

User instruction for RC aircraft ESC

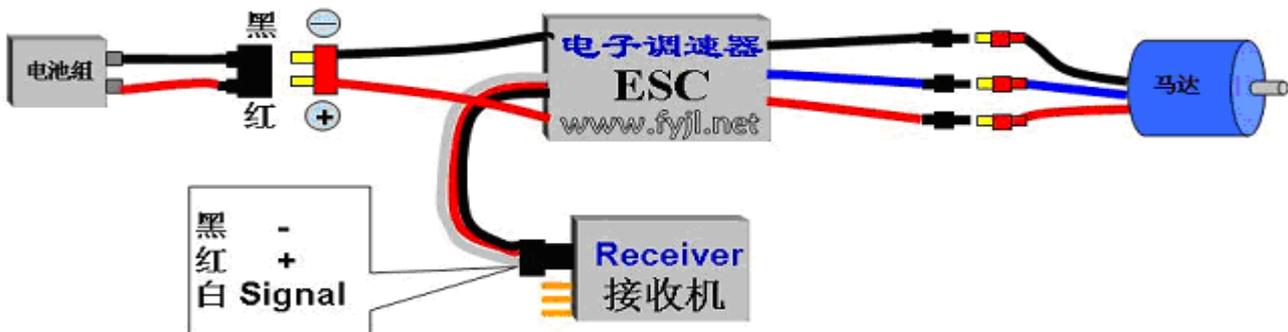
Thanks for purchasing brushless electronic speed controller(ESC) which designed and manufactured by Hobbyking.Improper operation may cause personal injury and equipment damage. High power system for RC model is dangerous,strongly suggest users read the instruction carefully . We won't assume any responsibility for personal injury ,property damage or consequential damages resulting from our product or our workmanship.

【Main Features】

- High performance microprocessor brings out the best compatibility with all kinds of motors and the highest driving efficiency.
- Maximum motor speed: 210000 RPM (2 poles), 70000 RPM (6 poles), 35000 RPM (12 poles).
- Smooth linear, quick and precise throttle response.Autocorrection of the end throttle.
- Unique circuit design,strong anti-interference.
- Startup mode can be set,throttle response fast,and it has a very smooth speed control linearity,Compatible with fixed wing aircraft and helicopters.
- Multiple protection features: Low-voltage cut-off protection / over-heat protection / throttle signal loss protection.
- High power safety performance:wherever the throttle lever is, the motor won' t start immediately.
- Support cycle menu setting, simple operation.Support setting with program box.
- Throttle range can be configured to be compatible with all transmitters currently available on market.

【Wiring diagram】

(To avoid short circuit and leakage, please make sure good joint insulation .)



【ESC Functions】

- ▶ Restor factory defaults

ESC factory default state:

- A Brake: OFF
- B Battery type: Li-Po battery
- C Low-voltage protection point: medium(3.0V/65%)
- D Motor timing: autumatical

- E Acceleration start: soft
- F Helicopter mode: OFF
- G Working frequency: 8kHz
- H Low-voltage protection mode: decrease power
- ▶ Battery type (LiPo/NiMh/NiCd) setting
- ▶ Brake setting (with/without)
- ▶ Low-voltage protection values setting (low-voltage protection value: 2.8V、3.0V、3.2V)
- 】▶ Acceleration start setting (specialized for RC helicopter)
- ▶ Helicopter mode (specialized for RC helicopter)
 - A .Helicopter1: After startup, from 0% throttle advance to 100% after 5 seconds
 - B .Helicopter2: After startup, from 0% throttle advance to 100% after 10 seconds
- Note: If helicopter mode, ESC default is no brake, default low-voltage protection type is power deduction.
- ▶ Motor rotation direction (clockwise/anticlockwise)
- ▶ Working frequency (8kHz/16kHz)
- ▶ Low-voltage protection mode (power reduction /stop immediately)

【Program ESC with transmitter】

Move throttle stick to the top, then power up transmitter and ESC. ESC exits program mode at this time. Refer to the following chart, when the music that you need programming this option starts, move throttle stick to the bottom. Motor emits “BEEP-BEEP” at this time, it shows your selected option has programmed successfully. The prompt tone of each option plays 4 times, move the throttle stick to the bottom before finishing 4 times. Disconnect the power after finishing program then re-power every time, it can run normally.

【Program with programming box】

Program: (5 types Prompt tone are as following)			
A=BEEP- short sound			
B=BEEP-BEEP-BEEP- 3 continuous sound			
C=~BEEP gradient sound+BEEP			
D=BEEP\ low sound			
E=BEEP-- long sound			
music 1	throttle----throttle calibration		A-A-A-A
music 2	brake		B-B-B-B
music 3	Battery type	Ni-MH	C-C-C-C
music 4		Li-Po	D-D-D-D
music 5	Low-voltage protection threshold	low (2.8V)	E-E-E-E
music 6		medium (3.0V)	AA-AA-AA-AA
music 7		high (3.2V)	BB-BB-BB-BB
music 8	Restore factory default		CC-CC-CC-CC
music 9	timing	automatic	DD-DD-DD-DD

music 10		low (7° -22°)	EE-EE-EE-EE
music 11		high (22° 30°)	AAA-AAA-AAA-AAA
music 12	motor start	very soft	BBB-BBB-BBB-BBB
music 13		soft	CCC-CCC-CCC-CCC
music 14		Acceleration start	DDD-DDD-DDD-DDD
music 15	helicopter mode	OFF	EEE-EEE-EEE-EEE
music 16		helicopter 1 (5S)	AAAA-AAAA-AAAA-AAAA
music 17		helicopter 2 (10S)	BBBB-BBBB-BBBB-BBBB
music 18	motor rotation direction		CCCC-CCCC-CCCC-CCCC
music 19	PWM motor frequency	8 kHz	DDDD-DDDD-DDDD-DDDD
music 20		16 kHz	EEEE-EEEE-EEEE-EEEE
music 21	low-voltage protection	power reduction	AD-AD-AD-AD
music 22	mode	Cut off output	AE-AE-AE-AE

【Solutions to normal problems】

problems	Possible causes	solutions
After powering up,motor doesn't run and doesn't emit sound, servo system doesn't connect,neither.	Bad connection between ESC and battery pack.	Clean the connectors or replace them,check the connection polarity.
	Signal wire connects with wrong polarity of receiver	Check signal wire and make sure the right polarity.
	Bad soldering cause bad contact.	Solder the wires again.
	The wrong polarity connection between each battery.	Check battery pack, replace battery pack with on-specification ones.
	Quality problem of ESC	Change ESC
After powering up,ESC emits the sound of battery cells automatic detection, but motor can't start.	ESC doesn't calibrate throttle	Do throttle calibration
After powering up ESC,ESC runs but motor can't run and doesn't emit sound. After powering up ESC,motor doesn't run and emits warning tone(short stop after "BBE-BEEP")	Bad connection between ESC and motor, or bad soldering .	Check the connectors or replace the connectors or solder the motor wire again.
	Bad motor	Change motor
	ESC low-voltage protection, battery voltage isn't in the acceptable range	Check the voltage of battery pack and change the full-charged battery pack.

After powering up,motor doesn't work and emits warning tone("BEEP-BEEP",short stop after first "BEEP")	No output throttle signal of receiver	Check if right connection between signal wire and receiver throttle channel. Check transmitter and receiver,make sure signal output.
After powering up,motor doesn't work and emits continuous warning tone	Throttle stick doesn't put in the bottom.	Move the throttle stick to the bottom and calibrate throttle again.
After powering up,motor doesn't work .ESC emits 2 long "BEEP"and 2 short "BEEP".	The positive and negative of throttle channel was put wrong. So ESC exits program mode.	Refer to the user instruction of transmitter, adjust the setting of throttle channel.
Motor rotates in the anticlockwise direction	The wrong sequence of connection wires between motor and ESC.	①Exchange random 2 of the 3 connection wires between ESC and motor. ② Change motor rotation direction with transmitter or programming box.
Motor stops running during flying	Battery voltage is lower than low-voltage protection threshold and low-voltage protection mode is cutoff output.	① Set right low-voltage protection threshold. Fly with full-charged battery pack.Choose power reduction as Low-voltage protection .If power is decreasing during flying, please land your aircraft soon. ②Control your aircraft during the range available to control with your transmitter. ③Attention to the voltage of transmitter, if it wil run out of the battery,please land your aircraft soon.
	Loss of throttle signal	①Check if the right operation of the transmitter ②Check if the right match between transmitter and receiver. ③Strong electromagnetic interference in the used environment, try to repower up . Start and restore the normal work, if the problem come up again and again, please change the flying field.
	Bad contact of the connection wire	Check the connectors of battery pack, battery output wires and motor connection wires.

【Safety knowledge when using ESC】

- Please don't remove the components on ESC, or it may cause permanent damage
- First time to test ESC and motor,if not sure the right setting of receiver,please don't install propeller and pinion.
- Please don't use broken,short-circuited and easy-heated battery pack.
- Please don't use substandard cables and cords and connectors.
- Battery cells and servos number can't be above ESC standard.
- Please mind battery polarity, wrong polarity connection will damage ESC.
- Please don't put ESC in the moist and bright light place.
- Please don't remove battery when motor is rotating, it will cause the huge peak current and burn ESC.
- Please install ESC in the ventilated place.
- Please don't use with antimagnetized motor.
- Please don't let ESC touch chemicals and water.

- If not use ESC in a period, please disconnect battery pack.