

45A/60A KINGBOX WATERPROOF ESC

Sensored/Sensorless Brushless Speed Controller for Car or Truck

Thank you for your purchasing this Brushless Electronic Speed Controller (ESC). This electronic speed controller 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. We 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 throttle linearity
- Using advanced software interface to set up or update the software
- Using both of LCD and LED program card to make adjustments.
- 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:

Please attend to each connections and make sure each assignment is correct.



45A/60A Specifications:

Model	Enemy 45A 60A
Continue Current	45A 60A
Burst Current	260A 380A
Resistance	0.0010ohm 0.0007ohm
Suitable Car	1:10 on-road and off-road cars/trucks, SCT
Motor Type	4Pole Sensorless brushless motor
Suitable Brushless Motor	4P SL 3650
Battery cell	2-3LiPo/5-10NC NiMH/NiCd
BEC Output	6V/2A 6V/3A
Dimension(with out fan)	41*33*35mm
Weight(g)	45A(102G) 60A(104)

Sensored Mode :

When using a Sensorless Brushless motor, the Blue motor wire A, Yellow motor wire B and Orange motor wire C of the ESC can be connected with the motor wires freely. If the motor runs in the opposite direction, please swap any two wire connections.

Connection to the Receiver

Black wire RX-
Red wire RX+6.0V
White wire RX-Signal

LEDs:

Conversion of Sensored and Sensorless function

When the Power wires on the ESC are connected with the battery pack, the ESC can automatically identify the motor type (Sensored/Sensorless) via indicated LEDs. If the ESC works at the status of Sensored, remove the Sensor wire, the ESC can be automatically changed to the status of Sensorless

Function	LED	LED Status
Low voltage of the battery	Red LED	Blinking
Over-heat of the ESC and motor(95°C)	Orange LED	Blinking
Sensored motor	Red and Orange LED	ON
Sensorless motor	Orange LED	ON

Throttle Range Calibration

Set up the ESC at the Throttle Range Calibration for the debut. For the first time using transmitter or changing the transmitter you must set up Throttle Range Calibration.

- 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 EPA/ATV value of the throttle channel to 100%.
- Hold the "set" button and switch on the ESC, wait for about 4 seconds until the Orange LED is on solid, then release the "set" button, pull the throttle trigger to full throttle until Red LED blinks and will be on Solid, the motor beeps.
- Push the throttle trigger to Full Brake until the Orange LED blinks and will be on solid, the motor beeps.
- Now return the throttle trigger to the Neutral position, both of the Red LED and Orange LED blink simultaneously and will be on solid, the motor beeps, both of Red LED and Orange LED wink. The Throttle Range Calibration is confirmed.
- Turn off the ESC power switch.
- Turn the ESC back ON. You are ready to use the ESC now.

Programmable items and default settings:

Default settings are shown in the grey boxes

Programmable Items	Programmable Value								
	1	2	3	4	5	6	7	8	9
Cut-off Voltage	2.6V/cell	2.8V/cell	3.0V/cell	3.2V/cell	3.4V/cell	NO-cut off			
Running Mode	Forward w/o Reverse	Forward with pause then Reverse	Forward /Reverse						
Motor timing	Very Low	Low	Normal	High	Very High				
Initial Acceleration	Low	Medium	High	Very High					
Throttle percent Reverse	20%	30%	40%	50%	60%	70%	80%	90%	100%
Throttle Limit	0%	20%	30%	40%	50%	60%	70%	80%	90%
Percentage Braking	10%	20%	30%	40%	50%	60%	70%	80%	100%
Percentage Drag Brake	0%	4%	8%	12%	15%	20%	25%	30%	
Motor Rotation	Normal	Reverse							
Neutral Range	2%	3%	4%	5%	6%	10%			

Sensored/Sensorless brushless ESC general information

1. Cutoff Voltage

Automatically detect the number of the cells

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 Cut off Threshold.

When using NiMH or NiCd batteries you do not need to set a cutoff voltage to protect the batteries. If you are using more than 6-cell NiMH or NiCd batteries, you must adjust the cutoff voltage, for example if you are using an 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

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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.

Customized Voltage Cutoff (for NiMH or NiCd Batteries) you can select a starting cutoff voltage of 4, 5, 6, 9 or 12 volts. Then using the up/down to the right of the voltage you can increase the voltage stepping up 0.1V between the selectable settings.

When using any Lithium or M1 (A123) batteries, they must not be discharged to less than 3.0V per cell.

2. 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 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.

3. Motor Timing - This option affects the power band and efficiency (run time) of an electric motor. The default is "Normal" and is a good starting point to deliver power and provide good run time.

Very Low Provides maximum efficiency with less power. Higher timing produces significantly more power but at the expense of efficiency (less run time) and typically the motor will generate more heat. Each brushless motor will respond to timing differently. Good for running around on paved, or harder surfaces, and racing with high KV rated or low-turn motors
Low Provides power for running through soft surfaces, having fun and longer run time.
Normal (Default) Good mix of power and efficiency using any motor
High More power than efficiency so run time will reduce, and you should be monitoring motor heat. The higher KV or lower turn motors will generate heat quickly using this setting. A safe high temperature range is 165F to 180F (74~82 Celsius), going higher may damage your motor.
Very high This is maximum power and must be used with caution.
Note : Any motor has the potential to over-heat in this setting. Frequently check the motor temperature and make sure you're not operating higher than 165 and 180 Fahrenheit (74 ~82 Celsius), which may damage your motor, or damage your Electronic Speed Controller (ESC).

Initial Acceleration - Use this to limit the initial power that is sent to the motor when starting from a complete stop.
Using the low option, the vehicle will launch very slowly and provide the longest run times. 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.
Low Using this option will provide longer run times and is easiest on the batteries. It is a good choice for beginners.
Medium Medium requires more from your batteries, and is good for low traction surfaces.
High This option will provide full acceleration and requires stout batteries to supply the load required in this setting.
Very high This option will provide full acceleration and requires stout batteries to supply the load required in this setting.

5. Throttle Percent Reverse - Use this to limit the power available using reverse throttle. The lower the percent or level the less speed will be available in reverse.
20%, 30%, 40%, 50%, 60% (Default), 70%, 80%, 90%, 100%

6. Throttle Limit Use this to limit the power available using forward throttle.

The lower the percent the less forward throttle speed will be available.
0% (Default), 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%

7. Percentage Braking - Gives you the ability to have full control over the amount of brake your vehicle will have.
10%, 20%, 30%, 40%, 50% (Default), 60%, 70%, 80%, 100%

8. 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. This will create the of a brushed motor.
Drag brake are used in racing to slow a vehicle as you let off approaching a corner versus the driver having to push the brake at every corner. Try working with this to get a sense of how you might use this for your track.

If you are running on a high traction track with tight corners, a stronger setting should work best. If you are running in an open area, you will find a smaller percentage will result in better control. If you are running in dusty or slippery surfaces, you will more than likely want to use the lowest option.

9. Motor Rotation

Normal (default), Reverse

10. Neutral Range This setting adjusts the amount of "Deadband" off neutral on the throttle trigger. This is in Milli-Seconds (MS) and is the amount of neutral when you pull the trigger.

The smaller the value the less "Deadband" or movement is required off-center for the ESC to begin throttle functions. Using a higher value for this setting will provide a wider Deadband.

- 2%
- 3%
- 4% (Default)
- 5%
- 6%
- 10%