



Orion Jr. 2 BMS Migration Guide

Ewert Energy Systems is pleased to announce the release of the **Orion Jr. 2 BMS** product line which is an upgrade to the existing Orion Jr. product line. This document serves as an overview of the major distinctions and notable changes between the existing Orion Jr. BMS and the new Orion Jr. 2 BMS as they pertain to the installer.

For purposes of clarity, the existing older Orion Jr. BMS product will be referred to as **Orion Jr. 1** to differentiate it from the newly released **Orion Jr. 2** products.

- **New Cell Tap Configuration:** The two cell groups on the Orion Jr. 2 are now split between cells 8 and 9. Previously on the Orion Jr. 1 the cell groups were split between cells 12 and 13. This new design allows for long busbar cables or a pack fuse / disconnect between cells 8 and 9 (common for 48v applications) without impacting performance as the BMS will not register the resistance of that link. Additionally, this allows for an 8 cell Orion Jr. 2 BMS product for 24v applications.
- **New Current Sensors:** Orion Jr. 2 BMS products now use hall effect style current sensors instead of the shunt style current sensors used in the Orion Jr. 1 BMS product line. Hall effect sensors tend to be more accurate than shunt style current sensors and are considerably easier to install. The specific sensors sold with the BMS are dual range (meaning there are 2 dedicated sensors inside each current sensor) to provide superior low current accuracy as well as high current capabilities. Additionally, the sensors are significantly lighter than shunt sensors which can help reduce shipping costs. The new current sensor sizes stocked are: **+/- 200A, +/- 500A, +/- 800A and +/- 1000A**. Additionally, dual current sensors can be used to boost measurement range to **+/- 2000A** if needed.

- **New Current Sensor Harness:** Due to the switch to hall effect style current sensors, the Orion Jr. 2 BMS has a new current sensor wiring harness for this purpose (p/n: CWHJ2CUR). The new harness is now 4 pins and is standalone from the cell voltage tap harness (on Orion Jr. 1 these two harnesses were combined).
- **Total Pack Voltage Sensor Removed:** The total pack voltage sensor, which was a dedicated full stack voltage sensor on Orion Jr. 1, has been removed on Orion Jr. 2 as it is no longer necessary. Orion Jr. 2 will still produce the total stack voltage value by summing up all the connected cells. This produces a much more accurate total stack voltage value than the dedicated total stack voltage sensor did on Orion Jr. 1.
- **New Utility For Orion Jr. 2:** Orion Jr. 2 has a new software utility dedicated to it and is not compatible with the older Orion Jr. 1 software utility. Please see the Downloads page on the main Orion BMS website to download it.
- **New Profile Format For Orion Jr. 2:** Orion Jr. 2 profiles are not compatible with older Orion Jr. 1 profiles. Profiles made with the Orion Jr. 2 BMS utility now have a new filename extension “.j2bms” to differentiate them from Orion Jr. 1 profiles (which have a “.jbms” file extension). **NOTE: Older Orion Jr. 1 profiles can be imported into the new Orion Jr. 2 utility**, however Orion Jr. 2 profiles cannot be exported back to the older Orion Jr. 1 profile format. Because of differences in features, carefully check all parameters after importing settings from an Orion Jr. 1 profile.
- **Charger Safety Timer Operation:** The Charger Safety timer function (settable on the Relays tab -> Charger Safety -> “Max time [minutes] that relay can stay on”) now only counts down while the Charger Safety relay is active (enabled). Previously on Orion Jr. 1 this counter would count down whenever Charge Power was present, regardless of whether the output was enabled or not.
- **Thermistor Expansion Module Operation:** The interaction between the BMS and Thermistor Expansion Module has been overhauled for Orion Jr. 2. Specifically, the Thermistor Expansion Module is now able to communicate directly with the Orion Jr. 2 via CANBUS in addition to the older method of using analog outputs to simulate thermistors connected to the Orion Jr. 1 BMS. Because of this, there is now a great deal more data shared between the BMS and the thermistor module, including highest and lowest thermistor ID, number of thermistors actively loaded and average temperature. Additionally the setup process has been significantly streamlined. **Because of these improvements, the Orion Jr. 2 requires any connected Thermistor Expansion Modules to be running Firmware Version 1.1 or newer (the BMS will not be able to communicate via CANBUS with expansion modules running older firmware).** The Orion Jr. 2 is still backwards compatible with installations where the old analog thermistor emulation method is being used.

Many Additional Improvements And Features Added: Please see the “What’s New In J2” document for a more extensive list of additional features and changes.