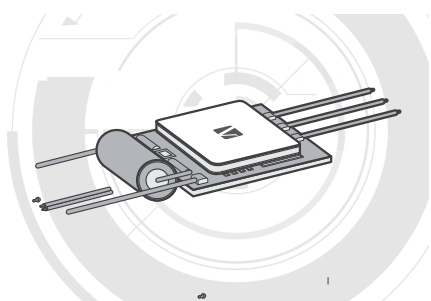


## Firefly series single track ESC Operation Manual(V1.0)



### 01 Features

- Using 32-bit ARM processor. With small size, light weight, rapid running speed.
- Fine speed control, fine linear throttle response, rapid implementation of gas changes, throttle signal loss protection function.
- Synchronous rectification, regenerative braking, energy recuperation (Compared with the other such kind of ESC, it can save more than 15% power.)
- Support and automatically detect the ordinary remote control signal and One-Shot125 control signal. Available throttle setting can compatible with different remote control.
- Automatic start up power mode, with great acceleration performance.
- Adaptive timing to compatible with much more different motors.
- Having start up protection function. To avoid the damage of motor, it will stop the start up of motor when the motor is blocked or don't start up for a long time.
- Special designed for multi drones. Having complete independent intellectual property rights, product sustainable for updates.

### 02 Parameter specifications

- Support 2-6s Lipo battery.(Please check the sticker to see the specified battery cells).
- Output PWM frequency is 24KHz.
- Ordinary control signal throttle range 900us~2400us, One-shot125 signal throttle range 100us~300us.
- Throttle resolution is about 1480 steps.
- Max. RPM: 450,000rolls(2 poles), 150,000rolls(6 poles), 75,000rolls(12 poles).

### 03 Connection of Cables

#### Power cables

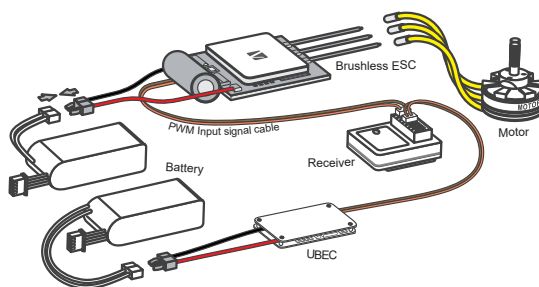
Red cable is soldered with battery positive polarity, black cable is soldered with battery negative polarity. Please note connect the battery with reverse polarity will destroy the ESC.

#### PWM input signal cables

Orange cable is PWM input signal cable, brown is ground cable. Connecting the cables reversely will cause ESC can't receive signals, can't working at all.

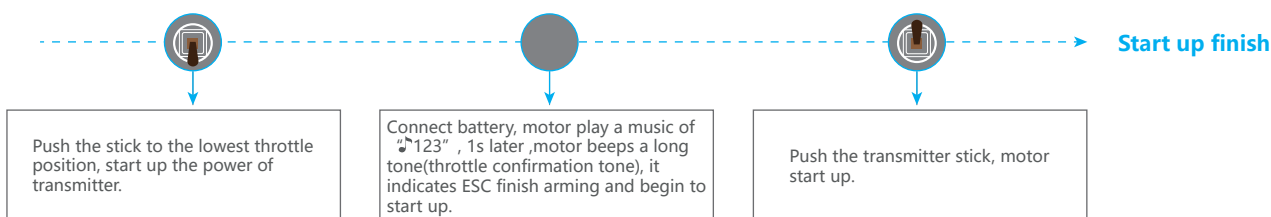
#### Motor cables

3 motor cables are yellow, they are arbitrary to solder with 3 motor connection pads. The motor direction will be reversed by changing any 2 of the 3 motor cables.

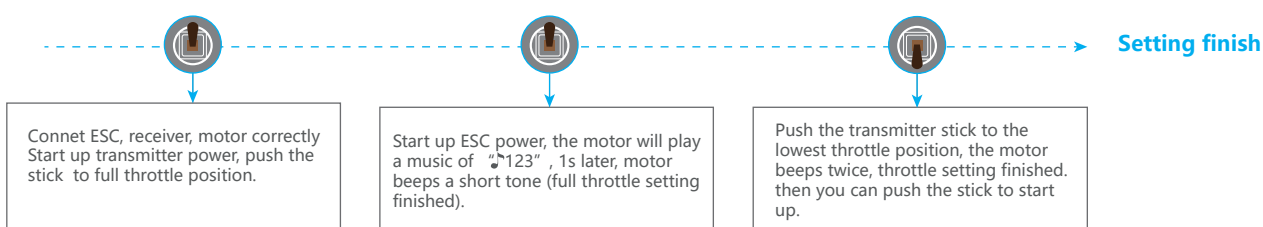


### 04 Operation

#### 01 Normal starting process



#### 02 Throttle setting



#### 03 Conversion of ordinary control signal and One-shot125 signal

- Under the condition of both ESC and receiver are not electrified: connect ESC, receiver, motor correctly. Power up the receiver(transmitter) firstly, then power up the ESC, ESC will automatically detect if it is ordinary control signal or One-shot125 control signal.
- Under the condition of both ESC and receiver all are electrified(ESC, receiver and motor were already connected correctly): If you want to convert the signal now, please cut off the connect cable between ESC and receiver, you will hear the motor play a music of '32'(indicates signal lost), then connect the new signal receiver with ESC, the ESC will detect the type of signal automatically, then move the stick to low throttle position, about 1s later, the motor will beep a long tone(throttle confirmation tone).

### 05 Beeps

- If the control signal is not ordinary control type or One-shot125 control type, you will hear 3 rapid short. beeps per 2s to remind it is a invalid control signal.
- When start up the power, the throttle stick is not under the position of throttle start power point, you will hear a sequence of rapid "beep, beep" tone.
- When control signal was lost, you will hear " beep, beep" per 3s.
- If start up failed, you will hear rapid beeps continually.

#### Safety instructions

Due to the strong brushless power system, improper operation may cause the personal injury and device damage. Please follow the instructions of manual to operate properly.

- Please don't operate long time under the battery with low load. It will affect the battery usage life and reduce the working efficiency of ESC.
- Please don't operate long time when the ESC is over temperature. Otherwise, it will easily damage the MOS FET and break the ESC.
- Please pay attention to the motor. Don't operate continually when the motor was blocked. Otherwise, it will affect the usage life of motor and ESC.
- Please don't put the ESC in the overvoltage condition, otherwise it will affect the usage life of ESC.