

LOTUS⁺RC

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T380 Quad-copter Manual version

V2.0

(25Aug, 2011)

● Safety Precautions :

1. Please read this manual before building and flying the aircraft.
2. The product is remote control model, people without independent ability; please do not operate it to avoid any adverse consequences.
3. Take necessary measures to prevent being hit by the rotating blades or motors and avoid personal injury.
4. If you have never built a quad-copter before, we advise you to seek help and guidance from someone who has.

● Disclaimer :

1. Do not use this product for illegal reasons or purposes.
2. LotusRC and our dealers bare no responsibility on how this product is utilized.
3. This model contains a large number of sophisticated components and electronics, which may fail overtime. LotusRC and our dealers assume no responsibility to any losses, be it direct and indirect as a consequence to this failure.

Agreement

Upon purchasing this product, you automatically accept to the above agreements.



Table of content

Foreword	3
Brief introduction	4
1. Function and features.....	4
2. Aircraft Dimensions.....	5
3. configuration and specification.....	6
4. Technical parameter.....	7
Components 'name	8
1. Major body components.....	8
2. Electronics.....	9
3. Software system.....	9
Assembly	9
1. Main body.....	9
2. Propeller mounting.....	10
3. Remote control receiver device	11
4. Radio settings.....	12
5. Powering up for the first time	13
First flight	14
1. WARNING: PLEASE READ BEFORE YOUR FIRST TEST FLIGH	14
2. Control directions.....	14
3. Lift off and hover.....	16
4. Built in safety features.....	17
Feedback	18

Foreword

Before utilizing T580p quad-copter, please read this instruction carefully. It will help you to understand and know how to use it with less time. If there still have some points can't be realized during this reading, please contact us, you will get optimal answer and help here. In order to provide optimal service for you, please purchase this product via legal channel. People utilize our product in illegal action or any other unclear places, including get this product via illegal channel, cannot share our relative service support.

To any illegal behavior which people copy our products and distributing, marketing, circulating, our company will claim for their legal liability.

Base on the continuous improvement and enhancement of product manufacturing techniques and producing workmanship, we maintain our rights on changing instruction and product parts, parameter index at any time; therefore we will not inform our customer. You may know the latest product development by visiting our website, welcome to send us any feedback of your feeling, opinions and suggestions at any time.



I Brief introduction

1. Function and features

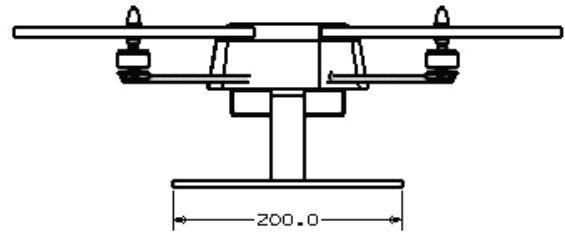
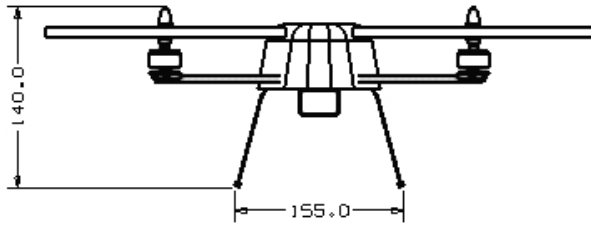
T380 quad-copter is a mid-level aircraft designed mainly for FPV players.

- 1) High efficiency: 8inch slow fly propellers and Disc brushless motors, the optimal efficiency is able to reach 9g/W.
- 2) Stability: utilizes a high-performance MEMS sensor for 6DOF stabilization with low drift, shock resistance ability.
- 3) Simple: a minimum 4remote control proportion channels are required to fly, Property core system, it is compatible to all RC equipments.
- 4) Easy to operate: Can be installed in a few minutes.
- 5) The T380 can take off and land vertically, hover, fly left and right, etc.

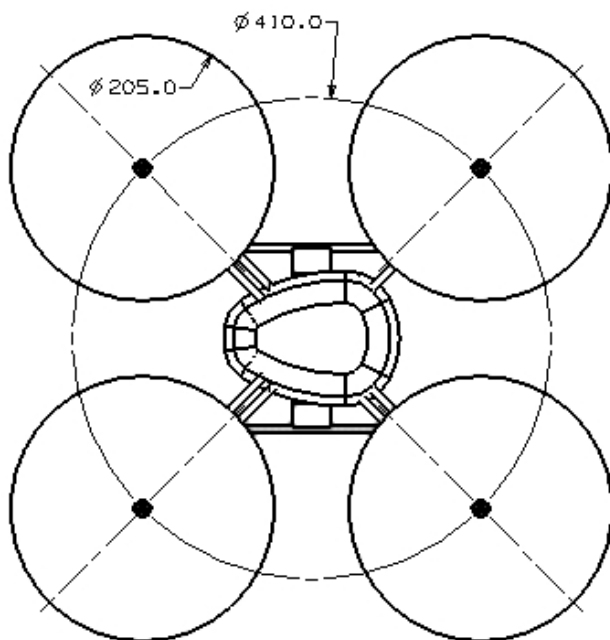
Left space in the front of the aircraft for camera installation



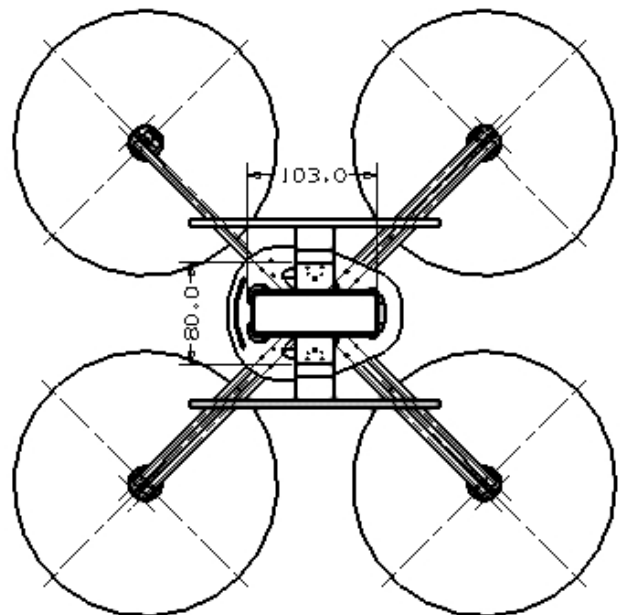
2. Aircraft dimensions



Aircraft dimension



Rotating diameter (mm)



battery placement (1P/2P)



3. Configuration and specifications

No	Names	Specification	Quantity	Unit
1	Cover	aluminum alloy /PVC	1	set
2	Arm beam	Glass fiber	8	Pcs
3	LG	Aluminum alloy/glass fiber/rubber	1	set
4	Motor	C2208 KV900 Out-runner brushless motor	4	Pcs
5	Propellers	8045 Plastic composites	2	Pair
6	Brushless ESC	2-3S 12A high speed ESC	1	Pcs
7	FC system	Inertial attitude self-stabilization system	1	Set

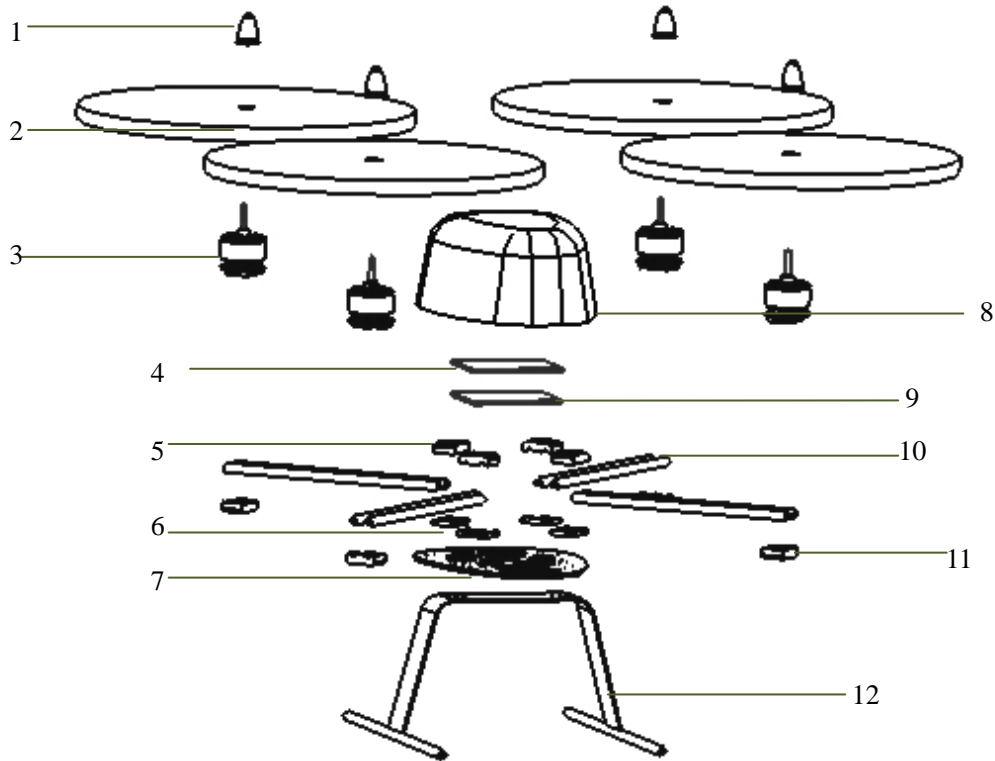
4. Technical parameters

Aircraft size	410x410x140	Mm
Maximum expandable size	615x615x140	Mm
Motor to motor	Diagonal distance between two motor centers	410mm
Propellers	frontal and versa professional props 8045	8inch
Battery	LiPo 3S 2200mAh 20C	standard1P
Aircraft weight(kit only)	Without battery, receiver, applicable payload	430gram
Take-off weight	3S 2200mAh 1P battery, receiver	610gram
Recommended payload	Camera and mount	≤380gram
Maximum payload	Use standard 1P battery	≤380gram
Maximum takeoff weight	Use standard 1P battery	1300gram
Flight distance	Visual area	-
Flight time	3S 2200mAh 1Pbattery, receiver	18~25mins
Wind resistance	≤4	Class



II . Components' names

1. Major body components (Aircraft exploded view)



No.	Components Name	Quantity
1	Propeller clip	4
2	Propeller	4
3	Brushless Motor	4
4	FC	1
5	Locking block (arm beam1)	4
6	Locking block (arm beam2)	4
7	Bottom cover	1
8	Cover	1
9	ESC	1
10	Arm beam	1
11	Motor locking block	4
12	Landing gear	1



2. Electronics

- 1) 12A Maximum output load, 4 brushless motors.
- 2) Motor and ESC overload and burn-out protection: once overloading is detected, motors will be turned off gradually.
- 3) FC with six high-performance micro MEMS transducer to achieve the stable, reliable and drift-free stabilization.

3. Software system

1. The fuzzy logic algorithm, the aircraft stabilization is proprietary and intellectually protected worldwide.
2. The T380 system has been fully field tested and intuitively easy to fly.

III. Assembly

1. Main body

- 1) In order to ensure the optimal configuration, T380 aircraft has been mounted and passed flight test before the delivery.



Aircraft (with main parts)





Bottom view

2) Users only need to install propellers, landing gear and RC receiver.

Locate LG at the bottom of the airframe tightly by M3 bolt, screw nuts down till LG is installed at right place snugly. (In case of break plastic chassis, please do not screw it too tight.)

3) Install T type slot of battery at the bottom of the fuselage, notice that you need a same-designed, female T type plug, (a standard Deans Ultra connector)

4) Hold 3S1p battery, install Velcro we offered on the cross beam of the LG.

2. Propeller mounting

1) There are four 8 inch high efficiency slow fly propellers.

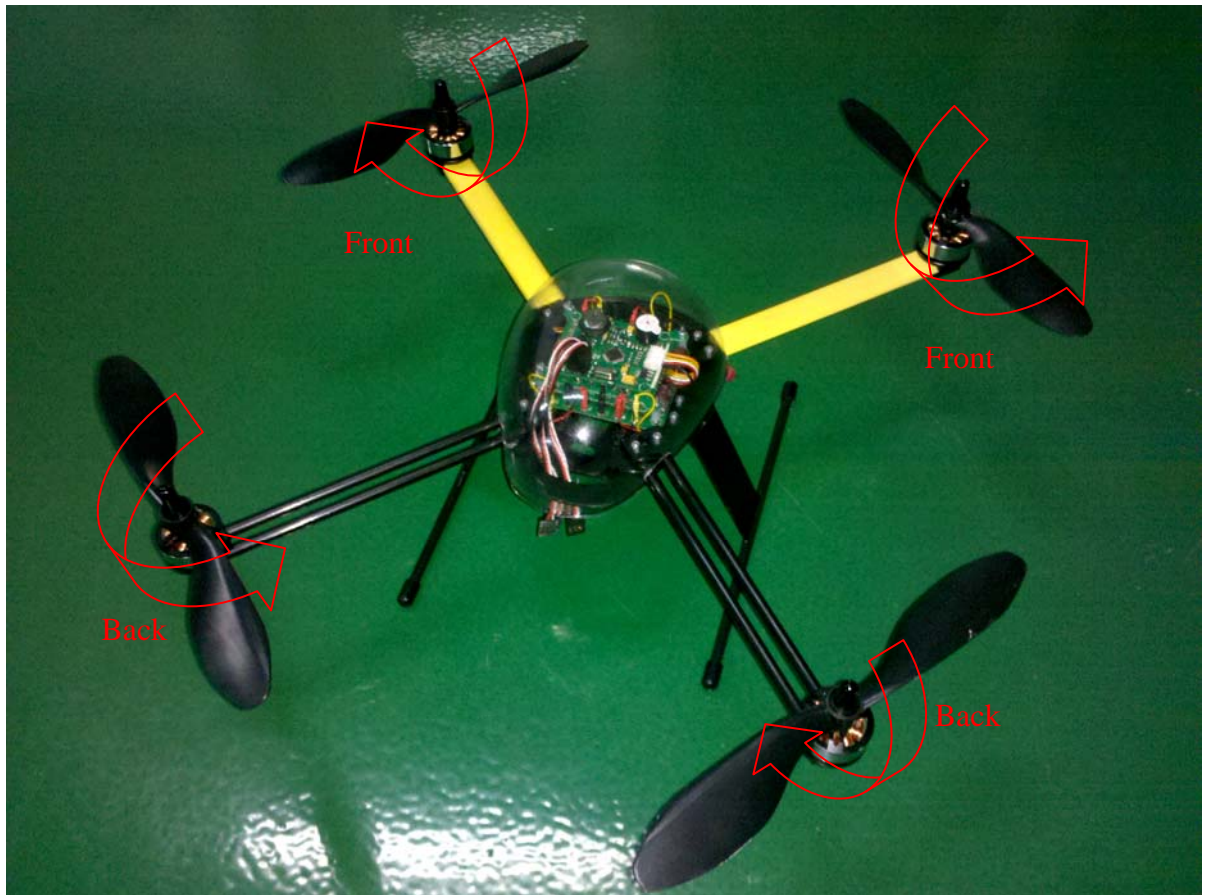
2) Install propellers on motor shaft directly, and screw down propeller clips.

3) Keys: Use Loctite or other thread locker when installing the Aluminum Blade



Holder. This is to prevent it coming off during flight.

4) Propeller rotation (pay attention to the “front” direction)



3. Remote control receiver device.

- 1) A minimum 4 channel Receiver is required to fly this system.
- 2) T380 has been tested to work with major brands of RC Radios, including Spectrum(DX), JR(DSX7,9XII), Sanwa (RD8000), Futaba(6EX,10C,FF9), Hi-TEC(Eclipse7), GWS, WFLY(FT06-C), ESKY, etc.
- 3) Plug in the corresponding channels as shown below to your RC Receiver.



T380 Input	Corresponding Receiver Channel	Example: Futaba Receiver	Example: JR Receiver
CH 1	Aileron Input	Channel 1	Channel 2
CH 2	Elevator Input	Channel 2	Channel 3
CH 3	Throttle Input	Channel 3	Channel 1
CH 4	Rudder Input	Channel 4	Channel 4
CH 6	Camera Angle Control Input (Optional)	Channel 5	Channel 5

4. Radio settings

- 1) Set your transmitter on fixed wing mode.
- 2) Set the end points of Channel 1, 2, 3 and 4 to between 0-100%.



- 3) Remove or disable any mixing between channels.
 - 4) Set a straight line curve for Throttle channel. You may fine tune this curve later.
5. Powering up for the first time.
- 1) Turn on your Radio transmitter, move the Throttle stick to the lowest position (zero throttle).
 - 2) Place the aircraft on level ground, install your LiPo battery and power up. You will hear some beeps indicating power is on.
 - 3) Do not move the aircraft until the initialization process is completed (indicated by 3 beep-beep-beep tones).

Initialization Beep Tones:

No.	Beep	Indication
1	First Beep Tones after 2 seconds	Indicate battery is connected.
2	Second Beep Tones after Power Switch is turned ON .	RC signal in detected and the lowest throttle position is identified.
3	Final Beep Sound after 6 seconds: "Beep Beep Beep"	Flight Control System is initialized and aircraft is ready to fly.
4	Beep before flight (after throttle stick is pushed up).	The aircraft confirms throttle stick has been moved and propeller will now start to rotate.



IV. First flight

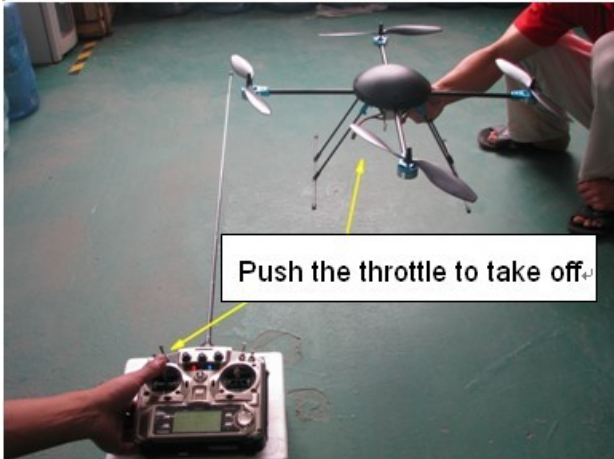
1. **WARNING: PLEASE READ BEFORE YOUR FIRST TEST FLIGHT.**

- 1) Default factory setting for the T380 “Cross Mode” configuration.
- 2) Two of the Motor Arms are colored yellow as a marker to indicate the front side.
- 3) To ensure your safety, the following flight tests must be done carefully with small controlling increments.

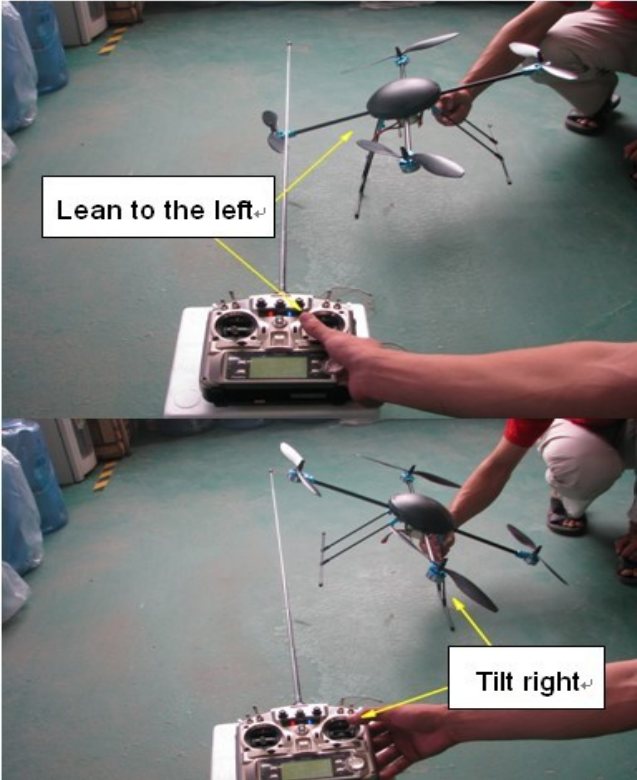
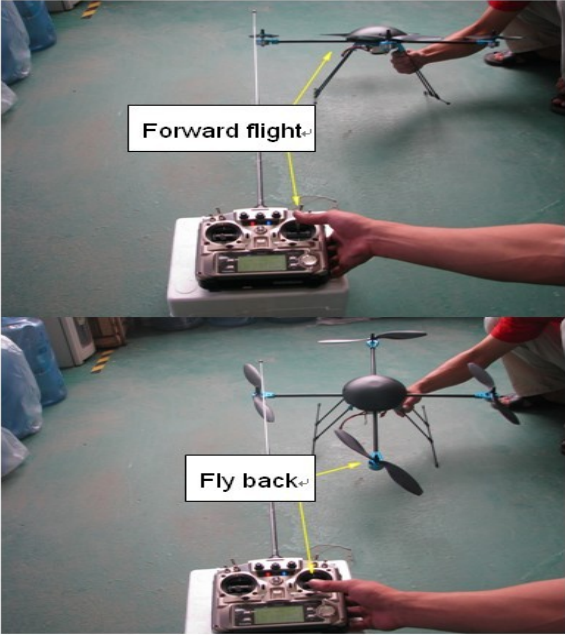
2. Control direction

To check your RC Transmitter control settings, carefully test as instructed below. If the movement is incorrect, reverse the channel accordingly.

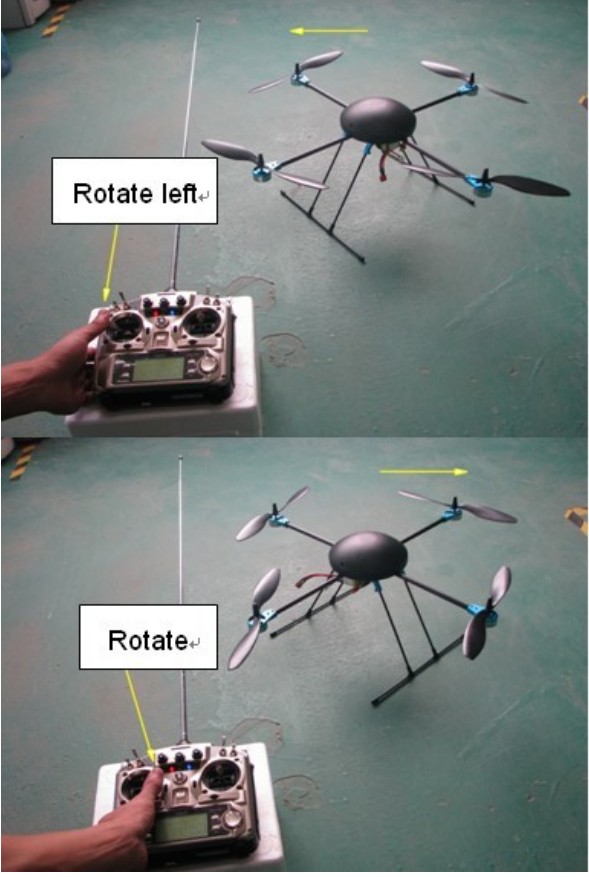
Safety note: this can be successfully done without the propeller installed.

No.	Control Input	Aircraft Reaction
11	Increase Throttle Gently (do not lift off!)	Motor revs up and down as per throttle input: 
22	Manually checking control direction.	<ol style="list-style-type: none"> 1. Carefully hold the aircraft by hand. 2. Gently increase throttle until the motors just begin to rotate.



<p>33</p>	<p>Roll left / Right</p>	 <ol style="list-style-type: none"> 1. Move the Aileron stick to the left; you should observe the right motor speed up while the left motor slows down. 2. Observe the opposite when rolled to the right
<p>44</p>	<p>Forward / Back</p>	<ol style="list-style-type: none"> 1. Move the Elevator stick to the front. 1) You should observe the back motor speed up while the front motor slows down. 2) Observe the opposite when Elevator stick is moved to the back. 



5	Rudder left / right (direction of rotation)	 <ol style="list-style-type: none"> 1. It is easier to check correct rotation if the aircraft is allowed to lift off slightly (do not hold the aircraft in your hand if you do this!). 2. If you move the rudder stick to the left, the aircraft should rotate to the left, and vice versa.
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3. Lift off and hover

- 1) After you have tested and confirm all 4 channels in your RC radio are set up correctly, it's time for your first flight.
- 2) As before, place the ARF on the flat ground, turn on the power and go through the initialization process. Do not move any control sticks or the aircraft during this process.
- 3) Gently move your throttle to start all motors. Push the throttle stick higher until the aircraft begins to lift off and fly.
- 4) If the ARF looks stable, allow it to hover, maintain altitude before gently bringing the throttle stick down for a soft landing.

5) Continue to test hover the aircraft, flying low and slow until you get used to its characteristics before going into higher altitude and forward flight.

4. Built in safety features

1) Loss of RC signal

- a. In case of RC signal is not detected during flight, the aircraft will automatically enter the security protection mode (SPM).
- b. In SPM, the aircraft will emit a long “b-e-e-e-e-p” tone intermittently.
- c. The aircraft will not fly until a RC signal is received by the controller.

2) Start-up throttle protection

- a. During power up, if your radio throttle stick is not in the lowest position (zero throttle), the SPM will be activated.
- b. In this state, the aircraft will not respond to any command until the throttle stick is placed in the lowest position.

3) In-flight Protection during RC signal lost

- a. If RC signals is lost or interrupted while in flight, the aircraft will immediately self land.
- a. And intermittent beep tone would also be emitted.
- b. When RC signal is regained, this protection will be deactivated and the aircraft can continue flying.

4) Low battery protection

- a. Upon detecting low battery, the aircraft will beep intermittently while still flying.
- b. Please land as soon as possible and replace a battery.
- c. If this warning is ignored, the aircraft will slowly power down and self-land. You still have flight control during this time, but not throttle control.
- d. Default is 3.2 volts per LiPo cell.

5) Beeping tones summary



No.	Alarm sound	Indicator for:	Action Required
1	Beeping sound during flight. Motor power down.	Low battery	Replace battery
2	Intermittent long beeps	No RC signal detected or throttle stick is not zero at start up.	Check your radio transmitter
3	Quick Beeps during flight	Low battery or the RC signal was lost	Check battery voltage and RC connection.
4	Quick Beeps and flight control is not allowed	Low battery or the RC signal was lost	Check the batteries and RC Connection

V. Feedback

We would like to hear from you to improve both the product and our services. #

