

## PRODUCT CARE GUIDE

### Warnings

Do not open or dismantle the battery.

Always read and understand battery warning labels.

Lithium batteries are heavy.

To avoid muscle strain or back injury, use lifting aids and proper lifting techniques when installing or removing batteries.

If involved in a vehicle accident, they can become a projectile!

Ensure adequate and secure mounting and always use suitable handling equipment for transportation.

Warranty does not cover if a user and/or installer damages, misuses, modifies, alters/ tampers with/or incorrectly installs or changes settings of our products.

### Unpacking and Handling

Take care when unpacking product.

Lithium batteries and chargers are heavy.

Do not lift the battery by its terminals.

Batteries have carry handles /straps to ensure safe lifting.

The weight of the battery can be found within our product specification guides online.

Familiarise yourself with the battery.

The main battery terminals on the top have a “+” symbol for positive and a “-” symbol for negative to ensure correct polarity.

 [info@greenmarinelithium.com](mailto:info@greenmarinelithium.com)

 [www.greenmarinelithium.com](http://www.greenmarinelithium.com)

 +61 400 036 966

## Storage and Installation

Do not install the battery in a place where it is exposed to direct sunlight or sources of heat (e.g. engine compartments, engine exhaust systems, electrical/hydraulic pumps or near any other device which generates heat under normal or exceptional operating conditions).

Keep any flammable material away from the battery, its connected loads and chargers.

Do not install in compartments with zero clearance, always leave space around the battery for ventilation and cooling.

Never expose the battery to fire or extreme heat.

Keep the battery dry and clean from dirt.

Battery surface should be cleaned with a soft, dry cloth made of non-electro conductive material.

Under no circumstances should liquids, cleaning agents or solvents be used to clean a battery.

Always install the correct circuit breaker to carry required current and voltage.

Observe the battery polarity when connecting the battery terminals to a DC system or other batteries.

Take care not to short-circuit the battery terminals.

Ensure adequate and secure mounting, as the battery can become a projectile if involved in a vehicle accident.

Under no circumstances are battery BMS settings to be modified, changed or altered in anyway. This will void warranty.

Under no circumstances connect any batteries live to equipment. Or hot connect.

Ensure that other equipment will not turn on whilst connecting batteries.

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## Storage and Installation

Ensure wire and cable specifications are correct to carry required current and voltage.

When batteries are not in use or in storage ensure batteries are disconnected/ isolated from low voltage draw under 8v.

Low voltage draw will unbalance all batteries diminishing their capacity and/or causing them to drop below the restart voltage levels.

All Lithium Battery Management Systems (BMS) rely on the lithium cells for power. When the voltage of a cell falls below the required startup voltage for the BMS, the battery will enter protect mode, preventing use.

Low voltage draw can stem from standby power for various devices, including GPS, Wi-Fi, Bluetooth transmitters, LED lights, battery monitors, and cooling fans in equipment like inverters, AC units, and DC-DC chargers.

Battery chargers that are not actively in use may have LED lights and LCD screens that contribute to low voltage draw.

Most charging and appliances are powered by auxiliary batteries and will draw low voltage when not in use or when in storage.

To assess low voltage draw, check the power consumption of devices when they are turned off.

For further assistance, please see our website support page or reach out to us at [info@greenmarinelithium.com](mailto:info@greenmarinelithium.com)

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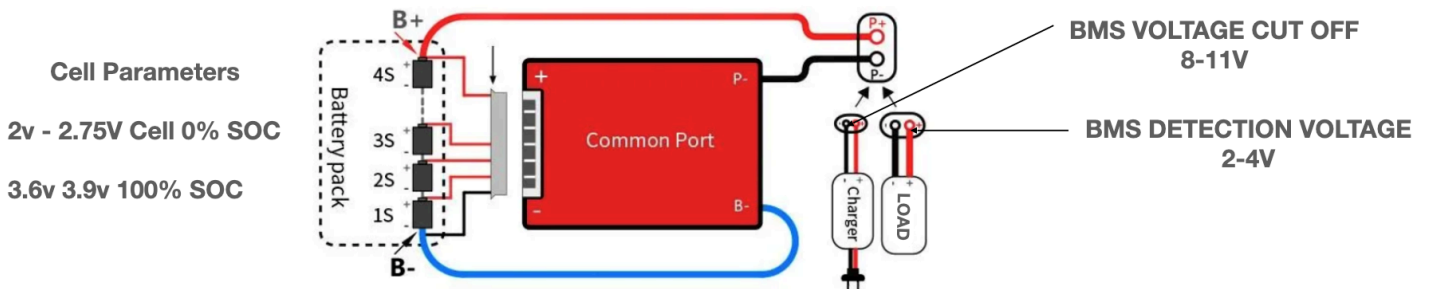
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## BMS Battery Management System

The BMS is powered by the battery cells. The BMS switches off as soon as 1 cell reaches 2V 2.75V. Below 2V the BMS does not power up or is no operational.



### Cell Parameters

2v - 2.75V Cell 0% SOC

3.6v 3.9v 100% SOC

1. Charge or Discharge over 8-11V BMS Starts
2. Charge or Discharge under 8-11V BMS Shuts off (low voltage can be drawn out of the battery for standby)

Setting	Value
cell volt high protect	3.80V
cell volt low protect	2.20V
sum volt high protect	30.00V
sum volt low protect	17.60V
diff volt protection	0.80V
chg overcurrent protect	150.0A
dischg overcurrent protect	150.0A
type of battery	LFPJIFePO4
rated capacity	105.0AH
cell reference volt	3.2V
sleep waking time	9999s
SOC set	99.6%
balanced open start volt	2.600v
balanced open diff volt	0.020v
collect boards Num	1
board 1 cell num	8
board 2 cell num	0
board 3 cell num	0
board 1 temp num	1
board 2 temp num	0
board 3 temp num	0
chg high temp protect	65°C
chg low temp protect	-40°C
disChg high temp protect	70°C
disChg low temp protect	-40°C
diff Temp protect	15°C
MOS temp protect	47°C

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