

PowerBox Competition SRS

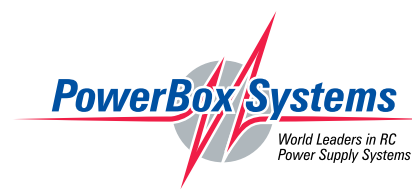
IT'S ALL ABOUT POWER OUTPUT

It is! It's all about the power output for the PowerBox system. It is about maintaining the output voltage and current for the control systems that today's generation of large-scale airplanes, sailplanes, jets and scale helicopters use. The PowerBox system is about getting the most performance out of your aircraft by guaranteeing that all servos, receivers and telemetry get clean, steady and reliable power. It is why so many championship RC pilots are now fitting their models with PowerBox power supply systems.

I first started using a PowerBox Royal power supply in my models about five years ago. It was after reading a report about what the PowerBox system does for supplying voltage and current to the servo systems. It was also after witnessing a couple of very scary crashes where the new generation of high-powered servos had consumed the aircraft's battery capacity in a short period of time, which resulted in the airplane losing control.



The new PowerBox Competition SRS includes inputs for two battery packs, heat sinks, four ports for remote receivers and a 128 x 64 OLED display.



This is the package that I purchased. It includes two 2800-mAh 7.4-volt LiPo battery packs, a switch, cables and the Competition SRS power supply.

It was, however, only after installing the PowerBox system in my model that I was truly sold on the power supply system. What I learned was that the PowerBox delivers clean, steady, and importantly, isolated power to each of my aircraft's servos. Unlike a typical receiver that has a common power bus (where all positive terminals and all negative terminals share a common wire), the PowerBox system uses field effect transistors (FET) to isolate the positive and negative leads for each servo's output. It also uses a pulse width modulation (PWM) for the power conversion and power output, which makes for very clean, steady and reliable power. However, the important thing is that the outputs are isolated from each other so that no matter what is happening to a servo on one channel, it won't affect the servos on the other channels.

That was a very fundamental explanation, so let me explain it another way. Let's look at the case of a new high-voltage, high-powered digital servo. This particular servo will deliver 403 oz-in. of torque when you supply it with 7.4 volts. Its rotational speed is 0.12 seconds on

7.4 volts too. However, the torque drops to only 333 oz-in. when it is supplied with 6.0 volts, and the speed then drops to 0.15 seconds. The reduction in torque from 7.4 volts to 6.0 volts is 17 percent, while the reduction in speed is 25 percent. So, consider that the bus of a typical receiver is common to all servos, and then consider that during any flight,

This is the magnetic switch that you can install in your model for turning the PowerBox on and off, which means you won't need an external switch.

PowerBox provides you with lots of input leads for using battery packs to power their power supply, so you can use NiCd/ NiMH, LiFe or Li-Ion packs.



This 12-volt car charger is designed to charge both battery packs at the same time. You just plug it straight into the packs. It includes a nice, long extension cable.



The 120/240 VAC wall charger is also designed to charge both PowerBox LiPo packs at the same time. Mine came with the plug used in Germany, which I changed out for a U.S. type.



The new PowerBox Competition SRS power supply is super easy to program. And you can now program it with the on/off switch that comes with the unit. Here it is showing the bootup screen.



You can program the Servo-Matching, Rx/Tx settings (frame rate) and Power Manager, and reset the unit. You simply enter the programming mode by holding down the Set button.



You can use the Servo-Matching program function to match the servos to each other. Again, you enter the programming function and just step through the menu.



This is the screen you'll use to select the transmitter system that you'll be controlling your airplane with. In this function you can also bind the radio to the receivers.



Once you have entered the programming mode, you can toggle through the functions by pressing buttons I or II on the switch. The SET button is used to confirm a selection.



At this screen you can choose the output voltage you want to use. In my case I've picked the 7.4-volt output that will drive my Hitec RCD high-voltage HS-7950TH servos.



Here I've set the frame rate to 18 ms. From this screen you can also pick the type of transmitter you'll be using, such as Spektrum/JR, Multiplex, Futaba or Jeti.



You can do output mapping to determine what port controls what function. You can also adjust servo travels, end points, travel volumes and centering.

servos do their work at different rates of current consumption. As the servo does its work, the bus' voltage is applied across the load (the servos' motors). Therefore, if some servos consume more current than others, more voltage is dropped across their loads. This is the same as saying that some servos will pull the bus' voltage low for the others on the bus. That then means that all the servos' performances are eroded by their lack of voltage because of the current consumed by the few. It kind of reminds you of communism, doesn't it!

Well, the capitalist in the RC power supply business is the

PowerBox system. It makes certain that no matter how much current or voltage an individual servo demands, the others have the opportunity to consume the power they need. This is like saying that all the servos on the PowerBox bus get to perform at their optimum when they have the need.

Moreover, the signal from the receiver that the servos use to know what position they must transit to or hold is isolated from the bus as well. Consequently, the signal is delivered to the servos at its optimum level, which means that the servos always "know" what they are being told by the radio receiver. It is not like what

a friend once told me, "You're running the servos' signal through another device." Nope, that is not even the case. The signal that is transmitted to the servos is amplified, clean and steady.

The PowerBox system uses very advanced technology to ensure that our airplanes' control systems get the power and signal they need. Considering this, it is no wonder that so many championship pilots are installing PowerBox systems in their competition models. It is also the reason that pilots who want the most from their models in terms of security and performance are using PowerBox hardware.



Entering this function will let you adjust the settings for both Rx and Tx. This is an intuitive process; however, PowerBox's instruction manual is one of the best I've ever used.



If you need to use your PowerBox Competition SRS in another model, you can reset all the program functions and parameters you've saved at this screen. Then you'll have it ready for reuse.



COMPETITION SRS

I'm not a championship pilot—not even! I'm a crazy, whacked, insane RC enthusiast who loves to fly RC airplanes. That is like saying I want the most from my models, even if it costs a couple of bucks extra to get it.

So that's why I've opted to buy the PowerBox Competition SRS system for my DA-120-powered, 168-in. wingspan Carbon Cub. This model is fitted with eight HS-7950TH servos. These servos deliver 486 oz-in. of torque when powered by 7.4 volts, and they have a transit time of 0.13 seconds. There is also an HS-7940TH running the throttle—yeah, I know that is way more servo than it needs, but I wanted to stay with a high-voltage system throughout the airplane, so ...

By putting a PowerBox Competition SRS (serial receiver system) in the Carbon Cub, I feel pretty much guaranteed that all the servos will get the power they need to do their work no matter what maneuver the airplane is being commanded to perform. Additionally, the SRS system has a built-in ability to use remote receivers with a serial interface, such as that of the new Spektrum® DSMX DX18 transmitter that I'll be using to communicate with the airplane's PowerBox. Let's just say that the whole RC system consisting of Spektrum Tx/Rx, PowerBox, Hitec servos, DA-120 engine and Falcon carbon propeller just turns me on as a high-quality reliable machine,

No matter how you want to set up your model's control surfaces, the PowerBox Competition SRS gives you the flexibility of doing so. This unit is worth its cost!

with the PowerBox Competition SRS power supply pumping the electrons through the "veins" of this outstanding airplane.

Specifications

Operating voltage	4.0–9.0 volts
Power source	2 x 2-cell LiPo batteries 7.4 volts 2 x 5-cell NiCd/NiMH batteries 2 x 2-cell LiFePo batteries (A123)
Current drain	switched on - ≈125 mA switched off - ≈33 µA
Dropout voltage	≈0.25 V
Max. receiver & servo current	2 x 10 A (stabilized) according to cooling, peak 2 x 20 A
Servo signal resolution	0.5µs
Signal repeat rate	12, 15, 18, 21 ms (frame rate)
Screen	OLED 128 x 64 pixels, graphic
Servo sockets	18 sockets, 14 channels
Temperature range	-30 to +75° C
Weight	115 g
SensorSwitch	15 g
EMV approval	EN 55014-1:2006
CE approval	2004/108/EG
WEEE Reg. No.	DE 639 766 11

PowerBox

SRS Features

- Ability to use receivers with a serial interface, such as those made by Spektrum DSM2 and DSMX, Multiplex M-LINK, Futaba S-BUS and Jeti R_SAT, Hott Weatronic.
- Direct transmission of battery voltages and capacities to the transmitter
- Unrestricted channel assignment of the PowerBox outputs
- Integral high-resolution graphic OLED screen, with 128 x 64 pixels
- User-friendly, menu-based programming using the SensorSwitch
- Signal amplification and interference suppression for 14 channels and 18 servos
- Synchronized servo output for totally synchronous servo response
- Flight recorder: records lost frames and Fail-Safe periods for all receivers connected to the backer
- Variable frame rate, range 12–21 milliseconds
- 16-bit processor for fast, high-resolution signal processing
- Four match-channels, each for two servos. Accurate adjustment of all eight servos
- Double-regulated output voltage for receivers and servos
- Can be connected to Spektrum and Multiplex MSB, Hott Weatronic downlink channel bus systems
- Separate voltage and capacity displays for each battery
- Software-selectable servo voltage: 5.9 V or 7.4 V
- Minimum value memory displays any voltage collapses
- Large-area heat sinks for high regulator power
- Regulator monitor, regulator malfunction indicator
- Support for three battery types: LiPo, NiMH/NiCd, LiFe
- Suppresses any servo feedback currents that might develop
- Upgradeable with PowerBox Systems USB Interface connectors

Distributor

PowerBox Systems GmbH
Ludwig-Auer-Straße 5
D-86609 Donauwörth
Germany
powerbox-systems.com

WHAT'S YOUR BLADE PATH?

He never dreamt of flying anything but fixed wing. Then he bought a Bind-N-Fly® mCX2 to fly around the house and . . . BAM! He was hooked. It was so fun to fly, he had to try another. Next thing you know he had worked his way up to the 120 SR and was eyeing the mCP X.

When it comes to giving you a clear path to your RC heli dream, no one beats Blade. From ready-for-anyone-to-fly ultra micros to high-performance 3D thrill machines, there's a Blade for every step of the way.

Blaze your own Blade path. Go to bladehelis.com right now to see the entire selection of Blade® heli-copters and accessories or to find the Blade retailer nearest you.



HORIZON H C B B Y | horizonhobby.com

BLADE
#1 BY DESIGN