



First of all thank you very much for using this product!

This product has high power and incorrect use may cause equipment damage or personal injury. Please read this statement carefully before using this product. Once this product is used, it means that you agree to all the terms of this statement. Please use this product strictly in accordance with the instructions in this manual. We do not assume any liability arising from misuse, illegal modification or improper operation of this product, including but not limited to indirect losses or joint and several liabilities.

## Brushless Electronic Speed Controller

[www.xc-blcd.com](http://www.xc-blcd.com)



Before connecting ESC to related devices, please ensure all wires are well connected and devices are well insulated to avoid short circuit damage to ESC

Before using the ESC, please read the instruction carefully to ensure a proper power configuration. An improper power configuration may lead to motor overload and damage the ESC.

## 1. Specifications

- 2.1 Meticulously proved commutation scheme, even in senseless mode.
- 2.2 Control current quickly to reduce MOS generating heat and current pulse
- 2.3 Current limiting in each PWM cycle reduces the impact of pulse current on the motor.
- 2.4 Built-in Bluetooth connects Mobile APP for firmware upgrade and parameter setting.
- 2.5 Mobile APP data observation interface for viewing ESC recording data (static data) and real-time debugging data.
- 2.6 High-power DC/DC conversion circuit makes BEC a potent loading capacity.
- 2.7 Full protection: low voltage, over voltage, throttle loss, abnormal braking, over temperature etc.
- 2.8 No need to buy additional modules, you can completely control the ESC.

Throttle wire: red: BEC+, black: BEC-, white: throttle



1. Please do not connect the ESC input wires DC+ and DC- in reverse. Reverse connection may damage ESC. If the ESC is damaged in this case, the relevant warranty service will not be provided.
2. The mechanical structure of some motors cannot support high speed. If the speed is forcibly increased, the motor may be damaged.
3. If not used for more than 1 hour, it is recommended to unplug the power wires of the ESC.
4. If there are any modifications to the connection line, check the circuit carefully before putting in use. It is recommended to open the throttle slowly and confirm that there are no errors before advancing it normally.

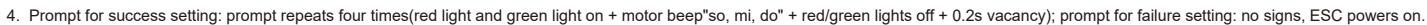
**Steps:**

1. Check whether the circuit is open, short circuit or in poor contact.
2. Check whether the motor is stuck.
3. Plug in the power cable.
4. Turn on the power button.

When you hear the battery prompt tone (described in the "Normal Startup" prompt in the light/sound prompt section), the startup is normal. If the throttle is normal, you can perform the throttle operation normally.

**Turn on transmitter, to set throttle as following:**

- 1.NOR。 Push trigger/stick to NOR
- 2.Set max throttle range to 90%
- 3.Throttle neutral deviation, set it to "0"



The naming rule of Bluetooth name is "general model" + "-" + "ESC code ID", for example, where "W250", W250 is the general model, and "1C-89" is the hexadecimal code ID of the ESC. Even if the user sets the Bluetooth name by himself, the ESC code ID is still retained to avoid two devices with the same name. Default password "1234".

### 1. Running Mode:

**Option 1: Single-way**

Motor only rotates CW or CCW upon motor direction setting

**Option 2: two-way**

Motos rotates CW and CCW

- 2. Lipo Cells:**  
Set the correct value according to the actual number of Lipo batteries used. The default is automatically calculated.
- 3. BEC Voltage:**  
BEC voltage support 6V/7.4V/8.4V. Generally, 6.0V is suitable for standard servos, while 7.4V/8.4V is suitable for high-voltage servos. Please set according to the servo specifications. WARNING! Do not set the BEC voltage above the maximum operating voltage of the servo, as this may damage the servo or even the ESC.
- 4. Low Voltage Cut-Off:**  
This function is mainly to prevent excessive discharge of lithium batteries causing damage. The ESC monitors the battery voltage at all times, and once the voltage falls below the set threshold, the power output is reduced and the power output is completely cut off after a few seconds, and generates a 10% braking force. For NiMH batteries, it is recommended to set this parameter to "Disabled".
- 5. Motor Rotation:**  
Setting the rotation of the motor. Due to some differences with the drivetrains on different car kits, it is possible to that the car will go in the opposite direction upon full throttle. In the event that this happens, you can set the "motor rotation direction" to the opposite direction; "CW" or "CCW".
- 6. Max. Brake Force:**  
This ESC provides proportional braking function; the braking effect is decided by the position of the throttle trigger. It sets the percentage of available braking power when full brake is applied. Large amount will shorten the braking time but it may damage your pinion and spur gear.
- 7. Punch:**  
Set in 1-9 stages, the higher the set value, the faster the acceleration. Kindly take into consideration according to the site, tire grip characteristics, vehicle configuration, etc. An aggressive setting may cause the tire to slip, the starting current to be too large and adversely affect the electronics performance.
- 8. Drag Brake Force:**  
Refers to the brake force generated by the motor when the throttle trigger returns to neutral position. Choose the appropriate value according to the type of vehicle, configuration, site, etc.
- 9. Turbo Timing:**  
**Three functions:**  
1) adjustable to be compatible with different motors, the smaller the value, the lower the efficiency  
2) The smaller the value, the higher the motor RPM (the greater the current); motor RPM increasing depends on motor, load, etc. it's subject to objective test
- 10. Neutral Range of Throttle:**  
Neutral range could be adjusted according to usage habits. Neutral range may deviate in some radio control, leading to move forward or reverse slowly. If this happens, neutral range needs to be set larger
- 11. Motor Pole Pairs:**  
For setting pole pairs. Motor Rotation speed=Electrical Speed / Pole Pairs, To get the precise mechanical rotational speed, the pole pairs must be set correctly.

### How to restore Bluetooth to factory settings:

If the Bluetooth password is lost or if you need to forcibly enter Boot, please follow the instruction:

- Step 1: Connect ESC wire(the white wire) to BEC+(red wire)  
Step 2: Turn on ESC  
Step 3: Disconnect from BEC when green light off and red light on  
Step4. Remove short circuiting

When boot activated, the status of Bluetooth will restore to factory value(password will be restored to "1234", and the name will be restored to the factory state), then restart ESC. If there is a hardware error, Boot can be activated in this way to upgrade hardware.

### How to restore parameters to factory settings:

If you want to restore the parameters to factory settings, just click the default button on the APP parameter page.

| Item                     | Type description                                                                          |                            | Light cue                                                                                | Sound cue                                  | Remark                                                                                                                                                                                              |
|--------------------------|-------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic information        | Throttle not zeroed                                                                       |                            | Red light flashes quickly                                                                | Short tone "beep"                          | Red light flashes quickly                                                                                                                                                                           |
|                          | Throttle signal lost                                                                      |                            | Red light flashes slowly                                                                 | Long tone "beep"                           | In cycle of 2s                                                                                                                                                                                      |
|                          | Voltage detection                                                                         | Low voltage protection     | (Redx1 Greenx2) ...                                                                      | Long tone "beep"x1,<br>Short tone "beep"x2 | Check the input voltage or setting of number of cells if no "beep" before MOSFET detecting.                                                                                                         |
|                          |                                                                                           | Over voltage protection    | (Redx1 Greenx3) ...                                                                      | Nil                                        | Voltage is too high, check whether the voltage is over the withstand value of ESC                                                                                                                   |
|                          | The MOS temperature is too high,<br>operating temp. > 125 ℃ / startup temp. > 110 ℃       |                            | (Redx1 Greenx4) ...                                                                      | Long tone beepx1,<br>short tone beepx4     | The temperature of MOS is too high. ESC can resume normal operation when the temperature drops below 100 degrees Celsius                                                                            |
|                          | The capacitor temperature is too high,<br>operating temp. > 105 ℃ / startup temp. > 100 ℃ |                            | (Redx1 Greenx5) ...                                                                      | Long tone beepx1,<br>short tone beepx5     | The temperature of capacitor is too high. ESC can resume normal operation when the temperature drops below 100 degrees Celsius                                                                      |
| Throttle parameters      | Abnormal throttle parameters                                                              |                            | (Redx1 Greenx7) ...                                                                      | Long tone beepx1,<br>short tone beepx7     | If there is still an abnormal prompt when positioning throttle to neutral point, throttle calibration process needs to be initiated.                                                                |
| Hall sensing abnormality | Hall output logic abnormality                                                             |                            | (Redx1 Greenx8) ...                                                                      | Long tone beepx1,<br>short tone beepx8     | Re-plug Hall wire. If the abnormality persists, it may be a problem with the internal Hall of the motor, and the Hall wire needs to be unplugged.                                                   |
| Throttle parameter       | Throttle calibration prompt                                                               | Calibrate low range        | (Red Green) ...                                                                          | Nil                                        | If the calibration process is irregular or unsuccessful, the ESC will exit the calibration process and enter the normal Startup process.                                                            |
|                          |                                                                                           | Calibrate high range       | (Green) ...                                                                              |                                            |                                                                                                                                                                                                     |
|                          |                                                                                           | Calibrate neutral throttle | (Red) ...                                                                                |                                            |                                                                                                                                                                                                     |
|                          |                                                                                           | Calibration success        | (Red Green) x4                                                                           |                                            |                                                                                                                                                                                                     |
| Normal operation         | All normal and no action to throttle                                                      |                            | (Green) ...                                                                              | Nil                                        |                                                                                                                                                                                                     |
|                          | Throttle operation                                                                        | Normal                     | The greater the accelerator, the faster the green light flashes                          |                                            |                                                                                                                                                                                                     |
|                          | Braking                                                                                   |                            | Red light is on                                                                          |                                            |                                                                                                                                                                                                     |
| Boot                     | Entering boot forcibly                                                                    |                            |                                                                                          | Nil                                        | Follow the process of Bluetooth factory reset                                                                                                                                                       |
|                          | Boot in progress                                                                          |                            | Green light: On 2s&Off 2s                                                                | Nil                                        | CPU enter Boot mode                                                                                                                                                                                 |
|                          |                                                                                           |                            | Red light remains flashing                                                               |                                            | CPU enter Boot, program upgrade in progress                                                                                                                                                         |
| Normal startup           | Prompt for the number of battery cells after normal startup                               |                            | Quinary prompt light signal, long tone with red light on, short tone with green light on | do, mi, so + quinary prompt sound          | do, mi, so: prefix of quinary number<br>Quinary definition<br>Long tone = 5 cells, short tone = 1 cell<br>Example: 8-cell lithium battery prompt sound<br>do, ri, mi + long tone x1 + short tone x3 |
| Fault warning            | ESC self check abnormality                                                                |                            | (Redx2) ...                                                                              | Nil                                        | Disconnect the motor wires, power on. if it is still abnormal,return it for maintenance                                                                                                             |
|                          |                                                                                           |                            | (Redx2 Greenx1) ...                                                                      | Nil                                        |                                                                                                                                                                                                     |
|                          |                                                                                           |                            | (Redx2 Greenx2) ...                                                                      | Nil                                        |                                                                                                                                                                                                     |

**\*Notes:**

1. Red light matches long tone, green light matches short tone.
2. For saving power, all "beep" lasts for 5mins; if all fault recovered, it takes effect again in next 5 mins
3. Ellipsis"..." in light cue represents repetition of previous action.