

PowerBox Systems

*World Leaders in RC
Power Supply Systems*

PowerBox 12

Operating Instructions



Dear customer,

Congratulations on your decision to buy the **PowerBox 12 - the switch backer!**

This compact product combines the performance features of our safety switch and a powerful battery backer in a single case which will fit in virtually any model.

The two servo leads which supply power to the receiver and servos feature a **conductor cross-section of 0.34 mm²** and have **gold-plated connector contacts**. The same applies to the two battery leads; original MPX receiver and battery connectors can also be supplied if required.

The actual enclosed switch is fitted with four floating-mount double contacts. Only the positive conductor of each pair is switched; all the negative terminals are connected together for additional security.

All the backer components are soldered to a single circuit board. The cables to the backer are **soldered directly** (no kinks) to broad solder pads, and protected from the effects of vibration by means of a special **supporting adhesive**. The cables which exit the case are also protected from vibration and kinking by **heat-shrink sleeving with internal adhesive**. The charge socket is separated from the inside of the switch by a partition, so that the **PowerBox 12** is also very well protected against dust and dirt penetration.

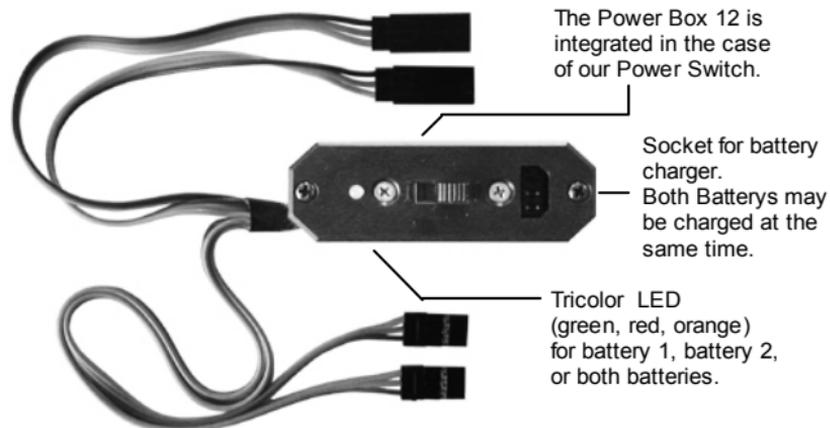
The switch positions are marked on the case: when the switch is moved towards the LED, it is in the ON position.

The primary purpose of the integral **three-colour LED** fitted to the switch case is to indicate the switched state of the **PowerBox 12**.

However, it also changes colour to indicate the condition of the two batteries connected to the backer: if both batteries are in good order, the LED glows **orange**. If the LED glows **green**, battery 1 is still in good condition, but battery 2 is faulty or flat. If it glows **red**, battery 2 is in order, but battery 1 is faulty or flat. The assignment of packs 1 and 2 is determined when you connect the batteries.

Both batteries can be charged simultaneously by means of the integral charge socket fitted to the switch case (MPX connector: increased current capacity), provided that a **standard battery charger** is used, e.g. the Robbe Lader 5, Graupner Multilader 6, Titan etc. Automatic chargers and reflex chargers **must not be used**, because these units are only capable of processing one battery at one charge output. When charging takes place, this means that the two batteries are separated in the backer by an additional pair of de-coupling diodes. Both batteries must be disconnected from the backer if you wish to fast-charge them.

The **total current** through the charge socket should not exceed **2 A**.



Please do not throw away the inner packaging immediately, as it includes a template for marking the switch aperture. Cut or saw **outside the marked line**, as shown in the photo.



Even though our product is very well protected from the effects of vibration, the switch should always be mounted in a part of the model relatively low in vibration. Please note that the GRP fuselage sides of a large power model are not suitable, as they are always subject to considerable vibration. You can remedy the situation by cutting a ply plate (2 - 3 mm thick) about 3 cm larger than the switch aperture, and gluing it in the appropriate place, as shown in the photo. The plate damps the vibration, and at the same time provides plenty of "meat" for the switch retaining screws to bite into.

For your receiving system power supplies we recommend that you use top-quality, low-resistance batteries exclusively. We can supply ready-made high-quality NC and NiMH batteries upon request; please enquire for details.

However, an alternative is to use the **latest battery technology**, i.e. **Lithium-Polymer cells**. These lightweight cells are not problem-free in use, and if you wish to use them we recommend that you employ **our own make of Li-Po cells**, combined with a matching electronic circuit for safe charging.

Please note that **Li-Po** cells must **not** be connected **directly** to the receiving system or the **PowerBox 12** battery backer! The voltage of a two-cell Li-Po pack is excessive, and must be reduced to the normal prescribed voltage for the receiver and servos (max. 6.0 Volts) by means of a **voltage stabiliser**. We recommend our **linear** voltage regulator, which is designed expressly for this task. It is light (9.5 grammes) and powerful (up to 10 Amps), and is simply connected **between the Li-Po pack** and the **PowerBox 12**. Two voltage stabilisers are required: one for each battery.

During the production process each battery backer undergoes a series of tests. We take the maintenance of high quality standards very seriously, and this includes bought-in items. That is why we are able to grant a **24 month guarantee** on all our battery backer systems. The guarantee covers proven material faults, which will be corrected by us at no charge to you.

Misuse and mistreatment, such as excessive voltage, damp, external mechanical influences or damage (crash damage) or inappropriate mounting (serious vibration) invalidate the guarantee.

The guarantee does not cover any additional claims, such as consequent damage. We do not accept liability for damage which is caused by the unit or its use, because we are unable to ensure that it is installed and operated in accordance with our instructions.



Connection diagram for JR/Graupner



Connection diagram for MPX

Specification :

Voltage range: 4,0 – 8,0 Volt
Power supply: NiCd or NiMH batteries consisting of 4 or 5 cells
7.4 Volt Li-Ion or Li-Polymer batteries connected to a linear voltage regulator supplying 5.5 or 5.9 Volts (Order No.: 5610 (5.9 Volts) or 5510 (5.5 Volts)).
Voltage loss: approx. 0,20 Volt
Max. cont. current: 12 A (for 10 min.)
Temperature range: - 10° C to + 60° C

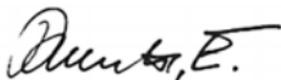
Accessories :

- fastening screws
- scribe template
- charger leads

Order No. :

- 6110 PB 12 JR black
- 6115 PB 12 JR grey
- 6120 PB 12 MPX black
- 6125 PB 12 MPX grey

We wish you every success using your new **PowerBox 12** switch backer, and hope you have loads of fun with it.



Donauwörth, January 2004

PowerBox Systems

PowerBox Systems
Modellbau-Deutsch
Hindenburgstraße 33

86609 Donauwörth

Tel: +49-0906-22559
Fax: +49-0906-22459
info@PowerBox-Systems.com

www.PowerBox-Systems.com