Freewing FLYFUN-150A-HV-8S Sensorless Brushless Speed Controller Instruction Manual

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Thanks for purchasing Our Electronic Speed Controller (ESC). High-power systems for RC models can be very dangerous, so we strongly suggest you read this manual carefully. In that we have no control over the correct use, installation, application, or maintenance 01 our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting trom the use of the product. Any claims arising from the operation, failure or malfunctioning etc. will be denied. We assume no liability for personal injury, property damage Or consequential damages resulting from Our product Or Our workmanship. As tar as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

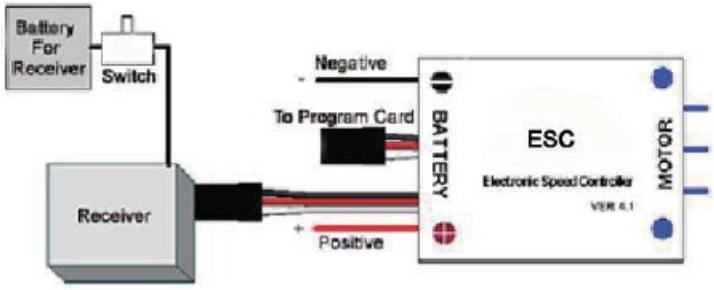
FEATURES

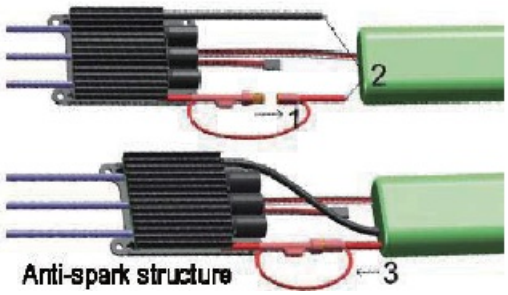
1. Use extremely low resistance PCB to make the whole ESC with super current endurance capability.
2. Military-quality capacitors with extremely low resistance increase the ability for preventing unwanted RF noise or interference.
3. Anti-spark circuit eliminates sparks when the battery pack is connected to the ESC.
4. protection features: Low-voltage cutoff protection / over-heat protection/throttle signal lost protection.
5. 3 start modes: Normal I Soft / Super-soft, compatible with fixed-wing aircraft and helicopters.
6. The throttle range can be configured. fully compatible with all transmitters.
7. Smooth and accurate speed control, and excellent throttle linearity.
8. Maximum speed: 210000 RPM (2 poles motor), 70000 RPM (6 poles motor), 35000 RPM (12 poles motor).
9. Pocket-sized program cards can be purchased separately for extremely easy programming of the ESC at the flying field.

Specification

Class y Cell	Model User	Cont. Weight	Burst Current		BEC Output		Batter	Size
Current		(>10s)		Lipo	NiMH	Program mable		L*W*H
		180A	N/A	5-8S	15-24	Yes	125g	88*55*18

Wiring Diagram





Note: There are 2 control wires on the HV controller. The longer one is close to the positive battery wire, which is connected with the receiver, and the shorter one is close to the negative battery wire, which is used to connect the card to set the programmable parameters Of the controller.

Anti-Spark Circuit

There is a pair Of bullet connectors and a thin red wire attached to the positive input wire (red color, thick) Of the ESC. They are used to eliminate sparks when the battery pack js connected with the ESC. Please use jt in the foJJ0wjng sequence:

1. Disconnect the bullet connectors on the positive input wire (red color, thick) of the ESC.
2. Connect battery wires to the ESC.
3. Connect the bullet connectors on the positive input wire (red color, thick) of the ESC as soon as you hear the special tone “‘1 23”

Feature Explanation

1. Bracket Brake Enabled / Brake D’sabled, default is Bra
2. Battery Type: Li-xx(Li-ion or Li-po) \ Ni-xx(NiMh or NiCd), default is Li-xx.
3. Low Voltage Protection Mode(Cutoll Mode): Soft Cutoff (Gradually reduces the output power) or Hard Cutoff (Immediately stops the output default is Soft Cutoff.
4. Low Voltage Protection Threshold (Cutoff Threshold), Low/ Medium / High, default is
    - For Li-xx batteries, the cell quantity Of a battery pack is calculated automatically or set manually. LOW I Medium / High cutoff voltage
      for each cell is: 2.6V/2.85V/3.IV. For example, 10 cells Lipo, when the “titanium” cutoff voltage is set, the cutoff voltage is: 2.85•10-28.5M
    - For Ni-xx battery, low/high cutoff voltages are Of the startup voltage (i.e. the initial voltage Of the charged battery pack), 0% means the low voltage protection function is disabled, For example:20 cells NiMH battery, fully charged voltage is I when “Medium• value is set, the cutoff voltage is:
      Start Moder Normal /Soft ‘Super-soft. default is Normal startup.
5. Normal IS suitable for fixed-wing aircraft. Soft and Super-soft are suitable for helicopters. The initial speed of Soft and Super-soft mcxle is

very slow so it Will take 3 seconds (Soft startup) or 6 seconds (Super-soft startup) from zero speed to full speed. But if the startup process is completed (i.e. The motor is running), then the throttle is dosed (that means the throttle stick is moved to a bottom position at 0% throttle) and again (throttle stick is moved upwards) within 3 seconds. the restart will be temporarily changed to normal mode to get rid of the chances of a crash caused by slow throttle response in the aerobatic fly.

6. Timing, Low / Medium \ High, default is Low.
   In normal cases. Low or Medium timing is suitable for most motors. In order to get a higher speed. please try the High timing value.
   Note: Alter you change the timing setting, please test your RC model on the ground before taking ot'.

Begin To use The New ESC

Note: In the following instructions, we use the words of "Top position" and "Bottom position" to represent the position of thi
throttle stick. Top Position: The throttle value is 100% at this position. Bottom Position: The throttle value 0% at this position. Before using your new ESC, please check all the connections to make Sure that they are reliable, and then start up the ESC in the following sequence:

1. Move the throttle stick to the bottom, and then switch on the transmitter.
2. Connect the receiver battery pack (4-6V) to the receiver, and then connect the main power battery pack to ESC, the ESC begins the
   self-test process, and the motor will emit several •beep" tones to represent the cells quantity of the lithium battery pack. After 2 seconds a
   long "beep—"tone emits, which means the self-test is 0K, and now the RC model is ready to take off.
   - If nothing is happened, check your battery packs and all the connections;
   - If a special tone ' 556112' emits after 2 beep tones (beep-beep-), means the ESC has entered the program mode, i.e. the throttle
     channel of your transmitter is reversed, please set the direction of the throttle channel correctly,
   - If a very rapid "beep-beep-, beep-beep-" tone emits (The time interval of each "beep-beep-" tone is 1 second), means the Input
     volta e is too low or too high, please check the battery voltage.
3. **VERY IMPORTANT**
   Because different transmitter has different throttle range, you need to use the "Throttle Range Setting Function" to calibrate the throttle range. Please read the instructions on page 1—"Throttle Range Setting'
4. **Alert Tone**

   Input voltage abnormal alert tone: The ESC begins to check the voltage of the battery pack when it is powered on, if the voltage is not in the acceptable range. such an alert tone emits: "beep-beep-, beep-beep-, beep-beep-" (Every •beep-beep– has a time interval of about 1 second)

5. Throttle signal abnormal alert tone: When the ESC can't detect the normal throttle signal, such an alert tone emits: "beep-, beep-, beep-• (Every "beep-' has a time interval of about 2 seconds)
6. Throttle stick is not at its bottom position alert tone: When the throttle stick is not in the bottom (lowest) position, a very rapid alert tone emits: "beep-. beep•, beep•"_ (Every "beep-" has a time interval of about 0.25 seconds.)

Protection Functions

1. Start-up protection: If the motor failed to start up in 2 seconds, the ESC will a.it off the output power. In this case, the throttle stick MUST be moved to the bottom again and then to restart the motor. (Such a situation happens in the following cases: The connection between ESC and Motor is not reliable, the propeller is blocked, the gearbox is damaged, etc.)
2. Over-heat pratectk>n: When the temperature cf ESC Is higher than a factory-preset value, the ESC wtll gradually reduce the output power.
3. Throttle signal lost protection: The ESC wtll reduce the output power If the throttle signal Is lost for 1 second, further lost for tobdly 2 seconds will cause its output to be completely a.JI off.

Normal Startup Pracadura

- Switch on the transmitter, and then move the throttle stick to the bottom position
- Connect the battery
- pack to ESC, a special tone JI 123″ will emit, which means the power supply is OK
- Several ‘beep-” tones emit to represent the cells quantity of the lithium battery pack
- When self-teat is finished, e long “beep · tone emits
- Reedy to go flying now

Please note that we use a special way to represent the cell quantity of a lithium battery pack: 1 long “beeJ>-‘ = 5 short “beep-•. For example, 2 long ‘beep-” plus 2 short ‘beep-” (Beep-sleep-BB) means e 12 cells lithium battery pack, 1 long “beep-” plus 1 short ‘beep-” (Beep-fl) means e 6 cells lithium battery peck, end so an.

(Throttle Range Setting) The throttle range should be reset when a new transmitter is being used

- Switch on the transmitter, and move the throttle stick to top position
- Connect the battery pack to the ESC, and then wait for about 2 seconds
- “Beep-beep-” tone emits, which means the highest point of the throttle range has been correctly confirmed
- Move the throttle stick to the bottom position, and then several “beep-n tones emit to represent the number of Lipo battery cells
- A long “Beep-” tone emits, which means the lowest point of the throttle range has been correctly confirmed.

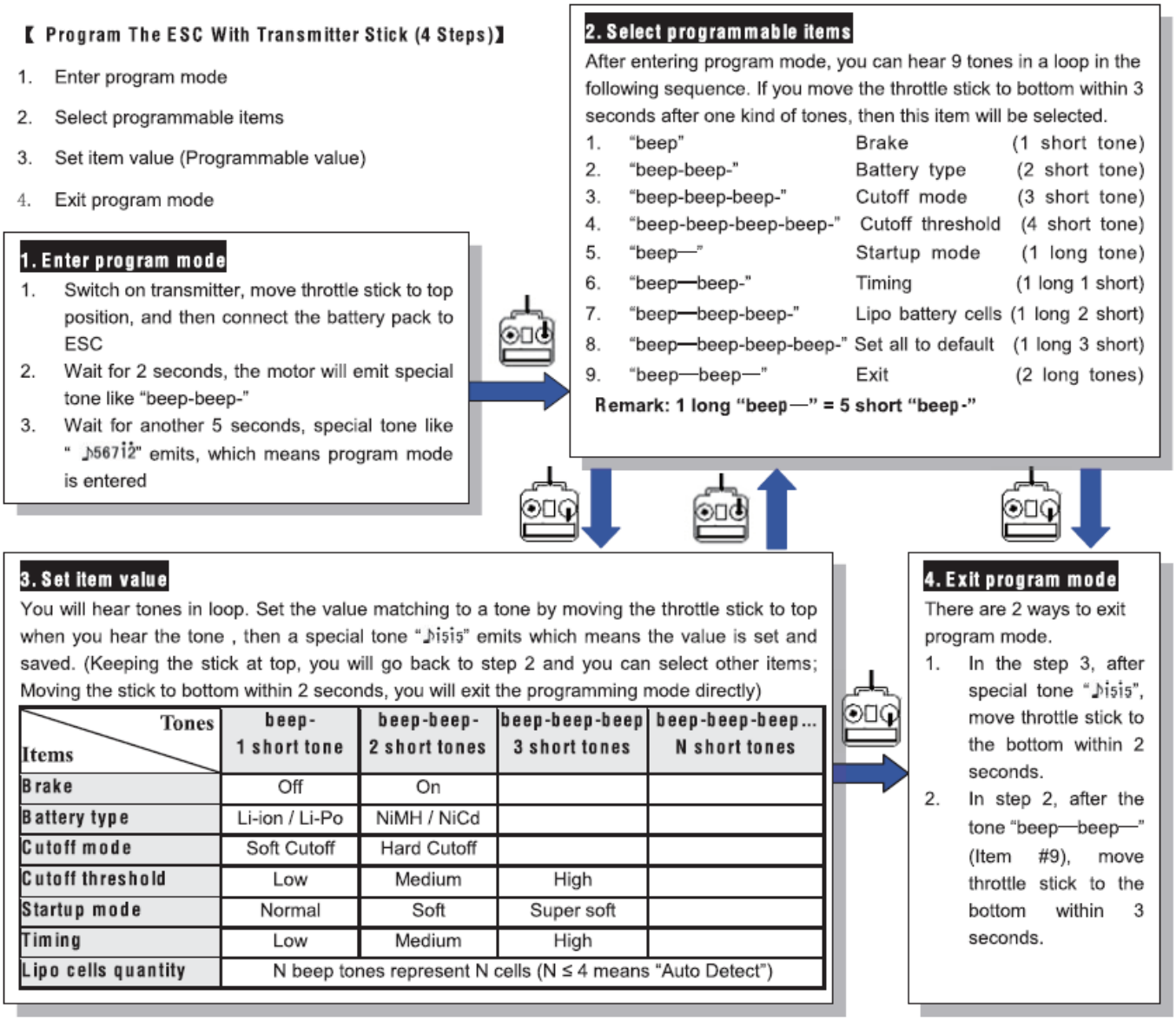
Trouble Shooting

Trouble Possible Reason Action

- After power on, the motor can’t work, no sound is emitted
- The connection between battery Dack and ESC is not 0K
- Check the power connection. Replace the connector.

After power on, the motor can’t work, such an alert tone emits: “beep-beep-, beep-beep-,beep-beep-” (Every “beep-beep- ” has a time interval about 1 second)	Input voltage is abnormal, too high or too low	Check the voltage of the battery pack
After power on, the motor can’t work, such an alert tone emits: “beep-, beep-, beep- “(Every “beep- ” has a time interval of about 2 seconds)	The throttle signal is abnormal	Check the receiver and transmitter Check the cable of the throttle channel
After power on, the motor can’t work, such an alert tone emits: “beep-, beep-, beep-” (Every “beep-” has a time interval of about 0.25 seconds)	The throttle stick is not in its bottom position (Lowest position).	Move the throttle stick to the bottom

After power on, the motor can’t work, a special tone ” ” emits after 2 beep tones (beep-beep-)	The direction of the throttle channel is reversed, so the ESC has entered the program mode	Set the direction of the throttle channel correctly
The motor runs in the opposite direction	The connection between ESC and the motor needs to be changed.	Swap any two wire connections between ESC and motor
The motor stops running while in a working state	The throttle signal is lost	Check the receiver and transmitter Check the cable of the throttle channel
	ESC has entered Low Voltage Protection mode	Land the RC model as soon as possible, and then replace the battery pack
	Some Connections are not reliable	Check all the connections: battery pack connection, throttle signal cable, motor connections, etc.



Note:

1. It very important to set the Lipo battery cells quantity correctly, otherwise the ESC will mistakenly calculate the cut-off voltage.
2. In the "Lipo cells quantity' setting process, 1 long "beep—" = 5 short "beep-". For example, 2 long "beeps" plus 2 short "beep-" means a 12 cells lithium battery pack, 1 long "beep " plus 1 short "beep-" means a 6 cells lithium battery pack.
3. If you are using a lithium battery pack, you'd better set the "Lipo cells quantity" manually. The voltage of a fully charged lithium battery

   the pack is different from that of a discharged battery pack, the more cells a battery pack has, the more difficult for the ESC to automatically detect the cell's quantity accurately.

(An Example of ESC Programming)
In the following example, we set the Startup Mode to "Super-soft", i.e. value #3 of the programmable item #5

1. **Enter Program Mode**

   Switch on the transmitter, move the throttle stick to top, connect battery packs to the receiver and ESC, wait for 2 seconds, and a "beep-beep" tone emits. Then wait another 5 seconds, a special tone emits, which means the

ESC is in the program mode.

2. **Select Programmable Items**

   Now you'll hear 9 tones in the loop. When a long "beep "Startup Mode" item. " tone emits, please move the throttle stick to the bottom position to enter the -Startup Mode- item.

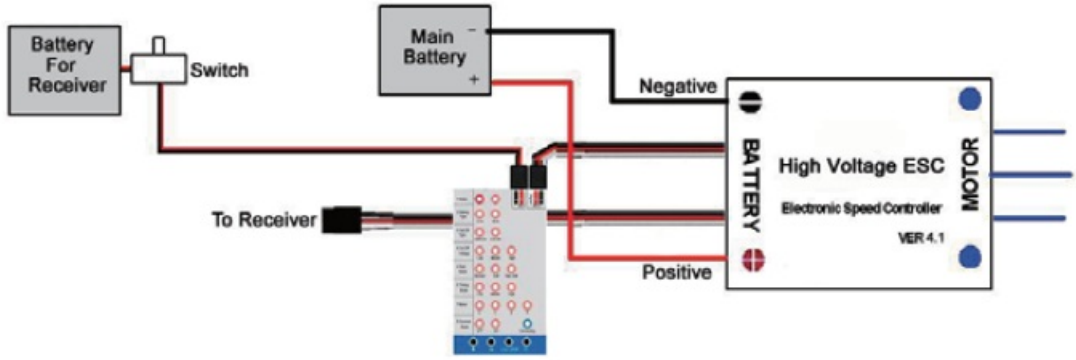
3. **Set Item Value (Programmable Value)**

   "Beep-", wait for 3 seconds; "Beep-beep-", wait for another 3 seconds; then you'll hear "beep-beep-beep", move the throttle stick to top position, then a special tone "N5i5" emits, now you have set the "Startup Mode" item to the value of "Super-soft Startup"

4. **Exit Program Mode**

   After the special tone "N5i5" move the throttle stick to the bottom position within 2 seconds.

(How To Use The Program Card)



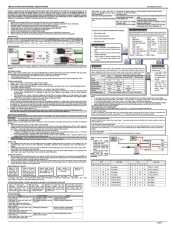
1. Connect the battery (4.8Vto 6V) to the port marked with "BATT"
2. Connect the programming lead (shorter control wire) to the port marked with BEC.
3. Connect the main battery pack to the ESC.

Please note the connection sequence be reversed. above cannot

Now the "Music/Lipo cell" item only means the cell quantity of the lithium battery pack. (● = LED is lighting)

LED				**Lipa Cells**	**LED**				Lipa **Cells**
0	0	0	0	Auto-detect	●	0	0	0	9 CELLS (33.3V)
0	0	0	●	Auto-detect	●	0	0	●	10 CELLS (37.0V)
0	0	●	0	Auto-detect	●	0	●	0	11 CELLS (40.7V)
0	0	●	●	Auto-detect	●	0	●	●	12 CELLS (44.4V)
0	●	0	0	5 CELLS (18.5V)	●	●	0	0	Auto-detect
0	●	0	●	6 CELLS (22.2V)	●	●	0	●	Auto-detect
0	●	●	0	7 CELLS (25.9V)	●	●	●	0	Auto-detect
0	●	●	●	8 CELLS (29.6V)	●	●	●	●	Auto-detect

Documents / Resources

	Freewing FLYFUN-150A-HV-8S Sensorless Brushless Speed Controller [pdf] Instruction Manual 030D002002, FLYFUN-150A-HV-8S, FLYFUN-150A-HV-8S Sensorless Brushless Speed Controller, Sensorless Brushless Speed Controller