Lithium Polymer Batteries

Li-Po batteries have two separate leads. ***The shorter lead with the WHITE (JST) connector attached is for charging only.*** It is the only lead protected by Charge Protection Circuitry, helping prevent costly charging errors. It is very important to note that the circuit only protects during the charge process. The second longer lead is for discharging or the power source for your airplane. The longer lead may also be supplier with a JST connector or you may need to solder a connector onto the 16-gauge wire before use.

WARNING: Please read before charging or using battery

IMPORTANT SAFETY INSTRUCTIONS AND WARNINGS

General Guidelines and Warnings

1) ***Use specific Lithium Polymer charger only. Do not use a NiCd or NiMh charger*** - Failure to do so may cause a fire, which may result in personal injury and property damage.
2) ***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.
3) Some Li-Po chargers on the market may have technical deficiencies that may cause it to charge the Li-Po batteries incorrectly or at an improper rate. It is your responsibility solely to assure the charger you purchased works properly. Always monitor the charging process to assure batteries are being charged properly. Failure to do so may result in fire.
4) ***If at any time you witness a battery starting to balloon or swell up, discontinue charging process immediately. Disconnect the battery and observe it in a safe place for approximately 15 minutes.*** Continuing to charge a battery that has begun to swell will result in fire. Likewise, never use a battery if you find it swollen or ballooned upon purchase.
5) Since delayed chemical reaction can occur, it is best to observe the battery as a safety precaution. Battery observation should occur in a safe area outside of any building or vehicle and away from any combustible material.
6) ***Wire lead shorts can cause fire!*** If you accidentally short the wires, the battery **must** be placed in a safe area for observation for approximately 15 minutes. Additionally, if a short occurs and contact is made with metal (such as rings on your hand), severe injuries may occur due to the conductibility of electric current.
7) A battery can still ignite even after 10 minutes.
8) In the event of a crash, you must remove battery for observation and place in a safe open area away from any combustible material for approximately 15 minutes.
9) If for any reason you need to cut the terminal wires, it will be necessary to cut each wire separately, ensuring the wires to not touch each other or a short may occur, potentially causing a fire.
10) To solder a connector: Remove insulating tape of Red wire and solder to positive terminal of a connector, then remove insulating tape of Black wire and solder to the negative terminal of connector. Be careful not to short the wire lead. If you accidentally cause the battery to short, place it in a safe open space and observe the battery for approximately 15 minutes. ***A battery may swell or even possibly catch fire after a short time.***
11) Never store or charge a battery pack inside your car in extreme temperatures, since extreme temperature could cause fire.

Before You Charge

1) Make a visual inspection of the pack. Look for any damaged leads, connectors, broken shrink, swelling of cells, or other irregularities. Do not use if you find any of the above issues with your pack.
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 per cell.
   Example 2S pack should read approximately 7.60V
   3S pack should read approximately 11.40V
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 fly the pack; contact celler directly as soon as possible.

Charging Process

1) Never charge batteries unattended.
2) ***Charge in an isolated area, away from other flammable materials on a concrete surface outside of buildings.***
3) Let the battery cool down to ambient temperature before charging.
4) ***Do not charge batteries packs in series.*** Charge each battery pack individually. Failure to do so may result in incorrect battery recognition and charging functions. Overcharging may occur and fire may be the result. ***In order to discharge packs in series, the charged voltage of both packs must be within 0.01V for the same cell count pack***

5) ***Be sure you use the shorter lead with the JST (BEC) connector for all charging.*** This is the lead protected by the Charge Protection Circuitry referenced in the introduction. There are two sets of lead wires on this battery. The shortest one is always used exclusively for charging.
6) ***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 can cause fire. As a safety precaution, please confirm the information printed on the battery is correct.
    a. Example: The label on a 2-Cell battery pack in series will read – "Charge as 2-Cell (7.4V), or may cause fire" – You must select 2-Cell for charging.
    b. Example: The label on a 3-Cell battery pack in series will read – "Charge as 3-Cell (11.1V), or may cause fire" – You must select 3-Cell for charging.
7) ***You must check the pack voltage before charging after flight.*** Do not attempt to charge any pack if open voltage per cell is less than 3.3V
    Example Do not charge a 2-cell pack if below 6.6V
    Do not charge a 3 cell pack if below 9.9V
8) ***You must select the charge rate current that does not to exceed 1C (one times the capacity of the battery, unless otherwise noted*).*** A higher setting may cause fire. The below chart is calculated at 1 x capacity of pack.
    Example
    1500 mAh: Charge at or below 1.5 Amps
    16000 mAh: Charge at or below 16 Amps
    22000 mAh: Charge at or below 22 Amps

First Flights

We recommend 3-5C max average discharge for breaking in new packs. 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 flight will ruin the battery permanently before you are able to enjoy it. See "Caring for Battery" below).

Storage & Transportation

1) Store battery at room temperature between 5 and 10 degrees Celsius for best results.
2) Do not expose battery pack to direct sunlight (heat) for extended periods.
3) When transporting or temporarily storing in a vehicle, temperature range should be greater than -5 degrees Celsius but no more than 65 degrees Celsius.
4) ***Storing battery at temperatures greater than 65 degrees Celsius for extended periods of time (more than 2.5 hours) may cause damage to battery and possible fire.***

Caring for Battery

1) Charge battery with good quality Lithium Polymer charger. A poor quality charger can be dangerous (such as the MRC Super Brain 969 which is NOT a proper Lithium Polymer charger).
2) Set voltage and current correctly (failure to do so can cause fire).
3) Please check pack voltage after the first charge.
    Example 2-Cell: 8.4V (8.30 to 8.44)
    3-Cell: 12.6V (12.45 to 12.66)
4) ***Do not discharge battery to a level below 3V per cell under load.*** Deep discharge below 3V per cell can deteriorate battery performance. Be sure to set your ESC for the proper cut off voltage (6.0V cut off for 2S packs, 9.0V cut off for 3S packs, etc).
5) Use caution to avoid puncture of the cell. Puncture of cells may cause fire.

Operating Temperature

Charge: 0 to 40 degrees Celsius
Discharge: 0 to 40 degrees Celsius

1) Let battery cool down to ambient temperature before charging.
2) During discharge and handling of batteries, do not exceed 70 degrees Celsius.

Battery Life

Batteries that lose 20% of their capacity must be removed from service and disposed of properly.
Discharge the battery to 3V/Cell, making sure output wires are insulated, then wrap battery in a bag for disposal.