it works also with DALY WiFi new Module
    - Passthrough can be enabled/disabled
    - data PACKET SNIFFER between Bluetooth LE Dongle and DALY Smart BMS
- Possibility to inject command to DALY/Hi & JK Smart BMS via web page
- Remote TCP Virtual UART to use BmsMonitorVx.x.x sw via internet
    - offer a TCP server for virtual com – manage advanced parameters using DALY 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:

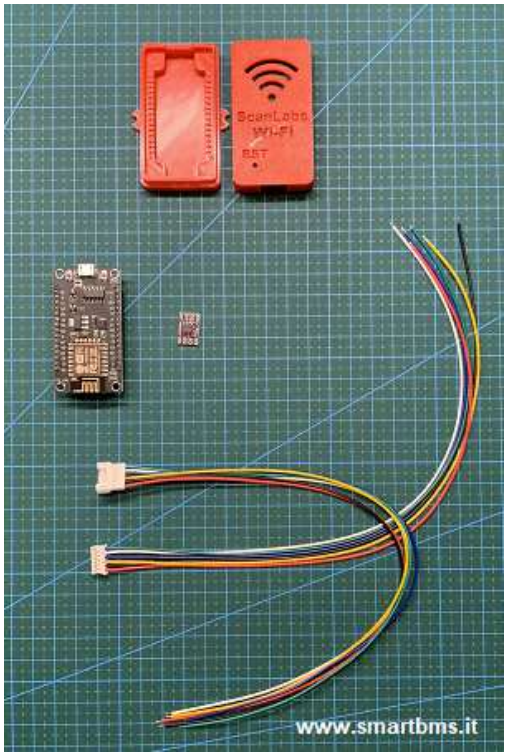
- DALY – NEWER & CLASSIC Models with UART(1) Interface are supported and reported as working
- JK-BD6AxxS-10P / JK-BD6AxxS-12P / JK-BD6AxxS-15P/ JK-B1AxxS-15PJK-B2AxxS-15P/ JK-B2AxxS-20P

WHAT YOU NEED :

To build for JK or DALY (New or Former connector) the process is about identical . Of course you have to purchaise 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)

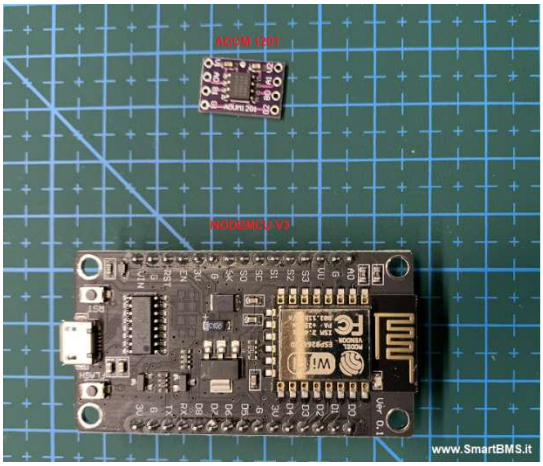
- DALY NEW (little 8mm)
  6pins JST GH Series 1.25
- DALY CLASSIC (larger 13mm)
  6pins Micro Mini JST 2.0 PH
- JK BMS (GPS Port)
  4pin Micro JST MX 1.25

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.



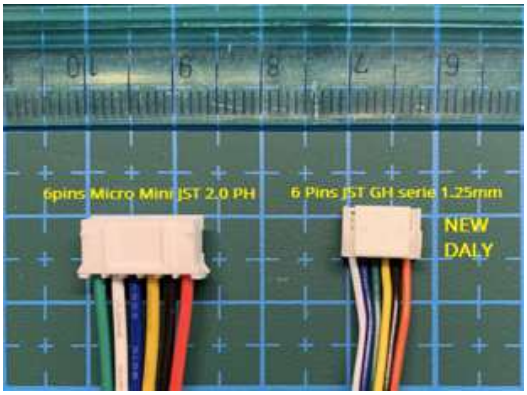
CABLE SELECTION

FOR DALY BMS

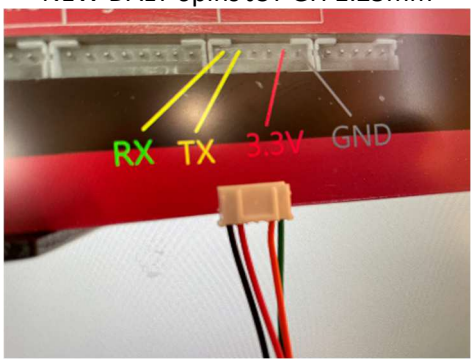
Daly BMS come with two kind of connectors.

- **DALY NEW** (little 8mm)
  6pins JST GH Series 1.25

- **DALY CLASSIC** (larger 13mm)
  6pins Micro Mini JST 2.0 PH



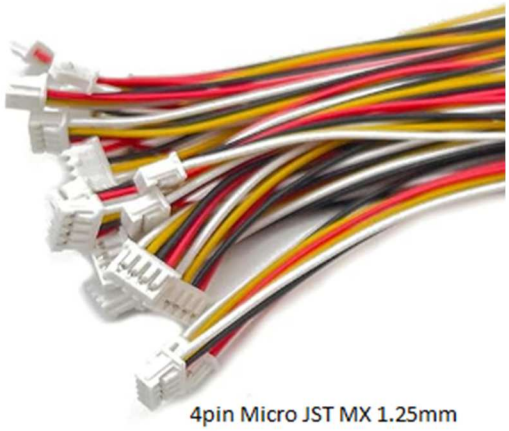
NEW DALY 6pins JST GH 1.25mm



CLASSIC DALY 6pins Micro Mini JST 2.0 PH

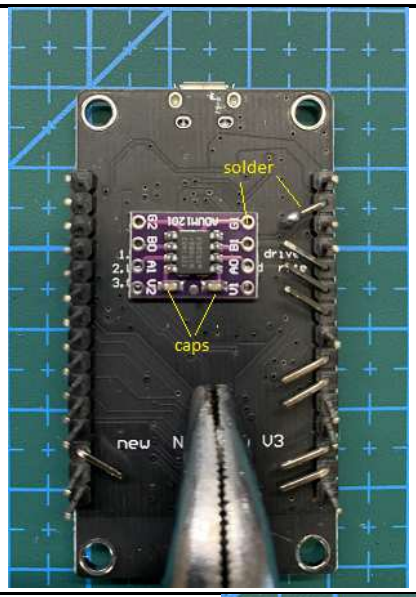
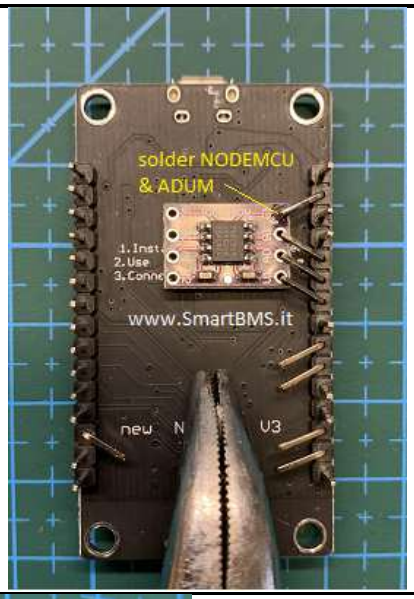
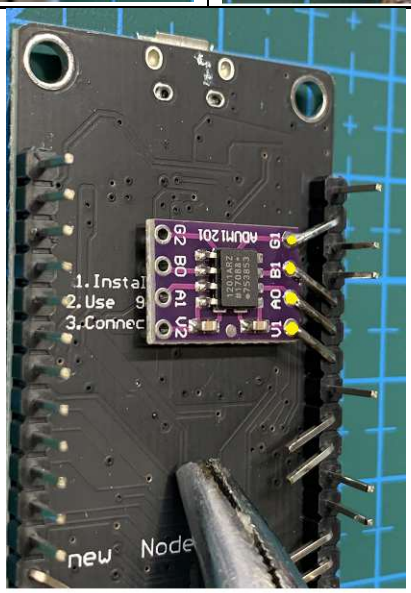
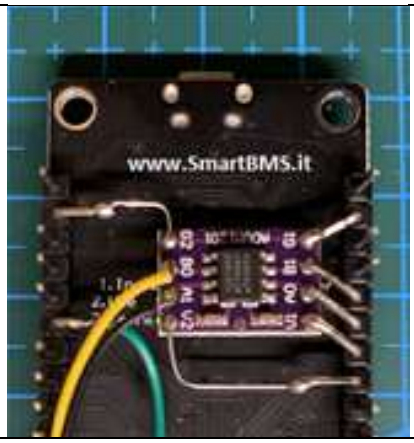
FOR JK BMS

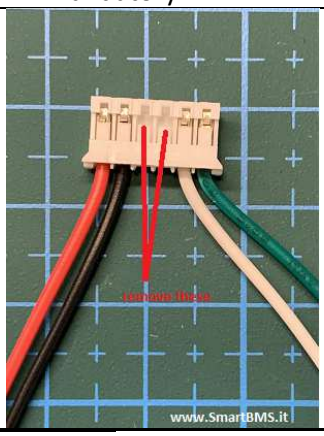
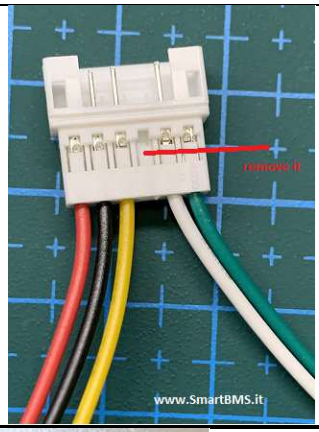
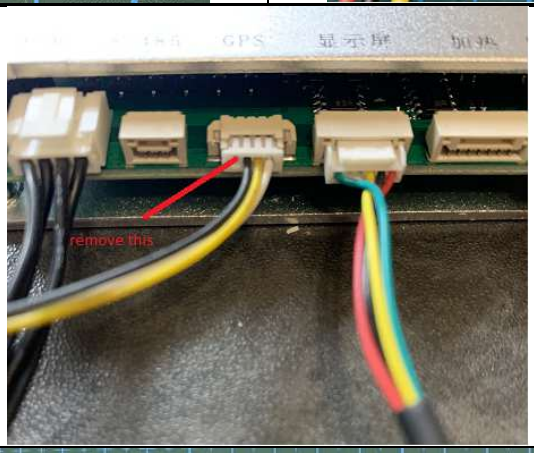
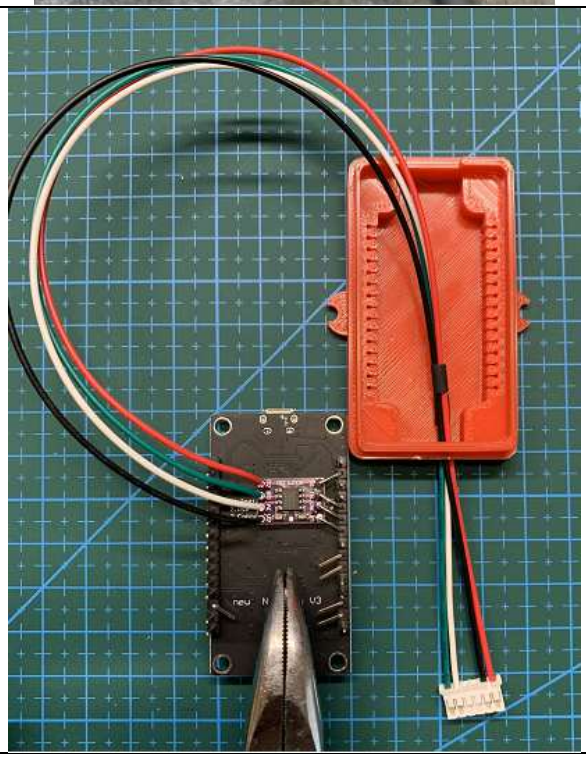
Supported Models works via GPS Interface
4pin Micro JST MX 1.25

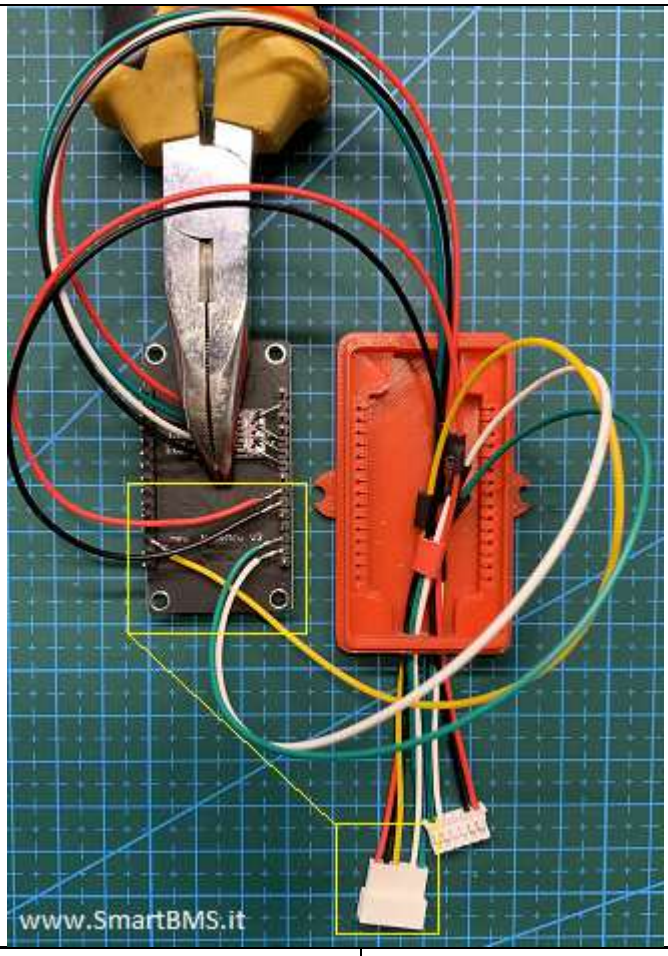
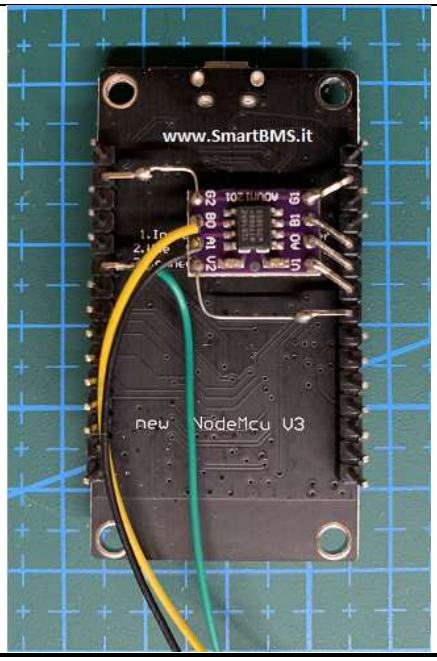


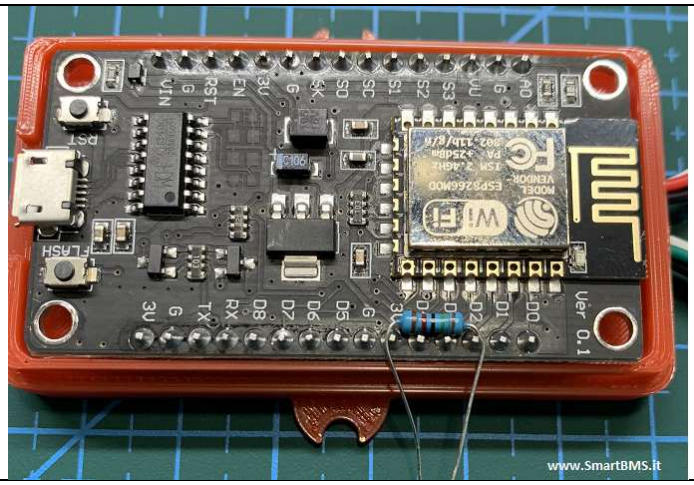
4pin Micro JST MX 1.25mm

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 . This is NOT a must to do, is simply a way to speed up the mounting process NOTE 2: if Pass-Through feature needed - you need 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 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.	

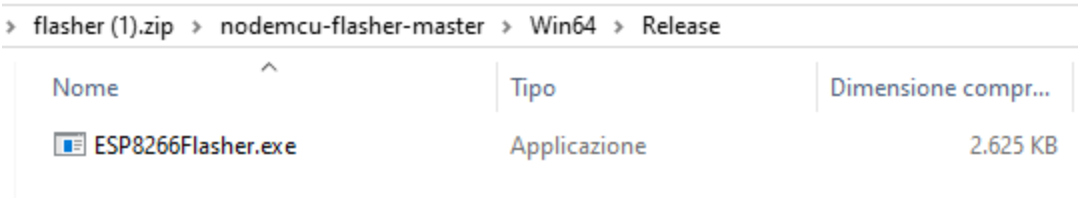
STEP 5 DALY BMS: CONNECTORS FEMALE Connector is a MUST – WiFi Dongle “talk”with DALY BMS through this cable. Central PINs are not Needed – REMOVE THEM MALE Connector is OPTIONAL and Needed ONLY if you want to use the Pass Through feature	Mandatory FEMALE 	Option MALE – PASS THROUGH- 
STEP 5 **JK BMS**: CONNECTORS 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 ;-)		
STEP 6 **DALY BMS**: CABLING DO NOT MIX CABLES – FOLLOW THE IMAGE		

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

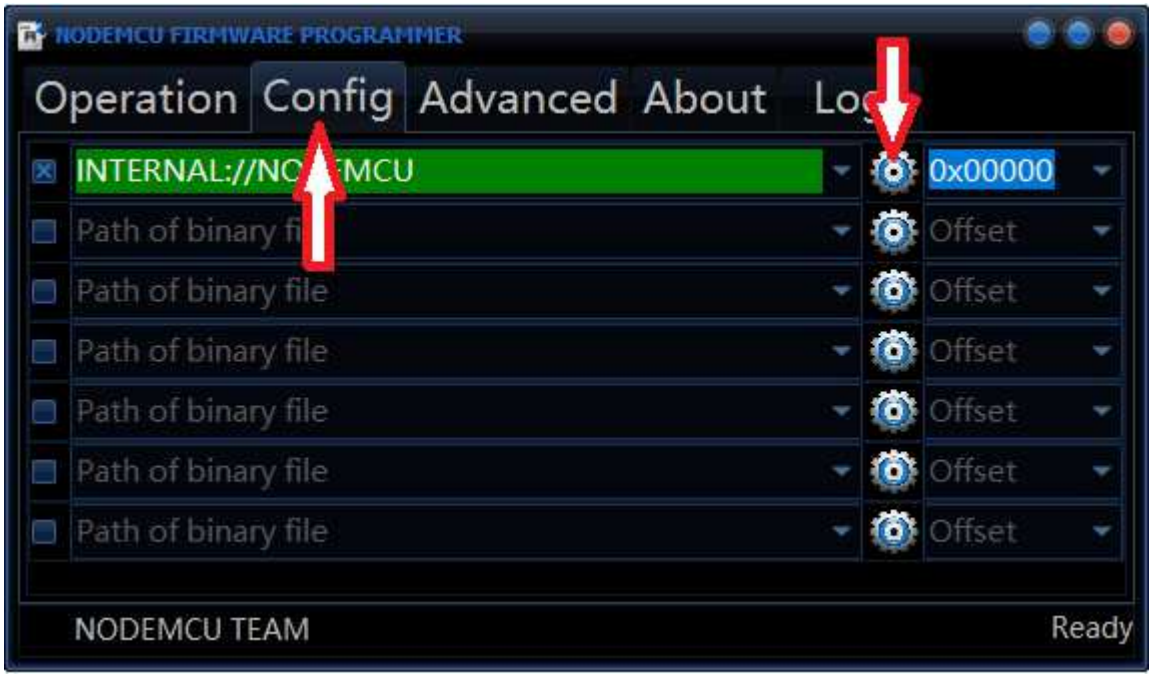
STEP 7 **DALY & JK** : OPTIONAL “PASS-THROUGH” Add a 10Kohm to 15kohm resistor between 3V and D2 NODEMCU Pin	

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



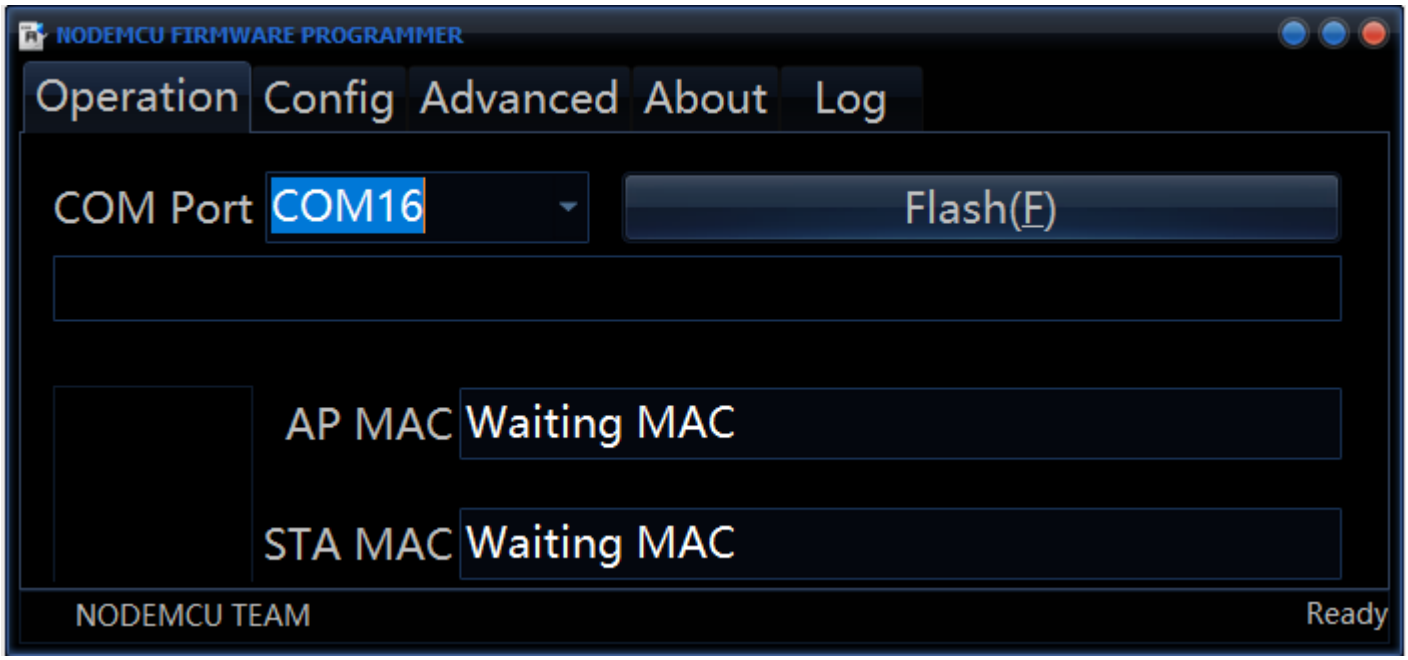
4- download the latest ScanLabs dongle FW from here
extract the zip – at this point we need only the .bin image
5- open ESP8266Flasher.exe -> CONFIG -> Gear Icon



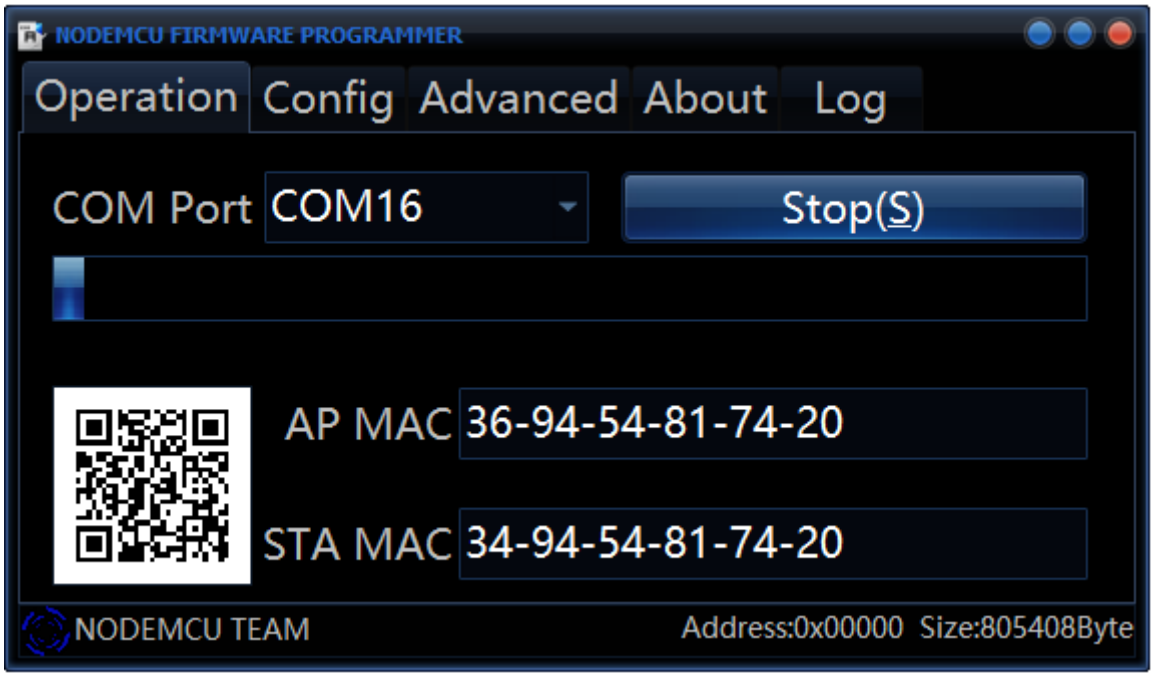
6- Select the .bin file for JK or DALY/Hi – don't worry – if you are wrong at this step you can after re-flash using the right binary image .
DON'T use binary images from others – I won't help further then
DON'T – DON'T – DON'T – DON'T – DON'T change 0x00000
>>>>> if you change it -> you waste the dongle <<<<<<<<<

7- Go to "OPERATION"

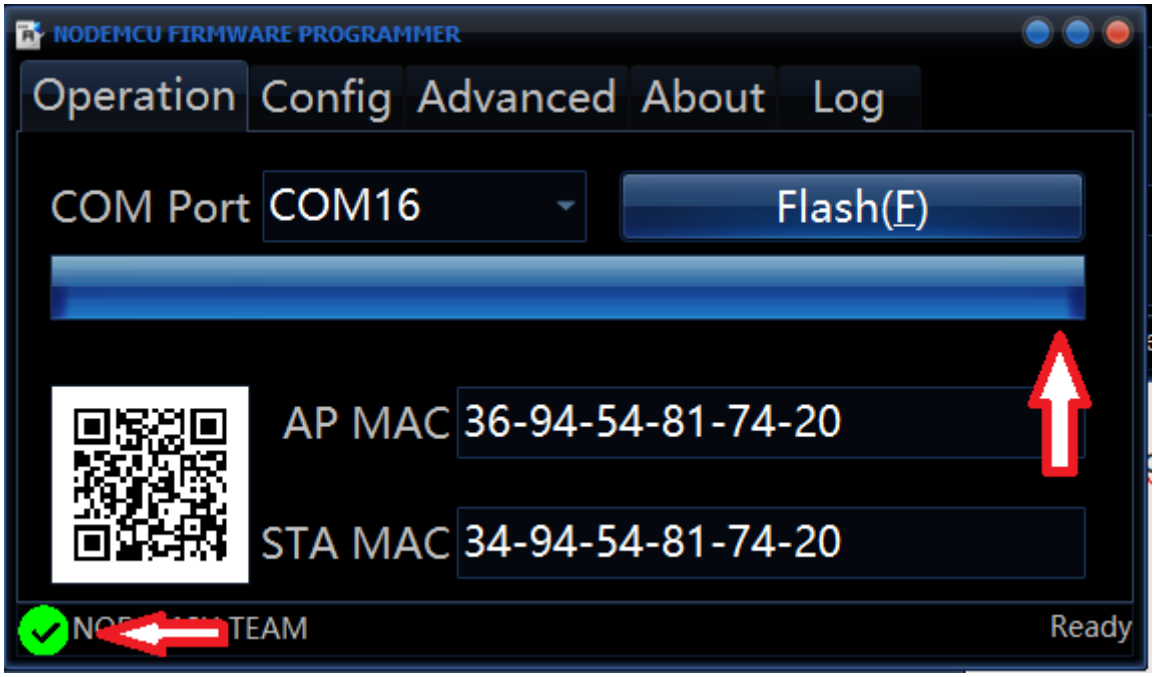
8- Select the COM port to which the dongle is connected to the PC – if NO com is listed you don't have the right driver installed – go to *Troubleshooting* and install the COM port drivers



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 defualt . First step is to joing the “***SmartBMS.it***” AP.

Browse to page http://192.168.0.1/upload

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

11- At this point you downloaded FW and WebPages . Follow the instruction on “smartbms.it” to configure

NOTE: un-licensed FW is about full functional – BMS / MQTT and MODBUS polling/publishing time are limited and only current month of data battery are availble. If you want to purchase a full SW license follow the page and instruction by clicking on the “UNLICENSED” link when it appears.