POWERTECH

HB8506

Portable Battery Box Power Station

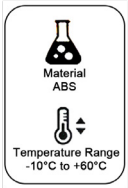
with Integrated 25A DCDC Charger

Instruction Manual

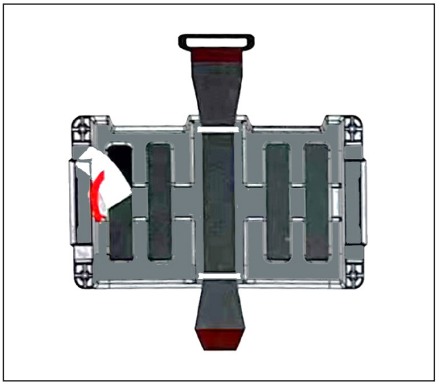
IMPORTANT SAFETY INSTRUCTIONS:

- For charging 12V rechargeable batteries only.
- Never attempt to recharge non-rechargeable batteries.
- The lid of the battery box must remain shut at all times while 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 when using lithium batteries.

PRODUCT OVERVIEW:



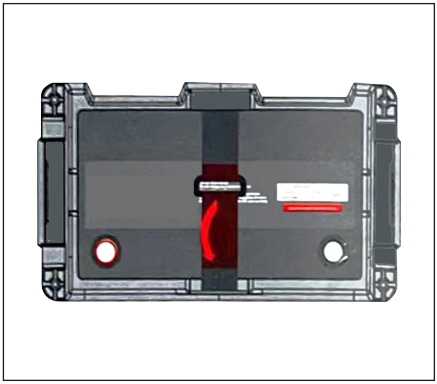
ACCESSORIES:



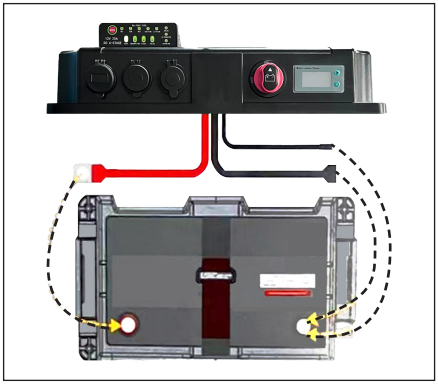
Step 1: Peel off the plastic film to expose the non-slip surface of the silicone pads.

Note: the pads may be washed to regain stickiness

Step 2: Place your battery carefully into the battery box base, positioning it as centrally as you can on the non-slip pads.

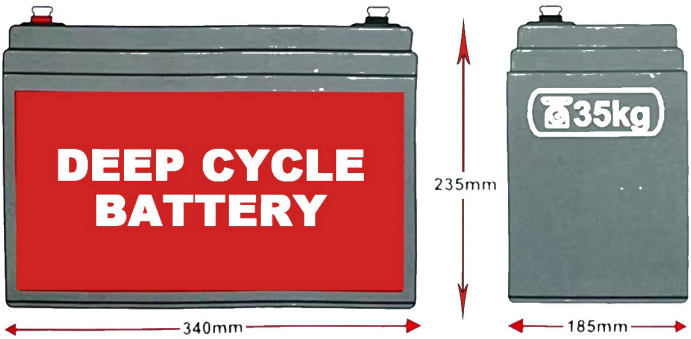


Step 3: Secure the battery in place by fastening the buckle over the battery pads.



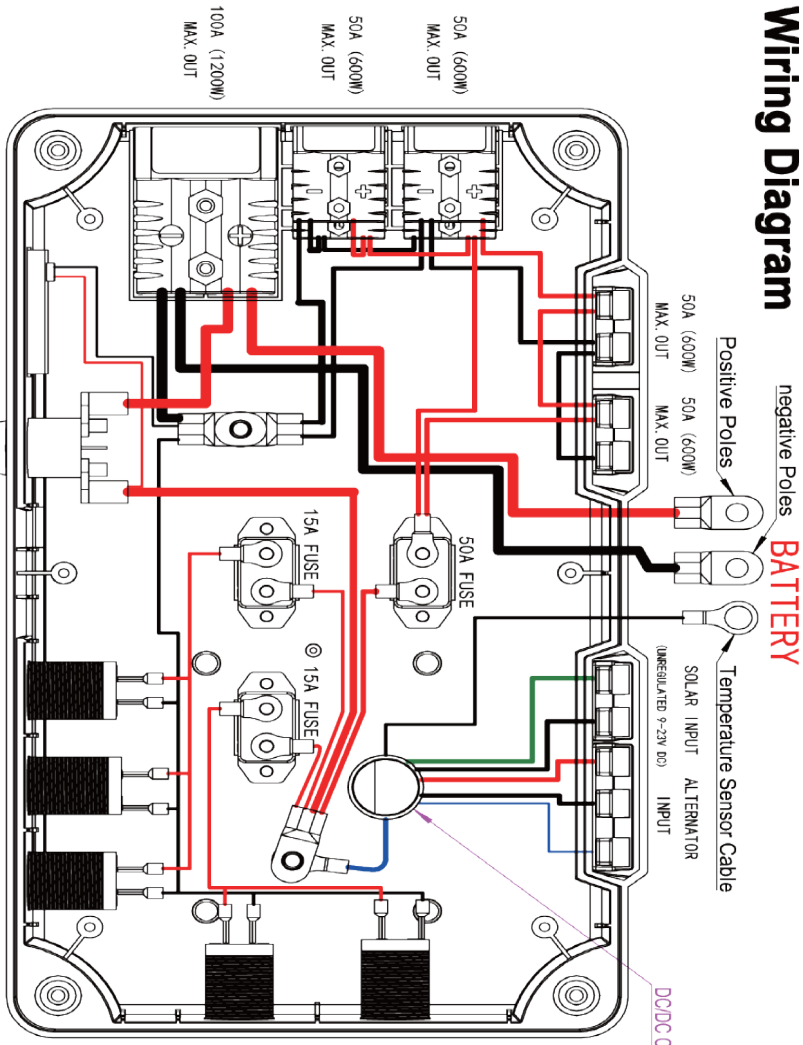
Step 4: Install the battery cables onto the terminal posts of the battery. Ensure the red cable is connected to the positive(+) terminal and both black cables connected to the negative(-) terminal. Tighten firmly but be sure not to over-tighten the battery terminals.

BATTERY TO USE:



Max.Battery Dimensions: 340mm x 185mm W x 235mm H (with Silicone Mat)
Max.Battery Weight: 35kg
Supported Chemistries: AGM, Calcium, Wet, Gel or Lithium LiFePO4
(Deep Cycle Bateries)

WIRING DIAGRAM:



SWITCH/BUTTONS:

The Master Switch
The master switch disconnects everything (except for the large 175 amp High Current Connectors) from the battery including the DC-DC Charger. Tuming it off is a quick way to disconnect all devices to ensure your battery is not being drained. Note: The DC-DC Charger and Solar Regulator cannot charge the internal battery while the Master Switch is in the OFF position, nor can an external battery. If another, external battery is connected through one of the IN/OUT connectors, the DC-DC is able to charge that battery, even with the Master Switch in the OFF position-bypassing the internal battery.

The Voltmeter
The inbuilt voltmeter will display the voltage of your battery. For an accurate voltage reading, disconnect all loads and charging sources from the power station and test. Note: The battery voltage table on the top sticker of the battery box is to be used as a guide only, check your battery specifications if you want to be precise.

CONNECTIONS:

Outputs

3 X Cigarette Socket Outputs
- Maximum 15A output per socket

2 X Dual USB Outputs
- 1 x 4.2A High Powered USB
- 1 x QC3.0+2.4A USB Output

Benefits of Quick Charge Q

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.

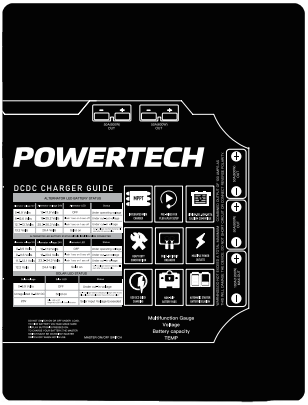
Outputs

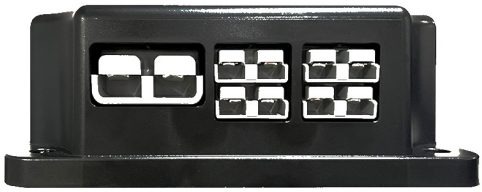
6 X (50A) High Current Connectors

- Input/Output Capable.
- All High Current Connectors combined must not exceed 50A total current.

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

CONNECTIONS:





NOTE: THE 6 HIGH CURRENT CONNECTORS INDICATED CANNOT EXCEED A TOTAL OF 50 AMPS COMBINED.

1X (175A) High Current Connectors

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

WARNING:

- The Master switch does not disconnect the battery from this connector.
- This output is NOT Fused or Short Circuit Protected.
- Do not jump start a vehicle for longer than 7 seconds.
- Deep Cycle batteries should be used for jump starting in emergency situations ONLY, as it will affect the battery life.
- Check battery specifications and compatibility with high current draw before using the jump start connector.
- Lithium batteries should not be used for jump starting.

CONNECTIONS:

Inputs

Alternator
1 X Triple High Current Connectors
- 9-32V DC Starter Battery Input(+/-)
- Ignition source connection

MPPT Solar
1 X (50A) High Current Connectors
- Minimum Solar Input Voltage: 9V DC
- Maximum Solar Input Voltage: 23V DC
- Maximum Solar Input Current: 25A

Unregulated Solar Input-utilises the inbuilt DC-DC 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.

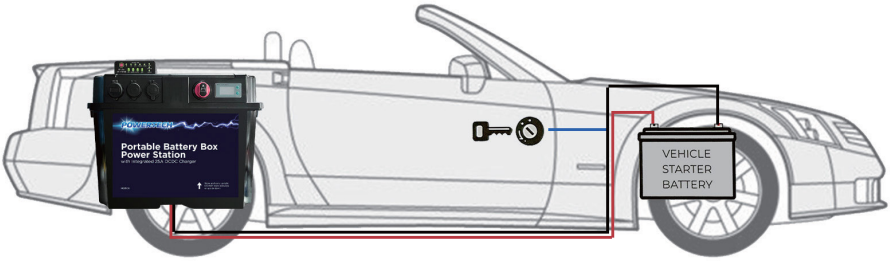
WARNING:
- Do not exceed the Maximum Voltage of 23V DC
- Do not exceed the Maximum Input Current of 25A

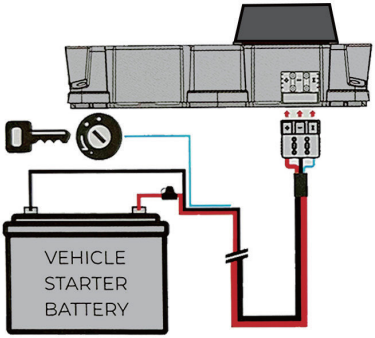
CONNECTION DC-DC CHARGER:

The 12V BATTERY BOX includes a built-in DC-DC Charger suitable for charging from a vehicle alternator.

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

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





Premium Plug & Play DC-DC Wiring Kit

DC-DC CHARGER GUIDE:

Understanding Solar, Alternator & Charging Lights

NOTE:

- Alternator has priority over solar therefore, if both solar and the alternator are connected, only alternator LED is Solid and the alternator is charging.
- 30 second delay between the cut-in voltage being reached and charging beginning and a 60 second delay before disconnecting when under cut-out voltage.

Alternator LED Battery Status

Voltage 12V	Voltage 24V	LED	Status
0-8.9 Volts	12-17.9 Volts	OFF	Under operating voltage
9-12.6 Volts	18-25.2 Volts	Flash 1 sec on 5 sec off	Under cut-out voltage
12.7-13.1 Volts	25.3-26.3 Volts	Flash 1 sec on 1 sec off	Under cut-in voltage
13.2 Volts	26.4 Volts	Solid On	Cut-in voltage reached charging will start after 30 sec delay

Alternator LED Battery Status Within Ignition Wire Connected

Voltage 12V	Voltage 24V	LED	Status
0-8.9 Volts	12-17.9 Volts	OFF	Under operating voltage
9-11.6 Volts	18-23.2 Volts	Flash 1 sec on 5 sec off	Under cut-out voltage
11.7-12.1 Volts	23.3-24.3 Volts	Flash 1 sec on 1 sec off	Under cut-in voltage
12.2 Volts	24.4 Volts	Solid On	Cut-in voltage reached charging will start after 30 sec delay

Solar LED Status

Solar Voltage	LED	Status
0-8.9 Volts	OFF	Under cut-in voltage
Unregulated 9-23V DC	Solid ON	Cut-in voltage reached charging will begin after 10 sec delay (please note alternator has priority over solar)
23V	Solar LED is Off Stage 1&3 LED Fault Code Indication	Solar input Voltage Exceeded

DC-DC CHARGER GUIDE:

Choosing the battery type:

The default battery setting is AGM.
When the auxiliary battery is connected, press and hold the mode button for 5 seconds or until the battery light starts flashing. Then select from either GEL, AGM,WET,CALCIUM or LITHIUM and wait for the battery light to stop flashing. When this occurs, your selection is saved.

Charging Stage Profile

Stage	Description				
Bulk	GEL 100% Current until 14.1V	AGM 100% Current until 14.4V	WET 100% Current until 14.7V	Calcium 100% Current until 15.4V	Lithium 100% Current until 14.4V
Absorption	Constant 14.1V Until 3.8A	Constant 14.4V Until 3.8A	Constant 14.7V Until 3.8A	Constant 15.4V Until 3.8A	Constant 14.4V Until 3.8A
Float	13.7V at 100% Current Max				
Pulse	Begins after a continuous float stage of 10 days and pulses power through the battery using the same current and voltage as the absorption stage to maintain charge. During this PULSE time, if the voltage of the auxiliaty battery drops below 12.6V, the charger will restart the charge cycle at Bulk. Once pulse is completed, the charger reverts to float stage.				

NOTE: When in the float stage, the battery is fully charged. At the "float stage", when the battery voltage drops to 12.7 volts, the charger will restart charging from the "bulk" stage.

Lithium BMS Sleep Mode & Recovery Feature

Most lithium batteries are built with a Battery Management System (BMS) inside to protect the battery from overcharging, overdischarging and extreme temperature changes. One of the key functions of the BMS is to protect your battery by internally disconnecting the load' when voltage drops below specific parameters, this will then result in the battery entering a "sleep" mode. 1 (Load includes any accessories and/or device(s) drawing charge from the battery. (Eg. fridges, pumps, food sealers, etc) The DC-DC MPPT Solar Battery Charger has a lithium battery recovery function. This function has been designed to recover lithium batteries from sleep mode.

Lithium Battery Sleep Mode Indication:
When the lithium battery has entered sleep mode, the charger will show fault codes for output open circuit, until all loads' are disconnected and a sufficient charge source is connected.

DC-DC CHARGER GUIDE:

IMPORTANT: You must select 'LITHIUM' as the battery type by using the 'MODE' button prior to connecting it to a lithium battery in sleep mode to attempt recovery.

How to Wake a Lithium Battery to Begin Recovery Mode

1. Disconnect any load connected to the lithium battery.
2. Connect Alternator Input or Solar Input? to the DC-DC MPPT Solar Battery Charger.
3. Connect the output from the DC-DC charger to the lithium battery. The Charger will have all battery types (GEL,AGM,WET CALCIUM,LITHIUM) flashing and the BULK and PULSE LED lights will remain on for 30 seconds (as indicated in diagram above,) before entering Recovery Mode. (Alternator and Solar inputs must be above the cut-in voltage for DC-DC Charger)

Recovery Mode Indicator

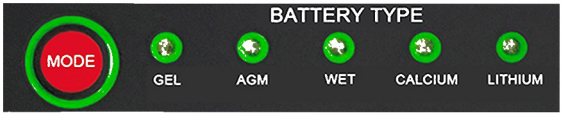
When the lithium battery has entered recovery mode, the DC-DC MPPT Solar Battery Charger display will have the source indicator illuminate(eg;SOLAR) and the battery type LITHIUM will be flashing. See the diagram below.

When the battery voltage has been recovered to 12V, the DC-DC charger will automatically change to normal stage charging programs and loads may be reconnected.

DC-DC CHARGER GUIDE:

Fault Codes

If all battery type selection lights are flashing simultaneously please see troubleshooting guide below.



There are error codes that may be displayed. These will be displayed in the following way:

Stage LED	S1	S2	S3	S4	Cause	Remedy
Solar input high voltage	X				Output voltage is detected at solar input	Check solar panel open circuit voltage
Solar input reverse		X			Solar input is reversely connected	Check solar input connection
Alternator high voltage		X			Overvoltage is detected at alternator input	Check vehicle battery voltage
Alternator input reverse	X	X			Alternator input is reversely connected	Check alternator input connection
Output fault mode	X				Output battery is reversely connected	Check output cable connection
					Overvoltage is detected at output	Check auxiliary battery voltage
					Output open circuit or dead battery	Check auxiliary battery voltage & cable connections

TECHNICAL SPECIFICATIONS:

Battery Box Information	
Material	ABS
Tempetature Range	-10°C - 60°C+
Battery Information	
Supported Chemistries	AGM, Calcium, Wet, Gel or Lithium (Deep Cycle Only)
MAX Battery Dimensions	340mm L x 185mm W x 235mm H (with Silicone Mat)
MAX Battery Weight	35kg
Ports (Input/Output)	
6 x (50A) High Current Connectors	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
1 x (175A) High Current Connectors	High Current Inverter Output 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 7s 4. Deep cycle batteries should be used for jump starting in emergency situations ONLY, as it will affect battery health 5. Check battery specifications and compatibility with high current draw before using jump start connector 6. Lithium batteries should not be used in this box when intending to jump start
3 x Cigarette Socket Outputs	Maximum 15A output per socket
2 x Dual USB Outputs	1 x 4.2A Standard USB Output 1 x QC 3.0+2.4A USB Output
Alternator Input	
1 x Triple High Current Connectors	9-32V DC Starter Battery Input (+/-) Ignition Override input (I)
Solar Input	
1 x (50A) High Current Connectors	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

FREQUENTLY ASKED QUESTIONS:

Q. What types of batteries can | charge with this battery box?
The battery box is compatible with most 12V deep cycle batteries. This includes AGM, Calcium, Wet, Gel or Lithium LiFePO4.

Q. If storing my 12 Power Box for long periods, what should I do to look after my battery's health?
An AGM battery is best stored fully charged. The 12V Power Box is fitted with a Master Switch that allows all to be disconnected from the battery for storage -meaning nothing can drain the battery over time.
For short term storage we recommend fully charging the battery with a 240V mains charge, before switching off the Master Switch and storing.
For longer term storage, we recommend instead connecting a 240V mains charger to the battery in order to continually maintain a full state of charge-this process is called trickle charging.

Q. Is the Power Station waterproof?
The 12V Power Box 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.

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