



G-series Brushless ESC Instructions

Thanks to purchase the **Hifei®** brushless motor ESC produced by Chongqing HIFEI Technology Ltd., please read this instruction booklet carefully before use. Wish you have a pleasant flight.

Using Warnings

- It is strongly recommended to calibrate the throttle range of transmitter when you at the very first use the ESC or when you use a new/different transmitter or receiver.

- When connecting the ESC, ensure that the polarity of battery is correct. Incorrect polarity may cause permanent damage to the ESC and such damage is not covered by the WARRANTY.

- When you use the ESC, turn on the transmitter BEFORE powering on the receiver.

- When you finish the flying, power off the receiver BEFORE turning off the transmitter.

- It is very IMPORTANT to make sure the ESC is mounted in a good air flowing place for heat sinking.

- The limiting current is set to the standard mode in factory. It is suitable for use in most configurations. Only experienced technicians can adjust this programming.

- In Governor Mode, the brake is always disabled and the soft cutoff is always active.

- Changing the PWM may cause the motor to heat ahead of time.

- Do not play on or near water. Never allow water, moisture or any foreign object onto the PC board of the ESC.

- Damage to the controller as a result of excessively high current is not covered by the manufacturer's WARRANTY.

- Never disconnect the battery pack while the motor is running, as this could cause damage to the speed controller and/or motor.

- Connectors with low conductivity may cause erratic motor rotations or other unexpected movements.

- If you do not use the BEC function of the ESC and are using a separate receiver battery or UBEC instead to power the receiver and servos, please disconnect the red wire from the ESC's receiver lead .
- The controller will automatically power off the motor if the battery voltage drops below the programmed cut-off voltage. Try using a smaller prop on the motor, or using batteries with a higher rating. It is especially important for the user of Li-poly cells.

- Allowing water, lubricants, moisture or other foreign objects inside the ESC will VOID the WARRANTY. Exposure to CA glue or its fumes can cause damage and malfunction; this will also VOID the WARRANTY.

- When finish the using of Hifei software ‘ V4.xx’, close the software first, then pull out the USB linker from your PC, or it may cause the crash of the computer..

ESC Specifications

Features

- Microprocessor controlled

- Extremely low resistance

- High rate adjustable switching (PWM:8KHz/12KHz/16KHz)

- Auto Lipo Cells Detecting

- Thermal Protection (100 centigrade)

- Safe “power on” arming program ensures motor will not accidentally turn on.

- Auto shut down when signal is lost or radio interference becomes severe for more than 3 seconds

- Run motor in forward and reverse by swapping any two motor wires connection.

- Apply to most inrunner and outrunner brushless motors.

- Fully programmable by Hifei program card, HiFei software and TX.

- Firmware is upgradeable by HiFei software on PC.

ESC Models

Low Voltage ESC with BEC					
ESC	Voltage (Lipos)	Current/Max *	BEC	Size (mm)	Weight (incl. wires)
20A-G-3S	2-3S	20amp/25amp	2A	48*26*10	26g
40A-G-3S	2-3S	40amp/46amp	2A	51*26*10	28g
45A-G-6S	2-6S	45amp/65amp	3.5A	58*27*17	39g
60A-G-6S	2-6S	60amp/70amp	3.5A	71*27*16	54g
80A-G-6S	2-6S	80amp/90amp	3.5A	71*27*16	55g
100A-GII-6S	2-6S	100amp/120amp	3.5A	89*35*21	107g
180A-GII-6S	2-6S	180amp/200amp	3.5A	100*43*26	153g
High Voltage ESC w/o BEC					
90A-GII-8S	4-8S	90amp/110amp	OPTO	89*35*21	107g
150A-GII-8S	4-8S	150amp/170amp	OPTO	100*43*26	153g
75A-GII-12S	4-12S	75amp/90amp	OPTO	89*35*21	107g
120A-GII-12S	4-12S	120amp/130amp	OPTO	100*43*26	153g
160A-GII-12S	4-12S	160amp/190amp	OPTO	92*54*26	257g
220A-GII-12S	4-12S	220amp/250amp	OPTO	110*61*25	285g
220A-GII-15S	4-15S	220amp/250amp	OPTO	110*61*25	271g

* The max current could be reached under the condition of ESC in contact with a 5 mph airflow of 25C (77F) or cooler air at full throttle.

Programmable Features

1 Low Cut-off Voltage

Low Cut-off Voltage can protect the main battery from discharged too low, and provide the normal operating voltage to receiver and servos.

The following form is the LVC for 20A, 40A-G-3S

Option 1:Auto Lipo	Auto Lipo Cells Detecting
Option2:5.0V(default)	6-8 cell NiCad or NiMH packs or 2 cell Lithium packs
Option 3:6.0V	8 cell NiCad or NiMH packs or 2 cell Lithium packs
Option 4:7.2V	9 cell NiCad or NiMH packs
Option 5:8.4V	10 cell NiCad or NiMH packs or 3 cell Lithium packs
Option 6:9.0V	12 cell NiCad/ NiMH packs or 3 cell Lithium packs
Option 7:12.0V	4 cell Lithium packs

The following form is the LVC options for 45A, 60A, 80A-G-6S and 100A, 180A-GII-6S

Option 1: Auto Lipo	Auto Lipo Cells Detecting
Option2: 6.0V(default)	6-8 cell NiCad or NiMH packs or 2 cell Lithium packs
Option 3: 7.2V	8 cell NiCad or NiMH packs or 2 cell Lithium packs
Option 4: 8.4V	9 cell NiCad or NiMH packs
Option 5: 9.0V	10 cell NiCad or NiMH packs 3 cell Lithium packs
Option 6: 12.0V	4 Lipo cells
Option 7: 15.0V	5 Lipo cells
Option 8: 18.0v	6 Lipo cells

The following form is the LVC options for 90A, 150A-GII-8S and 75A, 120A, 160A, 220A-GII-12S

Option 1: Auto Lipo	Auto Lipo Cells Detecting
Option2:12.0v(default)	4 lipo cells
Option 3:15.0v	5 lipo cells
Option 4:18.0v	6 lipo cells
Option 5:21.0v	7 lipo cells
Option 6:24.0v	8 lipo cells
Option 7:27.0V	9 Lipo cells
Option 8:30.0V	10 Lipo cells
Option 9:33.0v	11 Lipo cells
Option10:36.0v	12 lipo cells

2 Current Limiting

Option 1: very sensitivity	Low over-current threshold, will shut down rapidly
Option 2: standard (default)	Moderate over-current threshold, will shut down after a slight delay. Recommended for inrunner motors.
Option 3: Insensitivity	High over-current threshold, will shut down after a slight delay.. Recommended for outrunner motors. Only experienced modelers should use this option.
Option 4: disabled	Current limiting detection disabled. Only experienced modelers should use this option.

Note: Default setting is recommended. If you change the setting, damage to the controller as a result of over current will be not covered by the manufacturer's warranty.

3 Brake type

Option 1:Brake disabled (default)	Brake disabled is mainly used for helicopters.
Option 2:Soft brake	Soft brake provides 50% of full braking power. General aircraft use, with fixed or folding prop
Option 3:Hard brake	Hard brake is 70% braking power. Direct drive applications where more braking power is required. Hard brake should only be used below 12V.

4 Timing Advance

Option 1: Low advance timing 0°~15°	Recommended for more lower pole count motors. Gives more power and slightly less efficient.
Option 2: middle advance timing 5°~20°	Recommended for most motors. Gives a good balance of power and efficiency.
Option 3: High advance timing 15°~30°	Recommended for most of higher pole count motors
Option 4: Auto(default)	Recommended for most of all brushless motors.
Option 5: 0°; Option 6: 2°; Option 7: 4°; Option 8: 6°; Option 9: 8°; Option 10: 10°; Option 11: 12°; Option 12: 14°; Option 13: 16°; Option 14: 18°; Option 15: 20°; Option 16: 22°; Option 17: 24°; Option 18: 26°; Option 19: 28°; Option 20: 30°	
<i>Note: 0° and 30° are special settings, can be only selected for some special motors with manufactures special requirements.</i>	

5 Cutoff Type

Option 1: Hard cutoff (default)	When battery voltage reaches cut-off voltage the motor will shutdown immediately. Motor can be restarted by closing the throttle to the lowest position and then move the throttle as normal.
Option 2: Soft cutoff	When battery voltage reaches cut-off voltage, the ESC will slowly reduce motor power to zero, you will notice a decrease in power and it is time to land, the throttle maintains its full linear.

Note: Soft cutoff is always automatically active in Governor Mode.

6 Soft Start

Option 1: Very soft start	Recommended for helicopters
Option 2: Soft start (default)	Recommended for most of the fixed or folding prop airplanes, and some helicopters.
Option 3: Fast start	Recommended for fastest startup.

7 Governor Mode

Option 1: Auto calibrating throttle (default)	Recommended for general aircraft
Option 2: Low RPM Range (for helicopters)	Control gain is low
Option 3: High RPM Range (for helicopters)	Control gain is high

Note: In Governor Mode, the brake is always disabled and soft cutoff is automatically active. More detailed information for Hifei Governor mode, please download "Governor instruction V4.11" from www.hifei.com or ask for it from our dealers.

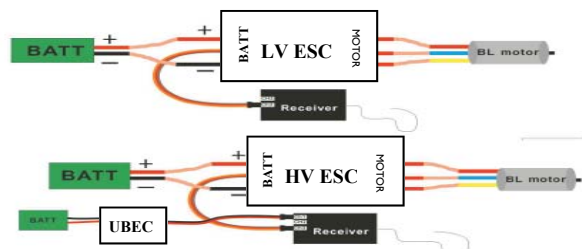
8 PWM Switching Rate

Option 1: 8 KHz (default)	Recommended for most brushless motors
Option 2: 12 KHz	Recommended for low inductance motors
Option 3: 16 KHz	Recommended for very low inductance motors

Note: we strongly recommend only experienced modeler could change this setting.

III: Using the ESC

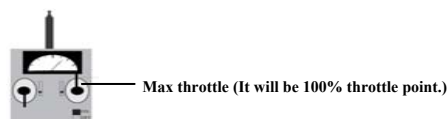
Connect ESC to BL motor, receiver and battery



Calibrate throttle range of transmitter

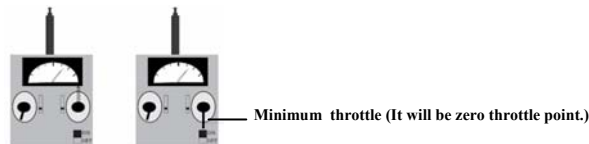
1st: Correctly connect ESC to brushless motor, plug the receiver lead of ESC into the throttle channel of receiver (usually CH3)

2nd: Push the joystick of transmitter to the max throttle position, power on the transmitter.



3rd: Connect the ESC to battery, there are 3 beeps emitted from the motor.

4th: After the following 2 beeps ♪♪, immediately pull joystick to the minimum throttle.



5th: 2 beeps emitting, the calibrating finished.

Note: Motor is needed to install for acoustic guide. Meanwhile, please keep the propeller away from the human beings or any objects.

Program the ESC by soft on PC

Install software to PC

Please download setup software 'HiFei Vx.xx' from www.hifei.com. The setup soft is checked to be no virus. Please double click it to start installing. Please proceed the installing according to the handling tips in pop-up windows.

When installing is finished, a shortcut icon of the software is auto saved.

Link ESC to PC

A. Link LV ESC to PC

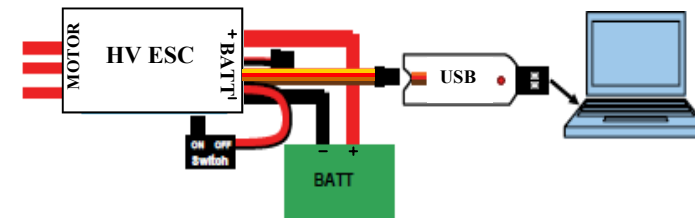
When link ESC to PC, a Hifei USB Linker (sold separately) is needed.

Steps: 1) Plug the receiver lead of ESC to USB Linker in right polarity; 2) Plug USB Linker into one of USB Ports of PC; 3) The red LED of USB Linker lights, the green LED on ESC lights.



B. Link HV ESC to PC

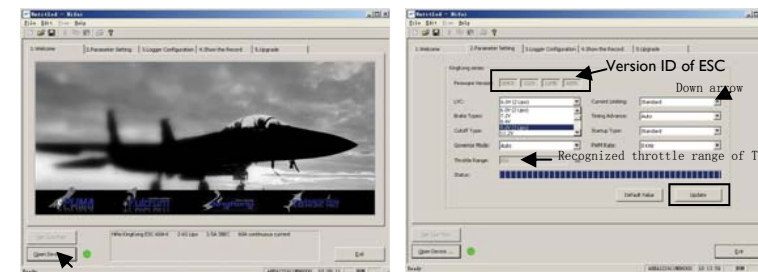
Steps: 1) Switch off if there is a switch on ESC; 2) Plug the receiver lead of ESC to USB Linker in right polarity; 3) Plug USB Linker into one of USB Ports of PC; 4) Connect ESC to battery; Switch on; 5) The red LED of USB Linker lights, the green LED on ESC lights



IV C: Program the ESC

Double click the shortcut icon of software.

Click 'Open Device'. If ESC is successfully linked to PC, it will automatically jump to the programming tab, as below pictures:



- Click down arrow to select the parameter options you would like to set.

- Click 'Update' to save modifications.

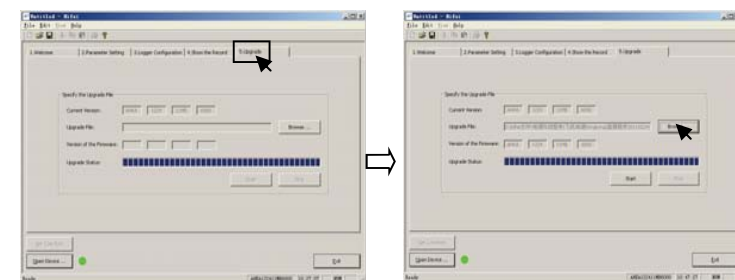
- Click 'Exit' to finish programming and ready to fly now.

Note: when finish the using of Hifei software 'V4.xx', close the software first, then pull out the USB linker from your PC, or it may cause the crash of the computer.

IV D: Upgrade ESC's Firmware

- Click tab 'Upgrade'

- Click 'Browse' to select the new firmware which the ESC will be upgraded into.



- Click 'Start' to begin upgrading. Please wait for a while, it will be finished within 20 seconds

- 'download successful', upgrading is finished.

