



PRODUCT MANUAL



36V LIFEPO4 BATTERY

INTRODUCTION

The NZ Lithium 38.4V 105Ah LiFePO₄ battery pack is a durable, high-performance energy solution purpose-built for golf carts and other light electric vehicles.

Designed, assembled and tested in New Zealand, this battery pack delivers reliable power and safe operation to meet the demands of both recreational and commercial users.

Designed for straightforward installation, the pack offers a dependable upgrade from traditional lead-acid batteries, providing more usable energy with less weight and maintenance.

Where possible, NZ Lithium incorporates locally sourced, high-quality components to ensure consistent performance and long-term value.



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Specifications:

MODEL NUMBER	36V-105AH
Nominal Voltage	38.4V
Nominal Capacity	105AH
Nominal Capacity watt hours	4032WH
Cell type	Prismatic LiFePO4
Cell configuration	12S
Capacity @ 0°C	84AH
Capacity @ 55°C	99AH
Series connection	NOT PERMITTED
Parallel connection	Unlimited
Recommended depth of discharge	90%
Usable capacity at recommended DOD	3,628WH
Battery Charging Temperature range. Protected via internal BMS	0 - 55°C
Normal Charge Voltage CV/CC*	42.6V
Standby (Float) Voltage	40.2V
Maximum Charge Current	100A
Recommended Charge Current	1-50A
Absorption Time	1 Hour
Battery Discharge Temperature range. Protected via internal BMS	-20°C to +55°C
Battery Output Voltage Range	31.2V - 42.6V
Maximum Discharge Current	150A @ 25°C
Pulse Discharge Current	300A @ 25°C for 60 seconds
Maximum Discharge Power	5.7Kw @25°C
Pulse Discharge Power	11.5Kw @25°C for 60 seconds
Over-charge Protection Per Cell	3.65V ± 0.05V
Over-charge Release Per Cell	3.50V ±0.05V
Over-charge Release Method	Cell discharges below release voltage
Over-discharge Protection Per Cell	2.60V ± 0.05V
Over-discharge Release Per Cell	2.65V ± 0.05V
Over-discharge Release Method	Disconnect load

Specifications:

Discharge Over Current	>150A for 60s
Short circuit protection	400A for 1500us
Over Current Release Method	Disconnect load
Battery Discharge Over Temperature	Protection 55°C Release 50°C
Battery Charge Over Temperature	Protection 55°C Release 50°C
Battery Charge Under Temperature	Protection 0°C Release 5°C
Electrical connection type	
Cooling method	Natural Convection
Casing material	Powder Coated Steel
Depth	380mm
Width	250mm
Height	257mm
Weight	Approx 34kg
Mounting arrangement	Horizontal only
Humidity Range non condensing	<80% RH
Self-discharge Rate	≤3% Per Month
Warranty period	5 Years - Refer to NZ Lithium warranty statement
Certifications (cell level)	GB/UN38.3 IEC62619
Recommended Fuse Type	Class T 20K AIC
Recommended DC Breaker Type	DC MCCB 20KA ICU

Charge & Discharge Information

Understanding LiFePO₄ Battery Packs for Golf Carts

LiFePO₄ battery packs behave differently from traditional lead-acid batteries, and it's important for golf cart owners and system installers to understand these differences.

These battery packs have a very flat charge and discharge voltage curve. This means that using voltage alone is not a reliable way to determine the state of charge (SOC) of your battery. Your golf cart's LCD display provides an SOC reading based on the Battery Management System (BMS). While convenient, this display is an estimate and may not always perfectly reflect the actual SOC.

Voltage can only give a rough estimate of SOC when the battery is near full or near empty:

- Near 100% SOC: If the battery reaches the target bulk charge voltage (above 42 V) and the charging current begins to taper off while the charging source remains steady, the pack is very close to fully charged.
- Near 0% SOC: If the battery measures below 36 V with little or no load, it is close to fully discharged.

Under normal driving conditions, typical pack voltage will be around 38.4 V, though this will vary slightly depending on load, SOC, and temperature.

Performance

Temperature

The built-in Battery Management System (BMS) constantly monitors cell and component temperatures. If the battery becomes too hot or too cold and exceeds the protection limits in the specifications, the BMS will automatically stop charging or discharging. Normal operation will resume once the temperature returns to a safe range.

In colder conditions, particularly below 15 °C, you may notice reduced driving range and slower acceleration from your golf cart. This is normal and temporary – the available energy and performance of the battery are limited until it warms back up into its optimal operating range (around 25 °C $\pm$ 5 °C). Once the temperature recovers, the full performance of the pack will return.

Tip: To reduce the impact of cold weather, store and charge your golf cart in a garage or sheltered area whenever possible. This helps the battery remain closer to its optimal operating temperature, ensuring better performance and charging efficiency.

DC Battery Module Connections

The Battery module is equipped with 1 x M8 Positive connection point and 1 x M8 Negative connection point.

Battery cable lugs should be torqued to 12-15 NM

Stacking battery lugs should be avoided where practical.

Nz Lithium battery modules CAN NOT be connected in series to multiply voltage.

Parallel connection is allowed.

Parallel connection's should be made after individual DC MCCB or Class T fuses by using a positive and negative bus bar, with cable runs in as equal lengths as possible, to ensure even charging / discharging of each battery module.

Each individual battery module must be fused or have a suitable DC MCCB fitted as close to the battery module as practical.

The need to ensure the use of suitable fuses / breakers on each module becomes clear when we look at the extremely high short circuit current available at the terminals of Lifepo4 battery modules, often in excess of 7,000A per module.

Battery cable conductors should be sized according to your maximum load, cable run, and a maximum of 3% voltage drop between the battery module and inverter under full load.

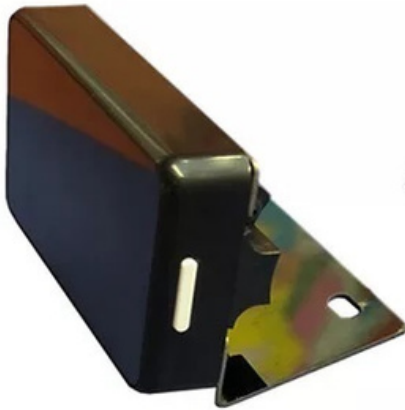
Fuses / DC MCCB should be sized in order to enable full load and to protect the cabling that is attached to them in the case of an over current event that the BMS can not control.

LCD Display

LCD Display information



- SOC
- CURRENT
- VOLTAGE
- WARNING



FUNCTION OF ACTIVATION BMS BY PRESS BUTTON

LCD operation instructions

1. When the BMS is off, press the touch button on the side of the LCD screen once to turn on the BMS.
2. When BMS is on, the display will turn off the LCD backlight to reduce power consumption if no current output from BMS is detected for 10 seconds.
3. When BMS is on, if the display does not display the content, press the button of the LCD screen once, and the LCD screen turns on the backlight.
4. When BMS is on, if the monitor is displaying the content, press the button of the LCD screen once and turn off the backlight.
5. When BMS is on, long press the touch button on the side of the LCD screen for 2 seconds and the BMS is off.

LCD Display

Troubleshooting:

Error Code	Description	Error Code	Description
1	Cell over-discharge alarm	6	Short circuit alarm
2	Cell over-charge alarm	7	Internal communication exception alarm
3	Overcurrent alarm	8	Balancing wire resistance too high alarm
4	MOS over-temperature alarm	9	String missing alarm
5	Battery over-temperature alarm		

BMS App

APP DETAILS:

To download the JK BMS Bluetooth APP simply search JK BMS in the Google Play Store or Apple APP Store, it is free to download.



The APP is not compatible with some devices

- Android devices older than Android 6
 - Apple Devices earlier than IOS 13.0 or IPHONE 6s,
- If you have trouble with an error on the Android app get in contact with NZ Lithium, you may need an earlier version of the App.

<https://apps.apple.com/us/app/jk-jbms/id1425725691>

<https://play.google.com/store/apps/details?id=com.jktech.bms&hl=en&gl=US>

Please accept all permissions the APP asks for, If not the APP may not function as desired.

The Password set on the App is 1234, you can change this if you wish.

The Parameter Settings on this BMS has been locked out to prevent accidental adjustments.

The APP offers a reasonably accurate SOC(State of Charge) generally within 5-10%. The battery will take several cycles of charge/discharge to calculate this.

If you are using coulomb counter/battery monitor shunt like a Victron BMV, Just use this for your SOC.

Note – Cell voltage delta shown on the BMS Bluetooth app will rise and fall depending on the current your charging/discharging and the SOC of the battery and temperature.

Storage

Storage

If you intend to store your battery module for a prolonged period of time, you must ensure these instructions are followed, failure to do so may result in irreversible capacity loss.

Switch the battery module OFF whilst in storage, it will remove the parasitic drain from the BMS

Complete a full charge / discharge / recharge cycle to approx 90% SOC at least every 3 months.

DO NOT leave the installation permanently powered and charging the battery module daily whilst in storage, this may cause capacity loss as the battery module will live in a permanent state of 100% SOC

Safety & Disposal



Designers and Installers MUST have read and understood the information within this manual before undertaking the installation and commissioning of the battery module/s

Installers MUST be competent in installation and commissioning of DC power systems.

Any and All local regulations regarding installation of DC power systems MUST be followed.

Battery module charging, discharging and storage specifications MUST be adhered to at all times.

Battery module/s MUST not be used if they have been damaged in any visible way.

Battery module/s MUST not be disassembled for any reason.

Battery module/s MUST not be installed in any area that humidity is >80%

Battery module/s MUST be kept dry at all times

Battery module/s MUST not be installed in direct sunlight.

Battery module/s MUST not be installed, transported or placed in any orientation other than those stated in the product manual, without permission from Nz Lithium.

Battery module/s that are leaking, MUST be disposed of at a suitable recycling facility.

Battery module/s are heavy, a two person lift is required.

Battery module/s are classified as Class 9 dangerous goods, and must be transported according to local regulations.

Safety & Disposal



First Aid

General Advice

The chemicals in this product are contained in a sealed package. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Inhalation

Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Safety & Disposal

Fire Fighting Measures

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media

CO₂

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

Accidental Release Measures

Steps to be taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

Use butyl rubber gloves when handling leaking batteries.



DESIGNED
ASSEMBLED & TESTED
IN NEW ZEALAND

PRODUCT MANUAL 36V LIFEPO4 BATTERY



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