U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

May 21, 2015

Exemption No. 11636
Regulatory Docket No. FAA–2015–0594

Mr. Tim Trott
dba Southern Helicam
3628 Seminole Lane
Marianna, FL 32448

Dear Mr. Trott:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter posted March 11, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography for real estate.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner. However, the FAA received one comment in support of the petition made to the docket.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 2 and DJI Phantom 2 Vision.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Mr. Tim Trott dba Southern Helicam is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Mr. Tim Trott dba Southern Helicam is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 and DJI Phantom 2 Vision when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the

operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal Government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC

qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least 5 minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on May 31, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

United States Department of Transportation
Docket Operations
1200 New Jersey Ave.SE
West Building Ground Floor Room W12-140
Washington DC 20590

Re: Exemption Request Pursuant To Section 333 of the FAA Reform Act of 2012

Dear Sir or Madam:

I am writing pursuant to the FAA Modernization and Reform Act of2012 (the "Reform Act") and the procedures contained in 14 C.F .R. 11, to request that Tim Trott, owner and and operator of small UAS, be exempted from the Federal Aviation Regulations (FAR's) listed below.

The exemption is necessary to operate a small unmanned aircraft system (UAS) commercially in airspace regulated by the Federal Aviation Administration (FAA). These operations will be conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.§11.81.

It is requested that the following aspects of Section 333 of the FAA Modernization and Reform Act of 2012 be considered:

Petition for Exemption under Section #333 of the
FAA Modernizations and Reform Act of 2012 and 14 CFR Part 11

(1) Name and Address

Tim Trott (dba Southern Helicam)
3628 Seminole Lane
Marianna, Florida 32448
info@SouthernHelicam.com

(2) Specific Exemption Sections:

45.22(d) Alternate Marking
61.113(a) and (b)
61.119
91.7(a)
91.103
91.119(c)
91.121

91.151(a)(1) day
91.405(a)
91.407(a)(1)
91.409(a)(1) and (2)
91.417(a) and (b)

(3) Extent of Relief and reason for seeking relief:

14 CFR, § 45.22(d) allows the UAS owner or operator to propose an alternative marking procedure to the FAA. Alternate marking approvals may be issued to public aircraft by FAA UAS Integration Office (AFS-80). If alternative markings were required , a copy of the Alternative Marking approval letter should be attached to application in the "Aircraft Registration" field.

The petitioner requests permission for 1 inch markings applied on the top surface of the body of the aircraft.

CFR 61.113 (a) & (b) Private Pilot Privileges and Limitations:

Pilot in Command:
Petitioner requests to be permitted for commercial operation of a small UAS PIC operating the UAS will have accumulated and logged, in a manner consistent with 14 CFR 61.51(b), at least 10 hours logged as a UAS pilot with a multi-rotor UAS.

CFR §61.3(a)(1): Requirement for certificates, ratings, and authorizations
Applicant has completed ground school for PAR/AKT and other qualification tests.

63.13 -Certificates ratings and authorizations

CFR 91.7(a) Civil Aircraft Airworthiness:
In the absence of an airworthiness certification process for sUAS, the equivalent level of safety will be achieved through the employment of flight manual and maintenance manual procedures, pilot training and analytical risk management for each activity.

CFR 91.119 (d) (1) Minimum safe altitudes; general
CFR 91.119 states:

> (d) *Helicopters, powered parachutes, and weight-shift-control aircraft.* If the operation is conducted without hazard to persons or property on the surface-
>
> > (1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA.

The current altitude and/or horizontal restrictions on rotorcraft assumes a much heavier manned aircraft loaded with fuel and possible external stores. The light-weight sUAS being proposed for use in this activity along with its guidance and redundant systems should taken into consideration.

The activities being proposed by this petitioner are in a very controlled and open area. The flights would be confined to overflight of the client real estate at the request of and with permission from the land owner, and maintain a distance of more than 50 feet away from any buildings, persons, active highways or railroads, and below the 400 ft AGL limitation.

CFR 91.121 Altimeter settings

CFR 91.121 states: Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating-Below 18,000 feet MSL, to-The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft.

The sUAS aircraft intended for this activity uses an onboard GPS which transmits altitude and location information to the PIC on the ground in real time. A phone APP, SkyRadar, uses separate GPS data to confirm altitude and location data for the launch location. It is stipulated that the UAS will be operated below 400 ft AGL at all times and during daylight hours only.

14 C.F.R. §91.151(a): Fuel Requirements for Flight in VFR Conditions

Section 91.151(a) prohibits an individual from beginning "a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to he first point of intended landing, and, assuming normal cruising speed – (1) During the day, to fly after that for at least 30 minutes . . . ."

The UAV is 100% electric and two low battery alerts are issued - per the operating documents, the UAV will be landed at the first alert. Flights are expected to be 5-10 minutes each, and the UAS has an automated function which results in immediate safe landing which is initiated when a low battery is detected. The PIC will not begin a flight unless there is more than 75% battery power remaining.

91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), 91.417(a) and (b)
The petitioner states that an exemption from 91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) and (b) *Maintenance inspections* may be required and should be granted since they only apply to aircraft with an airworthiness certificate. However, the petitioner states as a safety precaution preflight inspections will be performed on the UAS before each flight as outlined in the operating documents (check lists) provided.

(4) How this exemption would affect the public as a whole:

Low altitude aerial photography and video can provide a more detailed visual perspective of a real estate property, especially larger tracts. Standard aircraft cannot safely operate below 500 feet and Google Earth satellite images may not show recent changes such as timber clear cuts, excavation for development or effects of erosion. The proposed service will provide the public with an economical alternative to the noise and safety issues related to low flying aircraft or

helicopters while providing a better perspective of the subject property than can be obtained from ground level. A supporting document has been included in this filing.

(5) Reasons why would not adversely affect safety or how would provide a level of safety equal to existing rule:

- Applicant has maintained a flight and maintenance log for all aircraft from start of ownership.
- Applicant maintains current firmware and software updates for all aircraft.
- Applicant has accrued over 10 hours of logged UAS rotorcraft flight evidenced by flight and maintenance log
- Applicant has obtained "N" numbers and registration for each of the aircraft to be operated under the exemption is being requested
- DJI Aircraft firmware for the models being used includes systems for:
    - Blocking take-off in restricted areas around airports
    - Automatic Return-To-Launch-Site and land upon loss of control signal (see document provided)
    - Automatic remote monitoring and warning of low battery condition (30%)

Launch Operations Flight Kit contains:

- Operation safety procedures (document provided)
- Aircraft registration documents
- First Aid Kit
- Sectional Charts for proposed areas of operation (paper and electronic)
- Anemometer to measure local wind and temperature
- ICom IC-A21 Aircraft Navicom radio/VOR to monitor and scan aircraft frequencies where necessary or required by ATC.
- Safety cones bearing a warning sticker to mark restricted area around launch operating location when operating in public areas.
- An "observer/spotter" for all but remote practice flight operations. Observer/spotter will be required to read and acknowledge (sign) a safety procedures manual and to enhance situational awareness for the PIC (operator)
- Mobile applications to monitor TFRs, NOTAMS, Aircraft Weather data (AviationWX, AeroPlus), GPS position application and other programs to identify proximity to restricted areas (RCFlyMaps and HOVER), ADS-B/in signals (FlightRadar24), VOR distance and heading data, (SkyRadar).
- Safety Operations and Procedures Manual outlining specific procedures and restrictions, which specifies no flights within 50 feet of or over active highways or railroads, no spectators or communication with spectators within 50 feet (marked with warning cones) of flight operation area preceding or during flight operations.
- Operation Manuals for aircraft being used.
- Repair parts and tools.

(6) Summary to be published for public comment, including a brief description of the exemption being requested.

Pursuant to Section 333 of the FAA Modernizations and Reform Act of 2012 and 14 CFR Part 11, Tim Trott, operator of Southern Helicam (sUASs) equipped to conduct aerial photography, hereby applies for an exemption from the listed Code of Federal Regulations (CFRs) to allow commercial operation of sUASs, to include safety and training services, under the conditions outlined here or modified by the Federal Aviation Administration (FAA).

In the detailed explanation to follow, the exemptions being requested would allow commercial operation of two DJI Phantom series aircraft as outlined.

(7) Additional information, arguments to support request:

- Applicant has obtained N numbers and aircraft registration
- Applicant has accrued in excess of 10 hours practical experience and practice with each of the aircraft
- Applicant has completed ground school for PAR as preparation for the Operator Qualification Test indicated in the NPRM.
- Applicant has completed additional training:
  - Unmanned Experts Initial Qualification Training Course (IQT1)
  - AOPA Unmanned Aircraft Min-Course
- Applicant will only operate in reasonably safe environments that are strictly controlled, are away from power lines, elevated lights, airports and actively populated areas; and
- Applicant will conduct preflight inspections and protocols, during which safety carries primary importance.

(8) Operations outside US

(none)

The petitioner applicant requests relief from the following regulations:

Part 21 prescribes the procedural requirements for issuing and changing design approvals, productions approvals, airworthiness certificates, and airworthiness approvals.

Section 45.23(b) prescribes that when marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

Section 61.113(a) and (b) prescribes that—

> (a) no person who holds a private pilot certificate may act as a pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.
>
> (b) a private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:
>
> > (1) The flight is only incidental to that business or employment; and
> >
> > (2) The aircraft does not carry passengers or property for compensation or hire.

Section 91.7(a) prescribes that no person may operate a civil aircraft unless it is in an airworthy condition.

Section 91.7(b) prescribes that the pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight and that the PIC shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

Section 91.9(b)(2) prohibits operation of U.S.-registered civil aircraft unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Section 91.103(b) prescribes that a pilot shall for any flight, become familiar with runway lengths at airports of intended use, and takeoff and landing distance information.

Section 91.109(a) prescribes, in pertinent part, that no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.

Section 91.119 prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

> (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph
(b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and
(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

Section 91.121 requires, in pertinent part, each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "…to the elevation of the departure airport or an appropriate altimeter setting available before departure."

Section 91.151(a) prescribes that no person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, (1) during the day, to fly after that for *at least 30 minutes* [emphasis added].

Section 91.203(a) prohibits, in pertinent part, any person from operating a civil aircraft unless it has within it (1) an appropriate and current airworthiness certificate; and (2) an effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c).

Section 91.203(b) prescribes, in pertinent part, that no person may operate a civil aircraft unless the airworthiness certificate or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

Section 91.405(a) requires, in pertinent part, that an aircraft operator or owner shall have that aircraft inspected as prescribed in subpart E of the same part and shall, between required inspections, except as provided in paragraph (c) of the same section, have discrepancies repaired as prescribed in part 43 of the chapter.

Section 91.407(a)(1) prohibits, in pertinent part, any person from operating an aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of the same chapter.

Section 91.409(a)(2) prescribes, in pertinent part, that no person may operate an aircraft unless, within the preceding 12 calendar months, it has had an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

Section 91.417(a) and (b) prescribes, in pertinent part, that—

(a) Each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under

§ 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

The petitioner supports this request with the following information:

The petitioner has provided the following information, contained in his petition and supporting documentation including (attached):

- N number registration
- Aircraft registration
- Gold Seal Ground School document
- AOPA UAS safety course document
- Unmanned Experts IQT1 (UAV) course document
- Safety Operation Procedures manual
- Checklists – Preflight, logging, postflight
- Flight and maintenance log (with notarized statement)
- Observer/Spotter Checklist manual
- Supporting document from Realtor®
  Flight and Maintenance log (10+ hours flight time)
- Insurance Quotation
- DJI Operating Manual P2V (N741TT)
- DJI Operating Manual P2 Zenmuse H3-3D (N742TT)

(All hereinafter referred to as operating documents).

Exemption Request:

The petitioner requests that given the size, weight, speed, and limited operating area associated with the aircraft to be utilized, an exemption from 14 CFR part 21, Subpart H (Airworthiness Certificates) and § 91.203 (a) and (b) (Certifications required), subject to certain conditions and limitations, is warranted and meets the requirements for an equivalent level of safety under 14 CFR part 11 and Section 333 of P.L. 112-95 (Section 333).

Petitioner requests an exemption from § 45.23 *Marking of the aircraft* because his UA will not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, he states that two-inch lettering is difficult to place on such a small aircraft with dimensions smaller than the minimal lettering requirement. Regardless of this, petitioner states that he will mark his UAS in the largest possible lettering by placing assigned N number on its fuselage as required by § 45.29(f) so that he or anyone assisting as a spotter will see the markings. The lettering will be 1 inch in height.

The petitioner states that exemption from §§ 91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) and (b) *Maintenance inspections* may be required and should be granted since they only apply to aircraft with an airworthiness certificate. However, the petitioner states as a safety precaution he will perform a preflight inspection of his UAS before each flight as outlined in his operating documents. The petitioner has maintained a maintenance log for all aircraft since acquiring them. As propellers do not have serial numbers they are replaced as necessary for

signs of wear or damage.

UAS Pilot in Command (PIC)

The petitioner asserts that under § 61.113 (a) and (b) private pilots are limited to non-commercial operations, however the petitioner can achieve an equivalent level of safety as achieved by current regulations because the UAS does not carry any pilots or passengers. Petitioner further indicates that the risks of operating a UAS are far less than the risk levels inherent in the commercial activities outlined in 14 CFR part 61, et seq., thus requests an exemption from § 61.113 *Private Pilot Privileges and Limitations: Pilot in command* so as to be allowed to provide commercial services with a small (micro) UAV including flight and safety instruction.

Respectfully submitted

Tim H. Trott
Southern Helicam (Tim Trott Audio, Inc.)

FAA REGISTRY

N-Number Inquiry Results

N741TT is Reserved

Reserved N-Number

Type Reservation	Fee Paid
Mode S Code	52373774
Reserved Date	10/15/2014
Renewal Date	None
Purge Date	11/15/2015
Pending Number Change	None
Date Change Authorized	None
Reserving Party Name	TIM TROTT AUDIO INC
Street	3628 SEMINOLE LN
City	MARIANNA
State	FLORIDA
Zip Code	32448-1402
County	JACKSON
Country	UNITED STATES

FAA REGISTRY

N-Number Inquiry Results

N742TT is Reserved

Reserved N-Number

Type Reservation	Fee Paid
Mode S Code	52375663
Reserved Date	10/15/2014
Renewal Date	None
Purge Date	11/15/2015
Pending Number Change	None
Date Change Authorized	None
Reserving Party Name	TIM TROTT AUDIO INC
Street	3628 SEMINOLE LN
City	MARIANNA
State	FLORIDA
Zip Code	32448-1402
County	JACKSON
Country	UNITED STATES

Private Pilot Knowledge Test Endorsement

I certify that Tim Trott

has completed the required ground training mandated in FAR Part § 61.105 and have determined that he/she is prepared to take the Private Pilot Airplane Knowledge Test.

Russell Still, 2727474CFI
Exp: 09/15
www.OnlineGroundSchool.com

December 14, 2014
Date

Private Pilot Ground School
Certificate of Completion

This Certifies That

Tim Trott

has satisfactorily completed a course of home study for the Private Pilot, Airplane Single Engine Land certification as defined in the Code of Federal Regulations, 14 CFR Part 61.105.

This training was provided online by the Gold Seal Online Ground School.

Russell Still

Russell Still, 2727474CFI
Exp: 09/15
www.OnlineGroundSchool.com

June 18, 2014

Date

UNMANNED EXPERTS

Certificate of Training

Is Awarded to

Tim Trott

for successfully completing the

Initial Qualification Training Course (IQT1)

TRAINING TOPICS INCLUDED: Regulations & Guidance documents; Aeronautical information such as charts, NOTAMS and Aircraft Circulars; Radio Communications Procedures; Basic Small UAS Aerodynamics; Weather factors and Safe Operating Procedures.

06/29/2014	K. Gambold
Date/Location	Senior Instructor

THE

AIR SAFETY INSTITUTE

CERTIFICATE OF COMPLETION

FOR

successfully completing the Unmanned Aircraft Systems Mini-Course.

PRESENTED TO

Tim Trott

Pilot Certificate 000000000
AOPA Member 09168257
June 14, 2014

MINICOURSE

This product is eligible for
AOPA Accident Forgiveness.
Visit aopa.org/accidentforgiveness
for details.

FAA WINGS Code:
ALC-235

Bruce Landsberg
President, AOPA Foundation

Southern Helicam Safety Procedures:

Southern Helicam is a division of Tim Trott Audio, Inc (Tim Trott Productions)

SAFETY PRECAUTIONS[1]:

1. Prior to any flight the Pilot In Command (Operator) will:

    (a) Set safety cones 25 ft from launch point marking restricted area.

    (b) Monitor aircraft communications prior to launch and during flight (where warranted)

    (c) Follow the pre-flight/post-flight checklist

    (d) Record all flight operations, tests and maintenance on the Flight Log Form.

2. The Remotely Piloted Aircraft will not be flown:

    (a) In a careless or reckless manner.

    (b) At a location where model aircraft or UAV activities are prohibited.

    (c) More than 400 ft AGL or within in any restricted area without permission

    (d) Within 3 miles of any airport or within the landing zone of a designated Heliport

3. The Remotely Piloted Aircraft operator (Pilot In Command) shall:

    (a) Yield the right of way to all human-carrying aircraft.

    (b) See and avoid all aircraft and a spotter must be designated and present when appropriate. (AMA Document #540-D.)

    (c) Not fly higher than approximately 400 feet above ground level* within three (3) miles of an airport without notifying the airport operator.

    (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement. The Pilot in Command will not launch the RPA within visual range of a designated heliport.

    (e) Not exceed a takeoff weigh

    (f) Ensure the aircraft is identified with the AMA number of the owner on the inside or affixed to the outside of the remotely piloted aircraft.

    (g) Not operate aircraft with metal-blade propellers

(h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the remotely piloted aircraft.

(* Altitude and distance limits are set within aircraft firmware and controlled by GPS)

FLIGHT CONTROL[1] (RC)

1. The Pilot In Command of the Remotely Piloted Aircraft shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a restricted safety zone shall be established around the area from which all flying takes place. (AMA Document #706.) Safety Cones will be set up to mark restricted area with a warning notice.

(a) Only personnel associated with flying the Remotely Piloted Aircraft are to be allowed inside the marked restricted area, principally the Pilot In Command and the designated Observer/Spotter.

(b) The designated Observer/Spotter shall be review and acknowledge these safety procedures prior to launch.

5. Current Sector Charts will be obtained and be maintained at the flight site to assure avoidance of restricted areas.

6. No Remotely Piloted Aircraft will be flown closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located inside the restricted zone.

7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.

8. There will be no night flying (between local sunset and sunrise).

9.The pilot of an RC model aircraft shall:

(a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.

(b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.

(c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

PREFLIGHT[2]:

1. The launch area will be clear of all individuals except the Pilot in Command and the designated Observer/Spotter before take-off.

2. The flying area must be clear of all utility wires or poles and the Remotely Piloted Aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.

3. ***It shall be the Observer/Spotter's primary task to make the Pilot In Command aware of obstructions and hazards including the approach of manned aircraft or any unauthorized persons entering the designated safety zone.***

4. The Remotely Piloted Aircraft may not be flown closer than 50 feet to any structure, highway or railroad and shall not be flown above moving traffic in such a way that would prove to be a distraction to drivers.

FLIGHT GUIDELINES[3]:

- The Pilot In Command (PIC) shall be aware of and abide by FAA regulations, NOTAMs, and TFRs
- Manned aircraft have right-of-way at all times
- The Pilot In Command (PIC) shall avoid flight over persons or property
- The Pilot In Command (PIC) shall not fly while under the influence of alcohol or drugs
- The Pilot In Command (PIC) shall remain in line of sight with the aircraft at all times
- The Pilot In Command (PIC) shall have a clear understanding of the FAA regulations applicable to the airspace used
- Flight operation will not be undertaken unless the aircraft is deemed airworthy by the Pilot In Command.

MAINTENANCE AND LOG BOOK RECORDS[3]:

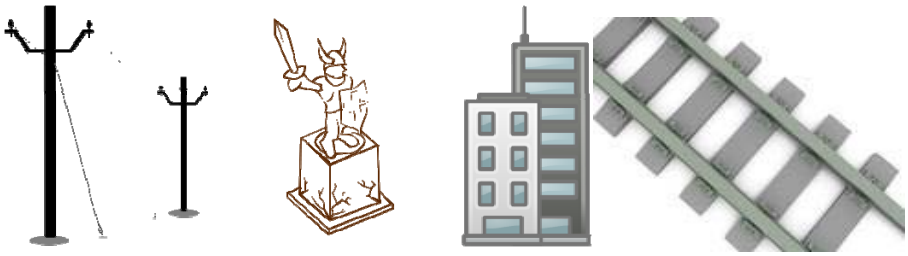
- Any damage or worn out parts are to be replaced or repaired before the next flight occurs. Log book records will be used to log aircraft flight times as well as all maintenance, repairs, and replacements.
- Each aircraft should have an identifying (manufacturer's serial) number that can be connected to the aircraft and corresponding aircraft log book.
- The flight and maintenance logbook forms shall be made available to the FAA for inspection.
- All repaired aircraft shall be tested, deemed airworthy, and so noted in the maintenance logbook before resumption of duties.
- The flight log shall contain the names of the Pilot In Control and the Observer/Spotter, flight location, launch time, weather conditions, flight duration and notations about any incidents

which may occur.

ANNOTATIONS:

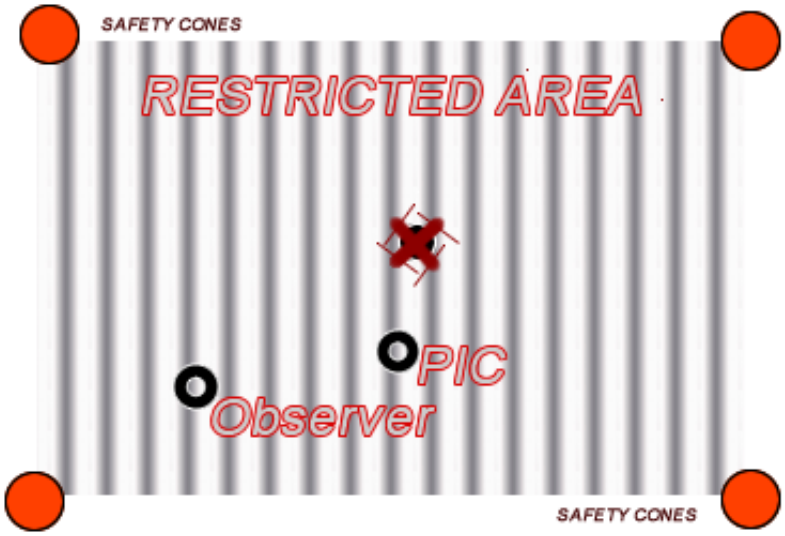
[1]Adapted from Academy of Model Aeronautics National Model Aircraft Safety Code Effective January 1, 2014
[2]Adapted from FAA Advisory Circular 91-57, June 9, 1981
[3]Adapted from Radio Controlled Aerial Platform Association General Guidelines

Member:



RESTRICTIONS (SUMMARY):

- UAV may not fly above 400 ft AGL
- UAV may not operate within 50 ft or over highway traffic
- UAV may not operate within 50 ft of operating railroad
- UAV may not operate within 50 ft of any building or public monument
- UAV may not operate in proximity to any Heliport landing zone (hospital, etc.)
- UAV may not operate within 5 miles of an airport without notification of the airport operator, Control Tower or Flight Services
- UAV may not be flown in a reckless or hazardous manner
- UAV may not be flown in Restricted Airspace or any Prohibited Area
  UAV may not be flown closer than 25 ft to any individual except for the pilot and observer/spotter
- UAV must be operated within Visual Line of Sight at all times during flight
- UAV may not be operated between one hour after local sunset and one hour before local sunrise.
- UAV may not be operated directly over spectators or crowds
- UAV may not obstruct emergency vehicles or aircraft



OBSERVER/SPOTTER DUTIES:

- Mark and maintain the Restricted Operational Area (50 ft) around Launch Area
- Read review the Safety Operations Manual prior to flight
- Do not allow anyone other than Pilot In Control (PIC) and Observer/Spotter within the Restricted Operational Area
- Observe and Discuss all power lines, light poles, buildings and other obstructions with the PIC prior to take-off
- Watch for and notify the PIC of any approaching aircraft.
- Discuss flight goals with PIC
- If assigned, inform PIC of number of satellites indicated (6 or more)
- If assigned, notify PIC when satellite number is 6 or below
- If assigned note Remote Altitude readings.
- Do not approach or touch the UAV at any time when props are turning
- Alert any observers to take offs and landings. (“STAY CLEAR”)

As a designated Observer/Spotter I acknowledge that
I have read and reviewed the Southern Helicam Safety Procedures:

Name:	Signature:	Date:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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Revision date: 6/02/2014


AOPA
Southern Helicam AIR PHOTO CHECK LIST- BIRD # 3
www.SouthernHelicam.com
REGISTRATION NOT TRANSFERABLE
TROTT TIM H
3628 SEMINOLE LN
MARIANNA FL 32448-1402
Individual
February 13, 2015
February 28, 2015
Johnson & Johnson
First Aid Kit
SAFE TRAVELS
70 Items
BAND-AID
NEOSPORIN
Anemometer
MODE
SET
Labelle
108 oil
TROTT

OBSERVER/SPOTTER DUTIES:

Mark and maintain the Restricted Operational Area (50 ft) around Launch Area
Read review the Safety Operations Manual prior to flight
Do not allow anyone other than Pilot In Control (PIC) and Observer/Spotter within the Restricted Operational Area
Observe and Discuss all power lines, light poles, buildings and other obstructions with the PIC prior to take-off
Watch for and notify the PIC of any approaching aircraft.
Discuss flight goals and plan with PIC
If assigned, inform PIC of number of satellites indicated (6 or more)
If assigned, notify PIC when satellite number is 6 or below
If assigned note Remote Altitude readings.
Do not approach or touch the UAV at any time when props are turning.
Alert any bystanders to take offs and landings. (“Clear Props!”)
Advise bystanders that they may not talk to the pilot until the conclusion of flight activity.

RESTRICTIONS (SUMMARY):

UAV may not fly above 400 ft AGL
UAV may not operate within 50 ft of operating railroad
UAV may not operate within 50 ft or over highway traffic
UAV may not operate within 50 ft of any building or public monument
UAV may not operate in the vicinity of any Heliport (hospital, etc.)
UAV may not operate within 3 miles of an airport without notification of the airport operator, Control Tower or Flight Services
UAV may not be flown in a reckless or hazardous manner
UAV may not be flown in Restricted Airspace or any Prohibited Area
UAV may not be flown closer than 25 ft to any individual except for the pilot and observer/spotter
UAV must be operated within Visual Line of Sight at all times during flight
UAV may not be operated directly over spectators or crowds
UAV may not obstruct emergency vehicles or aircraft

(Rev 8/17/14)

AIR PHOTO PREFLIGHT CHECK LIST:

CHECK LIST: P2V

- ☐ Charge Main Batteries
- ☐ Charge Repeater
- ☐ Check Motors
- ☐ Check Props for Wear
- ☐ Check Controller Power
- ☐ Test Anemometer
- ☐ Check Radio

CHECK LIST: P2 H3-3D

- ☐ Charge Main Batteries
- ☐ Charge Black Pearl Monitor
- ☐ Charge Go-Pro Camera
- ☐ Check Motors
- ☐ Check Props for Wear
- ☐ Check Controller Power
- ☐ Test Anemometer
- ☐ Check Radio

-

AIR PHOTO POST FLIGHT CHECK LIST:

CHECK LIST: P2V—P2/H3

- ☐ Check Motors for Wear or Heat
- ☐ Check Main Batteries for Signs of Heat or Damage
- ☐ Check Props for Damage or Wear (Replace as needed)
- ☐ Check for Any Missing or Broken Parts—Note Any Damage
- ☐ Turn Off Camera (P2/H3)
- ☐ Turn Off Controller Power
- ☐ Turn Off Anemometer
- ☐ Turn Off Monitor (P2/H3)
- ☐ Turn Off Radio
- ☐ Download Images and Video
- ☐ _____

Post Flight Maintenance Notes:

Signed: _____ Date:_____

AIR PHOTO CHECK LIST: N741TT

DATE:_____ LOCATION:_____ Satellites: _____

WIND: _____ TEMPERATURE: _____ Deg. F. CONDX:_____ Batt# _____

CHECK LIST:

- ☐ Check Wind and Temperature
- ☐ Check for Obstructions
- ☐ Install/Check Battery Level ___ %
- ☐ Turn on Range Extender
- ☐ Turn on Remote Control
- ☐ Turn on Controller (2 beeps)
- ☐ Set Wi-Fi /Turn on DJI Vision App
- ☐ Verify GPS (Green flashes—Screen)
- ☐ Start Video
- ☐ Take Off/Land
- ☐ Stop Video
- ☐ Power Down Phantom
- ☐ Turn Off Controller/Range Ext.

Flight Start Time:_____ Stop Time:_____ Max Altitude:_____

Notes:_____

_____Pilot: _____ Observer:_____

AIR PHOTO CHECK LIST: N742TT

DATE:_____ LOCATION:_____ Satellites: _____

WIND: _____ TEMPERATURE: _____ Deg. F. CONDX:_____ Batt# ____

CHECK LIST:

- ☐ Check Wind and Temperature
- ☐ Check for Obstructions
- ☐ Install/Check Battery Level ___ %
- ☐ Turn on Remote Control
- ☐ Turn on Camera
- ☐ Turn on Phantom 2
- ☐ Turn on Remote Screen
- ☐ Verify GPS (Green flashes—Screen)
- ☐ Start Video
- ☐ Take Off/Land
- ☐ Stop Video & Turn off Camera
- ☐ Power Down Phantom
- ☐ Turn Off Controller

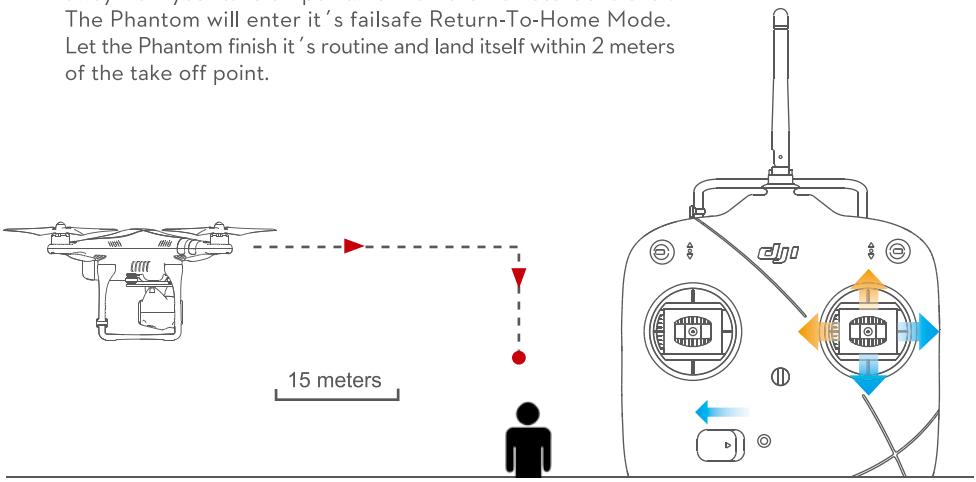
Flight Start Time:_____ Stop Time:_____ Max Altitude:_____

Notes:_____

Emergency Situations

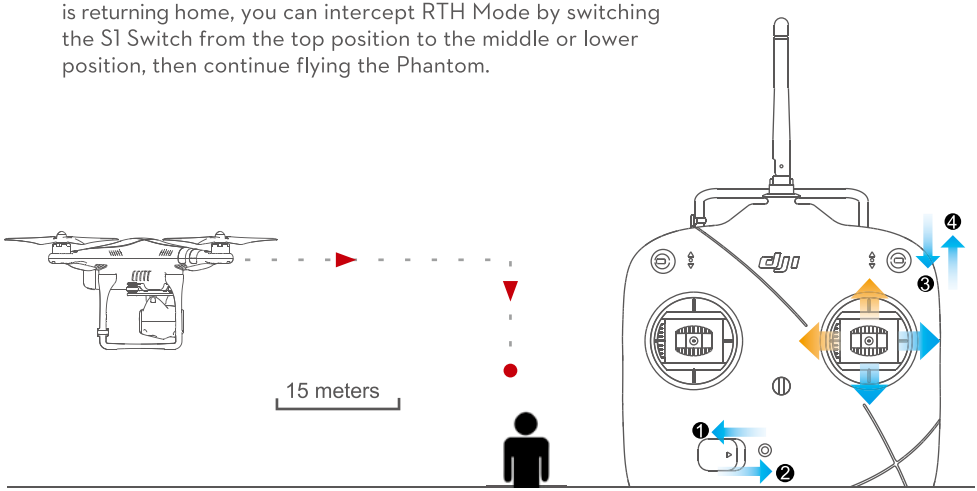
1 Return Home & Land Mode

Be sure you are in a large open area. Before you take off, make sure you have a good GPS lock by ensuring your LED indicators are flashing Green. Fly the Phantom at least 50ft away from your take off point. Turn off the Remote Controller. The Phantom will enter it's failsafe Return-To-Home Mode. Let the Phantom finish it's routine and land itself within 2 meters of the take off point.



2 Intercepting Return Home & Land Mode

Be sure you are in a large open area. Before you take off, make sure you have a good GPS lock by ensuring your LED indicators are flashing Green. Fly the Phantom 50ft away from your take off point. Turn off the Remote Controller. The Phantom will enter it's failsafe Return-To-Home Mode. When the Phantom is returning home, you can intercept RTH Mode by switching the S1 Switch from the top position to the middle or lower position, then continue flying the Phantom.



PHANTOM 2 User Manual V1.2

For PHANTOM 2 Flight Controller Firmware version V3.08

& PHANTOM 2 Assistant version V3.4

& PHANTOM RC Assistant version V1.1

2014.10

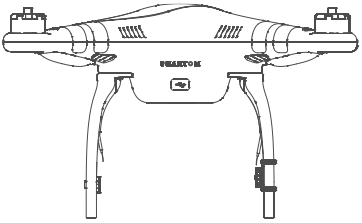
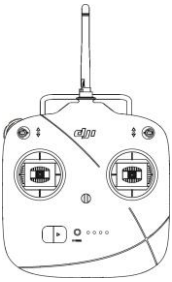
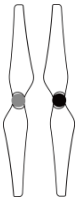
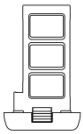
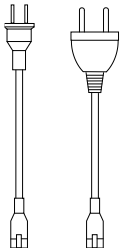
Congratulations on purchasing your new DJI product. Please thoroughly read the entire contents of this manual to fully use and understand the product.

It is advised that you regularly check the PHANTOM 2's product page at **www.dji.com** which is updated on a regular basis. This will provide services such as product information, technical updates and manual corrections. Due to any unforeseen changes or product upgrades, the information contained within this manual is subject to change without notice.

If you have any questions or concerns regarding your product, please contact your dealer or DJI Customer Service.

Content

In the Box

PHANTOM 2	Remote Control-2.4GHz	Propeller Pair
		
Intelligent Battery	Charger	Plug Set
		
Screwdriver	Assistant Wrench	Cables
		
Micro-USB Cable	Screws	Accessories Box
		

Legend

Forbidden(Important) Caution Tip Reference

1. PHANTOM 2 Aircraft

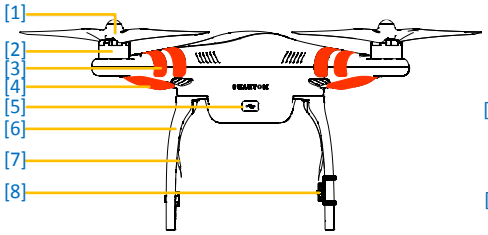


Figure 1-1

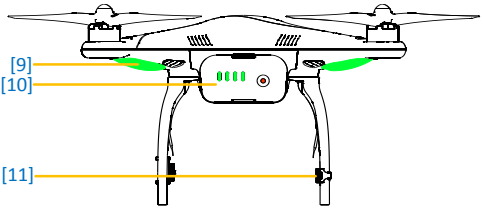


Figure 1-2

[1]Propeller [2]Motor [3]Front Side [4]Front LEDs [5]Micro-USB Port [6]Landing Gear [7]Receiver Antenna [8]CAN-Bus Connector [9]LED Flight Indicators [10]DJI Intelligent Battery [11]Compass

1.1 Built-in Flight Control System Instructions

The built-in flight control system is used to control the entire aircraft's functions in flight such as Pitch (forwards and backwards), Roll (left and right), Elevator (up and down) and Yaw (turn left or right). The flight controller contains the MC (Main Controller), IMU, GPS, compass, receiver.

The IMU (Inertial Measurement Unit) has a built-in inertial sensor and a barometric altimeter that measures both attitude and altitude. The compass reads geomagnetic information which assists the GPS (Global Position System) to accurately calculate the aircrafts position and height in order to lock the aircraft in a stable hover. The receiver is used to communicate with the remote control and the MC acts as the brains of the complete flight control system connecting and controlling all the modules together.

The PHANTOM 2 can be configured in the Assistant, by choosing Naza-M mode or Phantom 2 mode. This manual is for Phantom 2 mode. Please refer to the Naza-M V2 Quick Start Manual for more information.

1.2 Connections with Other DJI Products

PHANTOM 2 is compatible with other DJI products, including ZENMUSE H3-2D and H3-3D gimbal , iOSD mini , iOSD Mark II. Below are connections for these products and wireless video transmission module.

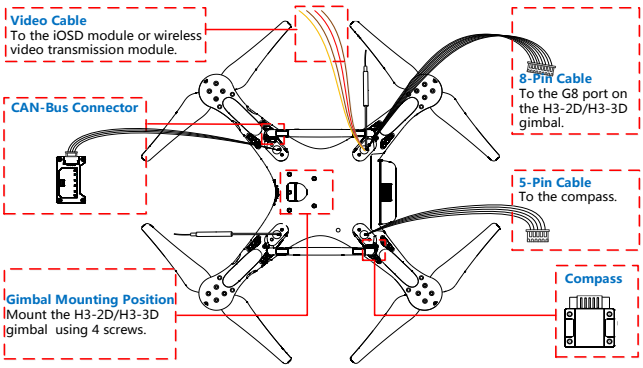


Figure 1-3

Important Notes of Using with Other DJI Products

(1) The video cable can provide power for the wireless video transmission module with a battery voltage (11.1V~12.6V) and a maximum current 2A.

(2) Make sure the working current of the wireless video transmission module you connect can work with an operational voltage between 11.1V~12.6V and the total working current of the iOSD and wireless video transmission module is under 2A, as an overcurrent will damage the central board's components. If the total current exceeds 2A, please be sure to provide power supplied from a separate power source for the wireless video transmission module.

(3) PHANTOM 2 uses a 2.4GHz RC system. To avoid communication interference, it's not recommended to use other 2.4GHz devices (including 2.4G Wi-Fi or 2.4G wireless video transmission module) except the 2.4G Bluetooth and 2.4G Datalink.

(4) Be sure to keep the wireless video transmission module and other communicating devices away from the compass during installation and connection to avoid interference.

(5) To improve the compatibility with ZENMUSE gimbals, the latest factory deliveries of PHANTOM 2 has updated to the Version 2 shown below. H3-2D/H3-3D gimbal can be directly installed for the Version 2 while for Version 1, a H3-3D adapter kit (coming soon) is required to install the H3-3D gimbal.

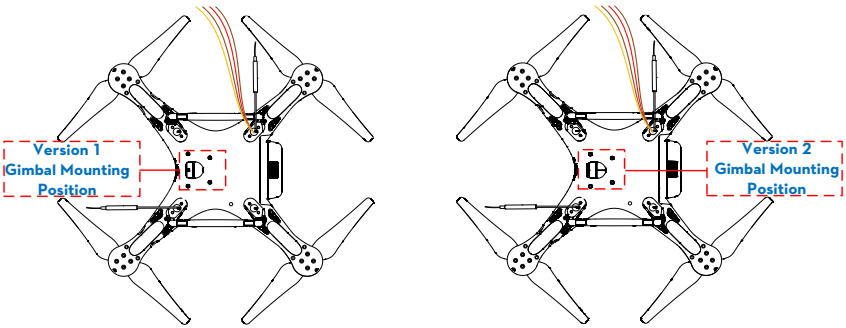


Figure 1-4

(6) When using the H3-3D gimbal, please connect the 8-Pin cable of PHANTOM 2 to the G8 port of H3-3D shown below.

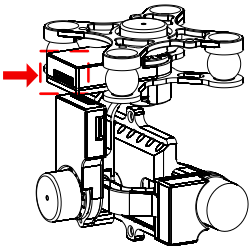


Figure 1-5

Connections with Other DJI Products

(1) Connecting the H3-2D and H3-3D gimbal and wireless video transmission module, the figure below uses H3-2D as an example.

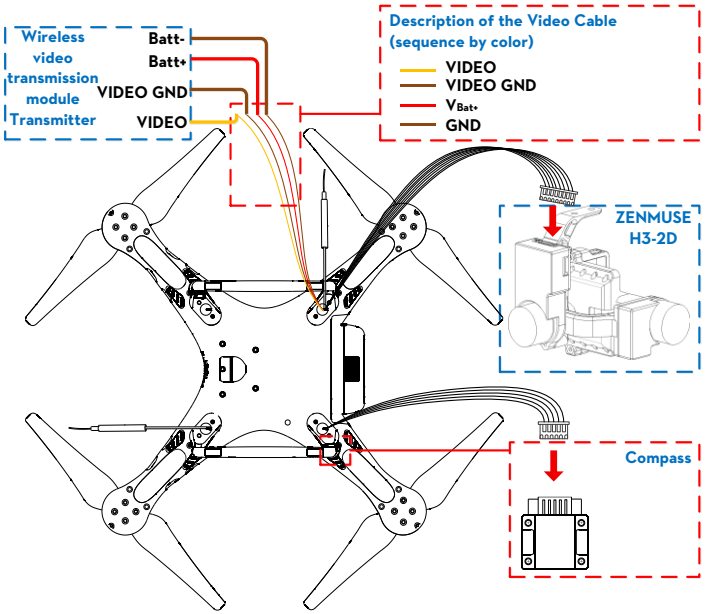


Figure 1-6

(2) Connecting the H3-2D and H3-3D gimbal, iOSD mini and wireless video transmission module, the figure below uses H3-2D as an example.

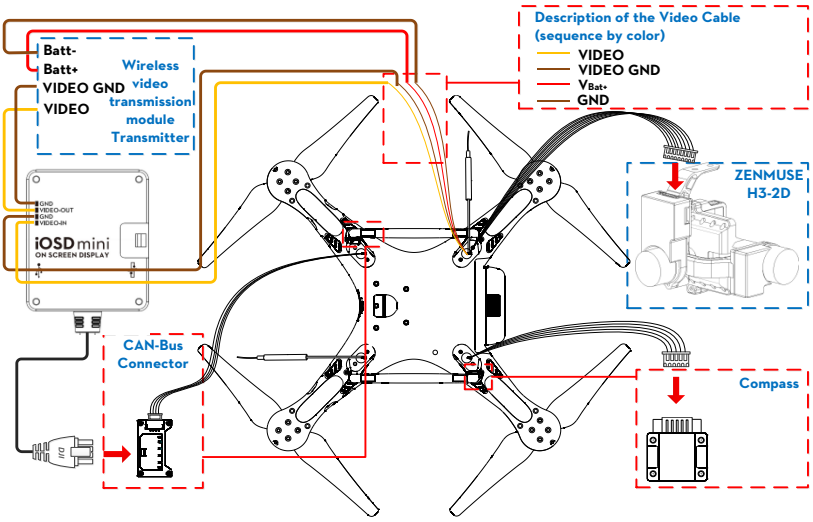


Figure 1-7

(3) Connecting the H3-2D and H3-3D gimbal, iOSD mini and DJI specified wireless video transmission module AVL58, the figure below uses H3-2D as an example.

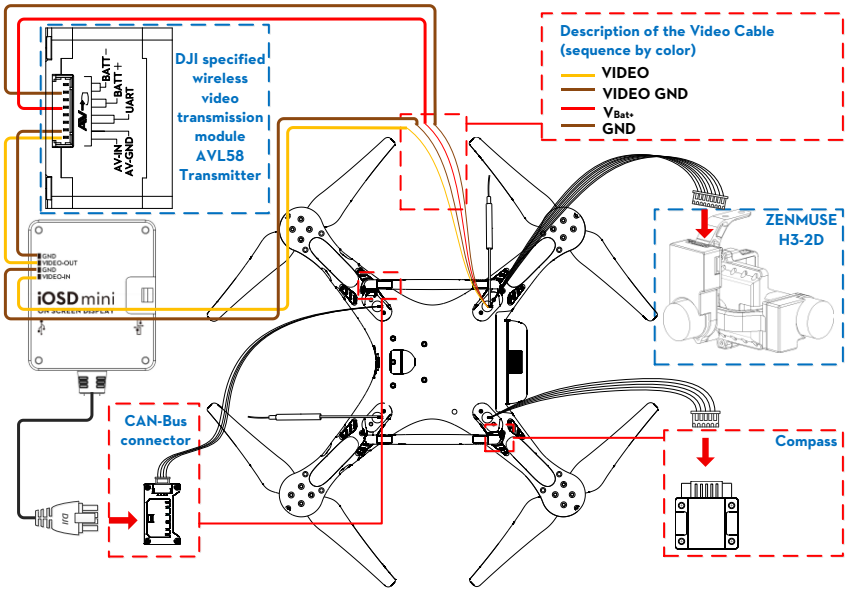


Figure 1-8

We recommend connecting the V_{Bat+} port of the video cable to the two BATT+ ports of the AVL58 simultaneously. The same is true of the GND port of the video cable and two BATT- ports.

(4) Connecting the H3-2D and H3-3D gimbal, iOSD Mark II and wireless video transmission module, the figure below uses H3-2D as an example.

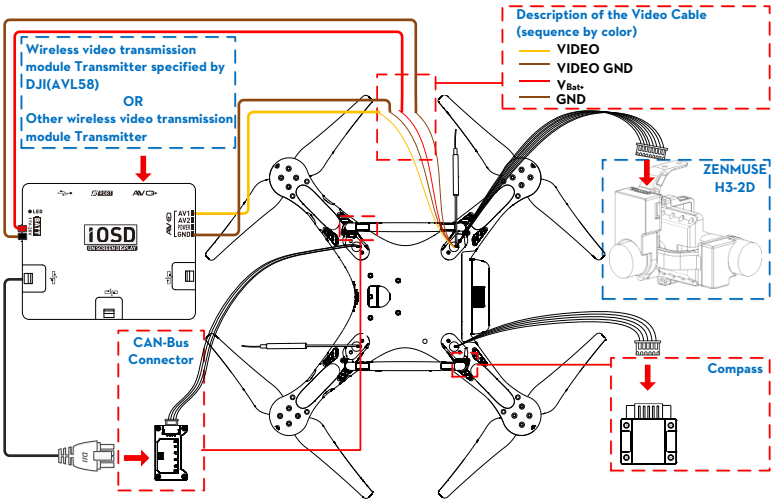
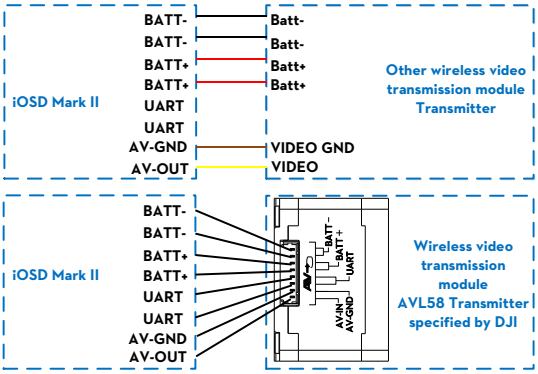


Figure 1-9

The diagram below illustrates the conneciton between the iOSD Mark II and the wireless video transmission module.



Use the 8-Pin cable in the iOSD Mark II package when connecting to the DJI specified wireless video transmission module AVL58.

(5) Using the iPad Ground Station

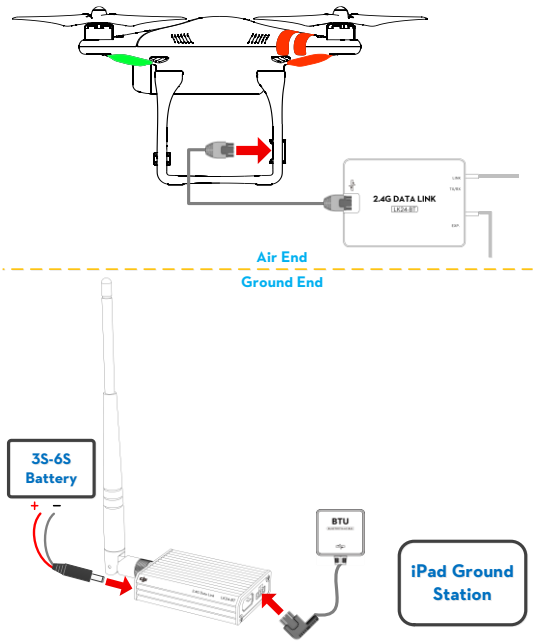


Figure 1-10

Connect the Air End of 2.4G Bluetooth Datalink to a spared CAN-Bus port of iOSD if an iOSD is used.

(6) Using the PC Ground Station

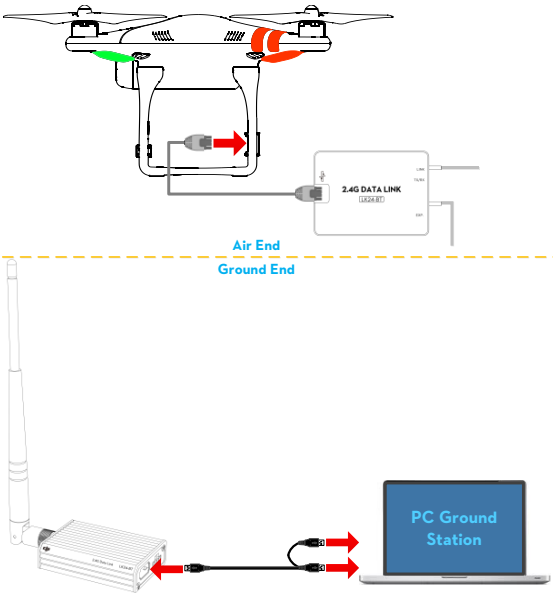
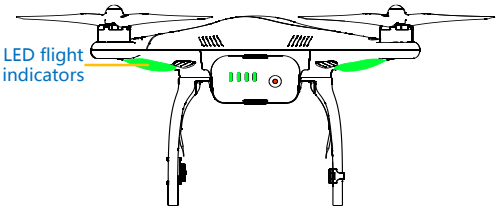


Figure 1-11

1.3 LED Flight Indicators Description

1. **LED flight indicators** are used to show the aircraft's current status. Once powered on, the indicators will light up.

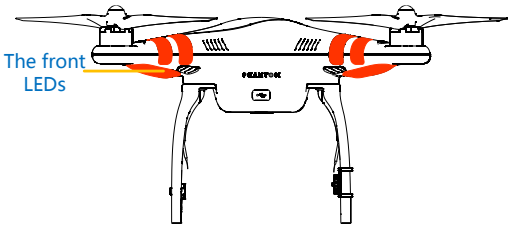


Aircraft in Normal status	Descriptions
	Power On Self-Test
	Warming Up & Aircraft cannot take off during warming up
	Ready to Fly
	Ready to Fly (non-GPS)
Aircraft in abnormal status	**Warnings and errors**
	Remote Control Signal Lost
	1st Level Low Battery Capacity Warning
	2nd Level Low Battery Capacity Warning
	Not Stationary or Sensor Bias is too big
	Errors & Aircraft cannot fly.
	Compass data abnormal because of ferro-magnetic interference or the compass needs calibration.

⚠ (1) The LED indicators diagram above are for Phantom 2 mode. In Naza-M mode, LED indicators will work according to the Naza-M flight control system.

(2) Connect to the PHANTOM 2 Assistant for detailed information about warnings and errors.

2. The front LEDs are for indicating where the nose of the aircraft is. They light up solid red only after the motors have spooled up.



1.4 Notes for PHANTOM 2 using with other DJI products

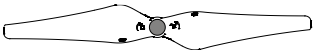
Before using PHANTOM 2 with other DJI products, users should connecting the products correctly and upgrade the firmware as requirements below .

Items to upgrade	Firmware versions required	Assistant for upgrading	Assistant version
P330CB (built-in central board)	V1.0.1.19 or above	PHANTOM 2	V1.08 or above
Zenmuse H3-2D	CMU V1.0 , IMU V1.6 or above	PHANTOM 2	V1.08 or above
iOSD Mark II	V3.01 or above	iOSD	V4.0 or above
iOSD mini	V1.06 or above	iOSD	V4.0 or above

*The iOSD Assistant is applied to both iOSD Mark II and iOSD mini.

2 Propellers

PHANTOM 2 uses the original 9-inch propellers which are classified by the color of each central nut. Damaged propellers should be replaced by purchasing new ones if necessary.

Propellers	Grey Nut (9450)	Black Nut (9450 R)
Diagram		
Assembly Location	Attach to the motor thread that **does not have a black dot**.	Attach to the motor thread that **has a black dot**.
Fastening/Un-fastening Instructions	 Lock: Tighten the propeller in this direction. Unlock: Remove the propeller in this direction.	

2.1 Assembly

1. (Figure 2-1) Remove the four warning cards from the motors after you've read them.
2. (Figure 2-2) Prepare the two grey nut propellers and two black nut propellers. Make sure to match the black nut propellers with the correctly marked black dot motors. Tighten the propellers according to the fastening instructions.

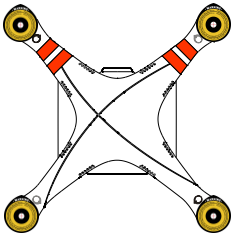


Figure 2-1

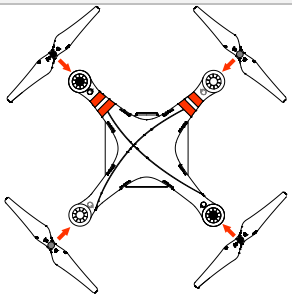


Figure 2-2

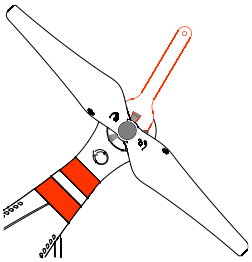


Figure2-3

2.2 Disassembly

(Figure 2-3) Keep the motor deadlocked in place with the assistant wrench (or one hand) and remove the propeller according to the un-fastening instructions.

2.3 Notes

1. Propellers are self tightening during flight. DO NOT use any thread locker on the threads.
2. Make sure to match the propeller nut colors with the corresponding motors.
3. It is advised to wear protective gloves during propeller assembly and removal.
4. Check that the propellers and motors are installed correctly and firmly before every flight.
5. Check that all propellers are in good condition before flight. DO NOT use any ageing, chipped, or broken propellers.
6. To avoid injury, STAND CLEAR of and DO NOT touch the propellers or motors when they are spinning.
7. ONLY use original DJI propellers for a better and safer flight experience.

3 Remote Control

The PHANTOM 2 remote control can be configured in the PHANTOM RC Assistant. The sticks mode is Mode 2 on delivery.

⚠	For upgraded remote control (models: NDJ6 or NRC900), select “Upgrade Version” in Phantom Assistant. For basic remote control (models: DJ6 or RC900), select “Basic Version” in Phantom Assistant.

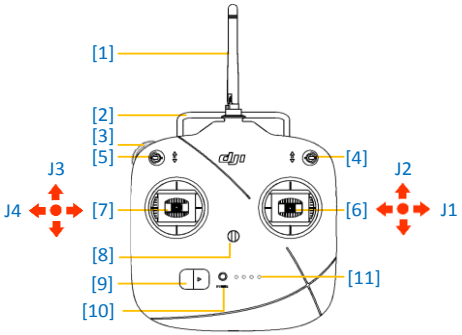


Figure 3-1

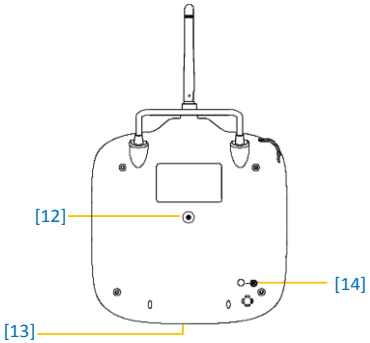


Figure 3-2

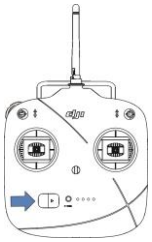
[1]Antenna [2]Carrying Handle [3]Left Dial [4]3-Position Switch S1 [5]3-Position Switch S2 [6]Joystick1(J1;J2) [7]Joystick2(J3;J4) [8]Neck Strap Attachment [9]Power Switch [10]Power Indicator

[11]Battery Level Indicators LED1/LED2/LED3/LED4 (from left to right) [12]Trainer Port

[13]Battery Charge & RC Assistant Port (micro-USB port) [14] Potentiometer

3.1 Power on the Remote Control

1. Set the S1 and S2 switches to the upper most position and ensure both joysticks are at the mid-point position. Then toggle on the power switch.
2. Push the power switch to the right to power on the remote control. If the power LED indicator is solid on, the remote control is functioning normally. The battery level indicators display the current battery level.



⚠

1. Please make sure the battery level of remote control is enough. If the low voltage warning alert sounds (refer to <Remote Control Power LED Indicator Status>), please recharge the battery as soon as possible.
2. Charge the remote control’s battery by using the included micro-USB cable. Using the incorrect type of charging cable may cause damage.
3. Turn off the remote control before charging. The power LED indicator will display solid red when charging is in progress. The LED indicators will display solid green when the battery is fully charged.

3.2 Remote Control LED Indicator Status

3.2.1 Remote Control Power LED Indicator Status

Power LED Indicator	Sound	Remote Control Status
	None	Functioning normally.
	None	Charging(remote control is powered off)
	None	Remote control joysticks calibration error, need to be re-calibrate.
	BB---BB---BB	Low voltage (from 3.5V-3.53V), recharge the remote control.
	B-B-B.....	Critical low voltage (from 3.45V-3.5V). Recharge the remote control immediately.
	B--B--B.....	Alert will sound after 15 minutes of inactivity. It will stop once you start using the remote control.

The remote control will power off automatically when battery voltage drops below 3.45V. Land and recharge the battery as soon as possible when the low voltage alert occurs to avoid loss of control during flight.

3.2.2 Remote Control Battery Level Indicator Status

The battery level indicators will show the current battery level during both the discharging process. The following is a description of the indicators.

: The LED is solid on : The LED will blink regularly

: The LED is light off

Discharging process				
LED1	LED2	LED3	LED4	Current battery level
				75%~100%
				50%~75%
				25%~50%
				12.5%~25%
				0%~12.5%
				<0%

3.3 Antenna Orientation

The remote control's antenna should point skywards without obstructions for maximum communication range during flight.

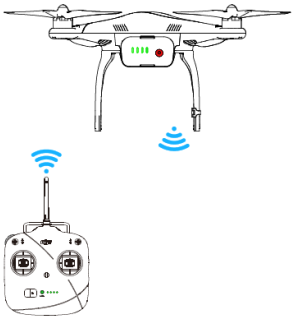


Figure 3-3

3.4 Remote Control Operation

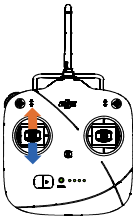
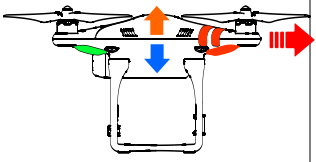
The operations of remote control are based on mode 2 stick configuration.

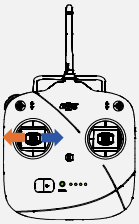
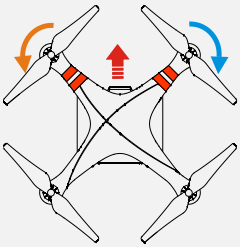
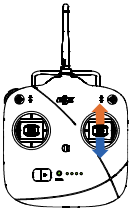
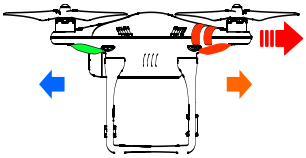
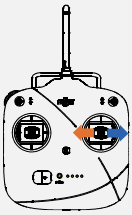
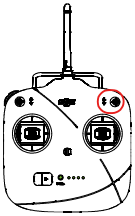
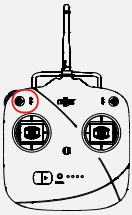
Definitions

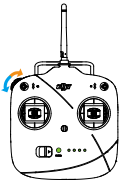
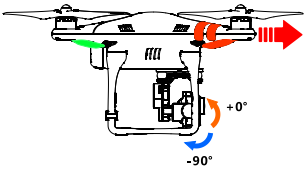
The **`stick neutral'** positions and **`stick released'** mean the control sticks of the remote control are placed at the central position.

To **`move the stick'** means that the stick of remote control is pushed away from the central position.

Slide Lever is used for the pitch control of the H3-2D and H3-3D gimbal.

Remote Control (Mode 2)	**Aircraft** (nose direction)	**Operation details**
		The throttle stick controls aircraft altitude/elevation. Push the stick up and the aircraft will rise. Pull the stick down and the aircraft will descend. The aircraft will automatically hover and hold its altitude if the sticks are centered. Push the throttle stick above the centered (mid-point) position to make the aircraft take off. When flying, we suggest that you push the throttle stick slowly to prevent the aircraft from sudden and unexpected elevation changes.

		The yaw stick controls the aircraft rudder. Push the stick left and the aircraft will rotate counter clock-wise. Push the stick right and the aircraft will rotate clock-wise. If the stick is centered, the aircraft will remain facing the same direction. The yaw stick controls the rotating angular velocity of the aircraft. Pushing the stick further away from center results in a faster aircraft rotation velocity.
		The pitch stick controls the aircraft ' s front & back tilt. Push the stick up and the aircraft will tilt and fly forward. Pull the stick down and the aircraft will tilt and fly backward. The aircraft will keep level and straight if the stick is centered. Pushing or pulling the stick further away from center will result in a larger tilt angle (maximum of is 35°) and faster flight velocity.
		The roll stick controls the aircraft ' s left & right tilt. Push the stick left and the aircraft will tilt and fly left. Push the stick right and the aircraft will tilt and fly right. The aircraft will keep level and straight if the stick is centered. Pushing the stick further away from center will result in a larger tilt angle (maximum of 35°) and faster flight velocity.
	 Position-1 Position-2 Position-3	S1 is for compass calibration. Toggle the S1 switch from position-1 to position-3 and back to position-1 at least 5 times, which will force the aircraft to enter into compass calibration mode. Users can configure position 3(bottom position) of the S1 switch to trigger the Failsafe in the Assistant.
	 OFF Course Lock point Lock Home	S2 is the IOC mode switch. IOC (Intelligent Orientation Control) function can be enabled in the Assistant when in Naza-M mode. Only use the IOC function after you are familiar with flying.

		The left dial controls the pitch of the H3-2D and H3-3D gimbal. The position of left dial determines the pitch angle relative to the horizontal level. Turn the left dial to the right to make the gimbal pitch up. Turn the left dial to the left to make the gimbal pitch down. The gimbal will keep its current position if the dial is static.

(1) For `Ready to Fly´ the aircraft will hover when all sticks are released.

(2) For `Ready to Fly (non-GPS)´ the aircraft will only keep the altitude when all sticks are released.

3.5 Linking the Remote Control & Built-in Receiver

PHANTOM 2 has a built-in receiver, the link button and indicator located on the bottom of the aircraft as illustrated in the Figure 3-4.

The link between the remote control and aircraft is already established for you so you can initially skip this procedure. If you ever replace the remote control, re-establishing the link is required.

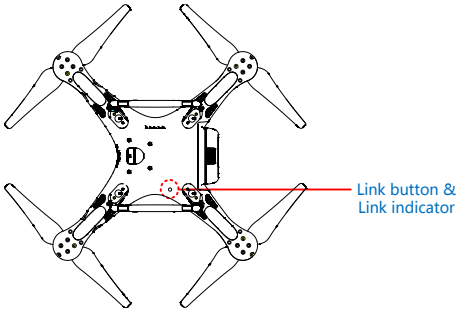


Figure 3-4

Linking procedures

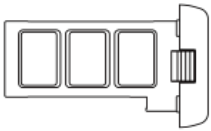
1. Power on the PHANTOM 2.
2. Turn on the remote control and place it 0.5m~1m away from the aircraft.
3. Push the link button with a thin object and hold it until the Link indicator blinks red, then release it.
4. When the Link indicator turns solid green, the link between the remote control and the built-in receiver has been successfully established.

Link Indicator	Status
	The remote control is turned off and there is no 2.4GHz signal around, please turn on the remote control.
	The receiver is ready for linking.
	There is 2.4GHz signal around but the remote control is not linked with the receiver,

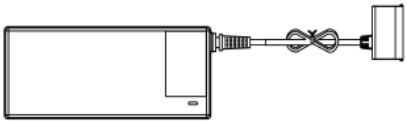
	please carry out the linking procedures.
	The remote control is linked with the receiver successfully.

4 Intelligent Battery

The intelligent battery is specially designed for the PHANTOM 2, with a battery capacity of 5200mAh, voltage of 11.1V and charge-discharge management functionality. The battery should only be charged with the DJI charger.



Intelligent Battery



Charger

DJI Intelligent Battery Functions	
(1) Balance Charging	Automatically balance the voltage of each battery cell during charging.
(2) Capacity Display	Display the current battery level.
(3) Communicating	The main controller communicates with the battery via communication ports for battery voltage, capacity, current and other information.
(4) Overcharging Protection	Charging stops automatically when the battery voltage reaches 12.8V to prevent overcharging damage.
(5) Over Discharging Protection	Discharging stops automatically when the battery voltage reaches 8.4V to prevent over discharging damage.
(6) Short Circuit Protection	Automatically cuts off the power supply when a short circuit is detected.
(7) Sleep Protection	The battery will enter sleep mode after 10 minutes of inactivity to save power. The static current is 10nA in sleep mode when the battery is powered on without connecting to other devices.
(8) Charging Temperature Detection	The battery will charge only when its temperature is within 0℃-55℃. If the battery temperature is out of this range, the battery will stop charging.

(1) Before use, please read and follow the user manual, disclaimer, and the warnings on the battery. Users take full responsibility for all operations and usage.

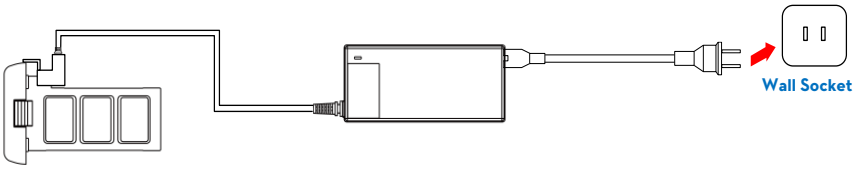
(2) The battery should only be charged with the charger provided by DJI. DJI does not take any responsibility for operation of any charger from a third party.

4.1 Charging Procedures

1. Connect the charger to a wall socket (Use the plug set if necessary).
2. Connect the battery to the charger. If the current capacity of the battery is over 75%, you should power on the battery to begin charging.
3. The Battery Level indicators display current capacity level as the battery charges. Please refer to battery

level indicator description for details.

4. The battery is fully charged when the Battery Level indicator lights are off. Please disconnect the charger and battery when the charging is completed.



4.2 Install the Battery

Push the battery into the battery compartment correctly as the following diagram shows. Make sure to push the battery into the compartment until you hear a `click' sound.

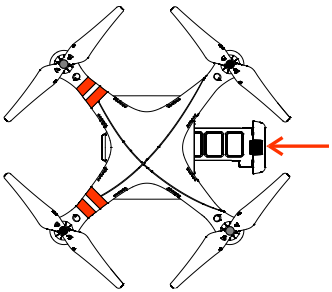


Figure 4-1

An incorrectly inserted battery may cause one of the following to occur: (1) Bad contact. (2) Unavailable battery information. (3) Unsafe for flight. (4) Unable to take off.

4.3 Battery Usage

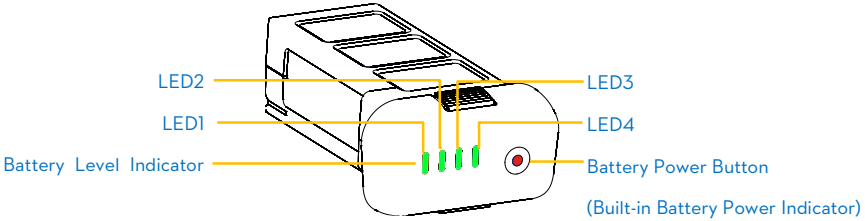


Figure 4-2

(1) Checking the battery level: When the battery is powered off; pressing the battery power button once will indicate the current battery level. Refer to < Battery Level Indicator Description> for details.

(2) Powering on: When the battery is powered off; press the battery power button once and then press and hold for 2 seconds to turn on the intelligent battery.

(3) Powering off: When the battery is powered on; press the battery power button once and then press and hold for 2 seconds to turn off the intelligent battery.

(4) Checking the battery life: When the battery is powered off; press and hold the battery power button for 5 seconds to check the battery life. The battery level indicators will show the life and the battery power indicator will blink for 10 seconds, then all LEDs will light out and the intelligent battery will turn off. Refer to < Battery Level Indicator Description> for details.

More battery information is available in the battery tab of the PHANTOM 2 Assistant.

4.4 Description of the Battery Level Indicator

The battery level indicators will show the current battery level during both the charging and discharging process as well as battery life. The following is a description of the indicators.

■ : The LED is solid on ● : The LED will blink regularly

■ : The LED is light off

Charging process				
LED1	LED2	LED3	LED4	Current battery level
●	■	■	■	0%~25%
●	●	■	■	25%~50%
●	●	●	■	50%~75%
●	●	●	●	75%~100%
■	■	■	■	Full charged

Discharging process				
LED1	LED2	LED3	LED4	Current battery level
■	■	■	■	87.5%~100%
■	■	■	●	75%~87.5%
■	■	■	■	62.5%~75%
■	■	●	■	50%~62.5%
■	■	■	■	37.5%~50%
■	●	■	■	25%~37.5%
■	■	■	■	12.5%~25%
●	■	■	■	0%~12.5%
■	■	■	■	<0%

Battery life				
LED1	LED2	LED3	LED4	Current battery life
■	■	■	■	90%~100%

■	■	■	●	80%~90%
■	■	■	■	70%~80%
■	■	●	■	60%~70%
■	■	■	■	50%~60%
■	●	■	■	40%~50%
■	■	■	■	30%~40%
●	■	■	■	20%~30%
■	■	■	■	Less than 20%

4.5 Correct Battery Usage Notes

1. Never plug or unplug the battery into the aircraft when it is powered on.
2. The battery should be charged in an environment that is between 0℃ to 40℃, and be discharged in an environment that is between -20℃ to 50℃. Both charging and discharging should be in an environment where the relative humidity is lower than 80%.
3. It's recommended to charge and discharge the battery thoroughly once every 20 charge/discharge cycles. Users should discharge the battery until there is less than 8% power left or until the battery can no longer be turned on. Users should then fully recharge the battery to maximum capacity. This power cycling procedure will ensure the battery is working at its optimal level.
4. For long term storage please place the battery with only a 40~50% capacity in a strong battery box securely. We recommend discharging and charging the battery completely once every 3 months to keep it in good condition. The capacity should be varied in such a cycle (40%~50%)—0%—100%—(40%~50%).
5. It's suggested you purchase a new battery after you have discharged your current battery over 300 times. Please completely discharge a battery prior to disposal.
6. It's suggested that you purchase a new battery if the current battery is swollen or damaged in any way.
7. Never try to recharge or fly with a battery that is swollen or damaged in any way.
8. Never charge the battery unattended. Always charge the battery on a non-flammable surface such as concrete and never near any flammable materials.
9. Safety is extremely important and users can get more information in the DISCLAIMER.

5 Calibrating the Compass

IMPORTANT: Make sure to perform the Compass Calibration procedures prior to the first flight.

The compass is very sensitive to electromagnetic interference which causes abnormal compass data and leads to poor flight performance or even flight failure. Regular calibration of the compass enables the compass to perform at its optimal level.

5.1 Calibration Warnings

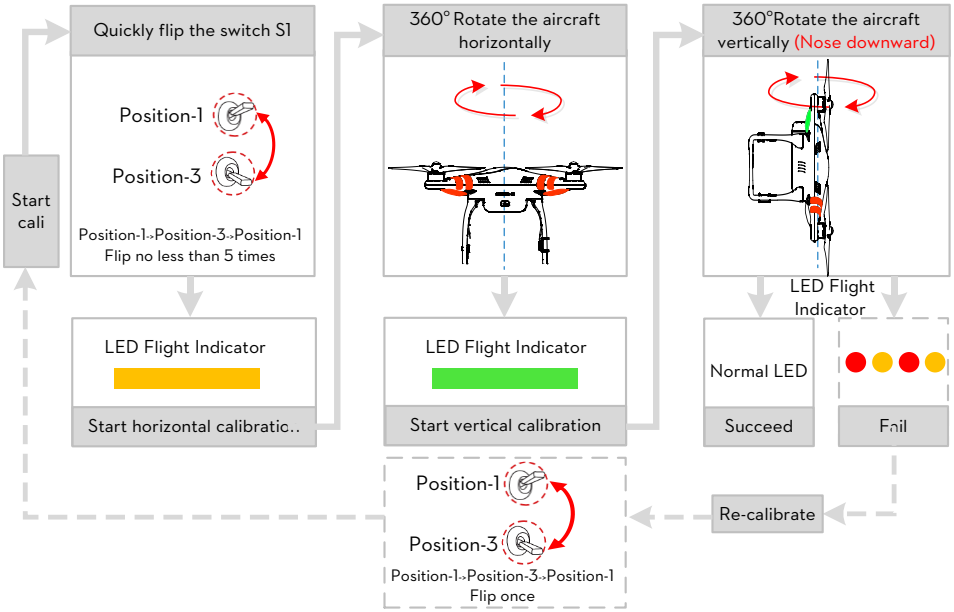
(1) DO NOT calibrate your compass where there is a possibility for the existence of strong magnetic interference such as magnetite, parking structures, and steel reinforcement underground.

(2) DO NOT carry ferromagnetic materials with you during calibration such as keys or cellular phones.

(3) Compass Calibration is very important; otherwise the flight control system will work abnormally.

5.2 Calibration Procedures

Please carry out the calibrating procedures in the flight field before flight. Please watch the quick start video of the PHANTOM 2 for more compass calibration details.



5.3 When Recalibration is required

(1) When Compass Data is abnormal, the LED flight indicator will blink alternating between red and yellow.

(2) Last compass calibration was performed at a completely different flying field/location.

(3) The mechanical structure of the aircraft has changed, i.e. changed mounting position of the compass.

(4) Evident drifting occurs in flight, i.e. the aircraft doesn't fly in straight lines.

6 Flight

6.1 Flying Environment Requirements

(1) Before your first flight, please allow yourself some flight training (Using a flight simulator to practice flying, getting instruction from an experienced person, etc.).

(2) DO NOT fly in bad weather, such as rain or wind (more than moderate breeze) or fog.

(3) The flying field should be open and void of tall buildings or other obstacles; the steel structure within buildings may interfere with the compass.

(4) Keep the aircraft away from obstacles, crowds, power lines, trees, lakes and rivers etc.

(5) Try to avoid interference between the remote control and other wireless equipment (No base stations or cell towers around).

(6) The flight control system will not work properly at the South Pole or North Pole.

(7) Never use the aircraft in a manner that infringes upon or contravenes international or domestic lays and regulations.

6.2 Starting the Motors

A Combination Stick Command (CSC) is used to start the motors. Push the sticks according to one of the options below to start motors. Once the motors have started, release both sticks simultaneously. The same CSC is used to stop the motors.

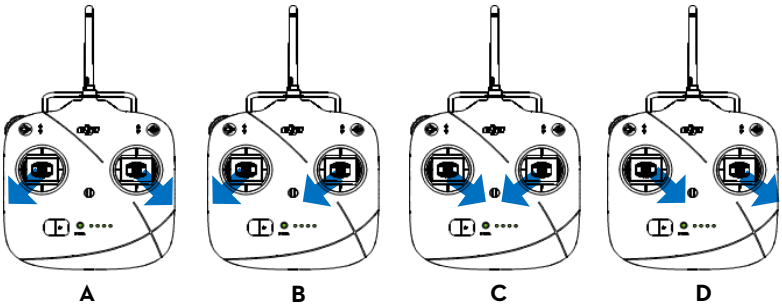


Figure 6-1

6.3 Takeoff/Landing Procedures

1. Start by placing the PHANTOM 2 on the ground with the battery level indicators facing you.
2. Turn on the remote control.
3. Power on the aircraft by turning on the intelligent battery.
4. When LED flight indicator blinks green/yellow, the PHANTOM 2 is entering Ready to Fly/Ready to Fly (non-GPS) mode. Start the motors with the CSC command.
5. Push the throttle stick up slowly to lift the aircraft off the ground. Refer to <Remote Control Operation> for more details.
6. Be sure you are hovering over a level surface. Pull down the throttle stick to descend. The stick will lock into

place and the aircraft will descend steadily.

7. After landing, leave the throttle stick down for 3 to 5 seconds to stop the motors. Return throttle stick to middle position after the motors have stopped.

You SHOULD NOT execute the CSC during normal flight! This will stop the motors and cause the aircraft to descend rapidly and drop without any type of control.

(1) When the LED flight indicator blinks yellow rapidly during flight, the aircraft has entered into Failsafe mode, refer to <Failsafe Function> for details.

(2) A low battery capacity warning is indicated by the LED flight indicator blinking red slowly or rapidly during flight. Refer to the <Low Battery Capacity Warning Function> for details.

(3) Watch the quick start video about flight for more flight information.

(4) Aircraft and battery performance is subject to environmental factors such as air density and temperature. Be very careful when flying 3000 meters (9800 feet) or more above sea level, as battery and aircraft performance may be reduced.

(5) When used with a H3-3D gimbal, a GoPro camera, and the iOSD mini, your Phantom 2 will be very close to its maximum takeoff weight. It is not recommended that you attach the Phantom 2 propeller guards at this weight. Otherwise, the aircraft will be unable to fly normally.

6.4 Failsafe Function

The aircraft will enter Failsafe mode when the connection from the remote control is lost. The flight control system will automatically control the aircraft to return to home and land to reduce injuries or damage. The following situations would make the aircraft fail to receive a signal from the remote control and enter Failsafe mode:

(1) The remote control is powered off.

(2) The remote control is powered on but the S1 is toggled in the position triggering the Failsafe (this must have been configured in the PHANTOM 2 Assistant).

(3) The aircraft has flown out of the effective communication range of the remote control.

(4) There is an obstacle obstructing the signal between the remote control and the aircraft, essentially reducing the distance the signal can travel.

(5) There is interference causing a signal problem with the remote control.

Failsafe works differently depending on the mode the aircraft is in when Failsafe mode is initiated whether it is in the Ready to Fly or Ready to Fly (non-GPS) mode.

Ready to Fly (non-GPS) ---- Automatic landing

The flight control system will try to keep the aircraft level during descent and landing. Note that the aircraft may be drifting during the descent and landing process.

Ready to Fly ---- Automatic go home and land

The flight control system will automatically control the aircraft to fly back to the home point and land.

Home Point

When the aircraft is initializing the Ready to Fly status, the aircraft will record the current GPS coordinates as the home point. It is recommended to lift off only after Ready to Fly status is confirmed for the safety of being able to fly back to home point successfully in case the Failsafe mode is initiated.

Go Home Procedures

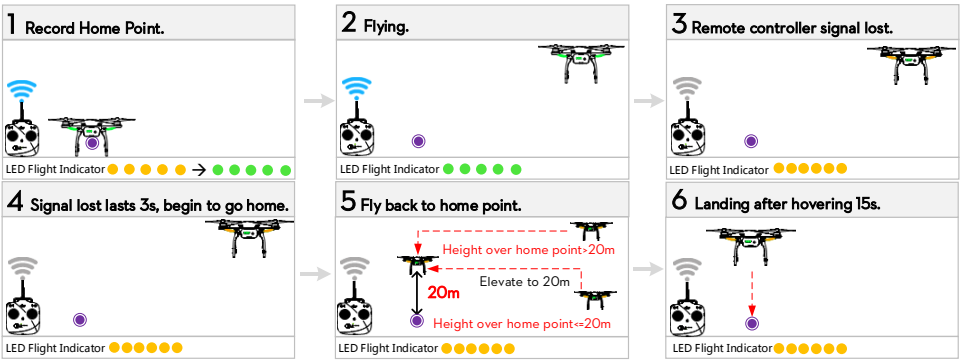


Figure 6-2

(1) In a Failsafe situation, if less than 6 GPS satellites are found for more than 20 seconds, the aircraft will descend automatically.

In Phantom 2 mode, users can set a new home point manually when the aircraft is in "Ready to fly" status as long as a home point has been recorded automatically. Quickly flipping the S2 switch of the remote control from upper most to lower most positions 5 times or more will reset the current aircraft position as a new home point of PHANTOM 2. When successfully reset, you will see a series of rapid green blinks on the LED Flight Indicator. The definition of "home point" is:

(1) The home point is the place PHANTOM 2 returns to when the control signal is lost, which is recorded last time.

(2) The home point is used to calculate the horizontal distance between you and the aircraft, the distance will be displayed as D if using iOSD module.

Regaining Control during Failsafe Procedure

Position of Switch S1	Position-1	Position-2	Position-3 (No triggering the Failsafe)
How to regain control	When the S1 switch is switched to Position-1, toggle the S1 switch to any other position once to regain control. If remote control's signal is recovered, control is returned back to the pilot.	Regain control as soon as signal is recovered.	

6.5 Low Battery Capacity Warning Function

The low battery capacity warning alerts users when the battery is close to depletion during flight. When it appears, users should promptly fly back and land to avoid accidental damage. The PHANTOM 2 has two levels of low battery capacity warning. The first appears when the battery has less than 30% power and the second appears when it has less than 15% power.

(1) When battery power drops below 30% and LED indicator will blink red slowly.

(2) At lower than 15% the LED indicator will blink red rapidly, the PHANTOM 2 will also begin to descend and land automatically. After it has landed, keep the throttle stick at its lowest point or execute CSC.

(3) There is a hidden third low battery threshold in addition to the 1st and 2nd level warnings. This uses 10.65V as its threshold. Both this voltage threshold and the 2nd Level Low Battery Warning will trigger auto-landing. Altitude can be maintained if necessary by pushing up on the throttle stick.

(1) Remember to fly your PHANTOM 2 back as soon as you see a low battery capacity warning.

(2) Keeping the battery contact needles and pads clean is very important. Any dirt and dust may cause a communication failure.

6.6 Flight Limits Function

All UAV (unmanned aerial vehicle) operators should abide by all regulations from such organizations at ICAO (International Civil Aviation Organization) and per country airspace regulations. For safety reasons, the flight limits function is enabled by default to help users use this product safely and legally. The flight limits function includes height, distance limits.

In Ready to Fly status, height, distance limits works together to restrict the flight. In Ready to Fly (non-GPS) status, only height limit works and the flying height restricted to be not over 120m.

(1) The default parameters in the Assistant is compliant within the definitions of class G ruled by ICAO. (Refer to Airspace Classification to get more details). As each country has its own rules, make sure to configure the parameters to comply with these rules too, before using the PHANTOM 2.

(2) Users in Mainland China can refer to 民用航空空域使用办法.

Max Height & Radius Limits

The Max Height & Radius restricts the flying height and distance. Configuration can be done in the PHANTOM 2 Assistant. Once complete, your aircraft will fly in a restricted cylinder.

Figure 6-3

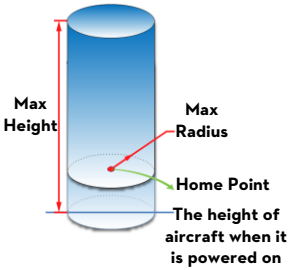


Figure 6-4

Ready to Fly			
	Limits	**Ground Station**	**Rear LED flight indicator**
Max Height	The flight height is restricted to fly under the max height.	Warning: Height limit reached.	None.
Max Radius	The flight distance is restricted to fly within the max radius.	Warning: Distance limit reached.	Rapid red flashings when close to the Max radius limit.

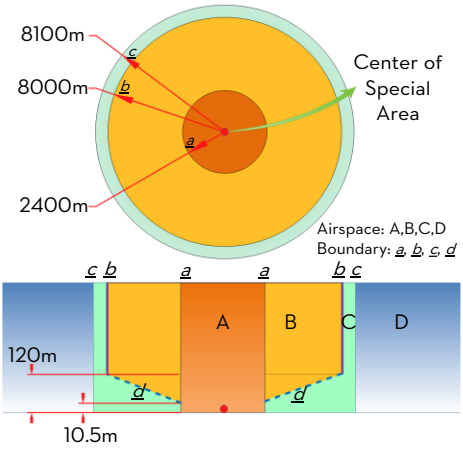
Ready to Fly(non-GPS)			
	Flight Limits	**Ground Station**	**Rear LED flight indicator**
Max Height	The flight height is restricted to fly under the minor height between the Max height and 120m.	Warning: Height limit reached.	None.
Max Radius	Not limited, no warnings or LED indicators.		

(1) If the aircraft flies out of the limits, you can still control your aircraft except to fly it further away.

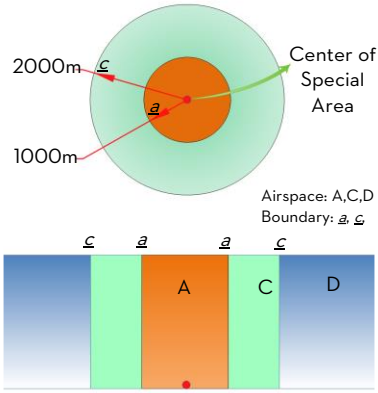
(2) If the aircraft is flying out of the max radius in Ready to Fly (non-GPS) status, it will fly back within the limits range automatically if 6 or more GPS satellites have been found.

6.7 Flight Limits of Special Areas

Special areas include airports worldwide. All special areas are listed on the DJI official website. Please refer to http://www.dji.com/fly-safe/category-mc for details. These areas have been divided into category A and category B.



Category A



Category B

Ready to Fly 		
Airspace	**Limits**	**Rear LED Flight Indicator**
A Orange	Motors will not start.	
	If the Phantom flies into a special area in Ready to Fly (non-GPS) mode and Ready to Fly mode activates, it will automatically descend and land then stop its motors.	
B Yellow	If the Phantom flies into a special area in Ready to Fly (non-GPS) mode and Ready to Fly mode activates, it will descend to airspace C and hover 5 meters below edge d.	
C Green	No restrictions of flight, but the Phantom will not enter Category A, the aircraft can fly free, but it will not enter Airspace B through Boundary b & d. Around Category B sites, the phantom can fly freely, but it will not enter into Airspace A through Boundary a.	
D Blue	No restrictions.	None.

Semi-automatic descent: All stick commands are available except the throttle stick command during the descent and landing process. Motors will stop automatically after landing. Users must toggle the S1 switch to regain control. This is the same as regaining control during Failsafe. Please refer to Regaining Control During Failsafe Procedure (Page23).

(1) When flying in the airspace (A/B/C) of restricted special area, LED flight indicators will blink red  quickly and continue for 3 seconds, then switch to indicate current flying status and continue for 5 seconds at which point it will switch back to red blinking.

(2) For safety reasons, please do not fly close to airports, highways, railway stations, railway lines, city centers and other special areas. Try to ensure the aircraft is visible.

6.8 Conditions of Flight Limits

In different working modes and flight modes, flight limits will differ according to number of GPS satellites found. The following table demonstrates all the cases(**√: available;** ×:unavailable).

All flights are restricted by height, distance and special areas simultaneously. The Failsafe and Ground Station operations are not restricted to flight limits, but if Ground Station function is used, the flight will be restricted the special area limits built in to Ground Station. Refer to the Ground Station manual for details.

Phantom mode			
Flight Status	**Limits of Special Area**	**Max Height**	**Max Radius**
Ready to Fly	√	√	√
Ready to Fly (non-GPS)	×	√	×

Naza-M mode				
Control Mode	**number of GPS found**	**Limits of Special Area**	**Max Height**	**Max Radius**
GPS	≥6	√	√	√
	< 6	×	√	×
ATTI.	≥6	√	√	×
	< 6	×	√	×
Manual	≥6	×	×	×
	< 6	×	×	×

Disclaimer

Please ensure that you are kept up to date with International and Domestic airspace rules and regulations before using this product. By using this product, you hereby agree to this disclaimer and signify that you have read this fully. You agree that you are responsible for your own conduct and content while using this product, and for any direct or indirect consequences caused by not following this manual, violate or disregard any other applicable local laws, administrative rules and social habits thereof.

7 Assistant Installation and Configuration

7.1 Installing Driver and PHANTOM 2 Assistant

Installing and running on Windows

1. Download driver installer and Assistant installer in EXE format from the download page of PHANTOM 2 on the DJI website.
2. Connect the PHANTOM 2 to a PC via a Micro-USB cable.
3. Run the driver installer and follow the prompts to finish installation.
4. Next, run the Assistant installer and follow the prompts to finish installation.
5. Double click the PHANTOM 2 icon on your Windows desktop to launch the software.

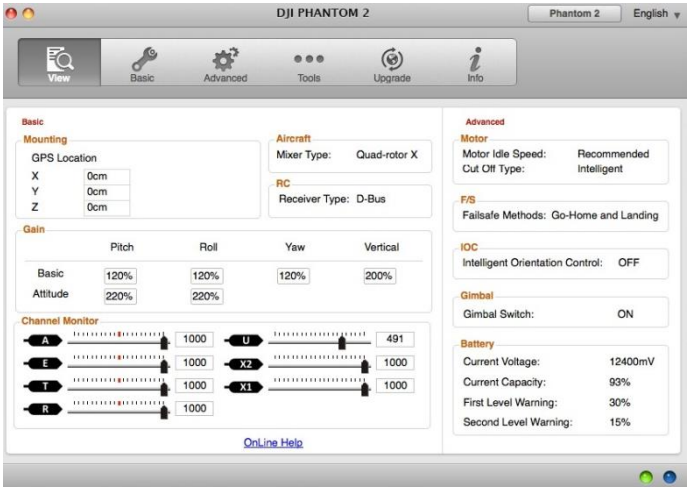
⚠ The installer in EXE format only supports Windows operating systems (Win XP, Win7, Win8 (32 or 64 bit)).

Installing and running on Mac OS X

1. Download the Assistant installer in DMG format from the download page of PHANTOM 2 on the DJI website.
2. Run the installer and follow the prompts to finish installation.

3. When launching for the first time if use Launchpad to run the PHANTOM 2 Assistant, Launchpad won't allow access because the software has not been reviewed by Mac App Store.

4. Locate the PHANTOM 2 icon in the Finder, press the Control key and then click the PHANTOM 2 icon (or right-click the PHANTOM 2 icon using a mouse). Choose Open from the shortcut menu, click open in the prompt dialog box and then software will launch.
5. After the first successful launch, directly launching of the software can be achieved by double-clicking the PHANTOM 2 icon in the Finder or using Launchpad.

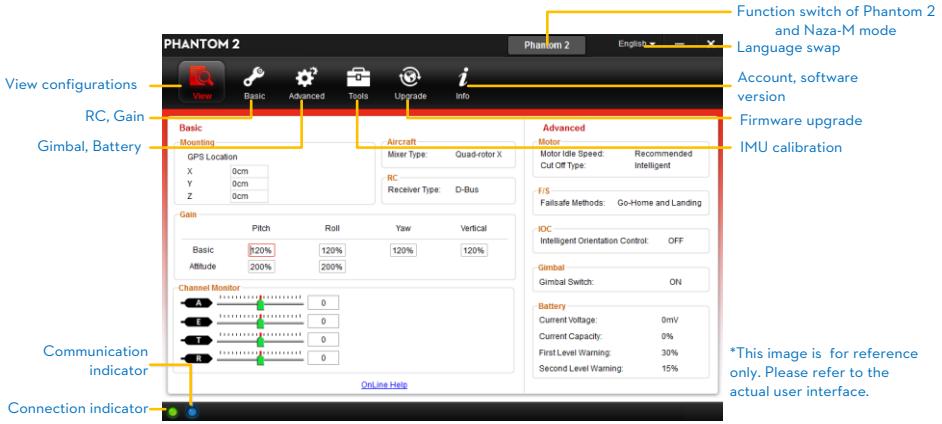


Installer in DMG format supports only Mac OS X 10.6 or above.

Usage of PHANTOM 2 Assistant on Mac OS X and Windows are exactly the same. The Assistant pages appear in other places of this manual are on the Windows for example.

7.2 Using the PHANTOM 2 Assistant on a PC

1. Start up the PC, power on the PHANTOM 2, then connect the PHANTOM 2 to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.
2. Run the PHANTOM 2 Assistant and wait for the PHANTOM 2 to connect to the Assistant. Observe the indicators on the bottom of the screen. When connected successfully, the connection indicator is and communication indicator is blinking .
3. Choose [Basic] or [Advanced] configuration pages.
4. View and check the current configuration in the [View] page.



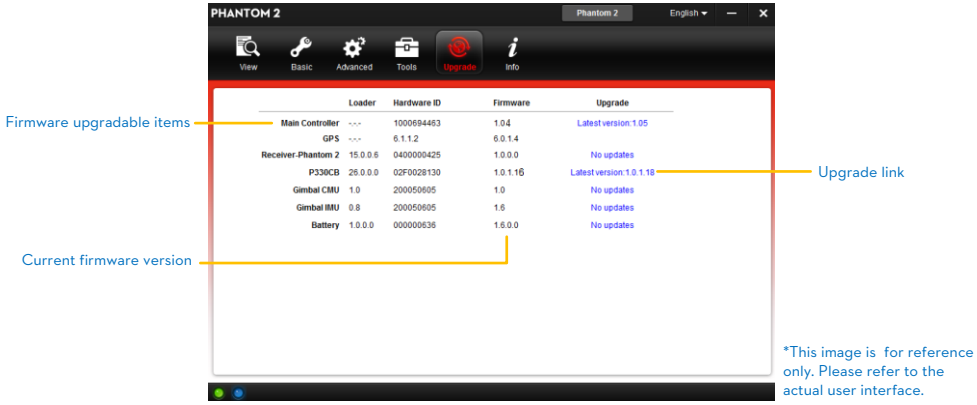
(1) Users should not enable the Naza-M function before finishing Advanced Flight Maneuvers procedure in the " PHANTOM Pilot Training Guide". If the Naza-M mode is enabled, users can switch the control mode between ATTI. Mode, GPS Mode or Manual Mode, and access the advanced settings (e.g. IOC). In addition, the LED located on the rear frame arms will display Naza-M flight status indications instead of the PHANTOM 2's indicators. Do not enable the Naza-M mode unless you are an experienced user or guided by a professional.

(2) You can change to the Phantom 2 mode by clicking the same button used to turn on the Naza-M mode. This operation will disable the Naza-M mode and enable Phantom 2 mode. All parameters will be returned to factory settings.

7.3 Firmware upgrade of PHANTOM 2

Please refer to the PHANTOM 2 Assistant to install driver and PHANTOM RC Assistant, and then follow the procedures below to upgrade the software and firmware; otherwise the PHANTOM 2 might not work properly.

1. An internet connection is required to upgrade PHANTOM 2's firmware.
2. Click the [Upgrade] icon to check the current firmware version and whether the installed firmware is the latest version. If not, click the relative links to upgrade.
3. Be sure to wait until the Assistant shows "finished". Click OK and power cycle the PHANTOM 2 after 5 seconds. Once completed, the firmware is up to date.



(1) DO NOT power off until the upgrade is finished.

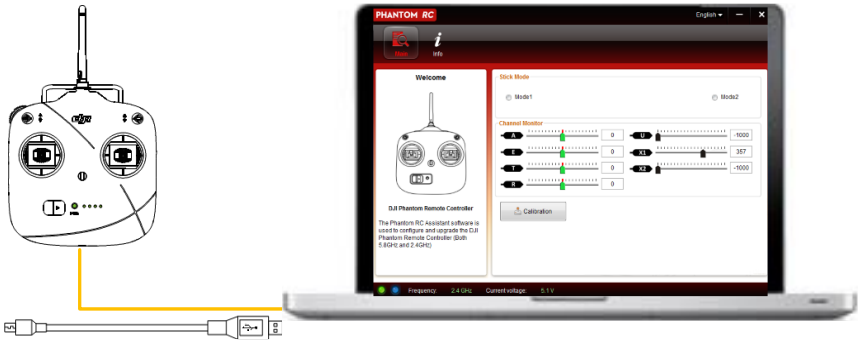
(2) If the firmware upgrade failed, the main controller will enter a waiting for firmware upgrade status automatically. If this happens, repeat the above procedures.

Firmware upgradable items: (1) Main Controller (2) P330CB(Main Board) (3) Receiver (4) Gimbal CMU (5) Gimbal IMU (6) Battery

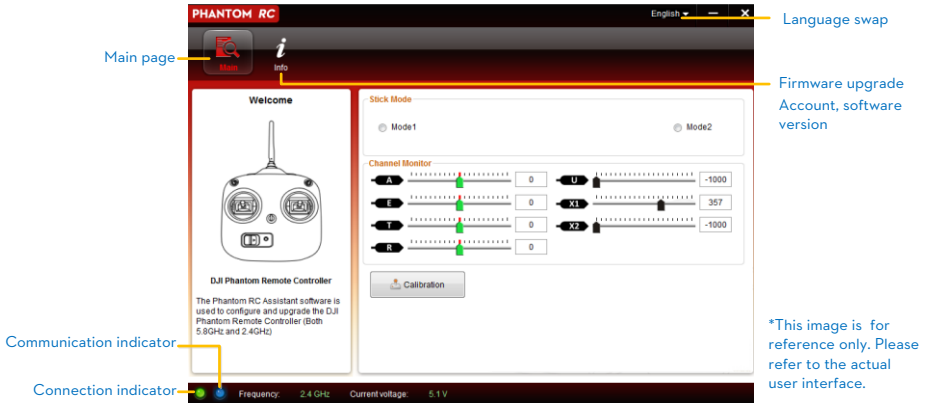
7.4 PHANTOM RC Assistant Description

Please follow the procedures to finish the configuration of the remote control.

1. Turn off the remote control and find the Micro-USB port on the bottom of it.
2. Start up the PC, power on the remote control, and then connect the remote control to the PC with a Micro-USB cable. DO NOT disconnect until the configuration is finished.
3. Run the PHANTOM RC Assistant and wait for the remote control to connect to the Assistant. Observe the indicators on the bottom left of the screen. When connected successfully, the connection indicator is and communication indicator is blinking.
4. Finish configuration in the [Main] page.
5. Finish upgrade in the [Info] page if necessary.



Main Page of the 2.4GHz Remote Control



8 Appendix

8.1 Specifications

Aircraft	
Operating environment temperature	-10℃ to 50℃
Power consumption	5.6W
Supported Battery	DJI Intelligent battery
Weight (including the battery)	1000g
Take-off Weight	≤1300g
Hovering Accuracy (Ready to Fly)	Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity	200°/s
Max Tilt Angle	35°
Max Ascent / Descent Speed	Ascent: 6m/s; Descent: 2m/s
Max Flight Speed	15m/s (Not Recommended)
Wheelbase	350mm
2.4GHz Remote Control	
Operating Frequency	2.4GHz ISM
Communication Distance (open area)	1000m
Receiver Sensitivity (1%PER)	-97dBm
Working Current/Voltage	120 mA@3.7V
Built-in LiPo Battery Working Current/Capacity	3.7V, 2000mAh
DJI Intelligent Battery	
Type	3S LiPo Battery
Capacity	5200mAh, 11.1V
Charging Environment Range	0℃ to 40℃
Discharging Environment Range	-20℃ to 50℃

8.2 LED Flight Indicators Description

Aircraft in Normal status	Descriptions
	Power On Self-Test
	Warming Up & Aircraft cannot take off during warming up
	Ready to Fly
	Ready to Fly (non-GPS)
Aircraft in abnormal status	**Warnings and errors**
	Remote Control Signal Lost
	1st Level Low Battery Capacity Warning

	2nd Level Low Battery Capacity Warning
	Not Stationary or Sensor Bias is too big
	Errors & Aircraft cannot fly.*
	Compass data abnormal because of ferro-magnetic interference or the compass needs calibration.

* Users can connect to the PHANTOM 2 Assistant to get detailed information about warnings and errors.

PHANTOM 2 VISION

User Manual V1.6

October, 2014 Revision

Congratulations on purchasing your new DJI product. Please thoroughly read the entire contents of this manual to fully use and understand the product.

It is advised that you regularly check the PHANTOM 2 VISION's product page at www.dji.com which is updated on a regular basis. This will provide services such as product information, technical updates and manual corrections. Due to any unforeseen changes or product upgrades, the information contained within this manual is subject to change without notice.

If you have any questions or concerns regarding your product, please contact your dealer or DJI Customer Service.

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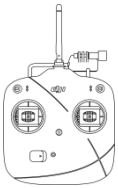
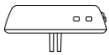
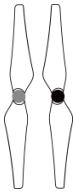
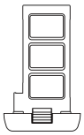
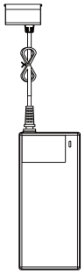
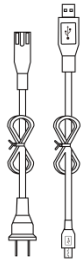
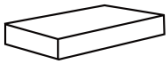
In the Box

PHANTOM 2 VISION X1	5.8GHz Remote Control X1	Range Extender X1
		
Propeller Pair X4	Mobile Device Holder X1	Micro-SD Card X1
		
Intelligent Battery X1	Charger X1	Cables X1
		
Plug Set X1	Screw X12	Screwdriver X 1
		
Assistant Wrench X1	Accessories Box X1	
		

Symbol Legend

Forbidden(Important) Caution Tip Reference

Watch the Quick Start Videos

This user manual details installation and usage procedures of the product. In addition, we provide a range of quick start videos. It is advised that you watch them fully before attempting to use the product.

<table>
<tr><td>Approach 1</td><td>Direct link.</td><td colspan="2">www.dji.com/phantom-2-vision/training</td></tr>
<tr><td rowspan="3">Approach 2</td><td rowspan="3">Scan the QR code to get the quick start video link.</td><td>  </td><td>Preparing for flight.</td></tr>
<tr><td>  </td><td>How to connect to the DJI VISION App.</td></tr>
<tr><td>  </td><td>The basics of flying, recording and sharing.</td></tr>
</table>

Downloading the DJI VISION App

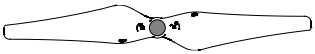
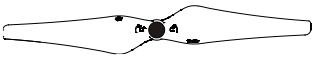
Before attempting to use the product, please download and install the DJI VISION App. Get the DJI VISION App according to the following methods.

<table>
<tr><td rowspan="2">Approach 1</td><td rowspan="2">Download from the App store or Google Play.</td><td>iOS user</td><td>Search “DJI VISION” from App Store.</td></tr>
<tr><td>Android user</td><td>Search “DJI VISION” from Google Play.</td></tr>
<tr><td>Approach 2</td><td>Scan the QR code to get the download link.</td><td>  </td><td>Scan and download.</td></tr>
</table>

1 Attaching the Propellers

Please use the original 9-inch propellers which are classified by the color of each central nut. Damaged propellers can be replaced by purchasing new ones if necessary.

1.1 Introduction

Propellers	Grey Nut (9450)	Black Nut (9450 R)
Diagram		
Assembly Location	Attach to the motor thread that **does not have a black dot**.	Attach to the motor thread that **has a black dot**.
Fastening/Un-fastening Instructions	Lock: Tighten the propeller in this direction. Unlock: Remove the propeller in this direction.	

1.2 Assembly

1. (Fig.1) Remove the four warning cards from the motors after you read them.
2. (Fig.2) Prepare the two grey nut propellers and two black nut propellers. Make sure to match the black nut propellers with the correctly marked black dot motors. Tighten the propellers according to the fastening instructions.

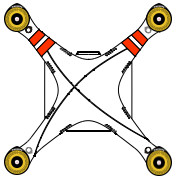


Fig.1

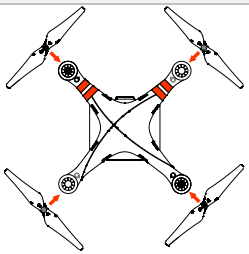


Fig.2

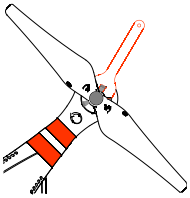


Fig.3

1.3 Removing the Propellers

(Fig.3) Keep the motor deadlocked in place with the assistant wrench (or one hand) and remove the propeller according to the un-fastening instructions.

1.4 Notes

(1) Propellers are self tightening during flight. DO NOT use any thread locker on the threads.

(2) Make sure to match the propeller nut colors with the corresponding motors.

(3) It is advised to wear protective gloves during propeller assembly and removal.

(4) Check that the propellers and motors are installed correctly and firmly before every flight.

⚠ (5) Check that all propellers are in good condition before flight. DO NOT use any ageing, chipped, or broken propellers.

(6) To avoid injury, STAND CLEAR of and DO NOT touch the propellers or motors when they are spinning.

(7) ONLY use original DJI propellers for a better and safer flight experience.

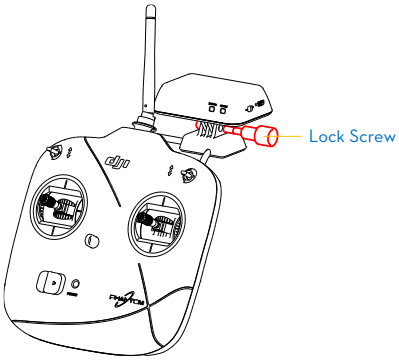
2 Installing the Range Extender and Mobile Device Holder

2.1 Installing the Range Extender

1. Adjust the range extender to align with the mounting bracket installed on the carrying handle.
2. Tighten the lock-screw to affix the range extender on the right side of the carrying handle.

(1) Make sure the assembly orientation is correct with the LED side facing you.

(2) To obtain better communication, try to keep the range extender facing the aircraft during flight.

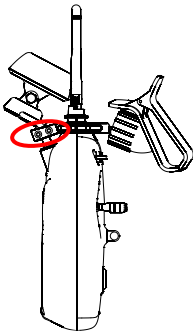


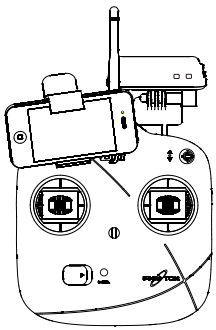
2.2 Installing the Mobile Device Holder

1. Tighten the Philips screws as shown to correctly attach the mobile device holder on the left side of the carrying handle.
2. Affix the mobile device sideways within the holder.

(1) Make sure the assembly orientation is correct. The mobile device should be facing you when mounted.

(2) It is recommended not to use oversized mobile devices (e.g. iPad), which cannot be placed into the Mobile Device Holder.





3 Preparing the Remote Control

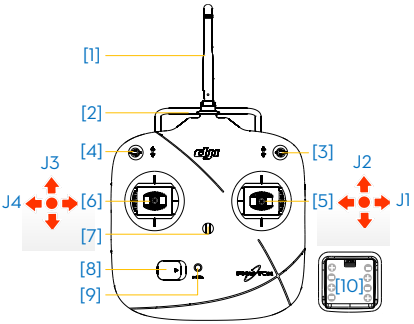
The PHANTOM 2 VISION remote control is a wireless communication device that uses the 5.8GHz frequency band. It is compliant with CE and FCC (see the FCC ID) regulations and is set to Mode 2 before delivery. The compliance version can be configured by twisting the potentiometer knob on the back of the remote controller. The stick configuration can also be reset in the PHANTOM RC Assistant. Refer to the PHANTOM RC Assistant and the Compliance Version Configuration (Page 12) for details.

(1) CE compliant devices have an effective communication range of 300 meters in open spaces due to power limitations. Be sure to watch your fight distance as the PHANTOM 2 VISION will enter Failsafe mode (auto-landing or go home and land) if it flies beyond this range.

(2) FCC compliant devices have an effective range of 500 meters in open spaces. Be sure to watch your fight distance as the PHANTOM 2 VISION will enter Failsafe mode (auto-landing or go home and land) if it flies beyond this range.

(3) Pay attention to and follow local laws and regulations.

3.1 The Remote Control

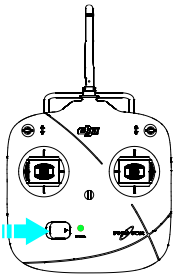


[1]	Antenna
[2]	Carrying Handle
[3]	Switch S1
[4]	Switch S2 (Reserved)
[5]	Joystick(J1: Roll [left & right], J2: Pitch [front & back])
[6]	Joystick(J3: Throttle [up & down], J4: Yaw [rotation])
[7]	Neck Strap Attachment
[8]	Power Switch
[9]	Power Indicator
[10]	Battery Compartment (On the back)

3.2 Power on the Remote Control

1. Install the four AA Batteries (not included) into the battery compartment on the back of the remote controller according to the negative and positive poles.
2. Set the S1 and S2 switches to the upper most position (position-1, refer to the Remote Control Operation (Page 10) for details) and ensure both joysticks are at the mid-point position. Then toggle on the power switch.
3. There will be a power on indicator beep. If the remote control is set to be CE compliant, then there will be one beep, while the FCC compliant version will emit two beeps. The power indicator blinks green quickly

indicating the remote controller and receiver is linking. Once fully linked, the power indicator will change to a solid green.



(1) If the low voltage warning alert sounds (refer to the Remote Control Power Indicator Status Information (Page 9)), please replace batteries as soon as possible.

(2) Using the incorrect type of battery may prevent a risk of damage.

(3) Remove the batteries after use and dispose of them safely.

(4) For long term storage, be sure to remove the batteries from the remote control.

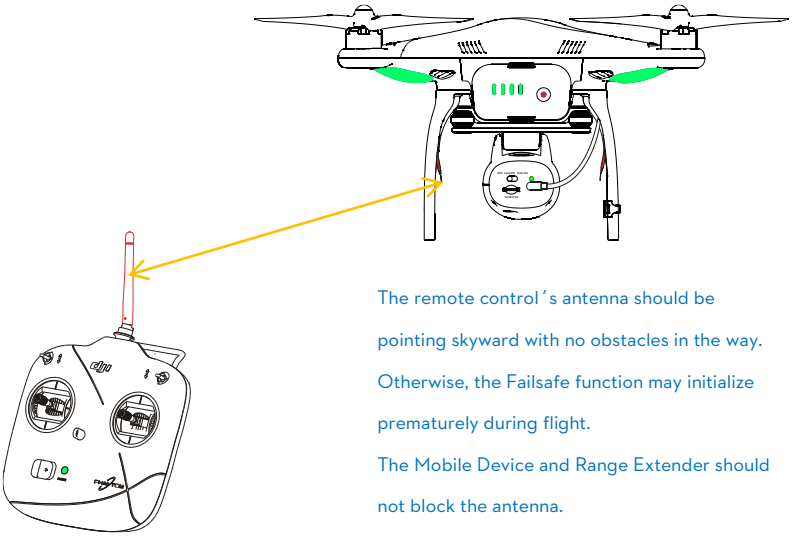
3.3 Remote Control Power Indicator Status Information

Power indicator	Sound	Remote Control State
▬▬▬	None	Functioning normally.
●●●●●●	None	Establishing a link between the remote control and the receiver.
● ● ● ●	B-B-B.....	Low voltage (at 3.9V-4.5V), should replace the batteries immediately.
●●●●●●	BBBB	Low voltage (lower than 3.9V). The remote control will automatically power off. Batteries should be replaced immediately.
● ● ● ●	B-B-B.....	The remote control will display a blinking green light and sound an alarm after 15 minutes without operator input. The alarm status will disappear once you start operation of the remote control.

The remote control will blink the LED and sound an alert when the voltage drops below 3.9V and automatically power off after 3 seconds. This process will repeat even if you power cycle the remote control. If this low voltage warning occurs during flight, the remote control will automatically power off causing the aircraft to enter Failsafe mode, which cannot be interrupted (refer to the Failsafe Function (Page 32) for details). It is strongly recommended to replace batteries if the 3.9V-4.5V low voltage warning occurs.

3.4 Antenna Orientation

Try to keep the antenna pointing skyward, perpendicular to the ground, in order to achieve the maximum communication range during flight.



The remote control's antenna should be pointing skyward with no obstacles in the way. Otherwise, the Failsafe function may initialize prematurely during flight.

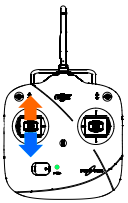
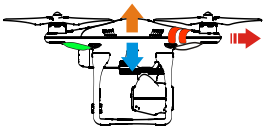
The Mobile Device and Range Extender should not block the antenna.

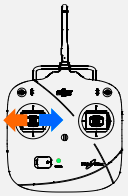
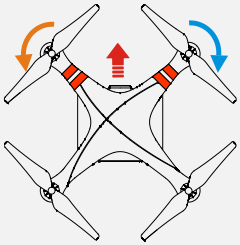
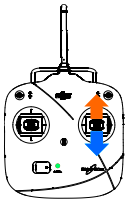
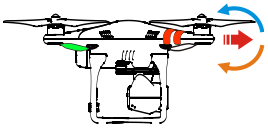
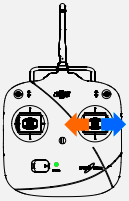
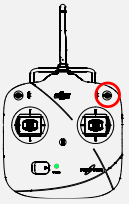
3.5 Remote Control Operation

Definitions

The '**stick neutral**' positions and '**stick released**' mean the control sticks of the remote control are placed at the central position.

To '**move the stick**' means that the stick of remote control is pushed away from the central position.

Remote Controller (Mode 2)	Aircraft (nose direction)	Operation details
		The throttle stick controls aircraft altitude/elevation. Push the stick up and the aircraft will rise. Pull the stick down and the aircraft will descend. The aircraft will automatically hover and hold its height if the sticks are centered. Push the throttle stick above the centered (mid-point) position to make the aircraft take-off. When flying, we suggest that you push the throttle stick slowly to prevent the aircraft from sudden and unexpected elevation changes.

		The yaw stick controls the aircraft rudder. Push the stick left and the aircraft will rotate counter clock-wise. Push the stick right and the aircraft will rotate clock-wise. If the stick is centered, the aircraft will remain facing the same direction. The yaw stick controls the rotating angular velocity of the aircraft. Pushing the stick further away from center results in a faster aircraft rotation velocity.
		The pitch stick controls the aircraft's front & back tilt. Push the stick up and the aircraft will tilt and fly forward. Pull the stick down and the aircraft will tilt and fly backward. The aircraft will keep level and straight if the stick is centered. Pushing or pulling the stick further away from center will result in a larger tilt angle (maximum of 35°) and faster flight velocity.
		The roll stick controls the aircraft's left & right tilt. Push the stick left and the aircraft will tilt and fly left. Push the stick right and the aircraft will tilt and fly right. The aircraft will keep level and straight if the stick is centered. Pushing the stick further away from center will result in a larger tilt angle (maximum of 35°) and faster flight velocity.
	 Position-1 Position-2 Position-3	S1 is for compass calibration. Toggle the S1 from position-1 to position-3 and back to position-1 at least 6-10 times, which will force the aircraft to enter into compass calibration mode.

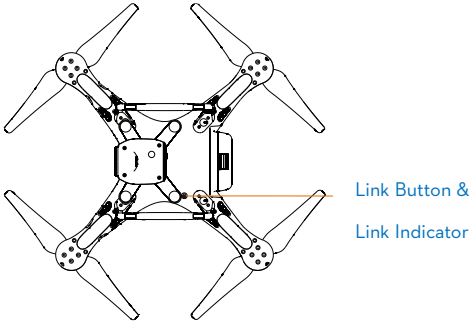
(1) For `Ready to Fly' the aircraft will hover (hold a stable horizontal position) when all sticks are released.

(2) For `Ready to Fly (non-GPS)' the aircraft will keep the aircraft level without horizontal positioning when all sticks are released.

3.6 Link between the Remote Control and Receiver

There is a 5.8G receiver in the PHANTOM 2 VISION, with the link button and indicator located on the bottom of the aircraft as illustrated in the following diagram.

The link between the remote control and aircraft is already established for you so you can initially skip this procedure. If you ever replace the remote control, re-establishing the link is required.



Link Procedures

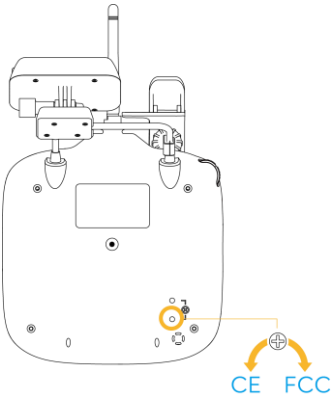
1. Power off the remote control, power on the aircraft. You will see the link indicator blinking red.
2. Press the link button with a thin object and hold until the link indicator blinks yellow. Release the link button.
3. Power on the remote control and the link indicator should switch off. This indicates that the link has been successfully established.

Link Indicator

Link Indicator	Description	Operation
	No signal received.	Switch on the remote control or perform a link procedure.
	In link status.	Switch on the remote control.

3.7 Compliance Version Configuration

The compliance version can be reconfigured by twisting the potentiometer knob (See the following diagram) on the back of the remote control using a flathead screwdriver. For CE compliance, set the remote control to CE compliance by carefully turning the potentiometer knob to the full counter clock-wise position. For FCC compliance, set the remote control to FCC compliance by carefully turning the potentiometer knob to the full clock-wise position. Users should follow their local regulations accordingly.



When adjusting the potentiometer knob to its limit position, be very careful to prevent damaging the potentiometer knob. Do not apply too much force during this adjustment. Also be sure to use the correct sized screwdriver.

(1) It is recommended to use a flathead screwdriver of Φ 2.4mm for adjustment.

(2) You can use the DJI screwdriver with the flathead for adjustment.

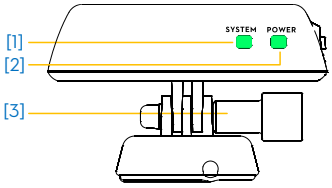
(3) There is another potentiometer reserved.

4 Preparing the Range Extender

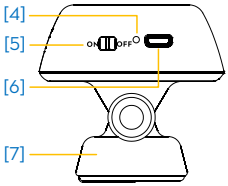
The PHANTOM 2 VISION range extender is a wireless communication device that operates within the 2.4 GHz frequency band and is used for extending the effective range of communication between a mobile device (Smartphone) and the PHANTOM 2 VISION. In an open unobstructed area, the transmission distance can reach up to 300 meters, but is usually affected by the surrounding environment, such as trees, buildings and other sources of the same frequency. Before every flight, it is suggested that you ensure the range extender functions properly. Otherwise you may experience a communication issue with the mobile device and the PHANTOM 2 VISION.

Each range extender has a unique MAC address and network name (SSID), details of which are printed on the back label as `Phantom_xxxxxx'. The `xxxxxx' represents the last six letters or numbers of the MAC address for the range extender.

4.1 The Range Extender



Front View



Right View

[1]	Wi-Fi Signal Indicator
[2]	Power Indicator
[3]	Lock-screw
[4]	Reset Button
[5]	Power Switch
[6]	Micro-USB
[7]	Mounting Bracket

4.2 Function Description

[1] Wi-Fi Signal Indicator (SYSTEM)

Tells you the system status of the range extender.

Wi-Fi Signal Indicator	Description
● ● ● ●	The range extender system is working normally.
Off	The range extender system is working abnormally.

[2] Power Indicator (POWER)

Tells you the power status of the range extender.

Power Indicator	Description
	The range extender is working normally or completely charged.
	Low voltage alert, a re-charge is required.
	The range extender is charging (allow for 3~4 hours, depending on USB power output).

(1) Make sure to charge the range extender completely before using it for the first time.

(2) If the power indicator is a solid red light, the ranger extender may stop working at any moment. Recharge it as soon as possible.

(3) It is recommended to charge the range extender completely before each use.

(4) Turn off the range extender after every use.

(5) Keep the range extender facing the aircraft during flight for the best communication link.

[3] Lock-screw

For attaching the range extender on the right side of the remote control's carrying handle.

[4] Reset Button:

Press to link the range extender and the camera.

[5] Power Switch:

ON – Power on.

OFF – Power off.

[6] Micro-USB

Used to charge the range extender.

[7] Mounting Bracket

It has been pre-installed on the remote control's handle. It is used to attach the range extender.

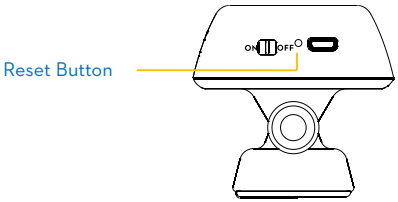
4.3 Powering on the Range Extender

1. Toggle the power switch of range extender to ON position.
2. Wait for approximately 30 seconds. The Wi-Fi signal indicator should blink green indicating the range extender is communicating properly.

It is advised that you power off the range extender after every flight to avoid discharging the battery.

4.4 How to Bind the Camera & Range Extender

If the camera and range extender connection is lost, or one of them needs to be repaired or replaced, a camera and range extender binding will need to be performed via the DJI VISION App.



1. Power on the camera and range extender. Note: (Place the camera power switch to the `WIFI ON' position).
2. Approximately 30 seconds later, press the reset button on the range extender with a thin object until the Wi-Fi signal indicator turns off. The range extender will then restart automatically.
3. Approximately 30 seconds later, the Wi-Fi signal indicator should start to blink green, which indicates the range extender is now ready to be bound.
4. Find and select the Phantom_xxxxxx via the Wi-Fi list on the mobile device to connect the range extender.
5. (Fig.1) Run the DJI VISION App->Settings->General->Binding. (Fig.2) Select `Scan the QR Code' to scan the camera QR code on the product packaging. (Fig.3) Get the camera SSID (E.g. FC200_0xxxxx) and the MAC address, select the tick ✓ on the top right corner. The range extender should automatically restart. The binding procedure is now complete.

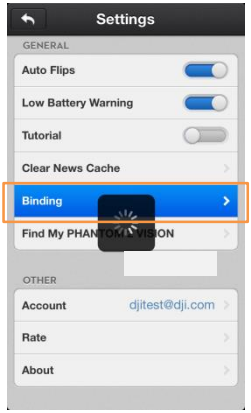


Fig.1

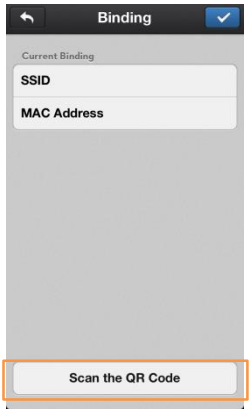


Fig.2 (QR code is only for example.)

Fig.3

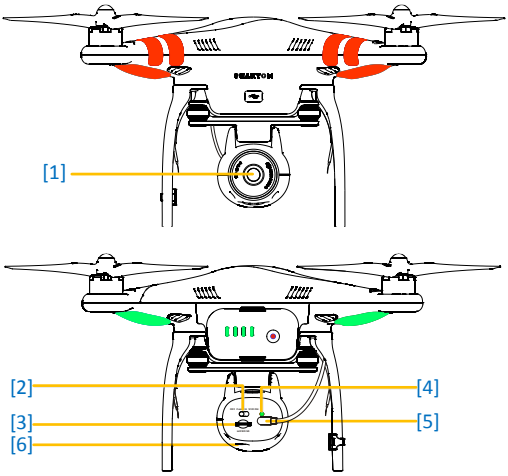
(1) If both the camera and range extender are powered on and working normally, you will be able to find the SSID on the Wi-Fi list of the mobile device.

(2) DO NOT push the reset button of the range extender unless you are ready to rebind the range extender and the camera! This will unbind your camera and you must follow the steps above to rebind.

(3) The QR code is located on the packaging of the PHANTOM 2 VISION. If you cannot find the QR code, please contact DJI customer service to receive the QR code related to your camera's serial number.

5 Preparing the Camera

5.1 The built-in camera



[1]	Lens
[2]	Camera Power Switch
[3]	Micro-SD Card Slot
[4]	Camera Status Indicator
[5]	Camera Cable
[6]	Capture/Record Button

Camera Features	Specifications
Resolution	14 Megapixels
FOV	120°/ 110° / 85°
Sensor size	1/2.3"
Functions	Supports multi-capture, continuous capture and timed capture Supports HD Recording (1080p30/1080i60) Supports both RAW and JPEG photo formats

5.2 Main Functions

[1] Lens

For viewing and photographing, with main parameters of f/2.8 , FOV 120°.

Please remove the lens cover when the camera is in use and replace the cover for storage.

[2] Camera Power Switch (on the back of the camera)

Used to power the camera on and off.

OFF – Powered off.

CAM ON – Power on, Wi-Fi off.

WIFI ON – Power and Wi-Fi are both on. Make sure to switch to `WIFI ON' and the range extender is powered on if using the DJI VISION App.

[3] Micro-SD Card Slot (on the back of the camera)

Make sure that the Micro-SD card is inserted before you take any photos or record any videos.

(1) Maximum supported Micro-SD card capacity is 32GB.

(2) The DJI VISION App may not be able to read the Micro-SD card prepared by the user. It is suggested that you use the DJI VISION App to format the Micro-SD card when first used in the camera.

(3) Refer to the Camera Settings (Page 46) for Micro-SD card formatting details.

[4] Camera Indicator (on the back of the camera)

The Camera Indicator is used to inform the user of the working status of the camera.

Camera indicator	Wi-Fi	Camera status
Solid	OFF	Power On; Idle State
Slow Blink (0.2s on, 1.8s off)	ON	Idle State
Fast Blink (0.1s on, 0.3s off)	ON	Synchronizing photos and videos
Solid	OFF	Recording
Blink Once (0.2s on, 0.3s off)	ON/OFF	Taking a single capture
Blink 3 Times(0.1s on, 0.1s off)	ON/OFF	Taking 3 or 5 photos per shot
Fast Blink (0.1s on, 0.3s off)	ON/OFF	Firmware Upgrading
(0.2s green, 1.8s orange)	ON	Recording
Solid	ON/OFF	Critical error
Slow Blink (0.2s on, 1.8s off)	ON/OFF	CMOS sensor error
Blink Once (0.2s on, 0.3s off)	ON/OFF	Operation failed
Blink 3 Times(0.1s on, 0.1s off)	ON/OFF	Micro-SD Card error
Fast Blink (0.1s on, 0.3s off)	ON/OFF	Upgrade error
(0.5s green, 0.5s orange, 0.5s red, 0.5s Off)	ON/OFF	Camera has overheated

When camera temperature rises above 80℃, the LED indicator will blink . The camera will automatically power off if the temperature rises above 85℃.

[5] Camera Cable (on the back of the camera)

Make sure that the camera cable is firmly attached to the camera before powering the camera on.

[6] Capture/Record Button (on the bottom of the camera)

Capture function: Press the button once (less than 2 seconds) to take a single capture.

Record function: Press the button once (greater than 2 seconds) to begin recording. Press once again to stop.

5.3 Upgrading the Firmware of Camera

Follow the below instructions to update your firmware.

1. Download the latest firmware of camera from DJI website.
2. Copy the “firmware.bin” file to the root folder of your Micro-SD card.
3. Insert the SD card into the camera before turning it on.
4. Turn on the camera.
5. The firmware update will begin automatically. A yellow flashing LED indicates that the camera is updating.
6. When the yellow flashing disappears, the firmware has been updated. After a successful update, the “firmware.bin” file’s name will change to “firmware.bin.bak00”. This file can now be deleted.

(1) During the update, do not turn off the camera or take out the Micro-SD card. This may prevent your camera from switching on and will need a factory reset.

(2) A fast red flashing LED after the update means the update has failed. Please try again.

(3) For the v1.1.8 version of the PHANTOM 2 VISION Camera, PAL support has been added to the camera including 1080p25 and 960p25.

6 Downloading and Installing the DJI VISION App

6.1 Download and Install

Download and install approaches		
Approach 1	Scan the QR code to read the download link. Download and install the DJI VISION App on your mobile device. You can find the QR code on the `Quick Start Guide' as well as on the packaging of the PHANTOM 2 VISION.	
Approach 2	iOS user	Search "DJI VISION" from App Store, download and install on your mobile device.
	Android user	Search "DJI VISION" from Google Play, download and install on your mobile device.

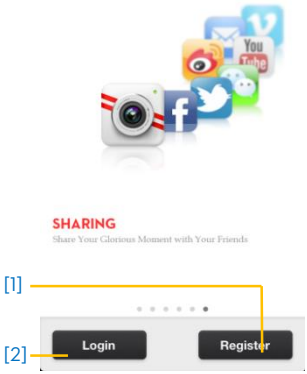
Supported mobile devices	
iOS (iOS6 or above)	Recommended: iPhone4s, iPhone5, iPhone5s, iPhone5C, iPod Touch4, iPod Touch5; Available but not recommended: iPad3, iPad4, iPad mini.
Android (System 4.0 or above)	Samsung Galaxy S3, S4, Note2, Note3 or mobile devices of similar configuration.

DJI continues to support many mobile devices and any information from users are welcome. Please send any questions or queries to the following mailbox: phantom2vision@dji.com.

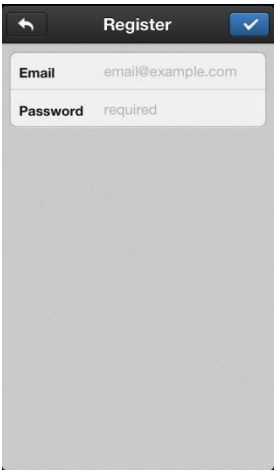
Be aware that the DJI website regularly updates so make sure you visit often as well as the App Store or Google Play in order to download the latest version of the DJI VISION App.

6.2 Register & Login

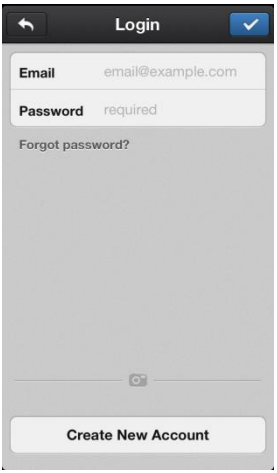
Access the Internet to register and login.



The App Welcome Page



Registration Page



Login Page

[1] Register

Select `Register' to enter the registration page. Fill in your Email and Password information and then select to create a new account.

[2] Login

Select `Login' to enter the login page. Fill in your registered Email and Password and then select to login.

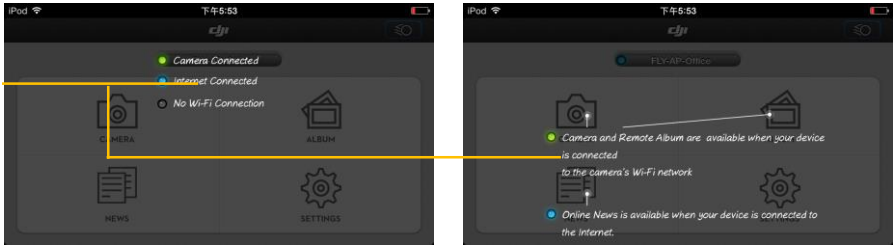
(1) You should login to your account the first time you use the DJI VISION App.

(2) If you do have an account, but forgot the password, select the "Forgot password" to retrieve it.

[3] Usage tips

Useful tips will display when you enter the welcome page. Tap the screen to display the next useful tip.

[3]



7 Preparing the Flight Battery

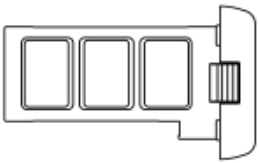
Before use, please read and follow the user manual, disclaimer, and the warnings on the battery.

Users take full responsibility for all operations and usage.

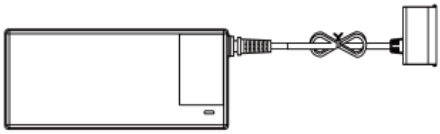
7.1 Intelligent Battery and Charger Instructions

The intelligent battery is specially designed for the PHANTOM 2 VISION, with a battery capacity of 5200mAh, voltage of 11.1v and charge-discharge management functionality. The battery should only be charged with the charger provided by DJI. DJI does not take any responsibility for operation of any charger from a third party. There are many features provided by the DJI charger:

- Balance charge protection
- Full charge protection
- Short circuit protection
- Output protection
- Sleep protection
- Overheating protection



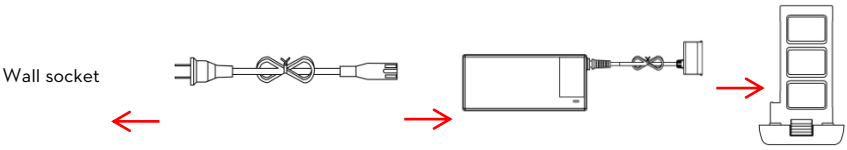
Intelligent Battery

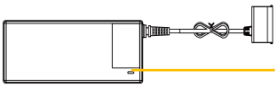


Charger

7.2 Charging Procedures

1. Connect the battery to the charger while the power is OFF.
2. Connect the charger to a wall socket. The charger indicator light will turn a solid red when it is charging.
3. Wait until the charger indicator turns solid green to which indicates that the battery is completely charged.

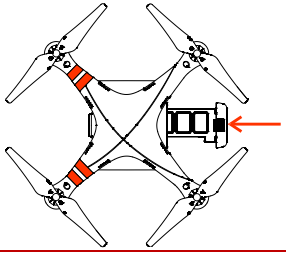




Charger indicator	Status of charge
	Charging.
	Completely charged.

7.3 Install the Battery

Push the battery into the battery compartment correctly as the following diagram shows. Make sure to push the battery into the compartment until you hear a ‘click’ sound.



An incorrectly inserted battery may cause one of the following to occur:

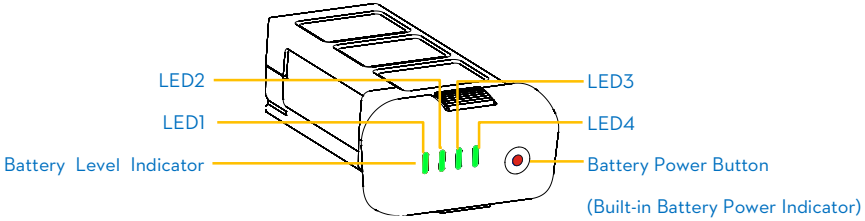
(1) Bad contact.

(2) Unavailable battery information.

(3) Unsafe for flight.

(4) Unable to take off.

7.4 Battery Usage



(1) Checking the battery level: When the battery is powered off; pressing the battery power button once will indicate the current battery level. Refer to Description of the Battery Level Indicator (Page 24) for details.

(2) Powering on: When the battery is powered off; press the battery power button once and then press and hold for 2 seconds to turn on the intelligent battery.

(3) Powering off: When the battery is powered on; press the battery power button once and then press and hold for 2 seconds to turn off the intelligent battery.

More battery information is available in the battery tab of the PHANTOM 2 VISION Assistant.

Description of the Battery Level Indicator

The current battery level is shown during both the charging and discharging process. Refer to the following table for details:

The indicators are defined below： LED is on. LED blinks. LED is off.

Battery level indicator	Current battery level

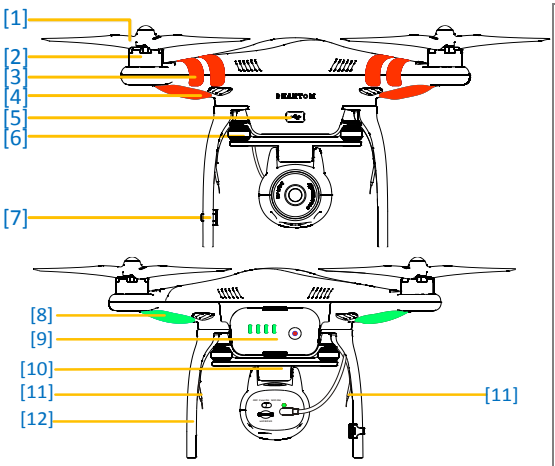
LED1	LED2	LED3	LED4	
■	■	■	■	87.5%~100%
■	■	■	●	75%~87.5%
■	■	■	■	62.5%~75%
■	■	●	■	50%~62.5%
■	■	■	■	37.5%~50%
■	●	■	■	25%~37.5%
■	■	■	■	12.5%~25%
●	■	■	■	0%~12.5%
■	■	■	■	<0%

7.5 Correct Battery Usage Notes

- It's suggested you purchase a new battery after you have discharged your current battery over 300 times.
- It's recommended to charge and discharge the battery thoroughly once every 20 charge/discharge cycles. Users should discharge the battery until there is less than 8% power left or until the battery can no longer be turned on. Refer to the DJI VISION App for an exact readout of the battery percentage level. You should then fully recharge the battery to maximum capacity. This power cycling procedure will ensure the battery is working at its optimal level.
- Turn the power OFF when you have finished flying and remove the battery from its compartment. NEVER plug or unplug the battery into the aircraft when it is powered on.
- Take the battery out of the aircraft after every flight and store the battery in a safe and secure place. For long term storage please place the battery with only a 40~50% capacity in a strong battery box securely. We recommend discharging and charging the battery completely once every 3 months to keep it in good condition. The capacity should be varied in such a cycle (40%~50%)—0%—100%—(40%~50%).
- Adhere to the notes for the battery in the disclaimer and regard safety as your first priority.
- The battery should be charged in an environment that is between 10℃ to 40℃, and be discharged in an environment that is between -20℃ to 60℃. Both charging and discharging should be in an environment that the relative humidity is lower than 80%.
- It's suggested that you purchase a new battery if the current battery is swollen or damaged in any way.
- Never try to recharge or fly with a battery that is swollen or damaged in any way.
- Never charge the battery unattended. Always charge the battery on a non-flammable surface such as concrete and never near any flammable materials.

8 PHANTOM 2 Aircraft

8.1 The Aircraft



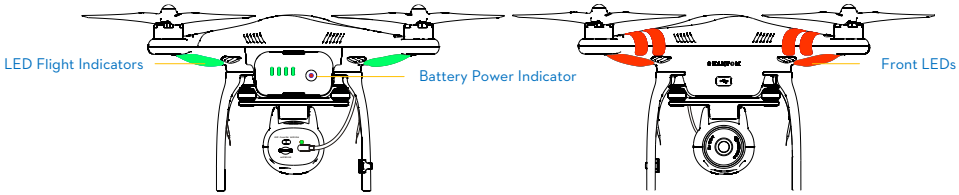
[1]	Propeller
[2]	Motor
[3]	Front Side
[4]	Front LEDs
[5]	Micro-USB
[6]	Vibration Absorber
[7]	Compass
[8]	LED Flight Indicators
[9]	DJI Intelligent Battery
[10]	Servo
[11]	Receiver Antenna
[12]	Landing Gear

8.2 Built-in Flight Control System Instructions

The built-in flight control system is used to control the entire aircraft's functions in flight such as Pitch (forwards and backwards), Roll (left and right), Elevator (up and down) and Yaw (turn left or right). The flight controller contains the MC (Main Controller), IMU, GPS, compass, receiver and LED indicators. The IMU (Inertial Measurement Unit) has a built-in inertial sensor and a barometric altimeter that measures both attitude and altitude. The compass reads geomagnetic information which assists the GPS (Global Position System) to accurately calculate the aircrafts position and height in order to lock the aircraft in a stable hover. The receiver is used to communicate with the remote control and the MC acts as the brains of the complete flight control system connecting and controlling all the modules together.

8.3 LED Flight Indicators Description

After powering on the intelligent battery, the LED flight indicators light up to show the aircraft's current status.



Front LEDs

The front LEDs are for indicating where the nose of the aircraft is. They light up solid red only after the motors have started spinning.

LED Flight Indicators Description

Normal status	LED flight indicators	Notes
Power On Self-Test		----
Warming Up		Aircraft cannot take off.
Ready to Fly		Slow blinking green.
Ready to Fly (non-GPS)		Slow blinking yellow.
Abnormal status	**LED flight indicators**	
Remote Control Signal Lost		Fast blinking yellow. Refer to the Failsafe Function (Page 32).
Low Battery Capacity Warning		Slow blinking red.
Critical Low Battery Capacity Warning		Fast blinking red.
Not Stationary or Sensor Bias is too big		Keep aircraft stationary or perform IMU calibration.
Error*		Cannot fly.
Compass Needs Calibration		Refer to the Calibrating the Compass (Page 30).

(1) The aircraft should be kept stationary on level ground before takeoff.

(2) Make sure the aircraft's status is in Ready to Fly or Ready to Fly (non-GPS) mode before takeoff.

(3) If an error occurs (LED is solid red), please connect to the PHANTOM 2 VISION Assistant for more detailed information.

NO.	Errors	Operation
1	IMU calibration is required.	Calibrate within the Assistant.
2	IMU is abnormal.	Should be repaired.
3	Compass is abnormal.	Should be repaired.
4	Remote Control's mid-point is set abnormally.	Refer to the How to solve large margin(s) mid-point error? (Page 66) for details.

9 Connecting to the Camera

9.1 Camera Connection Procedures

Please carry out the following procedures to connect a mobile device to the PHANTOM 2 VISION.

1. Power on the remote control and the range extender.
2. Make sure the switch on the back of the camera is set to “WIFI ON” and then power on the PHANTOM 2 VISION.
3. (Fig.1)Enable the Wi-Fi on your mobile device; wait for about 30 seconds, and then select the Phantom_xxxxxx from theWi-Fi network list.
4. (Fig.2)Run the DJI VISION App on your mobile device which will indicate the current Wi-Fi connection status on the main menu. The Wi-Fi connection indicator will turn solid green which means the connection is good.
5. Tap the “CAMERA” icon and the DJI VISION App will establish a live camera preview (Fig.3). This means everything is now functioning.

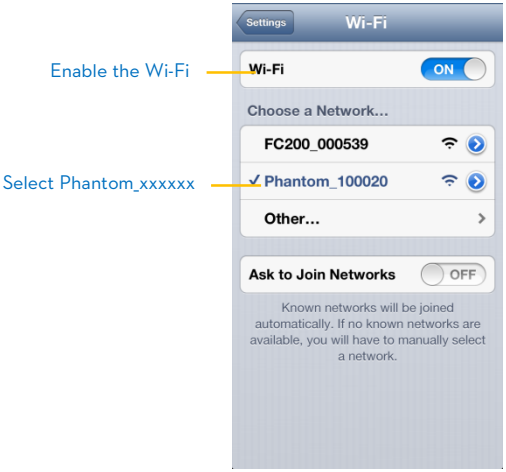


Fig.1

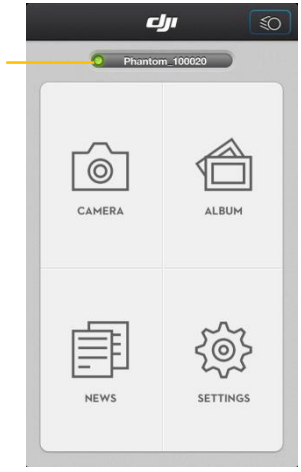


Fig.2

Fig.3

Wi-Fi Connection Indicator Description

Icon		Description
	Solid green	Wi-Fi is now connected to the PHANTOM 2 VISION.
	Solid blue	Wi-Fi is connected to another Wi-Fi network and NOT to the PHANTOM 2 VISION.
	Off	No Wi-Fi connection.

(1) The first time you launch the DJI VISION App, Internet access is required to finish the login process or new account creation.

(2) The SSID is unique for each PHANTOM 2 VISION which should appear in your Wi-Fi list as Phantom_xxxxxx. Always connect to the SSID starting with Phantom_xxxxxx. FC200_0xxxxx is the SSID of the camera and should not be connected to. If the SSID FC200_0xxxxx is connected to, then the connection signal range will be extremely shortened.

10 Calibrating the Compass

IMPORTANT: Make sure to perform the Compass Calibration procedures prior to the first flight.

The compass is very sensitive to electromagnetic interference which causes abnormal compass data and leads to poor flight performance or even flight failure. Regular calibration of the compass enables the compass to perform at its optimal level.

10.1 Calibration Warnings

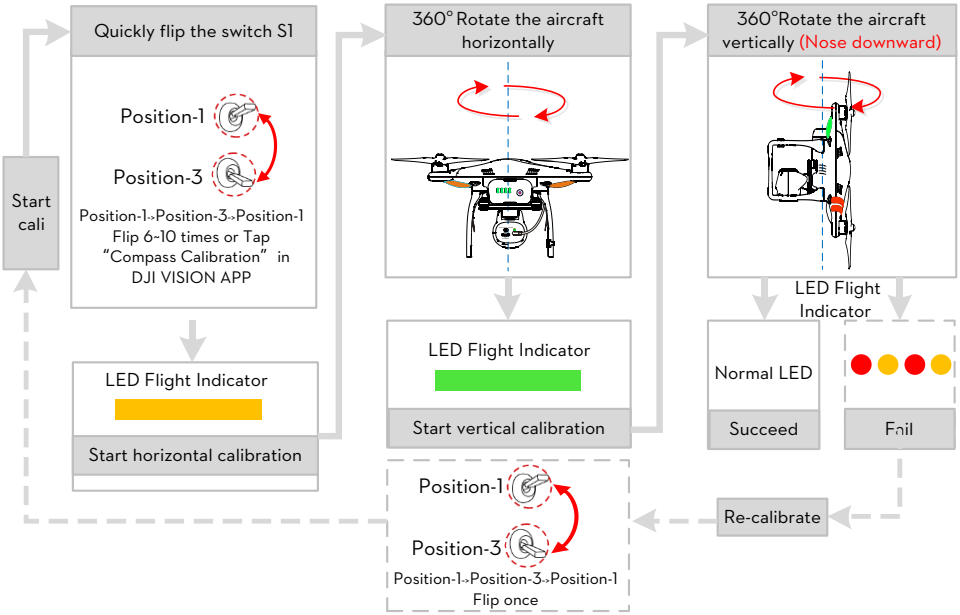
(1) DO NOT calibrate your compass where there is a possibility for the existence of strong magnetic interference such as magnetite, parking structures, and steel reinforcement underground.

(2) DO NOT carry ferromagnetic materials with you during calibration such as keys or cellular phones.

(3) Compass Calibration is very important; otherwise the flight control system will not work properly.

10.2 Calibration Procedures

Choose an open space to carry out the following procedures. Please watch the quick start video of the PHANTOM 2 VISION for more compass calibration details.



10.3 When Recalibration Is Required

(1) When Compass Data is abnormal, the LED flight indicator will blink alternating between red and yellow.

(2) Last compass calibration was performed at a completely different flying field/location.

(3) The mechanical structure of the aircraft has changed, i.e. changed mounting position of the compass.

(4) Evident drifting occurs in flight, i.e. the aircraft doesn't fly in straight lines.

11 Flight

11.1 Flying Environment Requirements

(1) Before your first flight, please allow yourself some flight training (Using a flight simulator to practice flying, getting instruction from an experienced person, etc.).

(2) DO NOT fly in bad weather, such as rain or wind (more than moderate breeze) or fog.

(3) The flying field should be open and void of tall buildings or other obstacles; the steel structure within buildings may interfere with the compass.

(4) Keep the aircraft away from obstacles, crowds, power lines, trees, lakes and rivers etc.

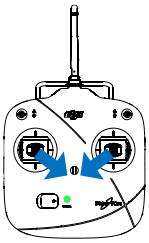
(5) Try to avoid interference between the remote control and other wireless equipment. (No base stations or cell towers around)

(6) The flight control system will not work properly at the South Pole or North Pole.

(7) All parts must be kept out of the reach of children to avoid CHOKING HAZARDS; if a child has accidentally swallowed any part, you should seek immediate medical assistance.

11.2 Starting/Stopping the Motors

A Combination Stick Command (CSC) is used to start the motors instead of simply pushing the throttle stick up. This is a safety precaution to prevent the motors from accidentally spinning up. Push both sticks to their bottom corners as indicated in the diagram below to start the motors. Once the motors have spun up, release both sticks simultaneously. The same combination stick command (CSC) is used to stop the motors.



11.3 Takeoff/Landing Procedures

1. Start by placing the PHANTON 2 VISION on the ground with the battery level indicator facing you.
2. Power on the remote control.
3. Power on the range extender.
4. Switch the camera to the “WIFI ON” position.
5. Power on the aircraft by turning on the intelligent battery, refer to the Battery Usage (Page 24) for details.
6. Connect the mobile device to the PHANTOM 2 VISION and then run the DJI VISION App to enter the camera preview page.

7. Wait until the LED flight indicator starts to slowly blink green/yellow. This means the aircraft is initializing and entering the “Ready to Fly”/“Ready to Fly (non-GPS)” state. Then proceed to execute the CSC command to start motors.
8. Push the throttle stick up slowly to lift the aircraft off the ground. Refer to the Remote Control Operation (Page 10) for more details.
9. Enjoy your flight while capturing and recording with the DJI VISION App. Refer to the Using DJI VISION App (Page 42) for more details.
10. Pull down the throttle stick to descend. The stick will lock into place and the aircraft will descend steadily.
11. After landing the aircraft on the ground, keep the throttle stick at its lowest position for about 3 to 5 seconds which will automatically stop the motors.

You SHOULD NOT execute the CSC during normal flight! This will stop the motors and cause the aircraft to descend rapidly and drop without any type of control.

(1) When the LED flight indicator blinks yellow rapidly during flight, the aircraft has entered into Failsafe mode, refer to the Failsafe Function (Page 32) for details.
(2) A low battery capacity warning is indicated by the LED flight indicator blinking red slowly or rapidly during flight. Refer to the Low Battery Level Warning Function (Page 34) for details.
(3) Watch the quick start video about flight for more flight information.
(4) Aircraft and battery performance is subject to environmental factors such as air density and temperature. Be very careful when flying 3000 meters (9800 feet) or more above sea level, as battery and aircraft performance may be reduced.

11.4 Failsafe Function

The aircraft will enter Failsafe mode when the connection from the remote control is lost. The flight control system will automatically control the aircraft to return to home and land to reduce injuries or damage. The following situations would make the aircraft fail to receive a signal from the remote control and enter Failsafe mode:

(1) The remote control is powered off.

(2) The aircraft has flown out of the effective communication range of the remote control.

(3) There is an obstacle obstructing the signal between the remote control and the aircraft, essentially reducing the distance the signal can travel.

(4) There is interference causing a signal problem with the remote control.

Failsafe works differently depending on the mode the aircraft is in when Failsafe mode is initiated whether it is in the Ready to Fly or Ready to Fly (non-GPS) mode.

Ready to Fly (non-GPS) ---- Automatic landing

The flight control system will try to keep the aircraft level during descent and landing. Note that the aircraft may be drifting during descent and landing process.

Ready to Fly ---- Automatic go home and land

The flight control system will automatically control the aircraft to fly back to the home point and land.

Home Point

When the aircraft is initializing the Ready to Fly status, the aircraft will record the current GPS coordinates as the home point. It is recommended to lift off only after Ready to Fly status is confirmed for the safety of being able to fly back to home point successfully in case the Failsafe mode is initiated.

Dynamic Home Point

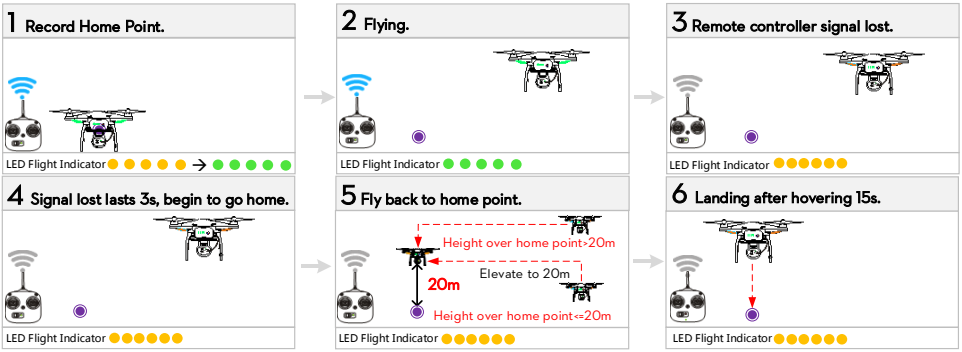
The Home point will be reset to position of the mobile device at specific time intervals.

(1) Enable dynamic home point in DJI Vision app or Phantom 2 Assistant.

(2) Dynamic home point is only available to the GPS-enabled mobile device. Turn on GPS and data service to obtain higher accuracy of the mobile device position.

(3) Dynamic home point is useful in situations when you are in motion and require a Home point that is different from the takeoff point.

Go Home Procedures



(1) In a Failsafe situation, if less than 6 GPS satellites are found for more than 20 seconds, the aircraft will descend automatically.

(2) Aircraft cannot navigate around vertical obstacles on its return home course during Failsafe. However, you can set return home altitude value in Phantom Assistant to avoid hitting vertical obstacles through DJI Phantom Assistant.

In Phantom 2 Vision mode, users can set a new home point manually when the aircraft is in "Ready to fly" status as long as a home point has been recorded automatically. Quickly flipping the S2 switch of the remote control from upper most to lower most positions 5 times or more will reset the current aircraft position as a new home point of PHANTOM 2 VISION. When successfully reset, you will see a series of rapid green blinks on the LED Flight Indicator. The definition of "home point" is: i) The home point is the place PHANTOM 2 VISION returns to when the control signal is lost, which is recorded last time. ii) The

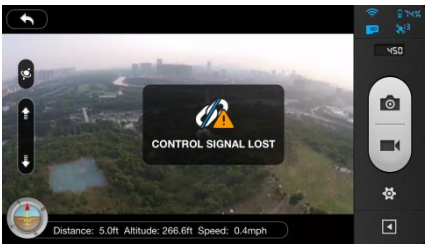
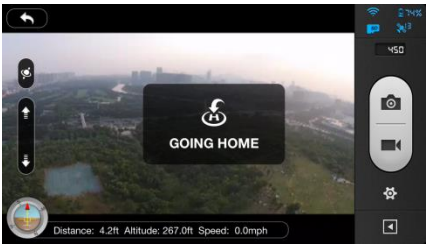
home point is used to calculate the horizontal distance between you and the aircraft, the distance will be displayed on the DJI VISION App.

Regaining Control During Failsafe Procedure

Position of Switch S1	 Position-1	 Position-2	 Position-3
How to regain control	When the S1 switch is switched to Position-1, toggle the S1 switch to any other position once to regain control. If remote control's signal is recovered, control is returned back to the pilot.	Regain control as soon as signal is recovered.	

Failsafe on the DJI VISION App

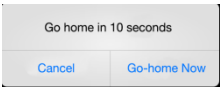
The DJI VISION App will provide information during Failsafe.

	
Control Signal Lost Indicator	Going Home Indicator

Refer to the Using DJI VISION App (Page 42) for details.

11.5 Low Battery Level Warning Function

If the DJI smart battery is depleted to a point that may affect the safe return of the aircraft, the low battery level warning notifies users to take action. Users are advised to land the aircraft immediately when they observe these warnings. The thresholds for these warnings are automatically determined based on the current aircraft altitude and its distance from the Home point. Details of the battery level warning are listed below:

Battery Level Warning	Remark	Rear LED Flight Indicator	DJI VISION App	Flight Instructions
Sufficient battery level 	Sufficient battery level.	 Green LED blinks slowly.	No message prompts.	Operating normally, no specific action needed.
Low battery level warning 	The battery power is low. Please land the aircraft.	 Red LED blinks slowly.	When “Go-Home” is selected in the Phantom Assistant, this message will appear:  Tap “Go-home Now” to have the aircraft return to the Home point and land automatically, or “Cancel” to resume normal flight. If no action is taken, the aircraft will automatically go home and land after 10 seconds.	Fly the Phantom 2 Vision+ back and land it as soon as possible, then stop the motors and replace the battery.
Critical Low battery level warning 	The aircraft must land immediately.	 Red LED blinks quickly.	The DJI Vision App screen will flash red and aircraft starts to descend.	The Phantom 2 Vision+ will begin to descend and land automatically.
Estimated remaining flight time 	Estimated remaining flight based on current battery level.	N/A	N/A	N/A

1. Color zones on the battery level indicator  reflect estimated remaining flight time and are adjusted automatically, according to the aircraft´s current status.
2. When the critical battery level warning activates and the aircraft is descending to land automatically, you may push the throttle upward to hover the aircraft and navigate it to a more appropriate location for landing.

When these warnings are triggered, please bring the aircraft back to the Home point or land to avoid losing power during flight.

Low Battery Level Warning on the DJI VISION App

Battery level warnings will show on the camera page of the DJI VISION App when the battery level is low.

(1) A red light will flash along the edges of the app screen.

(2) An audible alarm will sound. Make sure sound is turned on and volume is turned up on your mobile device.

(3) The aircraft battery icon will turn red.

Low Battery Capacity Warning

Refer to the Using DJI VISION App (Page 42) for details.

(1) Remember to fly your PHANTOM 2 VISION back as soon as you see a low battery capacity warning.

(2) The PHANTOM 2 VISION is "Ready To Fly," "Ready to Capture" and "Ready to Share" but it is still an aircraft. Keeping the battery contact needles and pads clean is very important. Any dirt and dust may cause a communication failure.

11.6 Flight Limits

All UAV (unmanned aerial vehicle) operators should abide by all regulations from such organizations at ICAO (International Civil Aviation Organization) and per country airspace regulations. For safety reasons, the flight limits function is enabled by default to help users use this product safely and legally. The flight limits function includes height, distance limits.

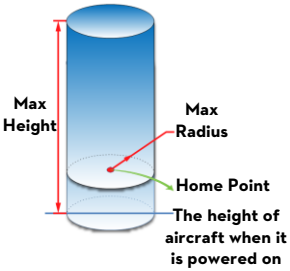
In Ready to Fly status, height and distance limits works together to restrict the flight. In Ready to Fly (non-GPS) status, only height limit works and the flying height restricted to be not over 120m.

(1) The default parameters in the Assistant is compliant within the definitions of class G ruled by ICAO. (Refer to Airspace Classification to get more details). As each country has its own rules, make sure to configure the parameters to comply with these rules too, before using the PHANTOM 2 VISION.

(2) Users in Mainland China can refer to 民用航空使用空域办法.

11.6.1 Max Height & Radius Limits

The Max Height & Radius restricts the flying height and distance. Configuration can be done in the PHANTOM 2 VISION Assistant. Once complete, your aircraft will fly in a restricted cylinder.



Ready to Fly		
	Limits	**Rear LED flight indicator**
Max Height	The flight height is restricted to fly under the max height.	None.
Max Radius	The flight distance is restricted to fly within the max radius.	Rapid red flashings when close to the Max radius limit.

Ready to Fly(non-GPS)		
	Flight Limits	**Rear LED flight indicator**
Max Height	The flight height is restricted to fly under the minor height between the Max height and 120m.	None.
Max Radius	Not limited and no LED indicators.	

(1) If the aircraft flies out of the limits, you can still control your aircraft except to fly it further away.

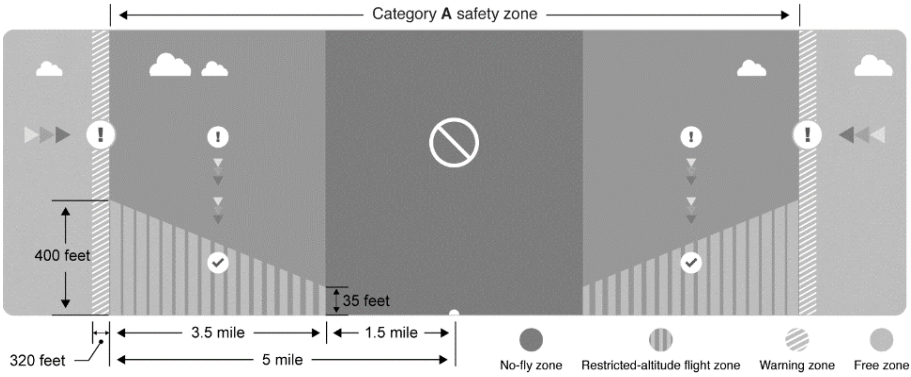
(2) If the aircraft is flying out of the max radius in Ready to Fly (non-GPS) status, it will fly back within the limits range automatically if 6 or more GPS satellites have been found.

11.6.2 Flight Limits of Special Areas

Restricted areas include airports worldwide. All restricted areas are listed on the DJI official website at http://www.dji.com/fly-safe/category-mc. Restricted areas are divided into category A and category B. Category A areas cover major international airport such as LAX and Heathrow, while category B areas includes smaller airports.

Category A Safety Zone

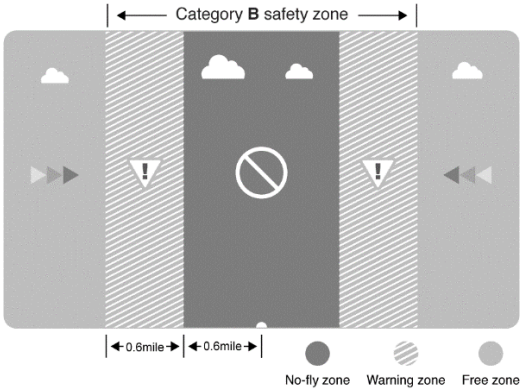
- The category A "safety zone" is comprised of a small "no-fly zone" and a range of "restricted-altitude zones". Flight is prevented in the "no-fly zone" but can continue with height restrictions in the restricted-altitude zone.
- 1.5 miles (2.4 km) around a designated safety zone is a no-fly zone, inside which takeoff is prevented.
- 1.5 miles (2.4 km) to 5 miles (8 km) around restricted areas are altitude restricted, with maximum altitude going from 35 feet (10.5 m) at 1.5 miles (2.4 km) to 400 feet (120 m) at 5 miles (8 km).
- A "warning zone" has been set around the safety zone. When you fly within 320 feet (100m) of the safety zone, a warning message will appear on the DJI Vision app.



Category A

Category B Safety Zone

- Category B "safety zone" is comprised of a "no-fly zone" and a "warning zone".
- 0.6 miles (1 km) around the safety zone is a designated "no-fly zone".
- A "warning zone" has been set around the safety zone. When you fly within 0.6 miles (1Km) of this zone, a warning will appear on the DJI Vision app.



Category B

Ready to Fly mode			
Zone	**Restriction**	**DJI VISION App Notification**	**Rear LED Flight Indicator**
No-fly Zone	Motors will not start.	Warning: You are in a No-fly zone. Take off prohibited.	
	If the Phantom enters the restricted area in Ready to Fly (non-GPS) mode but Ready to Fly mode activates, the Phantom will automatically descend to land then stop its motors after landing.	Warning: You are in a No-fly zone, automatic landing has begun. (If you are within 1.5 mile radius)	
Restricted-altitude flight zone	If the Phantom enters a restricted area in Ready to Fly (non-GPS) mode and Ready to Fly mode activates, it will descend to a safe altitude and hover 15 feet below the safe altitude.	Warning: You are in a restricted zone. Descending to safe altitude. (If you are between the range of 1.5 mile and 5 mile radius)	

		Warning: You are in a restricted zone. Max flight height restricted to between 10.5m and 120m. Fly Cautiously.	
Warning zone 	No flight restriction applies, but there will be warning message.	Warning: You are approaching a restricted zone, Fly Cautiously.	
Free zone 	No restrictions.	None.	None.

Semi-automatic descent: All stick commands are available except the throttle stick command during the descent and landing process. Motors will stop automatically after landing. Users must toggle the S1 switch to regain control. This is the same as regaining control during Failsafe. Please refer to Regaining Control During Failsafe Procedure (Page 34).

(1) When flying in the safety zone, LED flight indicators will blink red  quickly and continue for 3 seconds, then switch to indicate current flying status and continue for 5 seconds at which point it will switch back to red blinking.

(2) For safety reasons, please do not fly close to airports, highways, railway stations, railway lines, city centers and other special areas. Try to ensure the aircraft is visible.

11.6.3 Conditions of Flight Limits

In different working modes and flight modes, flight limits will differ according to number of GPS satellites found. The following table demonstrates all the cases(**√: available;** ×: unavailable).

All flights are restricted by height, distance and special areas simultaneously. The Failsafe and Ground Station operations are not restricted to flight limits, but if Ground Station function is used, the flight will be restricted the special area limits built in to Ground Station. Refer to the Ground Station manual for details.

Phantom mode			
Flight Status	**Limits of Special Area**	**Max Height**	**Max Radius**
Ready to Fly	√	√	√
Ready to Fly (non-GPS)	×	√	×

Naza-M mode				
Control Mode	**number of GPS found**	**Limits of Special Area**	**Max Height**	**Max Radius**
GPS	≥6	√	√	√
	< 6	×	√	×
ATTI.	≥6	√	√	×
	< 6	×	√	×
Manual	≥6	×	×	×
	< 6	×	×	×

11.6.4 Disclaimer

Please ensure that you are up to date with international and domestic airspace rules and regulations before using this product. By using this product, you hereby agree to this disclaimer and signify that you have read this fully. You agree that you are responsible for your own conduct and content while using this product, and for any direct or indirect consequences caused by not following this manual, violating or disregarding other applicable local laws, administrative rules and social habits thereof.

12 Using DJI VISION App

The DJI VISION App controls the PHANTOM 2 VISION camera including capture and recording, settings, pitch angle adjustments, and displays essential status including flight parameters and battery life.

12.1 DJI VISION App Main Menu

After login you will come to the main page. This shows the current Wi-Fi connection and four app function icons.

Icons		Description
	Camera	Tap to enter camera preview
	Album	Tap to enter Album
	News	Tap to enter DJI news
	Settings	Tap to enter App settings
	Checklist	Tap to enter preflight checklist.

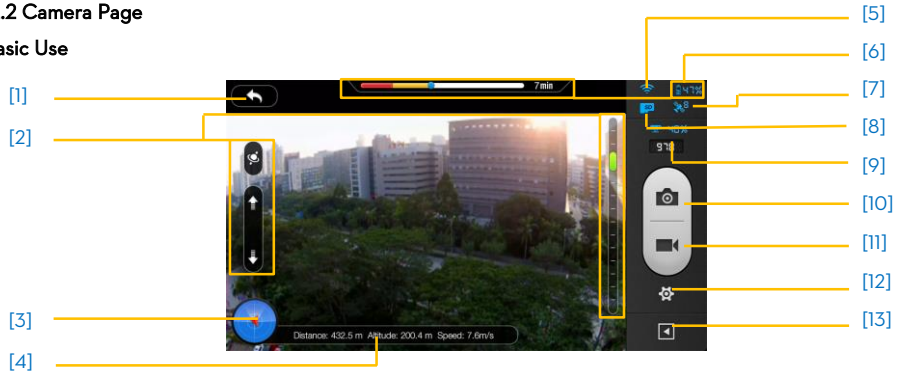
(1) Connect your mobile device to the PHANTOM 2 VISION Wi-Fi network to use the camera and onboard album.

(2) Connect your mobile device to the internet (mobile or Wi-Fi) to share photos, videos and read DJI news.

(3) If you receive a phone call during flight, the live camera preview screen may be interrupted. It's recommended to ignore the call and pay full attention to your flight.

12.2 Camera Page

Basic Use



[1] Return

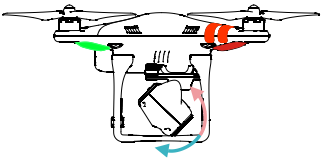
- Return to the preview page

[2] Camera Tilt Control

- Tilt Control Mode. Tap and hold to enter the Accelerometer Sensor Mode. Release to return to normal mode.

Normal Mode

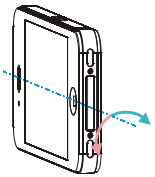
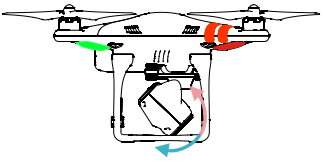
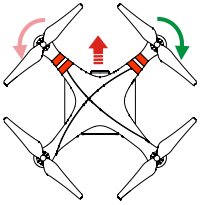
Tap up arrow ( ) to pitch camera upwards and down arrow ( ) to pitch downwards. Green slider indicates current camera pitch.

Normal Mode pitch control	Pitch movement
	

Accelerometer Sensor Mode

Tap and Hold to switch on Accelerometer Sensor Mode to control camera pitch and rotation by moving your mobile device.

Tilt device forward to pitch camera downward and backward to pitch upward. Lean it left to rotate left( ) and right to rotate right( ).

Accelerometer Sensor Mode Pitch Control		Pitch Movement
		
Accelerometer Sensor Mode Yaw Control		**Yaw Movement**
		

In Accelerometer Sensor Mode, the pitch angle indicator will show a grey area. When the green pitch indicator is inside the grey area, the camera will move according to pitch gestures. When the indicator reaches the boundary of the grey area, pitch gestures will control the camera´s pitch speed at a constant rate.

[3] Flight Attitude and Radar Function

Flight attitude is indicated by the flight attitude icon.

(1) The red arrow shows which direction the PHANTOM 2 VISION is facing.

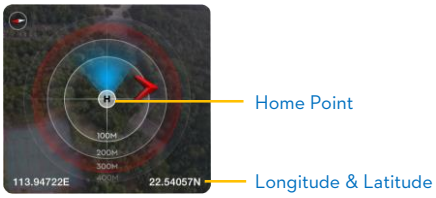
(2) Light blue and dark blue areas indicate pitch.

(3) Pitching of the boundary between light blue and dark blue area shows roll angle.

(4) An orange circle around the radar indicates that the dynamic home point is not available.

A green circle around the radar indicates that the dynamic home point is available and a new home point has been set.

Tap the flight attitude icon to turn on the radar function. Home is located in the center of the radar and the red icon indicates the PHANTOM 2 VISION's current heading, direction, and approximate distance from home. The current longitude and latitude of the aircraft is displayed on the bottom of the radar. Tap the flight attitude icon again to disable the radar.



(1) By default, the center of the radar indicates the home point that has been recorded by the PHANTOM 2 VISION. Tap the center of the radar to switch the center to your mobile device's current location.

(2) If your mobile device contains a compass, the top portion of the Radar is the direction you are pointing. If not, the radar will be oriented due north.

[4] Flight Parameters

Tap to set return home (RTH) altitude.

Distance: Horizontal distance from home point.

Altitude: Vertical distance from home point.

Speed: Horizontal flying speed.

Distance will appear as N/A if the PHANTOM 2 VISION is not Ready to Fly.

[5] Wi-Fi Signal Intensity

Indicates camera is connected to your mobile device and Wi-Fi is working normally.

The connection between the camera and mobile device may fail if Wi-Fi signal strength is low. Refer to the PHANTOM 2 VISION CONNECTION BROKEN on the camera page.

[6] Aircraft Battery Level

(1) When available power is more than 30%, the battery icon is blue (e.g. ). This battery level is appropriate for flight.

(2) When below 30%, the battery icon will turn red (e.g. ) and the LED flight indicator will slowly blink red. This battery level is low for flight. It is recommended that you fly your PHANTOM 2 VISION home and land it as soon as possible.

(3) After available power drops below 15% (e.g. ), there is no longer enough power for flight. The LED flight indicator will begin to flash red rapidly and the PHANTOM 2 VISION will begin an automatic descent and land.

The available power thresholds mentioned above can be adjusted in the PHANTOM 2 VISION Assistant.

[7] Aircraft GPS Status

Displays GPS status and the number of available satellites. The icon is highlighted when more than 6 satellites are found, enabling Ready to Fly mode.

[8] Micro-SD Card Status

Displays Micro-SD Card Status. The icon is highlighted when a valid Micro-SD card is inserted. If there is no Micro-SD card present, it is grayed out.

[9] Remaining Shots

Displays estimated shots remaining, based on the current Photo Size setting of camera and the storage capacity of the Micro-SD card. This shows `0' if:

(1) Micro-SD card is not inserted.

(2) Micro-SD card is full.

(3) Micro-SD card is damaged.

(4) Connection between the DJI VISION App and camera is broken.

[10] Shutter Button

Tap to take photos.

Single capture: press once for a single capture.

Continuous capture: press once for 3 or 5 captures.

Timed capture: press once to begin a timed capture, press again to stop.

(1) Shutter button is disabled during video recording.

(2) Capture modes can be reconfigured in camera settings; refer to the Camera Settings (Page 46).

[11] Record Button

Start and Stop video recording. Tap once to start recording. A red dot will blink to indicate recording is in progress and a time elapsed counter will appear in the top right corner of the preview screen. Press again to stop recording.

[12] Camera Settings

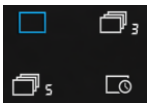
Tap to open the camera settings menu, refer to Camera Settings (Page 46).

[13] Hide or Show Flight Parameters.

Tap to hide the flight parameters. Tap again to show.

Camera Settings

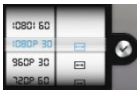
[1] Capture Mode

	Single capture.
	3 captures.
	5 captures.
	Timed capture. Also selectable: a) Intervals between two shots (3~60 s) b) Number of shots (2~254, or infinite shots until Micro-SD card is filled) 
Capture Button will change according to the selected capture mode. (, , , .)	

[2] Photo Size

	Large: 4384 x 3288, 4:3, 14.4MP
	Medium: 4384 x 2922, 3:2, 12.8MP
	Small: 4384 x 2466, 16:9, 10.8MP

[3] Video Resolution

	1920 x 1080 60i, 16:9
	1920 x 1080 30p, 16:9
	1920 x 1080 25p, 16:9
	1280 x 960 30p, 4:3
	1280 x 960 25p, 4:3
	1280 x 720 60p, 16:9
	1280 x 720 30p, 16:9
	640 x 480 30p, 4:3 (VGA)
Three Field of View (FOV) options are supported when shooting in 1920x1080 60i, 1920x1080 30p and 1920x1080 25p: Wide (120°), Medium (110°) and Narrow (85°).	

[4] Photo Format

	JPEG
	RAW The PHANTOM 2 VISION camera shoots in JPEG and RAW file formats simultaneously when this option is selected. See the following table for detailed specifications.

JPEG photo size	4384 X 3288	4384 X 2922	4384 X 2466
RAW photo size	4384 X 3288	4384 X 2920	4384 X 2464

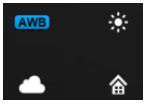
RAW is not supported in continuous capture mode or timed capture mode. JPEG photos will be created automatically.

RAW format support will be coming soon with DJI Conversion Software to convert PHANTOM 2 VISION´s Camera RAW files to Adobe DNG.

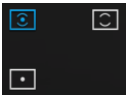
[5] Selectable ISO

	AUTO
	100
	200
	400

[6] White Balance

	AWB (auto)
	Sunny
	Cloudy
	Indoor

[7] Exposure Metering

	Center
	Average
	Spot

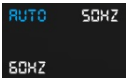
[8] Exposure Compensation

	-2.0 (EV)	2.0 (EV)
	-1.7 (EV)	1.7 (EV)
	-1.3 (EV)	1.3 (EV)
	-1.0 (EV)	1.0 (EV)
	-0.7 (EV)	0.7 (EV)
	-0.3 (EV)	0.3 (EV)
	0 (EV)	

[9] Sharpness

	Standard
	Hard
	Soft

[10] Anti-flicker

	Auto
	50Hz
	60Hz

[11] Restore Default Settings

Restores all camera default settings. Camera reboot is needed to allow restoration to take effect.

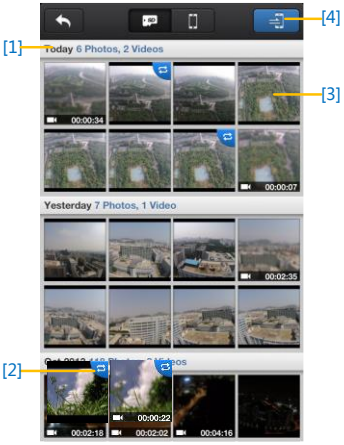
[12] Format SD Card

Format the Micro-SD card. All data stored in the Micro-SD card will be lost after formatting. Remember to backup before formatting.

12.3 Album Page

Camera SD CARD Album

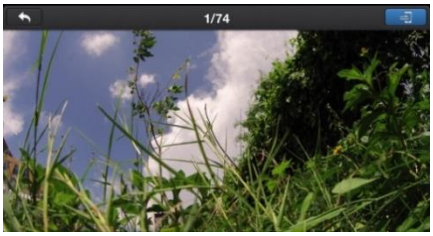
Browse thumbnails of photos and videos stored on the Micro-SD card. Tap to view photo or watch video.



[1] Photos and Videos are listed and grouped by date.

[2] All photos and videos that have already been synced to your mobile device are identified with the icon.

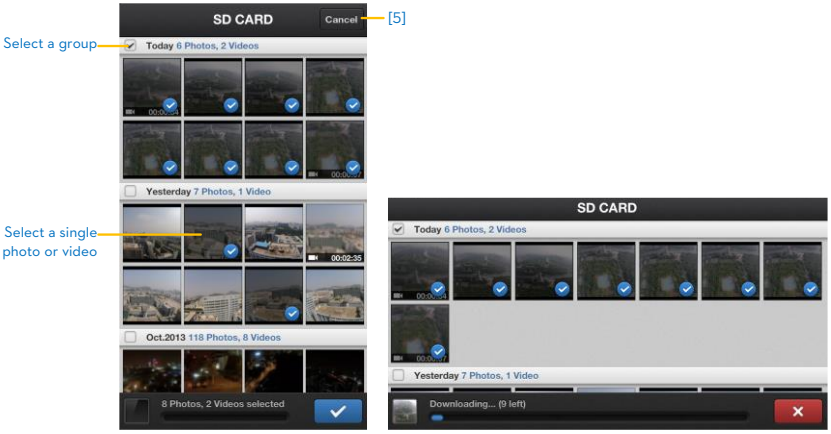
[3] Tap any thumbnail for single view mode. Tap a Photo thumbnail that hasn't been synchronized to the mobile device to view the photo. Swipe left or right to view the previous or next photo item. Tap on a video thumbnail to play it and view the video's length. A progress bar will also appear at the bottom of the screen. Tap to enter single synchronization mode to synchronize a single photo or video, or to synchronize and play a video at the same time.



[4] Tap the button to enter multiple synchronization mode (as shown in the following diagram). Tap thumbnails to select photos or videos to synchronize to your mobile device (The thumbnails identified by the check mark

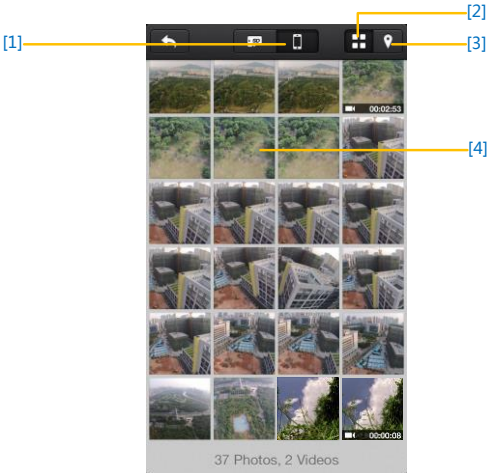
are successfully selected.). Or you can select one or more groups to be synchronized by checking the box before the group, and then tap to start synchronizing. During the synchronization process, users can tap to cancel the synchronization. Photos and videos that have been synchronized to the mobile device will remain.

> ⚠ Some mobile devices may fail to support synchronization of 1080i60 video files.



[5] Tap "Cancel" or "Finished" to exit the multiple synchronization mode and return to the SD CARD page.

Mobile Device Album

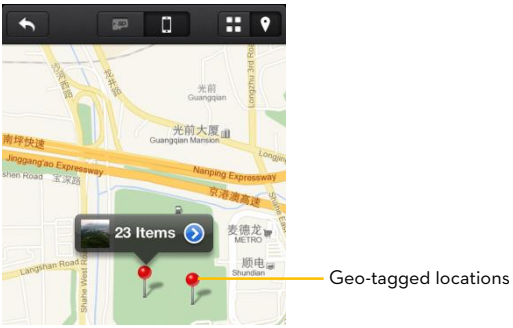


[1] You can browse all photos and videos in the album which have been synchronized to the mobile device, view a selected photo or play a selected video.

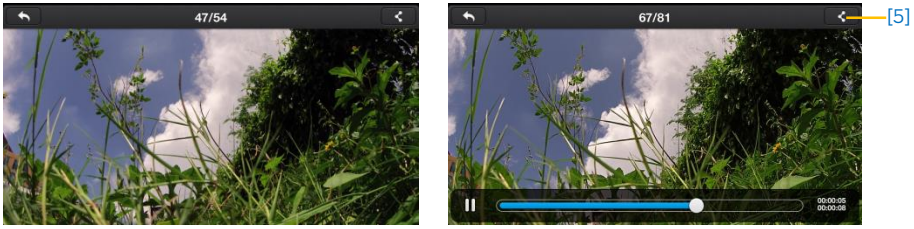
[2] Photos and videos are listed in thumbnail style and sorted by capture time.

[3] Pictures and videos are sorted by captured/recorded Geo-tagged locations.

> ⚠ Access to the Internet is required to load a map.



[4] Tap any thumbnail for single view; you can slide left or right to view the previous or next photo. Tap a video thumbnail to play a single video.

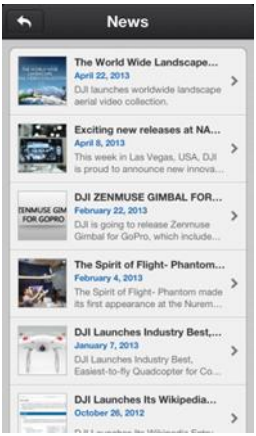


[5] Tap to share your photos and videos to social network sites.

> ⚠ Access to the Internet is required to share your photos and videos.

12.4 News Page

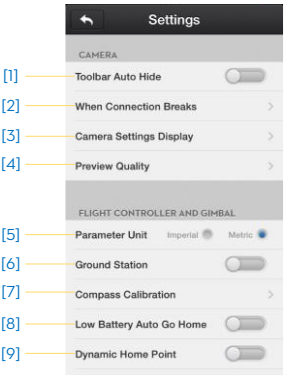
View the latest DJI news. (Internet access is required.)

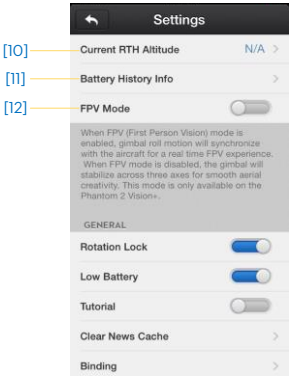


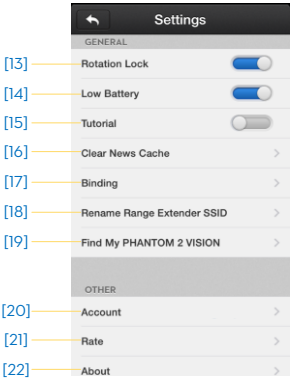
News List

News Details

12.5 Settings Page

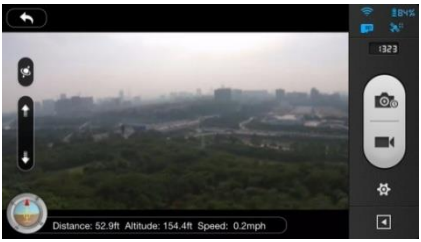




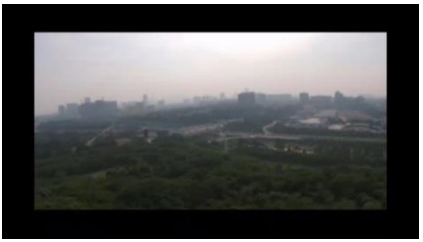


[1] Toolbar Auto Hide

Slide the switch from left to right to enable this function. The toolbar will auto hide on the camera page.



Toolbar Auto Hide Disabled



Toolbar Auto Hide Enabled

[2] When Connection Breaks

Stop Recording:

Enabled: Stop recording when the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.

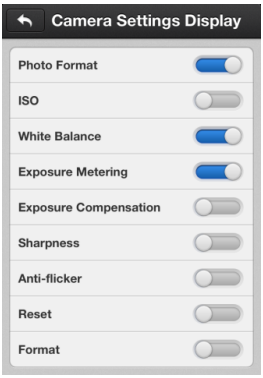
Disabled: Keep recording when the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.

Start Recording / Start Continuous Capture / Stay in Idle: Select the state the camera will enter in the event of a Wi-Fi Connection break between the mobile device and the camera. Use this function to ensure you continue to capture the scenes you don't want to miss during a flight.

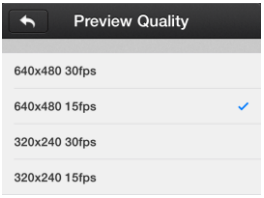
[3] Camera Settings Display

For iOS users, an enabled item will display in the camera settings toolbar, while a disabled item will be hidden.

For Android users, there is no this item.



[4] Preview Quality



High: 640×480@30fps

Medium: 640×480@15fps

Medium: 320×240@30fps

Low: 320×240@15fps (Recommended when there is a lot of interference.)

[5] Parameter Unit

Select imperial or metric units of measurement.

[6] Ground Station

Slide to the right to enable ground station feature.

[7] Compass Calibration

Tap to calibrate the compass. Do not calibrate the compass during flight.

[8] Low Battery Auto Go Home

Enable or disable auto go home feature when battery is low.

[9] Dynamic Home Point

When activated, the Home point will be reset to your current position at specific time intervals. The aircraft will return to the latest Home point as required.

[10] Current RTH Altitude

Default RTH altitude set to 20m. Raising the RTH altitude above 120m is not recommended.

[11] Battery History Info

Show the battery history warning records.

[12] FPV Mode

Switched on, the gimbal will work in FPV mode.

Switched off, the gimbal will work in Stabilize mode.

[13] Rotation Lock

The user interface of the DJI VISION App will rotate if rotation lock is enabled (for iOS device only).

[14] Low Battery Warning

If enabled, an alarm will sound when the battery level is too low. Be sure sound is enabled on the mobile device and try to adjust the volume to the highest level.

[15] Tutorial

Hints and Tips

[16] Clear News Cache

Tap to flush news cache.

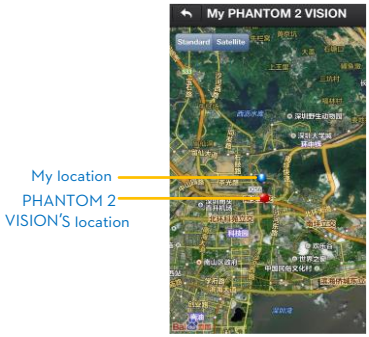
[17] Binding

In the event the camera and range extender bind is lost or one of them requires repair or replacement, camera and range extender binding should be performed via the DJI VISION App. Refer to the How to Bind the Camera & Range Extender (Page 15) for details.

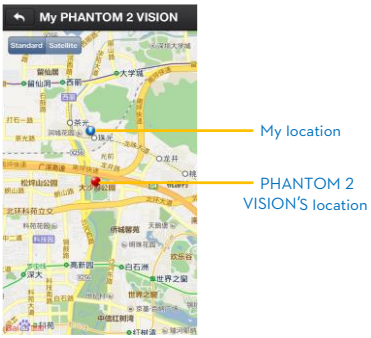
[18] Rename SSID of Range Extender

Tap to rename the SSID of the Range Extender. Follow the instructions on the App GUI.

[19] Find My PHANTOM 2 VISION



Satellite Mode



Standard Mode

[20] Account

Tap to see user account information.

[21] Rate

For iOS users, tap to rate the DJI VISION App. Internet access is required.

For Android users, there is no this item.

[22] About

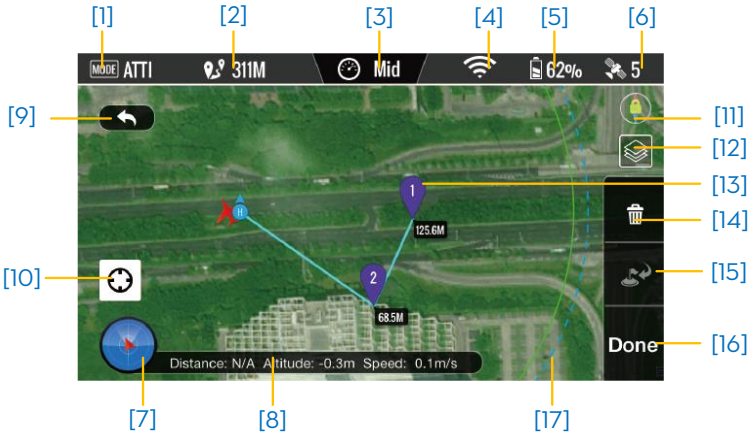
Tap to see the current version of the DJI VISION App and contact information.

12.6 Ground Station

The DJI Vision app features an integrated ground station function. Using it you can create flight missions by placing waypoints and setting waypoint altitude and overall speed. When flight plan has been created, simply tap "GO" and your aircraft will execute the flight mission automatically. You may also abort the flight mission and return home by tapping "GoHome" button.

> ⚠ Upgrade Phantom firmware to the latest version to enable ground station feature. Refer to the Firmware Upgrade of the PHANTOM 2 VISION (Page 63) for more information about how to upgrade the firmware.

12.6.1 Ground Station GUI



[1] MODE

Modes include

Hover：Hovering

Waypoint：Mission in progress

GoHome：Returning to home point

Take off：Taking off

Landing：Landing

GPS： GPS flight

Atti.：Atti. flight

Manual：Manual flight

[2] Approximated Flight Mission Distance

Planned mission distance. To achieve optimum battery performance, max mission distance is restricted to 5km (3miles).

[3] Speed

For flight safety concern, only three gears of flight speed are available. Choose from Fast (8m/s), Mid(4m/s) and Slow (2m/s) for flight speeds. Estimated 10 minutes flight is achievable when the aircraft travels in “Fast” gear.

[4] Wi-Fi Signal Strength

Wi-Fi signal strength display. Refer to the Basic Use [5] (Page 44) in Camera Page for details

[5] Battery Level

Battery level display. Refer to the Basic Use [6] (Page 45) in Camera Page for details

[6] GPS

Number of satellites connected. Refer to the Basic Use [7] (Page 45) in Camera Page for details

[7] Flight Attitude and Radar

Attitude and Radar display. Refer to the Basic Use [3] (Page 44) in Camera Page for details

[8] Flight Parameters

Flight information display. Refer to the Basic Use [4] (Page 44) in Camera Page for details

[9] Back

Return to camera GUI.

[10] Home Point Locator

Locate your Home point.

[11] Orientation Lock

Unlock to sync map orientation with aircraft movement

[12] Map View

Select map view from standard, hybrid or satellite.

[13] Waypoint

Tap each waypoint to set altitude

[14] Delete

Delete current waypoint.

[15] Go Home

Abort mission, return home and land

[16] Done

Hit “Done” then tap “GO” to begin mission.

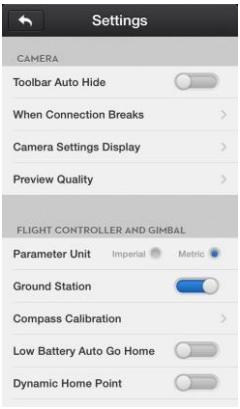
[17] Flight Area

The aircraft can fly in this area and return to the home point with the current battery level. This area is dependent on the current state of the aircraft and will be refreshed at specific time intervals.

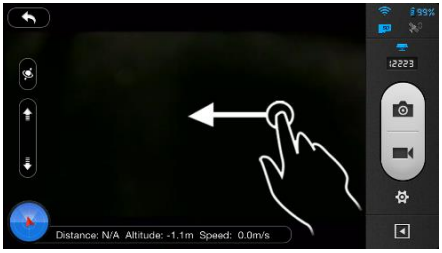
12.6.2 Using Ground Station

Step 1 Launching Ground Station：

Enable ground station feature from DJI Vision app Settings and a disclaimer for ground station prompts. Read the disclaimer thoroughly before starting to use ground station.



Ensure your mobile device has access to the Internet. Due to the map data required, Wi-Fi connection is recommended. Internet access is required to cache the ground station map, if Wi-Fi is unavailable, mobile data service is required. Open the DJI Vision app camera GUI and swipe left to launch ground station. DJI Vision app cannot connect to your aircraft while it is accessing the Internet. Hence, you may prompt with the warning message such as “Connection to Phantom Failed”. This message will not appear when your aircraft is re-connected to DJI Vision app. Map data of your current location will load. You can then drag the map to cache nearby areas for future use.

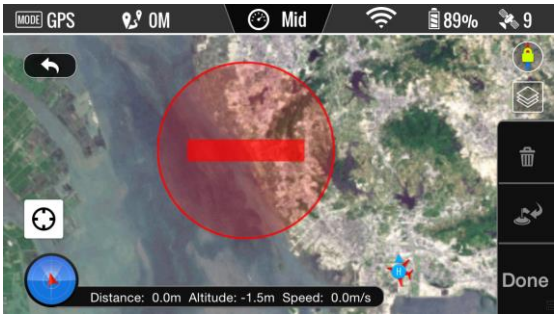


Step 2 Setting a Waypoint：

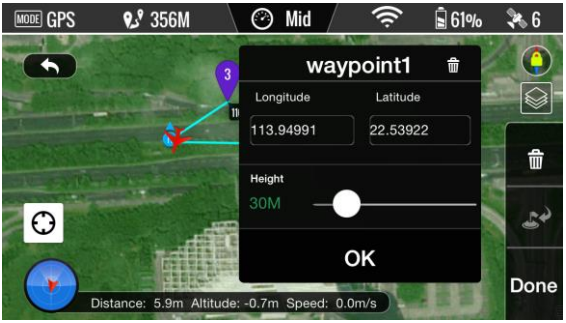
Disconnect from the Internet and connect the DJI Vision app to your aircraft. Check that remote control S1 switch is in position (position-1) and the upper left corner in ground station display GPS and wait for the aircraft to enter “Ready-to-Fly” mode (LED indicator blinking green) before swiping left into ground station. Tap on the map to place a waypoint. You can place up to 16 waypoints including the Home point. Waypoints cannot be placed beyond 500m from the Home point or inside No Waypoint Areas.

(1) A red circle on the map, as shown in the screenshot below, indicates a restricted, No Waypoint area. Waypoints cannot be placed in this area. For more information, refer to the Flight Limits of Special Areas (Page 38).

(2) To achieve the optimal video transmission quality, the aircraft is set to operate within a 500m-radius area from Home point.



Tap on a waypoint to open a waypoint properties window. Modify longitude and latitude value from the input box. Slide the white dot right to adjust waypoint altitude. The default altitude is set to 98 feet (20 m) and can be adjusted from 0 to 650 feet (200 m). Tap "OK" to save waypoint settings. To delete current waypoint, tap .



Step 3 Preview a Mission：

Tap "Done" to preview the mission when all waypoints are set. A prompt similar to the one below will appear.

This prompt lists all waypoints and their altitudes. The aircraft will fly to each waypoint listed. If there is a difference in altitude between waypoints, the aircraft will adjust its altitude as it flies between points. When ready, tap "GO" to begin mission.

Aircraft reacts differently to the "GO" command：

(1) If aircraft is on the ground, the aircraft takes off automatically and ascend 16 feet (5m) then fly to the first waypoint.

(2) If aircraft is in the air, the aircraft flies to the first waypoint.

Step 4 Executing Flight Mission

The aircraft flies to each waypoint in numerical order. As it flies, swipe back into the DJI Vision app camera GUI to control camera tilt and capture photos or video. Tap ⏸ to pause the mission during the flight, and aircraft will then start hovering. Tap ▶ to resume mission. If you wish to regain control of the aircraft, toggle the S1 switch on remote control from (Position-1) to either (Position-2) or (Position-3) to discontinue the current mission.

Step 5 Landing

When all waypoints have been visited, the aircraft will return to its Home point and hover. Regain control of the aircraft and land it manually. You may also tap button to initiate "Go Home" procedure. Aircraft will abort current mission, return to Home point and auto land.

13 Assistant Installation and Configuration

13.1 Installing Driver and PHANTOM 2 VISION Assistant

Installing and running on Windows

1. Download driver installer and Assistant installer in EXE format from the download page of PHANTOM 2 VISION on the DJI website.
2. Connect the PHANTOM 2 VISION to a PC via a Micro-USB cable.
3. Run the driver installer and follow the prompts to finish installation.
4. Next, run the Assistant installer and follow the prompts to finish installation.
5. Double click the PHANTOM 2 VISION icon on your Windows desktop to launch the software.

⚠ The installer in EXE format only supports Windows operating systems (Win XP, Win7, Win8 (32 or 64 bit)).

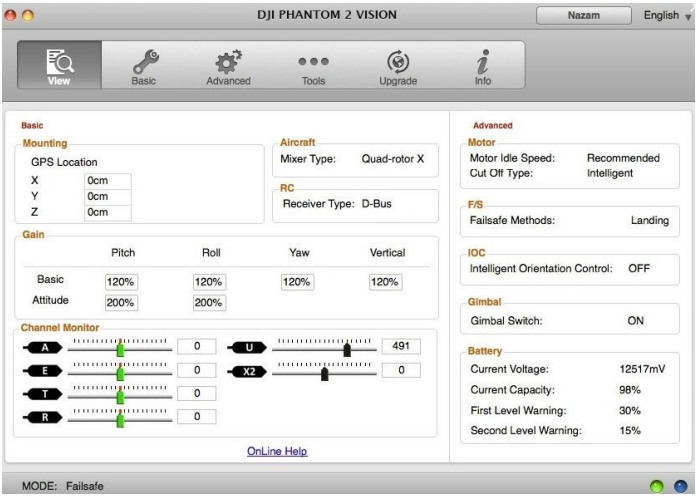
Installing and running on Mac OS X

1. Download the Assistant installer in DMG format from the download page of PHANTOM 2 VISION on the DJI website.
2. Run the installer and follow the prompts to finish installation.

3. When launching for the first time if use Launchpad to run the PHANTOM 2 VISION Assistant, Launchpad won't allow access because the software has not been reviewed by Mac App Store.

4. Locate the PHANTOM 2 VISION icon in the Finder, press the Control key and then click the icon (or right-click the icon using a mouse). Choose Open from the shortcut menu, click Open in the prompt dialog box and then software will launch.
5. After the first successful launch, direct launching of the software can be achieved by double-clicking the

PHANTOM 2 VISION icon in the Finder or using Launchpad.

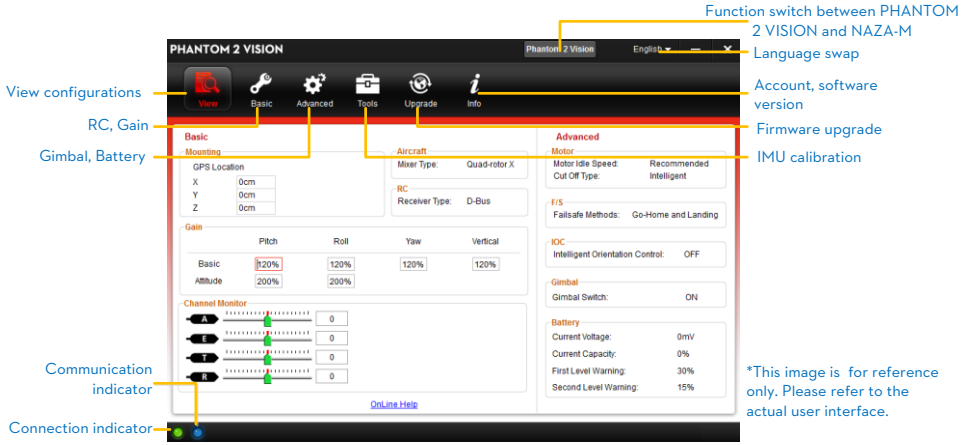


Installer in DMG format supports only Mac OS X 10.6(Lion) or above.

Usage of PHANTOM 2 VISION Assistant on Mac OS X and Windows are exactly the same. The Assistant pages appear in other places of this manual are on the Windows for example.

13.2 Using the PHANTOM 2 VISION Assistant on a PC

1. Start up the PC, power on the PHANTOM 2 VISION, then connect the PHANTOM 2 VISION to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.
2. Run the PHANTOM 2 VISION Assistant and wait for the PHANTOM 2 VISION to connect to the Assistant. Observe the indicators on the bottom of the screen. When connected successfully, the connection indicator is and communication indicator is blinking.
3. Choose [Basic] or [Advanced] configuration pages.
4. View and check the current configuration in the [View] page.



*This image is for reference only. Please refer to the actual user interface.

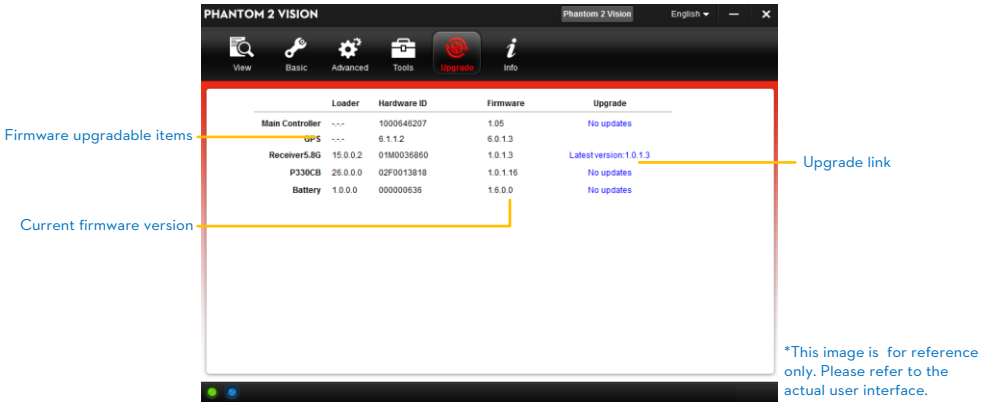
(1) Users should not enable the Naza-M function before finishing the "Advanced Flight Maneuvers" procedure, in accordance with the "Phantom Pilot Training Guide". If the Naza-M function is enabled, users can switch the control mode to either the ATTI. Mode, GPS Mode or Manual Mode, and access the advanced settings (e.g. IOC). In addition, the LED located on the rear frame arms will display the flight status according to the Naza-M's indicator, instead of the Phantom 2 Vision's indicator. Do not enable the Naza-M function unless you are an experienced user or guided by a professional.

(2)You can change to the Phantom 2 Vision function by tapping the same button if the Naza-M function is enabled. This operation will disable the Naza-M function and enable the Phantom 2 Vision function. All parameters will be returned to factory settings.

13.3 Firmware Upgrade of the PHANTOM 2 VISION

Please refer to the PHANTOM 2 VISION Assistant to install driver and PHANTOM RC Assistant, and then follow the procedures below to upgrade the software and firmware; otherwise the PHANTOM 2 VISION might not work properly.

1. An internet connection is required to upgrade the PHANTOM 2 VISION's firmware.
2. Click the [Upgrade] icon to check the current firmware version and whether the installed firmware is the latest version. If not, click the relative links to upgrade.
3. Be sure to wait until the Assistant shows "finished". Click OK and power cycle the PHANTOM 2 VISION after 5 seconds. Once completed, the firmware is up to date.



(1) DO NOT power off until the upgrade is finished.

(2) If the firmware upgrade failed, the main controller will enter a waiting for firmware upgrade status automatically. If this happens, repeat the above procedures.

Firmware upgradable items:

(1) Main Controller

(2) GPS

(3) 5.8G Receiver

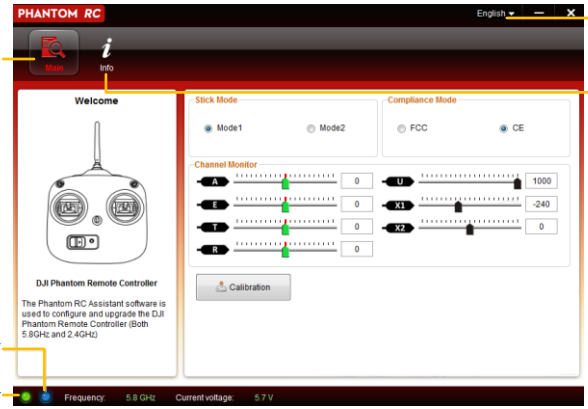
(4) P330CB (Main Board)

(5) Battery

13.4 PHANTOM RC Assistant Description

Please follow the procedures to finish the configuration of the remote control.

1. Turn off the remote control and find the Micro-USB port on the back of it. (If there is no one, users should open the rear cover to find the Micro-USB port on the board inner the remote control.)
2. Start up the PC, power on the remote control, and then Connect the remote control to the PC with a Micro-USB cable. DO NOT disconnect until the configuration is finished.
3. Run the PHANTOM RC Assistant and wait for the remote control to connect to the Assistant. Observe the indicators on the bottom left of the screen. When connected successfully, the connection indicator is and communication indicator is blinking .
4. Finish configuration in the [Main] page.
5. Finish upgrade in the [Info] page if necessary.



Main page

Language swap

Firmware upgrade

Account, software version

Communication indicator

Connection indicator

*This image is for reference only. Please refer to the actual user interface.

14 Troubleshooting (FAQ)

14.1 How to solve large margin(s) mid-point error?

If the Remote Control stick(s) mid-point margin of error is too big, the motors will fail to start when you execute the Combination Stick Commands (CSC) and the aircraft will not take off. Below are possible situations where the Remote Control's stick(s) mid-point margins of error could be too big:

(1) One of the Remote Control's stick position (except the throttle stick) is not centered when powering on the PHANTOM 2 VISION.

Solution: Place all Remote Control sticks at their mid-point positions and then power cycle the PHANTOM 2 VISION to re-record the mid-point. If the problem persists, this can be caused by scenario (2).

(2) The Remote Control sticks have been trimmed which leads to a large deviation of the mid-point position.

Solution: Use the Assistant to perform a Remote Control calibration. To do so, carry out the following procedures.

(a) Connect to the Assistant, tap Basic-> RC-> Command Sticks Calibration, and push all Remote Control sticks through their complete travel range to see if any stick cannot reach its outer most position.

(b) Power cycle the PHANTOM 2 VISION. Note that a power cycle is required.

(c) Redo the Remote Control calibration according to the Assistant.

If the above solutions do not solve your issue, please send your Remote Control to DJI Customer service for repair.

14.2 How to restore a video file if power is turned off during a recording session?

Solution: Keep or place the Micro-SD card back into the camera. Power cycle the camera and wait about 30 seconds for the video file to be restored.

14.3 Failure to acquire the SSID.

Solution: Double check whether both the camera and Range Extender are powered on and the power switch of the camera is switched to "WIFI ON".

14.4 What to do if PHANTOM 2 VISION is out of sight and the Wi-Fi connections is lost?

Solution: Turn off the Remote Control to trigger the Failsafe mode and the aircraft will start to fly back, descend, and land at the Home point automatically. Please make sure there are no obstacles within the go home route and you are familiar with the regaining control procedure.

14.5 Wi-Fi connection fails all the time.

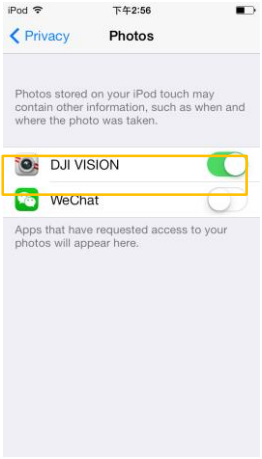
Solution: Double check the current Wi-Fi connection status of the mobile device. The mobile device may be connecting to other Wi-Fi networks after a connection breaks with the PHANTOM 2 VISION.

14.6 Files fail to synchronize.

Solution: Video files that are too large (file sizes close to 4GB) cannot be synchronized to the mobile device. Some mobile devices also fail to support synchronization of the 1080i60 video files.

14.7 Albums fail to synchronize.

Solution: Reset the settings of your mobile device as illustrated below. Enable the Settings ->Private->Photos->DJI VISION. Otherwise the Albums will fail to synchronize with your mobile device.



14.8 Failure to share.

Solution: Please make sure the mobile device has access to the Internet.

14.9 Some mobile Android devices have a problem connecting to the PHANTOM 2 VISION Wi-Fi Extender.

Solution: Some mobile Android devices do not allow for both a Wi-Fi connection and a mobile data connection at the same time. When trying to connect to the PHANTOM 2 VISION Wi-Fi network, most devices will check whether an Internet connection has a certain Wi-Fi setting enabled, e.g. Auto network switch or Test for Internet connection. If no Internet connection is found because the PHANTOM 2 VISION creates a non-routable connection it will drop the PHANTOM 2 VISION Wi-Fi network connection and scan for the next available connection. Example: For the Samsung Note 3, carry out the following procedures to solve this issue. Tap Settings -> Wi-Fi, and then tap the "Menu" button. Select "Advanced" then uncheck the "Auto network switch". You might see a warning that indicates the Internet connection is unstable but just ignore this message.

14.10 Usage tips for the App used on multiple mobile devices.

During flight, if you use the App on multiple mobile devices, please turn off the App on the first mobile device, and

then turn on the App on the second one to ensure the App can work normally on the second mobile device.

14.11 How to land the aircraft smoothly in a better way?

First pull the throttle stick position down to lower than 5%, then execute the CSC command to stop the motors.

14.12 Why the discharge cycle of a new battery not at zero?

A battery aging test is performed prior to delivery which affects the discharge time of the new battery. This is why the discharge time of a new battery is not zero. The battery is okay to use.

14.13 What if I accidently exit DJI Vision App when aircraft is still operating under ground station mode?

- If DJI Vision App is closed when aircraft is executing flight mission, aircraft continues with the remaining flight mission.
- If DJI Vision App is closed and failed to re-connect with aircraft within 1 minute, aircraft returns home point automatically.

14.14 Do I need extra equipment to use ground station?

No extra equipment is required.

14.15 Can I cache map data for future use?

Yes, user can cache map data in ground station for future use.

15 Appendix

LED Flight Indicator Status

Normal status	LED Flight Indicators
Power On Self-Test	
Warming Up	
Ready to Fly	
Ready to Fly (non-GPS)	
Warning and Error	**LED Flight Indicators**
Remote Control Signal Lost	
Low Battery Capacity Warning	
Critical Low Battery Capacity Warning	
Not Stationary or Sensor Bias is too big	
Error*	
Compass Needs Calibration	

*You can figure out the error by connecting the PHANTOM 2 VISION to the PHANTOM 2 VISION ' s Assistant.

Specifications

Aircraft	
Supported Battery	DJI 5200mAh Li-Po Battery
PHANTOM 2 VISION Weight	1160g
Recommend payload	≤1300g
Maximum payload	1350g
Hovering Accuracy (Ready to Fly)	Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity	200°/s
Max Tilt Angle	35°
Max Ascent / Descent Speed	Ascent: 6m/s; Descent: 2m/s
Max Flight Speed	15m/s (Not Recommended)
Wheelbase	350mm
Tilt Range of the Camera	0° - 60°
Remote Control	
Operating Frequency	5.728 GHz - 5.85 GHz
Communication Distance (open area)	CE Compliance: 300m; FCC Compliance: 500m
Receiver Sensitivity (1%PER)	-93dBm
Transmitting Power (EIRP)	CE Compliance: 25mW; FCC Compliance: 125mW
Working Current/Voltage	80mA@6V
Battery	4 AA Batteries
Camera	
Resolution	14 Megapixels
FOV	120°/ 110° / 85°
Sensor Size	1/2.3"
Functions	Supports multi-capture, continuous capture and timed capture Supports HD Recording (1080p30,1080i60) Supports both RAW and JPEG photo formats
Range Extender	
Operating Frequency	2412MHz - 2462MHz
Communication Distance (open area)	300m
Transmitting Power	17dBm
Power Consumption	1.5W
DJI VISION App	
Supported Mobile Devices	Recommended: iPhone4s, iPhone5, iPhone5s, iPhone5C, iPod Touch4, iPod Touch5; Available but not recommended: iPad3, iPad4, iPad mini.

	Samsung Galaxy S3, S4, Note2, Note3 or phones of similar configuration.
System Requirement of Mobile Device	iOS 6.0 or above; Android system 4.0 or above

AVIATION UAS / UAV INSURANCE PROPOSAL

Tim Trott
3628 Seminole Lane
Marianna, FL 32448

Presented by: Dawnell West
dwest@transportrisk.com

TRANSPORT RISK
TRANSPORT RISK MANAGEMENT Inc.

12424 Big Timber Drive
Conifer, CO 80433

720-208-0844

Tim Trott
April 9, 2014

BROKER **Transport Risk Management, Inc**.

CARRIER **StarNet Insurance Company / Berkley Aviaiton**

EFFECTIVE DATES **For an Annual Period TBD**
At 12:01am Standard Time at the Address of the Named Insured

NAMED INSURED

Tim Trott and all affiliated, owned, managed or controlled organizations or entities now in existence or hereafter formed.

3628 Seminole Lane
Marianna, FL 32448

RISK DESCRIPTION

All operations are conducted with Tim Trott acting as pilot in command.

Approximately 250 flight hours per year with an average flight time of 10 minutes.

Aircraft has “Auto Land” and “Return To Home” programming and functioning

PILOTS

Tim Trott; Otherwise, any properly qualified pilot approved by the Named Insured

USE

Aerial Photography and Filming For Hire
Coverage Excluded for Indoor Use of UAS / UAV

TERRITORY

Worldwide

AIRCRAFT

2013 DJI Phantom Vision 2	SN TBD	Liability: $1,000,000 CSL
2014 Phantom II	SN TBD	Liability: $1,000,000 CSL

AIRCRAFT LIABILITY

To pay on behalf of the Insured all sums the Insured should become legally obligated to pay for Bodily Injury and Property Damage arising out of the ownership, maintenance or use of any aircraft specifically scheduled and/or reported to the Insurance Company.

Limit of Liability: $1,000,000 Combined Single Limit Bodily Injury, Property Damage Excluding Passengers

CONTRACTUAL LIABILITY

To pay on behalf of the Insured all sums the Insured should become legally obligated to pay by reason of liability assumed by the Insured under a written contract designated by the policy schedule or reported to the Insurance Company within 60 days after its formation and not rejected by the Insurance Company.

Limit of Liability: $1,000,000 Combined Single Limit Bodily Injury and Property Damage

PREMISES LIABILITY

To pay on behalf of the Insured all sums the Insured should become legally obligated to pay for Bodily Injury and Property Damage arising out of the aviation operations of the facility described in the policy and all aviation operations away from the premises which are necessary or incidental to such operations.

Limit of Liability: $1,000,000 Combined Single Limit Bodily Injury and Property Damage

PREMISES MEDICAL PAYMENTS

To pay on behalf of the Insured all reasonable medical expense to persons who sustain Bodily Injury caused by an accident arising from a condition of the insured premises or aviation operations of the Insured.

Limit of Liability: $5,000 Each Person

NON-OWNERSHIP LIABILITY

To pay on behalf of the Insured all sums the Insured should become legally obligated to pay for Bodily Injury or Property Damage (EXCLUDING damage to the non-owned aircraft) arising from the use of any non-owned or non-leased/non-managed, UAS or UAV while being utilized by or on behalf of the Insured in its operations.

Limit of Liability:	$1,000,000 Combined Single Limit Bodily Injury, Property Damage Excluding Passenger Legal Liability

AIRWORTHINESS EXCLUSION ENDORSEMENT

Deleted

FELLOW EMPLOYEE COVERAGE

To insure for employee suits against another employee for Bodily Injury and Property Damage if an accident occurs in the course and scope of the employment of the claimant.

Included

TOTAL ANNUAL PREMIUM: $1,900

Terms provided herein are valid for 30 days from the date of the Proposal.

INSURANCE DOES NOT COVER UNLAWFUL USES OR ACTIVITIES

PREMIUM PAYMENT TERMS ARE ANNUAL – PREMIUM FINANCING IS AVAILABLE

StarNet Insurance Company

A.M. Best #: 012245 **NAIC #: 40045** **FEIN #: 223590451**

Administrative Office
215 Shuman Boulevard
Suite 200
Naperville, IL 60563
United States

View Additional Address Information

Phone: 630-210-0360
Fax: 630-210-0376

Financial Strength Rating BEST A+ Superior Assigned to companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.

Based on A.M. Best's analysis, 058496 - W. R. Berkley Corporation is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. View a list of operating insurance entities in this structure.

Best's Credit Ratings

View all of the companies assigned this rating as a part of an AMB Rating Unit.

Financial Strength Rating View Definition	
Rating:	A+ (Superior)
Affiliation Code:	r (Reinsured)
Financial Size Category:	XV ($2 Billion or greater)
Outlook:	Stable
Action:	Affirmed
Effective Date:	December 13, 2013
Initial Rating Date:	June 28, 1999

Long-Term Issuer Credit Rating View Definition	
Long-Term:	aa-
Outlook:	Stable
Action:	Affirmed
Effective Date:	December 13, 2013
Initial Rating Date:	June 22, 2005

u Denotes Under Review Best's Rating

Best's Credit Rating Analyst

Office: A.M. Best Company, Oldwick NJ

Senior Financial Analyst: David S. Blades

Assistant Vice President: Henry K. Witmer, CPCU, ARM-E

Disclosure Information

View A.M. Best's Rating Disclosure Statement

Tim Trott
April 9, 2014

REQUIREMENTS TO BIND

Prior to binding coverage and for coverage to apply, the insured agrees that:

1.) A copy of original invoice(s), title transfer or bill of sale in the name of the insured or principal will be provided for each aircraft.

2.) The vinyl asset label (example below) is required to be affixed to the aircraft frame as follows:

On “Liability-Only” policies: Only the large asset label is required to be affixed to the frame of the aircraft.

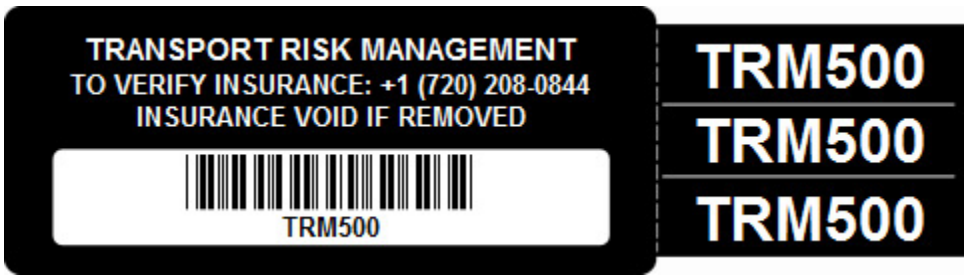
On Hull and Liability Policies: The large asset label is required to be affixed to the frame of the aircraft and;

One small label affixed to the Gimbal and;

One small label affixed to the Base Control Station and;

One small label affixed to the Remote.

The camera make, model and serial number must be included.



Example Asset Label

VERDURA
REALTY, LLC
254 East 6th Avenue • Tallahassee, Florida 32303 • 850-491-3288 • arogers@verduraproperties.com

January 15, 2015

To Whom it may Concern,

My company recently listed for sale a 520-acre property in the community of Hilton, Georgia. I appreciate your consideration of allowing low altitude photos and videos to be taken of that property and have outlined below the importance of being able to take advantage of such a tool.

As part of our marketing practices, significant focus is placed on our internet presence where many prospective purchasers begin their property search. In addition to the standard on-the-ground photos, we feel it is critical to incorporate aerials in order to convey the scale of the property and spatial relationship of the various natural features. While Google Earth can be a useful tool, it is often out of date. In fact, 135 acres within the Hilton tract are clear-cut yet the Google Earth image shows mature trees. Moreover, the images are of inferior quality - because not all of the property is easily accessible, aerial interpretation takes on heightened importance. Finally, video provides an added dimension that static images simply can't provide.

Thanks and please feel free to contact me should you have any questions.

Sincerely,

Arnie Rogers
Lic. Real Estate Broker