



WARNING!



CAUTION FIRE HAZARD! You must read and fully understand these safety, charging and handling instructions before use. Failure to read the following instructions may result in fire, personal injury or property damage.

- **Never** leave lithium batteries unattended or allow children under 14 years of age to charge or handle without knowledgeable adult supervision
- **Never** charge, discharge or storage charge lithium batteries on a wooden work-bench, inside a vehicle or its engine compartment or any flammable surface. Always charge on a nonflammable surface and in a fireproof container away from any flammable material.
- Always charge lithium batteries according to the battery chemistry (LiPo, LiHV, LiFe and Lilon). Always use the balance feature in the charge function and never exceed a 1C charge rate ($\text{mAh} \div 1000 = 1\text{C}$) unless specified by the manufacture.
- **Never charge a damaged battery.** Immediately terminate the charge, discharge or use process if the battery appears damaged, swells or deforms, gives off an odor, leaks or exceeds a temperature of 160°F (71°C), or if any other abnormality is detected. These abnormalities may cause the battery to leak, and the reaction with air may cause the chemical materials inside to ignite.

For questions or concerns please call EcoPower R/C customer service line at:
1-800-705-2215 (Toll-Free) / 1-530-894-0797 (International or Local)

Terms of Use: You must read this manual in its entirety and understand it before attempting to use this product. Failure to observe any of the following precautions can result in fire, property damage and cause personal injury. Please retain this document for future reference. By purchasing Lithium Polymer (LiPo), Lithium Ion (Li-Ion) or Lithium Iron Phosphate (Li-Fe) battery, the buyer assumes all risks associated with lithium batteries. If you do not agree with these conditions, please consider NiMH or NiCd battery before use. EcoPower R/C, its distributors, or its retailers assume no liability for failure to comply with these safety instructions and warnings. After reading all provided information, if you DO NOT agree with these terms and conditions and are not prepared to accept complete liability for the use of this product, return this product immediately in new/unused condition to your place of purchase.

Warning: Lithium battery cells have more energy density than NiMH battery cells, which makes Lithium batteries much lighter for the same battery capacity as NiMH batteries. Lithium batteries also have very low internal resistance, providing more 'punch' than NiMH batteries with less voltage loss. LiPo batteries are more volatile than many other rechargeable batteries. Charging or discharging Lithium batteries has the potential to result in fire, explosion and cause personal injury if these instructions are not followed fully.

General Guidelines and Warnings

Only use a Lithium specific charger. Do not use a NiMH or NiCd charger - Failure to do so may cause fire, which may result in personal injury and or property damage. Some Lithium chargers on the market may have technical deficiencies which may result in incorrect charging or charging at an improper rate. It is your responsibility to determine that your charger works properly. Failure to do so may result in fire.

Never charge batteries unattended. When charging Lithium batteries, you should always remain in constant observation to monitor the charging process and react to potential problems that may occur.

Always use the balance charge function for lithium batteries if the cell count of your pack is 2 cells or more. 99% of Lithium chargers will have the ability to perform balance charging. This process will check the voltages of each individual cell in your battery and ensure they all have the same voltage. This is a critical factor to monitor, as if one of the cells voltage increases or drops below the required voltage range, the battery could get damaged, or worse, catch fire.

Never charge a damaged battery. Immediately terminate the charge, discharge or use process if the battery appears damaged, swells or deforms, gives off an odor, leaks or exceeds a temperature of 160°F (71°C), or if any other abnormality is detected. These abnormalities may cause the battery to leak, and the reaction with air may cause the chemical materials inside to ignite. Because delayed chemical reactions may occur (a battery can still ignite even after 10 minutes), you should continue observing the battery for at least 15 minutes as a safety precaution.

Always charge your battery at 1C or less. If the battery manufacture states that the battery is capable of a charge higher than a 1C, never exceed that recommended charge rate. Please refer to the product page for this information or call a customer service representative. To calculate a 1C charge rate of your battery:

- Battery's mAh \div 1000 = 1C (ex. 5000mah pack \div 1000 = 5amp charge rate for 1C).

Always charge, discharge or storage charge the battery in a fireproof container and charge in an isolated area, away from other flammable materials. Always have a fire extinguisher accessible for emergency use.

Always let the battery cool down to ambient temperature before using, charging, discharge or storage charging.

Care and Handling

NEVER short the Lithium battery connectors! Handle all Lithium batteries with care. Lithium batteries can deliver extremely high currents if shorted and subsequently can cause fire or injury.

Never disassemble from its protective cover, puncture or modify the Lithium battery.

Always store Lithium batteries in a secure fireproof container and location where children cannot reach them. Store the Lithium batteries in a secure area that it cannot fall or items fall onto the battery. Store your batteries in a cool, dry place. Do not leave your battery exposed to direct sunlight or temperatures below 32°F (0°C), or above 122°F (50°C).

Lithium batteries are best stored at 50% charge. Please refer to the table on pg.2

Do not charge Lithium batteries higher than what is the recommended voltage is according to the cell chemistry. Please refer to the table on back page.

Do not discharge Lithium batteries to a voltage below than what is the recommended voltage is according to the cell chemistry. Please refer to the table on back page.

To gain optimal performance, the battery should be cycled (charge/discharge) at least five times.

If the lithium pack is stored for a long duration, it is wise to cycle the battery at least once every 2 months and store at ½ voltage to maintain peak performance.

Be sure to disconnect battery packs from all devices immediately after use, not doing so can cause degradation to the plug resulting in bad connections. It is advised to replace used plug or connectors frequently with high quality plugs to preserve performance and safety.

Charging and Safety Measures

Lithium batteries pose a higher risk of fire, property loss and personal injury over many other rechargeable battery chemistries. Always monitor your battery while charging, discharging and storage charging. Never charge a Lithium battery on a wooden workbench, inside a vehicle or its engine compartment or any flammable surface. Always charge on a nonflammable surface and in a fireproof container away from any flammable material. Be sure to select the balance charge option for lithium batteries with 2 or more cells.

Always inspect your Lithium battery before charging or use. Inspect for frayed wires, damage to the outer wire insulation, loose connections, swelling or deformations and damage to the protective cover. If any of the reasons mentioned, relocate the battery to a secure area away from any flammable materials and observe for at least 15 minutes. Discard the damaged battery in water with ½ cup of salt per 1 gallon of water. Discarding the lithium battery in salt water will lower the voltage to less than 1V in around 2 weeks' time.

The charge lead should always be plugged into the charger first before connecting the battery to the charge lead. When an operation is finished it is important to disconnect the battery first from the charge lead before disconnecting the charge lead from the charger. This will help ensure the exposed ends of the charge lead to not short out.

Always make sure that the charger settings represents what the battery specifications are (chemistry, mAh, voltage, correct end voltage and cell count) for all charger functions:
 Choose LiPo mode if the battery is a Lithium Polymer.
 Choose Li-ion mode if the battery is a Lithium Ion.
 Choose LiFe mode if the battery is a Lithium Iron Phosphate.
 Choose LiPo or LiHV mode if the battery is a Lithium Polymer High Volt capable.

Always set the charge amperage to a 1C charge rate unless the battery manufacture states the lithium battery can handle a charge rate higher than 1C. To ensure that your charger is set to 1C. $1000 \div \text{mah rating} = 1C$ (example if the battery is a 5000mah pack: $5000\text{mah pack} \div 1000 = 5\text{amp charge rate for } 1C$).

Never leave a battery unattended while charging, discharging, or anytime the charger is on. Only charge lithium batteries with chargers specifically designed to charge lithium batteries. NEVER use a NiMH or NiCd specific charger or charge a lithium battery on NiMH or NiCd charge functions. Battery temperatures should not be allowed to fall below 32°F (0°C), or above 122°F (50°C).

Never "trickle" charge a Lithium battery. Trickle charging at even the lowest possible rate will cause the cells within the battery to charge beyond maximum voltage, resulting in cell damage and potential fire.

Always use the balance charge function if the battery is 2S or more (2 cells or more). Using the balance charge function will allow the charger to not over charge a single cell in a multiple celled battery. Charging on the non balance charge mode could cause fire, injury or property damage.

Never attempt to charge a lithium battery with the individual cell voltage below 3.0V.

Always check that the battery's temperature is at ambient room temperature before charging, storage mode and discharging. Never start a charge or discharge if the batteries temperature exceeds 122°F (50°C).

| Battery Cell Count | 1S | | | | 2S | | | | 3S | | | | 4S | | | | 5S | | | | 6S | | | |
|------------------------|------|--------|------|-------|------|--------|------|------|-------|--------|-------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|-------|
| Battery Type | LiFe | Lilion | LiPo | LiHV | LiFe | Lilion | LiPo | LiHV | LiFe | Lilion | LiPo | LiHV | LiFe | Lilion | LiPo | LiHV | LiFe | Lilion | LiPo | LiHV | LiFe | Lilion | LiPo | LiHV |
| Nominal Voltage | 3.3V | 3.6V | 3.7V | 3.8V | 6.6V | 7.2V | 7.4V | 7.6V | 9.9V | 10.8V | 11.1V | 11.4V | 13.2V | 14.4V | 14.8V | 15.2V | 16.5V | 18.0V | 18.5V | 19.0V | 19.8V | 21.6V | 22.2V | 22.8V |
| Lowest Open Voltage | 2.5V | 3.1V | 3.2V | 3.2V | 5.0V | 6.2V | 6.4V | 7.5V | 9.3V | 9.6V | 9.6V | 10.0V | 12.4V | 12.8V | 12.8V | 12.5V | 15.5V | 16.0V | 16.0V | 15.0V | 18.6V | 19.2V | 19.2V | 19.2V |
| Max. Charge Rate * | ≤4C | ≤1C | ≤1C | ≤1C | ≤4C | ≤1C | ≤1C | ≤1C | ≤4C | ≤1C | ≤1C | ≤1C | ≤4C | ≤1C | ≤1C | ≤1C | ≤4C | ≤1C | ≤1C | ≤1C | ≤4C | ≤1C | ≤1C | ≤1C |
| Max. Charge Voltage | 3.6V | 4.1V | 4.2V | 4.35V | 7.2V | 8.2V | 8.4V | 8.7V | 10.8V | 12.3V | 12.6V | 13.0V | 14.4V | 16.4V | 16.8V | 17.4V | 18.0V | 20.5V | 21.1V | 21.75V | 21.6V | 24.6V | 25.2V | 26.1V |
| Min. Discharge Voltage | 2.5V | 3.1V | 3.2V | 3.2V | 5.0V | 6.2V | 6.4V | 7.5V | 9.3V | 9.6V | 9.6V | 10.0V | 12.4V | 12.8V | 12.8V | 12.5V | 15.5V | 16.0V | 16.0V | 15.0V | 18.6V | 19.2V | 19.2V | 19.2V |

* Unless battery manufacture states otherwise.

Disposal Procedures

- 1 If any Lithium cell in the battery pack has been physically damaged, resulting in a swollen cell or a split or tear in a cell's foil covering, do NOT discharge the battery immediately jump to Step 6!
- 2 Place the Lithium battery in a fireproof container or bucket of sand and observe for 15-20 minutes.
- 3 Now the battery must be discharged. Discharging a Lithium battery – especially those with a large capacity – can take hours, days and even weeks to complete. For the fastest results, make sure each cell in your battery has a voltage no higher than 3.0V before continuing to step 4. Choose a method below to achieve this:
 - Option 1:** Connect the battery to a Li-Poly specific charger and set the charger to "Discharge" mode. Set the discharge cutoff voltage to the lowest possible value and discharge the battery until it has finished its discharge cycle.
 - Option 2:** Use the battery in your model until the ESC low voltage cutoff initiates. Typically, the low voltage cutoff will be programmed to initiate when the individual cells reach 3.0 – 3.2V.
- 4 Deep Discharge - Connect a 150 ohm resistor with a power rating of 2 watts, commonly found at most electronic stores, to the packs positive and negative terminals to safely deep discharge the battery. This procedure is safe with 1S – 6S batteries; keep in mind the larger the battery capacity, the more time the discharge requires. It is important to be patient as this step can take many days to complete. For example, a 3S 2200mAh battery at 50% charge will take over 80 hours to discharge to 0V.
- 5 If possible use a volt meter and check the voltage of the battery. Ensure each cell is at 1.0V or lower.
- 6 Submerge the battery into a bucket or tub of salt water. This container should have a lid, but it does not need to be air-tight. Prepare a plastic container (do not use metal) of cold water, and mix in ½ cup of salt per gallon of water. Drop the battery into the salt water. Allow the battery to remain in the tub of salt water for at least 2 weeks. This salt bath will neutralize any remaining power in the battery.
- 7 Remove the Lithium battery from the salt water, wrap it in newspaper or paper towels and take to local Hazardous Waste Facility or Electronic Recycling Center.

Disclaimer & Warranty

All EcoPower R/C batteries are covered by manufacturer warranty against defects in materials and workmanship for 90 days after original purchase date. Warranty will not cover batteries that have been modified, disassembled, or otherwise misused according to the item's instructions. EcoPower R/C or its distributors is not responsible for bodily injury and/or property damage that may occur from the use of, or caused by, this battery.

This product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.