

Manual for HobbyKing 30A Boat Electronic Speed Controller

Dear user,

Thanks for purchasing the HobbyKing brushless motor intelligent power electronic speed controller (ESC). Improper use or operation may cause personal injury or damage to the equipment, as you switch it on, please take care. We strongly recommend that the customer reads the user manual carefully before using it and to operate it only as the manual states. We do not assume any liability arising from the use of this product, including but not limited to incidental damages or consequential damage liability. We also do not assume any responsibility for the use of unauthorized modifications and any liability arising from this product that is caused by third-party products. We have the right without notice to change the products specifications, including appearance, performance parameters, and user requirements. We do not make any guarantee, statement or promise that the product is suitable for the user's particular purpose.

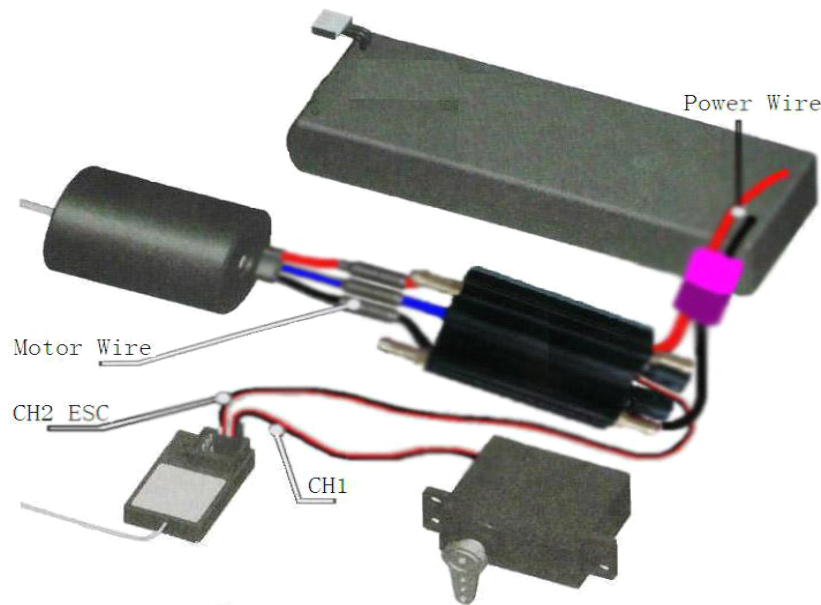
I. Main features:

- Suitable for all types of three-phase brushless motors on the drive market.
- Can be used straightaway without any complicated programming.
- Motor operating parameters can be set by the transmitter or programming card with voice prompts, very simple and convenient.
- Has multiple self-protection functions: battery low voltage, thermal cut out, throttle loss, stalled motor etc.
- Auto timing, automatically adapts to various types of high-speed motor.
- Has a smooth and linear speed control response. The throttle off position can automatically be set.
- Automatically detects the number of battery cells.
- High quality components and a water cooling system ensures that the unit remains reliable.

II. Setting up for the first time.

Warning: Please set the boat model up before installing the ESC, ensure the propeller and other moving parts are clear of yourself, other persons and objects.

1. Connect the wires as shown in the diagram.

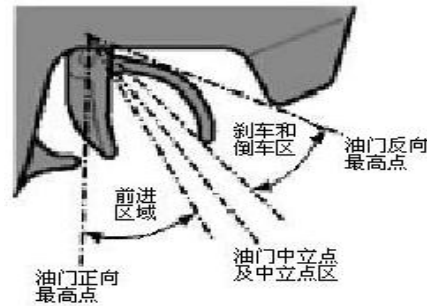


2. Setting the throttle parameters.

Firstly, the user must understand how to use their particular transmitter, read the manual before performing this next step, If your transmitter has EPA adjustment set these to 100% travel.

Setting throttle with gun-type remote control

- Cut off the main power supply to the ESC, turn on the power supply to the transmitter and receiver. Position the transmitter throttle trigger to maximum throttle and connect the main power of ESC then wait for 2secs. The motor will make 3 beeping sounds like this“ ϕ ϕ __ ϕ ϕ __ ϕ ϕ ”. When you hear the third beep move the throttle trigger to the full reverse position, when the motor makes 1 sound ϕ the throttle set up is finished and stored in the ESC.



Wait for 2secs and the motor will make a single sound many times, this is after the single sound, It will then make 2 continuous sounds ϕ ϕ . The ESC is now ready for use and the motor will work when you use the throttle trigger.

Setting throttle with Panel-type remote control

- Cut off the main power supply to the ESC, turn on the power supply to the transmitter and receiver. Push the transmitter throttle tstick to the maximum throttle position, connect the main power of ESC and wait for 2secs. The motor will make 3 beeping sounds like this“ ϕ ϕ __ ϕ ϕ __ ϕ ϕ ” (this shows that Max throttle is ensured by ESC). When you hear the third beep please move the throttle to the full reverse position. When the motor makes 1 sound ϕ the throttle set up is finished and stored in the ESC. Wait for 2secs and the motor will make single sound for many times, this is after the single sound, It will make 2 continuous sounds ϕ ϕ . This shows that the ESC is ready and the motor will work when you use the throttle.

If you lose the signal to the receiver during operation the motor will cut off in 1sec and make a beeping sound “\$ __” with 1sec intervals. If using a PCM receiver and you lose the signal it will keep the normal control signal, ESC won't provide any sound through motor.

※ For gun-type remote control and stick type remote control the ESC supports the setting of mid position.

Maximum –Minimum. The maximum – every position where between middle throttle and the Max position.(when using the panel remote control without being back to the middle automatical ,the residence time of the maximum throttle setting should wait for the end of the sound of battery test. For security, if the throttle is pushed when the throttle is lower the middle the throttle, the present position should be as the lowest position. Please pay attention to it.)

III. Start up

》 a Push the throttle to the lowest (two-way throttle back to the middle)

If ESC has connected in circuit, please check if ESC connects battery pack. If connected battery pack, please disconnect the battery pack.

》 b Connect ESC with battery pack.

》 c Wait for 2S, motor will make the N times sound of BEEP “\$ __”(N=LiPo cells),(“__” means pause a while after the sound \$.

Shows the power supply voltage of ESC is in the appropriate range. If there is no sound, shows the voltage of ESC's battery pack isn't in the specified range. For example, ESC's voltage is 2-6S, if it's lower than 2S or higher than 6S, ESC won't make sound.

》 d “N” times sound , motor will make continuous 2 short sound \$ \$

ESC enter the process of remote control throttle trip automatic practice. It can operate with starting by controller.

IV. Set the alteration of main options

》 1 When starting with factory default parameter, it won't enter “4 set alteration of main options”.

》 2 The processing of altering ESC's parameter is as following:

》 3 If ESC has connected in the circuit, please check if ESC has connected battery pack.

If connected battery pack, please disconnect battery pack first.

》 4 Push the throttle of remote control to the Max position in the forward direction and keep in this position. Connect the disconnected battery pack in the circuit again , wait for 2S.

*1 Motor makes the sound of BEEP “\$ \$ __ \$ \$ __ \$ \$ __”

*2 Motor makes the sound of BEEP “\$ ↑ \$ ↓ __ \$ ↑ \$ ↓ __ \$ ↑ \$ ↓ __”

Enter main options 1~6

BEEP “\$ __ \$ __ \$ __” 3 times, main option 1

BEEP “\$ \$ __ \$ \$ __ \$ \$ __” 3 times, main option 2

BEEP “\$ \$ \$ __ \$ \$ \$ __ \$ \$ \$ __” 3 times, main option 3

BEEP “\$ \$ \$ \$ __ \$ \$ \$ \$ __ \$ \$ \$ \$ __” 3 times, main option 4

BEEP “\$ \$ \$ \$ \$ __ \$ \$ \$ \$ \$ __ \$ \$ \$ \$ \$ __” 3 times, main option 5

BEEP “\$ ↑ __ \$ ↑ __ \$ ↑ __” 3 times, main option 6

*3 When you hear the sound of the main option that you want to set, please loose the throttle to the middle, enter “the sub option of this main option”.

*4 “prompt tone chart”, every sub option makes 3 sounds as the order in the chart. Don't move the throttle, it will make sound in the 3 sub options circularly. When hearing the sound that you wanted sub option . Push the throttle to

the Max in the forward direction. When making 1 sound “ \$ _ ” , shows this sub option has set successfully.

Keep the throttle in the Max position and back to the main option.

*5 Set 1~6 options as this procedure.

*6 Push the throttle to the minimum (the Maximum of the reverse direction). Back to the middle after the short sound.

Note: “*2” in “» 4” , when hearing the third sound, please push the rocker to the lowest throttle. The parameter of ESC will restore factory default. It's effective to restore the disordered parameter. When hearing the 2 short sound “ \$ _ ” , shows it restores factory default(don't set other options) , you can operate with the mode that manufacturer setted.

The chart of prompt tone

Prompt sound projects	1 short beep	2 short beep beep	3 short beep beep beep	4short beep beep beep beep	5 short beep beep beep beep beep	1 rising tone ↑	2 rising tone ↑↑	3 rising tone ↑↑↑	4 rising tone ↑↑↑↑
Operation mode	Forwar d with brake	Forward and Reversi ble with brake	Direct Forwar d and Revers ible						
4.Neutral range	6%	9%	12%						
Battery low-voltage protection	Non Protecti on	2.6V	2.8V	3.0V	3.2V	3.4V			
6.start up acceleration	1 level	2 level	3 level	4 level	5 level	6 level	7 level	8 level	9 level
5.reverse Force	25%	50%	75%	100%					
6.entrance angle setting	0 degree	5 degree	10 degree	15 degree	20 degree	25 degree	30 degree	automatic	

Use programming card

Use programming card to set the ESC is the most ideal and convenient choice, only insert the signal line of ESC into the programming card, select the item you want to change (see table above),press [OK] ,VALUE window displays "S. (To restore the last option press the [RESET] then click [OK]).

Setting (programming) item description and term explanation

★ 1 Operation mode

Forward with brake: can only move forward, when throttle reverse, it is brake. without reversing. this mode is mainly used for racing.

Positive and negative rotation with brake: reverse function is available. when push the throttle from forward direction to the reverse zone, Ship model is in the braking state, the throttle must return to the middle, And the motor stops operating then reversing, this mode is mainly used for training..

Direct positive and negative rotation: When push the throttle from the middle point region to the reverse zone, the motor reverses immediately..

★ 2 Designated region in the throttle

The designated region of the throttle are 6%, 9%, 12%, you can choose according to personal preference after experiments

★ 3 Battery low voltage protection

To prevent the lithium battery from over-discharge damage, the ESC will monitor the battery voltage all the time during operation, once the battery voltage is below the set value, the motor output will be cut off.

★ 4 Start acceleration

9 levels in total, the default is 6 levels , select the appropriate acceleration, according to the area and personal habit, the higher level the faster start, but a high requirement for the discharge capacity of the battery,(if high level

with insufficient battery capacity, it may cause abnormal start, then please reduce the level.) it's difficult to operate.

★ 5 Maximum reverse force

4 kinds of options: 25%, 50%, 75%, 100%, different option has different reverse force, it is recommended to use a less option, to avoid collision because the strength is too big to control hard when reversing.

★ 6 Entrance angle setting

0 degrees, 5 degrees, 10 degrees, 15 degrees, 20 degrees (the default), 25 degrees,30 degrees, automatic optional

The role of this function:

- Compatible with different motors, this motor can't operate normally in the default entrance angle, need to adjust into the right entrance angle before work properly.
- By adjusting the entrance angle, you can fine-tune the motor output speed, the higher the entrance angle, the higher maximum output speed, and power consumption is greater.
- By adjusting the entrance angle, the motor can work in the best efficiency point.
- Auto entrance angle can adjust entrance angle automatically between 0-30 degree according to the motor speed ,user can use this angle as it's simple setting.

Announcements

- When controlling the system, please note if the ESC is approved by CE.
- Properties of electrical or mechanical like bad technology may cause the unconscious operation of the motor, loose parts may cause serious personal injury or property damage.
- The ESC is specifically used for RC(remote control) model. Manned aircraft is prohibited
- Do not reverse the power supply batteries' polarity of ESC when connecting(+side and - side flip).if the polarity of the battery pack connected to the ESC reverse, it will cause irreparable damage.
- Electronic equipment is sensitive to moisture, if the ESC is wet , please do some dry processing or contact us to give guidance.
- The ESC must connect to standard power strictly, if the voltage of the power is too high, the ESC will be damaged, if

too low, it won't work normally.

● When turning off the battery of receiver, please note: Depending on the receiver you are using, it will send false throttle signal to the ESC, which will shorten the lifetime of the motor.

● Protect the ESC from mechanical load, vibration, dust and pollution.

● The length of motor cable should be as short as possible, can not exceed stated maximum length of the cable between the batteries and the ESC. The inside wiring of the battery pack must be as short as possible. Embedded way connected to the battery pack.

● Although some ESC use On/Off Switch to separate from the battery, but it can't completely insulate with the battery. the function of the ESC can be revealed with full use. Only in good handling state can protect and monitor the circuit

● In the case of motor fault (like coil short circuit), controller's over-temperature sensors responds is very slow in the prevention of damage. turn off the motor Immediately to prevent permanent damage to the ESC.

Note: Keep in mind that the circuit monitor can not detect each of the abnormal operation, like the broken of motor cable. if the motor's stop current higher than the controller's peak current, the stall motor will hinder current limiter. For example, if you connect 80A ESC with 20A motor, although the motor is stalling, the current monitor can not detect excess current.

● Interference

We think that some interference is related to the types of motor. The the occurrence of interference is related to different manufacturers of motor.

5. Tips should be pay attention and fault handling table

Failure phenomenon	Possible reason	Solution
when power on, motor does not work, come with "BEEP--,BEEP--" warning sounds. (Each group of dual sounds' time interval is 1second)	The battery packs' voltage is not in the normal range	Check the battery voltage
increase the throttle of remote control in the forward direction, Ship move in the opposite direction	1. The ESC output lines and motor Line are connected in wrong order 2. Maybe the problem of positive and negative control Settings	1. If it is senseless motor, exchange every two of the three connect line, or solve the problem as below. 2. Change the positive and negative control Settings
Motor suddenly stopped in the process of running	1. Receivers meet interference 2. The ESC is on the condition of battery low voltage protection or temperature protection	1. Rule out interference and power on to start up again 2. Replace the battery, use again until the temperature drop.
When motor startup quickly increase the throttle, motor come with the problem like Stick or pause	1. The battery discharge ability is not enough 2. Motor running speed is too high, reduction ratio is too small 3. The ESC start acceleration set is too high	1. Replace a high ability battery 2. Exchange to low speed motor or improve the reduction ratio. 3. Set the ESC start acceleration softer.