

Predator **Raptor**

POWERSPORT BATTERIES



Predator Raptor

LiFePO₄ Powersport Batteries

USER MANUAL



CONGRATULATIONS on purchasing one of the most advanced powersport batteries on the planet. The Predator Raptor series was developed to be the obvious powersport battery choice when only the best is good enough.

Predator Raptor batteries use Lithium Iron Phosphate (LiFePO_4) cells to ensure the highest levels of performance, safety and service life. The higher energy density of LiFePO_4 cells enables these batteries to deliver superior cranking power at a fraction of the weight of traditional lead acid batteries. Their higher voltage under load also delivers more starting power which can be heard every time you start your engine. LiFePO_4 batteries are safer than other lithium-ion batteries as they are incombustible, spillproof and are not susceptible to thermal runaway.

FEATURES

The Predator Raptor series are equipped with a list of features which make them superior to other conventional powersport batteries available:

- **Lightweight**
Less than half the weight of an equivalent lead acid battery
- **Higher Cranking Power**
Higher voltage under load delivers more starting power
- **Low Self-Discharge Rate**
For extended storage life
- **Spillproof**
No acid or liquid in the battery case
- **Increased Cycle Life**
More than 3 times the cycle life compared to a lead acid battery
- **Integrated BMS**
Actively manages & protects the battery
- **SOC Indicator**
Integrated State of Charge Indicator
- **Power Button**
Allows the user to switch the battery ON and OFF

- **HyperFlex Fitment System**
Quad terminals and EVA packers to allow each model to replace an amazing number of battery sizes.
- **Automatic Hibernation**
The battery will hibernate to conserve energy, ensuring there is enough power to start your vehicle when reactivated. It is like having a built-in jump starter!
- **Shake to Wake Technology**
An onboard sensor enables a hibernating battery to be reactivated by simply moving or shaking the battery
- **Operating Mode**
The battery has two operating modes - Normal and Intelligent. Intelligent mode enables the hibernation feature to extend battery storage life and maintain a power reserve to start your vehicle when the battery is reactivated
- **Bluetooth Connectivity**
The Predator Raptor App allows you to monitor the battery, remotely switch ON and OFF and also adjust a range of battery settings including operating mode, hibernation settings and Shake to Wake sensitivity
- **Data Log**
The BMS keeps a historical record of any engine crank and BMS protection events encountered by the battery

INSTALLATION

1. Confirm that the voltage of the battery which is being replaced is 12 volts (12V).
2. Check the polarity of the battery which is being replaced.
3. Remove the protective terminal covers from the side of the Predator Raptor battery to match this configuration.

NOTE: If the battery being replaced is taller than the Predator Raptor case, you can use the supplied EVA packers to adjust the height of the Predator Raptor battery to match.

4. It is recommended that you switch off the Predator Raptor battery before installing it. This can be done by using the button on the top of the battery (see Manual Operation section pg 18.) or by using the App (see Monitor Screen section pg 10.)
5. Before installing the battery, it is important that the connections are clean and free from corrosion.

NOTE: Dirty connections can result in poor starting and charging performance

NOTE: Battery terminal spray is not recommended. If terminal corrosion is a concern, use a small amount of petroleum jelly on the terminals and lugs before making the connections.

6. With the battery switched off, connect it to the vehicle, making sure that the polarity is correct.

NOTE: Take care to not overtighten the screws.

7. You can now switch the battery ON and hear the difference every time you start the engine!

OPERATING NOTES

ALARMS: If your vehicle is fitted with an alarm, the alarm may be triggered when the battery is reactivated after hibernating. Always ensure you have the key close by so the alarm can be deactivated. If you require your alarm to always be active, your Raptor battery should be set to NORMAL mode. For extended storage periods, a small lithium compatible charger like the REDMAX HC-12601 should be connected to ensure the battery does not discharge.

QUIESCENT DRAIN: If your vehicle is fitted with aftermarket accessories (e.g. alarm, GPS, USB charger etc.), it is possible that these devices will draw power and discharge the battery when the vehicle is turned off. For extended storage periods, you can switch off the Raptor battery via the App (page 12) or by using the button on top of the battery (page 18), or you can connect a small lithium compatible charger.

BATTERY MANAGEMENT SYSTEM

The integrated Battery Management System (BMS) will protect the battery if the conditions move outside the operating parameters of the battery. The BMS will protect the battery from over charging (high voltage), over discharging (low voltage), over current, short circuit, high temperature and low temperature.

BLUETOOTH APP

The Predator Raptor Bluetooth App allows you to communicate with the onboard Battery Management System (BMS) to monitor the status of the battery. It also allows you to make adjustments to the BMS operation settings.

It can be downloaded via the Play Store (Android) or App Store (Apple). Search for 'Predator Raptor'.

The following pages will step through each screen of the App and the information displayed, and also explain any adjustments which can be made.

1. To connect to the battery, open the Predator Raptor App and select the battery from the list.
2. If you cannot see the battery in the list, select the [-] symbol at the top left hand corner of the scanner screen (refer Fig. 1).

3. You may may be asked to give the App permission to use the device's camera - you will need to say yes to this.
4. Once the camera is active, hold the marked area on the screen over the QR code on top of the battery (refer Fig. 2) to allow it to be scanned.

The battery has a QR code label on the top of the battery. There are also additional QR Code labels included in the box, as many batteries are not easily accessible when installed. One of these labels can be placed somewhere on the vehicle where it can be easily scanned if required.

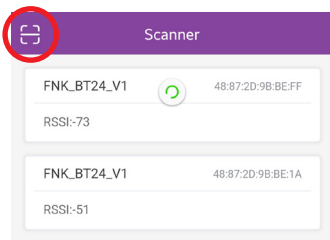


Fig. 1 - Access the QR Code Scanner

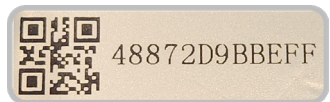


Fig. 2 - QR Code on the battery case

MONITOR SCREEN

When the App connects to the battery, it will default to the Monitor Screen (refer Fig. 3). This screen shows the following information:

- 1 State of Charge (SoC)**

Shown using the large battery symbol at the top of the screen.

Three green bars = High SoC
Two green bars = Medium SoC
One green bar = Low SoC

If the battery does not show any bars, and/or the outline colour changes from green to orange, the SoC is very low and battery should be charged immediately.
- 2 Real-time battery voltage (V)**
- 3 Current flow (A)**

A negative value indicates the battery is discharging and a positive value indicates the battery is charging.
- 4 Charge and Discharge Indicators.**

If the battery is in a normal state, both indicators will be green. If the battery is in an overcharged state, the Charge indicator will show a red disconnected symbol, indicating that the battery will not accept charge however the green Discharge indicator shows that it is still OK to deliver power.

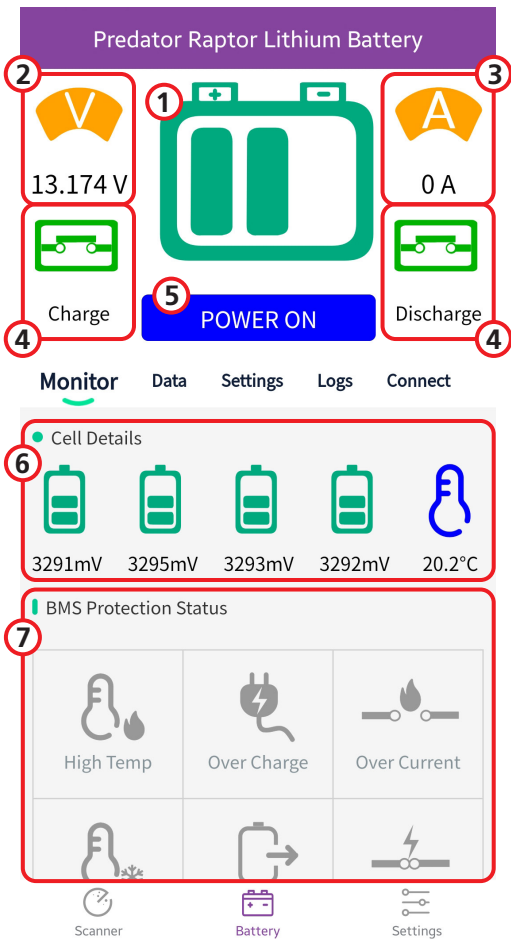


Fig. 3 - Monitor Screen

MONITOR SCREEN Continued...

- 5 ON/ OFF Switch**

This button is used to switch the battery ON and OFF remotely. It displays the current status of the battery. The button is blue and shows 'POWER ON' when the battery is powered on. If you want to switch the battery off, press the blue 'POWER ON' button. A confirmation screen will appear – select 'YES' to confirm that you wish to switch the battery off. The button will change to red, and will display 'POWER OFF'. You can switch the battery on again by pressing the red 'POWER OFF' button and confirming the action. Please note that a battery cannot be switched off when it is being charged or discharged.
- 6 Cell Details**

Cell Details section displays the voltage of each cell in the battery (there are 4 cells). On the right of the cell voltage display is the temperature monitor which shows the internal temperature of the battery.
- 7 BMS Protection Status section.**

If battery operation is normal, these symbols will all be grey however if one or more protection functions become active they will change to yellow or red.

DATA SCREEN

This screen displays data for the battery, including nominal voltage, battery type, the serial number and the nominal capacity (refer Fig. 4).

None of the information on this screen can be modified.

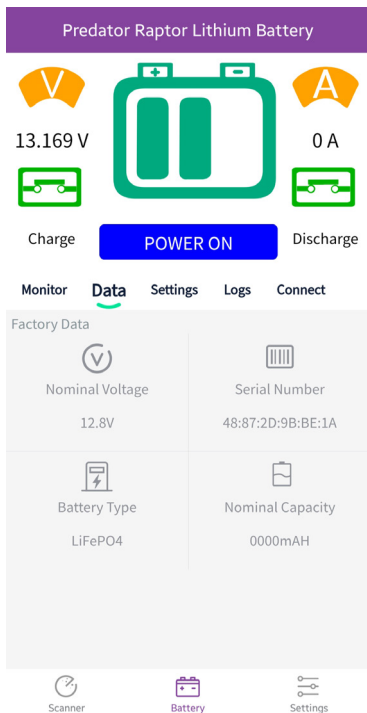


Fig. 4 - Data Screen

SETTINGS SCREEN

This screen displays, and can be used to modify the operating mode and settings of the battery (refer Fig. 5).

To make a change to the settings you must first use the 'QUERY' button to load the current battery settings. Once you have made your changes, you must press the 'CONFIRM' button and confirm your selection to save the changes to the battery.

① Hibernation Delay Time

This setting adjusts how many days the battery will wait before entering hibernation mode. In hibernation mode the Bluetooth function is disabled to conserve battery power. The maximum delay is 45 days.

To re-activate the battery, you can either momentarily press the power button on the top of the battery or shake the battery if the Shake to Wake function is activated.

② Shake to Wake Sensitivity

Adjusts the sensitivity required to re-activate the battery when in hibernation.

- Maximum: will allow a single movement to wake up the battery
- Normal: will require multiple movements
- Minimum: Requires vigorous shaking to wake up the battery. Use this setting to effectively deactivate the Shake-to-Wake function.

3 Operating Mode

There are two operating modes – INTELLIGENT and NORMAL. The active mode will appear in orange (refer Fig. 5). You may need to scroll down to see this.

To change the Operating Mode, select the grey button and confirm your selection.

NORMAL Mode

Deactivates automatic hibernation. The battery will operate as a normal battery with standard BMS protection (i.e. current, voltage & temperature). There is no energy reserve.

INTELLIGENT Mode

Activates automatic hibernation. The battery will automatically hibernate when the Hibernation Delay Time has elapsed. Shake to Wake is active. The low voltage cutoff is elevated to create an energy reserve.

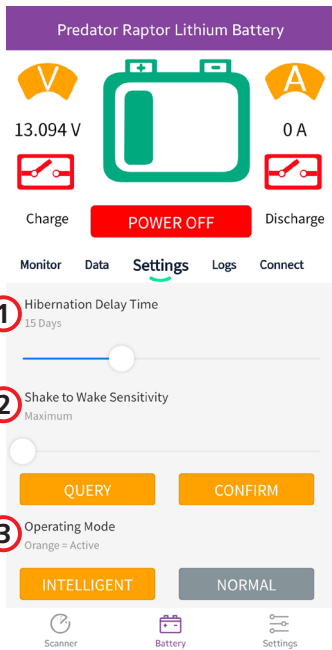


Fig. 5 - Settings Screen

CONNECT SCREEN

This screen allows the user to disconnect and reconnect to the battery (refer Fig. 6).

If there is a problem with re-connecting the App to the battery, fully close the App in your device and open it up again, connecting to the battery using the process detailed on page 8.

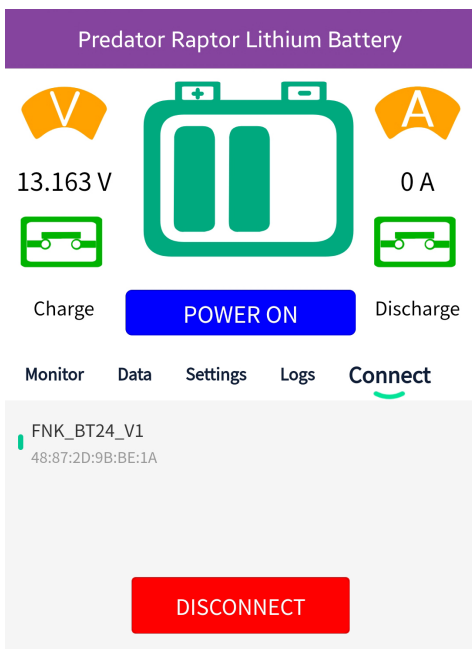


Fig. 6 - Connect Screen

LOGS SCREEN

This screen shows a history of events which the battery has experienced and the BMS has recorded. Events can include engine crank, short circuit, over discharge, over charge and over current (refer Fig. 7)

NOTE: Some vehicles may not draw enough current when starting for the BMS to recognise a cranking event.

To update the display with the latest information, select the 'QUERY' button and confirm your selection.

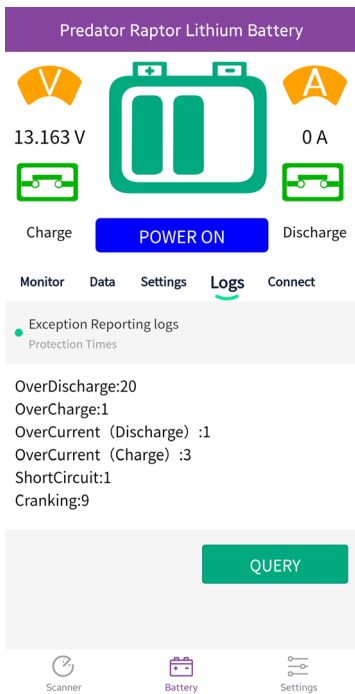


Fig. 7 - Logs Screen

MANUAL OPERATION

There are some basic functions which can be controlled without the Bluetooth App.

The battery can be switched ON and OFF manually by using the yellow power button on the top of the battery case next the SoC LED's (refer Fig. 8).

If the battery is ON, press and release the power button on the top of the battery case once, followed by a press and hold. All of the LED lights will illuminate, and they will then switch off one at a time (from top to bottom) as the battery powers down.

If the battery is OFF, use the same button press sequence to switch the battery ON. The LED lights will illuminate starting at the bottom as the battery powers ON.

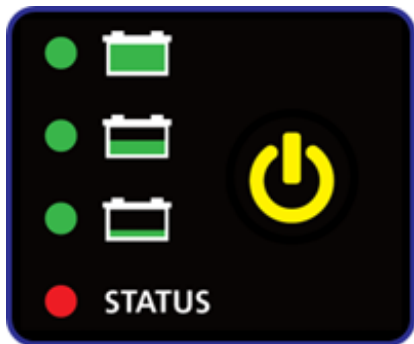


Fig. 8 - SoC Indicator, Status LED & Power Button

To check the State of Charge (SoC) of the battery, press and release the power button on top of the case. The SoC LED's will show either 1, 2 or 3 LED's. The SoC indicator can be used to see whether the battery is switched ON or OFF.

When the SoC indicator is illuminated, the Status LED will also indicate the Operating mode of the battery (refer Fig. 9):

- If the Status LED does not illuminate with the SoC indicator LEDs, the battery is switched OFF
- If the Status LED is green, the battery is in NORMAL Mode.
- If the Status LED is red, the battery is in INTELLIGENT Mode



**Fig. 9 - Red Status = Intelligent Mode,
Green Status = Normal Mode**

SHAKE TO WAKE TECHNOLOGY



When the Operating Mode of the battery is set to Intelligent, the battery will automatically Hibernation Delay Time set in the Predator Raptor App has elapsed. The battery will also hibernate if the State of Charge falls below a predetermined minimum value (approx. 25% SoC). This ensures there is enough power in reserve to start your vehicle within 3 to 6 months of hibernation.

Shake to Wake Technology is a unique feature which is only available in Predator Raptor batteries. It allows you to reactivate a battery without the need to press a button or connect an external device.

- If the Shake to Wake setting is set to maximum, you simply need to move or bump the battery or vehicle to re-activate the battery.
- If the battery is set to normal, it will require 3 or 4 movements to re-activate the battery.

NOTE: The battery wake up sensitivity may be diminished when installed in larger motorcycles with softer suspension. This is because the Shake-to-Wake function relies on a shock or vibration to activate. Another way to wake the battery up is to either knock or slap (using your hand) on the side of the bike near the battery compartment, or by gently rolling the bike forward and bumping the front tyre into a wall or other fixed object.

EXTREME COLD CONDITIONS

Lithium Iron Phosphate batteries have a wide operating temperature range however like all starting batteries, their performance reduces as they approach 0°C (freezing). If the battery is close to or below freezing and performance is sluggish, the battery should be warmed up by first switching on the ignition and allowing the vehicle's headlight to draw power. After 30-60 seconds, you can attempt to start the engine. If the engine does not crank fast enough to start, leave the light on for another 60 seconds and try again. The current draw of the headlight plus the engine crank will generate heat and warm up the cells. After 60 seconds has elapsed you should have enough power to start the engine.

If the battery is used continuously in freezing weather, a battery warmer is recommended.

Predator Raptor Battery Specifications**

Battery Cell Type	Lithium Iron Phosphate (LiFePO ₄)
Nominal Voltage	12.8V
Nominal Charge Voltage	14.6V (3.65V/cell)
Standard Charge Current	0.2C *
Maximum Charge Current	1.5C *
Standard Discharge Current	1C *
Maximum Constant Discharge Current	45C *
Operating Temperature Range - Charge	0 to +55°C
Operating Temperature Range - Discharge	-20 to +60°C

* C refers to the rated battery capacity in Amps (i.e. 1C for an 18Ah battery is 18A)

** For detailed specifications, refer to individual Product Data Sheets for each battery size.

WARRANTY

R&J Batteries warrants the Predator Raptor Powersport battery range to the original purchaser for a period of 2 years subject to the terms and conditions stated in the Warranty Statement available from www.rjbatt.com.au

WARRANTY COVERAGE

This warranty covers a Predator Raptor Powersport battery which become unusable or unserviceable due to defects in material and/or workmanship. This warranty only applies to products used in applications for which they are intended and operated within the parameters detailed in this booklet and also on the relevant Product Data Sheet (available from www.rjbatt.com.au).

Proof of purchase and return of goods in question must accompany any request for warranty. No exceptions.

PLEASE NOTE:

Predator Raptor batteries are **NOT** a solution for a slow cranking engine resulting from a faulty starter motor or poor wiring. Repeated long cranking events (more than 5 seconds) can cause the battery and starter motor to overheat. You must allow the battery to cool down before attempting to start the engine again.

Raptor batteries must only be used in vehicles which include a charging system that charges the battery when the engine is running. Do not use Raptor batteries in vehicles which have a 'total loss' system (i.e. no charging system).



IN THE BOX

- Predator Raptor LiFePO₄ Battery
- Owner's Manual
- Screws for battery terminal mounting
- Predator Raptor Keychain
- HyperFlex EVA Spacers (if applicable)
- QR Code Stickers (2)

SLEEP • WAKE • RIDE • REPEAT