

# LOTUS<sup>TM</sup>RC

[www.lotusRC.com](http://www.lotusRC.com)

T380 Quadcopter Manual version

V3.0

(January 8, 2013)



● **Safety Precautions :**

1. Please read this manual before building and flying the aircraft.
2. The product is hobby grade radio controlled aircraft, people without prior experience should not attempt to operate without the proper training. Seek help from an experienced person or website prior to attempting to fly.
3. To avoid injury while operating the aircraft, please take care to avoid the propellers while they are rotating.

● **Disclaimer :**

1. This product is not intended to be used to break any law or ordinance. It is the operator's responsibility to know the laws in his/her area.
2. LotusRC and our dealers are not responsible for the utilization of this product by any operator.
3. This model contains a large number of sophisticated electronic components, which may fail overtime. LotusRC and our dealers assume no responsibility for any damage caused by such a failure, be it direct and indirect.

**Agreement**

Upon purchase of this product, the purchaser agrees to the above conditions.



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## Foreword

Before flying the T380 quad-copter, please read these instruction carefully. Reading the instructions completely and carefully will help you get your T380 into the air safely and quickly. If, after reading the included instructions, you still have questions, please contact us via email or Skype so that we can help you get your product in the air safely. You will find our contact information on our website, [www.lotusrc.net](http://www.lotusrc.net) and on the last page of the instruction booklet. We at LotusRC have several authorized distributors of our products. You will find a list of all of our authorized distributors on our website, [www.lotusrc.net](http://www.lotusrc.net) . Please be sure that you purchased your product from one of our AUTHORIZED distributors to ensure best possible service.

LotusRC will take the appropriate action/actions against those found to be illegally selling, copying, marketing or distributing our product.

At LotusRC, we are continuously trying to improve our products, manufacturing techniques & workmanship. We reserve the right to change any of the instructions, hardware design and software at any time without prior notice to our customers. You will find the latest product development and product instructions by visiting our website [www.lotusrc.net](http://www.lotusrc.net). We welcome any feedback from our customers including their thoughts, suggestions or opinions.



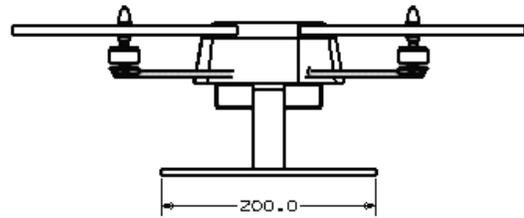
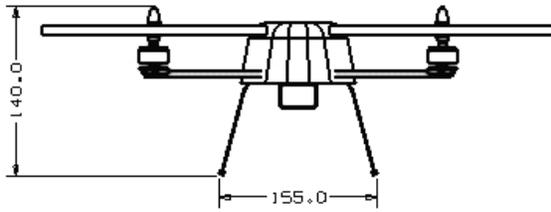
### Brief introduction

#### 1. Function and features

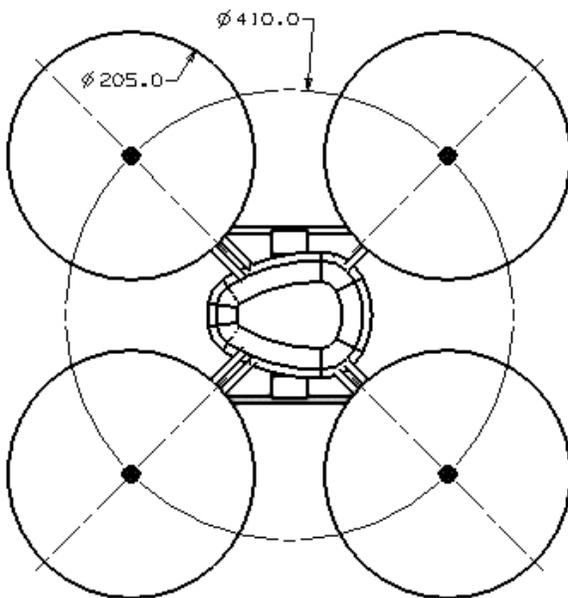
T380 quad-copter is a mid-level aircraft designed mainly for FPV enthusiasts. This means that the T380 is NOT for beginners. The T380 offers highly efficient flight by using 8 inch, slow turning propellers on brushless motors. The T380 is also very stable. The stability is achieved by using a high performance MEMS sensor for 6DOF stabilization resulting in low drift and offering shock resistance. The T380 is simple to fly and requires at least a four (4) channel radio. Our included radio receiver and core system is compatible with most radio transmitter systems. The T380 is easy to operate and is capable of taking off vertically, hovering, flying forward, left, right and backward as well as offering an altitude hold function.



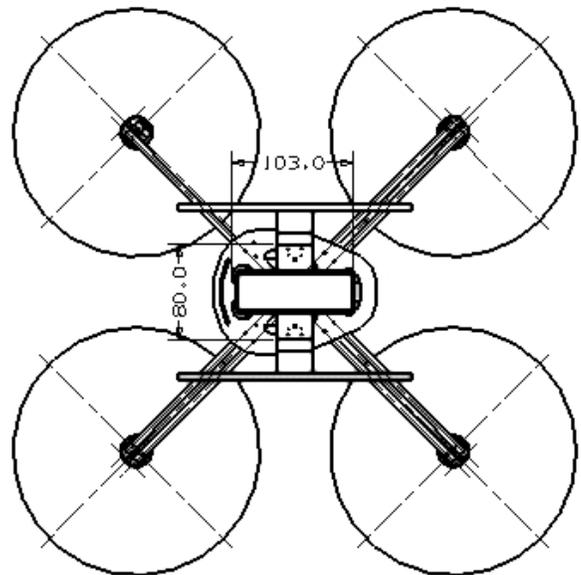
2. Aircraft dimensions – Height and Width



Motor to Motor and Overall Diameter



Rotating diameter (mm)



battery placement (1P/2P)

3. Configuration and specifications of included equipment

No	Names	Specification	Quantity	Unit
1	Cover	aluminum alloy /PVC	1	Set
2	Arm beam	Glass fiber	8	Pcs
3	Landing Gear	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



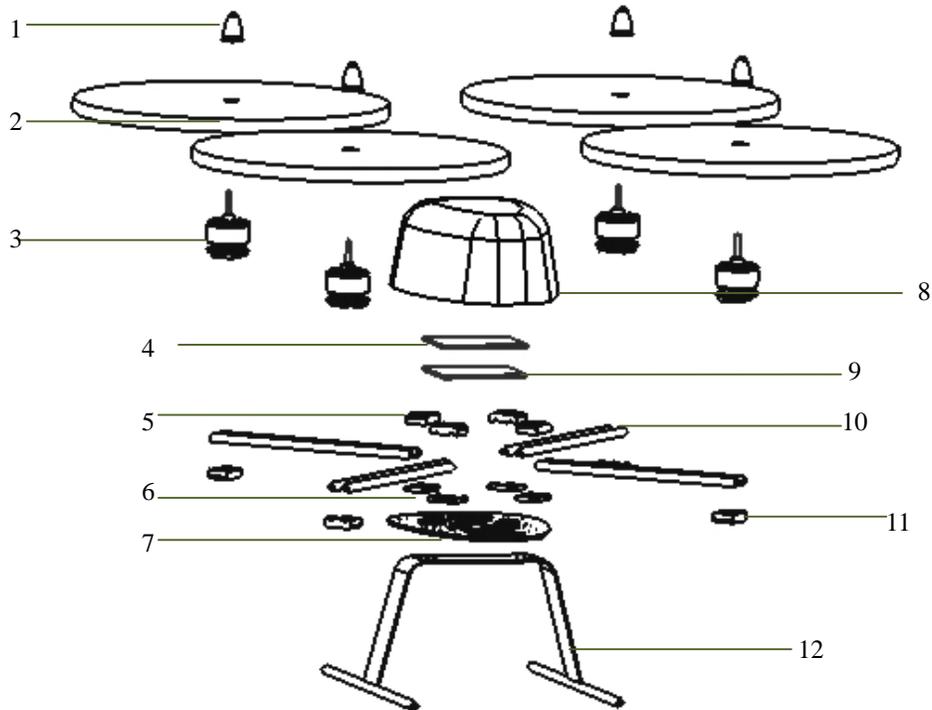
4. Technical Specification Chart

Aircraft size	410x410x140	mm
Maximum expandable size	615x615x140	mm
Motor to motor	Diagonal distance between two motor centers	410 mm
Propellers	frontal and versa professional props 8045	8 inch
Battery	LiPo 3S 2200mAh 20C	Standard 1 pc
Aircraft weight(kit only)	Without battery, receiver, applicable payload	430 grams
Take-off weight	With 3S 2200mAh battery & receiver	610 grams
Recommended payload	Camera mount	≤380gram
Maximum payload	Using 1 standard battery	≤ 380 grams
Maximum takeoff weight	Using 1 standard battery	1300 grams
Flight distance	Within Line of Sight (Always visible to pilot/operator)	-
Flight time	3S 2200mAh battery & receiver	18 to 25 Minutes
Wind resistance	≤4	Class



**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 transducers 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 is easy to fly.

**III. Assembly (Refer to the exploded aircraft view on Page 8)**

1. Main body

- A. In order to ensure the optimal operation, the T380 aircraft has been assembled and passed several flight tests before being shipped to you.



Assembled Aircraft – Top View





Assembled Aircraft - Bottom view

- B. Only the propellers & landing gear will need to be installed upon delivery. Attach the landing gear (12) to the bottom of the bottom cover (7) using four M3 bolts. Tighten the bolts snugly to ensure proper attachment. Do **NOT** over tighten the bolts as this may result in breakage of the plastic.
- C. The battery attaches to the aircraft's underside (between the landing gear).
- D. To hold the battery in place, install the Velcro included on the cross beam of the landing gear.

## 2. Propeller mounting

- A. There are four 8 inch high efficiency slow fly propellers (2) included.
- B. Install propellers (2) on motor shaft directly (3), and screw down propeller clips (1).

**IMPORTANT:** Use Loctite or another thread locker when installing the propeller clips. This will prevent the propeller clip from coming off during flight.



C. Propeller rotation – It is important to pay attention to the **FRONT** of the aircraft when installing the propellers.



3. Remote control receiver device.

- 1) A minimum 4 channel Transmitter/Receiver is required to fly the T380.
- 2) The included receiver has been tested to work with most major brands of RC Transmitters, 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 to 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).

Explanation of 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 <b>ON</b> .	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.



## Flying for the First Time

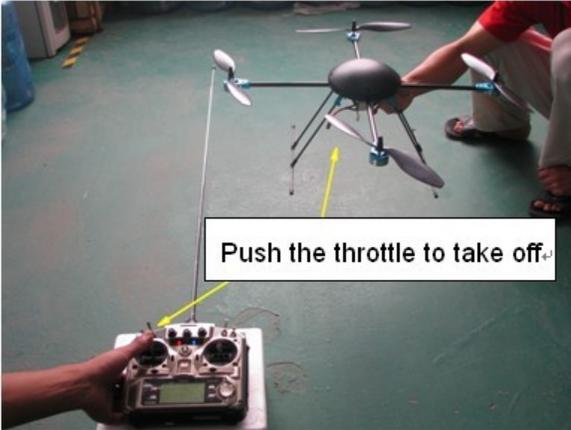
### 1. WARNING: PLEASE READ BEFORE YOUR FIRST TEST FLIGHT.

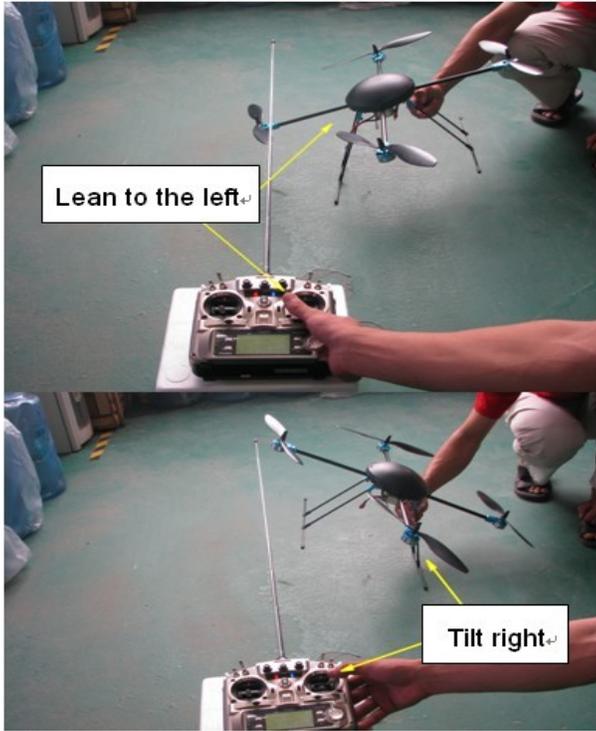
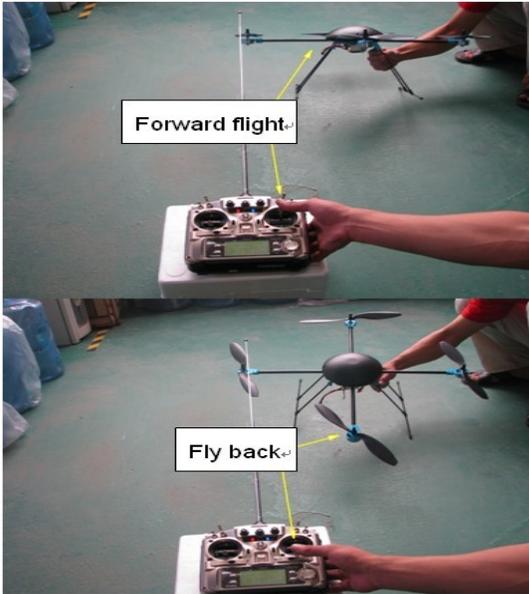
- 1) Default factory setting for the T380 "X Mode" configuration.
- 2) Two of the Motor Arms are colored YELLOW as a marker to indicate the front side of the aircraft (see Page 11 for diagram).
- 3) To ensure your safety and proper operation of the aircraft, the following flight tests must be done carefully & in small controlling increments.

### 2. Control direction

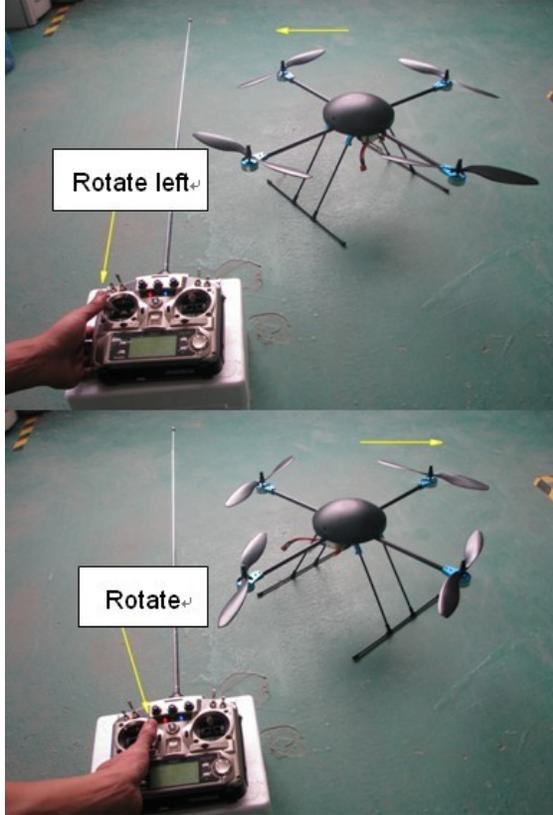
To check your RC Transmitter settings, carefully test as instructed below. If the movement is incorrect, reverse the channel accordingly.

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

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

<p>3</p>	<p>Roll left / Roll Right</p>	 <ol style="list-style-type: none"> <li>1. Move the Aileron stick to the left; you should observe the right motor speed up while the left motor slows down.</li> <li>2. Observe the opposite when rolled to the right</li> </ol>
<p>4</p>	<p>Forward / Back</p>	<ol style="list-style-type: none"> <li>1. Move the Elevator stick to the front. 1) You should observe the back motor speed up while the front motor slows down.</li> </ol>  <ol style="list-style-type: none"> <li>2) Observe the opposite when Elevator stick is moved to the back.</li> </ol>



5	Rudder left / right (direction of rotation)	 <ol style="list-style-type: none"><li>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!).</li><li>2. If you move the rudder stick to the left, the aircraft should rotate to the left, and vice versa.</li></ol>
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### 3. Lift off and hover

- A. After you have tested and confirm all 4 channels of your RC transmitter are set up correctly, it's time for your first flight!!
- B. As stated above, ALWAYS place the aircraft on the flat ground, turn on the transmitter first and then plug in the battery to go through the initialization process. Do not move any control sticks or the aircraft during this process.
- C. Gently move your throttle to start all motors. Push the throttle stick higher until the aircraft begins to lift off and fly.



- D. If the aircraft looks stable, allow it to hover & maintain altitude before gently bringing the throttle stick down for a soft landing.
- E. 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

##### A. Loss of RC signal

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

##### B. Start-up throttle protection

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

##### C. In-flight Protection during RC signal loss

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

##### D. 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 directional control during this time, but not throttle control.

E. 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

**Feedback**

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

Please do not hesitate to contact us via email or Skype:

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