Thanks for purchasing “SEAKING” Electronic Speed Controller (ESC) for boat. High power system for RC model can be very dangerous, so please read this manual carefully. In that we have no control over the correct use, installation, application, or maintenance of our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting from the use of the product. Any claims arising from the operating, failure of malfunctioning etc. will be denied. We assume no liability for personal injury, consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

Features

- ► Specially designed for RC boat, with excellent start-up, acceleration and linearity features.
- ► Use top quality electronic components to enhance the current endurance ability of the ESC.
- ► With water cooling heat-sink, the ESC is splash-proof (Note: Not 100% water-proof).
- ► 2 running modes, “Forward Only” mode and “Forward/Reverse” mode for various kinds of boats.
- ► Multiple protection features: Low voltage cut-off protection for lithium or nickel battery / Over-heat protection / Throttle signal loss protection.
- ► 8 steps of timing adjustment, compatible with all kinds of sensorless brushless motor.
- ► Pocket-sized Program Card can be purchased separately for easily setting the programmable items.
  Note1: The program card is an optional equipment for the ESC.

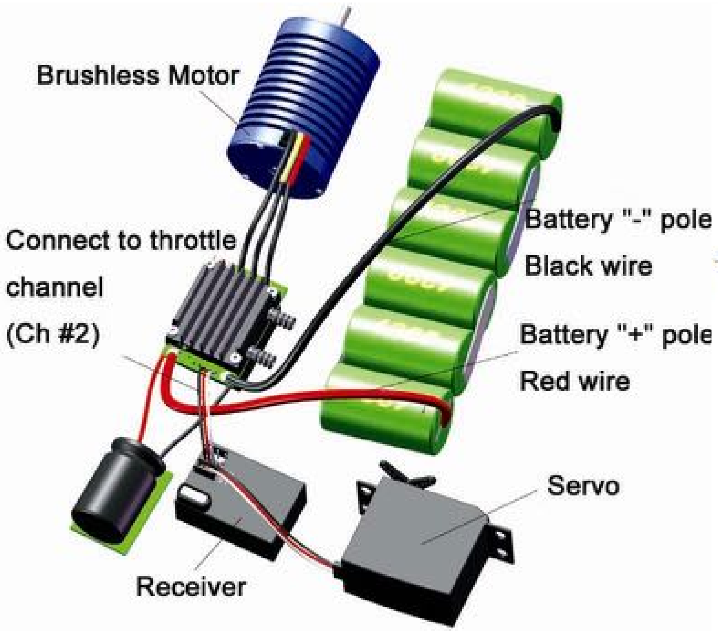
Specifications

Class	Model	Cont. Current	Burst Current (10s)	BEC Mode	BEC Output	Battery Cells Lipo	NiMH	Weight	Water Cooling Pipe	Size L*W*H
Normal ESC (Supports 2-6 cells Lipo)										
25A	SEAKING-25A	25A	50A	Linear	6V/1.5A	2-3	5-9	48g	Φ 4	48*35*20
35A	SEAKING-35A	35A	70A	Linear	6V/1.5A	2-3	5-9	50g	Φ 4	48*35*20
60A	SEAKING-60A	60A	120A	Switch	6V/3A	2-6	6-18	76g	Φ 5	94*33*18
90A	SEAKING-90A	90A	180A	Switch	6V/3A	2-6	6-18	81g	Φ 5	94*33*18
120A	SEAKING-120A	120A	240A	Switch	6V/3A	2-6	6-18	91g	Φ 5	94*33*18
180A	SEAKING-180A	180A	360A	Switch	5.8V/3A	2-6	6-18	165g	Φ 5	72*68*34
High Voltage ESC (Supports 5-12 cells Lipo)										
80A-HV	SEAKING-80A-HV	80A	160A	None	None	5-12	15-36	91g	Φ 5	94*33*18
130A-HV	SEAKING-130A-HV	130A	180A	None	None	5-12	15-36	182g	Φ 5	88*58*23

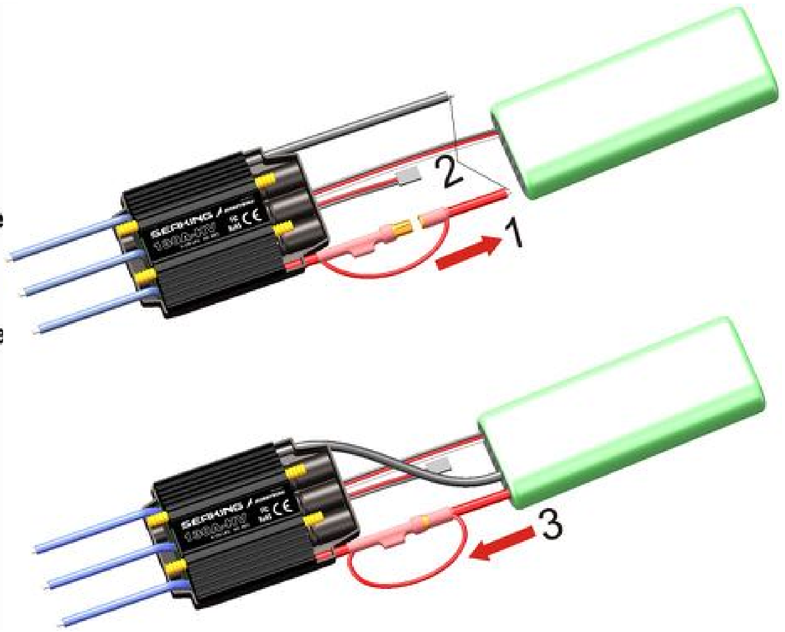
Begin To Use The New ESC

Warning! For safety, please always keep the propeller away from human body or any other object.

STEP #1. Connect the ESC, motor, receiver, battery and servo according to the following diagram(Picture 1).
The output wires of A, B, C of the ESC can be connected with the motor wires freely (without any order). If the motor runs in the opposite direction, please swap any two wire connections.



(Picture 1)



(Picture 2)

The SEAKING-80A-HV,SEAKING-130A-HV use the new anti-spark structure. There are a pair of bullet connectors and a thin red wire attached with the positive input wire (red color, thick) of the ESC. They are used to eliminate sparks when the battery pack is connecting with the ESC. Please use it in the following sequence(See picture 2):

1. Disconnect the two bullet connectors on the positive input wire (red color, thick) of the ESC.
2. Connect battery wires.
3. Connect the bullet connectors on the positive input wire (red color, thick) of the ESC as soon as you hear the special tone “♪123”

STEP #2. Throttle Range Setting (Throttle Range Calibration)

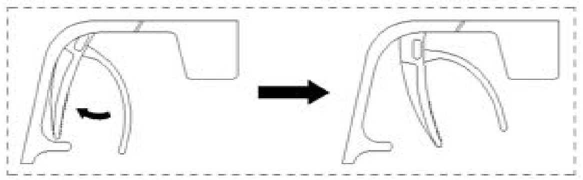
In order to make the ESC fit the throttle range, you must calibrate it for the following cases; otherwise the ESC cannot work properly.

- ► Begin to use a new ESC;
- ► Begin to use a new transmitter;
- ► Change the settings of neutral position of the throttle stick, ATV or EPA parameters, etc.

2.1 Turn on the transmitter, set the “EPA/ATV” value ... of the function of your transmitter if it does has this function. If you are using a Futaba transmitter, please set the direction of the throttle channel to “REV”

2.2 If you are using a **Handgun-style** transmitter:
a) Move the throttle stick to the maximum position (that is: full throttle position), and then connect the battery pack to the ESC, “Beep-Beep-” tone can be heard, that means the full throttle position has been confirmed.

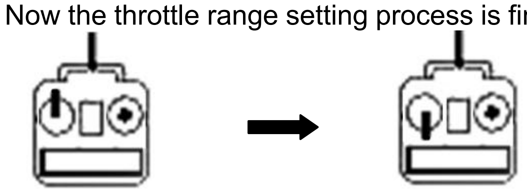
b) Release the throttle stick to the neutral position, a “Beep” tone can be heard, that means the neutral position has been confirmed.
Now the throttle range setting process is finished.



“Beep-Beep-” “Beep-”
Note: When the motor emits “Beep” tones, the red LED in the ESC will flash at the same time.

2.2 If you are using a **Flat-style** transmitter:
a) Move the throttle stick to the top position (that is: full throttle position), and then connect the battery pack to the ESC, “Beep-Beep-” tone can be heard, that means the full throttle position has been confirmed.

b) If you want to set it to **half-range**, please move the throttle stick to the neutral position, a “Beep” tone can be heard, that means the neutral position has been confirmed.
If you want to set it to **full-range** (In such a case, the boat cannot run backward), please move the throttle stick to the bottom position, a “Beep” tone can be heard, that means the bottom position has been confirmed.
Now the throttle range setting process is finished.



“Beep-Beep-” “Beep-”
Note: When the motor emits “Beep” tones, the red LED in the ESC will flash at the same time.

The Normal Start Process

1. Move the throttle stick to the neutral position or the bottom position, and then turn on the transmitter.
2. Connect the battery pack to the ESC.
3. The motor emits several “Beep” tones to represent the number of battery cells, please make sure that the number is correct. If only one “Beep” tone is emitted, please refer to the “Programmable Items” section, the “No protection” ... using a NiMH battery pack. Please never use “No protection” ... easy to be damaged.
4. Move the throttle stick upwards, the motor begins to run and speeds up.

The LED Status

There is a red LED in the ESC, the usages are:

1. The LED lights when the throttle stick is moved to the maximum position (full throttle).
2. When setting the throttle range or setting the programmable items of the ESC, the LED flashes at the same time when the motor beeps.

Programmable Items

Note2: The italics texts in the following form are the default settings.

Programmable Items	Value							
	1	2	3	4	5	6	7	8
1. Running Mode *Note3*	***Forward Only***	Forward and Backward						
2. Lipo Cells *Note4*	***Auto Calculate***	2 cells	3 cells	4 cells	5 cells	6 cells		
Note5	***Auto Calculate***	5 cells	6 cells	8 cells	10 cells	12 cells		
3. Low Voltage Cutoff Threshold	No Protection	2.8V/Cell	3.0V/Cell	***3.2V/Cell***	3.4V/Cell			
4. Timing	0.00°	3.75°	7.50°	11.25°	***15.00°***	18.75°	22.50°	26.25°

Note3: Seaking-130A-HV only 6H[illegible]
Note4: The parameters in this line are available for normal voltage ESC (Supports 2-6 cells lipo)
Note5: The parameters in this line are available for high voltage ESC (Supports 5-12 cells lipo)

1. **Running Mode:** With "Forward Only" mode, the boat can go for[illegible] Backward" mode provides backward function, which is suitab[illegible] user manual of your boat to confirm whether it is possible to run backward.
2. **Lipo Cells:** We strongly suggest setting th[illegible] ESC will measure the battery's vo[illegible] example, if the battery's voltage is lower than 8.8V, [illegible] judge the cells number correctly, please always use a fully charged battery to connect the ESC. If the battery is partly discharged, the "Auto Calculate" may get a wrong res[illegible]
   Hint: In the startup process, the motor will emits several "Beep" tones to [illegible] for you to check whether it is coincident with the actual battery pack or not.
3. **Low Voltage Cutoff Threshold:** This function prevents the lithium battery pack from over discharging. The ESC detects the battery's voltage at any time, if the volt[illegible] will be reduced 50%. Please replace the battery pack as soon as possible.
   a) **Warning!** If you ignore the low voltage cutoff phenomenon and keep running, the battery pack will be damaged!
   b) **How to calculate the cutoff threshold of a whole battery pack:**
   The cutoff threshold of a battery pack = The threshold of each cell * cells number
   For example, if the threshold of each cell is set to [illegible] cutoff threshold of this battery pack is 3.2*3=9.6V.
   c) **If you are using NiMH or NiCd battery:**
   NiMH and NiCd battery are not easy to be damaged-discharge a[illegible] problem, so you can set this programmable item to "Na[illegible]
4. **Timing:** Please select the most suitable timing value according to the motor you are just using. The correct timing value makes the motor running smoothly. And generally, higher timing value brings out higher output power and higher speed.

Program the ESC

1. Program the ESC with you transmitter

4 Steps: Enter program mode → Select programmable item → Change the selected item → Exit

STEP #1. Enter the program mode

1. Switch on the transmitter, move the throttle stick to maximum position (Full throttle position), and then connect the battery pack to the ESC.
2. Wait for 2 seconds, the motor emits "Beep-Beep-" tones.
3. Wait for 5 seconds, special tone means the program mode is entered.

STEP #2. Select the programmable item

You will hear 4 groups of "Beep" tone circularly, position within 3 seconds after one kind of tones, this item will be selected.

1. "Beep" — Running Mode
2. "Beep-Beep-" — Lipo Cells
3. "Beep-Beep-Beep-" — Low Voltage Cutoff Threshold
4. "Beep-Beep-Beep-Beep" — Timing

STEP #3. Choose the new value for the selected item

After entering an item, you will hear several tones in loop. Set the value matching to a tone by moving the throttle stick to the maximum position (Full throttle position) when you hear the tone," emits, means the value is chosen and saved in the ESC. (Keep the throttle stick at the maximum position (Full throttle position), you will go back to step #2 and you can select other items; Move the stick to bottom or neutral position within 2 seconds will exit program mode directly.)

Tone / Items	"B" 1 short Beep	"BB" 2 short Beeps	"BBB" 3 short Beeps	"BBBB" 4 short Beeps	"Be-e" 1 long Beep	"Be-eBp" 1 long 1 short	"Be-eBpB" 1 long 2 short	"Be-eBpBB" 1 long 3 short
Running Mode	Forward Only	Forward & Backward						
Lipo Cells	Auto Calculate	2 Cells	3 Cells	4 Cells	5 Cells	6 Cells		
Low Voltage Cutoff Threshod	No Protection	2.8V/Cell	3.0V/Cell	3.2V/Cell	3.4V/Cell			
Timing	0°	3.75°	7.5°	11.25°	15°	18.75°	22.5°	26.25°

Note6: [illegible] tone means the No.6 value. 5+1 6

STEP #4. Exit program mode

There are 2 methods to exit the program mode:

1. In Step #3, after choosing the "1" tone, move the throttle stick to bottom or the neutral position in 2 second to exit the program mode.
2. Disconnect the battery pack from the ESC to exit the program mode forcibly.

2. Program the ESC with the Program Card

Program card is an optional equipment for boat ESC, it has 3 digital LEDs to show the programmable items and their values, so the user interface is very friendly, it is quite easy for programming the ESC with this small equipment. Please read the user manual of program card for more information.

Trouble Shooting

Trouble	Possible Reason	Action
After power on, motor does not work, no sound is emitted	The connection between battery pack and ESC is not correct	Check the power connection. Replace the connector.
After power on, motor does not work, such an alert tone is emitted: "beep-beep-beep-, beep-beep-" (Every beep has a time interval of about 1 second)	Input voltage is abnormal, too high or too low.	Check the voltage of battery pack
After power on, motor does not work, such an alert tone is emitted: "beep-beep-beep-, beep-beep-" (Every beep has a time interval of about 2 seconds)	Throttle signal is irregular	Check the receiver and transmitter
The motor runs in the opposite direction	The connection between ESC and the motor need to be changed.	Swap any two wire connections between ESC and motor
The boat cannot run backward	The ESC is not set to "Forward and Backward" running mode The ESC cannot recognize the neutral point of throttle channel	Program the ESC correctly Calibrate the throttle range again according to the instructions on page 1
After power on, motor does not work, a special tone is emitted: "Beep-Beep-"	Direction of the throttle channel is reversed, so the ESC has entered the program mode	Set the direction of throttle channel correctly
The motor suddenly speeds down even if at the full throttle situation	The ESC has entered the low voltage cutoff protection mode The ESC is over heat	Replace the battery pack as soon as possible Stop running the boat for several minutes to cool the ESC