

Product Review

The Power Box systems

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The radio control market is undergoing change that is moving the types of models being flown into two general categories. At one end and the most popular are the low powered inexpensive electric powered through to the 46 size glow powered aircraft that are mostly ARF designs.

At the opposite end are the larger and more expensive models with costs from around \$5000 and upwards. In fact it's possible to see R/C models that cost around \$20,000 in action. Large scale, large aerobatic and turbine powered models fit into this category.

When you invest this amount of money in an aircraft you naturally want to ensure the maximum reliability and spending a little more to maximise this aspect is similar to paying for an insurance policy.

Another aspect of these expensive models to consider is the number and type of servos that are used to drive the large control surfaces. It is not unusual to see two high powered and fast digital servos used on each control surface. High power and speed come at the cost of higher battery drain and four or five of ten kilo torque servos place a tremendous demand on the RX battery, with maximum demand occurring when the servos start to move.

In these circumstances, a single battery supply with power delivered by a standard switch harness is under tremendous pressure. This is where the Power Box systems come in as in the range are heavy duty switch harnesses and several types of dual battery supply/monitors.

SWITCH HARNESSES

Three heavy duty switch harnesses are available and are physically identical apart from the leads. One rated at 12 amps and one at 20 amps are fitted with twin standard gold plated receiver plugs. The 12 amp version has standard RX battery sockets while the 20 amp one has the heavy duty Multiplex battery socket. Both use two sockets on any standard RX to share the



The basic Power Box 40. Two battery supply to RX and voltage indication for four or five cell battery packs.

current load. The other at 20 amps rating uses the Multiplex style heavy duty plug system and is designed to be used with the Power Box units and two are needed. All switch housings incorporate a green LED that signals power on and an integral battery charge lead socket and all can handle either four or five cell battery packs.

THE POWER BOXES

The basic Power Box 40 will handle up to 40 amps current drain from two of either four or five cell batteries. The two batteries plug in via the 20 amp switch harnesses so two of these are needed. Power to the RX and servos is supplied through two standard gold plated servo type leads. Each battery pack voltage is monitored by five LEDs, one red, one yellow and three green. The red LED comes at when the battery voltage drops to minimum whereas the yellow LED is a warning not to fly. The three green LEDs span the usable battery voltage range. Two high brightness red LEDs on the end of extension leads plug into each of the battery systems and can be used as an external indication of low battery voltage.

When dual battery systems are used it is necessary to isolate each battery to prevent a good battery discharging into a lower voltage or dead one. The Power Boxes do this very efficiently with only an 0.25 voltage drop on the battery supply. The entire airborne battery load can be supplied from just one battery if the other one fails or simply drops in voltage.



The 12 amp heavy duty switch harness with the external charging lead plugged in. A green LED indicates power is on.



A Power Box 40/16 installed in Steve Annett's turbine powered Eurosport handles the power requirements on this large and heavy model. Pictured below is Steve prepping the model before a flight at Temora.



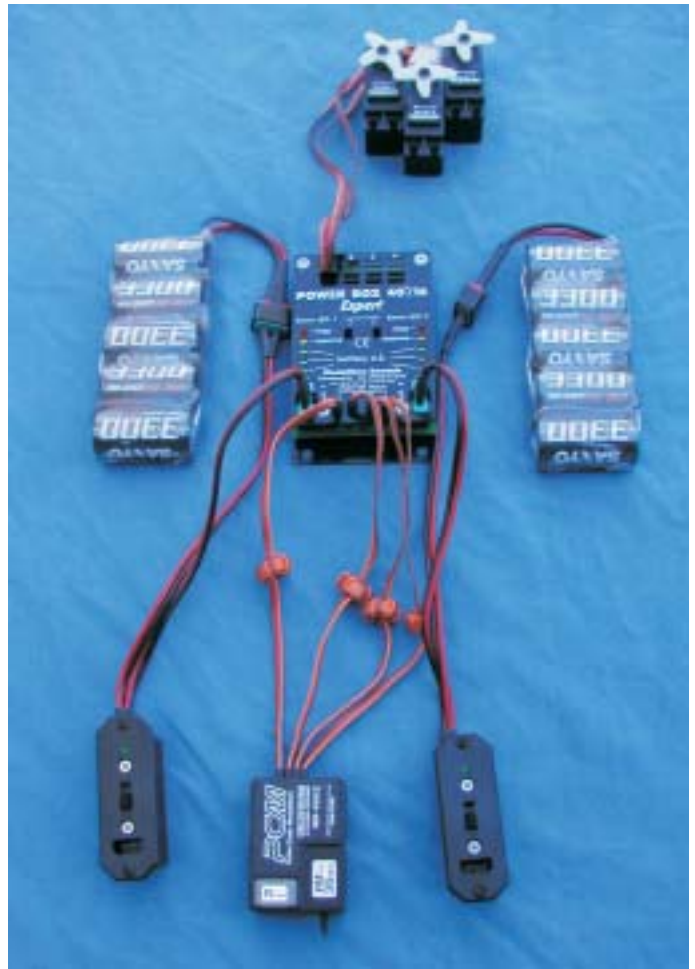
The Power Box 40 measures 85 x 45 x 19 mm and weighs 53 grams and is mounted with four grommeted screws.

The Power Box 40/16 is slightly larger at 91 x 65 x 18 mm with a weight of 77 grams. As per the Power Box 40 the battery supply is through two heavy duty switch harnesses. The battery voltage monitoring is the same as the Power Box 40 as is the external low voltage warning LEDs and also either four or five cell battery power.

The difference in the 40/16 is that it is fitted with four servo leads that plug into the RX channel sockets and each is fitted with a interference suppression ferrite ring. Each of these servo channels is expanded in the Power Box to four servo lead sockets making sixteen in all. Therefore you can plug up to four servos into each channel and their power will be supplied from the Power Box, not from the RX. The maximum current rating of each battery supply is a huge 40 amps.

In summary, the Power Box systems provide an increase in power supply reliability for those installations that require higher than normal servo power requirements. As well as supplying two independent power supplies the Power Boxes provide an invaluable indication of the battery capacity of each supply as well as an external low voltage warning. The switch harnesses are capable of handling high power and feature power on indication and an external battery charging socket.

The Power Box systems are available from Perth RC Models & Hobbies, 454 Newcastle Street, West Perth, 6005. Phone: 08 9328 8986. Fax: 08 9328 8932. email: perthrc@perthrc.com.au



Pictured right is a typical Power Box 40/16 installation. Two batteries and heavy duty switch harnesses. Up to four servos can be plugged into each RX channel. Note the interference suppression filters on each RX lead.



In a typical receiver, the positive and negative servo power is distributed to each servo on these power bus PC lands from the battery socket pins.