



Eclipse Lithium Titanate (LTO) Batteries - Tech Bulletin

- **WARNING:** Eclipse 12V LTO batteries are nominal 12V. Actual operating voltages are between 11.0V and 11.8V. Consult your inverter and/or 12V appliance manuals for minimum voltages to confirm they will operate in this range. Backwoods Solar has confirmed Victron 12V inverters work well through this entire voltage range but other brands may not operate properly. This is not an issue with Eclipse 48V LTO batteries.
- Eclipse LTO batteries should not be charged/discharged below -30F.
- When paralleling Eclipse LTO batteries, no more than three batteries should be paralleled with battery cables. Beyond three batteries, a bus bar must be used. Proper wiring practices should be followed and cables should be the same length/gauge.
- Eclipse LTO batteries cannot be wired in series.
- Do not use charger temperature sensors with Eclipse LTO Batteries. They are unnecessary and can cause charging issues.
- Never equalize Eclipse LTO batteries.
- A “State of Charge” meter like a Victron BMV, Midnite Whiz Bang Jr, Magnum BMK or Bogart Trimetric is highly recommended.
- Do not discharge an Eclipse LTO battery below 10% state of charge. If you do, make sure you charge the battery to a minimum of 40% SOC within 3 days.
- Do not discharge an Eclipse LTO battery so low that 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 at that time will turn on and start charging. It is ideal to fully charge the battery after a low voltage event.
- Over charging an Eclipse LTO battery may cause it to shut down due to high voltage, and damage could occur to system equipment if this happens. There is no harm to the battery if it does not get completely charged so it is better to slightly undercharge than to overcharge an Eclipse LTO battery.

- Eclipse LTO Batteries receive the majority of their power via the Bulk charging stage. Absorb time should be programmed to 10 minutes or less. If the charge control Absorb time cannot be limited to 10 minutes (Schneider/Xantrex C-40 or other limited programmable control) then the Absorb voltage should be set well under the normal Absorb voltage. See set points below.
- **Voltage set points for Eclipse 12V LTO batteries:** Max charge voltage is 14.5V. However, recommended Absorb voltage is 13.5V. For a fully programmable charge control set the Absorb at 13.5V for 5-10 minutes and Float at 13.0V. For a Schneider/Xantrex C-40 or other limited programmable control, set both the Absorb and Float at 13.0V.
- **Voltage set points for Eclipse 48V LTO batteries:** Max charge voltage is 61.5V. However, recommended Absorb voltage is 60.7V. For a fully programmable charge control set the Absorb at 60.7V for 5-10 minutes and Float at 57.2V. For a Schneider/Xantrex C-40 or other limited programmable control, set both the Absorb and Float at 57.2V.
- During low solar, high generator run times of year, take advantage of the Eclipse LTO battery's ability to operate without being fully charged. Running your generator to a minimal battery state of charge (40%-70% SOC) can greatly reduce your generator usage compared to lead batteries that need to be fully charged more frequently.
- Low voltage disconnect settings can vary with different inverters and even different systems. A general LVD for Eclipse 12V LTO batteries is 11.0V. LVD for Eclipse 48V LTO batteries is 48.4V.
- Auto Generator Start settings can vary with different inverters and different systems. General AGS set points for Eclipse LTO batteries are 11.3V for a 12V system and 49.7V for a 48V system.
- **WARRANTY:** All Eclipse LTO batteries include a 5-year full replacement, 5-year prorated warranty.