

IN DONOSTIA-SAN SEBASTIÁN, NOVEMBER 2023

BMS AND CONTROLLER FW UPDATE

This document explains the procedure to update the BMS (Battery Management System) and Controller of the NERVA EXE scooter.

For the update, the CAN reader device is necessary, which will be provided by NERVA.

The CAN reader device connects to the scooter CAN bus, which is in communication with all the most important systems of the scooter, such as the battery, BMS, controller, charger, display, etc. Moreover, the CAN reader device is also able to write over the CAN bus and therefore update some of the aforementioned systems.



Connect the CAN reader:

- 1) Access the right upper footrest and remove first the rubber part and then the plastic cover.



NERVA

MOVE AHEAD

- 2) The plugs of the CAN bus will be now visible. Three plastic plugs will be visible, two of them connected, and **one free**. The unconnected plug has just one wire on it and is used for the motor calibration function which will be explained later. To connect the CAN reader device, it is required to disconnect the plugs (the ones which are connected) and connect the CAN reader to the **female one**.
- 3) Next, connect the CAN reader to the computer. The PWR light will then activate showing a red light. The CAN1 light will start to blink when the communication between the CAN reader and the vehicle starts.
- 4) Finally, the technician can proceed to **update the Controller or BMS**



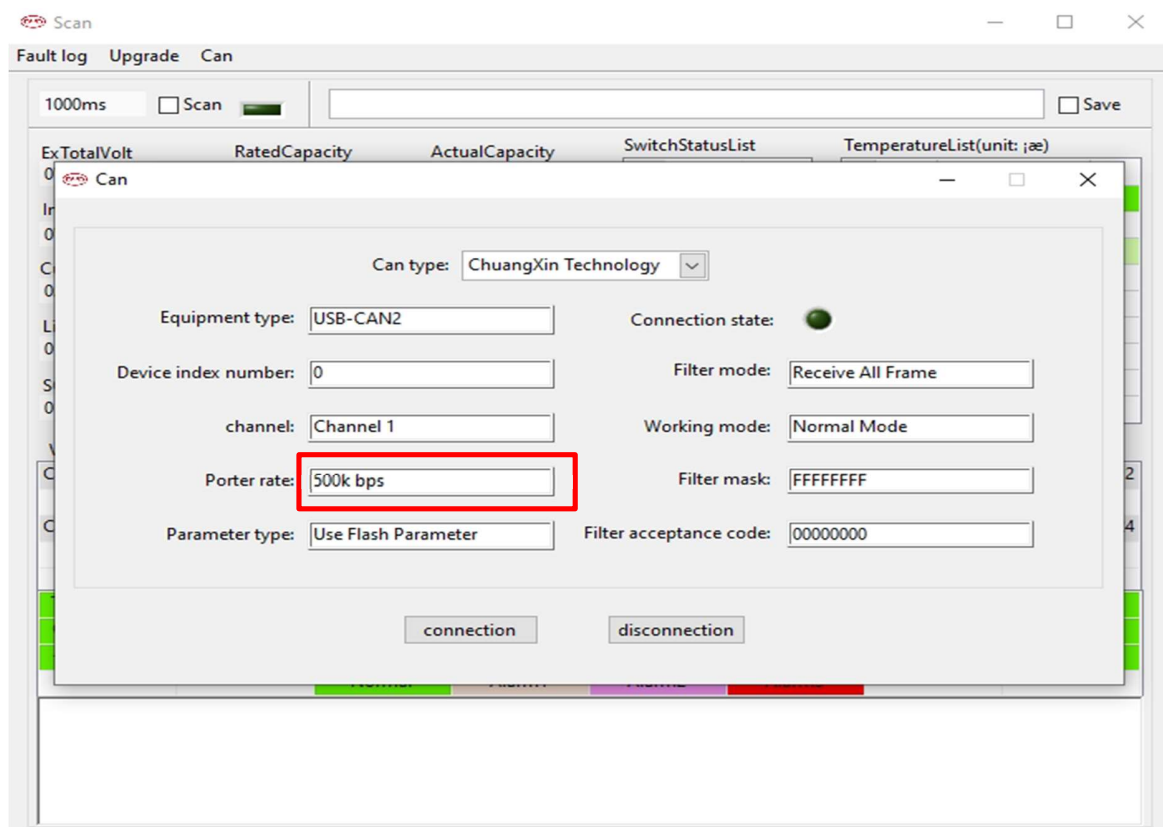
BMS UPDATE

The BMS (Battery Management System) is a crucial part of the battery system. It individually monitors the voltage and temperature of the cells of the battery, calculates both State of Charge (SoC) and State of Health (SoH), and limits the maximum available current to protect it.

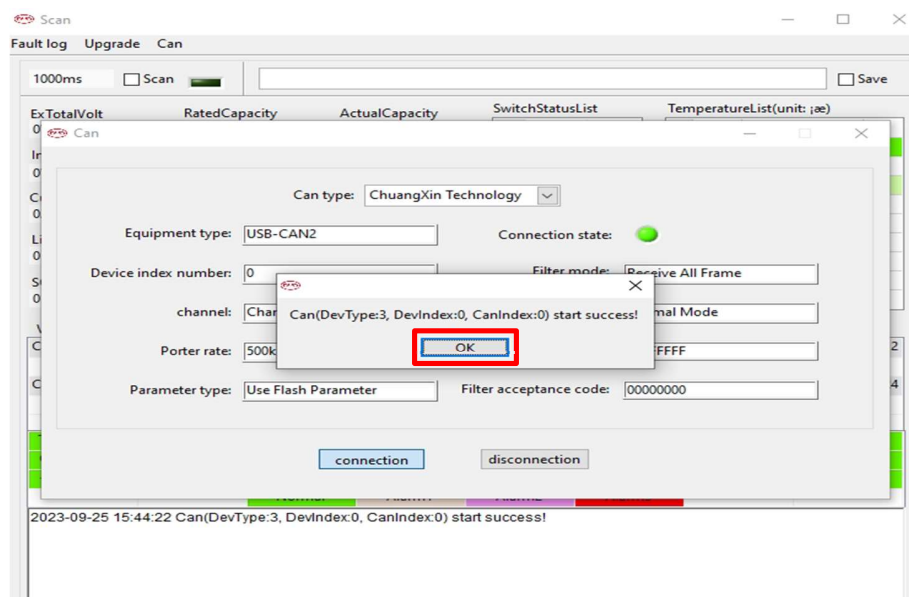


To update the BMS:

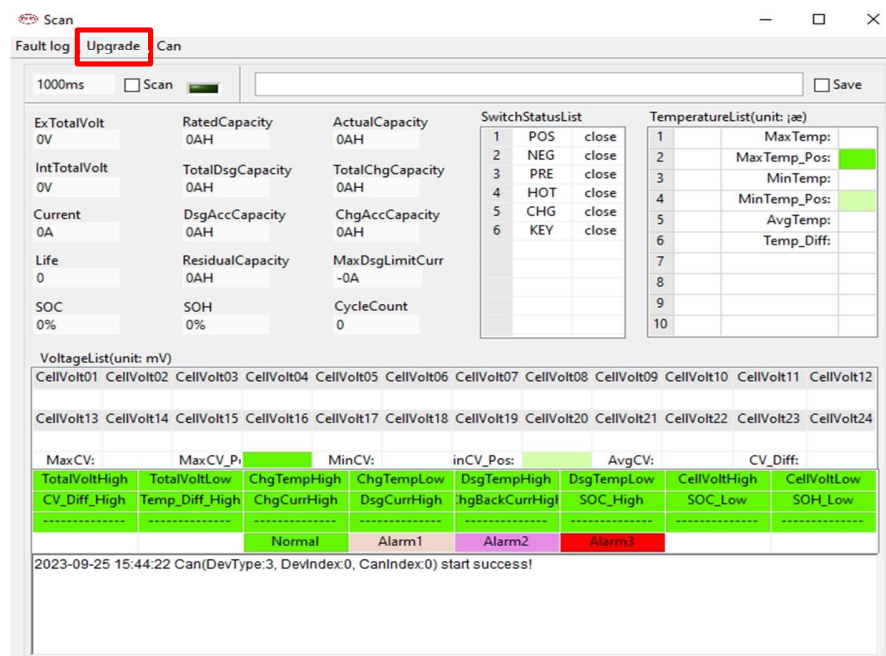
- 1) Turn on the scooter, execute the "MC1" software provided by NERVA, and configure the baudrate to 500K. Press the "connection" button to open the communication with the BMS.



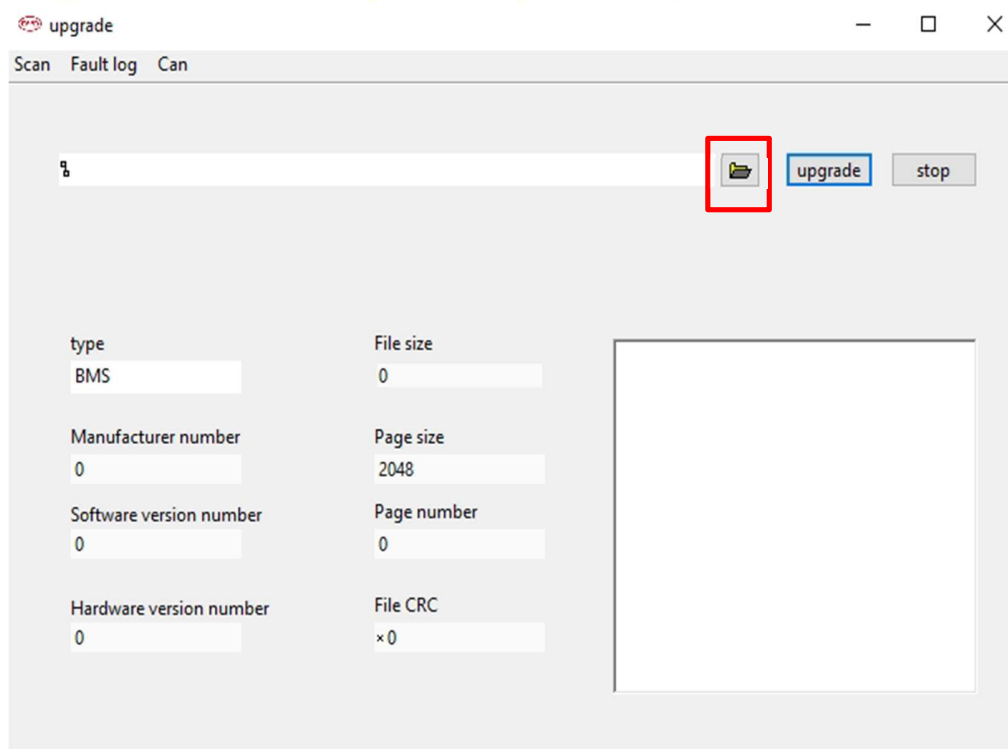
2) In case the connection is successful, the software will show the following screen:



3) Press the “Upgrade” tab to show the upgrade screen:



- 4) Select the following file provided by NERVA:
- MC1_01_100_124



- 5) Press the “Upgrade” button. The screen will show a red indication and the scooter will shut down. Once the scooter display is off, press on the “Upgrade” button again to start the update. Once the update is finished, the scooter will turn on.