



(Designed & Manufactured by **RC EXPLORER TEAM**)

**XPS Brushless Speed Control System V1.2 User Guidelines**

**1. Technical /Specifications:**

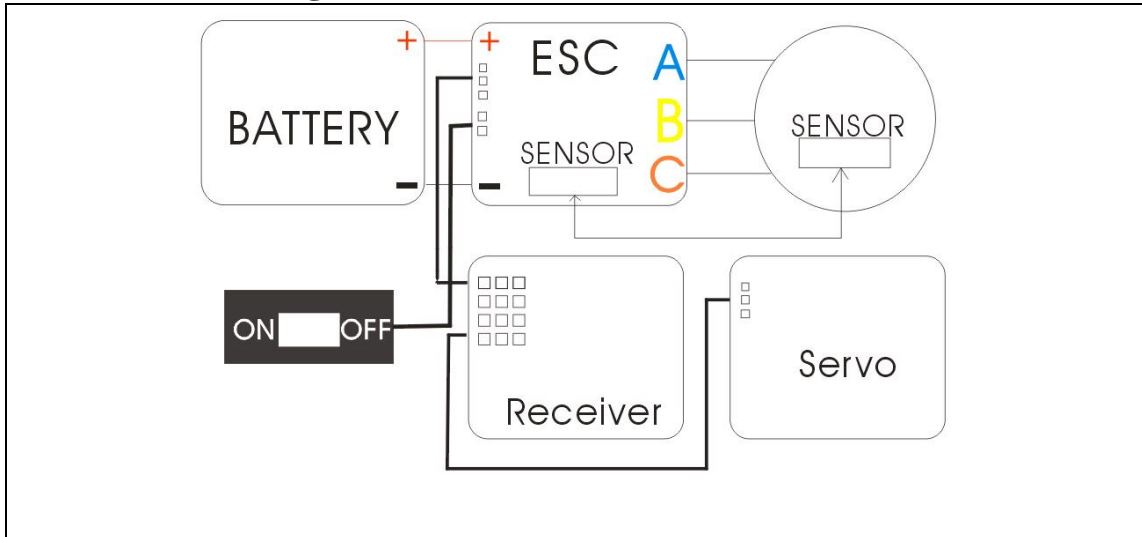
<b>Model:</b>		<i>XPS- Pro</i>	<i>XPS-Sport</i>	<i>XPS-EL</i>
<b>Continuous current:</b>		140A	70A	40A
<b>Burst Current (10sec):</b>		720A	380A	160A
<b>Battery Input:</b>	<b>3.7V LiPo</b>	2 cells	2 cells	2 cells
	<b>1.2V NiMh/NiCd</b>	4-6 cells	4-6 cells	4-6 cells
<b>BEC Output:</b>		Linear 6V/3A	Linear 6V/3A	Linear 6V/3A
<b>Weight (not include wiring &amp; fan):</b>		~42g	~41g	~40g
<b>Dimension(L x W x H) mm (Include the fan assembly to the ESC)</b>		~33 x 34 x 29	~33 x 33 x 29	~33 x 33 x 29
<b>Motor limit with 2cell x 3.7V Lipo. The motor timing is at 0 degree</b>		4 Turn or over	6.5 Turn or over	9.5 Turn or over

**2. Features:**

- \* Support all kinds of sensor/sensorless brushless motors in RC model 1/10<sup>th</sup>, 1/12<sup>th</sup> Car & Truck
- \* XPS Pro and Sport Speed control can support **Turbo** mode function for modify and stock mode motor.
- \* Include zero timing mode function. Orange LED blinking indicates zero timing mode at neutral position.
- \* Support Running Mode: Forward with brake, Forward/Reverse, Forward/Reverse with Brake
- \* Manual Power profile: It can adjust the setting of the throttle/ brake power profiles
- \* One touch On/Off switch which are located on top of speed control. It can eliminate the problem of the switch wire being cutting off under collision and can save some space for the rc car chassis
- \* Use the pocket-size LCD program card to program the controller settings
- \* Multiple protection functions: Low voltage cut-off protection, Overheat protection, Throttle signal loss protection.



### 3. Connection Diagram:



#### *Installation Tips:*

1. Connect the speed control to the receiver position channel 2.
2. Connect **blue** power wire to motor “A” solder-tabs
3. Connect **yellow** power wire to motor “B” solder-tabs
4. Connect **orange** power wire to motor “C” solder-tabs
5. Connect the hall sensor cable between the speed control (underneath the solder taps) and motor
6. Connect **red** power wire to battery “Plus”
7. Connect **black** power wire to battery “Minus”

#### *Point to notes:*

1. All power wires should be connected properly according to the color indicator and avoid creating solder bridges on the solder tab
2. Avoid soldering longer than 5sec per soldering joint when replacing the power wires on the speed control
3. When connecting the battery to the speed control, please make sure the battery + or – should be connected properly.

Please make sure to follow the above tips and notes to install the speed control, otherwise, the speed control may be destroyed due to the improper connection of the wires.



#### 4. Speed Control Setup:

##### **Step1: Transmitter Settings:**

Before setup the speed control, please setup the following functions on your transmitter if available:

Functions description	Name in Radio	Setting Request
Throttle Travel	High ATV, EPA	100%
Brake Travel	Low ATV, EPA, ATL	100%
Throttle Exponential	EXP, EXPO	Set at 0
Neutral Trim	Sub Trim	Center
Servo Reverse	Throttle Reverse	Any setting, keep unchanged after the set-up procedure

If the transmitter does not have any of the above function, it is already in basic setup function.

##### **Step 2: Set neutral, forward and brake endpoint data to the speed control:**

- ⊙ Switch off the power of the speed control and please make sure the speed control is not connected to the battery.
- ⊙ Remove the motor gear to allow the wheels of the model are free to rotate.
- ⊙ Switch the transmitter on and set the transmitter throttle stick to the full brake position.
- ⊙ Connect the battery to speed control and turn on the unit.
- ⊙ After the unit is on and wait for around 1 second, there is a RED light flashing. It means the speed control enters to the **throttle range setting** mode and the full brake position has been set at the same time.
- ⊙ After entering to the **throttle range setting** mode, please move the throttle stick to the neutral position. After that, the flashing RED light will changed to ORANEG light which indicates the neutral position has been set.



**Step 2: cont...**

- ⊙ Move the throttle stick to the full throttle position, then the flashing ORANGE light will be changed to GREEN light which indicates the full throttle position has been set.
- ⊙ Move the throttle stick to the neutral position again, then the flashing GREEN light will be changed to the fixed ORANGE light again that means **throttle range setting** has been completed.

**Step 3: Double check the speed control function:**

The speed control can be checked based on the below LED status.

<b>Functions</b>	<b>Status LED Color</b>
Neutral	Orange
Full Throttle	Green
Full Brake	Red

- ⊙ If the above LED status is correct corresponding to the speed control function, then the setup procedure has been completed and the XPS is ready to use.
- ⊙ If you make a mistake during the setup procedure. Please turn off the unit first and repeat the Step 2 procedure.

In setup mode, XPS will store all settings such as neutral, forward or endpoint position inside the XPS memory and will not lose even if it is disconnected from the battery.

**Notes:**

1. If you find the Throttle or Brake is reversed, please reverse it back to normal position in the transmitter and go to step 2 to setup the speed control again.
2. If you find the ORANGE LED keep blinking at neutral position, it indicates it is at zero timing mode without any timing function to the motor.



## 5. Mode Programming:

### Program mode function table:

<i>Mode function name</i>	<i>Description</i>	<i>Default Setting</i>
1. <i>Running Mode</i>	- Forward with brake, Forward/Reverse, Forward//Reverse with brake	Fwd/ brake Fwd/Brake/Rev (XPS EL)
2. <i>Low voltage protection</i>	2.0V~8.4V --- 0.1V/step	6.3V
3. <i>Dead band</i>	0~30% --- 1%/Step	10%
4. <i>Over heat Cut</i>	On/Off	On
5. <i>Reverse Force</i>	1~100% --- 1%/Step, higher value have higher reverse force	90%
6. <i>Brake PWM Frequency</i>	Level 1~4, higher level have higher brake frequency	2
7. <i>Brake force</i>	1~100% --- 1%/Step, higher value have higher brake force	90%
8. <i>Drag Brake</i>	1~100% --- 1%/Step, higher value have higher drag brake force	9% 2% (XPS EL)
9. <i>Forward PWM Frequency</i>	Level 1~4, higher level have higher forward frequency	3
10. <i>Punch level</i>	0~100% --- 1%/Step, higher value have more initial punch	0%
11. <i>Power Band</i>	1~100% --- 1%/Step, higher value have higher overall power band	100%
12. <i>Start RPM</i>	1000~100000 --- 1000/Step, RPM to start the Timing Boost	5000
13. <i>Timing Burst</i>	1~100% --- 1%/Step, how fast achieve the max timing boost value. Higher value allows faster Timing Boost	70%
14. <i>Timing Boost</i>	1~100% --- 1%/Step, higher value have more advance Timing, in term to make the motor having higher RPM	0%
15. <i>Turbo Delay</i>	0.1~1s --- 0.1s/Step, higher value with longer time to start up the turbo function	0.1s
16. <i>Turbo Boost</i>	1~100% --- 1%/Step, higher value have more advance turbo Timing, in term to make the motor having higher RPM	0%

**Notes:** The maximum sum value of Turbo Boost and Timing Boost cannot be set more than 100%. For example, if the Timing Boost is set at 80%, then the max Turbo Boost should be set at 20%. In other words, if the Turbo Boost is set at 50%, the max Timing Boost should be set at 50%.



### **Some Mode functions Explanation:**

- ◎ *Low voltage protection* – For some batteries when they are over-discharged, the battery may be got failure, so it can use this function to set the minimum working voltage to protect the battery.
- ◎ *Dead Band* – It can be used to control the sensitivity of the forward throttle at neutral position. If the dead band value is lower, it will be more sensitive to pull the motor up for rotating.
- ◎ *Overheat Cut* – When default temperature is achieved, the speed control will have adaptive system to control the max power output to the motor to avoid the burning problem.
- ◎ *Brake PWM Frequency* – higher braking frequency should allow the motor to be braked more smoothly.
- ◎ *Drag Brake* – The motor will be braked automatically when the throttle is returned from forward to neutral position. For higher drag brake value, the motor will have more automatic brake functions.
- ◎ *Forward PWM Frequency* – higher forward frequency should allow the motor to move forward more smoothly.
- ◎ *Punch* – It can increase the initial power to the motor for every time the throttle is pulled forward from one point to another point. Higher value punch should have more initial power to the motor.
- ◎ *Power Band* – It can control the overall battery power delivery to the motor. For 100% power band, it can delivery all battery power to the motor when in full throttle. For easier driving, it may try to lower the power band.
- ◎ *Start RPM* – It is the RPM to start the Timing Boost. For lower value RPM, it can increase the power to the motor more quickly. For more smooth control, it should increase the RPM.
- ◎ *Timing Boost* – It is the boost timing to the motor when achieve the start rpm value. For higher timing boost, it can increase more power to the motor.
- ◎ *Timing Burst* – It is how fast to finish the boost timing. For high value timing burst, it will complete the timing boost more quickly, in other words, it will make motor speed up more quickly.
- ◎ *Turbo Delay* – It is when to start up the turbo after the throttle is in full position. Higher value will have more delay to start up the turbo boost timing function.
- ◎ *Turbo Boost* – It is the turbo boost timing to the motor when the throttle is in full position and the turbo delay is achieved. For higher value turbo boost, it can increase more power to the motor.



## 6. Program Card Specifications:

- \* Dimension: 107mm(L) x 64(W) x 12.8mm(H)
- \* Weight: ~62g

### Program Card Operation:

#### **Step 1: Connection with Speed control:**

⊙ Switch off the power of the speed control and take out the speed control BEC wire from the receiver.

⊙ Connect the speed control BEC wire to the Program card connector.

Please make sure the speed control wire is connected properly based on the below description.

- Connect BEC white color wire to the program card pin at ('S') position.
- Connect BEC red color wire to the program card pin at ('+') position.
- Connect BEC black color wire to the program card pin at ('-') position.

⊙ Connect the battery to the speed control and turn on the unit. Then there should be a message 'XPS Series V1.1 Program Card'. If any key pressed, LCD screen will show 'Running Mode' setting of the speed control and it is ready to set the speed control.

Program Card Picture:





**Step 2: How to program the mode function setting:**

- ⊙ Press the Mode Left/Right key to select the mode setting
- ⊙ Press the Item Up/Down key to select the mode setting values
- ⊙ After all values has been set, please pull out the speed control BEC wire from the program card, then a beep sound will be heard that mean all values will be updated and stored inside the speed control

**Reset all Setting parameters:**

If factory default setting wants to be restored, press and hold Mode Left/Right keys for 1s, then there will be a message “Data Reset, Remove RX Wire” shown on the LCD. After BEC wire is pull out from the speed control, all settings value inside the speed control will be reset to factory default setting.

**Firmware Version Display:**

Press and hold Mode Left/Item Down keys for around 2s, then the firmware version number will be shown on LCD. If Mode Left/Mode Right key is pressed again, then it will returned back to the last setting display location.

**7. Points to Note:**

1. Once all data are reset, neutral point position is also reset. In this case, please remember to base on Section 4 to set the throttle position again.
2. When the Low Voltage Protection is activated, an RED light on the speed control will be flashing that mean the voltage is too low and need to change the battery.
3. When the Overheat Protection is activated, the speed control will have adaptive system to control the max power output to the motor to avoid the burning problem.





## 8. Troubleshooting Table:

<i>Symptom</i>	<i>Cause</i>	<i>Action to take</i>
No motor and servo functions	Wiring problem	Check wire and connectors
	Wrong polarity when connecting the BEC wire to the receiver	Correct the polarity when connecting the BEC wire to the receiver
	Transmitter, Receiver or Battery defective	Replace the components one by one
	Speed control defective	Send for repair
No motor function, but servo is working	Wiring problem	Check wire and connectors
	Sensor wiring defective/missing	Change other wire
	Motor defective	Change other motor
	Speed control defective	Send for repair
While accelerating, motor stutters	Sensor wiring defective	Replace the wire
	Motor or Sensor board defective	Change other motor or sensor board
	Power Capacitor failure	Replace the power capacitor
	Radio interference	Change the components location
	Speed control defective	Send for repair
Motor runs at constant slow speed and never stops	Transmitter settings changed after setup	Repeat set up procedure
	Humidity/water in speed control	Dry the speed control
Radio Interference	Transmitter batteries empty	Replace transmitter batteries
	Bad battery connection	Check wire connection
	Receiver, transmitter or servo defective	Replace the components one by one
	Receiver or antenna too close to power wires of motor and battery	Change the components location



## **9. Warning Notes:**

- Please read the following instructions carefully before starting to use the unit. For those users that do not have experience to use it, please seek help from the professional users.
- Please make sure the voltage applied to the unit is in the operating range and the battery + and – sign should be connected properly to the power cord of the unit. If battery +, - is reversed to connect to the unit, the unit will be burnt out.
- In case there is an abnormal operation in the unit, please turn off the unit and go to section 4 to setup the speed control again.

## **10. 45 days Warranty Services:**

All products are manufactured according to the highest quality standards. Team Powers guarantees this product to be free from defects in materials or workmanship for 45 days from the original date of purchase verified by sales receipt. This limited warranty doesn't cover incorrect installation, operations that are instructed to users, damaged by crash or any natural disaster.

This also applies the below things on:

- ⊙ Cut off the original power plug
- ⊙ Receiver wire and/or switch wire damaged
- ⊙ Mechanical damage of the case
- ⊙ Mechanical damage of electronic components/PCB
- ⊙ Humidity/Water inside the speed control
- ⊙ Soldered on the PCB (except on solder pads)
- ⊙ Connected speed-control with reversed polarity

Before you send in this product for repair, please try to eliminate all other possibilities or improper handling by checking all other components in your model and the trouble shooting guide. If the products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

With sending in this product, the customer has to advise Team Powers if the product should be repaired in either case. If there is neither a warranty nor guarantee claim, the inspection of the product and the repairs may be charged with a fee at the customers expense according to our price list. A proof of purchase including date of purchase needs to be included. Otherwise, no warranty



can be granted. For quick repair-and return service, please add your address and detailed description of the malfunction.

If Team Powers are unable to service those defective products that are no longer exist in the market, we shall provide you with a product that has at least the same value from one of the successor series.

The specifications like weight, size and others should be seen as in this user guideline. Due to ongoing technical improvements, which are done in the interest of the product, Team Powers does not take any responsibility for the accuracy of these specs.

**Distributor Service:**

- ⊙Package your product with sales receipt together with the detailed description of malfunction.
- ⊙Send parcel to your national Team Powers dealer/distributor.
- ⊙Distributor repairs or exchanges the product.
- ⊙Shipment back to your usually by COD (cash on delivery), but this is subject to the general policy of your national Team Powers dealer/distributor.

If any further information need upon reviewing the instruction, please feel free to contact **enquiry@rc-explorer.com**. For more about Team Powers product information, please go to the below web sites. <http://www.rc-explorer.com> or <http://www.team-powers.com>.