

Brushless Car ESC's User Manual

FVT Sensored/Sensorless Brushless Speed Controller for Car or Truck

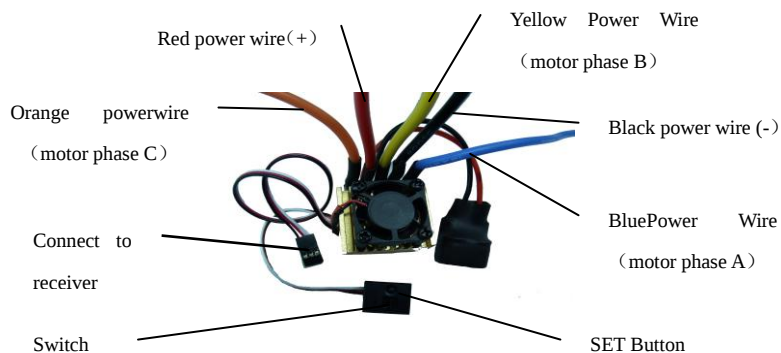
Thank you for your purchasing the FVT Brushless Electronic Speed Controller (ESC). The FVT ESC is specifically designed for operating Sensored / Sensorless brushless motors. High power systems for RC model can be very dangerous and we strongly suggest that you read this manual carefully. FVT Model have no control over the correct use, installation, application or maintenance of these products, thus no liability shall be assumed nor accepted for any damages, losses of costs resulting from the use of this item. Any claims arising from the operating, failure or malfunction etc. will be denied. We assume no liability for personal injury, property damage or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation for compensation is limited to the invoice amount of product in question.

Features:

- Enhanced throttle response, excellent acceleration, strong brakes and linear throttle.
- Various kinds of running modes to enable customer to operate systems very easily and quickly.
- Ratio brakes: 10 kinds of percentage barking and 8 kinds of percentage drag brake adjustments.
- 5 different modes of motor timing which can be adjusted by firmware and can be matched with all kinds of brushless motors.
- Using advanced 2-in-1 LCD programming card or USB Link Software to set up or update the firmware online to make setting changes.
- Multiple protection features: Low voltage cut-off protection, over-heat protection and throttle signal loss protection
- Compatible with NOVAK, LRP , ORION Sensored brushless motor

Begin to Use The New ESC:

Before using the new ESC please carefully check for whether each connection is correct or not. When using the Sensored Brushless motor, the Blue motor wire A, Yellow motor wire B and Green motor wire C of the ESC must be connected with the Sensored motor wire A,B,C respectively. It is necessary to connect the Sensor wire to the “Sensor” socket on the ESC. Don’t change the wires sequence optionally.



ESC's LEDs function

* When Power is connected, the ESC can automatically identify the motor type (Sensored/Sensorless) indicated via LED.

*If the ESC works initially as Sensored, remove the Sensor wire and the ESC will automatically change to Sensorless.

Sensored/Sensorless ESC's		
Function	LED	LED Status
Low voltage of the battery	Red LED	Blinking
Over-heat of the ESC and motor (95℃)	Green LED	Blinking
Sensored motor	Red and Green LED	ON
Sensorless motor	Green LED	ON

Throttle Range Calibration (For the first time using transmitter or changing the transmitter you must set Throttle Range Calibration)

1. Switch off the ESC, then connect ESC with the battery packs and turn on the transmitter; set the direction of the throttle channel to “REV”, set the throttle trim to “0”, set the “EPA/ATV” value of the throttle channel to 100%, and disable the ABS function of your transmitter.
2. Hold the “Set” button and switch on the ESC, wait for about 1 second until the Red LED begins to flash and the motor emits continuous “Beep-beep-“ sound, then release the “Set” button and pull the throttle trigger to the neutral point at the same time, you will hear motor beeps.
3. Push the throttle trigger to end position of forward, press set button for one time, you will hear motor “Beep-beep-”.
4. Now push the throttle trigger to the end position of backward, press “Set” button for one time, you hear motor “Beep-beep-beep”, both of the Red LED and Green LED turned off simultaneity, the Throttle Range Calibration is confirmed, the motor can be started after 2 seconds for battery cells detecting program.

Brave Wolf I Series Programmable items and factory default

Function	1	2	3	4	5	6	7	8	9	10
Motor Timing	Very Low	Low	Normal	High	Very High					
Initial Acceleration	Low	Medium	High	Very High						
Running Mode	Forward w/o Reverse	Forward w/pause then Reverse	Forward/revese							
Percentage Braking	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Percentage Drag Brake	0%	4%	8%	12%	15%	20%	25%	30%		
Cut-off Voltage	2.6V/Cell	2.8V/Cell	3.0V/C	3.2V/Cell	3.4V/C	No protect				
Throttle Limit	20%	40%	60%	80%	100%					
Throttle Percent Reverse	20%	30%	40%	50%	60%	70%	80%	90%	100%	
Motor Rotation	Forward	Reverse								
Neutral Range	3%	5%	7%	9%						

FVT Sensored/Sensorless brushless ESC general information

1. Motor Timing – Very Low Low Normal High(Default) Very High

Different timings suit for different motors so to make motor works with the best efficiency. Please test different timing’s working state before making changes.

2. Initial Acceleration –Low Normal High(Default) Very High h

According to your own favorites and function of your car, you can choose different accelerations. Attention: When using the HIGH choice, you will have wheel-spinning acceleration at the cost of run time. This is also very tough on the batteries as the amperage draw can be very high. If your vehicle cuts out, hesitates or loses radio control, you should consider setting this at a lower value.

3. Running Mode

•Forward w/o Reverse

This is a Race setting - Reverse is disabled. You will find in racing, most tracks will not allow racing with reverse enabled.

• Forward with pause then Reverse: (DEFAULT)

General bashing around (FUN) or racing if reverse is allowed for the event. The Electronic Speed Controller requires 2 seconds of continuous neutral from the transmitter prior to allowing reverse to operate.

Note: There is automatic protection within the FVT ESC. Only after you have stopped and returned the trigger to neutral will reverse become available. If while traveling in reverse, pull the trigger to go forward. This is to help prevent serious damage to the drive train.

• Forward / Reverse

If the option is activated, the RC car could go forward and backward, but couldn’t brake.

ESC – reverse operation Should you get into a situation that requires reverse, after you have applied any brakes you may have needed, return the throttle trigger to the neutral position. Wait a moment or two and then push the trigger forward for reverse.

Percentage Braking –10%,20%,30%,40%,50%(Default),60%,70%,80%,90%,100%

Gives you the ability to have full control over the amount of brake your vehicle will have.

Note: Percentage Braking relates to the position of the throttle stick, the highest braking position means when the throttle stick is put on the bottom.

5. Percentage Drag Brake - 0%(Default) 4%,8%,12%,15%,20%,25%,30%

The drag brake function provides the driver a set percentage of brake when you have the transmitter resting in neutral.

6. Cutoff Voltage Threshold

• Automatically detect the number of the cells Default: 3.0V/Cell

According to the type of your batteries , set up the type of the batteries and Low Voltage Cutoff Threshold via PC software or program card. The ESC can detect the Voltage of the battery anytime and will stop working once the Voltage of the battery is lower than the preset Low Voltage Cutoff Threshold.

- When using **NiMH or NiCd batteries** you do not need to set a cutoff voltage to protect the batteries. If you use more than 6-cell NiMH or NiCd batteries, you must adjust the cutoff voltage, for example if you use a 8-cell pack of NiMH batteries you would use a cutoff of 5.6V volts (8 x 0.7V = 5.6V). When the voltage of the batteries packs is within 8.4~12.6V, the ESC will automatically identify 3S LiPos. When the voltage of the batteries packs is less than 8.4V, the ESC will automatically identify 2S LiPos. When the voltage of the batteries packs is within 8.4~14.8V, the ESC will automatically identify 2~4S LiPos. When the voltage of the batteries packs is within 21~25.2V, the ESC will automatically identify 5-6S LiPos.

- When using any **Lithium batteries**, they must not be discharged to less than 3.0V per cell.

7. Throttle Limit –20%,40%,60%,80%,100% (Default)

Use this to limit the power available using forward throttle.

The lower the percent the less forward throttle speed will be available.

8. Throttle Percent Reverse –20%, 30%,40%,50%,60%(Default),70%,80%,90%,100%

Use this to limit the power available using reverse throttle. The lower the percent or level the less speed will be available in reverse.

9. Motor Rotation Normal (default), Reverse

10. Neutral Range –3% , 5% , 7% (Default), 9%

This setting adjusts the amount of “Deadband” off neutral on the throttle trigger.

Trouble shooting

Trouble	Possible Reason	Solution
After power on, LED doesn't light up, fan doesn't work	1. ESC doesn't get the working voltage; 2. ESC's switch is damaged.	1. Check the circuit from battery to ESC is soldered well or not. 2.Return ESC to repair or replace ESC's switch button.
After power on, both Red and Green LED lights up	Battery's voltage is not within the normal range.	Check the voltage of battery pack.
After power on, the LED lights up always and motor could not start up	Battery's power voltage is too low.	Check the voltage of battery pack.
Remote Controller makes "Forward" singal while the Car make the "Rervese" function	1.Wire connection sequence between input wire and motor wire are incorrect; 2. This car body's motor rotation is in reversed direction with main body's motor.	Swap any two wire connections between ESC and motor.
Motor stops suddenly during running	1. Receiver meet with interruption; 2. ESC enters into Battery low voltage or over-heat protection.	Disconnect ESC with power, recheck battery pack's voltage and receiver cable are connected correctely or not.
During start up, motor accelerates suddenly so the motor may stop for a while or doesn't run smoothly	1. Battery's discharge is not strong enough; 2. Motor rotation is too high and the teeth ratio is not correctly; 3. ESC's start up acceleation sets to be too fast; 4. Motor timing is too low	1. Change battery with stronger discharge power; 2. Change lower-speed motor or raise the ratio of motor's speed decrease; 3. Change ESC's start up acceleration (start up mode) to be slower; 4. Set motor timing to bigger one.

Favorite Electronics (Shenzhen) Co.Ltd.

Block I, Henghaofeng S&T Park, Phase II, E Zone, Mingzhu West Industrial Park, Mingzhu Avenue, Shajing, Bao’an, Shenzhen, P.R.China

Tel: +86 755 61168885 61168882

Fax: + 86 755 61168887

Website: www.szft.com E-mail: sales@szft.com