



**LITHIUM
POWERTOP**



50Ah LiFePO4

Portable power, anywhere you need it.



More power



Faster charging



Light-weight



4 USB Sockets incl. C type



BMS protection with external fusing

50AH Lithium PowerTop Overview

Your Baintech 50Ah Lithium PowerTop is a portable 50Ah lithium battery with convenient plugs to provide power for a variety of purposes. Like all electronic devices you need to treat your appliance carefully and not expose to excessive temperatures, water, dirt or undue rough handling.



1. On/off switch
2. Fuse
3. Fuse
4. Fuse
5. Volt meter
6. Ciga
7. Ciga
8. Engel
9. USB + C Type
10. USB + C Type
11. Dc - Dc Anderson plugs (DC-DC Version only)
12. 3 X Anderson plugs

Technical Datasheet

Lithium Cells

Cells: 4 x 50Ah Rigid Prismatic Lithium Ferrous Phosphate (LiFePO₄) Cells

Cells in rigid insulated Aluminium Casing

Capacity: 50Ah at Nominal 12.8V

VoC at 100% Charge: 13.4V

BMS

Solid State Battery Management System (BMS) connecting each Lithium Cell

LVD Disconnect ~ 9.2V

HVD for charge sources ~ 14.6V

Short Circuit Protection 300uS

Maximum continuous Discharge - 50A

Maximum continuous Charge - 50A

Maximum connected Inverter - 600W

Maximum connected solar panels - 600Watts

Fusing:

3 x 30A ANL Fuses

1 x 30A fuse for all Accessory Sockets

2 x 30A fuse for Grey Anderson loads or chargers

DC-DC Charger

Via Cig Plug connection (Blue and Black plug) <10A continuous

Via Anderson adaptor lead (provided) (Blue, Black, Orange Micro Anderson) <20A continuous

VSR set to 12.5V cut-out , 13.0V cut in.

Accessory Specifications:

Cig Socket 10A max

Engel Socket - 10A max

USB C - 2.4A max

USB Dual 1/2.1A max

Voltmeter

100% - 13.4V

50% - 12.8V

0% - 10V (Turns off at approx 11 volts)

Triple Guard Safety Protection

1. Cells are the safest Lithium chemistry (LFP) and safest construction type (Prismatic Rigid)
2. **BMS Electronic protection with added external fusing**
3. Cast Aluminium outer enclosure



FAQs

Can I Charge via the Anderson and Use another Anderson to supply power at the same time?

Yes, the Anderson plugs are bi-directional so you can charge your battery whilst running your fridge for example.

How much solar can I use with the 50Ah Lithium PowerTop?

Maximum connected solar panels - 600 Watts - **Must be regulated.**

How do I charge the PowerTop?

For DC-DC model charge via the in-built DC-DC charger.

Two ways:

1. using supplied Ciga lead, you will be charging at 10A when plugged in via your vehicle cigarette socket.
2. Via supplied Tri colour Anderson plug extension lead, plugged into a dedicated 20A feed via Grey Anderson, direct from your vehicles main battery.
3. External 240V Lithium Battery Charger (up to 20A) with Anderson connection via one of the three Anderson connections.
4. Solar panel/blanket via regulated solar controller using the grey Anderson plug. **Must be regulated.** Maximum connected solar panels - 600W.

How do I charge the PowerTop?

For standard model PowerTop

1. Charge via external DC-DC charger (i.e. Baintech 40A DC-DC Charger)
2. External 240V Lithium Battery Charger (up to 20A) with Anderson connection via one of the three Anderson connections.
3. Solar panel/blanket via regulated solar controller using the grey Anderson plug. **Must be regulated.** Maximum connected solar panels - 600W.

How long will it run my fridge for?

24-48hours* depending on the **size** and **current draw** of your fridge. There are many factors to take into consideration, amp draw, ambient temperature, use frequency, contents of your fridge.

TIPS:

- Cool your fridge and drinks before running your fridge off the PowerTop
- Maintain your battery via charging source
- Keep frozen bottles of water to keep the internal temp lower so it doesn't have to work as hard

It's best practice to keep your battery topped up via solar or DC-DC charging to keep your essentials running while off-grid.

What is a BMS?

An internal battery monitoring system protecting the battery from over and under voltage, and temperature. By shutting down the battery if it reaches excessive temperatures or voltages.

Troubleshooting Guide

• When I turn the voltmeter on there is nothing on the screen.

The battery is most likely completely discharged. Connect a charger and give the battery a good charge up.

Note: if you leave your battery for an extended period you will need to use a charger that automatically provide charge without sensing any voltage from the battery. At very low voltages the battery will appear to be dead because it is protecting itself and will only come to life when you apply a charge.

• The voltmeter is on but I am not getting any power.

One or more of the fuses is likely blown. Remove the cover from the fuse holders inspect and replace fuses as necessary. They are standard automotive fuses available from any many locations including service stations and automotive supply stores.

See specifications for fuse replacements.

• The voltmeter is OFF but I am still getting power.

The on/off switch only isolates the voltmeter and two USB sockets with lighting circuits.



Introduction

As with all batteries, you should consider the mechanical and environmental conditions that you intend to operate the battery in to maximise overall performance and achieve the longest battery life. Bainbridge Technologies offer these general guidelines; however, you should seek Bainbridge Technologies advice or that of a qualified electrical tradesperson if you are in doubt.

Do's and Don'ts

This battery contains lithium iron phosphate (LFP) cells. While LFP cells are the safest Li-Ion chemistry, the stored chemical energy represents a risk of fire, burns or explosion if misused.

Avoid injury to yourself and others, adhere to the warnings in this Guide.

- Avoid mechanical shock;
- Do not expose to fire;
- Do not pierce battery;
- Do not disassemble;
- Do not drill into battery enclosure;
- Do not short the battery terminals;
- Do not allow water to enter the battery; and
- Do not expose battery to > 60°C temperatures.

To ensure a long and safe life from your battery, please ensure you consider the following.

Ensure the battery is physically secure

Even though lithium batteries are light weight in comparison to lead acid, they can still become a dangerous projectile in a moving vehicle, RV, cart or boat if not secured. Ensure the battery is safely secured before travel. If in doubt seek advice and consider making use of custom battery tray to safely secure the battery.

Do not penetrate the battery enclosure

You may be tempted to drill into the aluminum enclosure to secure mounting brackets. Doing so may inadvertently penetrate one of the cells which could cause thermal runaway and lots of smoke. Do not under any circumstances drill or penetrate into the enclosure. Use a battery box, tray, or alternatively use strapping and clamping to secure the battery in place.

Maintain an acceptable temperature range

Like all batteries, these batteries operate and perform the best as well as last the longest in a cool and stable temperature environment of between **10°C and 25°C. The maximum window of acceptable operation is 0-45°C.**

If you regularly operate outside of this suggested range you should consider changing the battery location or actively cool or heat the environment in order to preserve battery life. **If the ambient temperature that the battery operates in is greater than 60°C you should cease use immediately.** Operating outside of these guidelines diminishes the life and performance of the battery and voids the warranty.

Avoid repeated shock and vibration

Whilst the battery is robustly constructed and protected in an aluminum enclosure, it is not designed to operate continuously in high shock or high vibration environments. Normal use in a 4WD environment is acceptable and the battery has been designed in accordance with these expected conditions. However, dropping the battery or exposing the battery to a high number of excessive vibrations may lead to a fault or failure of the battery.

Avoid water or salt spray

Whilst the battery is mechanically protected, the enclosure is not designed for a wet environment. Do not submerge the battery in water or expose the battery to direct water spray.

Avoid exposing the battery to salty water spray such as in a marine environment to avoid corrosion. Salt laden air may also cause corrosion in the long term; minimise exposure by installing the battery in a protected hatch or compartment.



Charging your PowerTop

12V AC chargers, solar chargers and DC-DC chargers connect to the grey Anderson Plugs. All charging sources must be under 50A. The PowerTop can be charged from 2 sources at the same time as long as the 50A total limit is not exceeded.

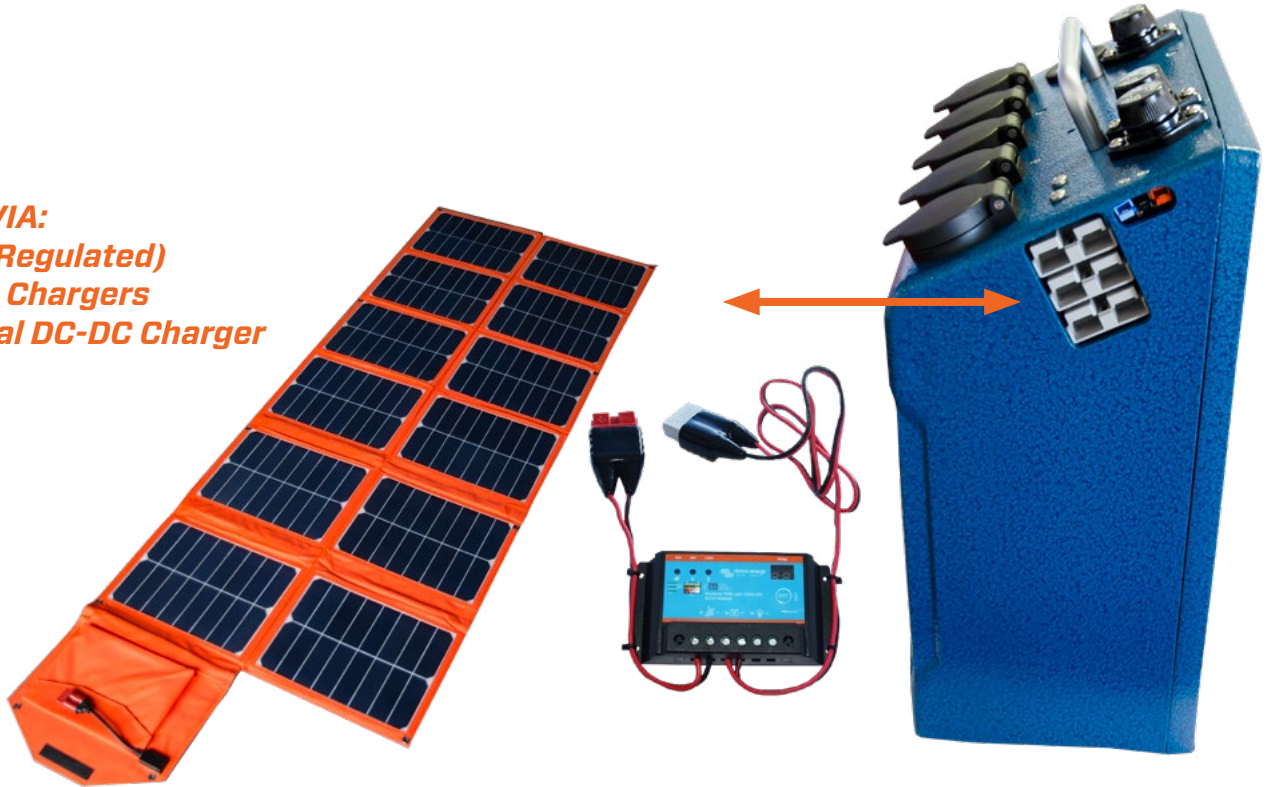
The PowerTop will automatically cut out when the battery is fully charged. It also cuts out when battery gets too low.

When fully charged the battery will be at 13.3-13.5V.

Discontinue use when the battery is approximately 11V. It will automatically cut out at approximately 11V.

CHARGE VIA:

- **Solar (Regulated)**
- **12V AC Chargers**
- **External DC-DC Charger**



Voltmeter

The voltmeter with the circular ring of LED's will give the voltage and an indication on how full the battery is. When an appliance is connected, the voltage will dip a small amount and when a charge is applied the voltage will raise a small amount. This is normal.

If storing for extended periods it is recommended that you switch off the battery. The lithium cells will self-discharge very slowly if not charged for prolonged periods, so it is a good idea to charge the battery every couple of months.

Anderson Plugs

The grey Anderson plugs are bi-directional and can handle loads or charging to a maximum of 50A. This means a maximum inverter size of 600W.

Ciga Sockets and USB sockets

Ciga sockets should only be used as intended to charge devices with a maximum load of 10A.

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