



# X2POWER LITHIUM BLUETOOTH BATTERIES PERFORMANCE GUIDE

Designed for reliable performance with outstanding deep cycle run time, and continuous high-power output, along with low self-discharge between uses.

X2Power Lithium Iron Phosphate batteries are considered "smart", as they contain a printed circuit board that controls and optimizes the performance of the battery. This board, or Battery Management System (BMS), can balance cells, monitor state of charge, state of performance, and serve as a protection circuit. X2Power batteries take it to the next level with the integration of Bluetooth communication with the BMS to receive real-time updates on your battery's condition from our exclusive X2Power app. So whether you're cruising, camping, fishing or road-tripping, you can rely on X2Power.

## DOWNLOAD THE APP



## KEY BATTERY FEATURES

- **Faster Charging** - Charges 4x faster and is 50% lighter than comparable lead-acid batteries.
- **Trusted Performance** - Provides relentless power and reliability for deep-cycle power demands.  
\*These batteries are only for use in deep-cycle applications and should not be used for starting purposes.
- **Optimum Safety** - Equipped with an advanced Battery Management System (BMS) that controls the parameters of the battery for optimum safety, protecting against over-charging and over-discharging.
- **Backed by a 10-Year, 2000 Cycle Limited Warranty.**
- **Bluetooth Capable** - Bluetooth-enabled smart batteries allow for the tracking of battery status, cycles and health using the X2Power app available in the [Apple App Store](#) and the [Google Play Store](#).

# APP DETAILS

The X2Power App provides extensive information regarding your battery across several pages..

## Bluetooth

This page provides a view of the specific, active batteries that can be connected (via Bluetooth) for evaluation. On this screen, only one battery can be selected at a time and a connected battery can only be selected on one device at a time. Use this page to connect to and disconnect from the BMS of your battery.

## Dashboard

This page highlights key performance metrics of the connected battery, at that point in time.

- **Serial Number:** The serial number of the connected battery is listed. This number is included on a sticker on the side of the battery.
- **Available Voltage:** The Available Voltage reading of the battery at the terminals. Please note: a battery in protection mode will show **Zero** Available Voltage.
- **Current:** the amount of energy leaving the battery, measured in Amps
- **Power:** the total of voltage and current multiplied together, measured in Watts
- **Cycles:** one cycle occurs any time the battery is subjected to 80% cumulative discharge
- **Charging Time:** the time required to achieve full charge, measured in minutes
- **FCC:** Estimated Capacity at Full Charge, measured in Ampere Hours
- **Temperature:** The temperature reading of the battery, measured in degrees Fahrenheit.

## Status

This page provides specific data from BMS, including history of any triggering of protection mode. Status boxes will be shaded green to indicate the current state of the battery.

- **Actual Voltage:** The Actual Voltage reading of the battery, at the BMS. Please note: a battery in protection mode can show an Actual Voltage, and a **Zero** Available Voltage.
- **Amps:** energy drawn from the battery in real time; the unit of measure of *Current*.
- **History:** Clicking on this button will display the volume history of protection occurrences based on the triggering event. (See Protection Mode, Notifications)

## About

This page provides general information regarding X2Power, and a link to [www.batteriesplus.com](http://www.batteriesplus.com) for further information.

## PROTECTION MODE - PERFORMANCE

The X2Power App will provide "pop-up" notifications related to the battery performance, as recognized by the BMS. The BMS can balance cells, monitor state of charge, state of performance, and serve as a protection circuit. If select criteria are met, the BMS will go into protection mode, often referred to as Sleep Mode. When a BMS enters Sleep Mode, either or both the charge and discharge circuits will be turned off - this is commonly recognized with Zero Open Circuit Voltage.

Common Scenarios for Protection Mode:

- Over/Under Voltage
- Over/Under Temperature
- Over Current/Short Circuit

## IMPORTANT INFORMATION TO NOTE

- Not all lithium batteries have a full BMS and the triggers could differ depending on the brand and application of the battery.
- Protection mode can be triggered due to any of these reasons, and sleep mode acts as an extension of protection mode.
- While under protection, either or both charge and discharge circuits of the battery have been 'turned off' to protect it, and action has to be taken to release the protection.
- It can be as simple as disconnecting the battery from the device for a couple of seconds or applying a short charge. It depends on what triggered the protection.

# PERFORMANCE NOTIFICATIONS & TROUBLESHOOTING GUIDE

The X2Power App may provide the following notifications regarding battery performance, as part of the Protection Program Start.

**"Cell Over Voltage (COV)" one cell is overcharged** – remove the charger and allow the balance circuit to lower the voltage of that cell

**"Cell Under Voltage (CUV)" one cell is over discharged** – charge as soon as possible

**"Pack Over Voltage (POV)" battery is overcharged** – remove charger and allow balance circuit to lower the voltage of the battery

**"Pack Under Voltage (PUV)" battery is over discharged** – charge as soon as possible

**"High-Temp Charging (OTC)" battery is over temperature while charging** – remove charger and allow battery to cool

**"Low-Temp Charging (UTC)" battery is under temperature while charging** – move the battery to a warmer location and charging will resume

**"High-Temp Discharging (OTD)" battery is over temperature while discharging** – remove load and allow battery to cool

**"Low-Temp Discharging (UTD)" battery is under temperature while discharging** – remove load and move battery to a warmer location

**"Over Current Charging (OCC)" charging current is too high** – lower charging current

**"Over Current Discharging (OCD)" discharging current is too high** – reduce load

**"Short Circuit (SCD)" short circuit detected** – remove short circuit

**"Front-end detection IC error" internal error** – possible permanent protection. Please visit a Batteries Plus® retail store, or by calling 800-677-8278 to review status.

**"Software lock MOS" internal error** – possible permanent protection. Please visit a Batteries Plus® retail store, or by calling 800-677-8278 to review status.