

voltage, short the pin designated "Down" to the center pin momentarily. If you hold the pins shorted for longer than one second the voltage will increase or decrease at a rate of about one quarter volt a second.

#### Servo Power LEDs

The servo power LEDs show the servos are getting voltage greater than 5.4V. If the regulator output drops below 5.4 volts the LEDs will go out. The most probable cause of the regulator output going below 5.4 volts is that the voltage at the inputs (Deans connectors) is going below 5.9 volts. Possible causes of the inputs going below 5.9 volts would be low batteries, wiring that is not up to handling the current causing excessive voltage drop or bad solder connections on the connectors.

#### Receiver Power LEDs

The receiver power LEDs show the receiver is getting voltage greater than 4.75V. If the receiver regulator output voltage drops below 4.75 volts the LEDs will go out. There are two possible causes of the receiver voltage going below 4.75 volts. First the load the receiver is presenting to the regulator is greater than one amp causing the regulator output to droop. This could be caused by directly plugging something into the receiver that is overloading the circuit. The second cause of the receiver regulator going below 4.75 volts is the input voltage to the receiver regulator has dropped below 5.4 volts. This means the input voltage on the Deans connectors is probably below 5.9 volts for some reason.

#### Optional Failsafe-switch

The PowerSystem Competition 12 supports the addition of a failsafe switch (optional package). The PowerSystem Competition 12 supports 2-cell lithium packs, ion or poly. When using the failsafe-switch, the switch lead is plugged into the input marked "Sw" near the bottom left of the servo connections as shown on the reference drawing.

Smart-Fly can supply two types of failsafe switches. First is the standard slide switch that most people are familiar with. This is a small slide switch without a charge jack. The second failsafe-switch is the Pin&Flag switch, where a pin, with a flag on in, is inserted into the switch to turn the system off. To fly, the pin is pulled out of the switch. The advantage of the Pin&Flag switch is that the system cannot accidentally be turned off, as can be the case with a slide switch. The failsafe switch lead can be extended using a standard Futaba extension.

The PowerSystem Competition 12 also supports charging the batteries through the two charge connections denoted by the "Chg 1" and "Chg 2" next to the battery input ports. The optional failsafe-switch package includes two charge leads and two Ernst charge jack mounts. The charge leads have a Futaba male on one end and a JR male on the other end. You may use these by

plugging either end into the PowerSystem Competition 12 and the other end into the charge jack holder.

The charge jacks on the PowerSystem Competition 12 can also be used to connect to a battery meter. One thing to keep in mind when using a battery meter and the failsafe-switch is that the jacks are not switched off when the unit is off so the battery meter will continue to draw power even when the unit is turned off.

#### Ignition Cutoff

A separate manual, "PowerSystem Competition 12 Ignition Cutoff User Guide" is supplied to instruct you on the setting up and use of the Ignition Cutoff. The Cutoff channel is assigned using a jumper from the receiver channel (on the receiver or servo output on the Competition 12) you want to control the Ignition Cutoff to the Ignition Cutoff control input marked as "IC" on the unit.

#### Calculating The Servo Regulator's Current Capability

The actual continuous current the servo regulator can handle is based on both the input voltage and the output voltage. The regulator's 7.5-amp current handling is based on an input voltage of 8.4 volts and an output voltage of 6.0 volts. If you have some other combination of input and output voltages you can calculate how much continuous current the regulator can handle. The maximum amount of current the regulator can supply is about 15 amps even if you calculate you can handle more continuous current based on your input and output voltages. You can use the following formula where  $V_{in}$  is the input voltage and  $V_{out}$  is the output voltage and  $I_c$  is the continuous current capability:

$$I_c = 18 / (V_{in} - V_{out})$$

An example might help clarify this. If you were using a 3-cell lithium pack in an electric, the fully charged voltage of the pack is about 12 volts. If you set the output voltage of the regulator at 6 volts then, using the equation:

$$I_c = 18 / (12.0 - 6.0) = 18 / 6.0 = 3.0 \text{ amps}$$

Additional information and technical help can be found at [www.Smart-Fly.com](http://www.Smart-Fly.com)

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# *PowerSystem Competition 12*

## User Guide

*Thank you for purchasing the Smart-Fly  
PowerSystem Competition 12!*

This manual takes you through the installation and operation of the Smart-Fly PowerSystem Competition 12. Features of the PowerSystem Competition 12 are:

- For use on 85cc to 140cc gas engine planes
- Light weight, 3.7oz, 108g
- Compact design, footprint is 6.0" x 3.0"
- Inputs protect against cell failure or power shorts
- Adjustable (5.5V-6.5V), 7.5 amp continuous, 15 amp peak servo regulator
- Filtered and regulated 5.0V power to the receiver
- LED power indicators for input and receiver power
- 12 channels, servo control buffered and amplified to 5.0V
- Full filtration of all signals in and out of the unit
- Integrated Ignition Cutoff

