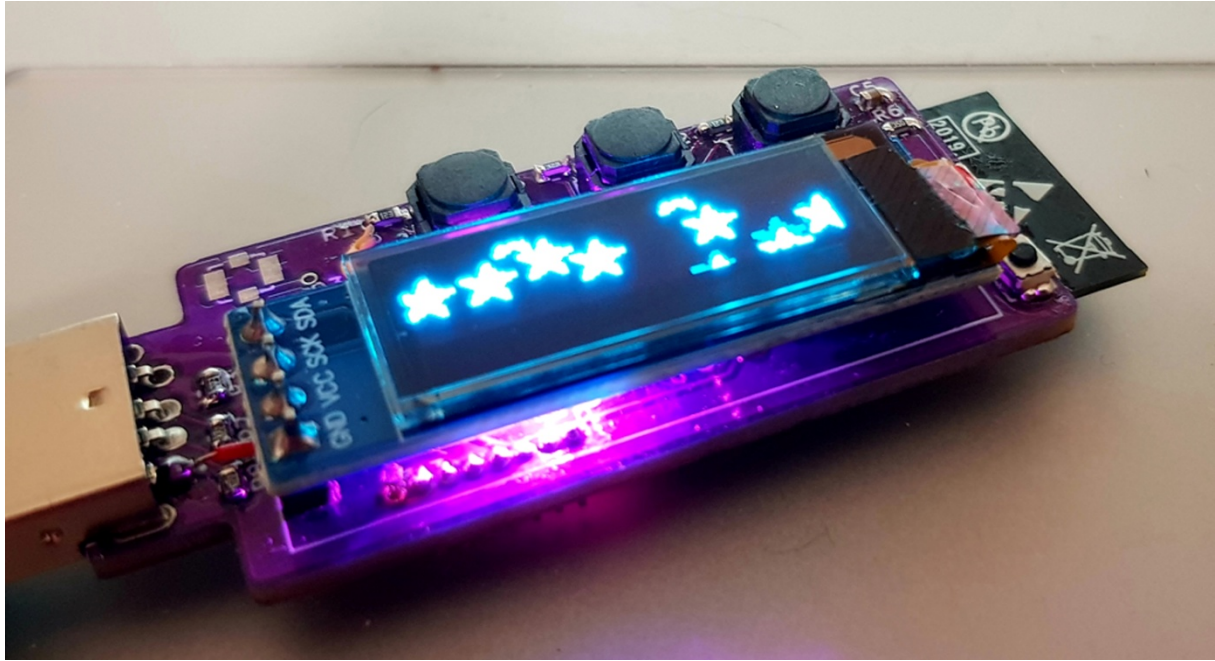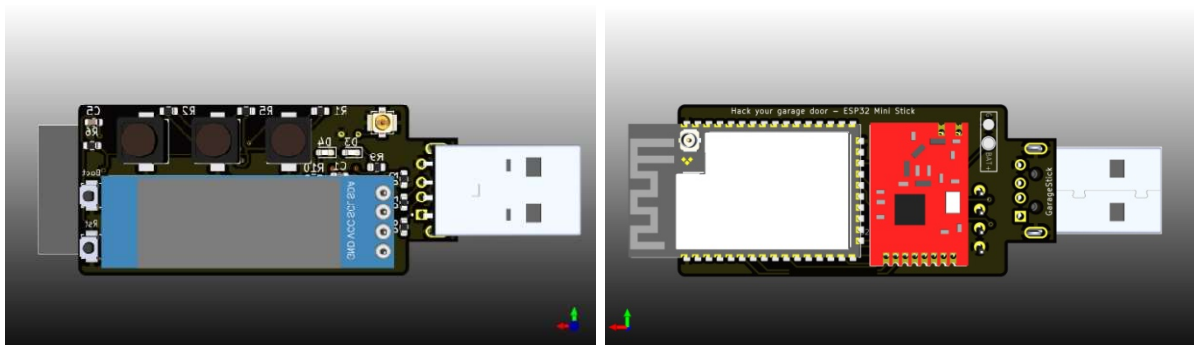# HackZeGarage

@sulfuroid / Dr CADIC Philippe

Portable USB Stick to replace garage doors and gate doors remote controls into one single 433 Mhz C1101 transceiver device. Data bank of gates digital signatures.

The ESP32 C1101 USB stick to ease the access to garages and parkings using 433 Mhz remote keys. HackZeGarage is a USB stick with ESP32 S2, battery and charging module with 3 buttons and a SSD1306 Oled display. This item can also be used as a passwords data bank.
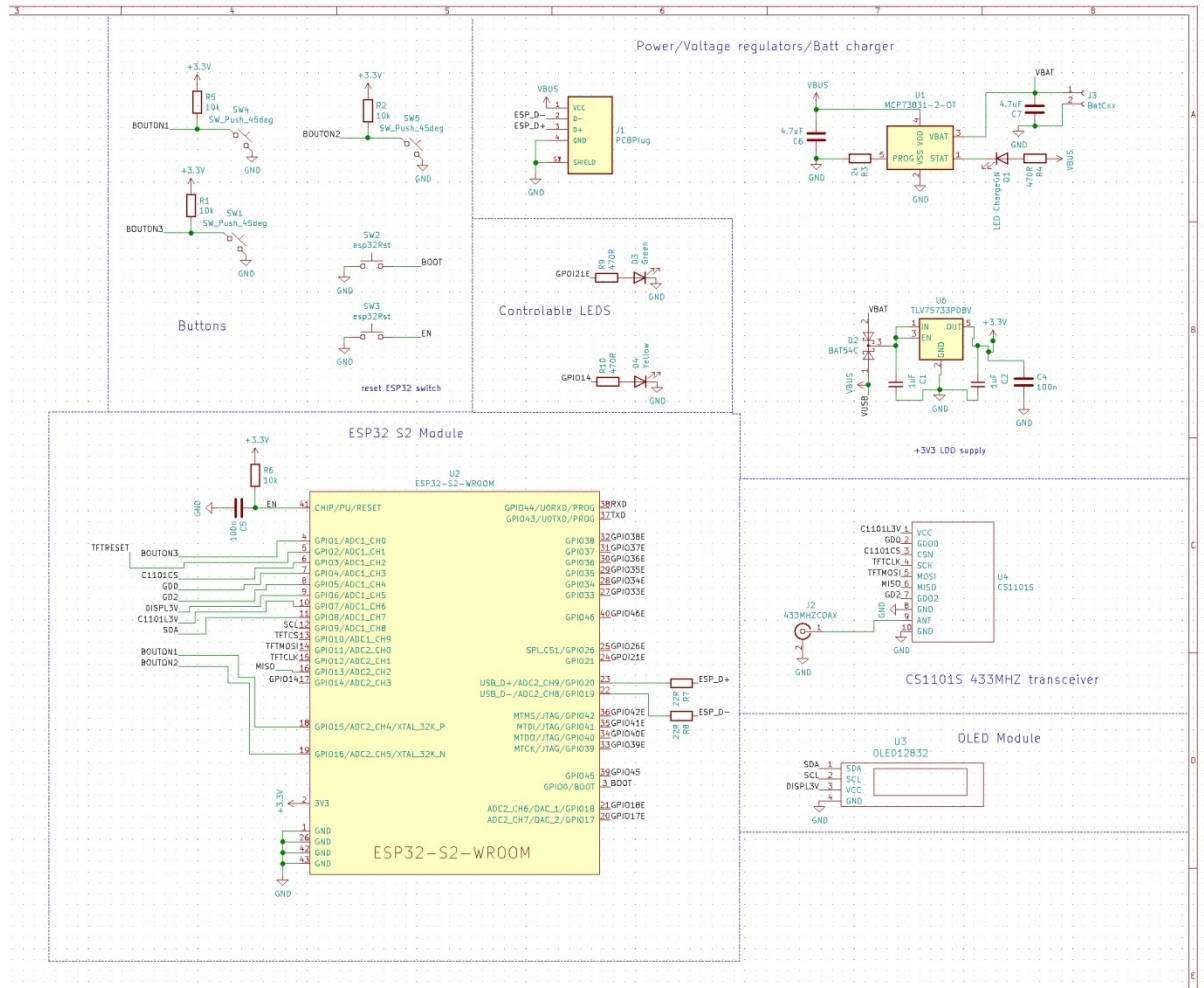

List of components

- 2 micro switches for ESP32 BOOT/RESET options
- 3 buttons on the top of the display
    - SW1/BUTTON3/GPIO 01
    - SW4/BUTTON1/GPIO 15
    - SW5/BUTTON2/GPIO 16
- 2 configurable LEDs
    - D3 : GPIO 21

- o   D4 : GPIO 14
- A 128x32 SSD1306 OLD Display (I2C connected). The display's power is controlled by GPIO 06
- A 433 MHZ SPI transceiver module. This device is also power controlled with GPIO 7

Schematic diagram

UPLOADING SKETCHES

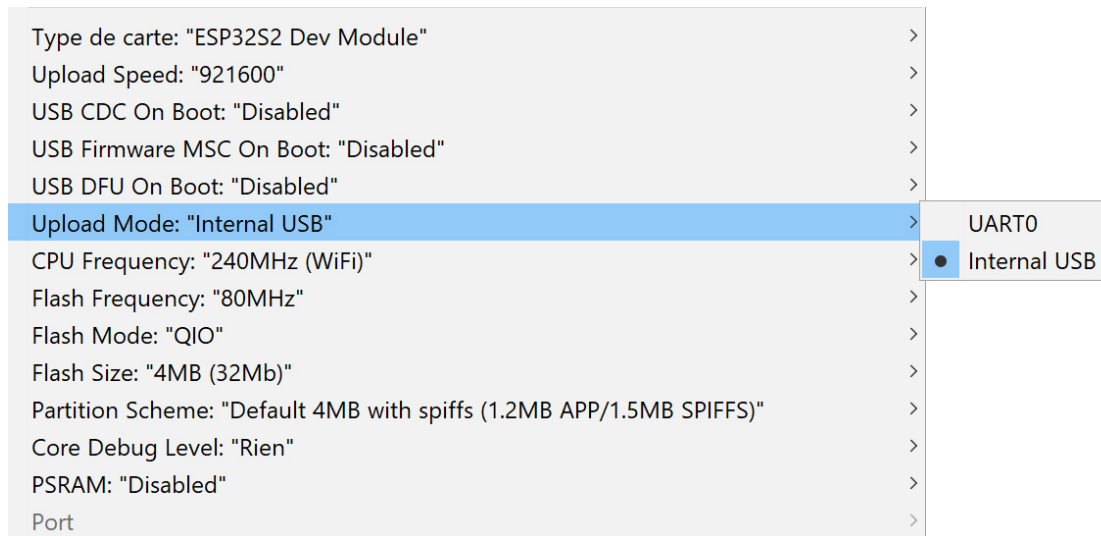Uploading sketches onto an ESP32S2 is a bit tricky. You have to plug the device onto the USB port of the PC running Arduino IDE. Then, you have to press RST and BOOT micro switch respecting this order :

1. Press both RESET & BOOT switches
2. Release RESET switch
3. Then release BOOT

If it is done properly , you should ear the computer recognize the device and a COMx port should appear.

ARDUINO IDE setup

The ESP32S2 is capable or direct USB connection. You have to select ESP32S2 DEV MODULE and select the option as shown in the image above.
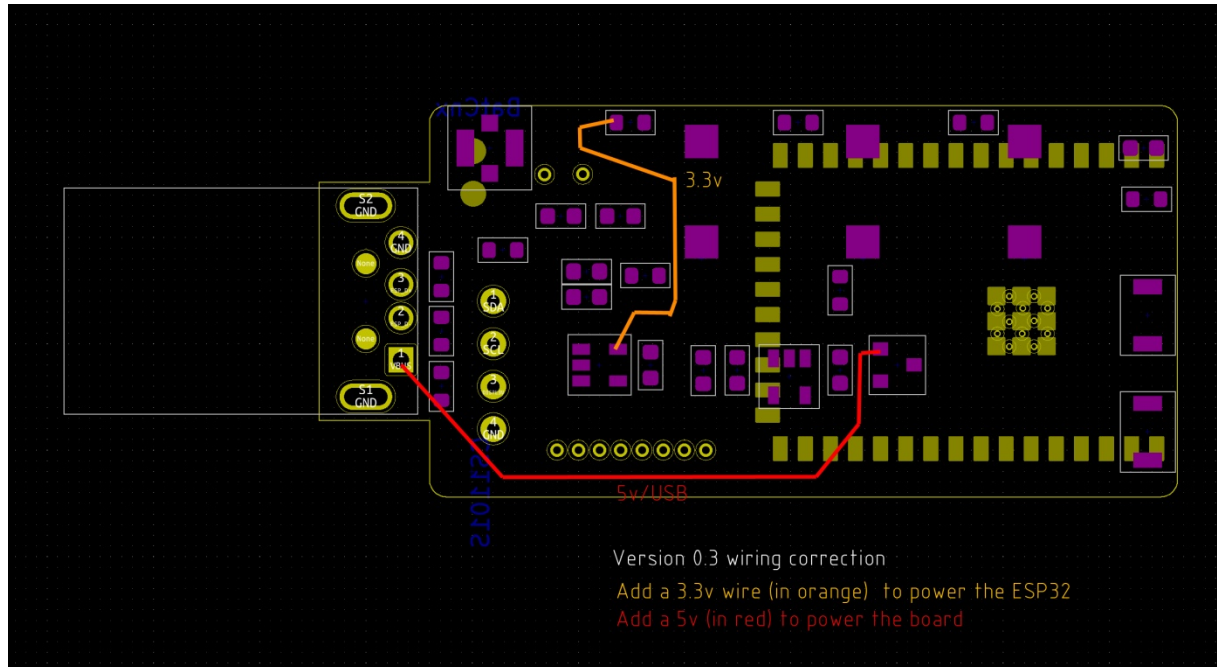
Type de carte: "ESP32S2 Dev Module"	>
Upload Speed: "921600"	>
USB CDC On Boot: "Disabled"	>
USB Firmware MSC On Boot: "Disabled"	>
USB DFU On Boot: "Disabled"	>
Upload Mode: "Internal USB"	>
CPU Frequency: "240MHz (WiFi)"	>
Flash Frequency: "80MHz"	>
Flash Mode: "QIO"	>
Flash Size: "4MB (32Mb)"	>
Partition Scheme: "Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS)"	>
Core Debug Level: "Rien"	>
PSRAM: "Disabled"	>
Port	>

UART0
● Internal USB

BOM : see BOM.XLS

This board has been designed to keep the budget as low as possible. Most of the components are classic components you may find everywhere.

Reference(s)	Value	LibPart	Footprint	Datasheet
C1	1uF	Device:C_Sm	Capacitor_SMD:C_0603_1608Metric	~
C2	1uF	Device:C_Sm	Capacitor_SMD:C_0603_1608Metric	~
C4	100n	Device:C	Capacitor_SMD:C_0603_1608Metric	~
C5	100n	Device:C	Capacitor_SMD:C_0603_1608Metric	~
C6	4.7uF	Device:C	Capacitor_SMD:C_0603_1608Metric	~
C7	4.7uF	Device:C	Capacitor_SMD:C_0603_1608Metric	~
D1	LED ChargeG	Device:LED	LED_SMD:LED_0603_1608Metric	~
D2	BAT54C	Diode:BAT54	Package_TO_SOT_SMD:SOT-23	http://www.diodes.com/_files/datasheets/ds11005.pdf
D3	Green	Device:LED	LED_SMD:LED_0603_1608Metric	~
D4	Yellow	Device:LED	LED_SMD:LED_0603_1608Metric	~
J1	PCBPlug	20210211_e	27sharp:MOLEX_48037-0001	https://fr.aliexpress.com/item/1005003060240787.html
J2	433MHZCOA	20210211_e	27sharp:Molex_Microcoaxial_RF	https://fr.aliexpress.com/item/1005003045038291.html
R1	10k	Device:R	Resistor_SMD:R_0603_1608Metric	~
R2	10k	Device:R	Resistor_SMD:R_0603_1608Metric	~
R3	2k	Device:R	Resistor_SMD:R_0603_1608Metric	~
R4	470R	Device:R	Resistor_SMD:R_0603_1608Metric	~
R5	10k	Device:R	Resistor_SMD:R_0603_1608Metric	~
R6	10k	Device:R	Resistor_SMD:R_0603_1608Metric	~
R7	22R	Device:R	Resistor_SMD:R_0603_1608Metric	~
R8	22R	Device:R	Resistor_SMD:R_0603_1608Metric	~
R9	470R	Device:R	Resistor_SMD:R_0603_1608Metric	~
R10	470R	Device:R	Resistor_SMD:R_0603_1608Metric	~
SW1	SW_Push_45	Switch:SW_P	18650:SW_TP1003	https://fr.aliexpress.com/item/32820232659.html
SW2	esp32Rst	Switch:SW_P	Buttons_Switches_SMD:SW_SPST_B3U-1000P	https://fr.aliexpress.com/item/1005003045038291.html
SW3	esp32Rst	Switch:SW_P	Buttons_Switches_SMD:SW_SPST_B3U-1000P	https://fr.aliexpress.com/item/1005003045038291.html
SW4	SW_Push_45	Switch:SW_P	18650:SW_TP1003	https://fr.aliexpress.com/item/32820232659.html
SW5	SW_Push_45	Switch:SW_P	18650:SW_TP1003	https://fr.aliexpress.com/item/32820232659.html
U1	MCP73831-2	Battery_Man	Package_TO_SOT_SMD:SOT-23-5	http://ww1.microchip.com/downloads/en/DeviceDoc/20001984g.pdf
U2	ESP32-S2-WF	20210211_e	18650:esp32-s2-wrooom	https://fr.aliexpress.com/item/4001143287643.html
U3	OLED12832	20210211_e	27sharp:OLED-0.91-128x32	https://fr.aliexpress.com/item/32982681500.html
U4	CS1101S	20210211_e	27sharp:C1101S	https://fr.aliexpress.com/item/1005001688654787.html
U6	TLV75733PDI	Regulator_Li	Package_TO_SOT_SMD:SOT-23-5	https://www.ti.com/lit/ds/symlink/tlv757p.pdf

Important note:

You may get the 0.3 version of the board which has to issues you can easily fix. Beside this fix, there is no difference with V1 version. To protect the environment of our planet, we decided not to through the 50 V0.3 PCB to the bin as the fix is minor. If you get the V0.3 version, you will need to add 2 extra wires when assembling the device. See diagram above.

Version 0.3 wiring correction
Add a 3.3v wire (in orange) to power the ESP32
Add a 5v (in red) to power the board

GitHUB documentation

https://github.com/ccadic/HackZeGarage