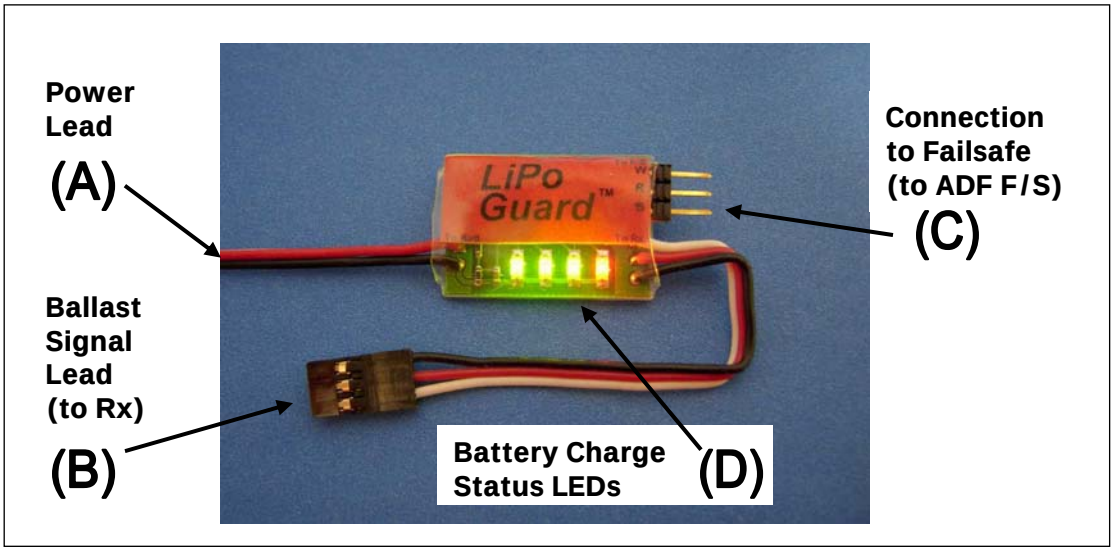
LiPo Guard™

General layout



Quick Setup Guide

1. Connect the **Power Lead (A)** to your power bus (battery connection), red to positive, black to negative.
2. Plug the **Ballast Signal Lead (B)** into the ballast channel of your receiver.
3. Plug the ADF's (or other) failsafe lead into the **Connection to Failsafe (C)** receptacle taking note of the correct polarity.
4. Observe the charge state of the battery on the four **Battery Charge Status LEDs (D)**

Features

- Intuitive four LED "gas gauge" gives an instant indication of battery type (cell count) and charge level.
- When used in conjunction with a "missing pulse detector" failsafe device (ADF recommended) the LiPo Guard helps protect your batteries from damage due to over-discharge. Low battery warning is indicated by a forced surfacing after which you will not be able to dive. If you're stuck on the surface, it's time to come back for a recharge!
- No setup required. LiPo Guard automatically configures for two cell (2S) and three cell (3S) Lithium Polymer and Lithium Ion batteries. Low voltage warning is indicated by triggering your ballast failsafe.

LiPo Guard Operation

When power is first applied the LiPo Guard initially enters "cell detect mode". At this time the voltage of the connected battery is evaluated to determine the cell count - If a two cell (2S) battery is detected 2 green LEDs will be illuminated, if a three cell (3S) battery is detected 3 green LEDs will illuminated. All green LEDs will then briefly extinguish and the LiPo Guard will begin "cell voltage monitor mode". With a fully charged battery connected all four LEDs will be illuminated. As the charge level falls the LEDs will go out one by one, with the number of illuminated LEDs indicating the remaining charge level. When the battery is fully discharged (3V/cell) the LiPo Guard will extinguish the red LED and illuminate the first and last green LEDs to indicate that a low voltage condition has been detected. It will also block the receiver's ballast signal from being transmitted to the ADF, activating its failsafe. This condition will persist until power is removed from the LiPo Guard, preventing you from diving your sub on a discharged battery.

General Notes

- The red LED will illuminate as soon as power is applied to the LiPo Guard, and will remain illuminated so long as a "low voltage" condition is not detected. (This includes during "cell detect mode".)
- Continuously flashing LEDs indicate that the LiPo Guard has detected a problem with the connected battery.
- Once a low voltage condition is detected power must be removed from the LiPo Guard to reset it.
- The LiPo Guard maintains galvanic isolation between the battery connection and the servo connections so noise-causing ground loops are not introduced.
- LiPo Guard can also be used with dynamic diving "pool" subs- Insert the LiPo Guard between the receiver and the ESC and your throttle will be disabled when it's time for a recharge. (Not recommend for running beyond the reach of a retrieval net.)