# Eclipse Lithium Battery Cheat Sheet

- Eclipse batteries should NOT be operated below 32F and should never go below 0 degrees F.
- When paralleling Eclipse batteries, no more than three batteries should be paralleled with battery cables "battery to battery". Beyond three batteries, a busbar must be used. Proper wiring practices should be followed and battery to battery cables need to be exactly the same length and gauge.
- Eclipse batteries cannot be wired in series.
- Do not use temperature sensors with Eclipse Lithium Batteries. Turn off temperature compensation on Victron charge controllers.
- Never Equalize or overcharge an Eclipse Lithium Battery.
- Using a "State of Charge" meter like a Bogart Trimetric, Midnite Whiz Bang or Victron BMV is highly recommended.
- Do not discharge Eclipse Batteries below 20% state of charge. If you do, make sure you charge the battery back to a minimum of 40% SOC within 3 days.
- Do not operate the battery so it shuts down from low battery voltage. Leaving the battery in a low voltage state can damage the battery. Low voltage shutdown is not covered by warranty. To restart a battery that has shut down due to low voltage, a constant voltage charge must be applied to the battery. The battery will "see" this charge and will then turn on and start charging. It is best to fully charge the battery after a low voltage event.
- Eclipse Lithium Batteries receive the majority of their charging via the "Bulk" stage. Absorb time at "high" voltage should be 20 minutes or less for most charge controls. Over charging a battery may cause it to shut down due to high voltage disconnect. Damage could occur to equipment if the battery shuts down. There is no harm to the battery if it does not get completely charged. It is better to slightly undercharge than to overcharge an Eclipse Lithium battery.
- If charge control "Absorb" time cannot be limited to 20 minutes or less (C40 charge controller or other limited programmable control), then Absorb voltage should be under the max charge voltage set point.
- **Voltage Set points for 12V 100Ah and 12V 400Ah**: Absolute max charge voltage is 14.6V. For a fully programmable charge control set the Absorb at 14.4V for 5-10 minutes and Float at 13.8V. For the C40 or similar control, set the Absorb at 14.2V and Float at 13.8V.
- **Voltage Set points for 24V 200Ah**: Absolute max charge voltage is 29.2V. For a fully programmable charge control set the Absorb at 29V for 5-10 minutes and Float at 27.6V. For a C40 set the Absorb voltage at 28.6V and Float at 27.6V.
- **Voltage Set points for 48V 100Ah and 48V 200Ah**: Absolute max charge voltage is 54.6V. For a fully programmable charge control set the Absorb at 54.4V for 5-10 minutes and Float at 53.5V. For a C40 set the Absorb voltage at 54.1V and Float at 53.5V.
- During low solar, high generator run times of year, take advantage of the Eclipse Lithium's ability to be used without being fully charged. By running your generator a minimal amount (up to 40%-70% SOC) you can greatly reduce your generator usage compared to a lead battery that needs to be fully charged frequently.
- Low voltage disconnect settings can vary with different inverters and even different systems. A general LVD for 12V batteries is 11.8V. Set LVD for 24V batteries at 23.7V. Set LVD for 48V batteries at 47.4V.
- Auto Generator Start settings will greatly vary with different inverters and different size systems. A general starting voltage for a 12V system is 12.2V. A 24V system is 24.4V. And a 48V system is 48.2V.
- Upon startup, if possible, it is best to start up the solar charge control first, before turning on the inverter breaker. Inverters can have a large surge on the initial start that can shut down the battery BMS.

Eclipse Multifunction Battery Display

This document describes the features and function of the LCD display now available on the Eclipse 24v-200-V3, 48v-100-V2 and the 48v-200-V3 batteries. The display shows:
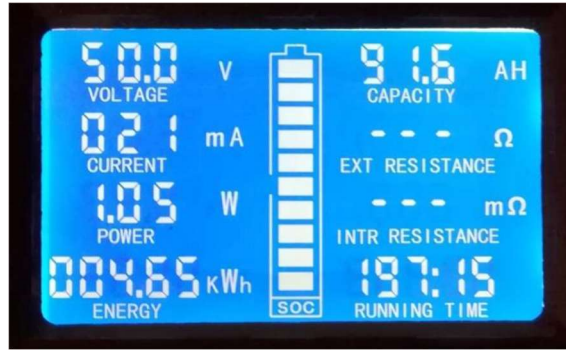
Voltage- This is the battery voltage.

Current- This is current going into or out of the battery.

Power- This is the watts going into or out of the battery.

Energy- Only used for troubleshooting. Contact Backwoods for more info.

State of Discharge Graph- This visual display shows a basic state of charge. Must be programmed. Not very accurate.

Capacity- Only used for troubleshooting. Contact Backwoods for more info.

External Resistance- Only used for troubleshooting.

Internal Resistance- Only used for troubleshooting.

Running Time-Accumulated time while the battery is in operation.

Setting the State of Discharge Bar Graph

You must first set the "full" cut off voltage. To make the display as accurate as possible, set the full voltage to 51.2v for a 48v battery. Set it at 25.6v for a 24v battery. To do this, push and hold the display button. The display will rotate from tenths, then ones, tens and finally hundreds. When you are finished setting the full volts at 51.2v (25.6v) push and hold the button to continue on to the "low" voltage.

Set the low voltage set-point in the same fashion. The number will rotate from tenths to ones, tens then hundreds. Set the low voltage at 48v (24v). When finished, hold the button down to exit and the setup display will rotate thru the rest of the menu options. It is not recommended to set the rest of the options, but a brief description of those options appears below. It is also important to note that the bar graph state of discharge is not as accurate as a shunt-based meter like a Bogart Trimetric, Midnite Whiz-bang Jr or Victron BMV.

Other Display Functions.

The Eclipse battery display is capable of giving a more accurate state of charge as well as remaining watt hours and remaining amp hours. But this set up requires totally discharging the battery, zeroing the Energy and Capacity numbers, then fully charging the battery. Some versions of the Eclipse battery will need an external charger to power back on from a total discharge. Charging the battery fully off-grid will most likely require a generator. Since it is recommended to be using an external battery meter with Lithium type batteries, this display setup should not be necessary and is not recommended. But if the display Energy and Capacity are desired, holding the display button will advance thru the menu and allow you to zero the amounts in the Energy and Capacity fields while the battery is fully or nearly fully discharged. After the battery is then charged fully, the Energy and Capacity fields will show remaining available amounts.