

# PROCEDURE:

## TURN ON BMS

### 1. Turn on the multimeter:

The multimeter is on the car dashboard and reads the voltage of one of the cells of the auxiliar battery. It must be set to measure DC voltage.

### 2. If the multimeter reads above 3.800V turn on the auxiliar system:

This is done by pressing the "4 piscas" button located in the center console near the parking brake.

If the multimeter reads bellow 3.800V the auxiliar battery must be charged.

### 3. Connect a PC to the VIENA network:

After the "4 piscas" button is pressed it will take two or three minutes for the "VIENA" network to appear in the list of available networks.

Name: VIENA

Password: not shown because this is a public document

### 4. Connect to the Raspberry Pi:

On the PC open the "command prompt" and type: "ssh [pi@192.168.31.50](mailto:pi@192.168.31.50)".

A password will be requested, type: "fiatelettra"

The raspberry Pi terminal should appear saying "pi@raspberrypi:~\$"

### 5. Stop other programs that are already running:

Type "killall -9 python3" in the terminal

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Since the python code that allows the rpi to communicate with the BMS runs automatically, it is necessary to stop that code in order to command the BMS from the terminal.

### 6. Start the CAN listener program:

On the raspberry Pi terminal type: "cd foxbms\_CAN"

Then type: "python foxbms.py"

### 7. Check the BMS state:

Type "state 0.1"

Several CAN message should be printed on screen

Look at message "CAN0\_MSG\_SystemState\_0 0x110". Field "CAN0\_SIG\_GS0\_current\_state" indicates the state of the BMS (4-standby, 6-normal, 240-error).

If BMS is not in error procced

**8. Change the state**

Type "changestate 3" to change the state from standby to normal

The contactor should be heard closing

The battery is now connected to the load

Repeat step 6 to check if the BMS is in normal state

**Note:** throughout the operation of the system the cells of the auxiliary battery must not go below 3.8V. Attention must be paid to the value on the multimeter. The system must be shut down when the auxiliary battery reaches below 3.8V.

**9. Turn off the BMS (when you want)**

Type "changestate 8" to change the state from normal to standby. Thus, disconnecting the battery from the load.

Press the "4 piscas" button to turn off the auxiliary system (this turns off the BMS and the RPI).