



25C FANTOM RACING Li-Po INSTRUCTIONS

*** IMPORTANT SAFETY INSTRUCTIONS AND WARNINGS ***

You must read these safety instructions and warnings before using or charging your batteries.

- Lithium Polymer batteries are volatile. Failure to read and follow these instructions may result in fire, personal injury and damage to property if used or charged improperly.
- Fantom Racing, its distributors and retailers assume no liability for failures to comply with these warnings and safety guidelines.
- By purchasing this battery, the buyer assumes all risks associated with this product. If you do not agree with these conditions, please return the battery immediately before use.

General Guidelines and Warnings

1. Fantom Racing batteries are NOT fully charged when you receive them. They contain approximately 80% of a full charge.
2. **Use Lithium Polymer specific chargers ONLY (follow manufacturer's instructions for charging and/or balancing). DO NOT** use a Ni-Cd or Ni-Mh charger - Failure to do so may cause a fire, which may result in personal injury and property damage.
3. **Never charge batteries unattended.** When charging Li-Po batteries you should always remain in constant observation to monitor the charging process and react to potential problems that may occur.
4. Some Li-Po chargers on the market may have technical deficiencies that may cause them to charge Li-Po batteries incorrectly. **It is solely the responsibility of the user to assure that the charger used works properly.**
5. **If at any time you witness a battery starting to balloon or swell up, discontinue the charging process immediately. Disconnect the battery and place it in a safe observation area for approximately 15 minutes. Continuing to charge a battery that has begun to swell will result in fire.**
6. Battery observation should occur in a safe area outside of any building or vehicle and away from any combustible material. The middle of a cement driveway is a good example of a safe observation area.
7. **Use of a Li-Po sack is highly recommended when charging and/or discharging your pack to help reduce the risk of a fire spreading in the event of a malfunctioning pack.** In fact, Li-Po sacks are mandatory at ROAR sanctioned events. Li-Po sacks are readily available from a number of R/C suppliers on the Internet and most hobby shops.
8. **You MUST use a balancer (stand-alone or balance charger) EVERY TIME you charge your pack (not required with 1-Cell packs). Charging your pack without a balancer VOIDS WARRANTY.** Balance charging increases the longevity of your pack, helps maintain the pack's performance longer, increases your packs performance every run, and helps prevent premature failure. Stand-alone balancers and balance chargers are readily available from numerous Internet R/C suppliers and most hobby shops.
9. **Shorts can cause fires!** If you accidentally short the wires, the battery must be placed in a safe area for observation for approximately 15 minutes. Additionally, be mindful of the burn danger that may occur due to a short across jewelry, such as rings on your fingers, etc.
10. Chemical reactions are not instantaneous; a battery that has been shorted may not ignite for 10 minutes.
11. All crash batteries, even if not deformed, should be placed in a safe area for observation for at least 15 minutes.
12. If for any reason you need to cut the terminal wires, cut each wire separately, ensuring the wires do not become shorted across the cutting tool.
13. When soldering connectors, first place a short length of heat shrink tubing over each wire. Then remove the insulating tape from the red wire and strip a short length of the insulation off, exposing the conductor approximately ¼". Tin the exposed wire as well as the connector terminals. Place the wire in contact with the positive connector terminal and re-flow the solder of both together. Once cool, slide the heat-shrink tubing down to cover the joint and shrink. Repeat the process for the black wire. If you accidentally short the battery wires, place the battery in a safe area and observe it for approximately 15 minutes.
14. Never store or charge a battery pack inside your car if the internal temperature will exceed 120 degrees.

Before the First Charge

1. Make a visual inspection of the pack. Checking for any damaged leads, connectors, broken or cracked shrink covering, puffiness or other irregularities.
2. Before installing or changing the connector, check the voltage of the pack using a digital voltmeter (not your charger). All new packs ship at approximately 3.80v to 3.9v **per cell**. For example: A 2S pack should read approximately 7.60v to 7.80v.
3. If any damage to the pack or leads is found, or the voltage is significantly less for your pack than specified above, do not attempt to charge or run the pack. Call Fantom Racing tech support at 269-483-0200 or email support@fantomracing.com for instructions.

Charging Process

1. **Never charge batteries unattended.**
2. **Charge in an isolated area, away from flammable materials.**
3. Let the battery cool down to ambient temperature before charging.
4. **When selecting the cell count or voltage for charging purposes, select the cell count and voltage as it appears on the battery label. Selecting a cell count or voltage other than the one printed on the label may result in overcharging and fire. 1S/3.7v packs charge as 1-Cell, 2S/7.4v packs charge as 2-Cell, and 4S/14.8v packs charge as 4-Cell.**
5. **You must check the pack voltage after each run before re-charging.** Do not attempt to charge any pack if the unloaded individual cell voltages are less than 3.3v. For example: Do not charge a 2-cell pack if the combined cell voltage is below 6.6v.
6. **NORMAL CHARGING:** The charge rate should not exceed $4C^*$ (capacity divided by 1000×4) For example: 5400mAh divided by $1000 = 5.4 \times 4 = 21.6$ amps. **Higher setting may cause problems which can result in fire.**
7. ***Charge at maximum rate ONLY with approved chargers.** Approved chargers include: Hyperion - EOS Series (w/built-in balancer), FMA - CellPro Series, Junsu - iCharger Series, Thunder Power - all models. **Maximum charge rate is 2C with all other charger/balancer combinations. Maximum charge rate is 1C when charging without a balancer** (balancer not required with 1-cell batteries). **When charging 1-cell batteries over 2C, it is critical that your charger must cut off at or below 4.22V.**
8. **YOU MUST use a stand-alone balancer or balance charger EVERY TIME you charge the pack (not required with 1-Cell packs). Charging without a balancer VOIDS WARRANTY.**

First Few Runs

Fantom Racing recommends no more than 3 to 5C average discharge for breaking in new packs (example: 5000mAh battery at 15 to 25 amps). Also be extremely careful not to over discharge new packs (**Packs should NEVER be over discharged at any time, but over discharging on the first run will ruin the battery permanently, which is NOT covered under warranty**).

Storage & Transportation

1. Store batteries at room temperature between 40 and 70 degrees F for best results.
2. If storing longer than one week; batteries must be stored at 3.8v per cell to 3.9v per cell (approximately 80% charged).
3. Do not expose battery packs to direct sunlight (heat) for extended periods.
4. When transporting or temporarily storing in a vehicle, temperature ranges should be greater than 20 degrees F, but no more than 150 degrees F.
5. **Storing Li-Po batteries at temperatures greater than 170 degrees F for extended periods of time (more than 2 hours) may cause permanent damage to battery and possible fire.**

Caring for Battery

1. Only charge a Li-Po battery with a good quality Lithium Polymer charger. **A poor quality charger can be dangerous.**
2. **USE A STAND-ALONE or BALANCE CHARGER EVERY TIME YOU CHARGE (not required with 1-Cell packs).** Balance charging increases the longevity of your pack, helps maintain the pack's performance longer, increases your packs performance every run, and helps prevent premature failure.
3. Set voltage and current correctly on charger (**failure to do so can cause fire**).
4. Check the pack's voltage after the first charge. For example, a 2S (2-Cell) battery should measure approximately 8.4v (8.30v to 8.44v).
5. **Do not discharge a battery to a level below 3.3v per cell under load.** Discharging below 3.3v per cell can deteriorate battery performance. Be sure to set your ESC for the proper cut off voltage (example: 6.6V cut off for 2S packs).
6. Use caution to avoid puncture of the battery. **Puncturing a Li-Po battery may cause a fire.**
7. **DO NOT DISCHARGE YOUR PACK AFTER A RUN.** Lithium Polymer cells do not have "memory", so it is **not** necessary to discharge your pack at any time. Discharging a Li-Po pack at any time will NOT increase performance or longevity. After a run, simply recharge your pack from the point it was discharged to. The only time discharging should occur (besides running it in your car) is during stand-alone balancing, at which point your balancer will only discharge the high cell down to the same voltage as the low cell.

Operating Temperature

Charge: 32 to 113 degrees F

Discharge: 32 to 140 degrees F

1. Always allow a battery to cool down to ambient temperature before re-charging.
2. During discharge and handling of batteries, do not exceed 160 degrees F.

Battery Life

1. Batteries that lose 20% of their capacity must be removed from service and disposed of properly.
2. Discharge the battery to 3.3v per cell, making sure output wires are insulated, and then wrap battery in a bag for disposal.

Warranty

- Includes 1-Year "No Questions Asked" 50% off warranty towards new pack. See web site for details.
- This pack also includes a 1-Year free replacement warranty **limited to original manufacturing defects**. This does NOT include normal use, crash damage, misuse, abuse, improper charging and/or discharging, or any other mishandling. Warranty is void if balancer is not used. Warranty is void if Li-Po warning device is used. Warranty is at the discretion of Fantom Racing upon inspection of returned battery. See web site for further details.