

# LITHIUM

LiFePO<sub>4</sub> POWER STATION

# USER MANUAL



**WITH DCDC CHARGER**



**NO DCDC CHARGER**

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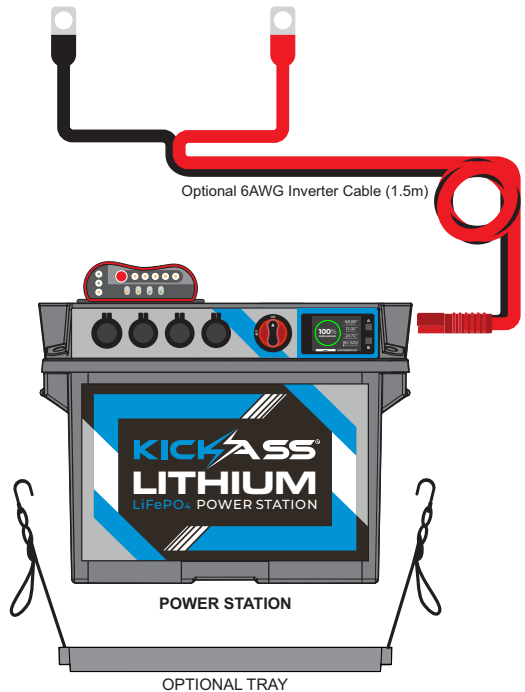
# Congratulations On Purchasing Your New KickAss LiFePO4 L1 Power Station

## Why KickAss?

What makes KickAss different is the fact that we offer the complete solution: KickAss Lithium Power Station, Solar Panels, Portable Fridges, AC Chargers and everything you need to get your off-grid camping needs solved in one place.

## Designed by the KickAss Team

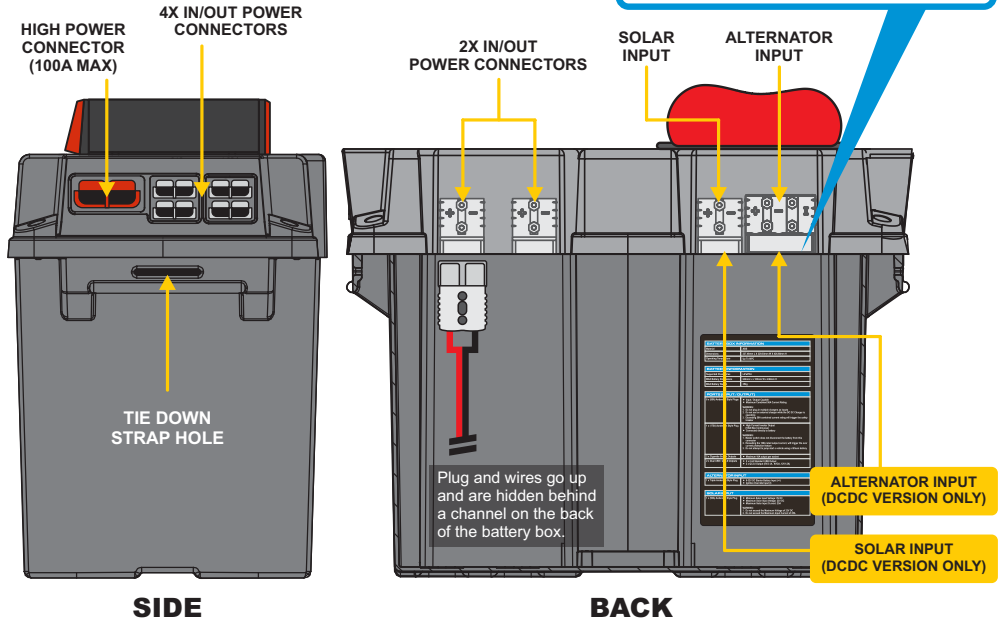
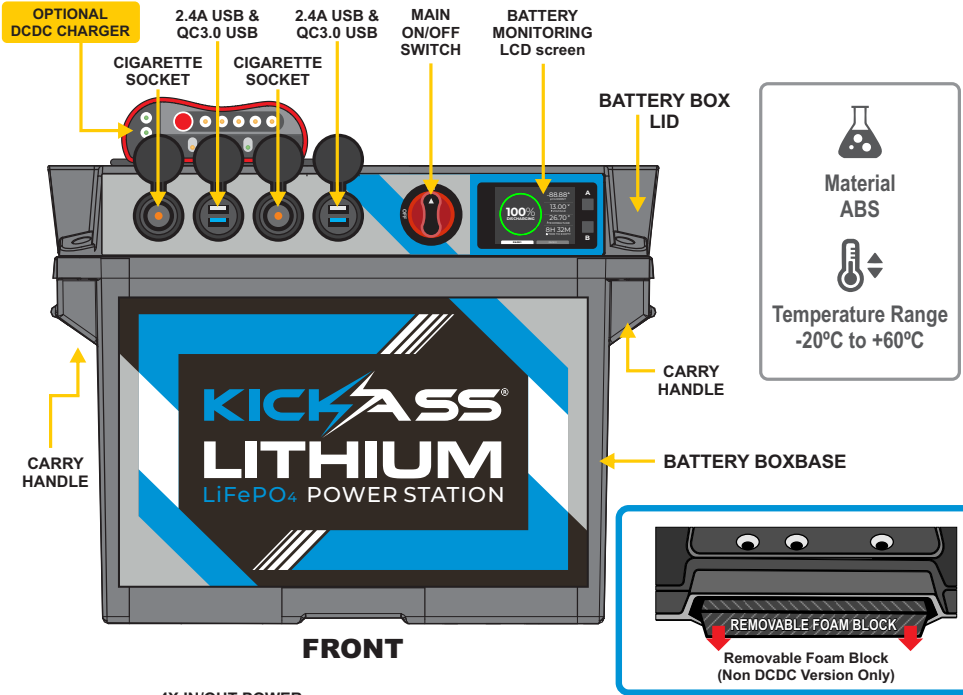
The KickAss Lithium Power Station has been designed in-house by the KickAss Team and has taken over 4 years of hard work and dedication to complete. We listened to our customers over many years to make a feature rich and practical portable power station.



## IMPORTANT SAFETY INSTRUCTIONS

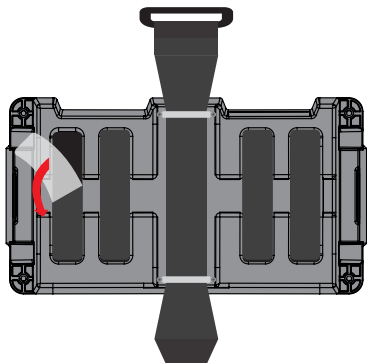
- For charging 12V KickAss 120Ah LiFePO4 batteries.
- The total current draw from the battery must not exceed 100 Amps. Should the current draw exceed 100 Amps, the internal BMS will shut down
- Never attempt to recharge non-rechargeable batteries.
- The lid of the battery box must remain shut at all times whilst charging a battery or powering a device from an outlet.
- Do not allow any metal objects to fall into the battery box or enter any of the ports.
- Never insert anything other than a compatible electrical plug into any of the ports on the battery box.
- Ensure that the battery box is shut and the screws are tight before powering any devices.
- Do not try to jumpstart a vehicle with this battery box.

# OVERVIEW



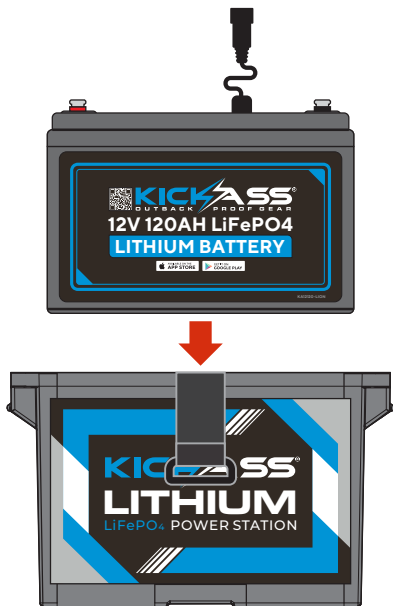
# GETTING STARTED

**Step 1:** Peel off plastic film to expose the non-slip surface of silicone pads.



Note: the pads may be washed to regain stickiness.

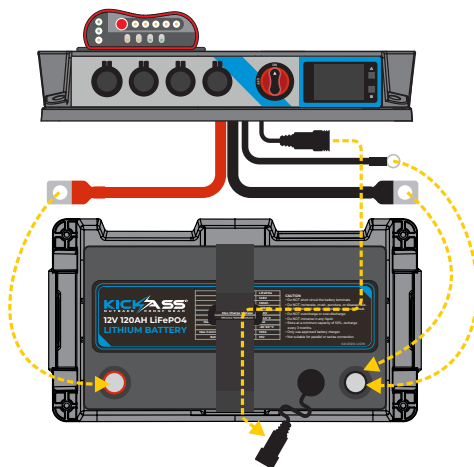
**Step 2:** Lower your battery into the battery box base carefully, locating it as centrally as possible on the non-slip pads.



**Step 3:** Secure the battery in place by tightening the velcro strap over the battery.



**Step 4:** Install the battery cables onto the terminal posts of the battery. Ensure the red cable is connected to the positive (+) terminal, the black cable connected to the negative (-) terminal. Tighten firmly but be sure not to over tighten the battery terminals.



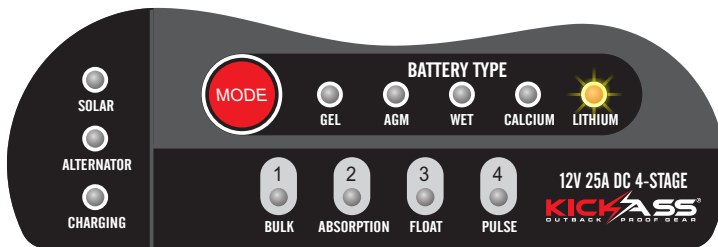
**Step 5:** Tuck cables in under the battery box lid, lowering the lid carefully onto the box - ensuring the lid is correctly oriented.



**Step 6:** Install the 4 provided screws to fasten the lid to the base, being sure not to over tighten with the supplied allen key.



**Step 7 ATTENTION FOR DCDC CHARGER MODELS:** Ensure Lithium is selected as the battery type. If it is not, select Lithium as the battery type on the DCDC charger by holding the MODE button for 5 seconds or until the battery light starts flashing. Then select LITHIUM and wait for the battery light to stop flashing. When this occurs, your selection is saved.



# BATTERY

## Features

- 120Ah Lithium Iron Phosphate (LiFePO<sub>4</sub>) battery
- 100A Internal Battery Management System (BMS)
- BMS supervised Lithium Battery Protection and alarms
- Bluetooth compatibility with KA app (Android and iOS)
- LCD screen unit connection to BMS
- Approximately 2000 cycles at 80% DOD, and up to 4000 cycles at lower discharge rates.
- Low self-discharge and long shelf life

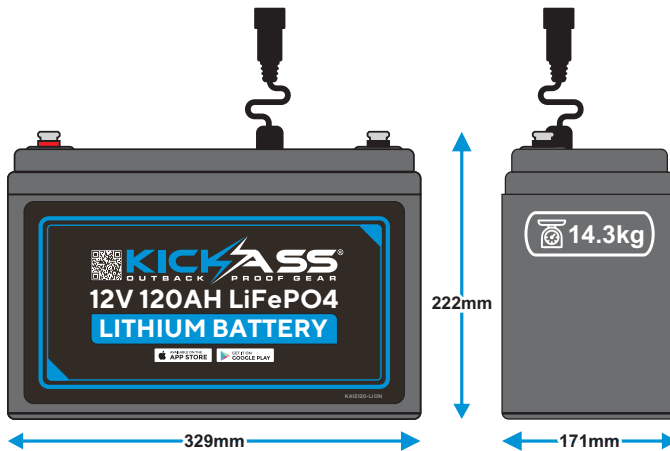
**Note:** The total current draw from the battery must not exceed 100 Amps. Exceeding 100A will trigger the BMS over current protection feature.

## BMS Protection Features

- Battery over and under voltage protection
- Battery over and under temperature protection
- Battery over charge and discharge protection
- Battery short circuit protection

## Applications

- Solar System
- Telecommunications
- 4WD Dual Battery Systems
- Caravan, Motorhome Systems
- Emergency Power System



<b>Battery Dimensions</b>	329mm L x 171mm W x 222mm H
<b>Battery Weight</b>	14.3kg
<b>Battery Chemistry</b>	Lithium LiFePO <sub>4</sub>
<b>Battery Nominal Voltage</b>	12.8V
<b>Battery Capacity</b>	120Ah
<b>Max Charge Current</b>	50A
<b>Operating Temperatures</b>	Discharge: -20 - 60°C Storage: -20 - 45°C Charge: 0 - 45°C
<b>Self Discharge</b>	<3% of capacity declined per month at 25°C

# OPTIONAL ACCESSORIES

## MOUNTING TRAY (OPTIONAL)

### Step 1:

Confirm install location of tray, drilling any required holes.

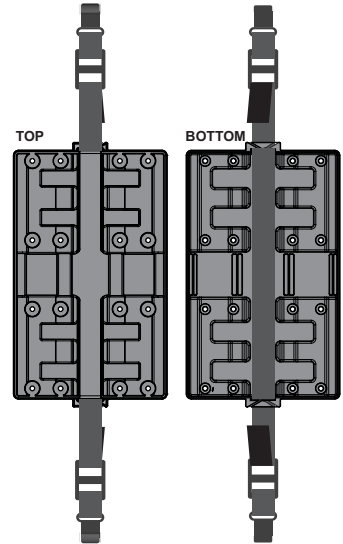
Install the strap under the tray, sliding the strap into the slots either side.

Ensure strap is oriented correctly so that the hooks face toward the Power Station when installed.

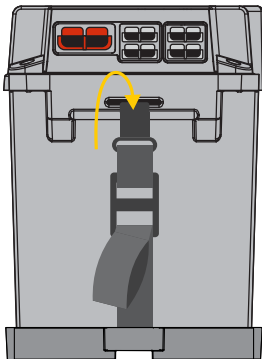
Securely affix the tray in position using bolts or screws, whichever is applicable.

Ensure that washers are used when installing the tray, to avoid damage.

Note: We do not provide the screws or bolts for this installation.



**Step 2:** Ensure straps are laying outside the tray before lowering the battery box carefully onto the tray. Attach each strap hook to the corresponding slot in the Power Station.



**Step 3:** For ease of tightening, place thumbs in each strap loop, pushing firmly downwards. The strap should tighten and hold the Power Station firmly in place.

To release, depress the buckle and pull the strap to loosen.





# Inverter Cables (Optional)

KickAss Inverter leads have been designed to allow you to easily connect a high powered inverter to the battery box. When it comes to Inverter cables, there is no substitute for quality and these KickAss Inverter Cables have been designed to work flawlessly and to provide a high current flow to your inverter.

## Note:

- The internal BMS will not allow more than 100 amps to be drawn from the battery, do not exceed a 1200W inverter load.



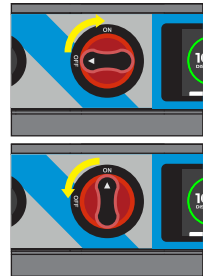
## SWITCHES

### The Master Switch

The master switch disconnects everything (except for the large 175 amp Anderson style plug and the LCD screen) from the battery, including the DCDC Charger. Turning it off is a quick way to disconnect all devices to ensure your battery is not being drained.

Note: The DCDC Charger + Solar Regulator cannot charge the internal battery while the Master Switch is in the OFF position, neither can an externally connected charger.

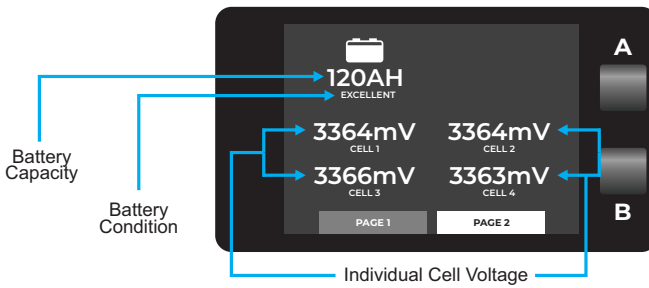
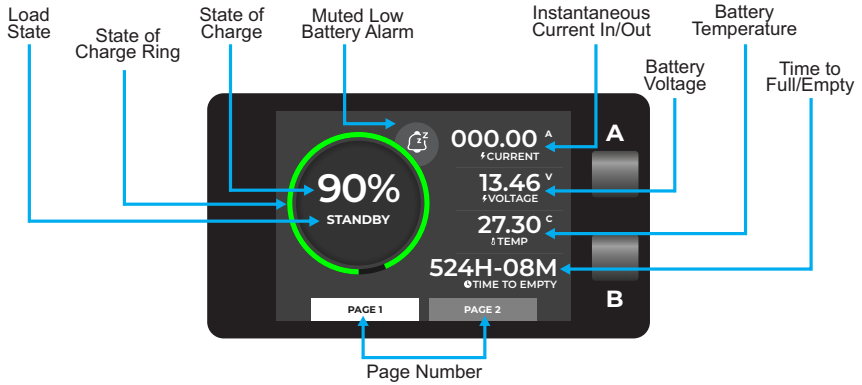
**Note:** Only turn this switch off when placing the battery in storage and not attempting to charge.



## LCD SCREEN

The KickAss Lithium Battery Box Monitor has a display and two buttons. The screen is used to monitor the state and condition of the battery. The display features the following:

- Battery State of Charge (SoC).
- Instantaneous Current Flow, positive when charging, negative when discharging
- Battery pack voltage and individual cell voltages
- Battery Temperature
- Remaining time to full/empty at the current rate of charge/discharge
- Total Capacity of Battery
- Mutable Low Battery Alarm
- Battery Capacity Condition State (Excellent, Good, Fair, Bad)
- Battery Protection Alarms



### Turning the screen on/off

The screen can be turned on/off by clicking Button B. To save power, the screen will turn off automatically after prolonged inactivity. To set the duration of the screen "On" time before turning off, hold Button B for five seconds until the Screen time menu appears. Navigate through the menu using the buttons. To confirm selection, wait 5 seconds for the home screen to return.

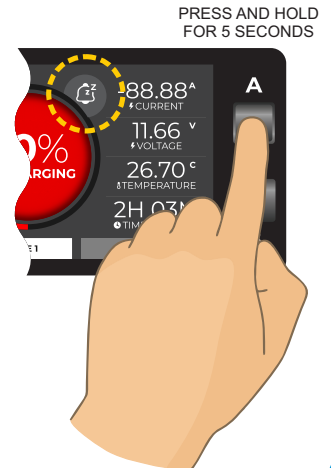


### Switching between Displays

The display can be switched between Page 1 and Page 2 by clicking Button A.

### Low Battery Alarm & Muting Feature

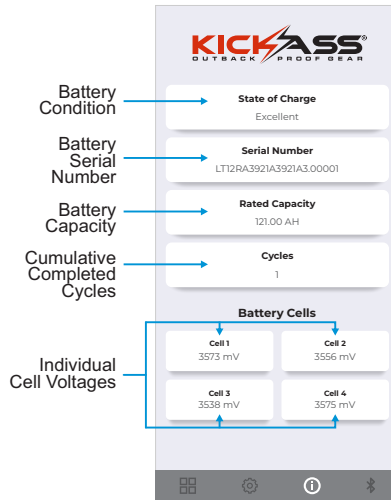
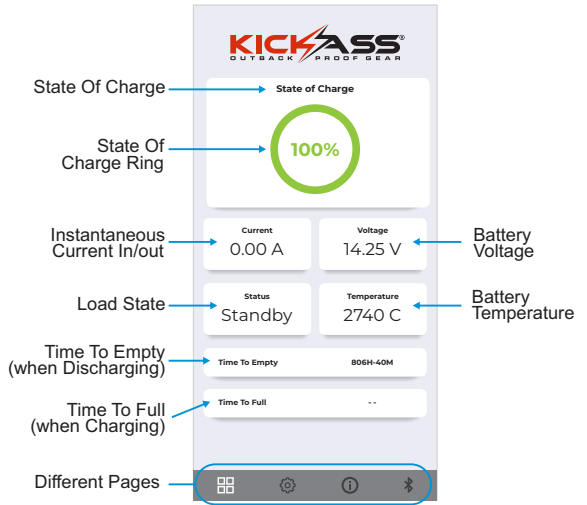
A low battery alarm will sound when the batteries state of charge falls below 10%. To mute the alarm, press and hold button A for 5 second or until the muted symbol displays on page 1 of the display. The alarm will stay muted for 8hrs or until the battery is charged sufficiently.

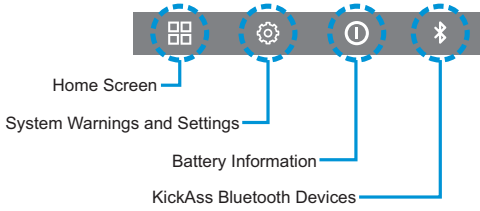


# KICKASS LITHIUM APP

The KickAss Lithium Battery has been designed with the latest bluetooth technology to remotely monitor your battery from your smartphone. The app features the following:

- State of Charge (SoC)
- Instantaneous Current Flow, positive when charging, negative when discharging
- Battery Pack and Cell Voltage.
- Battery Temperature
- Remaining time to full/empty at the current rate of charge/discharge
- Total Capacity of Battery
- Low Battery Alarm
- Battery Capacity Health Indicator
- Battery Protection Alarms





## Connecting to the App

To get started please download the KA Outback Proof Gear app from the Google Play store or the Apple iTunes Store.

If the app is already downloaded on your device for use with your KickAss Bluetooth fridge, you must ensure that any updates to the app are installed prior to connecting.

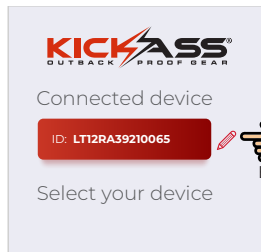
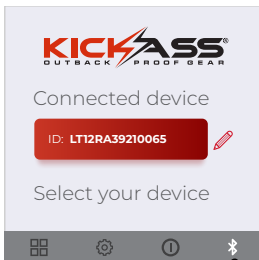
Once the APP is installed, locate your battery's serial number on the side of your battery. On the KA Outback Proof Gear app, find the device ID that corresponds to the first 10 digits and the last 4 digits of the battery's serial number and click connect device.












## Rename Device ID

To rename your bluetooth device, connect to the device and then navigate to the fourth tab on the bottom toolbar. Click the pencil icon next to the connected device, edit the name and then click save.

**Note:** Editing your devices name, will only edit it on your device. It will not change the name of the battery for other people who try to connect to it.



# KickAss LITHIUM BMS ALARM MODES

ALARM MODE	APP SYSTEM WARNING	LCD screen SYSTEM WARNING
<p><b>Over Voltage Protection:</b> The voltage of your battery has exceeded the normal range. Remove charger from battery</p>	<p>Charging Over Voltage Error</p> <p><a href="#">View Error</a></p>	 <p>CHARGING OVER VOLTAGE (Check Manual)</p>
<p><b>Under Voltage Protection:</b> The voltage of your battery is below the normal range. Connect charger to battery</p>	<p>Under Voltage Error</p> <p><a href="#">View Error</a></p>	 <p>UNDER VOLTAGE (Please Recharge)</p>
<p><b>Charging High Temperature Protection:</b> The temperature of your battery has exceeded the normal range. Disconnect all loads/chargers and place your battery in a cooler location</p>	<p>Charging High Temperature Error</p> <p><a href="#">View Error</a></p>	 <p>CHARGING HIGH TEMPERATURE (Check Manual)</p>
<p><b>Charging Low Temperature Protection:</b> The temperature of your battery is below the normal range. Disconnect all loads/chargers and place your battery in a warmer location</p>	<p>Charging Low Temperature Error</p> <p><a href="#">View Error</a></p>	 <p>CHARGING LOW TEMPERATURE (Check Manual)</p>
<p><b>Discharging High Temperature Protection:</b> The temperature of your battery has exceeded the normal range. Disconnect all loads/chargers and place your battery in a cooler location</p>	<p>Discharging High Temperature Error</p> <p><a href="#">View Error</a></p>	 <p>DISCHARGING HIGH TEMPERATURE (Check Manual)</p>
<p><b>Discharging Low Temperature Protection:</b> The temperature of your battery is below the normal range. Disconnect all loads/chargers and place your battery in a warmer location</p>	<p>Discharging Low Temperature Error</p> <p><a href="#">View Error</a></p>	 <p>DISCHARGING LOW TEMPERATURE (Check Manual)</p>
<p><b>Charging Over Current Protection:</b> The charging current of your battery has exceeded the normal range. Disconnect all chargers from the battery</p>	<p>Charging Overcurrent Error</p> <p><a href="#">View Error</a></p>	 <p>CHARGING OVERCURRENT (Check Manual)</p>
<p><b>Discharging Over Current Protection:</b> The discharging current of your battery has exceeded the normal range. Disconnect all load from the battery</p>	<p>Discharging Overcurrent Error</p> <p><a href="#">View Error</a></p>	 <p>DISCHARGING OVERCURRENT (Check Manual)</p>
<p><b>Short Circuit Protection:</b> The battery is short-circuited. Check all wiring and connections for short circuits</p>	<p>Short Circuit Protection Error</p> <p><a href="#">View Error</a></p>	 <p>Short Circuit Protection (Check Manual)</p>

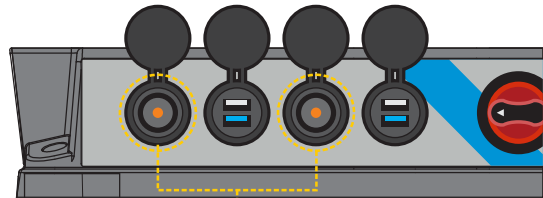
# CONNECTIONS

**Note: The total output load of all connections combined must not exceed 100A**

## ▶ **OUTPUTS**

### **2 X CIGARETTE SOCKET OUTPUTS**

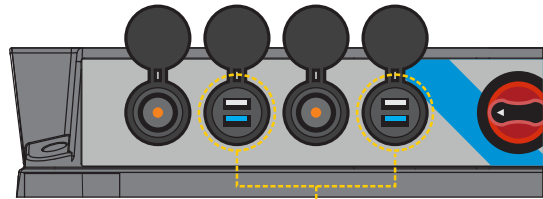
- Maximum 10A output per socket



2 x Cigarette Socket Outputs

### **2 X DUAL USB / QC3.0 OUTPUTS**

- 2 x 2.4A High Powered USB (White)
- 2 x Quick Charge QC 3.0 Ultra High Powered USB Outputs (5V/3.1A, 9V/2A, 12V/1.5A - Blue)



2 x Dual USB / QC3.0 Outputs

### **Benefits of Quick Charge**

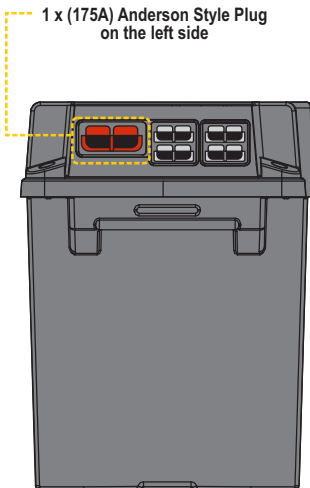
When paired with compatible devices, a Quick Charge-enabled charger delivers more power, allowing the connected device to charge faster. As one of the most widely used of the fast charging technologies, Quick Charge is already in many of your favorite smartphones. If your smartphone is Quick Charge 3.0-compatible, you can charge up to 80% in just 35 minutes.

To future-proof your chargers, each new Quick Charge generation is backwards compatible, meaning it will work with the generations that came before.

## ▶ **INPUTS/OUTPUTS**

### **1 X (175A) ANDERSON STYLE PLUG**

1 x (175A) Anderson Style Plug on the left side



- High Current Inverter Output
- Emergency 600A Jump Starter Output (7 seconds)
- Connected directly to battery

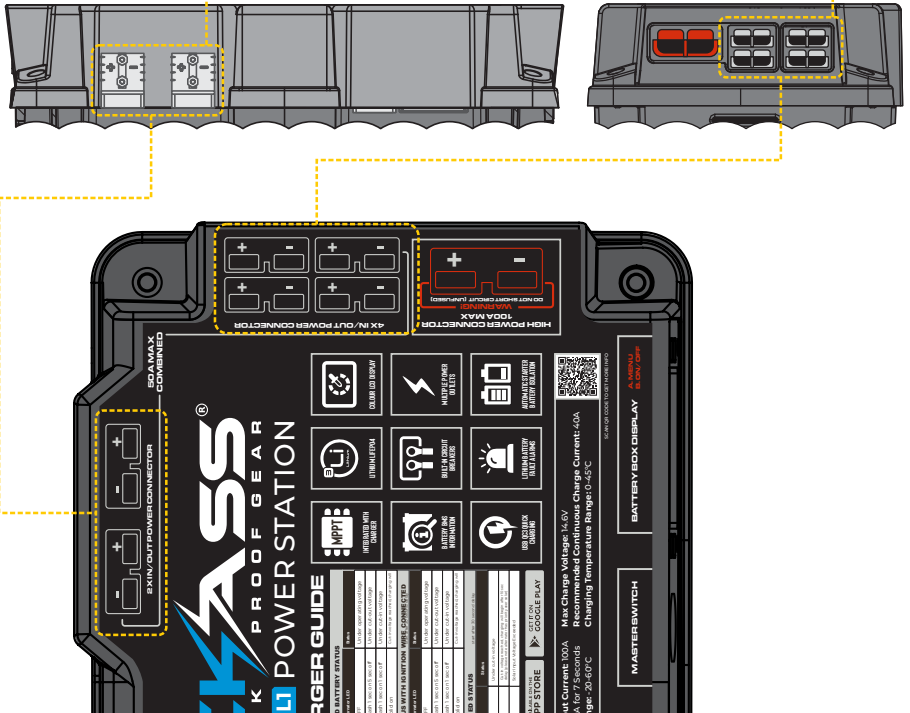
#### **WARNING:**

1. Master switch does not disconnect the battery from this connector.
2. This output is NOT Fused or Short Circuit Protected.
3. Do not jump start a vehicle for longer than 7 seconds.
4. Check battery specifications and compatibility with high current draw before using jump start connector.
5. Lithium batteries should not be used for jump starting.

## 6 X (50A) ANDERSON STYLE PLUGS

2 x (50A) Anderson Style Plugs on the back

4 x (50A) Anderson Style Plugs on the side



- Input / Output Capable.
- All Anderson Plugs combined must not exceed 50A total current.

### WARNING:

1. Do not plug in multiple chargers as inputs.
2. Do not use an external charger while the DC-DC Charger is operating.
3. Exceeding 50A combined current rating will trigger the safety breaker. Safety breaker will auto-reset in time.

**NOTE: THE 6 ANDERSON PLUGS INDICATED CANNOT EXCEED A TOTAL OF 50 AMPS COMBINED.**

# ► INPUTS

## ALTERNATOR

### 1 X TRIPLE ANDERSON STYLE PLUG

- 9-32V DC Starter Battery Input (+/-)
- Ignition source connection

## MPPT SOLAR

### 1 X (50A) ANDERSON STYLE PLUG

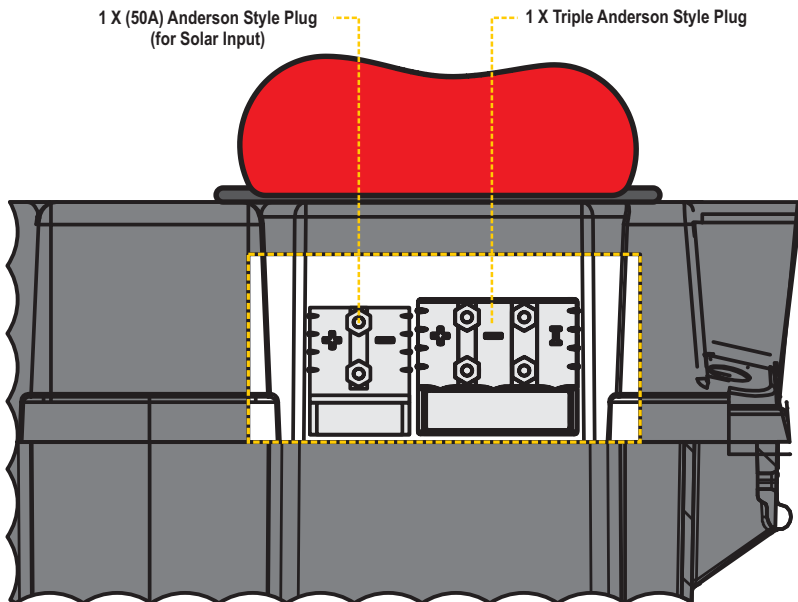
- Minimum Solar Input Voltage: 9V DC
- Maximum Solar Input Voltage: 23V DC
- Maximum Solar Input Current: 25A

Unregulated Solar Input - utilises in built DCDC MPPT regulator.

Not suitable for regulated solar input, connect to a standard in/out connector when using an external or panel-mounted solar controller/regulator.

#### WARNING:

1. Do not exceed the Maximum Voltage of 23V DC
2. Do not exceed the Maximum Input Current of 25A





## CONNECTING TO EXTERNAL CHARGERS

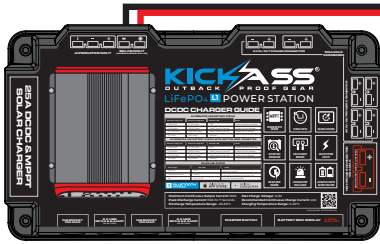
The KickAss Power Station may be charged in a number of ways:

- Connecting an AC charger to any of the in/out Anderson style connectors.
- Connecting a solar panel with regulator/controller to any of the in/out Anderson style connectors.
- Connecting alternator power to optional DCDC Charger in a vehicle.
- Connecting an unregulated solar panel input to optional DCDC Charger.

### **Warning:**

- Connecting multiple chargers to the battery at any one time is not recommended.
- Do not connect an unregulated solar panel directly to the battery via any of the in/out connectors.

# TYPICAL DIAGRAMS

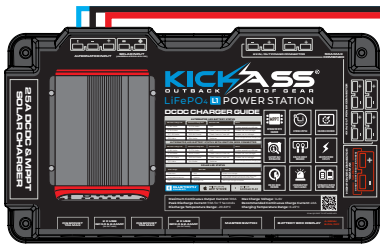


UNREGULATED SOLAR PANEL 23V MAX



plug-in to any of these sockets

AC CHARGER



VEHICLE IGNITION

VEHICLE BATTERY



plug-in to any of these sockets

REGULATED SOLAR PANEL

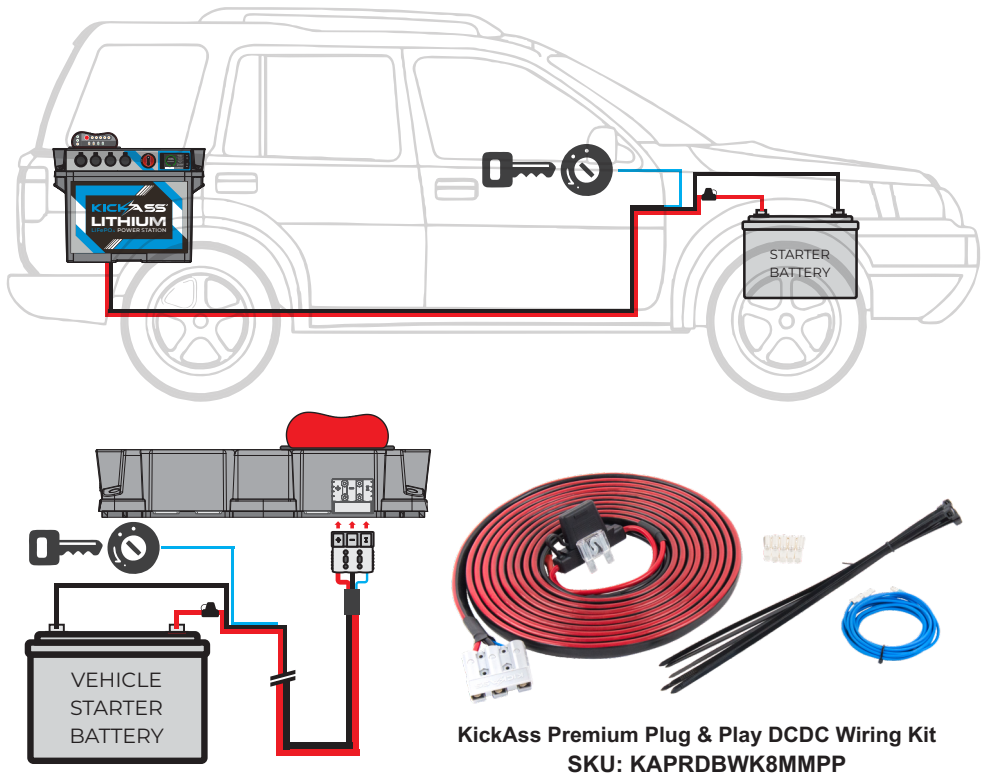
# CONNECTING DCDC CHARGER

The KickAss Lithium Power Station includes a built-in DCDC Charger suitable for charging from a vehicle alternator.

The easiest way to connect the Power Station to your vehicle is by using the KickAss Plug & Play Wiring Kit (sold separately).

The triple Anderson style connector fitted to the Power Station interfaces with the KickAss Plug & Play Wiring Kit, providing a simple, quick release vehicle charging solution. This triple connector and cable provides alternator power to the DCDC on the Power Station, along with an Ignition Source for charging in vehicles that are fitted with Smart or Temperature Compensating Alternator.

For more information on installing a Dual Battery Wiring Kit and Ignition Wire, please visit [KickAssproducts.com.au/support](http://KickAssproducts.com.au/support)



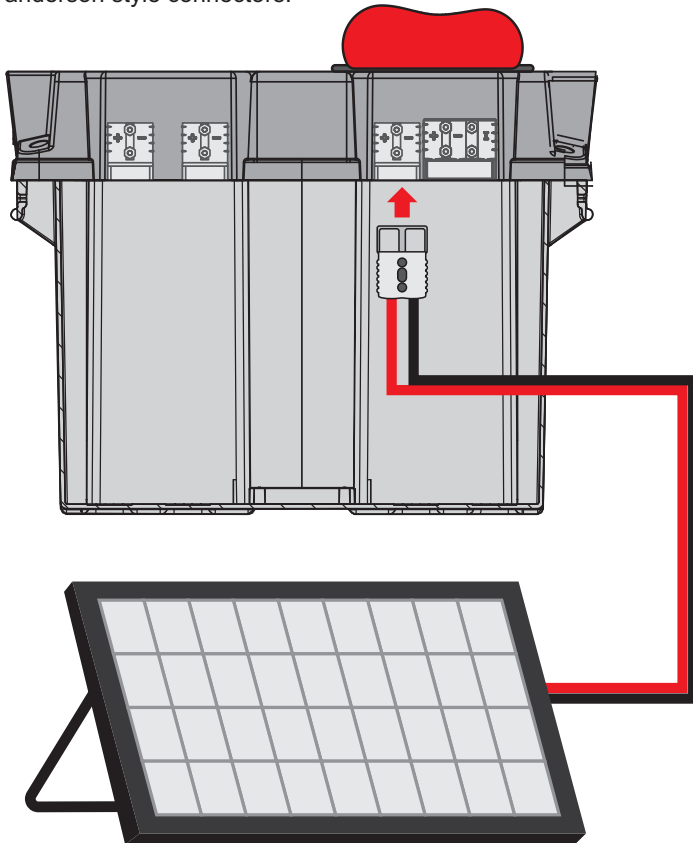
# CONNECTING TO ALTERNATOR INPUT

## CONNECTING TO UNREGULATED SOLAR

KickAss Battery Box includes a built-in DC-DC Charger with a MPPT regulator suitable for charging from unregulated solar panels. To connect your solar panel to the regulator simply plug it in via the anderson style plug on your battery box.

**Note:**

- Your solar panel open circuit voltage must not exceed 23 VoC, the voltage of your panel can generally be found on the sticker on the rear of your solar panel
- If your solar panel is fitted with a built-in regulator, you will need to bypass the regulator port. Alternatively you can connect your regulated solar panel to any of the 6 in/out anderson style connectors.



UNREGULATED SOLAR PANEL 23V MAX

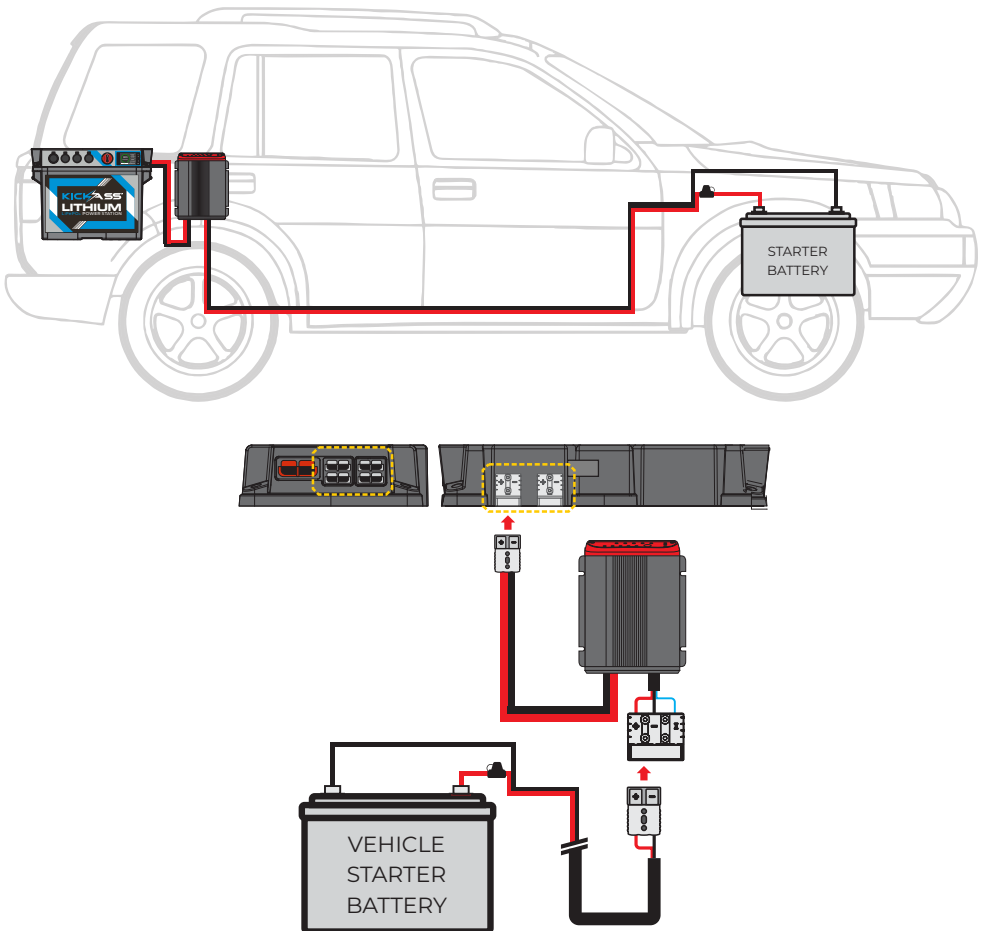
## DIY DCDC CHARGER WIRING

*Note: Prior to undertaking any DIY Installation ensure your battery is disconnected and your lid is removed from the battery box base.*

If you already have a DCDC Charger, there are a number of ways in which you can install it on the non DC DC version of the battery box.

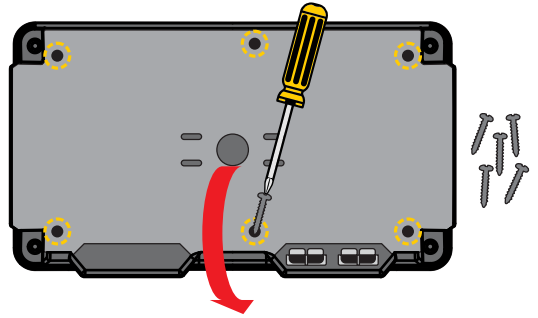
### Method One (Mounting near box)

If you have a mounting position for the DCDC charger in the vehicle, close to the battery box, simply crimp an Anderson style connector to the output of the DCDC charger and connect to any of the In/Out Anderson Style connectors. If required, blank two pin anderson style connectors can be purchased from the KickAss Store.



## Method Two (Mounting on box)

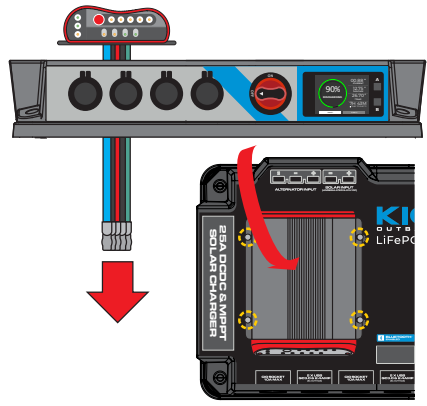
1. Flip the battery box lid upside down, remove the 6 screws and carefully remove the cover revealing the cabling.



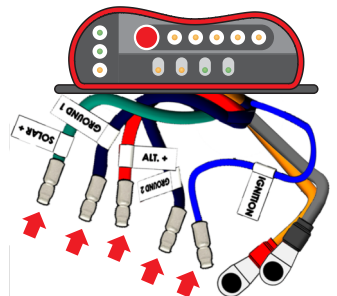
2. There is a pre-drilled hole for cabling on the face of the battery box, this is covered by the sticker. Locate this hole on the top of the lid that is marked by a large dashed circle. Using a sharp knife, cut the sticker.



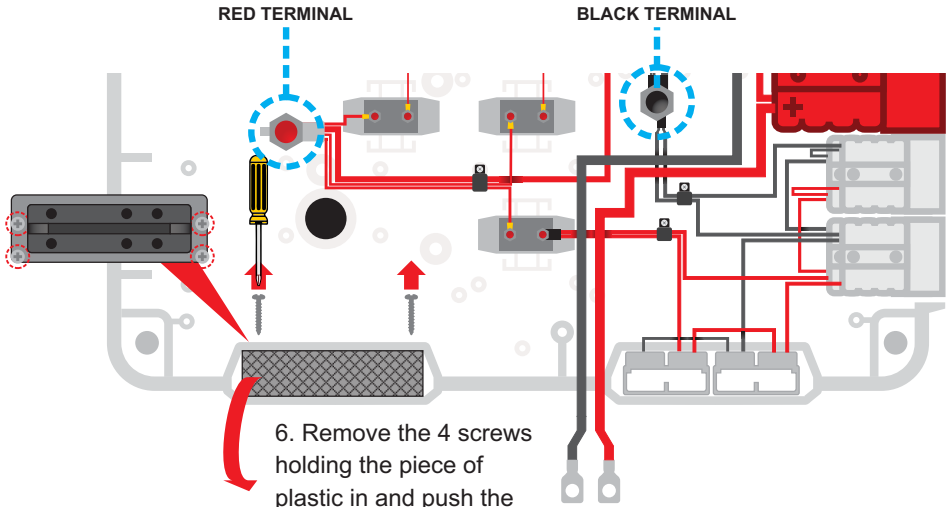
3. The DCDC charger must be suitably mounted to the lid of the battery box. There are 4 threaded holes on the top of the lid, these are located under the smaller dashed circles. If you wish to make use of these holes to mount your DCDC charger, again cut the sticker with a sharp knife. If you need to drill holes into the battery box lid, caution must be taken to ensure cables beneath are not damaged.



4. Crimp Anderson connectors onto the solar and alternator input wires including the ignition trace wire.

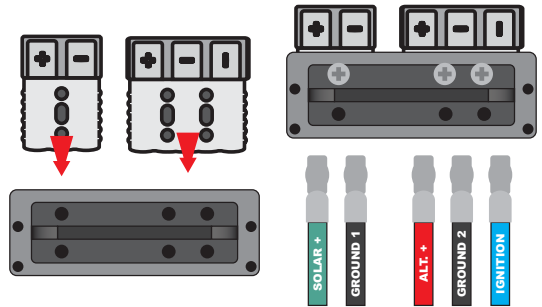


5. Connect the outlet wires of your DCDC Charger to the red and black terminal posts.

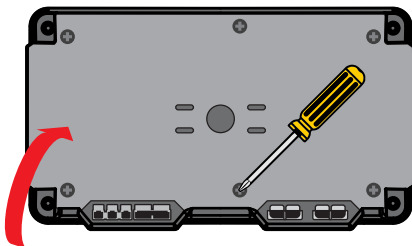
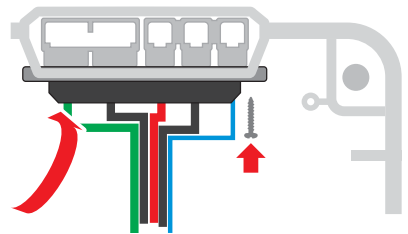


6. Remove the 4 screws holding the piece of plastic in and push the foam block out.

7. Using appropriate screws, attach the two and three pin Anderson style plugs to the piece of plastic. Connect the wires to the appropriate port in the Anderson style plug.



8. Slide the mounted anderson style connectors into the slot in the battery box and return the 4 screws to hold the mount in.



9. Replace the cover concealing the cabling and carefully return the 6 screws.

# TECHNICAL SPECIFICATIONS

## BATTERY BOX INFORMATION

<b>Material</b>	ABS
<b>Temperature Range</b>	-10°C - +60°C

## BATTERY INFORMATION

<b>Battery Dimensions:</b>	329mm L x 171mm W x 222mm H
<b>Battery Weight:</b>	14.3Kg
<b>Battery Chemistry:</b>	Lithium LiFePO4
<b>Battery Nominal Voltage:</b>	12.8V
<b>Battery Capacity:</b>	120Ah
<b>Operating Temperatures</b>	Discharge: -20 - 60°C Storage: -20 - 45°C Charge: 0 - 45°C

## PORTS (INPUT/OUTPUT)

<b>6 x (50A) Anderson Style Plugs</b>	<b>1 x (175A) Anderson Style Plug</b>
Input / Output Capable Maximum Combined 50A Current Rating WARNING: 1. Do not plug in multiple chargers as inputs 2. Do not use an external charger while the DC DC Charger is operating 3. Exceeding 50A combined current rating will trigger the safety breaker	High Current Inverter Output WARNING: 1. Output must not exceed 100A 2. Master switch does not disconnect the battery from this connector. 3. KickAss Lithium batteries should not be used for jump starting.
<b>2 x Cigarette Socket Outputs</b>	Maximum 10A output per socket
<b>2 x Dual USB / QC 3.0 Outputs</b>	2 x 2.4A Standard USB Output 2 x QC 3.0 Output (5V/3.1A, 9V/2A, 12V1.5A)

## ALTERNATOR INPUT

<b>1 x Triple Anderson Style Plug</b>	9-32V DC Starter Battery Input (+/-) Ignition Override Input (I)
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## SOLAR INPUT

<b>1 x (50A) Anderson Style Plug</b>	Minimum Solar Input Voltage: 9V DC Maximum Solar Input Voltage: 23V DC Maximum Solar Input Current: 25A WARNING: 1. Do not exceed the Maximum Voltage of 23V DC 2. Do not exceed the Maximum Input Current of 25A
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# FREQUENTLY ASKED QUESTIONS

## **Q. If storing my KickAss Lithium Power Station for long periods, what should I do to look after my battery's health?**

A lithium battery can be stored at any state of charge due to a very low rate of discharge. It is recommended that if storing for long periods, the battery be charged to approximately 70% before switching off the Master Switch and storing.

**NOTE:** The battery will not go into storage mode if:

- There are loads connected to it.
- It is being charged
- It is communicating with LCD
- It is communicating to App.

## **Q. Is my KickAss Lithium Power Station Water Proof**

The KickAss Lithium Power Station has been designed to be as resistant to moisture and dust as possible,

though it is not waterproof. Do not leave exposed to rain or weather, and do not submerge. For more information visit us at [kickassproducts.com.au/support](http://kickassproducts.com.au/support).

## **Q. Can I Jump Start with my KickAss Lithium Power Station**

The KickAss Lithium Battery has been design with a battery management system (BMS) to protect your lithium battery. Should more then 100A be drawn from your battery, the BMS will alarm and shut down the load to protect your battery. Jump starting will often require more than 100A draw from your battery so it is not recommended to jump start with the Lithium Battery Box.

*The information in this document is subject to change without prior notice.*

