



## USER'S GUIDE

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## AVENTURA BATTERY

The Aventura series batteries are designed to be used with a maximum of 4 unit connections, in series **OR** parallel. They are ideal for Off Grid caravanning, recreational vehicles, solar powered, boats (utility) or any application requiring the use of a deep cycle battery.

They are equipped with a BMS "Battery Management System" which monitors, optimizes and protects the batteries in order to ensure a safe and precise operation.

## GENERAL BMS FEATURE

### **High voltage:** (+ 16.7 V)

If an individual cell voltage exceeds a prescribed threshold while charging, the BMS will prevent the charging current from continuing. The discharge is always allowed under this condition.

### **Low voltage:** (- than 10 V)

If an individual cell falls below a prescribed threshold during discharge, the BMS will prevent further discharge. Although the battery is in "low voltage disconnection" mode, it will still allow a charging current.

Several chargers must detect a voltage greater than 10 V to send a charge to the battery.

### **High temperature:** \* (+ 55-70° Celsius)

The BMS will not allow a charge or discharge current.

*\* Depending on the model, refer to the technical sheet for more details.*

### **Low temperature:** (- 20 to 0° Celsius)

The BMS will either prevent charging or use it to heat the cells for self-heating models.

### **High charge current**

The BMS will not allow a charge current that exceeds 100A (+/- 5%) amps for 30s, or 200A (+/- 10%) amps for 0.5s.

## INSTALLATION

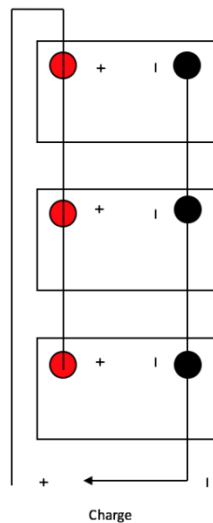
The batteries can be mounted in any orientation. Exercise caution when connecting to the battery terminals. The positive and negative terminals are labeled and color coded (red for +, black for -).

**Do not reverse the polarity of the battery**, as this will damage the battery and the connected device.

### Parallel

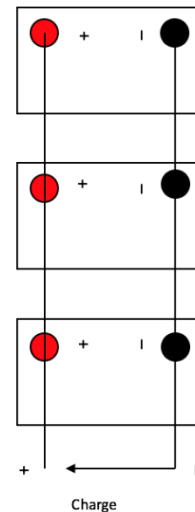
Up to 4 Aventura batteries (of the same production series) can be connected in parallel to increase the capacity of the system. When the batteries are connected in parallel, the system voltage does not change, but the amperage will add up. Therefore, all cables and connections must be able to withstand the high currents that can be delivered by the battery. Appropriate fuses and circuit breakers are also required to protect downstream components from current peaks and short circuits. **The batteries to be connected in parallel must be at the same state of charge before connecting. To ensure that, fully charge each battery using a 12V charger before connecting them in series.**

To distribute the current evenly between the batteries, use the diagram below



### PROPER INSTALLATION

Evenly distributed battery current.  
All batteries equally contribute to the charge current.



### IMPROPER INSTALLATION

Unevenly distributed current.  
The batteries closest to the load contribute the most to the charge current while those farthest contribute the least. The wear is higher for batteries near the load.

### Series

Up to 4 Aventura batteries (of the same production series) can be connected in series to increase the system voltage up to a 48V system. When the batteries are connected in series, the current capacities will remain the same, but the system voltage will add up.

The batteries to be connected in series must be at the same state of charge before connecting. To ensure that, fully charge each battery using a 12V charger before connecting them in series.

### Disconnecting the battery

First, disconnect the negative cable from the battery terminal (-) and then disconnect the positive cable from the terminal.

### Inverters / Chargers

Do not connect batteries to an inverter / charger greater than 3500 Watts without a surge arrester, this will damage the BMS and create a potential fire hazard.

Battery chargers without a specific lithium charging algorithm are compatible. However, a charger which has an automatic equalization mode which cannot be switched off permanently should not be used.

## SECURITY POINTS / WARRANTY CANCELLATION

- DO NOT CONNECT IN SERIES OR PARALLEL WITH OTHER TYPES OF BATTERIES (ACID / LEAD, AGM, GEL OR LITHIUM FROM ANOTHER SERIES)
- DO NOT LEAVE THE BATTERY DISCHARGED (- 11.5V) OVER A LONG PERIOD.
- DO NOT IMMERSER THE BATTERIES
- DO NOT SHORT-CIRCUIT THE BATTERIES
- DO NOT INVERT THE POLARITY
- DO NOT EXPOSE BATTERIES TO EXCESSIVE HEAT.
- DO NOT DROP, PUT DOWN, DISCARD, OR APPLY EXCESSIVE FORCE TO BATTERIES.
- DO NOT USE FOR STARTUP FUNCTIONS
- DO NOT DISASSEMBLE, DRILL OR MODIFY THE CASE

## CHARGING THE BATTERY

You can recharge your Volthium batteries after each use or when they have been discharged up to 80% (20% SOC). If the BMS disconnects the battery due to low voltage (100% discharged) remove the load to reconnect the battery circuit and recharge immediately.

### Charging with lead battery chargers

Most lead battery chargers can be used with Volthium batteries as long as they meet the proper voltage guidelines. The AGM and Gel algorithms generally match the voltage requirements of our batteries. The voltage for standard Acid / Lead battery charging algorithms is often higher than the LiFePO4 requirements, which will cause the battery to be disconnected by the BMS at the end of the charge cycle and possibly display an error code. If this happens, it is recommended to replace your charger with a lithium function charger. Since the BMS protects the battery, using lead chargers will generally not damage the battery. However, it must be **disconnected after the battery is fully charged. Do not leave the charger in place to maintain or store the battery.**

### Load parameters

Volthium batteries can be charged in 1 or 2 steps:

1 Step mode: Bulk - <i>Will charge the battery to approximately 95%</i>	
Voltage	14.2 – 14.6 V
Amperage	5-40 A
2 Step mode: Bulk and Absorption - <i>Will charge the battery to 100%.</i>	
Voltage (Bulk)	14.2 – 14.6 V
Voltage (Absorption)	14 – 14.4 V
Amperage	5-40 A

The "Float" step is not necessary for a lithium battery, thus the charging time will be reduced.

For the initial charge, it is recommended to leave the battery under charge for 4 hours after it displays a voltage or a % of completed charge.

A fully charged battery disconnected from any charging source will see its voltage drop back into a range of 13.2V to 13.6 Volts in the following hours.

### Series or parallel connection

When connecting batteries in series or parallel, make sure that each battery is within 50 mV (0.05 V). **It is recommended to fully charge the batteries individually once a year** to avoid imbalance. When charging Volthium batteries in series, it is best to use a multi-bank charger which charges each battery individually to ensure that the cells remain balanced.

If you are charging batteries in series or in parallel with a single charger for the entire system, set the charger to 14V. If your charger voltage is lower, the battery will be undercharged and will not provide its full rated capacity. If your charger voltages are higher, the BMS will disconnect the battery circuit and you will need to remove the load to reconnect.

### Charger / Inverter and charge controller

Load Parameter	Voltage Parameter
Bulk Voltage : 14V-14.6V	Low Voltage Cutoff 11V-12V
Absorption Voltage : 14V-14.6V	High Voltage Cutoff 14.6V
Absorption Time : 0-15min	
Float Voltage : 13.3 -13.8V	

*Volthium batteries do not require equalization.*

### Alternator

To protect your battery and alternator, be sure to use a high quality compatible alternator. Current and voltage spikes associated with substandard alternators or high load can cause the Volthium batteries to be disconnected by the BMS. If the BMS disconnects the batteries, the alternator may be damaged. Otherwise, the addition of a DC to DC type voltage regulator is recommended.

### Storage

Before storing your batteries, charge them between 50% and 80% and then disconnect them from any charge or discharge.

### 10 YEAR LIMITED WARRANTY

Volthium Energy guarantees that each Aventura Series LiFePo4 battery sold by Volthium Energy or one of its authorized distributors or resellers is free of any malfunction for a period of 10 years from the date of sale determined by the customer's sale receipt, the shipping invoice and / or the battery serial number, along with a proof of purchase.

Subject to the exclusions listed below, the manufacturer will repair if repairable, replace or credit, the product and / or parts of the product, if the components in question are found to be defective.

During the first 4 years of life of your Volthium battery, if applicable under this limited warranty, the amount covered for a new replacement battery will be 100%. From the first day of the 5th year of life of your Volthium battery, if applicable under this limited warranty, the amount covered for a new replacement battery will be determined according to the table below:

Number of years of life of the defective Volthium battery respecting this limited warranty	% of the amount covered for the equivalent Volthium replacement battery included in this limited warranty
5 ans	50%
6 ans	25%

\*\*\* The amounts granted above are always conditional on the return of the defective battery to Volthium with proof of purchase. \*\*\*

### WARRANTY STATEMENT

This guarantee is the only legitimate guarantee supported by Volthium Energy. Under no circumstances can the manufacturer be held responsible for any loss or damage of any other nature, whether direct or indirect, in connection with Volthium brand batteries.

This warranty is understood to be the exclusive agreement between the parties concerning the subject matter hereof. No employee or representative of the manufacturer is authorized to offer any warranty in addition to those provided in this agreement.

### NON-TRANSFERABLE WARRANTY

This limited warranty is to the original purchaser of the product and is not transferable to any other person or entity. Please contact the place of purchase for any warranty claim.



### WARRANTY EXCLUSIONS

The manufacturer has no obligation under this limited warranty for products subject to the following conditions (including, but not limited to):

- Damage due to improper installation; loose terminal connections, undersized wiring, incorrect connections (series and parallel) for desired voltage and AH requirements, or reverse polarity connections;
- Environmental damage; unsuitable storage conditions as defined by the manufacturer; exposure to extremely hot or cold temperatures, to fire or frost, or water damage;
- Damage caused by a collision;
- Damage due to improper maintenance; under or overload of the product, cold overload, use of an unsuitable charger;
- Product that has been opened, drilled, modified or altered;
- Product used for applications other than those for which it was designed and intended, including repeated engine starting;
- Product used on an oversized inverter / charger without the use of a manufacturer approved surge protector;
- Product not stored in accordance with manufacturer's storage guidelines, including storage of product at low state of charge;
- Product that was undersized for use, including an air conditioner or similar device having a locked rotor starting current that is not used in conjunction with a manufacturer approved surge suppressor device;
- This limited warranty does not cover a product which has reached its normal end of life due to excessive use. A battery can only deliver a fixed amount of power over its lifetime, which will occur over different time periods depending on usage. For example, using more than one battery cycle per day repeatedly and frequently will result in normal end of life before the end of the warranty period. The manufacturer reserves the right to refuse a warranty claim if it is determined, upon inspection, that the product has reached its normal end of life even if it remains within its warranty period;
- This limited warranty does not apply to components not essential to the operation of the battery. These are covered as follows:
  - LCD display - 1 year;
  - Bluetooth device - 4 years.

### REPAIRS WITHOUT WARRANTY

For any damage outside the warranty period or for damage not covered by the warranty, customers can always contact the manufacturer for battery repairs. The costs will be evaluated and determined according to the terms and conditions.

### SUBMITTING A WARRANTY CLAIM

To submit a warranty request, please contact Volthium Energy by email at [support@volthium.com](mailto:support@volthium.com) or at 514 989-9586.

## RETURN AND REFUND POLICY

### Return and Refund Policy

If you're not completely happy with your purchase, we're here to help.

#### Return

You have 14 calendar days to return an item from the date the item was shipped. To be eligible for a return, your item must be new (sealed box) and have never been used. Keep the original packaging for 45 days. Your item must be in its original packaging. Your item must have the receipt or proof of purchase. No return will be accepted without a secure barcode label number.

#### Refunds

Once we receive your item, we will inspect it and notify you that we have received your returned item. We will issue the refund immediately after inspecting the item and confirming its eligibility.

#### Delivery

You will be responsible for paying your own shipping costs for returning your item. Delivery charges are not refundable. If you receive a refund, the return shipping cost will be deducted from your refund.

If you have any questions on how to return your item to us, please contact us.

#### Return request

To submit a return request, please contact Volthium Energy by email at [support@volthium.com](mailto:support@volthium.com) or at 514 989-9586.