

Over the past season I have quite often had a chance to take a peek inside a TOC model – and there I very often found a Deutsch Power Box. I made enquiries, and learned that many top pilots place their faith in this product because it is more than just a battery backer. Well, what is effective for the lads with large aerobatic power machines must also have its advantages for those of us flying jets. So let's take a closer look at the little black box!

At the one end the first thing we find is a large bank of servo sockets: four for each of six channels. The servo signals for all six channels are amplified by an operational amplifier circuit. This eliminates the problem with long servo extension leads, as found in our jets. The signal amplifiers are designed with capacity in reserve, so that – in an extreme case – it is possible to connect no less than eight (!) servos to each output using Y-leads, although I have yet to come across such an application; if it does exist, kindly let me know!

However, the integral amplifiers also offer the crucial advantage that they block any interference signals which may be induced in the long servo leads. Ferrite rings may only provide a false sense of security; this is real security! A further notable feature is that the servos connected to the backer are supplied with power directly from the two batteries. Excessive

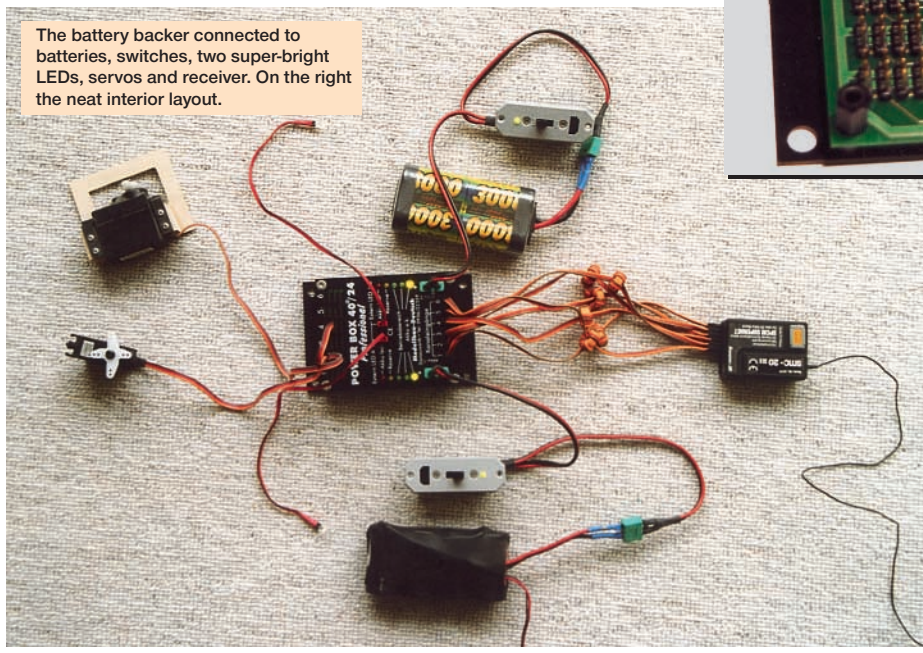
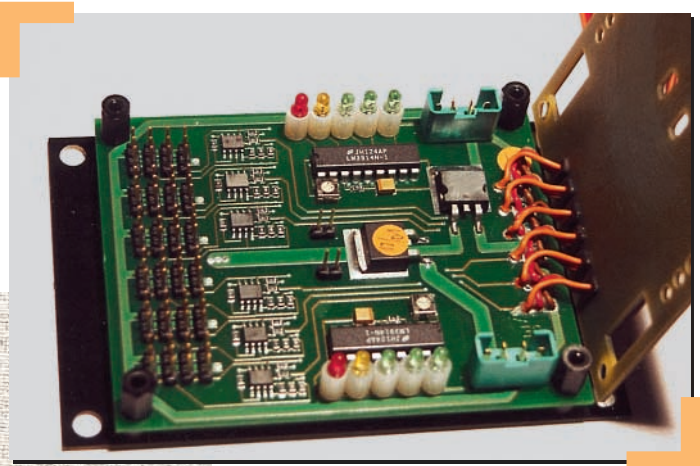


Power Box 40/24

PROFESSIONAL

More security with the Modellbau Deutsch accessory

PRESENTED BY WINFRIED OHLGART

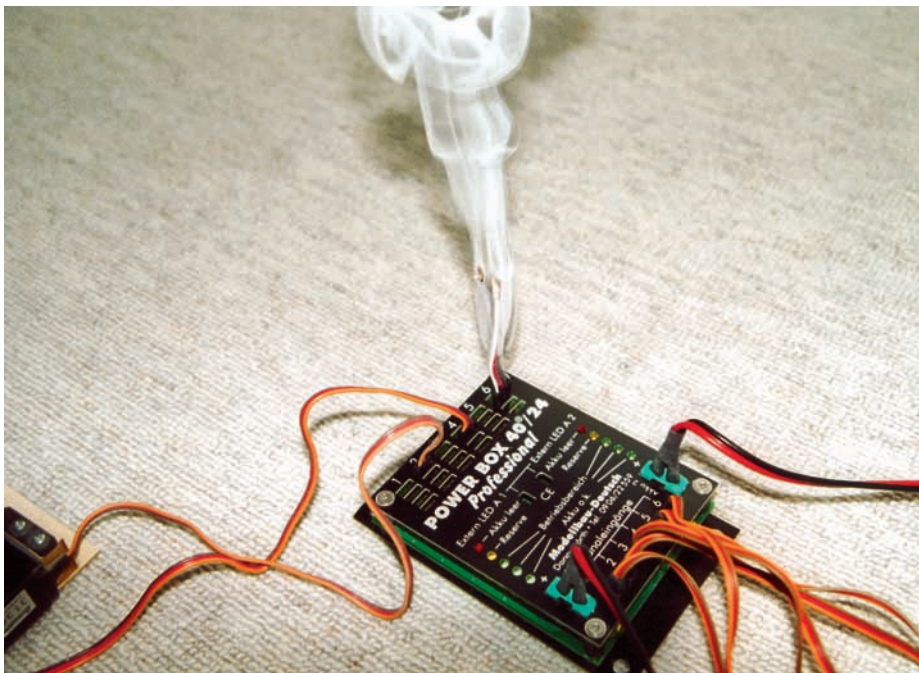


The battery backer connected to batteries, switches, two super-bright LEDs, servos and receiver. On the right the neat interior layout.

servo currents can certainly flow in large models equipped with many servos, but with the Deutsch unit they do not pass through the receiver.

Emmerich Deutsch, whom I met and got to know at the Ballenstedt Air Show, gave me an impressive demonstration of the unit's impunity even if a servo »goes up in smoke«. He simply short-circuited the servo leads at one output until smoke poured out of the socket – but all the other servos connected to the unit continued to work without problem!

Moving along the case from the 24 servo sockets we find a pair of sockets for the

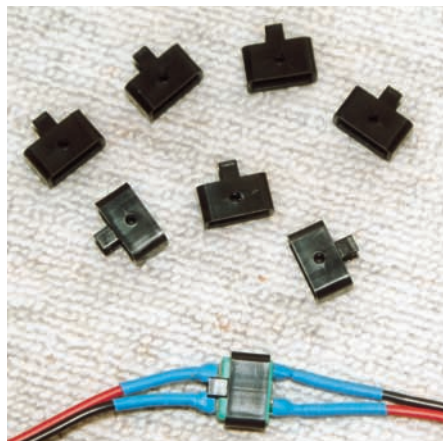


super-bright LEDs supplied, and adjacent to them the two independent battery voltage monitors. Next to the monitors are the two high-current sockets for the batteries. Power is fed to the receiver via a stabilisation circuit which ensures that no voltage higher than 5 Volts is passed to it. This is carried out by two »very low drop« fixed voltage regulators with an output current rating of 1.5 A. This arrangement provides a maximum current of 3 A for the receiver.

The batteries are de-coupled in the usual way using Schottky diodes, although in this case two dual Schottky diodes are employed. A dual diode is a single housing with two diodes inside (see also the Power Box block circuit diagram). The voltage drop with this arrangement is so slight that the backer can also be operated safely using four-cell batteries, although the optimum set-up is to use two five-cell batteries of the same capacity and cell type. With this arrangement the full capacity of both packs is available when the model is in flight, since both are discharged evenly. If one battery should fail, the other takes over the power supply on its own. This does mean that it is possible to operate the unit with only one battery, although I can see absolutely no point in this.

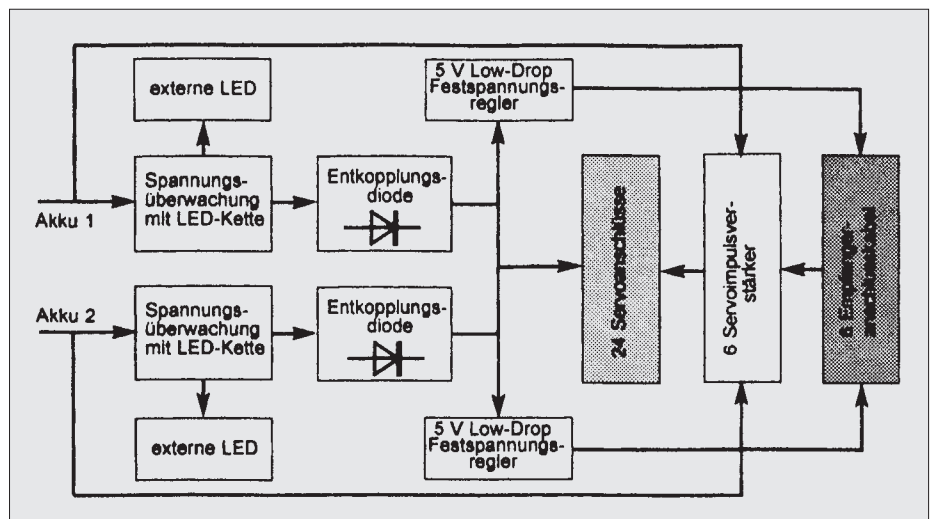
The voltage monitor displays with their LEDs (three green, one orange and one red) are not linear in response; instead they are matched to the discharge curve of NiCd and NiMH batteries. If the two super-bright LEDs are connected, the state of the two packs can be monitored from the outside; for example, if the LEDs are installed in the fuselage side.

On the underside of the backer we find the cables for the six channel inputs;



Things are really smoking (top)! Here a servo lead has been short-circuited – without affecting the operation of the other servos in any way! In the second picture we see the safety clips for the high-current connectors, as mentioned in the text.

The block circuit diagram reproduced below gives an idea of the overall circuit layout. It shows the inter-connections between the individual components in graphic form.



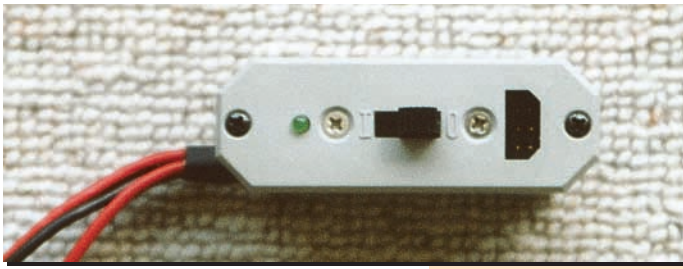
these are plugged into the receiver channels which you wish to amplify. Generally these will be the model's primary functions. If fewer than six channels are to be used, please note that all six leads should still be connected to the receiver, as power is fed to the receiver through these cables.

It is also possible to connect two receivers to the Power Box by connecting three leads to one receiver and three to the second. However, if you wish to do this you should check with the receiver manufacturer, as some makes of receiver may affect each other under certain circumstances.

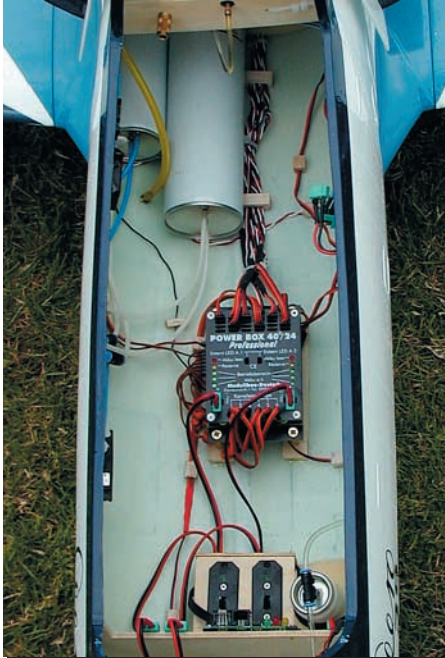
This is one case where the ferrite rings in the receiver connecting leads are not intended to remove interference (which – according to Dieter Perkuhn in the last issue of JETPOWER – in most cases only provides reassurance rather than protection); instead they provide earth de-coupling between the receiver and the backer. This provision ensures that there is no reduction in range even when the maximum number of servos is connected to the backer.

»In for a penny, in for a pound«, say I, and that is why I also recommend that you purchase the 20 A power switch, which is available from Modellbau Deutsch as an option. These switches are finished in a muted grey, and are equipped with four double contacts for switching the positive wire simultaneously. In addition to a green LED these switches also feature their own charge socket which can cope with charge rates of up to two Amps.

One completely new feature is the security clips for all the high-current connectors. These can easily be fitted to the battery backer at any time. Clips are simply pushed onto all the other high-current connectors, and glued to the housing using cyano applied through the open blind hole. It is important to wait three or



The 20 A switch, including green LED and charge socket.



The Power Box installed in an »Albatros«.

four minutes after this for the glue to cure completely. Emmerich Deutsch points out that some high-current connectors are of two-part construction. In this case there is a danger of the socket falling apart when disconnected, so please be careful!

The Power Box from Modellbau Deutsch certainly represents another important contribution to the security of our valuable models. Over the last few weeks and months I have heard and read much sense and nonsense talked on the subject of dual power supplies. Speaking personally, I, like many of my colleagues, shall

never fly a jet again with only one receiver battery.

I know that there are no 100% secure solutions to the safety issue, but with all its features this »battery backer« represents an excellent all-round security package for my receiver's power supply. I shall install the unit in my new jet with confidence, and I know that I will be in good company in so doing.

SPECIFICATION

Operating voltage	4 to 8 Volts
Power supply	2 x 5-cell NiCd or NiMH batteries
Current drain	approx. 230 mA
Voltage loss	approx. 0.25 Volt
Max. receiver current	2 x 1.5 A at 5 Volts (stabilised)
Servo sockets	24 sockets, each for up to 2 servos
Max. continuous current	2 x 20 Ampere
Temperature range	-10°C to +55°C
Dimensions	115 x 75 x 19 mm (incl. baseplate)
Weight	125 g
Special features	Earth decoupling of receiver and backer Interference suppression on all 24 servo outputs Sockets for two super-bright warning LEDs
Price	199.00 Euro
Manufacturer / Supplier	Modellbau-Deutsch, D-86609 Donauwoerth