

**FLIER** ESC for Boat 2S to 22S

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# FLIER



ESC for Boat 2S to 22S

**User's Manual**

**[www.fliermodel.com](http://www.fliermodel.com)**

# **FLIER** ESC for Boat 2S to 22S

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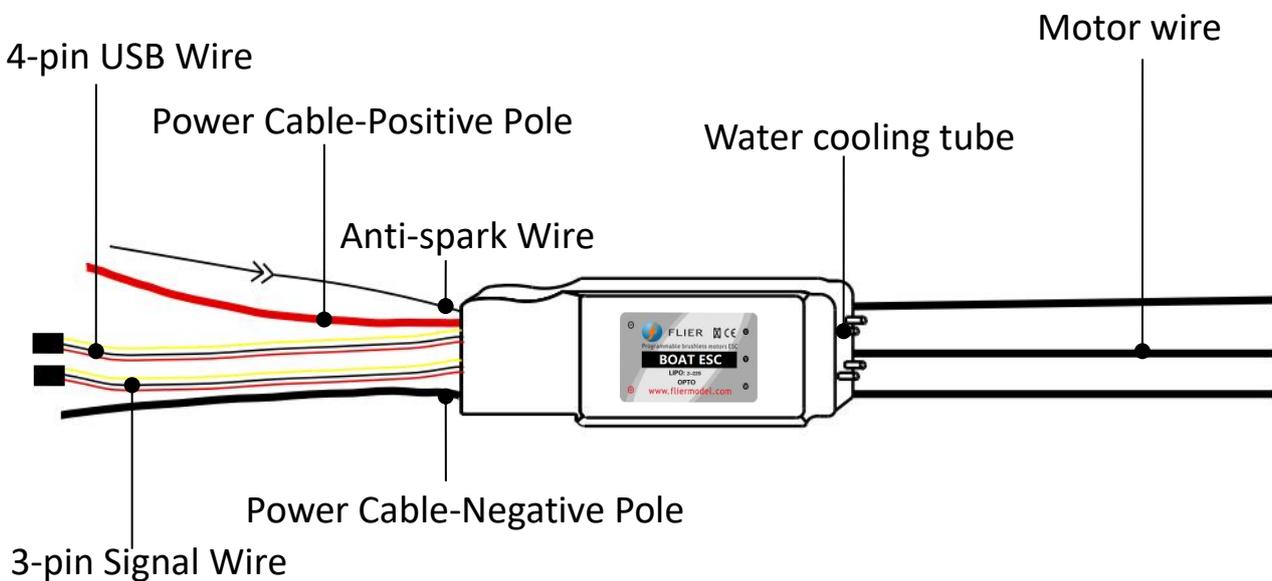
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## ESC Manual for Boat

Thank you for purchasing our products! For the high power of this system, failure to use it may result in injury and damage to the whole device. So we highly recommend you read carefully and abide by the operating procedures of this manual before using it. Our company is not responsible for your misuse of this product or any damage, including incidental or indirect losses you may cause. Moreover, we have no responsibility for your modifying the products without authorization. We have the right to change the design, features, functions, and operating requirements of our products without any advanced notice!

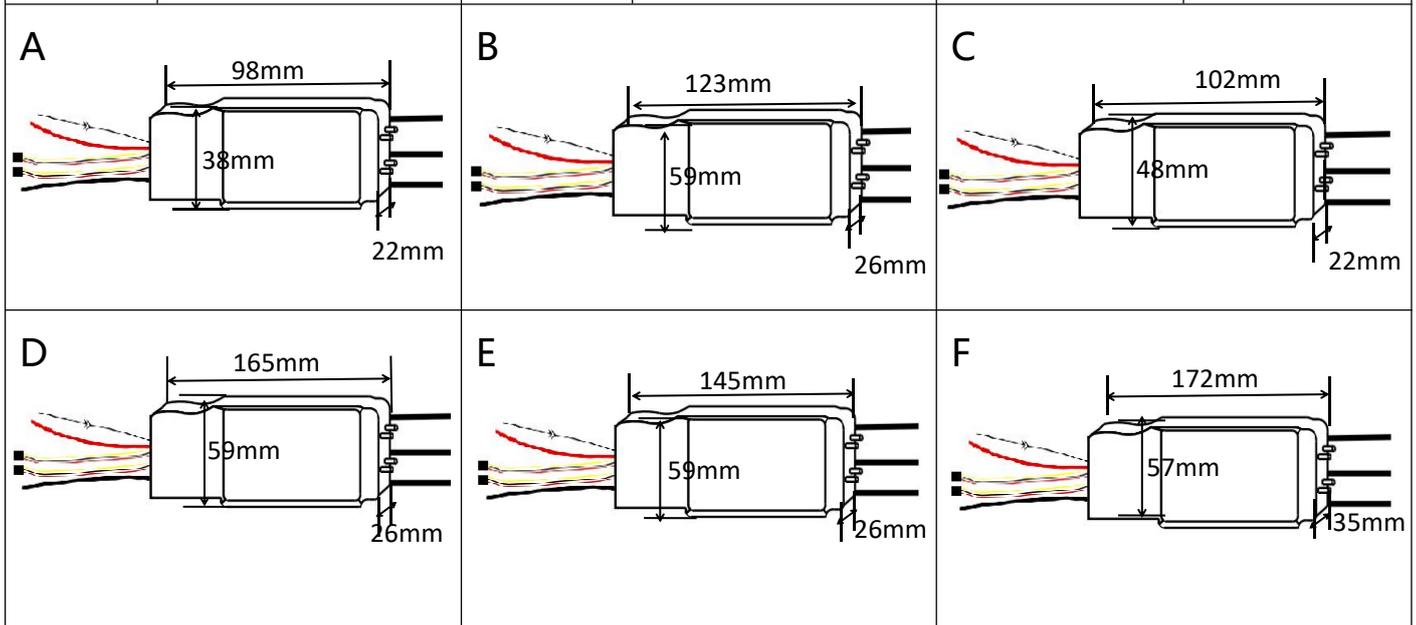
## Diagram



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## Catalog

Volts	Current Continue/Max	BEC	Size(mm)	Weight(g)	Pictures
2~7S	120A/180A	5V/3A	98*38*22	106	A
2~8S	200A/300A	5V/3A	123*59*26	270	B
	250A/320A	5V/3A	102*48*22	186	C
	300A/450A	5V/3A	165*59*26	400	D
3~12S	150A/250A	OPTO	145*59*26	350	E
	200A/300A	OPTO	123*55*26	270	B
	300A/450A	OPTO	165*59*26	400	D
3~16S	200A/300A	OPTO	123*55*26	320	B
	300A/450A	OPTO	165*59*26	460	D
	400A/550A	OPTO	172*57*35	460	F
4~22S	400A/550A	OPTO	168*59*35	460	F



# FLIER ESC for Boat 2S to 22S

## Features

- 1.Design for boat and more functions
- 2.Battery voltage from **2S** to **22S** for super high voltage version
- 3.Two-way communication while connecting with a computer
- 4.Firmware can be upgraded by the user
- 5.Set function values by **Prog-Box** or by **PC** via USB link wire simply
- 6.Motor test when powered on
- 7.Li-MH/Li-Po, Ne-Cd/Ne-MH, and LiFe batteries can be used
- 8.Enables setting the voltage per cell for the point at which the controller's cut-off circuitry engages. Li-MH/Li-Po from 2.0-3.6V, Ne-Cd/Ne-MH 0.4-1.0V, LiFe from 2.2-2.8V
- 9.Timing settings may be adjusted (**0°-30°**) per degree to suit the motor type
- 10.Three types of throttle curve
- 11.Automatically detects the throttle range or can be set a fixed value by manual operation
- 12.Auto cut off the power within 3 seconds if no radio signs

## Function Value

**Reverse:** On/Off

**Timing:** 0°、1°、2°、3°、.....30°

**Frequency:** 8 kHz, 16 kHz, 32 kHz

**Acceleration:** Soft / Medium / Hard

**Accumulator type:** NiCd/NiMh、Li-Ion/Li-Pol、LiFe

**NiCd/NiMH CutOff:** No Cut Off、0.4V、0.5V、0.6V、0.7V、0.8V、

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0.9V、 1.0V

**Number of cells:** Auto, 2S, 3S .....22S

**Lilo/Pol Cut Off:** 2.0V、 2.1V、 2.2V、 2.3V、 2.4V、 2.5V、 2.6V、 2.7V、 2.8V、 2.9V、 3.0V、 3.1V、 3.2V、 3.3V、 3.4V、 3.5V、 3.6V

**LiFe Cut Off:** 2.2V、 2.3V、 2.4V、 2.5V、 2.6V、 2.7V、 2.8V

**Cut Off Type:** Slow down、 Hard

**Power limited forward:** Off, 75%, 50%, 25%

**Power limited reverse:** Off, 75%, 50%, 25%

**Delay time when direction converted:** 0.25S, 0.5S, 0.75S, 1S, 1.5S, 2S, 3S, 5S

**Reverse point:** Auto、 fixed 1.0mS、 fixed 1.1mS、 fixed 1.2mS、 fixed 1.3mS

**Forward point:** Auto、 fixed 1.7mS、 fixed 1.8mS、 fixed 1.9mS、 fixed 2.0mS

**Throttle curve:** Logarithmical、 Linear、 Exponential

**Timing monitor:** On/Off

**Note: The values in red color are the factory default value.**

### Diagram for wire connection

1. Correctly connect the ESC to the motor and the receiver.
2. Connect the ESC to the battery pack. (Correctly use the Anti-spark wire while connecting the ESC to battery pack).
3. Then you will hear  or  melody. (If you hear other melodies, please check your motor connection. The  melody means the ESC enters forward-only mode. The  melody means the ESC



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negative wires of the battery. If you do this, no spark will be generated, and it will protect the main bullet connector from damage.

### **Function value setting by PC**

The excellence of this series ESC is that the function value can be set via PC. By software designed by Flier, via a USB Linker, the ESC can communicate with PC, which means you can easily set the ESC function value on the PC.

**Notice: If it's your first time using Flier ESC, please install the USB Linker Driver and the ESC setting software.**

### **Installation of USB Linker driver**

Below are the instructions on how to install the driver on Windows XP:

1. Firstly plug the USB linker into the USB port on the computer. The computer will automatically detect the USB linker and ask for the installation of the USB driver. The computer screen shows the window "Found new hardware wizard ". Press the "Next" button.
2. Please select "Install from a list or special position (Advanced)" and press the "Next" button.
3. Please select "Search for the best driver in these locations" and check "Include this location in the search". In the search dialog specify the location of the USB driver that is located in the CD or driver download folder "USB driver".

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4. The above steps probably need to be repeated. If any same prompts appear, please repeat the installation steps carefully until the installation process is complete.
5. Open Windows Device Manager. (Control panel "C system "C device manager)
6. Find "Ports (COM & LPT)" in the list and click the "+" sign to its left.
7. Find the line that reads "Prolific USB-to-Serial Comm. Port (COMX)". The "x" value is the COM port number that was assigned to the USB to serial converter. This is the port that will need to be selected in the Flier ESC Computer Linking Software. Make note of it.

**Note: Different computers will have different numbers of COM ports, remember it and the number will be used in the ESC setting software.**

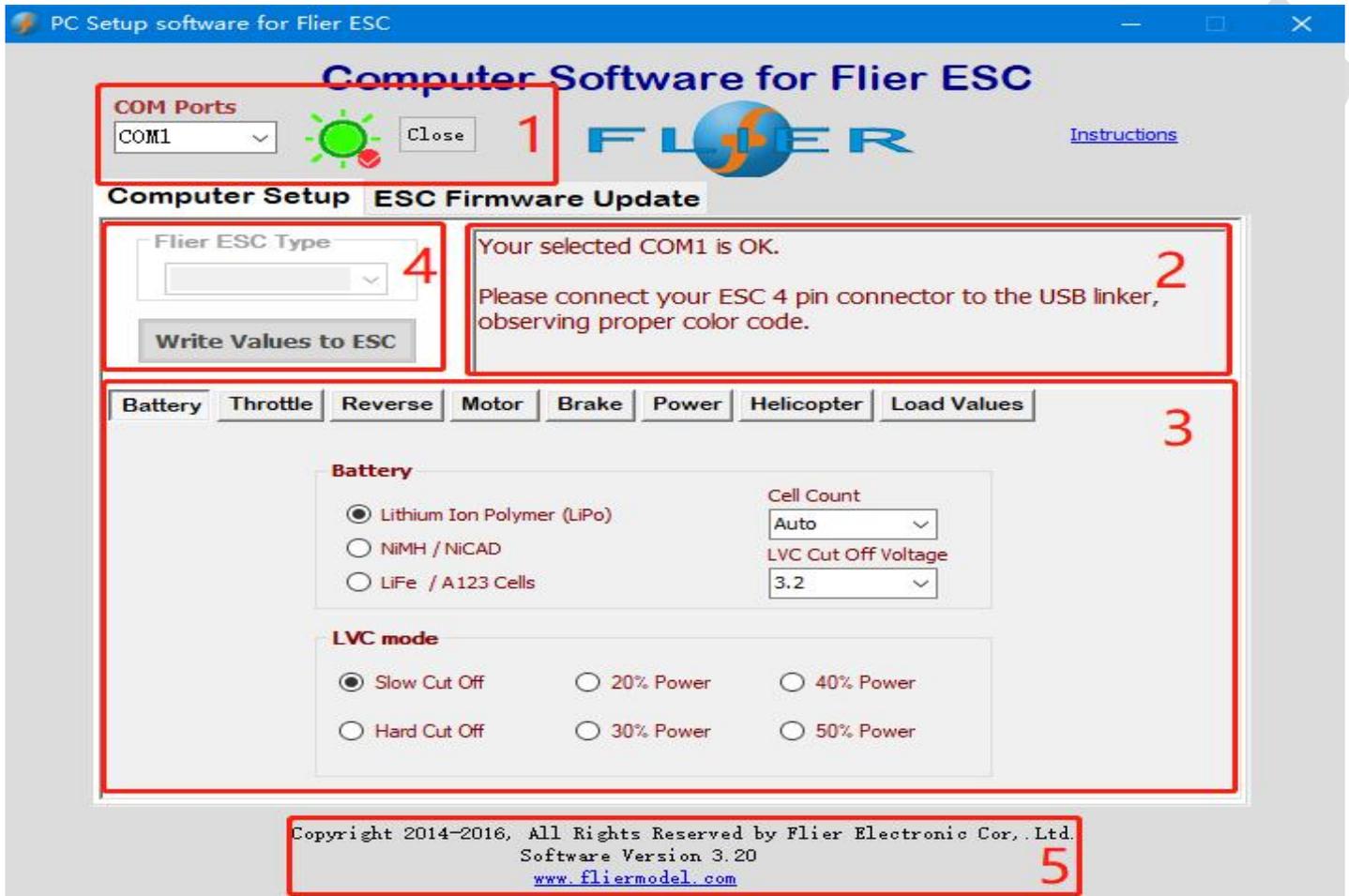
### **Flier ESC Computer Linking Software Installation**

The installation of Flier ESC Computer Linking Software is the same as other Windows software. In the Windows system, you run simplify setup file, and then install it easily according to the prompt. After installation, you can run the software.

Only after the Flier USB linker connects the Flier ESC to the computer, the software can be operated.

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# Flier ESC Computer Linking Software Interface Overview



1. The top-left of the interface is "Select COM Port", and "ESC type", this will be for comport select and the Flier ESC type display. (Manual selection is needed when there's an error. The side indicator light indicates whether the serial port works normally. If the light is on , the serial port works normally. If the light is off , the serial port does not work. The button next to it can temporarily open/close the serial port.)

2. The top-middle of the interface is a text box. It can display some messages about the software's progress.

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3. The middle main area of the interface is the program area. You can program the setting value of the ESC here. Some items in gray color cannot be modified, which are functions that are not available in the current ESC model.
4. The top-left of the interface is a write data button. You can press it to write the setting value into the ESC.
5. The bottom of the interface displays the copyright and company website information.

### **How to program the ESC**

1. This is very important. Disconnect the battery, the motor, and the receiver. **i.e. disconnect all connections of the ESC.**
2. Launch the Flier ESC Computer Linking Software. You can see an interface which the above mentioned. Because the Flier ESC is not connected, the interface isn't operated now.
3. Plug your Flier USB linker into the computer, and if the USB linker driver has been installed correctly. The com port can be automatically selected, and the automatic selection is usually right, but some computers have too many com ports is using. An error com port selection is possible in this condition; you must select the correct com port which the above mention.
4. Connect the 4-pin wires of the USB linker to the 4-pin wires of the ESC, pay attention to the color of the wires, and ensure the same color wires connect, or you will possibly damage the ESC. If you connect it correctly, the Flier ESC type will be displayed in the ESC

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type column. If it doesn't display correctly, you can pull the 4-pin wires and plug in again till the display is correct.

5. You can see the setting value in the Flier ESC will display the program area. So you can easily know the setting value of the ESC at the current.

6. You can change any setting value from the program area; you can also press the "load factory default" text to load the factory default value.

7. After you finish your adjustment. Press the top-right "write" button, and your setting value will be written into the ESC.

8. Disconnect the 4-pin USB wires.

9. Exit the flier ESC computer software.

10. Pull out the USB wire. Now, your ESC has been programmed.

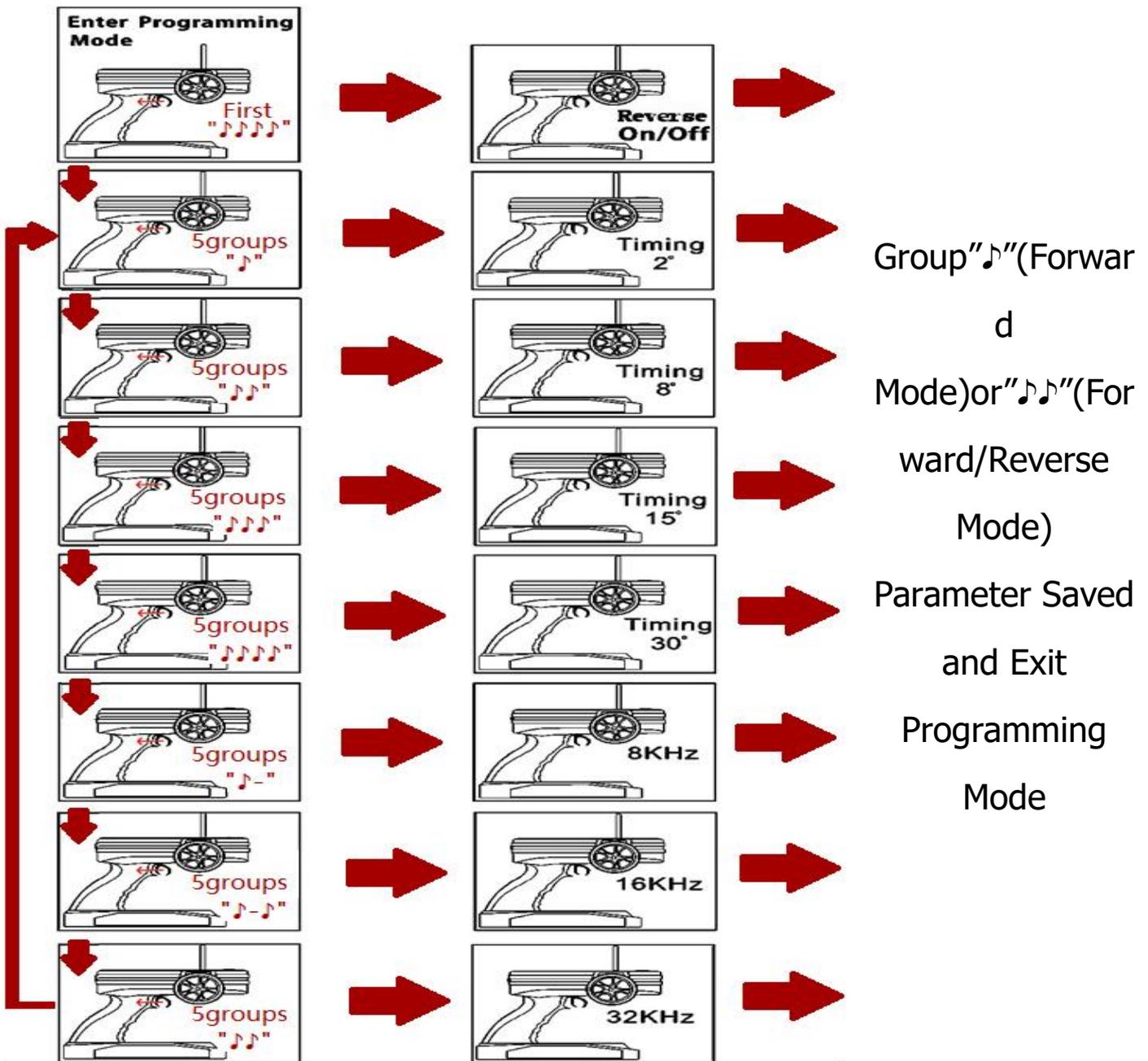
### **Function value setting by the transmitter**

This ESC has two different types of main modes, one is Forward-Only mode (Reverse Off), and another is Forward&Reverse mode (Reverse On). If Reverse Off mode is set, the motor will spin forward only. And if the Reverse On mode is set, the motor can spin forward and reverse.

You can set some simple function values via the transmitter, but if you want to set more function values, you have to use Prog-Box or PC via USB link wire.

Function value can be changed following the step below:

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1. Move the stick of the transmitter to the full throttle position, and power on the receiver.
2. After powering on the ESC, you can hear the "♪♪♪" melody; this indicates that the motor connection is ready.
3. Don't move the stick and wait about 5 seconds, a four-tone melody can be heard; this indicates that a main mode programming sequence is ready.

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4. And then you will hear 5 groups "♪ (a short beep)", then 5 groups "♪♪", then 5 groups "♪♪♪" and then 5 groups "♪♪♪♪"; and 5 groups "♪", 5 groups "♪-(a long beep)♪", 5 groups "♪♪". And these sounds of groups will circulate

5. Each group of 5 sounds stands for a different mode of ESC respectively.

6. You can put the throttle stick to the middle position during one group of 5 sounds, and then the corresponding mode is saved.

7. Hear 1 "♪" (Forward mode) or "♪♪" (Forward/Reverse mode), then you can exit the setting mode after saving the mode.

(When the mode is saved, you can disconnect the ESC to the battery pack)

### **Forward-Only mode and Forward-Reverse mode:**

After the "♪♪♪" melody, Hear the "♪♪♪♪", put the throttle stick to the middle position, and the mode is changed from Forward-Only mode to Forward&Reverse mode. If you want to change it back, please repeat the above procedures and vice versa.

### **Timing (motor ignition advance)function value:**

1. Hear 5 groups "♪" or "♪♪" or "♪♪♪" or "♪♪♪♪" in the above circulation, and put the throttle stick to the middle position.

2. Timing mode 1: 5 groups "♪"----0~7° (recommended for 2 poles and common motors)

3. Timing mode 2: 5 groups "♪♪"----8~15° (recommended for 4 poles motors)

4. Timing mode 3: 5 groups "♪♪♪"----16~23° (recommended for 8

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poles motors)

5. Timing mode 4: 5 groups "♪♪♪♪"----24~30° (recommended for more than 10 poles motors and out runner motors)

### The setting of Frequency:

1. Hear 5 groups "♪-" or 5 "♪-♪" or 5 "♪♪" in the above circulation, and put the throttle stick to the middle position.

2. Frequency 1: 5 groups "♪-"----8 kHz ((For common setting, the lowest efficiency loses)

3. Frequency 2: 5 groups "♪-♪"----16 kHz (recommended for the low internal resistance of the motor)

4. Frequency 3: 5 groups "♪♪"----32 kHz (recommended for the low electrical inductance of motor)

## Function value setting by Program Box

With the Flier Program Box, you can set all function values very simply. The setting procedure is as follows:

1. Connect the 4-pin connector of ESC with the 4-pin connector in Prog-Box. Make sure the direction is correct.

2. Connect ESC and motor.

3. Power on the ESC, and you will hear a "♪♪♪" melody, it prompts that the connecting is ready and you can go ahead.

4." Great! Read ESC Data OK" will be displayed on the LCD screen(on the front of the Box).

After 1 second, it will enter the first function-MODE TYPE setting

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interface automatically. Then your ESC type can be displayed on the LCD screen. "←" and "→" buttons make no difference because the ESC type can't be changed.

5. Press the "Forward" button to enter the second function item-CONTROLLER TYPE. The ESC type which you purchased will be displayed on the LCD screen. "←" and "→" buttons make no difference because the ESC type can't be changed.

6. You can press the "Forward" button to enter desired function item, then press the "←" and "→" buttons to enter a desired value. You can also press the "Back" button, then back to the last function item.

7. All setting is done. The LCD screen will display "Sending Data to ESC" if you press the "Back" and "Forward" buttons. It prompts the setting value has been sent to the ESC.

8. Turn off the power of the ESC, and connect the power. You can inspect whether the function values were written in the ESC or not.

9. After setting over, turn off the ESC, and disconnect the Prog-Box. The setting is done.

**Notes:** If you need to restore factory defaults. You should disconnect the 4pins wires on the ESC after the Prog-box read the ESC function value. Then connect the box with the 4-pin wires from ESC. The Prog-box can automatically restore the Factory Defaults after disconnecting. At this time, you need to press the "Forward" and "Back" buttons. The Factory Default value will be sent to the ESC, and the ESC will be the Factory Defaults Value ESC.

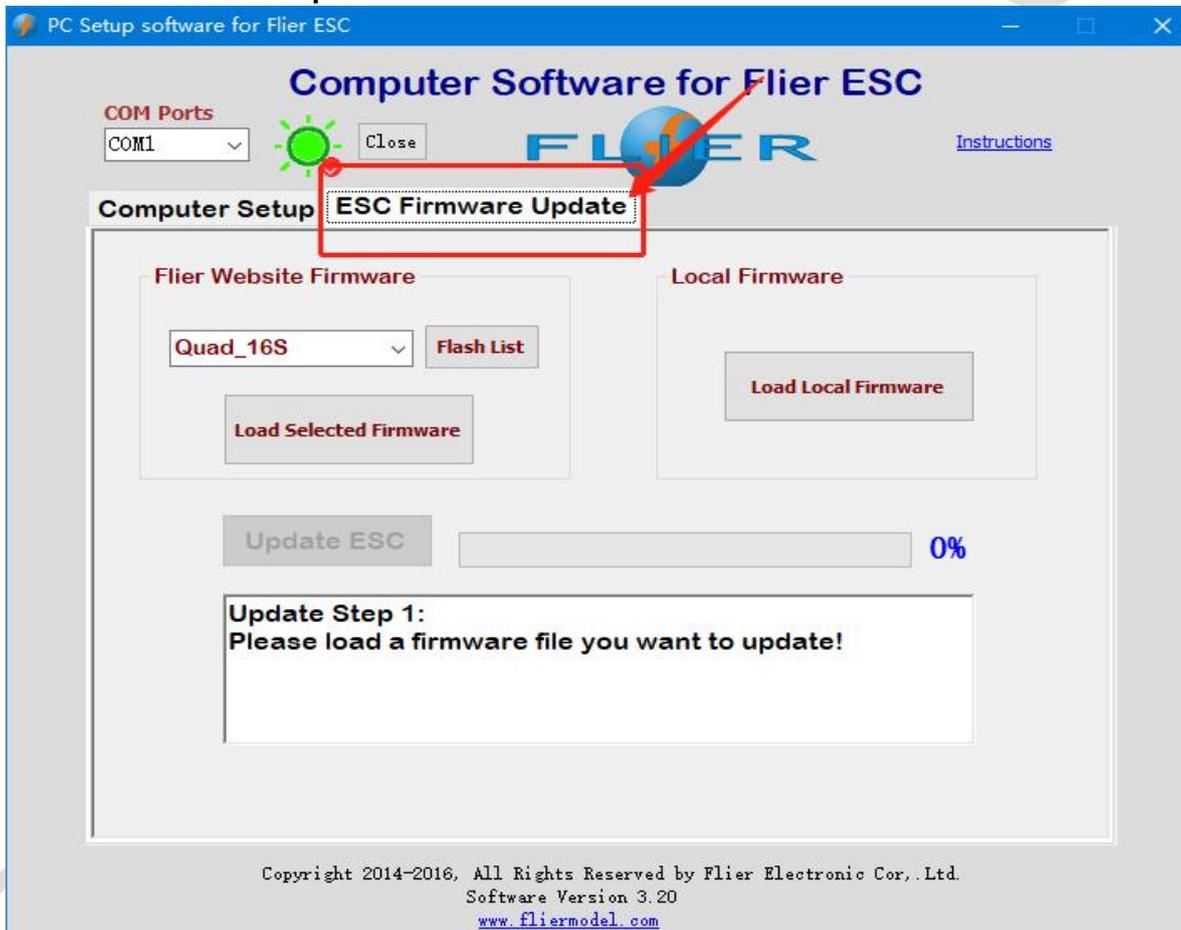
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### Updating the firmware

Flier will update new versions of the firmware from time to time, so the firmware of the ESC can be updated. But there are too many firmware versions and ESC models, some firmware versions and ESC models are not compatible, so please contact us before updating the firmware to the right firmware version.

The steps to update the firmware are as follows:

Click the "ESC Firmware Update" above, and the software will go to the firmware update interface as below:



1. Disconnect all the connections to the ESC. Insert the USB cable into the USB port of the computer, and run the software. Please kindly notice whether the right port is selected.

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2. If it's your first time running this software, or you can't find the needed firmware in the list, please press the "Flash List" button next to it, then all the firmware will appear in the list. Close the software and rerun it.
3. Choose the firmware which you need, the next step is to click the "Load Selected Firmware" button. "File read OK!" message will appear.
4. Disconnect the power of the ESC and BEC.
5. Plug the 4-pin wire of the ESC into the 4-pin of USB wire. "Connect OK, Pl....." message will appear.
7. If any errors, please pull out the 4-pin wire and then repeat step 6 until the correct message is displayed.
8. Click the "Update ESC" button. The firmware will be updated now.
9. Wait until "update to 113 pages, errors pages 0....." appears, which means the firmware has been updated successfully
10. You can disconnect the 4-pin wire of the ESC from the USB Linker now.