ORIGIN
HOBBY

EFUN

Item Number

EFUN ARF 301401 EFUN kit 301402

SPECIFICATIONS

Wingspan: 2120mm(W/O winglets)
Length: 1017mm
Flying weight: 1150g
Motor: 2820 1000KV
Battery: 3S 2200mAh Lipo(Not included)
ESC: 30A
Servo: 4x 9g
Propeller: 10x6
Radio: 4CH or above(Not included)

ORIGIN HOBBY

HIGH PERFORMANCE MODELS

Thanks for choosing the EFUN. The airfoil and winglets design make sure that you can fly it super stably and comfortably. So it is suitable for beginner. EFUN is a scale glider (the actual airplane is SZD54) , which you can also fly with many aerobatics. It's made of EPO, and its wing and fuselage are highly reinforced with fiberglass and CFK spars, which ensures the strength when you are performing maneuvers.In addition,there are alternative winglets for use. We wish you have a pleasant flight with the EFUN.

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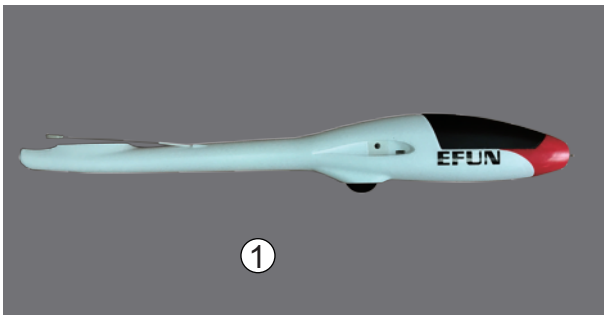
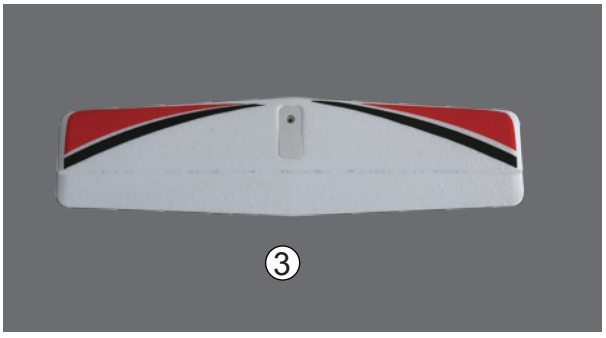
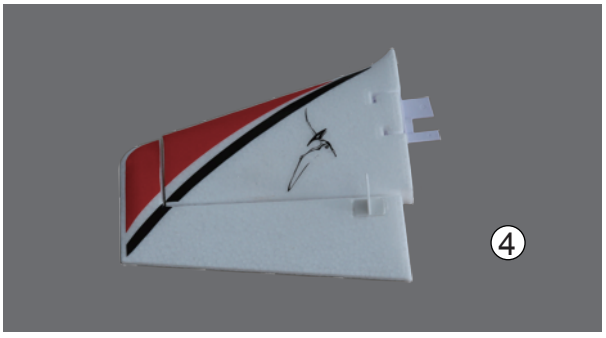
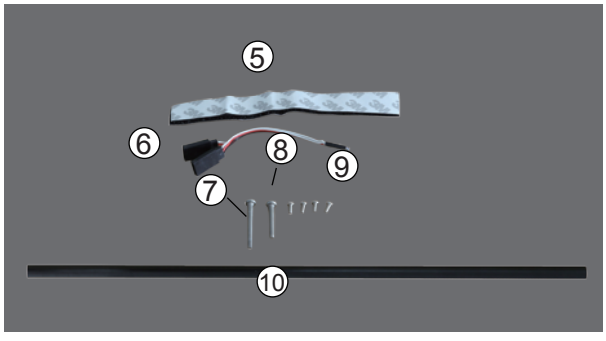
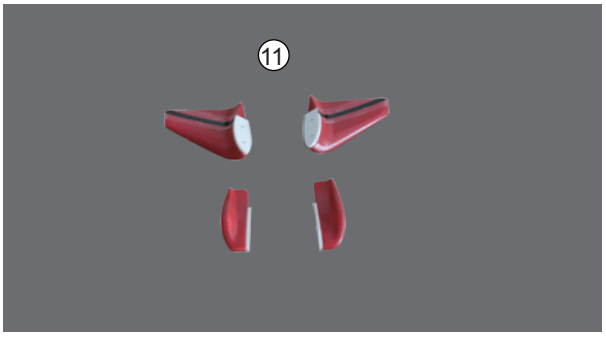
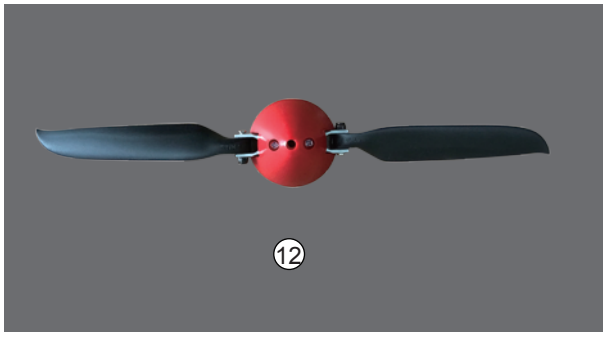










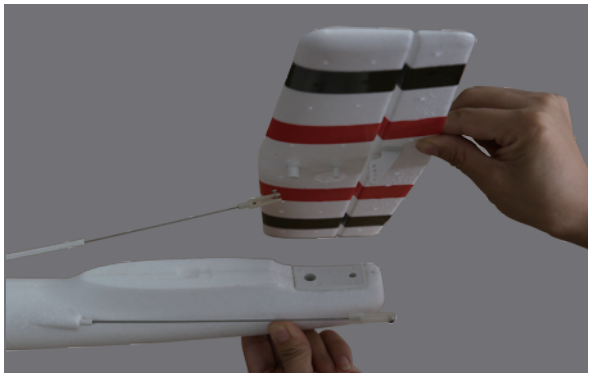


1. Fuselage
2. Wing
3. Horizontal stabilizer
4. Vertical stabilizer
5. Velcro
6. Y-harness
7. Screw M4 x 35 for wing
8. Screw M4 x 25 for horizontal stabilizer
9. Screw M3 x 8 for winglets
10. Wing tube
11. Winglets
12. Propeller assembly

ASSEMBLE THE MODEL

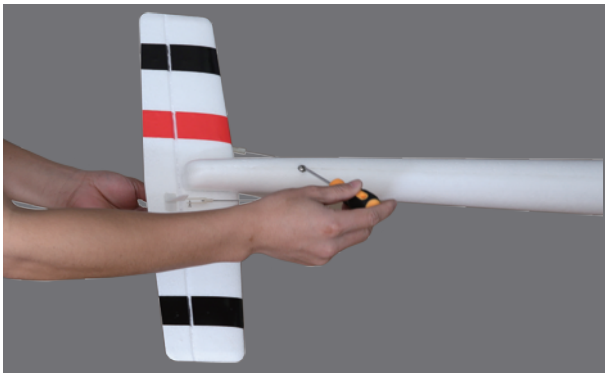
Step 1. Mount the horizontal stabilizer

Place the horizontal stabilizer in place and use the screw M4 x 25 to secure it from the top. Make sure it is secured tightly.



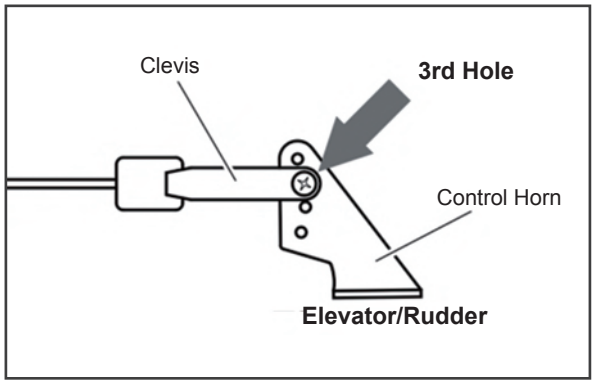
Step 2. Mount the vertical stabilizer

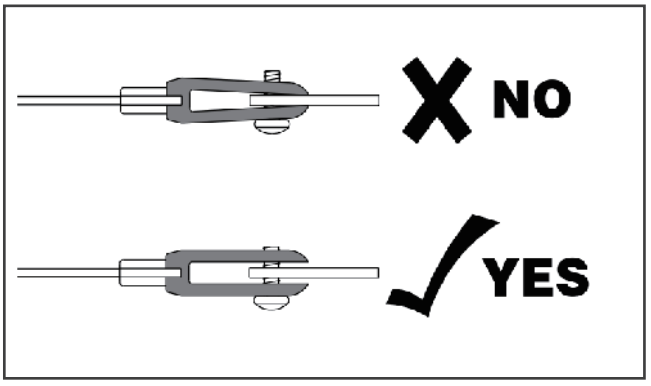
Align the plastic stabs on the vertical stabilizer to the slots on the tail of fuselage, and then Insert the vertical fin to tail from the top. Tighten it using the M4 x 35 screw from the bottom of tail.



Step 3. Connect the clevises of rudder and elevator

Connect the clevis to the control horn of rudder and elevator respectively with screwdriver. The 3rd hole is recommended to use for installment. Please do not tighten the screw on the clevis too much, as it's should be able to move freely. So try to move the rudder and elevator after connecting and make sure these control surfaces can move freely.

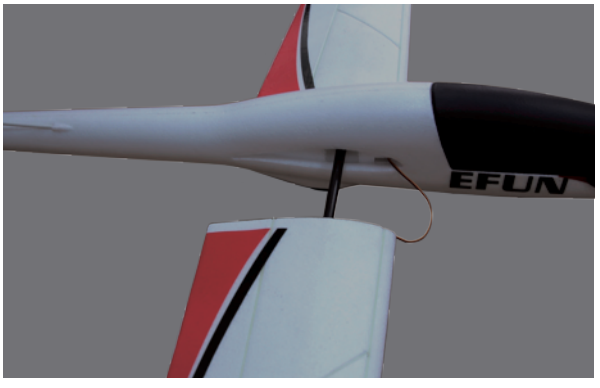




Step 4. Mount the wing

Insert the wing tube to the fuselage, and insert one wing halve, guide the servo wire thru the side hole on fuselage to the cabin.

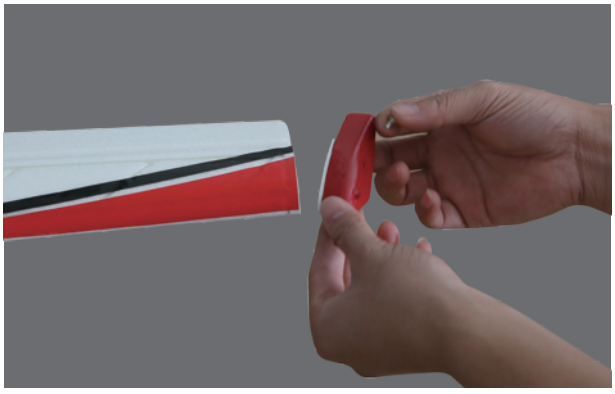
Insert the other wing halve with the same way. Make sure the wing halves are mounted in place. Tighten the fixing screws on the bottom of wing to secure the wing halves. Try to detach the wing halves, and it should not be able to be detached.

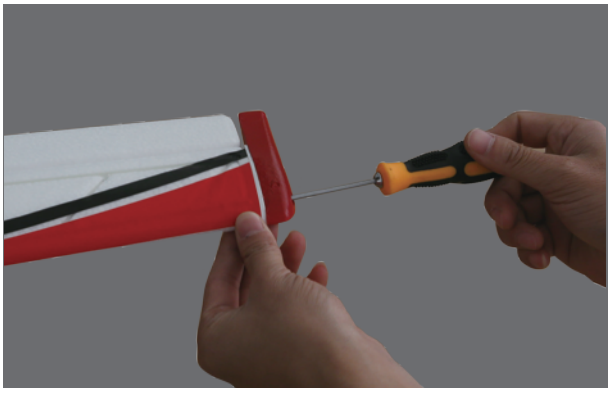


Step 5. Mount winglets

There are 2 types of winglets for use. Choose one type of winglets and mount them with 4pcs screws M3 x 8(2pcs for each side). It can reduce induced drag with Type 1, and it's more stable with Type 2.

Type 1(downwards):





Type 2(upwards):

Step 6. Connect the receiver

Connect the 2 servo wires of wing to the included Y-harness. Then connect the wires to receiver channels . Please see "ADJUSTMENT BEFORE FLIGHT".

Before plugging in the lipo battery to the ESC, turn the transmitter on first with the throttle stick in the lowest position, THEN plug in battery, be careful not to move the throttle stick upward until you are ready to fly. After flying, remove lipo from the plane first THEN turn off the transmitter.

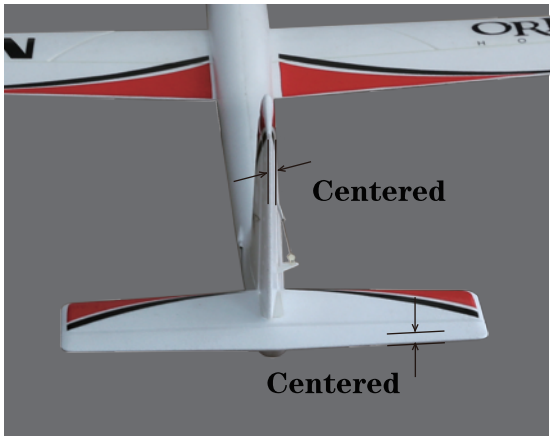
Step 7. Power up the transmitter.

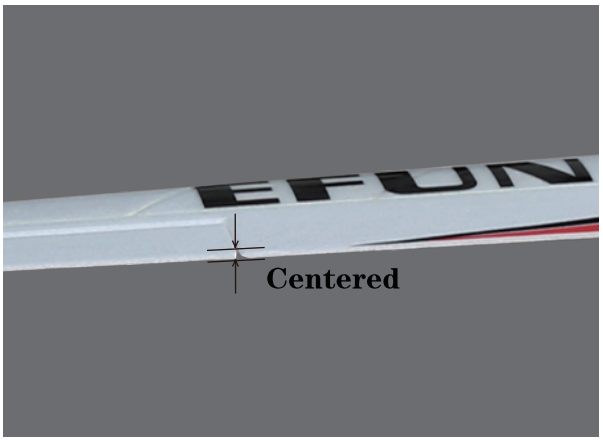
Make sure the transmitter and receiver are paired up before connecting battery to ESC. Please refer to your transmitter manual for pairing method.

Step 8. Connect battery to ESC.

Before plugging the lipo into the ESC, be sure the transmitter throttle stick is in the lowest position. And connect the battery to ESC, please note that the ESC has already been preset in factory. But throttle range should be reset whenever a new transmitter is being used. Please refer to "Begin To Use Your New ESC" in page 8 for resetting throttle range. Be careful of the spinning motor shaft.

Check for proper operation of the throttle, if it is reversed, change the direction of the throttle channel in the transmitter. Proper operation is at low throttle stick position the motor is stopped, high throttle stick position the motor is operating at full speed. Adjust all control surfaces (aileron, rudder, elevator) to be centered and move in the correct direction when moving the transmitter sticks.

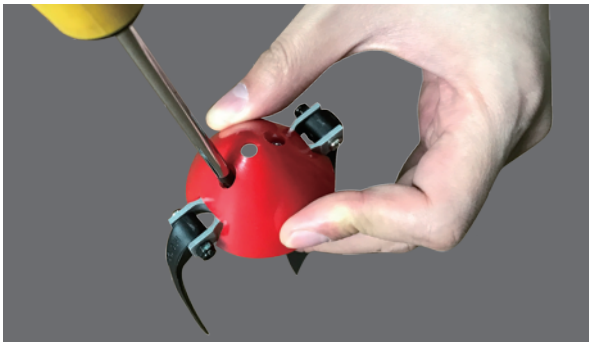




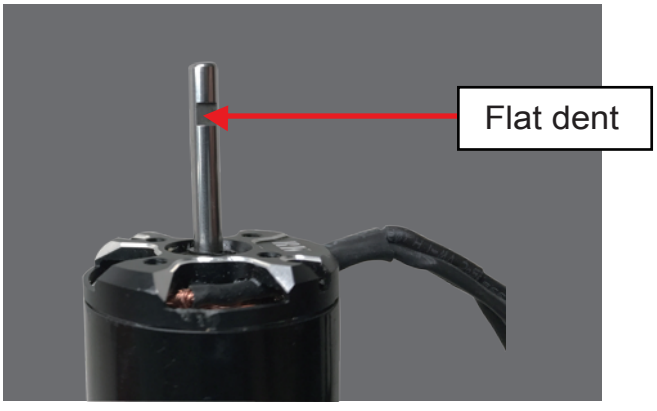
Step 9. Unplug the baterry and mount propeller and spinner

First all, please disconnect the battery!

Dismantle the spinner by remove the two screws with phillips screwdriver.

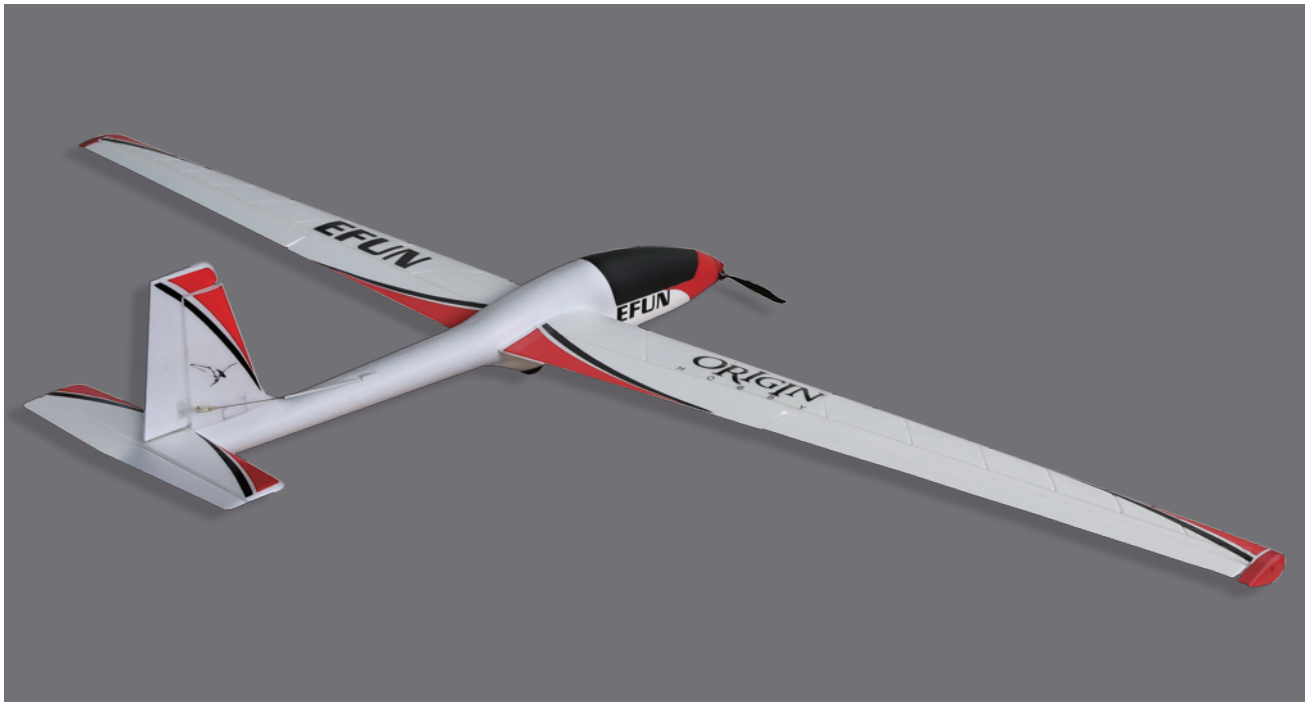


Fit the propeller yoke to the motor shaft, and tighten the two hex screws (on the top and bottom). Please note that there are two flat dents on the shaft to align the two hex screws. Only when they are aligned, the propeller yoke is firmly tightened on the shaft.



Mount the spinner by firmly tightening the two screws with phillips screwdriver.

Assembled product as shown below



ADJUSTMENT BEFORE FLIGHT

WARNING! During the adjustment,please make sure no one is standing close to or in front of the propeller !

Section 1:Connect the receiver

2 aileron servos are connected to CH1 with a Y-harness , Elevator servo to CH2,ESC to CH3, Rudder servo to CH4.

Section 2:Manual of Brushless Motor Speed Controller

Specifications:

Model	Cont. Current	Burst Current (>10s)	BEC Mode	BEC Output	BEC Output Capability				Battery Cell		Weight	Size
					2S Lipo	3S Lipo	4S Lipo	6S Lipo	Lipo	NiMH		L*W*H
Skywalker-6A	6A	8A	Linear	5V/0.8A	3 servos				2S	5-6 cells	5.5g	32*12*4.5
Skywalker-12A	12A	15A	Linear	5V/1A	3 servos	2 servos			2-3S	5-9 cells	9g	38*18*6
Skywalker-12AE	12A	15A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	10g	38*18*7
Skywalker-20A	20A	25A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	19g	42*25*8
Skywalker-30A	**30A**	**40A**	**Linear**	**5V/2A**	**5 servos**	**4 servos**			**2-3S**	**5-9 cells**	**37g**	**68*25*8**
Skywalker-40A	40A	55A	Linear	5V/3A	5 servos	4 servos			2-3S	5-9 cells	39g	68*25*8
Skywalker-40A -UBEC	40A	55A	Switch	5V/3A	5 servos	5 servos	5 servos		2-4S	5-12 cells	43g	65*25*12
Skywalker-60A -UBEC	60A	80A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18 cells	63g	77*35*14
Skywalker-80A -UBEC	80A	100A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18 cells	82g	86*38*12

Programmable Items: (The option written in bold font is the default setting)

1.Brake Setting： **Enabled** / Disabled

2.Battery Type：**Lipo** / NiMH

3.Low Voltage Protection Mode(Cut-Off Mode)： **Soft Cut-Off (Gradually reduce the output power)** /Cut-Off (Immediately stop the output power)

4.Low Voltage Protection Threshold(Cut-Off Threshold)：Low / **Medium** / High

1）For lithium battery, the battery cell number is calculated automatically. Low / medium / high cutoff voltage for each cell is: 2.85V/3.15V/3.3V. For example: For a 3S Lipo, when “Medium” cutoff threshold is set, the cut-off voltage will be: 3.15*3=9.45V

2) For NiMH battery, low / medium / high cutoff voltages are 0%/50%/65% of the startup voltage (i.e. the initial voltage of battery pack), and 0% means the low voltage cut-off function is disabled. For example: For a 6 cells NiMH battery, fully charged voltage is

1.44*6=8.64V, when “Medium” cut-off threshold is set, the cut-off voltage will be: 8.64*50%=4.32V。

5.Startup Mode：**Normal** /Soft /Super-Soft (300ms / 1.5s / 3s)

Normal mode is suitable for fixed-wing aircraft. Soft or Super-soft modes are suitable for helicopters. The initial acceleration of the Soft and Super-Soft modes are slower, it takes 1.5 second for Soft startup or 3 seconds for Super-Soft startup from initial throttle advance to full throttle. If the throttle is completely closed (throttle stick moved to bottom position) and opened again (throttle stick moved to top position) within 3 seconds after the first startup, the re-startup will be temporarily changed to normal mode to get rid of the chance of a crash caused by slow throttle response. This special design is suitable for aerobatic flight when quick throttle response is needed.

6. Timing：**Low** / Medium / High,(3.75°/15°/26.25°)

Usually, low timing is suitable for most motors. To get higher speed, High timing value can be chosen.

Begin To Use Your New ESC

IMPORTANT! Because different transmitter has different throttle range, please calibrate throttle range before flying.

Throttle range setting: (Throttle range should be reset whenever a new transmitter is being used)

Switch on the transmitter, move throttle stick to the top position	Connect battery pack to the ESC, and wait for about 2 seconds	The “Beep-Beep-” tone should be emitted, means the top point of throttle range has been confirmed
Move throttle stick to the bottom position, several “beep-” tones should be emitted to present the amount of battery cells		A long “Beep-” tone should be emitted, means the lowest point of throttle range has been correctly confirmed

Normal startup procedure:

Move throttle stick to bottom position and then switch on transmitter.	Connect battery pack to ESC, special tone like " ♪ 123 " means power supply is OK

Several "beep-" tones should be emitted to present the amount of lithium battery cells	When self-test is finished, a long "beep-----" tone should be emitted	Move throttle stick upwards to go flying

Protection Function

1. Start up failure protection: If the motor fails to start within 2 seconds of throttle application, the **ESC** will cut-off the output power. In this case, the throttle stick **MUST** be moved to the bottom again to restart the motor. (Such a situation happens in the following cases: The connection between ESC and motor is not reliable, the propeller or the motor is blocked, the gearbox is damaged, etc.)

2. Over-heat protection: When the temperature of the ESC is over about 110 Celsius degrees, the ESC will reduce the output power.

3. Throttle signal loss protection: The ESC will reduce the output power if throttle signal is lost for 1 second, further loss for 2 seconds will cause the output to be cut-off completely.

Trouble Shooting

Trouble	Possible Reason	Action
After power on, motor does not work, no sound is emitted	The connection between battery pack and ESC is not correct	Check the power connection. Replace the connector.
After power on, motor does not work, such an alert tone is emitted: "beep- , beep- , beep- , " (Every "beep- " has a time interval of about 1 seconds)	Input voltage is abnormal, too high or too low.	Check the voltage of battery pack
After power on, motor does not work, such an alert tone is emitted: "beep- , beep- , beep- , beep- , " (Every "beep- " has a time interval of about 2 seconds)	Throttle signal is irregular	Check the receiver and transmitter Check the cable of throttle channel
After power on, motor does not work, such an alert tone is emitted: "beep- , beep- , beep- " (Every "beep- " has a time interval of about 0.25 second)	The throttle stick is not in the bottom (lowest) position	Move the throttle stick to bottom position
After power on, motor does not work, a special tone " ♪ 56712 " is emitted after 2 beep tone (beep-beep-)	Direction of the throttle channel is reversed, so the ESC has entered the program mode	Set the direction of throttle channel correctly
The motor runs in the opposite direction	The connection between ESC and the motor need to be changed.	Swap any two wire connections between ESC and motor

Program the ESC with your transmitter (4 Steps):

Note: Please make sure the throttle curve is set to 0 when the throttle stick is at bottom position and 100% for the top position.

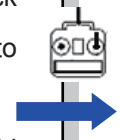
1. Enter program mode
2. Select programmable items
3. Set item's value (Programmable value)
4. Exit program mode

1. Enter program mode

1) Switch on transmitter, move throttle stick to top position, connect the battery pack to ESC

2) Wait for 2 seconds, the motor should emit special tone like "beep-beep-"

3) Wait for another 5 seconds, special tone like " ♪ 56712 "should be emitted, which means program mode is entered

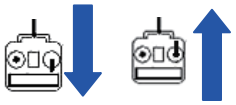


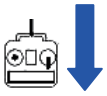
2. Select programmable items:

After entering program mode, you will hear 8 tones in a loop with the following sequence. If you move the throttle stick to bottom within 3 seconds after one kind of tones, this item will be selected.

1. "beep" brake (1 short tone)
2. "beep-beep-" battery type (2 short tone)
3. "beep-beep-beep-" cutoff mode (3 short tone)
4. "beep-beep-beep-beep-" cutoff threshold (4 short tone)
5. "beep-----" startup mode (1 long tone)
6. "beep-----beep-" timing (1 long 1 short)
7. "beep-----beep-beep-" set all to default (1 long 2 short)
8. "beep-----beep-----" exit (2 long tone)

Note: 1 long "beep-----" = 5 short "beep-"





3. Set item value (Programmable value):

You will hear several tones in loop. Set the value matching to a tone by moving throttle stick to top when you hear the tone, then a special tone " ♪ 1515 " emits, means the value is set and saved. (Keeping the throttle stick at top, you will go back to Step 2 and you can select other items; or moving the stick to bottom within 2 seconds will exit program mode directly)

Tones / Items	"beep-" 1 short tone	"beep-beep-" 2 short tones	"beep-beep-beep" 3 short tones
Brake	Off	On	
Battery type	Lipo	NiMH	
Cutoff mode	Soft-Cut	Cut-Off	
Cutoff threshold	Low	Medium	High
Start mode	Normal	Soft	Super soft
Timing	Low	Medium	High

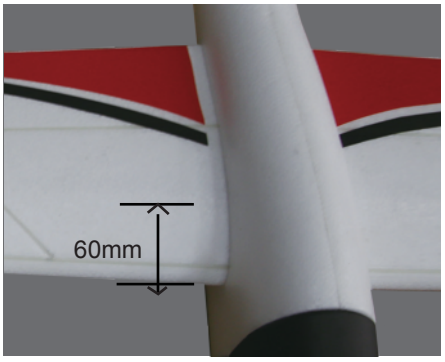
4. Exit program mode

There are 2 ways to exit program mode:

1. In step 3, after special one " ♪ 1515 ", please move throttle stick to the bottom osition within 2 seconds.
2. In step 2, after tone "beep-----beep-----"(ie.The item #8), move throttle stick to bottom within 3 seconds.

Section 3:Recommended CG

For the first flight,the recommended Center of Gravity location is 60mm behind the leading edge of the wing against the fuselage.Use the battery pack , moving it forward or backward,to achieve the correct balance .

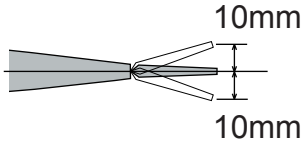


Section 4:Control throws

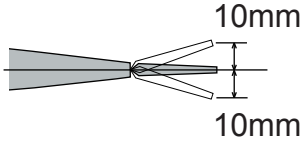
The following control throws are for your reference,you can adjust them based on your habit.

Normal flight

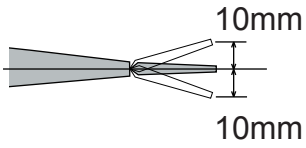
(1)Aileron



(2)Elevator



(3)Rudder



SPARE PARTS

Name	Item Number	Name	Item Number
EFUN wing	301403	EFUN winglets	301410
EFUN fuselage	301404	EFUN decals	301411
EFUN tail	301405	EFUN motor	301412
EFUN canopy	301406	EFUN ESC	301413
EFUN propeller blade	301407	EFUN servo	301414
EFUN propeller set	301408	EFUN Wing tube	301415
EFUN pushrod set	301409		

Safety Instructions

- This model is not a toy. Allowed for children over 14 years. Children under 14 years old must use it accompanied by an adult.

- Assemble the model accordingly to this instruction manual. Do not alter or modify the model. Only use parts that are officially recommended by OriginHobby .

- Always pay close attention to the manuals that are included to accessory parts.

- Do not fly the model before you have finished the assembly completely according to this manual.

- Before flying your model, check all functions of the model carefully. Check if your frequency is clear and not used by any other pilots in your area. This may cause radio interference.

- Never fly your model near other human beings, animals or other obstacles. You are responsible for flying the model, so you have to check carefully your flight area.

- Do not touch any moving or hot motor parts during action! Let all components cool down before you handle them.

- Stop flying immediately if you realize any radio interference. Check the system for the cause and change the frequency if necessary.

- Check your model carefully after each flight. Replace parts if they are worn out or if they are defective.

- Keep your hands out of reach from rotating or hot parts of the model.

- Keep in mind that plastic parts easily break under cold temperature conditions.

- If you are a novice in flying you should ask experienced pilots for assistance during your first flights.

- Charge your batteries carefully. Always watch the charging process and make sure all connectors are in good conditions.

- Take care that your motor does not get overload or gets blocked under full power.

- Do not shorten the battery by connecting the pluspole with the minuspole directly!

- In case of technical questions please contact local dealer or Originhobby directly .

§ 1 Warranty

(1)We guarantee that there will be no production or material errors on OriginHobby items during the guarantee period (§ 4)

(2) The guarantee is valid for customers who bought OriginHobby items over an authorized dealer. This guarantee cannot be transferred to another person.

§ 2 Exclusion of warranty

(1) We do not grant any warranty on wastage parts like tires, wheels, bearings, glow plugs, clutch systems, paintings etc.

(2) We also do not grant any warranty, if

- non authorized accessory parts are used in the model, that are not produced by OriginHobby or that are not clearly approved from OriginHobby.
- a third party, who is not authorized by OriginHobby, tries to repair or to modify the product.
- the user disregards the instruction manual or modifies the model in a damaging way.
- the error occurs because of local conditions where the model is used.

§ 3 Notification of legal rights

(1) We grant this warranty on our products although we are not forced by law to do so.

(2) Please note that you have also legal rights if an item is faulty when you buy it. In case of defects and a warranty claim you have to contact your local dealer. You can ask your dealer to replace or to repair the faulty item.

(3) Your rights against the company OriginHobby are additionally to your legal rights.

§ 4 Period of warranty

(1) We grant you a 1 year warranty on all OriginHobby products. This period starts when you buy the item at your local hobby shop.

(2) In case of service feature the warranty period does not get extended.

§ 5 Your warranty rights

(1) In case of warranty claim we will replace or repair the defective parts. The defective parts are property of OriginHobby.

(2) The warranty adjustment will be executed by the OriginHobby service department.

(3) We will cover the costs for material and man power. The risk and the costs of transportation are covered by the customer.

(4) There are no further claims like annulling the sales contract, price reduction or compensation against us.

§ 6 Assertion of warranty claims

(1) Any warranty claims have to be notified immediately after realizing an error. This can be done by your local hobby shop or directly to OriginHobby. We do not cover any consecutive faults that occur because of a delayed notification.

(2) For the assertion of a warranty claim you have to send us the defective part and a hardcopy of your invoice with the date of purchase.

(3) All defective items have to be returned in a cleaned condition. Fuel tanks must be empty! In case parts are heavily contaminated we will return the parts on your costs!

(4) In case the returned item is not defective and that there is no claim of warranty, we will charge you 8,50€ or 10 USD for our labor costs.

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