

P4 **Quadcopter manual**

version 1.0



(13th Sep, 2011)

- **Safety Precautions:**

1. Please read this manual before building and flying the aircraft.
1. The product is remote control model, people without independent ability; please do not operate it to avoid any adverse consequences.
2. Take necessary measures to prevent being hit by the rotating blades or motors and avoid personal injury.
3. If you have never built a quadcopter 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. TQ TECH 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. TQ TECH 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 agreement.

Foreword

Before utilizing P4 quadcopter, 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.

I Brief instruction

1. Functions and features

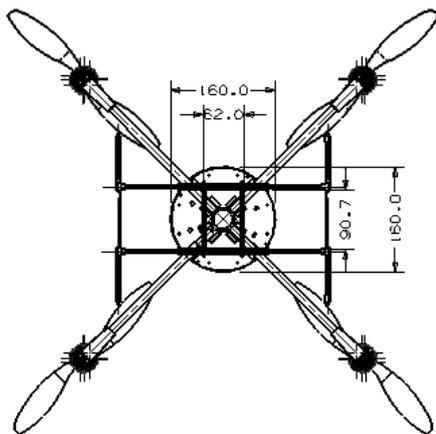
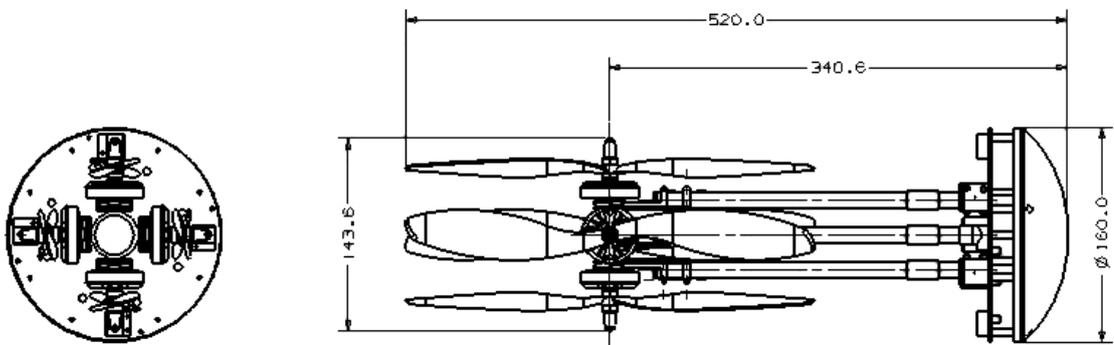
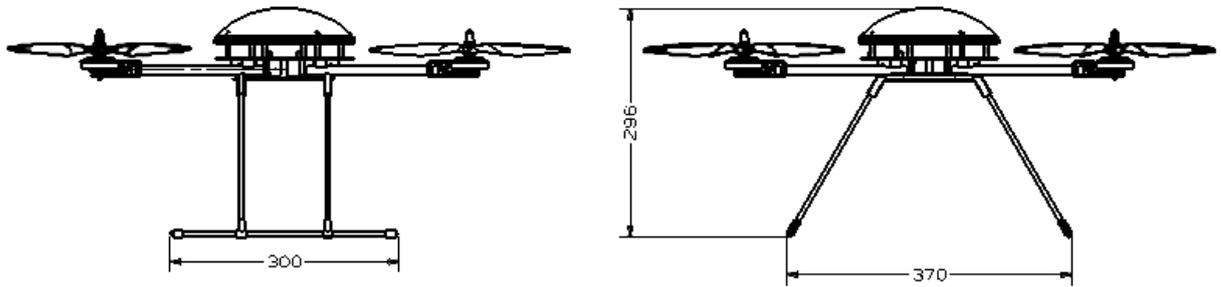
P4 is our latest mid-level aircraft model designed base on Q4 and P4.

It's for flight photography players.

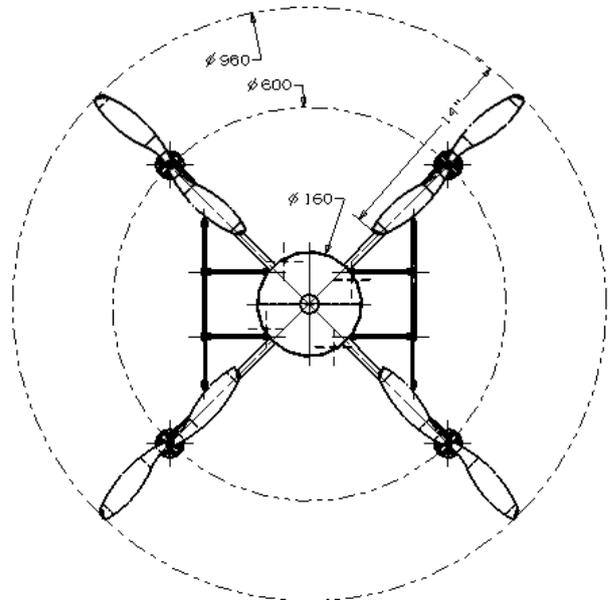
- 1) High efficiency: with 14inch slow rotate propellers and disc brushless motors. The optimal working efficiency can reach 11.5g/W.
- 2) Stability: take high-performance MEMS sensor for 6DOF stabilization with low drift, shock resistance ability.
- 3) Simple: only require 4channel to fly. Property core system, it is compatible to all RC equipments
- 4) Easy to use: can be installed quickly, easy to operate, and support planar self-stabilizing PTZ function.
- 5) P4 can take off and land vertically, spot hover, altitude hold, fly left, right, etc.

Install a camera mount at the bottom of the aircraft. You can adjust pitching angle of PTZ through RC. Suspension system with high-efficient filter function and low frequency vibration is used to connect camera mount and aircraft. Camera mount swings on the cross beam of LG, can be installed and dismantled quickly.

2. Aircraft Dimension(mm)



Recommended battery placement



unfold diameter

3. Configuration and Specification

No.	Names	Specification	Qty.	Unit
1	Cover	Engineering plastic+3K carbon fiber	1	set
2	Arm beam	Engineering plastic+3K carbon fiber	4	Pcs
3	LG	Glass fiber/rubber/high-strength aluminum	1	Set
4	Motor	C3410 KV400 out runner brushless motor	4	pcs
5	Props	1445engineering plastic	2	Pair
6	PTZ (choose)	Carbon fiber, with shutter, single axis	1	set
7	PTZ hanging bracket	Flexible damper	1	Set
8	PTZ steering engine	Metal high-speed digital steering engine	2	Pcs
9	Brushless motor	2-3S 18A high-speed ESC	4	Pair
10	FC system	Metal high-speed digital steering engine	1	Set

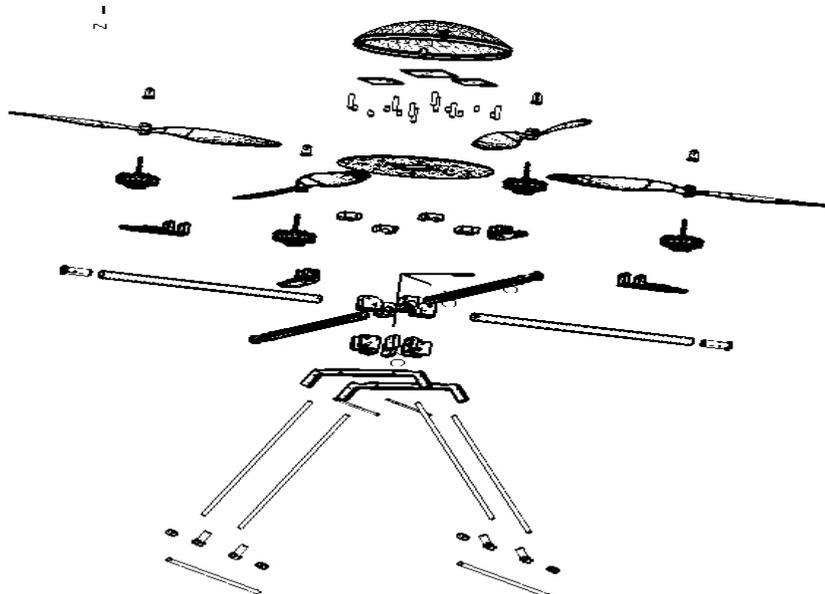
4. Technical parameters

Aircraft dimension	634 × 634 × 296	mm
Maximum expandable size	960 × 960 × 296	mm
Folded size	D160 × 520	mm
Motor to motor	Diagonal distance between two motor centers	600mm

Propeller	1447 frontal and versa professional props	14inch
Battery	LiPo 3S 4300mAh 20C	standard1P
Aircraft weight(kit only)	Without battery, receiver, applicable payload	1000gram
Take-off weight	3S 4300mAh 1P battery, receiver, camera mount	1400gram
Recommended payload	DV/ Card-type camera	≤500 gram
Maximum pull	1P standard battery	6000 gram
maximum payload	1P standard battery	≤1000 gram
Maximum take-off weight	1P standard battery	2500 gram
Flight distance	Visual area	-
Flight time1	3S 4300mAh 1P battery, receiver	10~12 mins
Flight time 2	4S 10000mAh 1P battery, receiver	20~25 mins
Flight time 1	6S 10000mAh 1P battery, receiver	Undetermined
Wind resistance	≤5.4class wind, can cruise normally	Class

II . Components Names

1. Aircraft components (exploded view)



No.	Components Name	Qty.	No.	Components Name	Qty.
1	Propeller clip	4	10	FC board	1
2	Propeller	4	11	Brushless ESC	1
3	Rubber damper gasket	1	12	Bottom cover	1
4	Brushless Motor	4	13	Arm beam	4
5	Cross beam	2	14	Locking block	4
6	Side arm	4	15	Lateral axis	2
7	Propeller holder	4	16	Center coupling	1
8	Bar(LG)	2	17	Tee joint(LG)	4
9	Cover	1			

2. Electronic equipments

- 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.
- 4) Flight controller(FC) is ready for PTZ stabilization

3. Software system

- 1) The fuzzy logic algorithm, the aircraft stabilization is proprietary and intellectually protected worldwide.
- 2) The P4 system has been fully field tested and intuitively easy to fly.

III. Assembly

In order to ensure the optimal configuration, P4 has passed whole-set assembly, aging and flight test before shipping.

1. Main body

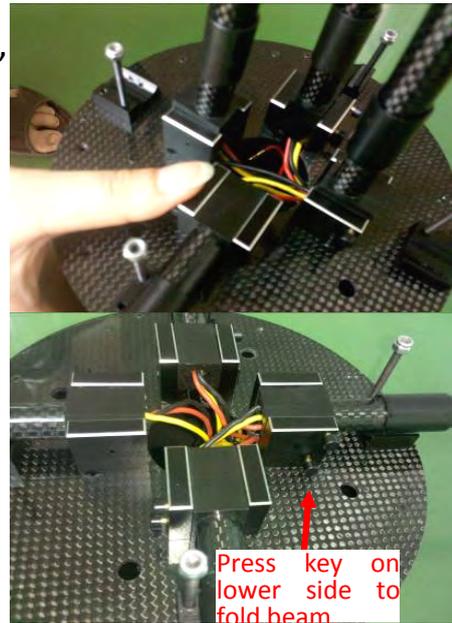
- a. Fuselage take out from packing box was folded.



a. Press relative locking keys, you will open 4 P4 arm beams.



b. Pull out cross beams, press on fixing pad, you may hear clear "click". It says cross beam unfolding condition is locked.



1. Landing gear

a. Mount one side of the bar (LG) onto the position between footstock and small platform.



b. Lock two Hex screws at the inner side of the arm tightly, be carefully and do not break glass fiber pole.



c. Direct to the plastic ware's locating hole, and plug another side of the bar (LG) into the locating place.

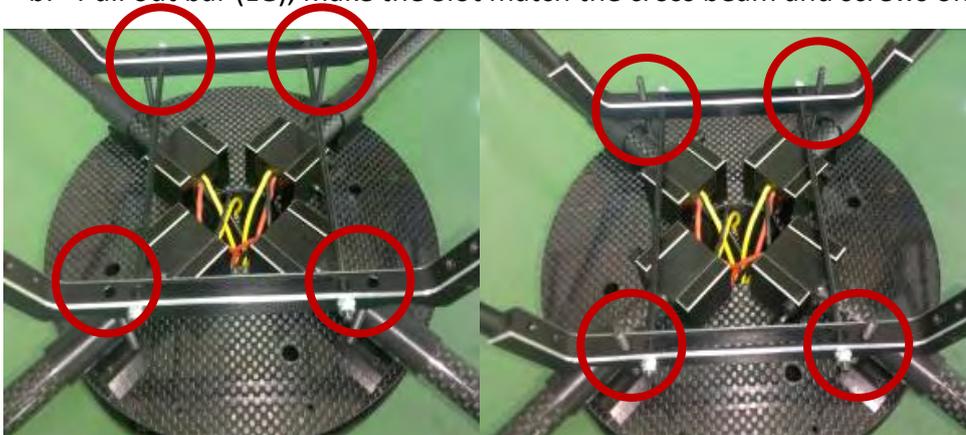


2. Installation

a. Unscrew 4 nuts of fixing screws on the base plate.



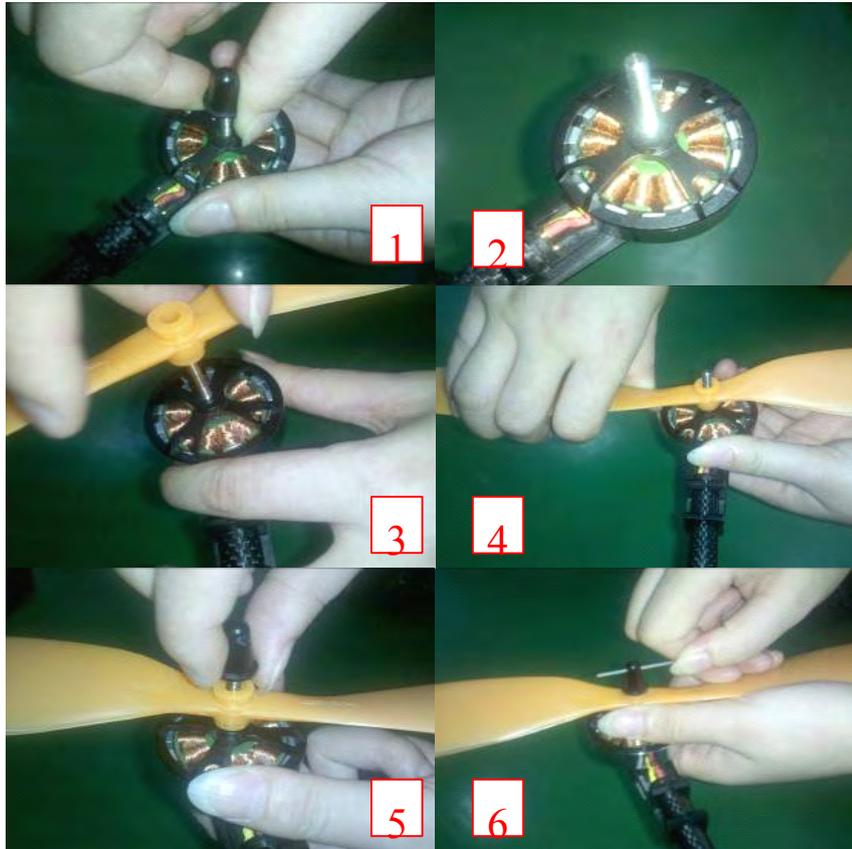
b. Pull out bar (LG), make the Slot match the cross beam and screws on Base.



c. Install the nuts, and lock Hex screws.



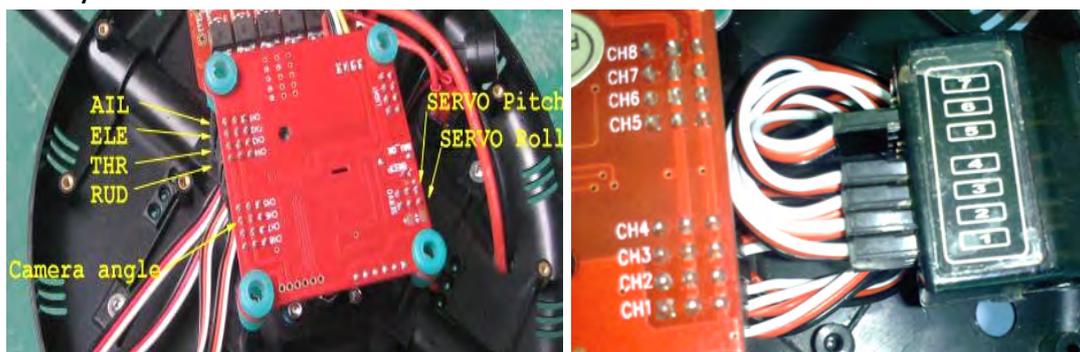
- d. Unscrew prop clip from motor shaft and mount propellers(notice the threaded hole of props), screw prop clips well.



3. FC switch and "T" type slot of the battery should be installed at the bottom of ARF, notice that you need a same designed, female "T" plug (and a standard Deans Ultra connector).
4. Hold 3S battery, and install the Velcro we provided onto the arm beam of LG

Remote control receiver installation

- a. A minimum 4 channel Receiver is required to fly this system.
- b. The P4 has been tested to work with major brands of RC Radios, including Spectrum (DX7), IR (DSX7, 9XII), Sanwa (RD8000), Futaba (6EX, 10C, FF9). Hi-TEC (Eclipse7), GWS, WFLY (FT06-C), ESKY.etc.
- c. Plug in the channels as shown below to the corresponding channels of your RC Receiver.



P4 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

5. Radio settings

1. Set your transmitter on fixed wing mode.
2. Set the end points of Channel1, 2, 3 and 4 to between 0-100%.
3. Remove or disable any mixing between channels.
4. Set a straight curve line for Throttle channel. You may fine tune this curve later.

6. Powering up for the First time

1. Turn on your Radio Transmitter. Move the throttle stick to the lowest position (zero position).
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 ARF until the initialization process is complete (indicated by the 3 beep-beep-beep tones).

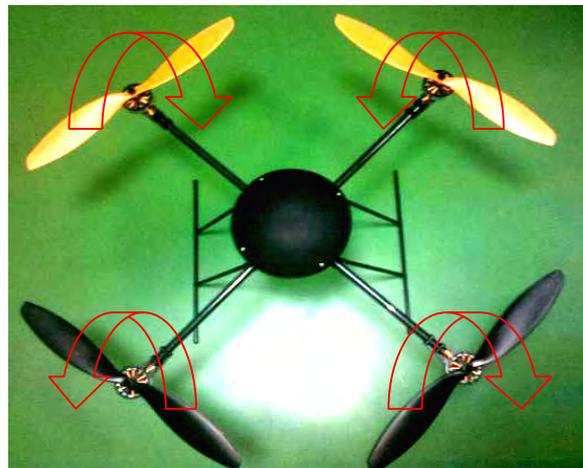
Initialization beeps tones:

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

WARNING: PLEASE READ BEFORE YOUR FIRST TEST FLIGHT

1. Default factory setting for the P4 "**cross mode**" configuration.
2. One of the Motor Arm is colored yellow as a marker to indicate the "front" of the aircraft.



3. To ensure your safety, the following flight tests must be done carefully

with small controlling increments.

4. Control direction

To check your RC Transmitter control settings. If the movement is incorrect, reverse the channel accordingly.

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

5. Life 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.

6. 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-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.
 - b. And intermittent beep tone would also be emitted.
 - c. 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