The PATHFINDER BMS

By Overkill Solar

This is the very first BMS designed and manufactured by Overkill Solar. We have been working on this design for several years now, and we have been 100% focussed on it since our old BMS supplier pulled the plug on the old models.

This new BMS is designed for DIY use in every way. Automatic cell count and chemistry detection allow the BMS to be configured for any 3-16 cell battery, and reconfigured or repurposed at any time. The built-in OLED display gives you a convenient window into your battery's condition at a glance. MQTT brings all your data into Home Assistant for unlimited automation potential. Large threaded terminals for balance wires and the high current terminals make for easy assembly and maintenance. Positive side switching improves compatibility with other equipment and makes the setup more intuitive.

There is more work to do. We will continue to improve the firmware and provide updates that add new features and squash the inevitable bugs. As of this first release, most of the parameters can only be adjusted via the Overkill Solar mobile app. Some parameters like WiFi and MQTT credentials must be entered via the OLED display. If you spot any problems or have suggestions, please email them to support@overkillsolar.com, or you can add an issue to the public github repos at **github.com/OverkillSolarLLC**. This would be the best way to report issues if you don't need immediate assistance.

When you get your new BMS up and running, please connect it to WiFi so that you can receive OTA firmware updates as they become available. Please also consider selecting "beta" updates to get the freshest new features. The default is "stable only". Check the release notes on OverkillSolar.com for the list of changes. If you reject an update, the BMS will not ask again until the next new release.

If you prefer not to connect the BMS to the internet, keep an eye out for new updates in .UF2 format, which you can load into the BMS with a USB-C cable.

The back of the BMS has a simple connection diagram. More like it can be found in the Pathfinder datasheet. The full user manual is not published yet. The datasheet should have all the necessary information, but it lacks step-by-step instructions. If you can't find the answers you need in the datasheet, please email **support@overkillsolar.com**.

Thank You!
-Steve, Overkill Solar LLC

More on back

Find more information here: Overkillsolar.com/support-downloads/

The Support page on OverkillSolar.com has the BMS Datasheet,
Links to monitoring applications, UF2 update files,
and release notes for OTA updates.

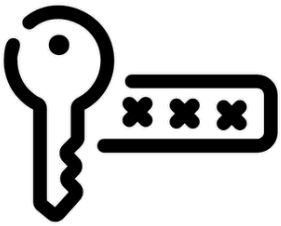
Measuring State Of Charge is surprisingly difficult and complicated. LiFePO4 is more difficult to measure than NMC.

The Pathfinder BMS has 2 choices for the state of charge calculation. The default is called SimpleSOC- it simply tracks coulombs in and out of the battery and resets at the top and bottom of the cycle. It works best when the battery is regularly cycled. No special learning cycle is required. The SOC confidence level will increase when the battery is cycled from 0% to 100%.

The other option is the Texas Instruments BQ34Z100 fuel gauge chip. The BQ34Z100 was intended to be calibrated at a factory and copied many times to identical batteries, but we are using it in a DIY scenario where this step must be completed in the field for each battery. The Pathfinder datasheet has details on the BQ43Z100 learning cycle procedure.

Your feedback is valuable as we refine the procedure. Please send a note to support@overkillsolar.com with your observations.

The Bluetooth default passkey is **123456**



You can change the passkey via the OLED screen.
The passkey will prevent unauthorized Bluetooth connections only if you change it from the default.

If you ever want to change your battery voltage or repurpose the Pathfinder BMS for a different battery setup, you can order different balance terminal boards from Overkill Solar.
We also have 24v and 48v Tesla module kits available as spare parts.