

2in1 LiPo Guard + BEC

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2S, 3S AND 4S LIPO USAGE
STRONG BUILT-IN 6.0V/5A BEC
ADJ. CUT-OFF VOLTAGE

USER GUIDE

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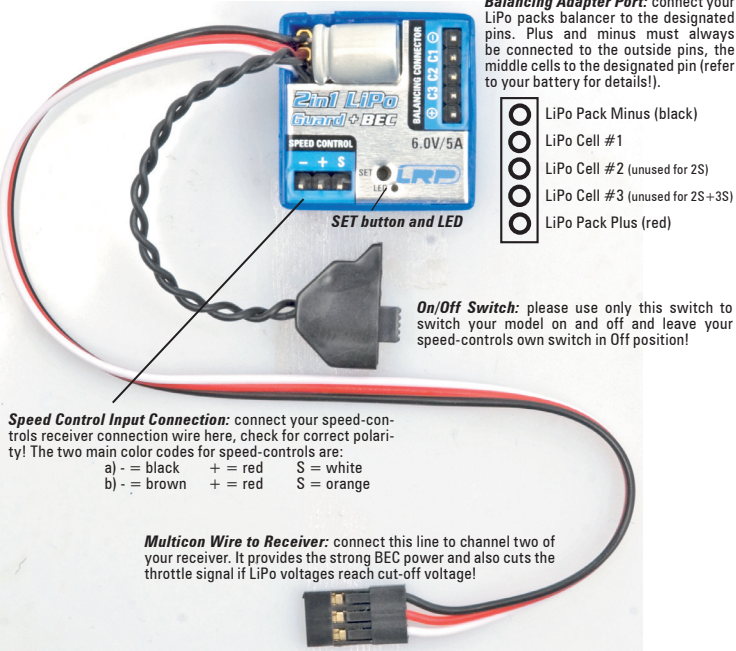


TECHNICAL DATA

Size	[mm]	26 x 26 x 10	Switching BEC	yes
Weight	[g]	13.5	Multiprotection System	yes
Input Voltage Range	[V]	6.0 - 14.8	Status LED	red
Output Voltage	[V]	6.0	Set Button	yes
Output Current Capability	[A]	5.0	Input Connection (ESC)	RX-style 3-Pin
Standby Current	[A]	<0.02	Output Connection (RX)	Multicon
Microprozessor controlled		yes	LiPo Balancing Connector	2-4S (5-pins)

Specifications subject to change without notice.

CONNECTIONS



Balancing Adapter Port: connect your LiPo packs balancer to the designated pins. Plus and minus must always be connected to the outside pins, the middle cells to the designated pin (refer to your battery for details!).

- LiPo Pack Minus (black)
- LiPo Cell #1
- LiPo Cell #2 (unused for 2S)
- LiPo Cell #3 (unused for 2S+3S)
- LiPo Pack Plus (red)

On/Off Switch: please use only this switch to switch your model on and off and leave your speed-controls own switch in Off position!

Speed Control Input Connection: connect your speed-controls receiver connection wire here, check for correct polarity! The two main color codes for speed-controls are:

- a) - black + = red S = white
- b) - brown + = red S = orange

Multicon Wire to Receiver: connect this line to channel two of your receiver. It provides the strong BEC power and also cuts the throttle signal if LiPo voltages reach cut-off voltage!

Dear Customer,

Thank you for your trust in this LRP product.
 The **LRP 2in1 LiPo Guard + BEC** is the perfect tool to „monitor“ your RC-Car!

Allows the use of 2S to 4S LiPo batteries with almost all brushless- and brushed-speedos, no matter if the speed-control has internal LiPo cut-off or not! It monitors each single cells voltage during use and triggers when voltage drops below a safe level to avoid battery damage. Additionally a strong/switching 6.0V/5A BEC is integrated as many speed-controls integrated BEC's are to weak for 3S/4S LiPo use.

Please read the following instructions carefully before you start using this product. This user guide contains important notes for the installation, the safety, the use and the maintenance of this product. Thus protecting yourself and avoid damages of the product.

Proceed according to the user guide in order to understand your product better. Please take your time as you will have much more joy with your product if you know it exactly.

This user manual shall be kept in a safe place. If another customer is using this product, this manual has to be handed out together with it.

WARNING NOTES

No toy. Not suitable for children under 14 years.
 Keep the product out of the reach of children.

Pay close attention to the following points, as they can destroy the product and void your warranty. Non-observance of these points can lead to property damage, personal and severe injuries!

- Never leave the product unsupervised while it is switched on, in use or connected with a power source. If a defect occurs, it could set fire to the product or the surroundings.
- Avoid incorrect connections or connections with reversed polarity of the product.
- All wires and connections have to be well insulated. Short-circuits can possibly destroy the product.
- Never allow this product or other electronic components to come in contact with water, oil or fuels or other electroconductive liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Always wire up all the parts of the equipment carefully. If any of the connections come loose as a result of vibration, you could loose control over your model.
- Only use LiPo batteries with 2S (7.4V) to 4S (14.8V) voltage.
- Never cut off or modify the original plugs.
- Never change the polarity of the receiver connectors.
- Do not open the product and never solder on the PCB.

The manufacturer can not be held responsible for damages, which are a result of non-observance of the warning notes and security advices.

SETUP

The **2in1 LiPo Guard + BEC** does not need to be set to your radio and it's simply plug & play, with no adjustments needed! Of course you can alter the LiPo cut-off voltage (indicated by voltage per cell) if you wish to do so.

At turn-on the LED indicates the number of cells which were indicated by a flashing sequence 3-times:
 → 2 flashes = 2S (7.4V) ----- 3 flashes = 3S (11.1V) ----- 4 flashes = 4S (14.8V)

Caution: if indicated cell number doesn't comply with your LiPo battery pack, please check wiring!

If you don't want to use the recommended factory default for cut-off voltage (3.0V/cell) you can alter it by proceeding as following.

- press SET-button for 3+sek (you are now in setup mode).
- the selected cut-off voltage (voltage per cell) is indicated by a flashing sequence:

1x	2x	3x	4x
2.5V	2.8V	3.0V	3.2V

- press SET-button to increase the selected value by 1.
- the selected value is indicated 5-times before unit switches to drive mode automatically.

Information: if the cut-off voltage is reached, the motor function will be shut off (you remain steering) and the LED will flash fast. You can initialise the system again by switching off/on.

TROUBLESHOOTING GUIDE

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide before you send in this product for repair. If products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

SYMPTOM	URSACHE	MASSNAHME
LED flashes fast	No correct voltage detected at balancing port LiPo cut-off has triggered	Check wiring Battery empty?
LED indicates wrong number of cells	Wiring problem Battery pack defective or completely empty	Check wiring Replace battery or try re-charging
No servo and no motor function	Unit connected to receiver with wrong polarity Wiring problem Battery defective Crystal, receiver or transmitter defective	Connect unit with correct polarity Check wiring Replace battery Replace components one by one
No motorfunction, steering servo is working	Speed-control's receiver wire connected to unit with wrong polarity?	Check polarity of speed-controls receiver wire
Model stops often, steering still ok	The units LiPo cut-off has triggered If speed-control has a built-in LiPo cut-off as well, this may have triggered	Battery empty or damaged? Disable LiPo cut-off in speed-control



The crossed-out wheeled bin means that within the European Union the product must be taken to separate collection at the product end-of-life. Do not dispose of these products as unsorted municipal waste.

SPECIAL FEATURES & RECOMMENDATIONS

Switching BEC: as a general explanation, a switching BEC converts the voltage in the most efficient way with only very little temperature buildup, most other regulators work in linear mode and therefore need large heatsinks when high current capability is desired.
 LRP's exclusive Switching BEC algorithm works at a variable frequency to achieve best efficiency and performance under all circumstances with no radio noise.

Compatibility: check for compatibility between your speed-controls integrated BEC and the strong BEC of the 2in1 LiPo Guard + BEC. It is important that the speed-controls switch remains in off position, as in the worst case you may damage your speed-control!

Higher LiPo voltages and your speed-control & motor: the 2in1 LiPo Guard + BEC allows in principle the 4S usage of any speed-control, but pay attention that not all speed-controls are allowed to be used with such high voltage and that there may be component limitations inside. As a rule of thumb: 3S is ok with pretty much every speed-control, to use 4S you should speak to your speed-controls manufacturer.
 Also pay attention that you will need different motors in order to benefit from the higher voltage! Simply using your existing motor at higher voltage will result in failure.

REPAIR PROCEDURES / LIMITED WARRANTY

All products from LRP electronic GmbH (hereinafter called "LRP") are manufactured according to the highest quality standards. LRP guarantees this product to be free from defects in materials or workmanship for 90 days (non-european countris only) from the original date of purchase verified by sales receipt. This limited warranty doesn't cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage.

This applies among other things on:

- Cut off/changed original input- and/or output-wires
- Receiver wire and/or switch wire damaged
- Mechanical damage of the unit
- Humidity/Water inside the unit
- Mechanical damage of electronic components/PCB
- Removed or damaged original heatsink.
- Reverse Polarity
- Soldered on the PCB

LRP does not do a warranty change of the whole product, once the product has been used. Do not send in the whole product. Only send in the defective parts, on which you want to claim warranty. If the whole product is send in, LRP will charge a service fee for the Disassembly and Assembly of the product at our discretion.

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide, if available, before you send in this product for repair. If products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

With sending in this product, the customer has to advise LRP if the product should be repaired in either case. If

there is neither a warranty nor guarantee claim, the inspection of the product and the repairs, if necessary, in either case will be charged with a fee at the customers expense according to our price list. A proof of purchase including date of purchase needs to be included. Otherwise, no warranty can be granted. For quick repair- and return service, add your address and detailed description of the malfunction.

If LRP no longer manufactures a returned defective product and we are unable to service it, we shall provide you with a product that has at least the same value from one of the successor series.

The specifications like weight, size and others should be seen as guide values. Due to ongoing technical improvements, which are done in the interest of the product, LRP does not take any responsibility for the accuracy of these specs.

LRP-Distributor-Service:

- Package your product carefully and include sales receipt and detailed description of malfunction.
- Send parcel to your national LRP distributor.
- Distributor repairs or exchanges the product.
- Shipment back to you usually by COD (cash on delivery), but this is subject to your national LRP distributor's general policy.