

LITHIUM-  
POLYMER  
POWER

LRP

CAR / FLIGHT  
POWERPACKS  
TX - RX PACKSHIGH  
CAPACITY

VTEC

HIGH  
POWER

## USER MANUAL

LRP

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## 1. CONNECTIONS

All LRP VTEC LiPo-batteries come with properly sized power-wires incl. plugs. The special Competition Car Line Hardcase packs already have 4mm gold plug socket built into the battery pack. These power connections have to be used for standard charging and for all applications in the model/device.

Additionally to the power connections, all LRP VTEC LiPo-batteries are equipped with a so-called EHR-Balancing-port. This EHR-Balancing-port can be used to condition and equalize the individual cells inside a LRP VTEC LiPo-battery pack. The Competition Car Line Hardcase packs use a 2mm gold plug socket, which acts as a cell connection between the two cells in the pack. This connection can be used for balancing the cells as well.

Special balancers or certain chargers use this balancing port to perfectly condition and equalize the individual cells inside the pack. Please check the user manual of the balancer/charger in order to know how the battery needs to be hooked up.

**Note:** The Balancing-port shall not be used for the standard use in the model/device. Only use the power-wires incl. plugs to power your model/device.

For the standard applications, the Balancing-port is not necessary. Nevertheless do never cut-off or remove the Balancing-port plug.

**Balancing-port 3-pole (7.4V packs)**

Black (Battery-Negative) = Cell 1-  
Brown (cell connection) = Cell 1+ (Cell 2-)  
Red (Battery-Positive) = Cell 2+

**Power-wires incl. plugs**

Red = Battery-Positive +  
Black = Battery-Negative -

**Balancing-port 4-pole (11.1V packs)**

Black (Battery-Negative) = Cell 1-  
Brown (cell connection 1) = Cell 1+ (Cell 2-)  
Blue (cell connection 2) = Cell 2+ (Cell 3-)  
Red (Battery-Positive) = Cell 3+

**Power-wires incl. plugs**

Red = Battery-Positive +  
Black = Battery-Negative -

**Balancing-port „Competition Car Line“ (7.4V packs; not shown)**

4mm gold plug socket (battery -) = Cell 1-  
2mm gold plug socket (cell conn.) = Cell 1+ (Cell 2-)  
4mm gold plug socket (battery +) = Cell 2+

**Balancing-port 5-pole (14.8V packs; not shown)**

Black (Battery-Negative) = Cell 1-  
Brown (cell connection 1) = Cell 1+ (Cell 2-)  
Blue (cell connection 2) = Cell 2+ (Cell 3-)  
Green (cell connection 3) = Cell 3+ (Cell 4-)  
Red (Battery-Positive) = Cell 4+

Dear Customer,

thank you for your trust in this LRP product. By purchasing a LRP VTEC Lithium-Polymer battery (LiPo-battery), you have chosen a high-performance battery for your RC model. Please read the following instructions to ensure, that your LRP VTEC LiPo-battery always works up to your full satisfaction.

LiPo-batteries need special treatment and care. Please read the following instructions carefully before you start using your LRP VTEC Lithium-Polymer battery. 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 LRP VTEC Lithium-Polymer battery 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.

## 2. SPECIAL NOTES FOR HANDLING

- Avoid short-circuits! Short-circuiting the battery results in very high currents, which damage the internal structure of a LiPo-battery. This leads to a loss of power and capacity.
- Be sure, not to damage the outside of the LiPo-battery. The battery is protected by a heatshrink. The actual Lipo-cell is directly under this heatshrink. If the outer skin of the cell gets damaged, the battery can no longer be used. Therefore take special care, that no sharp objects like knives, tools, carbon fibre edges or similar items can damage the battery.
- When securing the LiPo-battery inside your model/device, you have to take care that the LiPo-battery does not get damaged or warped in case of a crash. LiPo-batteries are less mechanical resistant than NiMH-batteries in a metal can. Therefore pay special attention that the LiPo-battery does not get damaged or warped by letting it fall down, hitting it, bending it or by similar actions.
- If you want to change the plug system of your LiPo-battery, take care that you only attach the new plugs to the power-wires directly. Under no circumstances you allowed to solder directly on the tabs of the LiPo-cells. Please note, that there's the possibility to void your limited warranty when changing the plug system.
- Never charge several LiPo-battery packs at once with one charger. The different capacities and charge levels can lead to serious overcharging of the battery, even if you are using a charger with LiPo capabilities.
- Damaged packs cannot be used any longer. If the packs show signs of damage, are bent or similar, do not use the packs anymore.
- The chemical reaction during charging and discharging a LiPo-battery is not fully reversible. Due to that, LiPo-batteries loose capacity during their life-span. This is normal and not a manufacturing nor production fault.

**Disposal note:** Damaged packs or packs, which can no longer be used are hazardous waste and have to be disposed accordingly.

## 3. STORAGE

LRP VTEC LiPo-batteries do not have a memory effect and only a very low self-discharge rate. Therefore these batteries can be stored over a longer period of time without special treatment. You only have to take care, that the batteries do not get stored completely empty.

For a storage over a longer period of time, we recommend to charge the battery up to 50% of the nominal capacity. Therefore fully discharge the battery pack and then partially charge it with a charge current of 1C for 30 minutes. In this condition, the battery can be stored at least half a year at 25°C room temperature without the need of recharging it.

For a storage over a short period of time, you also have to pay attention, that the battery is partially charged. Never store the battery completely empty.

Even if you are using your battery regularly every week, always pay attention that the battery is partially charged with at least 20% of the nominal capacity during storage. A partial charge with 1C charge current for 10 minutes is sufficient in this case, if the battery was completely empty before.

If you pay attention to the above mentioned notes, you can enjoy your LRP VTEC LiPo-battery for a very long time.

## 4. USE OF RX-ONLY PACKS

Due to the nominal voltage of 7.4V of all RX-only packs, these battery packs cannot be connected directly to the receiver. Standard receivers and servos work with a voltage of 6V and therefore will not work properly or get damaged.

You need our LRP LiPo RX Regulator 6V/5A (#45000) to connect a RX-only pack to your receiver. This regulator reduces the voltage to a safe level of 6V and will be connected directly between the LRP VTEC LiPo RX-only battery and the receiver. Please see the instruction manual of the LRP LiPo RX Regulator 6V/5A (#45000) for further reference.

## 5. CHARGING

All LRP VTEC LiPo-batteries can be charged with a maximum current of 1C\* (0.8C\* for RX/TX-packs). For charging, only use chargers, which are specially designed and developed for LiPo-batteries. These chargers charge the battery with the max. current till the battery reaches the max. charging voltage. The charger then reduces the charging current until the battery is fully charged.

**ATTENTION:** Under no circumstances use NiMH/NiCd-chargers for charging LiPo-batteries! These chargers do not reduce the charging current and therefore ultimately lead to overcharging the battery!

LRP VTEC LiPo-batteries do not heat up during charging. It is normal, that the battery still has ambient temperature when it is fully charged. If the battery heats up during charging or warps, immediately stop charging it.

The maximum charging voltage for each single LiPo-cell is 4.20V. If the battery reaches this voltage, the charge current has to be lowered. This is automatically done by the charger. If the charge current reaches 0.05 - 0.1C\*, the battery is fully charged. All LRP VTEC LiPo-batteries consist of multiple LiPo-cells. You can see the max. charging voltage in the table below.

LRP VTEC LiPo-batteries do not have a memory effect and only a very low self-discharge rate. Therefore you can also charge batteries with a partial charge in them, without the need of discharging the pack before. Partially charged packs can be stored over a long period of time, without getting damaged. Please also see the „Storage“ section for further reference.

We recommend the following settings for charging our LRP VTEC LiPo-batteries:

Cell configuration	max. charge current	max. charging voltage
LiPo Pack - 7.4V - 2S	1C*	8.40V
LiPo Pack - 7.4V - 2S - RX-only	0.8C*	8.40V
LiPo Pack - 11.1V - 3S	1C*	12.60V
LiPo Pack - 11.1V - 3S - TX-only	0.8C*	12.60V
LiPo Pack - 14.8V - 4S	1C*	16.80V

**Please Note:** You can use your LRP VTEC LiPo-battery several times a day. However be sure, that the battery has completely cooled down to ambient temperature, before re-charging it again.

\* C=Nominal capacity of the battery. E.g. with a nominal capacity of 3300mAh (3.3Ah), the battery can be charged with a max. current of 3.3A.

## 6. DISCHARGING

All LRP VTEC LiPo-batteries (except the RX/TX-packs) are capable of a maximum peak discharge current of 25C. The special manufacturing technology of the LRP VTEC LiPo-batteries make these high discharge currents possible. The **continuous** discharge current for all LRP VTEC LiPo-batteries (except the RX/TX-packs) is 15C.

**Please note:** RX-/TX-only packs can only be used for the typical application as receiver (RX-only) or transmitter (TX-only) pack. They are not suited for high discharge currents!

You have to take care, that the batteries do not get deep discharged. **As soon as the battery voltage falls below 2.80V per single cell, the battery pack gets damaged irrevocably.**

With 2S packs, the discharge cut-off voltage is 5.6V, with 3S packs it is 8.4V and with 4S packs the discharge cut-off voltage is 11.2V. The battery voltage should never fall below these discharge cut-off voltages.

If your speed control does not have a special undervoltage protection for LiPo-batteries, you have to stop your model early enough in order not to deep discharge the battery pack. Therefore stop immediately as soon as you feel a rapid loss in power.

**IMPORTANT:** The max. temperature of the LiPo-battery during discharge must never exceed 60°C (140°F).

## 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 especially applies on already used batteries or batteries, which show signs of heavy usage. Damages or output losses due to improper handling and/or overload are not a product fault. Signs of wear (loss of capacity) after intensive usage are also no product fault.

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. The following points do also result in a service fee:

- Original power plugs replaced with a NON reverse polarity protected power plug system.
- Send in the battery without power plugs.
- Removed or damaged original heatshrink.

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.


**WARNHINWEISE**

Kein Spielzeug. Nicht für Kinder unter 14 Jahren geeignet.

Bewahren Sie das Produkt außerhalb der Reichweite von kleinen Kindern auf.

**Beachten Sie unbedingt die folgenden Hinweise, da diese Ihr Produkt zerstören können und die Gewährleistung ausschließen. Nichtbeachtung dieser Hinweise können zu Sach- und Personenschäden und schweren Verletzungen führen!**

- Vermeiden Sie falschen Anschluss oder Verpolung des Produkts.
- Alle Kabel und Verbindungen müssen gut isoliert sein. Kurzschlüsse können unter Umständen das Produkt zerstören.
- Die Originalstecker und Originalkabel dürfen niemals verändert oder abgeschnitten werden.
- Entnehmen Sie immer den Akku aus Ihrem Produkt bzw. trennen Sie das Produkt von der Stromquelle, wenn das Produkt nicht verwendet wird.
- Verbrauchte Batterien nicht in den Hausmüll geben, sondern nur bei den bestehenden Sammelstellen oder einem Sondermüllplatz abgeben.
- Laden Sie den Akku immer außerhalb des Produktes auf, für den Sie den Akku benutzen möchten. Sollte der Akku einen Defekt haben, kann dies zu einer Beschädigung des Produkts führen.
- Vermeiden Sie Kurzschluss, Überladung und Verpolung des Akkus oder einzelner Zellen. Dies kann zu Brandentwicklung oder Explosion führen.
- Öffnen Sie niemals einen Akku, eine Batterie oder einzelne Zellen.
- Laden Sie den Akku nur unter Aufsicht.
- Während der Ladung muss sich der Akku auf einer nicht brennbaren, hitzebeständigen Unterlage befinden. Desweiteren dürfen sich keine brennbaren oder leicht entzündlichen Gegenstände in der Nähe des Akkus befinden.
- Überschreiten Sie unter keinen Umständen den maximalen Lade-/Entladestrom, der von der LRP electronic GmbH empfohlen wird.
- Unter keinen Umständen darf ein NiMH/LiPo-Akku tiefentladen werden.
- Der Akku darf nicht mit Feuer, Wasser oder anderen Flüssigkeiten in Berührung kommen.
- Ladevorgang nur in trockenen Räumen durchführen.
- Verwenden Sie für die Ladung von LiPo-Akkus nur Lade-/Entladegeräte, die für diesen Akkutyp spezifiziert wurden. Verwenden Sie keinesfalls NiCd/NiMH Lade-/Entladegeräte.
- Die Aussenhaut des LiPo-Akkus darf nicht beschädigt werden. Achten Sie also unbedingt darauf, dass keine scharfen Gegenstände wie Messer, Werkzeuge, Kohlefaserkanten oder Ähnliches den Akku beschädigen können.
- Achten Sie darauf, dass der Akku nicht durch Herunterfallen, Schlagen, Verbiegen oder Ähnliches beschädigt wird.
- Beschädigte Zellen dürfen nicht mehr verwendet werden. Sollten die Zellen Verformungen, optische Beschädigungen oder Ähnliches aufweisen, so dürfen Sie diese nicht mehr verwenden.
- Bei zu starker Erwärmung einzelner Zellen im Akkupack den Ladevorgang sofort unterbrechen.
- **Der Hersteller kann nicht für Schäden verantwortlich gemacht werden, die infolge von Nichtbeachtung der Sicherheitshinweise und Warnungen verursacht werden.**


**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!**

- 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 cut off or modify the original plugs and original wires.
- Always remove the battery from your product or disconnect the product from the power source, if the product is not in use.
- Do not throw away used batteries in the household garbage, but only give them to the collection stations or dispose of them at a special garbage depot.
- Always charge the battery outside of the product you want to use. The product could get damaged, if a battery defect occurs.
- Avoid short circuits, overcharging and reverse polarity of the battery or single cells. This can lead to fire or explosion.
- Never open a battery or a single cell.
- Never leave the battery unattended while charging.
- During charging, the battery has to be kept on a non-flammable, heat-resistant mat. Furthermore no flammable or highly inflammable objects may be close to the battery.
- Never exceed the maximum charge/discharge current, which is recommended by the LRP electronic GmbH.
- Under no circumstances a NiMH/LiPo-battery shall be deep discharged.
- The battery may never get in touch with fire, water or other liquids.
- Only charge in a dry place.
- Only use chargers and dischargers, which are specified for LiPo-batteries by the manufacturer. Never use chargers or dischargers, which are specified for NiCd/NiMH-batteries!
- The outside of the LiPo-battery must not be damaged. Therefore take special care, that no sharp objects like knives, tools, carbon fibre edges or similar items can damage the battery.
- Pay special attention that the LiPo-battery does not get damaged or warped by letting it fall down, hitting it, bending it or by similar actions.
- Damaged packs cannot be used any longer. If the packs show signs of damage, are bent or similar, do not use the packs anymore.
- If individual cells in the battery pack heat up excessively, immediately stop the charging process.
- **The manufacturer can not be held responsible for damages, which are a result of non-observance of the warning notes and security advices.**