

# BLDC Electronic Speed Controller (120A ESC)

## Products Features

- Maximum RPM range: 210000 rpm for 1 pair-of-motor-poles, 70000 rpm for 3 pair-of-motor-poles, and 35000 rpm for 6 pair-of-motor-poles;
- NEODYM SMART ESC – Software can be downloaded and updated to fit your needs. Fully programmable from either radio, or by using a separate programming card.

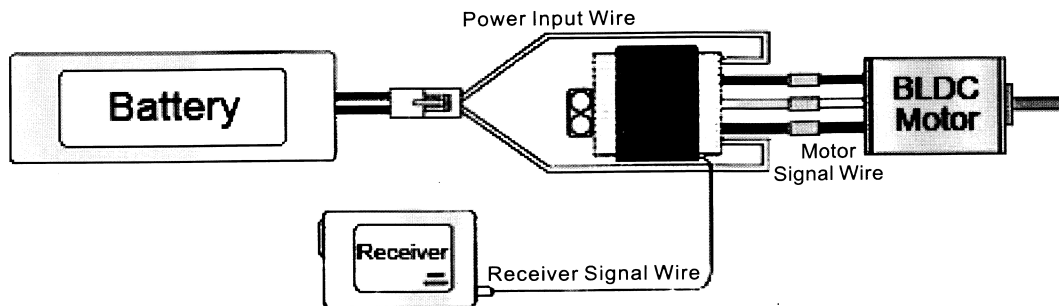
## Products Specifications

Product Number	Continuous Current	Instantaneous Current (I)	BEC Output	Voltage (V)	Dimension (L*W*H)	Weight (g)
NB030B	30A	50A	5V/2A	5.5~13	35*25*8	18
NB060B	60A	80A	5V/2A	5.5~13	46*35*20	62
NB090B	90A	120A	5.3V/3A	6.8~13	46*35*20	62
NB120B	120A	180A	5.3V/3A	6.8~17	58*40*20	105

## Notes:

1. Instantaneous Current can only be achieved when the ESC is well ventilated and shouldn't be used for more than 10 seconds;
2. Explanation of Product Number:  
For example: NB030B - N - designation of NEODYM brand; B - Designates for car model, 030 - Continuous current of 30 amps, B-ESC has BEC Output; If there is no second letter "B", it means this ESC has no BEC.

## Wiring Diagram



## Products Functions

### 1. Function explanation;

- 1.1. Automatic Identification of the throttle neutral;
- 1.2. Self-regulation of the brake;
- 1.3. The parameter can be set by either the radio or by a programming card. Any parameter will be saved after it is set;
- 1.4. There are seven parameters in sequence that can be set. They are as follows: Timing setting; Cut-off voltage battery protection setting; Starting power setting; Range of neutral; Run mode; Reverse power; Drag brake Power ;
- 1.5. If reverse is disabled, the motor will run at the full speed when the throttle trigger is pulled, and will brake when the Throttle trigger is pushed. If reverse is enabled, the motor will run at full speed when the throttle trigger is pulled and will brake to stop if the throttle trigger is pushed to reverse position. Braking will continue until the throttle trigger is returned to the neutral position. If the throttle trigger is pushed to reverse again, then the reverse will be activated.

### 2. Setting description

To program the functions using the radio, follow the process is listed below.

- 2.1. Make sure the motor and battery leads are properly connected to the ESC, and the ESC power switch is in the "OFF" position.
  - 2.2. With the transmitter on, pull full throttle on the throttle trigger.
  - 2.3. Switch the power to the ESC to the "ON" position .
  - 2.4. 2 seconds later, you will hear "♪-♪-♪-♪-♪-♪-♪-♪" that indicates the ESC has found the correct maximum full throttle signal. Then, within 2.5 seconds after the beeps, release the throttle to the neutral position. You will hear "♪-♪-♪-♪" This indicates that the ESC has found the correct neutral position of the throttle. Then, within 2.5 seconds of setting the neutral, push the throttle trigger full reverse/brake, you will hear "♪-♪-♪-♪" that indicates the ESC has found the correct max full reverse/brake signal. Lastly, release the throttle to the neutral position again, you will now enter the "Programming Mode".
  - 2.3. Every parameter will be set in the way of "Question and Answer". The ESC will give all items of each parameter to select in sequence. As each option is given and if you wish to select the current option, pull the throttle trigger to full position, the ESC will give confirmation tone and go to the next parameter setting. Once you hear the confirmation tone, release the trigger back to the neutral position. Take the *Timing setting* as an example. There are 3 options for the timing setting: low, middle and high. Firstly, the ESC will give "♪-♪" to ask you that if you choose the low timing. If you wish to choose it, you should pull the throttle trigger to the full throttle position within 2.5 seconds after the ESC give you "♪-♪" confirmation, and go to the "next parameter setting". If you do not choose, the next 2 items will be "♪-♪-♪" and "♪-♪-♪-♪" for the middle and high timing. If you choose nothing, it will go to the next parameter setting.
  - 2.4. Every parameter will be saved after it is set. After the last parameter, *drag brake power* is set, the ESC will give "♪-♪-♪-♪-♪-♪-♪" to indicate the end of Programming.
- The other parameters setting are as same as above.

The following table is all the parameters setting options:

No.	Parameter Name	Parameter Item	Tone	Explanation
1	Timing	Low	♪-♪	Default
		Middle	♪-♪-♪	
		High	♪-♪-♪-♪	
2	Cut-off voltage	Low(2.65V)	♪-♪-♪	
		Middle(2.8V)	♪-♪-♪-♪	Default
		High(3.1V)	♪-♪-♪-♪-♪	
3	Starting power	9%	♪-♪-♪-♪	Default
		15%	♪-♪-♪-♪-♪	
		20%	♪-♪-♪-♪-♪-♪	
		25%	♪-♪-♪-♪-♪-♪-♪	
		35%	♪-♪-♪-♪-♪-♪-♪-♪	

4	Range of neutral	4%	♪♪♪♪—♪	Default
		6%	♪♪♪♪—♪♪	
		8%	♪♪♪♪—♪♪♪	
		10%	♪♪♪♪—♪♪♪♪	
		12%	♪♪♪♪—♪♪♪♪♪	
5	Run mode	Backward disable	♪♪♪♪—♪	
		Backward enable	♪♪♪♪—♪♪	
6	Reverse power	0%	♪♪♪♪♪—♪	Default
		30%	♪♪♪♪♪—♪♪	
		40%	♪♪♪♪♪—♪♪♪	
		50%	♪♪♪♪♪—♪♪♪♪	Default
		65%	♪♪♪♪♪—♪♪♪♪♪	
		80%	♪♪♪♪♪—♪♪♪♪♪♪	
		90%	♪♪♪♪♪—♪♪♪♪♪♪♪	
		100%	♪♪♪♪♪—♪♪♪♪♪♪♪♪	
7	Drag brake power	0%	♪♪♪♪♪—♪	
		10%	♪♪♪♪♪—♪♪	
		30%	♪♪♪♪♪—♪♪♪	Default
		40%	♪♪♪♪♪—♪♪♪♪	
		50%	♪♪♪♪♪—♪♪♪♪♪	
		70%	♪♪♪♪♪—♪♪♪♪♪♪	
		80%	♪♪♪♪♪—♪♪♪♪♪♪♪	

### Operation Manual:

#### 1. "Beep" explanation

1.1. If you don't set any of the above parameters and the ESC found the normal neutral position, the ESC will give you a "♪" with same number that corresponds to the number of Li-PO cells. If no normal neutral throttle signal can be detected, the ESC will give continuous "♪" until a correct signal has been found.

#### 1.2. "Beep" setting process

The ESC gives "♪♪♪♪" with same time of the Li-PO cells if the setting is correct. Notice: Make sure the number of beeps correctly corresponds to the number of cells in your battery. Always start with a fully charged battery.

#### 2. Initial use and adjustment instructions:

**Notice: Please keep your vehicles wheels off the ground before making any adjustment.**

##### 2.1. Connect the wires as per the wiring diagram , switching on the radio

and then the ESC, if the ESC give the sounds with same number of the Li-PO cells, it means the ESC has found the normal neutral. If the ESC give continue beeps, it means the ESC hasn't found the normal neutral, please check the transmitter and receiver, or go through the above programming section and reset the forward, neutral ,and reverse.parameters

2.2. To check if the throttle position of the transmitter correctly corresponds to the forward and reverse of the ESC, please pull the throttle very softly till the car runs normally, then quickly push the throttle to its full reverse position. If the car stops by brake without going in reverse, it means the ESC and transmitters forward and reverse are matched. If the car runs in reverse without braking it means the ESC and transmitters forward and reverse aren't matched. The switch on the transmitter for setting the forward and reverse should be changed to other side.

##### 2.3. Checking the motor running direction which should be same with ESC.

After checking the radio and ESC, pulling the throttle, the car should move forward. If not, please change any 2 of the 3 motor wires to the ESC.

Notice: Please always make sure the wires between the battery and ESC are correct, otherwise the ESC could be damaged and you could injure yourself or somebody else.

##### 2.4. Running the car.

Once you finish the confirmation above, please run the car for 3 minutes for the temperature test of the ESC and motor. If the temperature is low, the motor and ESC are in good matching. If the temperature is higher than 85°C(185° F), you should change either the motor or ESC. If the motor is very hot, you should decrease the teeth of the motor pinion or lower the battery voltage. If the ESC is too hot, you should change to a higher rated ESC.

### Caution

1. Please use the connector which was supplied to avoid the wrong connection , especially for the first time use. If you change the connectors or battery, please check your connections closely.

2. If you want to extend the length of the wires, please make sure the diameter is not smaller than the original one. Please touch the motor and ESC with caution to avoid burning yourself, as the temperatures are very high after running.

3. Please disconnect the battery after operating; please never store the car out of sight if not disconnecting the battery.