

Wike RC Products

Power Distribution System (PDS)

Version 1.0

10/10/2010

Overview:

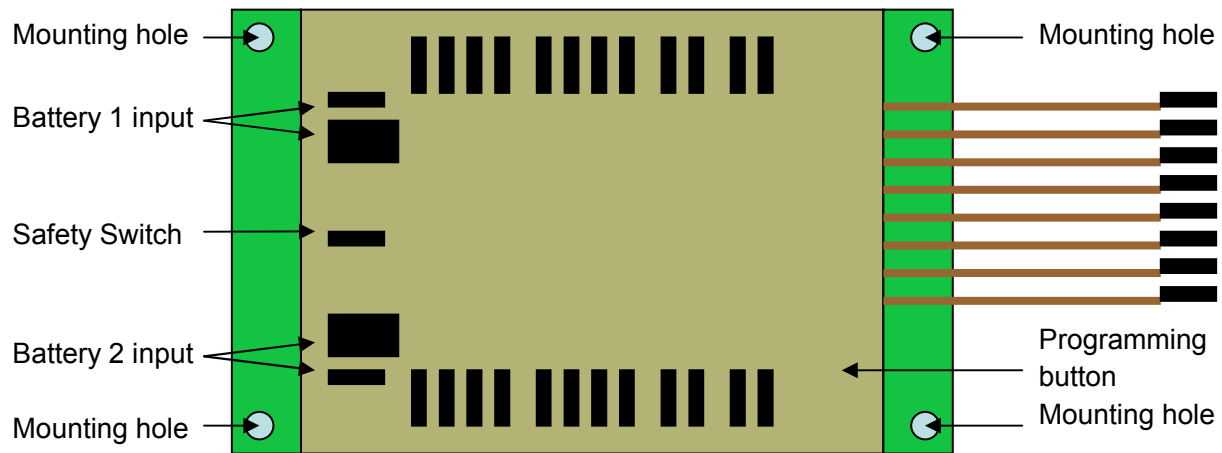
Congratulations on the purchase of a product that solves many common problems with larger RC aircraft and jets. The most important safety factor it provides is a highly reliable high current path between the batteries and the servos. The JR, Hitec, and Futaba connectors that we use can only carry about 3Amps. Also the small power switches supplied with radio systems can not handle much current either. With a large number of servos or the new high torque and high speed servos more current will be used by these servos than these connectors and switches can handle.

The PDS was designed to provide up to 20 Amps of continuous power to the servos. The switch is a safety switch meaning that the current for the radio system does not go through the switch. If the switch fails or becomes unplugged the PDS stay on and continues to supply power to the servos and receiver. The safety switch system consumes <10 microamps (uA). This is equal about 50mAH of battery drain per year. So it is not necessary to unplug the batteries from the PDS between flying sessions. If a plane is going to be stored for long periods of time then it is not a bad idea to unplug the batteries.

The PDS is intended to have dual batteries of the same type connected. The PDS will pull power from the battery with the most charge then drain them equally when their voltages are equal. The PDS displays battery voltage for each battery on the LEDs. This allows you to mount the PDS and see how the battery voltage is holding up. The PDS can support 2-cell Li-Ion, Li-Fe, Li-PO, or A123 batteries, 5 cell Ni-Cd or Ni-Mh, and 4-cell Ni-Cd or NiMh. If dual batteries are used they should be the same type (they don't have to be the same size however). The batteries are isolated from each other such that if one battery fails it will not short out or drain the other battery. The type of batteries being used can be programmed into the PDS so that the LED voltage read out is correct for that type of battery. The PDS comes factory set for 2-cell Li-Ion or Li-Po but can be changed for other types with the programming button.

The voltage output to the servos is battery voltage minus about 0.2 volts. This means that if high voltage servos are being used the PDS can delivery almost full battery voltage to them. The PDS has a 3-5Amp continuous 5.0V regulator that powers the receiver. This allows you to plug standard (5V) servos into the receiver if using higher voltage servos and batteries for flight control surfaces on the PDS. This is good for things like throttle and choke for example.

Installation:



There are four mounting holes in each corner of the PDS. It is recommended that a grommet or a piece of fuel line is put on the screw after inserting in the PDS then screwing it down in the airplane. The fuel line or grommet will reduce vibration.

Batteries can be plugged in via the high current connector or the standard connector. Extensions can be used on the safety switch. The polarity of the switch does not matter and it can be plugged in either way. For all other connections battery minus (-) goes toward the edge of the board and battery plus (+) is in the middle and signal is toward the center of the board.

To program the battery type, press and hold the programming button while turning the power on then release it after power is on. The last green LED for each battery should be flashing. This indicates that the battery type is set to 2-cell Li-Ion/LiPo. Pressing it again will cause the second green led to flash which is 2-cell A123. The yellow LED indicates 5-cell Nicd/Nimh. The red led is for 4-cell NiCd/NiMh. The programming button is on the bottom board between channel 8 and the nylon support for the upper board in the corner nearest channel 8.

Remember that the servo output is basically battery voltage. So if you are using servos that can not accept 7 or 8 volts then you will need regulators before the PDS. Remember that regulators still use some power under no load. So you will need either a switch or a regulator with a fail safe switch if you need regulators between the PDS and the batteries. Wike RC Products has 15AMP high efficiency switching regulator with a fail safe switch. If you have external switches or regulators with fail safe switches then you unplug the fail safe switch on the PDS and not use it. If the switch is unplugged the PDS is turned on.

The eight wires coming off the PDS go to the receiver and the PDS then amplifies each servo signal and distributes it to the servo outputs. Some servo outputs have four outputs and some have two outputs. It is not required to plug channel 1 of the PDS into channel 1 of the receiver.

Plug the PDS channels with four outputs into the receiver channels that need more servos. Not all receiver inputs need to be connected to the receiver. Some can be left disconnected.

Specifications:

Input Voltage Range: 4.8 – 10 Volts
Servo Output Voltage: Input voltage minus 0.2-0.3 volts
Total output Current: 20 amps continuous
Receiver output Voltage: 5.0Volts +/- 5%
Receiver output Current: Current limited to 3.0 Amps
Temperature Range: -40 to 85 deg C (-40 to 185deg F)

The following table provides the voltage required to turn each LED on based on the type of battery configured for.

	2-cell Li- ion/PO	2-cell A123	5-cell Ni-mh/cd	4-cell Ni-mh/cd
Top Green LED	> 8.0 Volts	> 6.5 Volts	> 6.0 Volts	> 5.0 Volts
2 nd Green LED	> 7.8 Volts	> 6.4 Volts	> 5.8 Volts	> 4.7 Volts
Yellow LED	> 7.6 Volts	> 6.2 Volts	> 5.6 Volts	> 4.5 Volts
Red LED	> 4.0 Volts	> 4.0 Volts	> 4.0 Volts	> 3.2 Volts

So if a battery is plugged in that is below the RED led voltage no LEDs will light up when turned on.

Warranty and Support:

The PDS comes with a 180 day warranty. The warranty only covers the IBEF. Always perform range tests. Warranty and support is available by emailing Wike RC Products at billw@nc.rr.com.