



ITEM#: WRL-SPECLHV

Congratulations on your purchase of the Spectrum LiPo Battery Monitor HV (High Voltage). The Spectrum LiPo Battery Monitor HV is one of the first Lithium Polymer (LiPO) battery monitors that take up to 13 LiPO cell batteries. It uses a unique ultra bright super flux wide angle LED that gives an advanced 6 level battery strength indication through its color spectrum. LiPO batteries are unlike other batteries and discharges on a non-linear curve, therefore it is important not to drain any LiPO batteries to minimum before charging as it can cause permanent damage. The Spectrum can prevent this by giving you an early indication of your LiPO battery strength. It is designed with the leading edge micro-controller technology that gives precise accurate voltage level detection. It also has an optional high decibel audible buzzer that sounds at low battery strength. The Spectrum is designed to work with all popular brands of radio control model systems and will monitor its voltage level at all conditions. This LiPO battery monitor is ideal for all electric R/C models such as helicopters, planes, cars, trucks and boats.

Features:

- Acts as an insurance that protects any R/C model investment.
- Compact design works in any hostile environment.
- Monitors wide range of Lithium Polymer batteries from 2-13 LiPo Cells (7.4V to 54.6V).
- One time simple toggle mini switch to auto learn connected FULLY charged battery pack.
- Easy one touch switch to select between 3 different LED indicator schemes.
- Battery over-load condition indication.
- Ultra low power consumption with operational voltage as low as 5 volts.
- Ultra Bright Super Flux LED status indicator gives visual 6 level spectrum feedback of battery strength.
- Optional high decibel buzzer for audible low battery indicator (sold separately).

Package Contents:

- Spectrum LiPo Battery Monitor High Voltage Unit
- User Manual

Installation:

1. Connect the Spectrum's Red Power Lead to the Positive (+) and Black to the Negative (-) Li-Po battery source connection ideally in parallel with the R/C model's ESC or after a power switch if applicable.
2. Securely mount the Spectrum with the LED protruding from your R/C model allowing it to be seen during operation.

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Installation Cont'd:

3. Audible Buzzer Option: Connect the 3 pin connection of the high decibel audible buzzer to the right angle 3 pin male connector on the Spectrum unit (Audible Buzzer sold separately). Securely mount the buzzer and direct the buzzer in the general direction of the user during operation.

Initial Programming and Setup:

Warning: When operating the Spectrum HV at high voltages (10s and above), the unit may get extremely hot. Allow the unit cool before handling. It is recommended to operate the Spectrum with a flashing LED scheme to prevent it from overheating.

1. Connect an appropriate **JUST FULLY CHARGED HEALTHY** battery pack (8V to 54.6V) to the Spectrum (Red wire to the Positive+ and Black wire to the Negative- battery terminal. The Spectrum will greet with the LED displaying it's full spectrum of colors. Please review the ideal programming voltages table as a reference for an appropriate fully charged battery pack to use for programming.
2. To allow the Spectrum to learn the connected **fully charged healthy LiPo battery pack**, simply toggle the DIP switch number 1 once and the Spectrum will respond by flashing a magenta color rapidly momentary. This indicates programming is done and the Spectrum will display the LED color according to the battery strength. **This is only required to be done once unless a different number battery pack is used. The Spectrum stores the value of your fully charged battery pack in it's memory.**
3. To display a different LED indicator scheme, simply toggle the DIP switch number 2 once to scroll to the next scheme. Repeat to scroll through all 3 different schemes. 3 schemes include solid on, rapid flashing and intermittent flashing.

LED Status Function:

- BLUE - Fully Charged
- CYAN - Very Good
- GREEN - Good
- YELLOW/AMBER - Low Battery Warning
- RED - Battery Low (Battery drained down to approximately 70% from programmed voltage - Stop Operation)
- MAGENTA or WHITE - Possible overload condition.

Programming Voltage Table

Please refer to the following table for the proper LiPo cell count battery pack with respect to it's fully charged voltage level to use for the one time programming of the Spectrum unit.

LiPo Cell #	Ideal Charged Voltage to Program	Voltage Level at RED Warning
2	8.1	6.1
3	12.2	9.1
4	16.2	12.1
5	20.3	15.1
6	24.3	18.2
7	28.4	21.2
8 (HV)	32.4	24.2
9 (HV)	36.5	27.2
10 (HV)	40.5	30.3
11 (HV)	44.6	33.3
12 (HV)	48.6	36.3
13 (HV)	52.7	39.3
14 (HV)	56.7	42.4

TROUBLESHOOTING:

- Q:** The Spectrum LED does not light when I plug in the battery?
A: Check if the power source is above 4.5 Volts and the connections are secured tightly with the correct polarity. Red wire is positive and the Black wire is negative.
- Q:** The Spectrum does not give a BLUE color indication (Very Good Level status) when I connect my fully charged battery pack?
A: Make sure the Spectrum has been programmed with your just fully charged battery pack with the toggle switch 1. Refer to Initial Programming and Setup instructions.
- Q:** RED or YELLOW color level warning is either too late or early even when I programmed the Spectrum with my battery pack.
A: For the Spectrum to give the correct warning levels, you must program it with a just fully charged battery pack. It is ideal to program the spectrum with battery packs that have been fully charged and outputs voltage levels as stated on the Programming Voltage Table. These values on the table display common voltages for the appropriate fully charged battery pack.
- Q:** The RED or YELLOW color level warning is still too late or early to my preference even if I programmed it with the ideal fully charged battery pack?
A: Not a problem, the Spectrum has a fully programmable input voltage feature.
 If you find the warning is **too early** simply program the Spectrum with either a Power Supply or another battery pack that gives a slightly lower voltage than indicated on the Programming Voltage Table. The lower the voltage respectively will give you a later warning.
 If you find the warning is **too late** simply program the Spectrum with either a Power Supply or another battery pack that gives a slightly higher voltage than indicated on the Programming Voltage Table. The higher the voltage respectively will give you a earlier warning. Try increments or decrements of 0.2V as a starting point.

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Limited Warranty (North America Only)

The Spectrum LiPo Battery Monitor High Voltage is guaranteed to be free from defects in material and workmanship for a period of 90 days from the date of purchase accompanied by the proof of purchase or invoice. Warranty does not cover damage due to improper use or incorrect installation.
 During the 90 day warranty period, if the product shows defects caused by abuse, accident or misuse, it will be repaired or replaced upon Western Robotics Ltd. sole discretion, at a service charge not greater than 40% of the current retail list price. Please ensure to include your contact information before any repair(s) or replacement(s) can be conducted. Under no circumstances or condition will the purchaser be entitled to consequential or incidental damages. In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provision without notice. Because Western Robotics Ltd. has no control over connection and use of this product, no liability may be assumed nor will be accepted for damage resulting from the use of this product, user accepts all resulting liability. If you attempt to disassemble, modify or repair this unit yourself, it may void the warranty.
 For warranty service on Western Robotics product(s) in, out or off warranty period, please send the defective unit(s) along with the proof of purchase and a description of the problem, postage paid, to the given address below.

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