

PowerBox Systems

*World Leaders in RC
Power Supply Systems*

PowerSwitch SET

Operating Instructions



Dear customer,

Congratulations on your choice of the **PowerSwitch** Set from our range of products. The **PowerSwitch** Set features heavy-duty connectors and over-sized cable of **0.75 mm²** cross-section, and is designed for switching both battery channels of our battery backer systems: the **PowerBox Basic**, the **PowerBox 40/16 Expert** and the **PowerBox 40/24 Professional**.

All our systems are compatible with each other, i.e. the switches in this **PowerSwitch Set** can also be used with any other battery backer from our range, including those power supply systems which are supplied as standard with a **SensorSwitch**. A useful advantage of this set is that both batteries - including Li-Po packs - can be charged and monitored via the integral charge socket. You may also prefer to use this switch if you want to provide a means of completely separating a model's power supply between battery backer and battery; with the electronic **SensorSwitch** the batteries can be left permanently connected to the backer, which means that a so-called "stand-by" circuit is always active.

The switches used in this Switch Set have also proved ideal for use with turbine batteries, and the connectors are identical.

This unit was the first contribution from **PowerBox Systems** (Modellbau-Deutsch) to a programme aimed at significantly improving electronic security in large models. The **PowerSwitch** has been continuously developed since its introduction in 1992, and since 2001 it has been widely used all over the world for switching our Power battery backers, offering stable, ultra-reliable technology. The units are individually hand-made, and not a single failure of this type of **PowerSwitch** has ever been reported to us, although many thousands of examples have been sold.

The actual **PowerSwitch** is housed in a sealed, dustproof metal case. Four double silver-plated contacts, mounted in a floating suspension, are used to switch the positive conductor only; the negative line is looped through without any contacts at all - which reduces the theoretical possibility of failure by a straight 50%! Two ball latches hold the switch in the selected position even when subjected to severe vibration.

The unit features a green LED which indicates the switched state. The LED has absolutely zero effect on the reliability of the switch, but it does enable the user to check the unit's status even from a distance.

The elegant outer housing is an injection-moulding in plastic with a **20% glass fibre** content; the switch is retained using two screws, each secured with lacquer. All cables run in a **straight** line to the extra-wide solder pads, i.e. they are routed in the direction of tension, **with no bends and kinks**. A special support adhesive is applied to give extra protection from vibration fracture. The cables which exit the housing are protected in a shared heat-shrink sleeve with internal adhesive, acting both as strain-relief and kink protection. The cables exit the unit from the side of the housing, i.e. not directly under the retaining screws.

When the switch is at the OFF position, the integral polarised charge socket (Multiplex system) can be used to charge the batteries at currents of **up to 2 Amps**. The charge socket itself is connected to a circuit board fuse to prevent damage caused by significantly higher charge currents or reversed polarity. Even if the charge socket should fail, this cannot have any effect on the primary switching process. A matching charge lead with a conductor cross-section of 0.34 mm² is supplied in the pack. If you require additional charge leads, they are available from us as accessories.

Important: when charging the batteries it is essential to check that your charger can cope with two batteries simultaneously, both with a common negative terminal. If you use a single charge lead or a standard battery charger, there is never a problem. With two charge leads that is not necessarily the case, and the likelihood of problems is greater if the charger is an automatic or reflex type.

The reason for this is particular technical differences between chargers. **If the charger monitors the battery state internally during the charge process via the positive terminal, there will be absolutely no problems.** You can recharge both batteries simultaneously via the two charge sockets on the switches. However, if the charger monitors the battery internally via the negative terminal, the negative terminal of both batteries would be connected via the battery backer, and this would prevent charging taking place successfully, i.e. the charge process of the packs would not be terminated correctly. Incidentally, this is a problem common to all battery backers made by all manufacturers.

However, there is a little trick which solves the problem neatly: simply disconnect one of the two switch plugs from the battery backer - it does not matter which one. Both batteries will then be charged correctly, regardless of the charger you are using..

The battery connecting lead is fitted with an MPX high-current connector, secured by a retaining clip developed in-house. This ensures a constant, totally reliable connection to the battery.

The switch positions are marked on the case. The switch is ON when the slider knob faces the LED, i.e. position "1".

Please don't throw away the inner packaging, as it includes a template for marking the switch aperture. Cut or saw out the aperture **just outside the marked line** (photo).

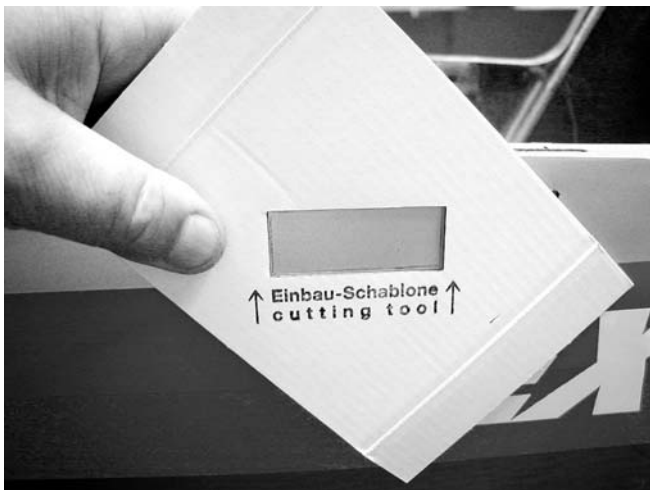
The **PowerSwitch** is virtually impervious to vibration, but it is still good practice to mount the unit in an area of the model where vibration levels are low.

Please note the following point:

The GRP fuselage sides of a power model are actually unsuitable for mounting any kind of switch, as they are always subject to considerable vibration.

You can remedy the situation by cutting a ply plate (2.5 - 3 mm thick) about 2 - 3 cm larger than the switch aperture, and gluing it in the appropriate position.

The plate damps the vibration, and at the same time provides plenty of "meat" into which the switch retaining screws can "bite".



We strongly recommend that you use top-quality rechargeable batteries of low internal resistance to power your receiving system. We can supply high-quality ready-made NC and NiMH batteries for this; please enquire for details.

However, it is also possible to use the **latest battery technology**, i.e. **Lithium-Polymer cells**. If you wish to exploit the advantages of these lightweight, high-performance cells, we recommend **our own** Li-Po packs: the **PowerBox Battery 2800** and **PowerBox Battery 1500**. These batteries feature integral electronic monitoring and security circuitry for reliable charging, and are supplied complete with a purpose-designed mounting frame.

During the production process each **PowerSwitch** undergoes a series of tests. We take the maintenance of the highest quality standards very seriously, and this also applies to all bought-in components. This enables us to offer a **24 month guarantee** on all our battery backer and switch systems. The guarantee covers proven material faults, which will be corrected by us at no charge to you.

Misuse and maltreatment, such as excessive voltage, the effects of damp, severe external mechanical influences or damage (crash-damage) invalidate the guarantee. The same applies to faults which are due to excessive vibration.

Additional claims, e.g. for consequent damages, are excluded. We do not accept liability for the device or the use of the device, as we are not in a position to ensure that the product or products are correctly installed and operated.

Specification:

Voltage range:	4,0 – 8,0 Volts
Power supply:	NiCd or NiMH batteries, 4 or 5 cells Li-Ion or Li-Polymer batteries, 7.4 Volts
Max. continuous current:	Up to 20 Amps when in circuit
Temperature range:	-10°C to +60°C

Accessories:

- Retaining screws
- Cutting template
- Charge lead

Order No.: 6100

We wish you much pleasure and success with your **PowerSwitch Set**.

Donauwörth, June 2005



PowerBox Systems
Modellbau-Deutsch
Hindenburgstraße 33
86609 Donauwörth
Germany

Tel: +49-906-22559
Fax: +49-906-22459
info@PowerBox-Systems.com

www.PowerBox-Systems.com