



Orion Battery Management System Software

HOW-TO GUIDE

COMMERCIAL GRADE. ALL DAY POWER.

Battery Management System (BMS) Overview

The Battery Management System (BMS) is a critical component of Mean Green mowers. It monitors and manages the battery's performance, health, and safety.

The Orion BMS Jr. 2 software is used to interface with the BMS for diagnostics, monitoring, and profile updates.

KEY FUNCTIONS OF ORION BMS JR. 2 SOFTWARE

- **Access Live Cell Data** – Use the Orion software to view the status of the battery's 13 individual cells and overall battery health, including the Delta Cell Voltage (the difference between the highest and lowest cell voltage).
- **Retrieve Diagnostic Trouble Codes (DTCs)** – The Diagnostic Trouble Codes tab displays current and historical error codes detected by the BMS. This tab shows the current state of the battery and helps identify any issues.
- **Update the Mower's BMS Profile** – The Orion BMS Jr. 2 Software utility allows you to upload a new battery profile from your computer to the mower's BMS.

KEY TAKEAWAYS FOR TECHNICIANS

- A solid understanding of the BMS ensures the battery operates safely and efficiently. Technicians can use Orion software to:
 - Monitor individual cell health
 - Diagnose issues using Diagnostic Trouble Codes
 - Update battery profiles correctly
- Ensure the necessary tools are available and properly connected when accessing the mower's systems, including:
 - IXXAT USB to CAN adapter
 - CANDapter box (black)
 - RS232 cable
 - Single Sevcon Programming Jumper cable
- Always refer to the Evolution Series Folder and the specific mower files for accurate settings and configurations.



fig. 1A – CANDAapter shown connected to the RIVAL's CANbus port and USB near the RH Drive Controller under the seat.



fig. 1B – CANDAapter shown connected to the EVO's CANbus port and USB located in the battery compartment near the RH Drive Controller.



fig. 1C – CANDAapter shown connected to the CANbus port and USB on stand up models. VANQUISH's port is located under the tower below the display. FURY's port is located inside the controller compartment above the LH Drive Controller.



fig. 2A – BMS connection port.



fig. 2B – 8 pin connector shown with jumper.

Battery Management System (BMS) Operations

BEFORE YOU BEGIN
Ensure the Orion BMS Jr. 2 software is installed on your computer. If not, contact service@meangreenproducts.com

CONNECTING TO THE BMS

- Connect to the Mower** – Choose one of the following methods:
 - Via CANbus (recommended):
 - Connect the black CANDAapter box (fig. 1A, B, and C) to the mower's CANbus port.
 - Connect the CANDAapter's USB cable to your computer.
 - Via RS232:
 - Connect the RS232 cable directly to the BMS under the battery cover. Install a jumper on the 8-pin connector to power on the BMS (fig. 2A and B). *NOTE: You will need to remove the battery cover to access the BMS.*
- Open the Orion Software** – Launch the Orion BMS Jr. 2 software on your computer and click "Connect to BMS." (fig. 3)
- Select Connection Type** – In the connection window, select "Connect via CANBUS" and click "Connect." (fig. 4)
- Download Existing Settings** – When prompted, click "Yes, Download existing settings from BMS" and wait for the next pop-up.
- Acknowledge Warning** – When the warning message appears, click "Yes, Continue" to begin downloading the current settings from the mower's BMS. (fig. 5)
- Confirm Connection** – When the download completes, the software will display a confirmation message that the battery profile has been received. At this point, you are successfully connected to the BMS and can view current battery data and activity.

VIEWING DIAGNOSTIC TROUBLE CODES

When connected to the BMS, click the "Diagnostic Trouble Codes" tab along the top of the app to display current and historic trouble codes the BMS has detected from the battery. This is a great tool to help the user understand what the current state of the battery is. (fig. 6)

VIEWING LIVE CELL DATA

- After connecting to the BMS, click "Live Cell Data" in the Orion software. (fig. 7)
- Review the status of the 13 individual cells, paying particular attention to the Delta Cell Voltage (difference between the highest and lowest cell voltage).
 - A lower Delta Cell Voltage generally indicates better battery health and more evenly balanced cells.
- If cell voltages appear uneven or any cells are missing, contact Mean Green Service for assistance by email at service@meangreenproducts.com

UPDATING THE BMS SOFTWARE PROFILE

IMPORTANT
Ensure you have authorization from Mean Green to perform a profile update and confirm that you have the correct data file for the specific mower model and battery pack. If you are unsure, contact service@meangreenproducts.com for guidance before proceeding.

- After connecting to the BMS, in the Orion software click "File" > "Load Profile From Disk."
- In your file browser, select the appropriate battery profile for the mower and click "Open."
- In the Orion software, click "Send Profile Changes to BMS."
- A warning box will appear. Click "Continue." A second warning box will appear. Click "I Agree" to proceed with the update.
- An upload status window will appear in the bottom-right corner of the application window.
 - During the upload, the mower will turn off once the upload reaches roughly the halfway point.
 - You will hear a contactor "click" inside the battery.
 - Before the upload completes, the mower will turn back on automatically.
- When the upload finishes, a confirmation message will appear stating that the new profile has been successfully stored in the BMS.

If any of these steps do not occur as described, STOP and contact Mean Green Service before attempting further changes.

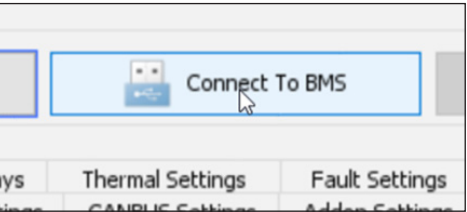


fig. 3 – Connect to BMS button in the Orion BMS Jr connection software.

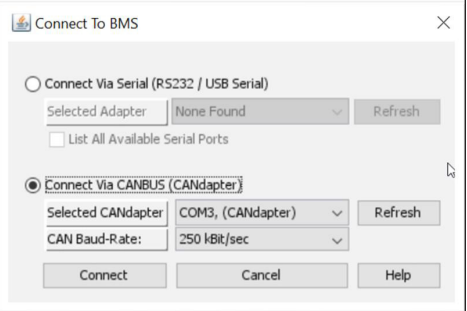


fig. 4 – Orion BMS Jr connection software window selector for connection type.

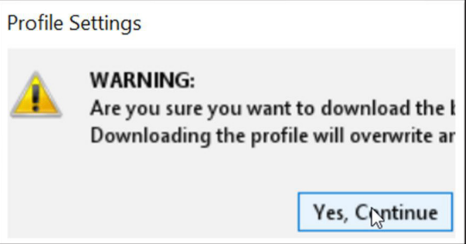


fig. 5 – Orion BMS Jr connection software warning.

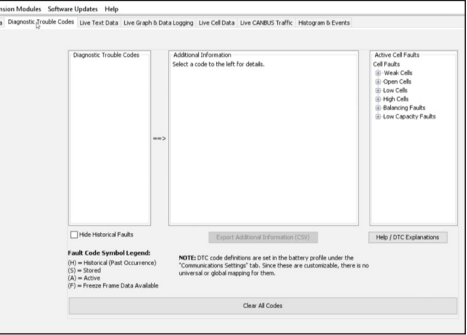


fig. 6 – Orion BMS Jr connection software Diagnostic Trouble Code log.

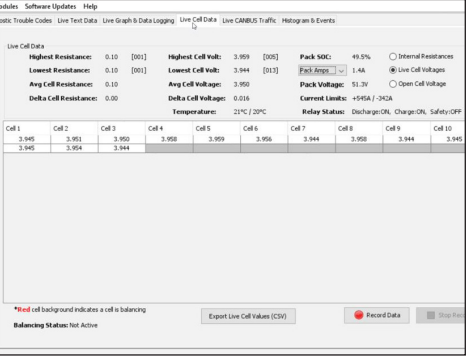


fig. 7 – Orion BMS Jr connection software Live Cell Data report.

Troubleshooting Checklist for BMS Software Issues

CONNECTION ISSUES

- **Problem:** Unable to connect to the BMS.
- **Solution:**
 - Confirm that the Orion BMS Jr. 2 software is installed on your computer.
 - Verify that the black CANDapter box is properly connected.
 - If using the RS232 cable, ensure it is connected to the BMS under the battery cover and confirm the jumper is properly installed on the 8-pin connector to power the BMS.
 - In the Orion software, verify the baud rate is set to 250 kbit/s.
 - Ensure the correct COM port is selected (e.g., “COM 5 can adapter” or similar, depending on your system).
 - Click the “Refresh” button in the Orion software if the connection is not established on the first attempt.
 - If the connection still fails, close and reopen the Orion software, then try again. If the issue persists, contact Mean Green Service.

BATTERY PROFILE UPDATE ISSUES

- **Problem:** Unable to update the BMS profile.
- **Solution:** Confirm you have the correct battery profile file for the specific mower model and battery configuration. If you are unsure, contact service@meangreenproducts.com.

If the upload fails, the mower does not turn off during the update, or it does not restart automatically after the upload, DO NOT repeatedly attempt to reflash the profile. Contact service@meangreenproducts.com for support before proceeding.

GENERAL TROUBLESHOOTING TIPS

1. Ensure all relevant software and firmware (Orion, BMS, and mower-related firmware where applicable) are up to date. For the latest versions, contact service@meangreenproducts.com.
2. Verify that all connections (cables, adapters, ports) are secure, undamaged, and functional.
3. Use the “Diagnostic Trouble Codes” tab in the Orion software to identify battery-related issues and confirm system status.
4. Refer to the Evolution Series Folder for:
 - Model-specific mower settings
 - Configuration details
 - Any special instructions or notes for particular units
5. When contacting Mean Green Service, document and provide:
 - Error codes shown in the Orion software
 - Any warning messages or unusual behavior
 - Steps taken prior to the issue (e.g., attempted profile update, connection method used)

This information will help the service team diagnose and resolve issues more efficiently.

Contact Us

EMAIL

Service@MeanGreenProducts.com

Notifies the Mean Green Service Team for immediate assistance with user questions and concerns. Email is the preferred method of contact, especially during periods of high call volumes.

PHONE NUMBER

513-738-4736

For use when an Urgent Response is required. In event that all agents are busy, please leave a detailed voice message including your name and contact number, model of machine experiencing the issue, and any error code displayed or other relevant details. An agent will return your call as soon as possible.

PARTS DEPARTMENT

Parts@MeanGreenProducts.com

Email us directly for parts inquiries. For fast service, please include a PO#, Account#, and shipping address.

WARRANTY DEPARTMENT

Warranty@MeanGreenProducts.com

Contact the Warranty Department directly with questions about your Mean Green warranty or to process a claim.

DEALER360

Dealer.Generac.com

Visit the Generac Dealer360 portal to access a complete library of service documents, model schematics, and “How-To” information.



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