

PHANTOM Quick Start Manual v1.0

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Thank you for purchasing our product. Please enter the DJI special website of PHANTOM to confirm if the print manual is the latest one according to the manual version, because this print manual may be not the latest one. If not, please download and refer to the latest manual. It is without any update notice.

The manual will get you ready to fly by doing simple operations. You can get an advanced manual from DJI website to learn more about PHANTOM, for example, configuring parameters by connecting to assistant software, changing the transmitter to Mode1, matching frequency between the transmitter and the receiver, and intelligent orientation flight, etc.

www.dji-innovations.com

Disclaimer & Warning

The PHANTOM is only for the persons **who are over 18 years old and have certain aero-modeling knowledge**, as it is an aero-modeling more than an ordinary toy. DJI strongly oppose the persons to use the PHANTOM without any an aero-modeling experience, to avoid damage and injures, or even casualties. The fast rotating propellers and aircraft drop will cause serious injury. **Therefore, please fly with a high safety consciousness!!!**

Please strictly follow these steps to use the PHANTOM. As DJI Innovations has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. DJI Innovations accepts no liability for damage(s) or injuries incurred directly or indirectly from the use of this product.

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Before You Start

Checking list before every flight!!!

- ✓ Keep the flight away from objects, such as obstacles, human beings, high-voltage lines, etc.
- ✓ Do not over load the multi-rotor, i.e. do not carry heavy weight
- ✓ Check that the propellers and the motors are installed correctly and firmly. Make sure the rotation direction of each propeller is correct. Keep away from rotating motor and propeller to avoid injure.
- ✓ Prevent the TX from interface with other wireless device.
- ✓ Always keep the TX, battery and all other parts are charged fully.
- ✓ Please always switch on the transmitter first, then power on quad-rotor before takeoff! Power off the quad-rotor first, and then switch off the transmitter after landing!

CAUTIONS!!!

- ✓ Avoid any impact by external forces to keep the high accuracy performance of the multi rotor and Tx.
- ✓ Do not disassemble or modify your multi rotor or transmitter.
- ✓ Not waterproof and not oil-proof. Please keep the multi rotor and Tx dry.
- ✓ Make sure the positive and negative poles of the battery are connected correctly, to avoid short circuit.
- ✓ The battery may cause explosion, chemical burns or ever fire hazard because of misuse. DO NOT expose the battery to sunlight directly, burn the battery or discard the battery in fire. Always keep the children away.
- ✓ DO NOT use damaged or leaking battery. Discard it according to the tips of the battery, and use a new one.
- ✓ Please use the associates approved by DJI.
- ✓ Please contact our customer service if you have some problems you can't solve.

In the box

Aircraft

Transmitter

Bi-pod

Frame for Camera

Propellers (with Nuts)

Charger (with Cables)

Battery

Assistant Wrench

Cross Screwdriver

Owned Tools

Introduction

The PHANTOM is an all-in-one small Quad Copter designed for multi-rotor enthusiasts. Before shipping from the factory, it has been configured and fully tested, which means you have no configuration to do.

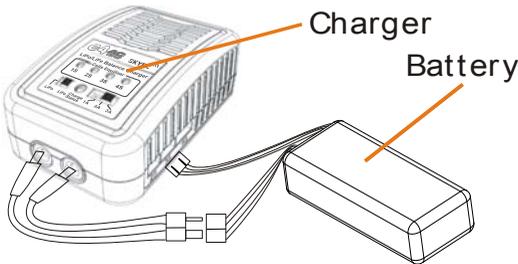
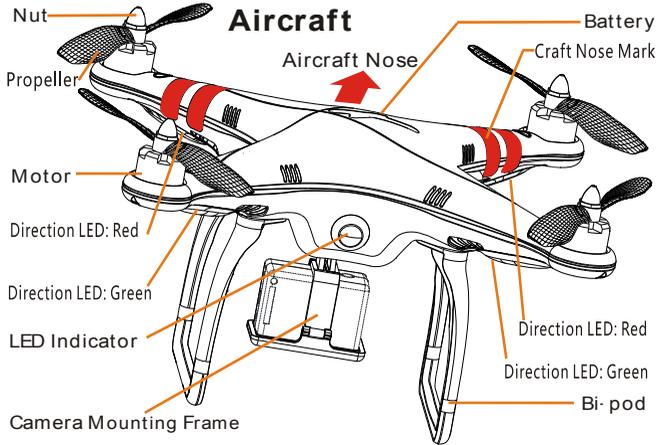
- Built-in

- ✓ NAZA-M Autopilot System
Refer to NAZA-M manual for details
- ✓ GPS & Compass module
- ✓ R/C Receiver
- ✓ Power System for Flight
- ✓ LED Indicator

- Function

- ✓ Manual/ATTI./GPS ATTI.
- ✓ Intelligent Orientation Control
- ✓ Enhanced Fail-Safe
- ✓ Low-voltage Alarm

- Camera Frame (For Gopro)

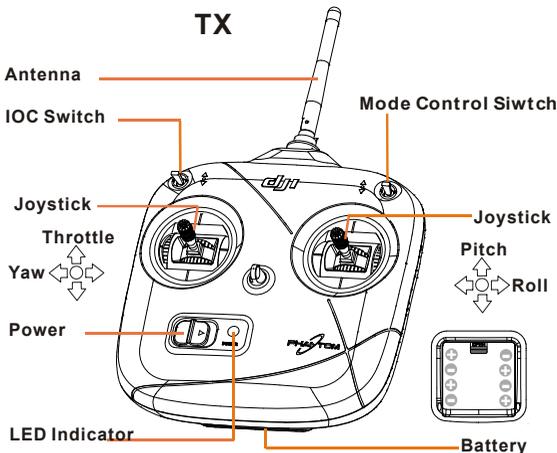


- Charger

- ✓ AC Input: 100-240V
- ✓ Charge Circuit: 1A/2A/3A
- ✓ Current Drain for Balancing: 200mA
- ✓ Circuit Power: 20W

- Battery

- ✓ Type: LiPo

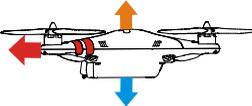
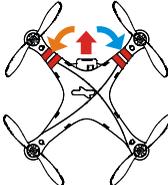
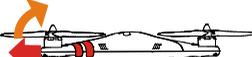


- ✓ Working Frequency: 2.4GHz ISM
- ✓ Control Channel Numbers of TX: 6
- ✓ Communication Distance: 300m
- ✓ Receiver Sensitivity (1%PER) : >-93dBm
- ✓ Power Consumption of TX: <20dBm
- ✓ Working Current /Voltage: 52 mA@6V
- ✓ AA Battery: 4 Required

Aircraft & TX Basic Operation

Definitions

- **Stick neutral position and stick released** means the stick of TX is pushed to the central position.
- **Command Stick** means the stick of TX is pushed away from the central position.

TX	Aircraft (← is the nose direction)	GPS ATTI. /ATTI. Mode	Manual Mode
		Throttle stick is for aircraft up& down control. The aircraft will hold the height automatically if the stick released. The throttle stick cannot hold the central position when released.	Throttle stick is for aircraft up& down control without height hold function.
		Yaw stick is for aircraft rudder control. Command stick is responding to the changing angle velocity of the aircraft, with the maximum rudder angular velocity is 200°/s. Left push the stick, counter clock-wise rotation of the aircraft, vice versa.	
		Roll stick is for aircraft left/right control and Pitch stick is for front/back control. Command stick is responding to the changing angle of the aircraft. Stick neutral position is for 0°, its endpoint is 45°. The roll and pitch stick holds the central position when released.	Command stick is the changing angle velocity (the max velocity is 150°/s) of the aircraft.
		<ul style="list-style-type: none"> ● In GPS Mode, the aircraft will hover (hold horizontal position) when sticks released. ● In ATTI. Mode, the aircraft will keep attitude stabilizing without horizontal position (different from hover in GPS Mode) 	The aircraft will keep the front/back /left/right not to rotate, but without attitude stabilizing in 0°.
	 <p>GPS ATTI. ATTI. Manual</p>	Use a 3-position switch on the TX as mode control switch. After connection to the GPS module, GPS ATTI. Mode is available. Pay attention because the GPS ATTI. Mode is dependent on the number of GPS satellites acquired by the main controller.	
	 <p>OFF Course Lock Home Point Lock</p>	Use a 3-position switch on the TX as Intelligent Orientation Control (IOC) switch. Flip the switch to OFF in basic flight. Use IOC function when you are family with basic flight. Download the advanced manual from DJI website to get more details.	

You can change the operation mode of the TX according to the advanced manual if necessary.

Before Flying

1. Power on the TX

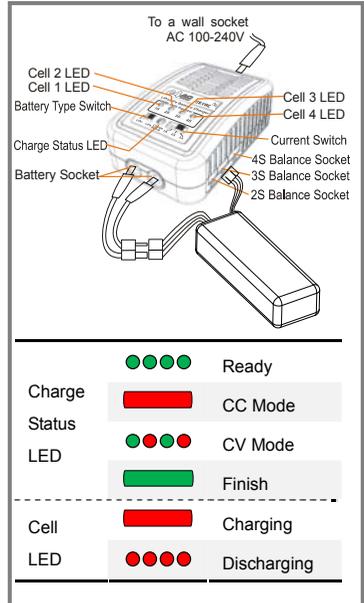
1. Open the battery compartment cover of the TX.
2. Put into the 4 battery in accordance with the + /- pole.
3. Close the battery compartment cover of the TX.

- It is recommended to use the Nickel-Hydrogen charging battery.
- Take out the battery after usage.

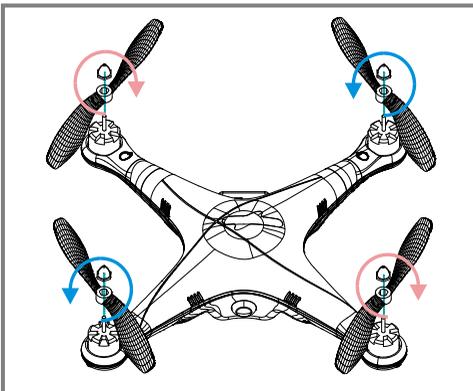
2. Battery Charging

1. Insert the AC power cord into the charger and AC cord into a wall socket (100-240V). The charge status LED will flash green.
2. Select the battery type LiPo and the charging current 2A.
3. Connect the battery main charge lead to battery socket and battery balance wire to balance port.
4. Start charging. The charge status LED and the 1S/2S/3S cell LED will glow constant red.
5. When the charge status LED glows constant red, it is charging in CC mode and LED glows green and red blink is in CV mode.
6. When the cell LED is flashing, it is discharging for balancing.
7. When the battery is fully charged, the charge status LED will glow constant green. Unplug the battery from the charger.

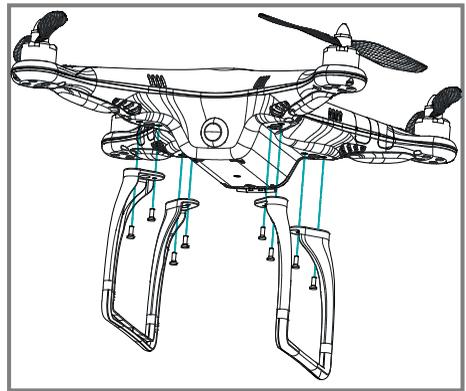
- Make sure to use the battery after fully charging.
- When the charger is in CV mode (with green and red LED blinking), the battery is over 80% charged .If you need to use the battery at once, make sure it is 80% charged.
- Please use the battery according to the sticker prompted.



3. Assemble the Propeller



4. Mount the Bi-pod if necessary



Make sure the rotation direction of propellers is correct.

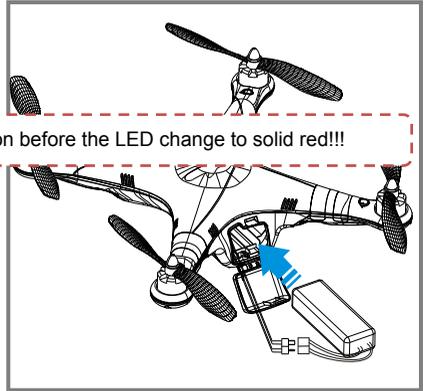
1. Lower the throttle stick to the bottom position, and flip the IOC and mode control switch to the top position.
2. Turn on the power switch of the TX, When the linking is successful, the LED indicator on the TX will change to solid red.

5. Turn on the TX

1. Place the aircraft on the ground
2. Open the battery compartment cover of the aircraft.
3. Put the battery into the compartment with the power cord

Make sure to keep the throttle stick at the bottom position before the LED change to solid red!!!

4. make sure the ESC's work properly.
5. Keep the sticks of the TX stationary until the system start and self-check finished, and the LED will blink according to the control mode.
6. Put the power cable into the battery compartment.
7. Close the battery compartment cover.



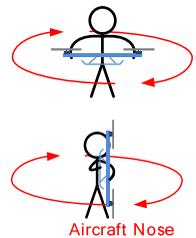
6. Power on the aircraft

7. GPS & Compass Calibration

The GPS module is built-in magnetic field sensor for measuring the geomagnetic field, which is not the same in different areas. Calibrate the compass at the first flight or fly area is far away from the previous area.

Make sure to keep away from ferromagnetic substance when calibration.

1. Quickly switch the control mode switch from **Manual Mode** to **GPS Atti. Mode** for 6 to 10 times, The LED indicator will turn on constantly yellow.
2. Rotate your multi rotor around the horizontal axis until the LED changes to constant green, and then go to the next step.
3. Hold your multi rotor vertically and rotate it around its vertical axis, keep rotating until the LED turns off, meaning the calibration is finished.
4. The LED indicator will show whether the calibration was successful or not.



Make sure to use the PHANTOM after the four green LED is off!!!! Please contact us if the last four green blinks are abnormal.

- If the calibration was successful, calibration mode will exit automatically.
- If the LED keeps flashing quickly Red, the calibration has failed. Switch the control mode switch one time to cancel the current calibration, and then re-start from step 1.

If you keep having calibration failure, it might suggest that there is very strong magnetic interference around the GPS & Compass module, please avoid flying in this area.

Flight Test

1. If in GPS ATTI. Mode, place the aircraft in the open space without buildings or trees. Take off the aircraft after 6 or more GPS satellites are found (● blinks once or no blinking). If in ATTI. Mode or Manual Mode (it is not recommended for newcomer), you can skip this step.
2. Place the aircraft 3 meters away from you and others, especially children, to avoid accidentally injure.
3. Start-up

- ✓ Push both sticks to the left bottom or right bottom, to start the motors.



- ✓ Release the yaw, roll and pitch sticks and keep them at the neutral position avoiding the aircraft to tilt to one side. At the same time push the throttle stick from the bottom quickly, because the motors will stop if not to push the throttle stick from the bottom in time and you need to execute start-up procedure again. When the aircraft is on the point of leaving the ground, continue to push the throttle stick upwards to rapidly take off from the ground, pay attention not to push the stick excessively.
 - ✓ Pay attention to the aircraft movement at any time when flying, and use the sticks to adjust the motion status. Keep the yaw, roll and pitch and throttle sticks at the neutral position to hover the aircraft at the height you need.
4. Nose down the aircraft slowly. Push the sticks to the left bottom or right bottom to stop the motors after landing. (Push the throttle stick under 10%, and after landing 3s the motors will stop automatically)
 5. Please always power off the quad-rotor first , then switch off the transmitter after landing.

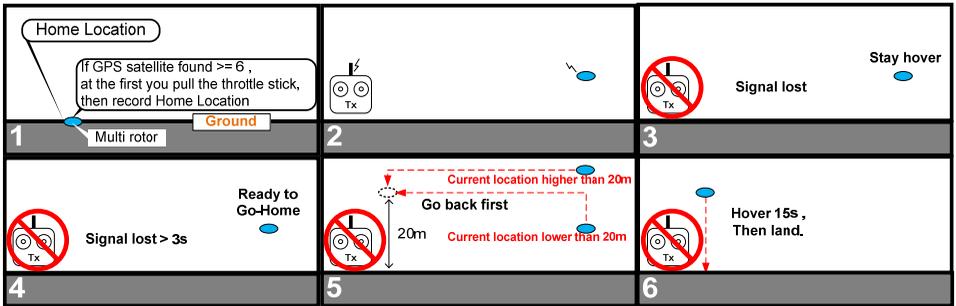
FLYING NOTES!!!

- ✓ Please always switch on the transmitter first, then power on the quad-rotor before takeoff!
- ✓ If in GPS ATTI. Mode, keep the aircraft flying in the open space without obstruction. Pay attention to the GPS satellite status indicator LED. If the GPS signal is bad (red LED blink twice or three times), switch to ATTI. Mode. You may use the GPA ATTI. Mode again after the GPS signal back to normal
- ✓ If the multi rotor LED flashes quickly Red then this indicates battery voltage is low, please land ASAP. Once the system enters the second-level low-voltage alarm, the aircraft will drop height automatically.
- ✓ DO NOT flying in ferromagnetic substance area, to avoid strong magnetic interference with the GPS.
- ✓ It is recommended to land the aircraft slowly, to prevent the aircraft from damage when landing.
- ✓ If the TX indicates low-battery alarm, please land ASAP. Because the TX abnormal work may cause the aircraft out of control or even crash.
- ✓ After powering on and before the motors start, if the multi rotor LED double blinks yellow or green without Tx stick movement, you should power cycle the multi rotor.
- ✓ The multi rotor will automatically land (or return home if in GPS mode) if the fail-safe mode is active.
- ✓ We recommend that you take off the multi rotor in ATTI. Mode. Manual mode is very sensitive.
- ✓ If the LED lights Red, please hover the aircraft until it turns off, so as to have better flight performance.

Enhanced Fail-safe

- Enhanced Fail-safe will be triggered when the MC loses the control signal, there are following situations.
 - ✓ Signal lost between the transmitter and receiver, e.g. multi-rotor is out of the communication range, or transmitter is down, and so on.
 - ✓ One or more connections of A, E, T, R, U channels between main controller and receiver loses. If this happens before take-off, motors will not work if you push the throttle stick; if this happens during the flight, LED yellow light will flash to warn in addition to the failed-safe method.
- The multi rotor will automatically land if the fail-safe mode is active, or return home if in GPS mode.
- Before takeoff, current position will be saved as home point by MC automatically when you push the throttle stick first time after 6 or more GPS satellites are found (red LED blinks once or no blink) 8 seconds.
- Make sure to save the home location before takeoff and keep it in mind clearly for safe reasons.
- When switch to **Manual Mode** or **Atti. Mode**, MC will disengage enhanced failed-safe mode, you can re-gain control of multi-rotor.

The following schematic shown is introduction for Go-Home and Landing.



The aircraft will not go home if the GPS signal is not good; or the distance between the Home Location and multi-rotor is less than 25m and the altitude is lower than 20m relative to the Home Location.

Low-Voltage Alarm

Low-voltage alarm is to indicate that the battery cannot provide enough power for the aircraft, in order to warn you to land the aircraft ASAP. There are both first level and second level protections. **It is not for fun, you should land your aircraft ASAP to prevent your aircraft from crash or other harmful consequences!!!**

- All two level protections will only have LED warning in Manual Mode, no any automatic actions.
- In ATTI. and GPS Mode.
 - ✓ The first level protection have LED warning
 - ✓ The second level protection the aircraft will land automatically having LED warning. Meanwhile the center point of throttle stick will move up slowly to 90% of endpoint, you should land ASAP to prevent your aircraft from crash! When the center point is at 90% of endpoint, multi-rotor will still ascend slowly if you continue to pull the throttle stick, and the control of Pitch, Roll and Yaw are the same as before.

LED & Sound Indicator Description

LED Indicator Description

Control Mode (with GPS module)			
	Manual Mode	ATTI. Mode	GPS ATTI. Mode
GPS Satellite number < 5	● ● ●	● ● ● ●	● ● ● ● ●
GPS Satellite number = 5	● ●	● ● ●	● ● ● ●
GPS Satellite number = 6	●	● ●	● ● ●
GPS Satellite number > 6	NO	●	● ● ●
Flight Attitude is bad	■	■ ●	■ ●

Control Mode (without GPS module)	
Manual Mode	NO
ATTI. Mode	● ● ● ● ● ● ● ● ●

When ■ appears, please hover the aircraft until disappears, so as to have better flight performance.

Sparkling indications of Atti. ● and GPS Atti. ● are:

- Before motors start: **Single blink**, all sticks (except throttle stick) return to center; **Double blinks**, stick(s) (except throttle stick) not at center.
- After motors start and throttle stick is over 10% in 3 seconds: **Single blink**, all sticks return to center; **Double blinks**, stick(s) not at center.

Compass Calibration

Begin horizontal calibration	
Begin vertical calibration	
Calibration or others error	

Others

Tx signal lost	
Low voltage / Other errors	
System start and self-check	

ESC Sound Introduction

NO	ESC State	Sound
1	Ready	♪1234567
2	Throttle stick is not at bottom	BBBBBB...
3	Input signal abnormal	B-----B-----B...
4	Input voltage abnormal	BB--BB--BB--BB...

TX State Introduction

NO	TX State	Introduction
1	The throttle stick isn't in the lowest position after turning on.	B-----BB
2	Linking between the TX and the RX	
3	Normal Operation	
4	Low-battery Alarm(Need to change the battery)	BB.....

Specifications

NO	Parameters	Range
1	Operating Temperature	-10°C ~ 50°C
2	Power Consumption	3.12W
3	Take-off Weight	<1000g
4	Hovering Accuracy (GPS Mode)	Vertical: ± 0.8m. Horizontal: ± 2.5m

5	Max Yaw Angular Velocity	200°/s
6	Max Tilt Angle	45°
7	Max Ascent / Descent Speed	±6m/s
8	Max Flight Velocity	10m/s
9	Diagonal Wheelbase	350mm

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party Responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

RF warning statement

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.