



# **Firmware Upgrade for BMS via RS232**

## **Operating Guide**

MNPowerflo16

MNPowerflo5

**V1.2.0** November 2024

Author: Stone



## Table of Contents

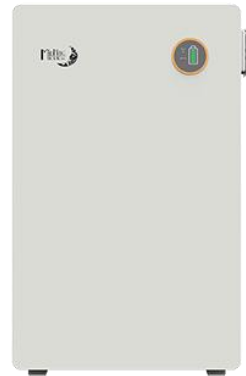
1. Range of Applicable Products .....	3
2. Preparation .....	3
3. Connect the communication cable .....	4
4. Battery Power On .....	5
5. Operating tool software .....	6
6. Upgrade Failed .....	8
7. Common Issues and Solutions .....	9

# 1. Range of Applicable Products

**1.1** This operating guide is applicable to the following product range: MNPowerflo 16 and MNPowerflo 5 models, designed to provide users with a safe and efficient upgrade process. Please ensure that your device is compatible with the specifications listed in the guide to achieve optimal performance and functionality enhancement. If you have any questions, please refer to the relevant product manual or contact technical support.



MNPowerflo 5

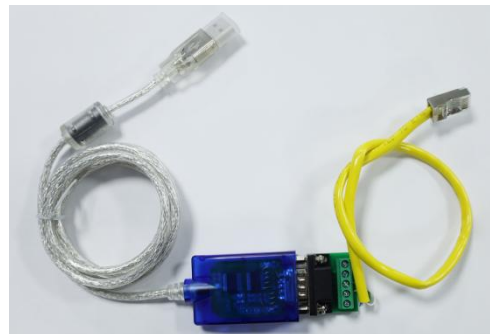


MNPowerflo 16

## 2. Preparation



A. USB Type-A to RS232 adapter



B. With RJ45 connector

### 2.1 Hardware Requirements:

- A computer with an RS232 port, or an RS232-to-USB adapter.
- Connection cables (RS232 cable). then use an Ethernet cable to connect the adapter with an RJ45 connector, making a tool with an RJ45 connector, as shown in Figure 2.2.
- Battery Management System (BMS) hardware(Inside the battery pack).
- Prepare one PC with the operating system as Windows 10 or Windows 11

### 2.2 Software Tools:

- BMS firmware upgrade software.
- Necessary drivers and software for the firmware upgrade are installed to ensure communication via the RS232 interface.

### 2.3 Firmware File:

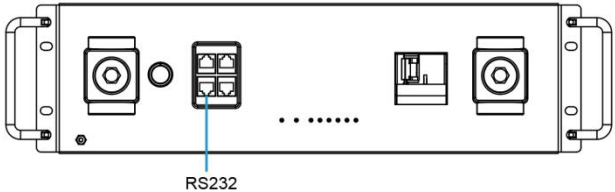
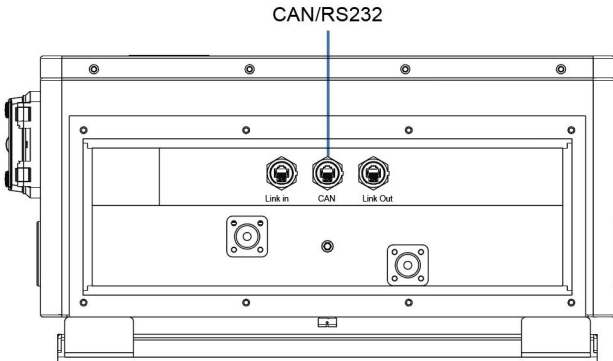
- Obtain the latest version of the BMS firmware file (usually in .bin or .hex format).

### 2.4 Battery Status:

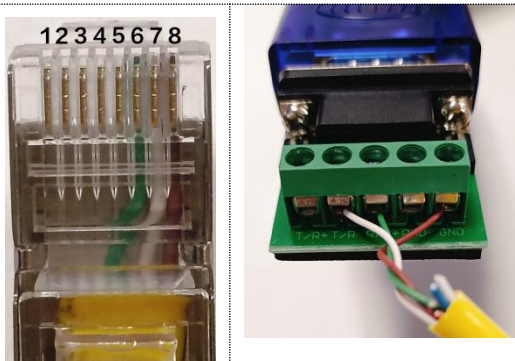
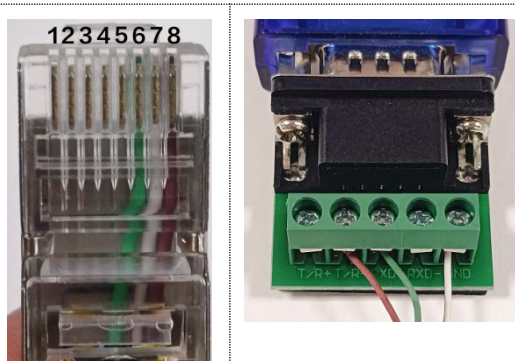
- During the upgrade process, do not charge the battery or perform other high-load operations.
- Ensure the battery charge level is within the recommended range (typically between 50% and 80%) to avoid performing the firmware upgrade under high load conditions.

## 3. Connect the communication cable

**3.1** Connect the USB Type A end of the adapter board to the PC, and the RJ45 end to the RS232 port of the battery module

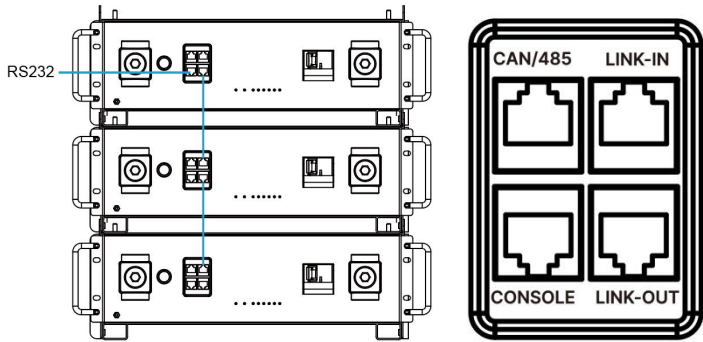

MNPowerflo 5		MNPowerflo 16	
			
<b>RS232</b>	Pin 6-RX / Pin 7-TX / Pin 8-GND	<b>RS232</b>	Pin 6-RX / Pin 7-GND / Pin 8-TX

### 3.2 Corresponding Pinout of RJ45 and Adapter Board

MNPowerflo 5		MNPowerflo 16	
RJ45	Adapter board	RJ45	Adapter board
Pin 6-RX	RXD+	Pin 6-RX	RXD+
Pin 7-TX	T/R-	Pin 7-GND	GND
Pin 8-GND	GND	Pin 8-TX	T/R-
Wiring Reference		Wiring Reference	
			

### 3.3 Firmware Upgrade for Multiple Battery Connections

- Identify the primary unit, which is the first battery connected to the LinkOut, as shown in the diagram below.
- Ensure that the communication connection between the primary unit and the secondary unit is normal, and that all devices are powered on.
- The RJ45 connector of the USB Type-A to RS232 adapter is connected to the RS232 port of the primary unit.

MNPowflo 5	 <p>The CONSOLE is the RS232 interface.</p>
MNPowflo 16	 <p>CAN and RS232 are the same interface.</p>

## 4. Battery Power On

**Step1:** Turn off the battery breaker

**Step2:** Disconnect the communication connection and power connection between the battery and the inverter.

**Step3:** Start the Battery Management System (BMS):

Press and hold the POWER button for 3 seconds.

Note:

- Powering On the Standalone Battery Pack  
Press and hold the “POWER” button for 3 seconds. The battery indicator and fault indicator will light up simultaneously. After flashing 3 times, the battery's State of Charge (SOC) percentage will be displayed normally, and the operation indicator will begin to flash, indicating that the power-up is complete.
- Powering On the Parallel Battery Pack  
Press and hold the “POWER” button on the master unit for 3 seconds. The battery indicators and fault indicators of both the master and slave units will light up. After flashing 3 times, the master unit will display the battery's SOC percentage normally, and the operation indicator will flash. The slave unit will

only show the flashing operation indicator, indicating that both units have powered on successfully.

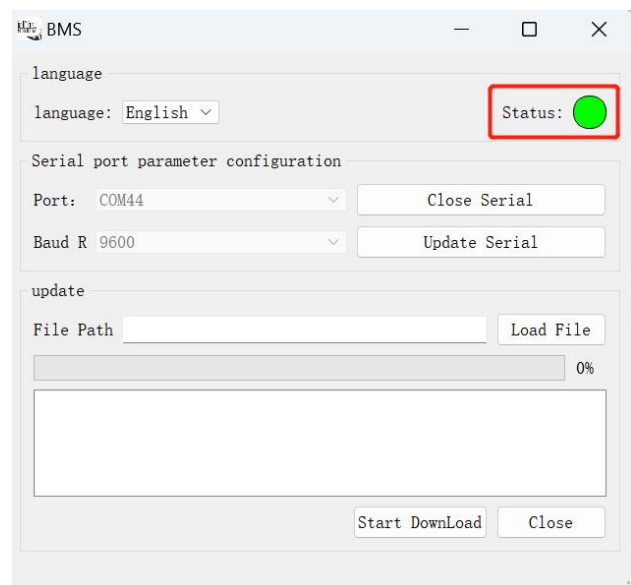
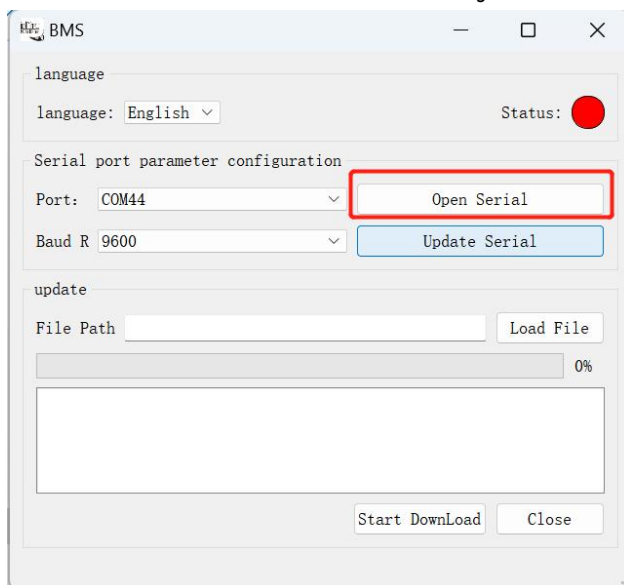
## 5. Operating tool software

### Notes:

- Ensure a stable connection: Please make sure the cable connections are secure during the upgrade to avoid communication interruptions.
- During the BMS firmware upgrade process, do not move the battery
- Prevent Power Loss: During the firmware upgrade process, prevent the battery or system from losing power to avoid firmware corruption.
- Environmental Requirements: Perform the upgrade in an environment free from external electromagnetic interference, with stable temperature and humidity conditions.

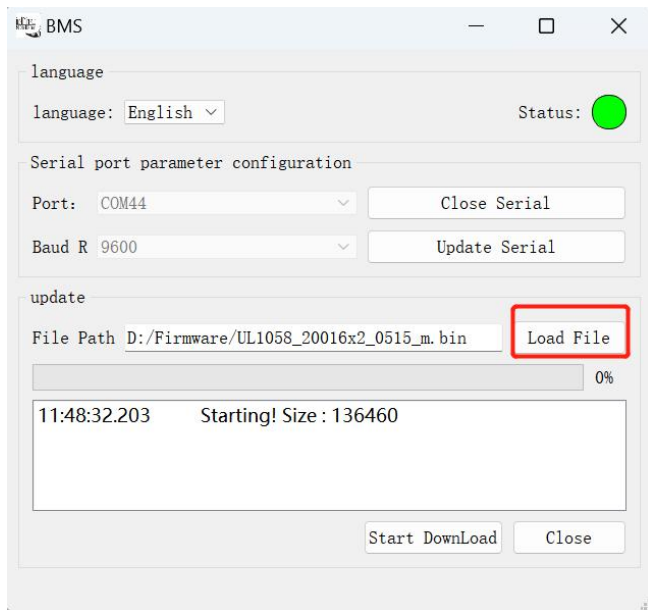
### Step1: BMS connection

1. Launch the BMS upgrade tool software.
2. Select the correct COM port.
3. After clicking the “Open Serial” button, the Status indicator turns green, Indicates that the BMS has been successfully connected.



## Step2: Load the firmware file

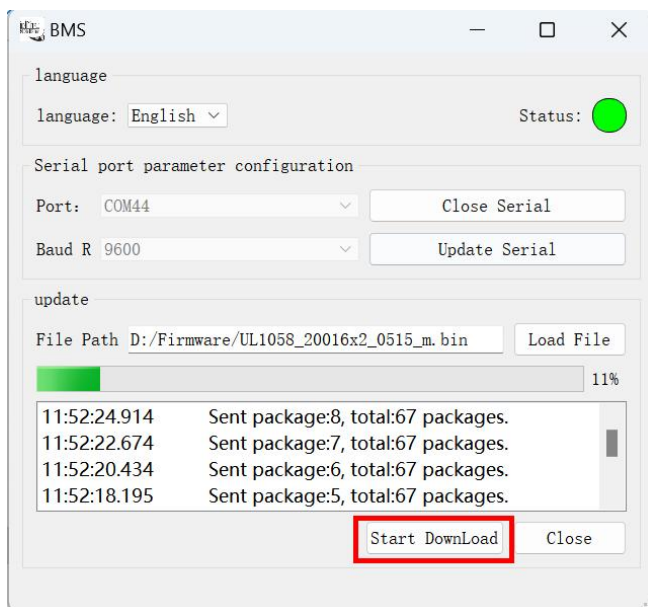
Click the “Load File” button to load the new firmware file.



## Step3: Start download

Click the “Start Download” button to initiate the upgrade, and the battery SOC indicator light will start flashing.

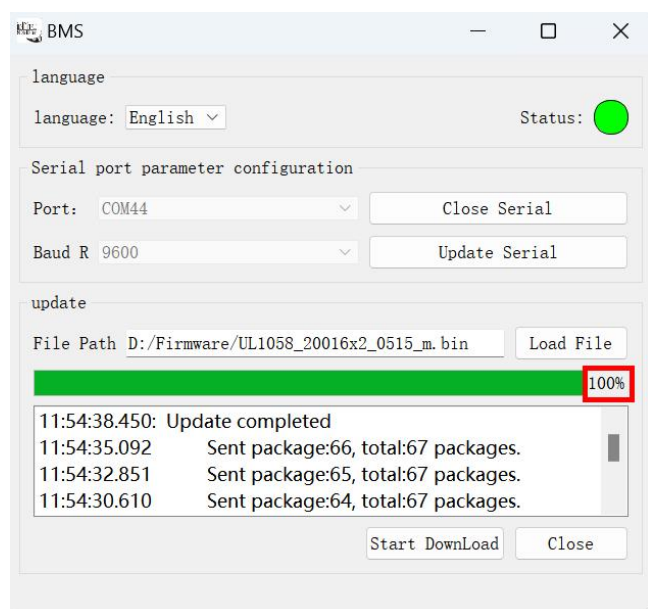
The upgrade for a single battery is expected to take 3 minutes, and the progress will be displayed in the status bar below. This system also supports software upgrades for parallel-connected batteries; for each additional battery, the upgrade time will be longer.



#### Step4: Upgrade completed.

1. Once the software upgrade reaches 100%, it means the upgrade is complete.
2. Restart: After the upgrade is complete, the BMS will automatically restart.

**Note:** During the upgrade process, do not disconnect the upgrade harness, as disconnecting it will cause the upgrade to fail.



## 6. Upgrade Failed

During the firmware upgrade process, if the upgrade fails due to power loss or a loose communication connection, the following phenomena may occur:

### 6.1 Symptoms of Upgrade Failure:

1. The SOC indicator light stops flashing.
2. The progress percentage no longer updates.

### 6.2 Steps to Resolve:

1. Disconnect the RS232-to-USB adapter from the battery.
2. Press the POWER button on the battery briefly to turn it off.
3. Reconnect the RS232-to-USB adapter to the battery.
4. Press the POWER button on the battery briefly to turn it on.
5. Quickly initiate the firmware update again.



## 7. Common Issues and Solutions

**7.1 RS232 Port Not Recognized:** If the upgrade software cannot detect the RS232 port, check whether the connection cables are properly connected. Alternatively, use other serial port tools to see if the BMS device can be detected.

**7.2 Firmware Upgrade Failure:** If the upgrade fails or a software error message appears during the process, first check the connection status, restart the BMS, and try again. If the issue persists, you may need to contact the supplier for technical support.

**7.3 System Malfunction After Upgrade:** If the system fails to start properly after the upgrade, try restoring the previous firmware version or use backup files to recover the system configuration.

**7.4 Battery Alarm:** After the upgrade, if the BMS triggers abnormal alarms, check if the firmware version was installed correctly or restart the BMS.