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

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

September 14, 2015

Exemption No. 12844
Regulatory Docket No. FAA−2015−2096

Mr. Justin Burrell
Owner
Vineyard Aviation, LLC
13253 Saint Tropez Circle
Palm Beach Gardens, FL 33410

Dear Mr. Burrell:

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 dated May 21, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Vineyard Aviation, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial imaging, surveying, and inspections.

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.

Airworthiness Certification

The UAS proposed by the petitioner is a DJI Phantom 3 Professional.

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[1]. 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, Vineyard Aviation, LLC 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.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Vineyard Aviation, LLC 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 3 Professional 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 five 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 September 30, 2017, unless sooner superseded or rescinded.
Sincerely,
/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

May 21, 2015

U. S. Department of Transportation
Docket Management System
1200 New Jersey Ave, SE
Washington, DC 20590

Re: Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations from 14 C.F.R. 45.23(b); 14 C.F.R. Part 21; 14 C.F.R Part 27; 91.7(a); 91.9(b) (2); 91.103(b); 91.109; 91.121; 91.151(a); 91.203(a)&(b); 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.417(a)&(b)

Dear Sir or Madam,

I, Justin Burrell, owner of Vineyard Aviation, LLC, am writing pursuant to the FAA Modernization and Reform Act of 2012 and the procedures contained within 14 C. F R. 11. I, Justin Burrell, owner and operator of small unmanned aircraft, am requesting to be exempted from the Federal Aviation Regulations ("FARs") as outlined in this petition. This petition for exemption is so that I, Justin Burrell, may operate my small light weight unmanned aircraft system ("UAS") commercially in airspace regulated by the Federal Aviation Administration ("FAA").

I. Description of Petitioner:

Vineyard Aviation, LLC is a single proprietor owned company operated by myself, Justin Burrell. I have been a full time Airline Transport Pilot since 2004 (Cert. #3289415) and maintain a first class medical certificate. I, Justin Burrell, have a diverse background in management and consulting in the aviation industry and am experienced in flying hobby unmanned aircraft systems for recreational purposes. Over the last five years, I have flown multiple RC airplane and quad- copter aircraft recreationally piloted by remote control without incident.

It is my intent via Vineyard Aviation, LLC to operate UAS, DJI Phantom 3 Professional, for aerial imaging to enhance individual and company awareness in relation to agricultural, geological, and real estate survey and inspection. Traditionally, much of this type of imaging has been done with the use of fixed-wing aircraft and full-scale rotorcraft. The use of fixed-wing aircraft and rotorcraft in low level operations present risks of such vehicles carrying large amounts of combustible fuel and aircraft weights of thousands of pounds. The operation of a small UAS will eliminate risks associated with these traditional methods of agricultural, geographical and real estate survey and inspection.

Vineyard Aviation UAS operations for the purposes described above will occur under tightly controlled conditions mostly on privately owned property at the owner's or authorized representative's request and consent. Generally, these agricultural areas are located in rural settings away from buildings, people, and crowds. Those operations not occurring on privately owned property will occur under tightly controlled conditions and conducted away from congested or densely populated areas and at low levels of flight.

Vineyard Aviation operations will be conducted in compliance with in the conditions and limitations of the UAS manufacturer's aircraft/component manual and limitations of this Petition for Exemption. Operations will be limited to VFR conditions in daytime hours at altitudes at or below 400 feet AGL and remaining clear and yielding the right of way to all manned aviation operations and activities at all times.

Petitioner's Contact Information:

Vineyard Aviation, LLC
c/o Justin Burrell
13253 Saint Tropez Circle
Palm Beach Gardens, Fl 33410
Tel: 504-453-8254
Email: jburr737@gmail.com

For ease of review please refer to the following table of contents found on the next page.

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II. Description of Proposed Operations:

Vineyard Aviation intends to use its small UAS for the purpose of conduction of aerial surveys and inspection of various agricultural crops inclusive of various citrus, vegetable, and grape varieties. This will afford farmers and growers critical information necessary to maximize crop harvest by identifying diseases, irrigation, and drainage. The use of a small UAS will provide greater resolution and flexibility in imaging in this setting. Low flying UASs can deliver information that support crop analysis in a much safer, efficient, and cost effective manner than conventional methods using heavier, fuel filled fixed-winged or full scale rotorcraft.

Vineyard Aviation intends to use its small UAS for the purpose of conduction of aerial surveys and inspection of geographical layouts and real estate listings. This will increase public and academic visual awareness of land layouts in specified areas of request. The use of a small UAS will provide close-up augmented views of real estate listings unattainable by traditional means. The UAS is battery operated and creates no emissions. It contains no combustible fuel source rendering it safer than conventional aerial photography.

I, Justin Burrell, via Vineyard Aviation intend to operate the UAS at a ground speed no greater 30 knots and an altitude at or below 400 feet AGL. All operations will be completed during daylight hours with a visual observer ("VO") and operated with in the visual line of sight ("VLOS") of the VO at all times.

III. Relevant Statutory Authority

This Petition for Exemption is submitted pursuant to Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012 ("Reform Act"). Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to permit unmanned aircraft systems to operate in the National Air Space ("NAS") where it is safe to do so based on the following considerations:

- The UAS's size, weight, speed, and operational capability
- Operation of the UAS in close proximity to and airports and populated areas
- Operation of the UAS within the visual line of sight of the operator

In addition, the FAA Administrator has general authority to grant exemptions from the agency's safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. (49 U.S.C § 106 (f) defining authority of the Administrator; 49 U.S.C. § 44701 (f) permitting exemptions from § 44701 (a), (b) and § 44702-44716) A party requesting and exemption must explain the why the exemption would: (1) benefit the public as a whole, and (2) not adversely affect safety or how it would provide a level of safety at least equal to the existing rules. (14 C.F.R. § 11.81 petitions for exemption)

IV. Vineyard Aviation's Proposed UAS Operations meet the Requirements of Section 333 of the Reform Act

The operation of a small UAS by Vineyard Aviation qualifies for approval pursuant to Section 333 of the Reform Act as each of the statutory criteria and relevant factors are satisfied as stated in this Petition for Exemption.

A. Approval is warranted based on Vineyard Aviation's small UAS's size, weight, speed, and operational capability.

1. The UAS will weigh less than 20 pounds (this includes all equipment and loads).
2. The UAS will not exceed a speed of 25 knots.
3. The UAS will not exceed an altitude of 400 feet AGL.
4. Altitude information will be generated by GPS triangulation that is contained within the UAS. This information is transmitted to the pilot via telemetric data feed (DJI Pilot App).
5. All flights will be flown with enough power to fly at normal cruising speed to the intended landing point and land the UAS with 20% battery power remaining.
6. The UAS will have system independent functionality in the event communications or GPS signal is lost. The UAS will return to a pre-determined location and land safely within the planned operating area via DJI's Return To Home feature (RTH).

7. Radio frequencies used for operations and control of the UAS will be in compliance with the Federal Communications Commission ("FCC") or other appropriate oversight agency requirements.

B. Approval is warranted based on the UAS's manufacturer's operational manual and Vineyard Aviation's proposed operations.

1. UAS operations will be conducted with a minimum of a Pilot-In-Command ("PIC") and visual observer ("VO") at all times.
2. The UAS will be operated within Visual Line of Sight ("VLOS") of the PIC and VO at all times during flight.
3. All flights will be operated during day light hours.
4. The UAS will be operated in compliance with all manufacturer Safety Bulletins in addition to the UAS operational manual and firmware updates.
5. The UAS will remain clear and yield the right of way to all manned aviation operations and activities at all times.
6. The PIC will abort the flight in the event of unpredicted obstacles or emergencies.
7. Vineyard Aviation will obtain an Air Traffic Organization ("ATO") issued Certificate of Waiver or Authorization ("COA") prior to conducting any operations under this grant of exemption. This COA will require Vineyard Aviation to request a Notice to Airman ("NOTAM") with the appropriate ATC facility 48 to 72 prior to UAS operation.
8. Vineyard Aviation will obtain all required permissions from the landowner/controller or authorized representative prior to operations over private or controlled-access property.
9. Prior to each flight the PIC shall do a pre-flight inspection of the UAS to ensure it is in a condition for safe flight. If the UAS inspection reveals a condition that affects safe operation of the UAS, the UAS will be grounded until the necessary maintenance has been performed and the UAS is found in a condition for safe flight. The Ground Control Station will be included in the pre-flight inspection. All maintenance and alterations will be properly documented in the UAS records.
10. The UAS will not be operated higher than 200 feet within a quarter mile from an airport or any flight path or flight operation; or 5 nautical miles (NM) from an airport having an operational control tower; or 3 NM from an airport with a published instrument flight procedure, but not an operational tower; or 2 NM from an airport without a published instrument flight procedure or an operational tower; or 2 NM from a heliport with a published instrument flight procedure.

In addition, the DJI Pilot app displays warning messages and UAS altitude restrictions when the UAS enters within 320 feet of No-Fly Zones. Furthermore the UAS firmware will not allow the UAS motors to activate in No-fly Zones (*Phantom 3 Professional User Manual v1.0 pages 41, 42, 43*). These features coupled with the operator's Airline Transport Pilot's airspace knowledge and situational awareness will thoroughly ensure the UAS does not interfere with airport and airspace manned aircraft operations.

11. Vineyard Aviation's PIC will be an Airline Transport Pilot ("ATP") that holds at least a current Third Class Medical Certificate.

V. Regulations From Which Exemption is Requested

A. 14 C.F.R. Part 21, Subpart H – Airworthiness Certificates and 14 C.F.R. § 91.203

The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the UAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. These criteria are met, and therefore no exemption is needed. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 13-14, 22. If, however, the FAA determines that there are some characteristics of the chosen UAS that fail to meet the requirements of the Reform Act, an exemption is requested.

The DJI Phantom 3 Professional that Vineyard Aviation intends to use meets this equivalent level of safety taking into account its size, weight, speed, and operational capability. As set forth in the description of proposed operations in Section II, the UAS weighs less than 20 pounds and will be flown at less than 25 knots and outside controlled airspace. Additionally, the UAS carries neither pilots nor passengers, no combustible materials or flammable liquid fuels, and operates exclusively within the parameters stated in the manufacturer's manual.

Operations conducted under this exemption will be closely controlled and monitored by the operator and will be conducted in compliance with local public safety requirements to provide security for the area of operation. Vineyard Aviation will also provide the FAA with advance notice of operations via NOTAMs as necessary.

Further, the UAS does not need a means to communicate with other aircraft or ATC, because those capabilities will be possessed by the PIC and Observer, who are not onboard the UAS. *See* Grant of Exemption, Docket FAA-2014-0352 at 13. In addition, no sense-and-avoid technology is necessary for the UAS because it will be operated at all times in VFR conditions and within VLOS of the PIC and Operator.

B. 14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft

Title 14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent that Vineyard Aviation's small UAS would otherwise require certification

under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, Subpart H, *supra*.

C. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness

Vineyard Aviation seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required for 14 C.F.R. § 91.7(a) to the extent that the requirements of Part 21 are waived or found inapplicable. Therefore, no airworthiness certificate would be issued for Vineyard Aviation's UAS. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 13-14, 22. Accordingly, Petitioner requests that the requirements for § 91.7(a) be treated in accordance with Section V(A), *supra.*

D. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft and 14 C.F.R. § 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration Title 14 C.F.R. § 91.9(b)(2) and § 91.203(a) and (b) require the operator to carry airworthiness documents and other aircraft manuals onboard the aircraft. Pursuant to 14 C.F.R. § 91.9(b)(2):

(b) No person may operate a U.S.-registered civil aircraft –

(2) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter, 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.

Pursuant to 14 C.F.R. § 91.203(a) and (b):

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate…

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section 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.

The small size and configuration of the UAS render it without a cabin or cockpit, making it impossible to store airworthiness documents and other aircraft manuals on board.

In an FAA Office of Chief Counsel's Opinion dated August 8, 2014, and prepared by Dean E. Griffith, Attorney, AGC-220, it was acknowledged that the intent of 14 C.F.R. 91.9(b) and 91.203(a) and (b) is met if the pilot of the unmanned aircraft has access to the UAS flight manual, registration certificate, and other required documents from the ground control station from which he or she is operating the aircraft. (1)

[1] Memorandum from Mark Bury, FAA Assistant Chief Counsel for International Law, Legislation and Regulation, to John Duncan, FAA Flight Standards Service (Aug. 8, 2014); *see also* Docket No. FAA-2014-0352 at 16-18.

As this FAA Office of Chief Counsel Opinion clarifies, the intent of the rule is to ensure the pilot has access to these key documents during flight. Therefore, an equivalent level of safety will be achieved by ensuring that the pilot has access to the documents at the ground control station from which he or she is piloting the UAS.

E. 14 C.F.R. § 91.9(c), 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements

Vineyard Aviation seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

- 14 C.F.R. § 91.9(c), Civil Aircraft Flight Manual, Marking and Placard requirements, provides:
  No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.

- 14 C.F.R. § 45.23(b), Markings of the Aircraft, states:
  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.

- 14 C.F.R. § 45.27(a), Rotorcraft, states:
  Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

In a previous Grant of Exemption, the FAA determined that exemption from these requirements was warranted provided that the aircraft "have identification (N-Number) markings in accordance with 14 C.F.R Part 45, Subpart C if the markings are as large as practicable." FAA Docket No. FAA-2014-0352.

Vineyard Aviation's UAS will bear N-Number markings that are as large as practicable in accordance with 14 C.F.R. Part 45, Subpart C (2)

[2] *See, e.g.,* FAA Docket No. FAA-2014-0352, at 14.

F. 14 C.F.R. § 91.103: Preflight Action

Vineyard Aviation seeks exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight Manual is required.

An equivalent level of safety will be provided by Vineyard Aviation's compliance with the Manufacturer's Manuals and it's PIC will perform a series of checklists designed to identify any defects or inoperable components. These checklists will be inclusive of Pre-Flight, Launch, Landing, and Post-Flight procedures. The PIC will also review weather, flight requirements, battery charge, landing and takeoff distance, and contingency landing areas before initiation of flight. Manufacturer's Manual, and any other relevant manufacturer publications will be kept at the GCS and will be accessible to the PIC at all times while operating the UAS.

G. 14 C.F.R. § 91.109(a): Flight Instruction

Vineyard Aviation seeks an exemption from 14 C.F.R. § 91.109(a), which provides in pertinent part that "[n]o 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." UASs and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio communications. Accordingly, an exemption will be required for the flight instruction requirements of 14 C.F.R. § 91.109(a).

In regards to the size and speed of the DJI Inspire that Vineyard Aviation intends to use, an equivalent level of safe training can be performed without dual controls because no pilot or passengers are aboard the UAS. All Flight training will be conducted with all persons a safe distance away in the event that the UAS experiences any difficulties during flight instruction.

H. 14 C.F.R. § 91.119: Minimum Safe Altitudes

Vineyard Aviation requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. *See* 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

An exemption is required because in order to perform the intended agricultural/real estate aerial surveys and inspections, the UAS will need to be operated lower than 400 feet AGL. Further, due to the nature of the proposed operations, the PIC and Observer may at times be less than 500 feet away from the UAS.

Compared to flight operations with rotorcraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel with the UAS operated by Vineyard Aviation, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS, as well the controlled location where the operations will occur. In order to avoid any risk to manned aircraft, flight operations will be restricted to 400 feet AGL or below. The UAS will be operated over private or controlled access property with permission from the land owner/controller or authorized representative and all flights will be operated at a lateral distance of at least 500 feet from any nonparticipating persons, unless that person is in a position where he or she is shielded from the UAS and any possible debris resulting from UAS failure. Further, UAS operations will occur at least 500 feet away from vehicles or structures unless the property owner/controller has granted permission and the PIC has made a safety assessment of the risk of operating closer to those objects and, operations near the PIC or Observer will not present an undue hazard per § 91.119(a). As a whole, these requirements ensure a level of safety better than or equal to the rules from which exemption is sought.

I. 14 C.F.R. § 91.121: Altimeter Settings

Vineyard Aviation seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required to the extent that the UAS does not have a barometric altimeter, but rather a GPS altitude read out.

The FAA has stated that an equivalent level of safety to the requirements of 14 C.F.R. § 91.121 can be achieved in circumstances where: (1) the UASs will be operated at 400 feet AGL or below, (2) within VLOS, (3) where GPS based altitude information is relayed in real time to the operator at a ground-based on-screen display and, (4) where prior to each flight, a zero altitude initiation point is established for the PIC to confirm accuracy of the onboard GPS. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 21**.**

The UAS that Vineyard Aviation uses for performing the proposed UAS operations will meet all these operational characteristics. Moreover, the PIC will calibrate the aircraft's GPS compass prior to each flight operation. Like the Grant of Exemption to Astraeus Aerial, the UAS Vineyard Aviation intends to use ensures that an equivalent level of safety will be achieved, and a grant of exemption to the requirements of § 191.121 is therefore appropriate. See (*Phantom 3 Professional User Manual v1.0 pages 44, 45 "Calibrating the Compass*).

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

Vineyard Aviation requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

> (a) 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; or
> (2) At night, to fly after that for at least 45 minutes.

Here, the technological limitations on UAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30-minute battery reserve. An exemption from the fuel requirements of 14 C.F.R. § 91.151(a) is therefore required.

The FAA has stated that an equivalent level of safety can be achieved by requiring that each UAS operation be completed within 30 minutes flight time or with 20% battery power remaining, whichever occurs first. *See* Grant of Exemption to Clayco, Inc., Docket No. FAA-2014-0507 at 15. Vineyard Aviation intends to conform to this limitation, and therefore provides an equivalent level of safety. In addition, the DJI Phantom 3 Professional utilizes many failsafe features to ensure adequate energy reserves for safe return including: Low Battery Warning, Critical Battery Warning, and a Low Battery Return To Home (RTH) feature (*Phantom 3 Professional User Manual v1.0 pages 12, 13*).

K. 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2); 91.417(a) and (b): Maintenance Inspections

Vineyard Aviation seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, e.g.*, 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft shall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections have discrepancies repaired as prescribed in part 43 of this chapter). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS to be operated under this grant of exemption will not have.

An equivalent level of safety will be achieved due to maintenance and inspections performed in accordance with the Manufacturer's Manuals and any required manufacturer Safety or Service Bulletins. Furthermore, the PIC will conduct a pre-flight inspection of the UAS and all associated equipment to account for discrepancies and/or inoperable components. Maintenance will be performed and verified to address any conditions potentially affecting safe operation of the UAS and no flights will occur unless, and until all

flight critical components of the UAS have been found to be airworthy and in a condition safe for operation. A functional test flight will be conducted following the replacement of any flight-critical components. The PIC who conducts the functional test flight will make an entry in the UAS aircraft records of the flight.

VI. Public Safety, Interest, and Benefit

Vineyard Aviation's Petition for Exemption will be in the interest of public safety and contribute to the innovation and implementation of new safety protocols for UAS operators. Congress has established a national policy that favors early integration of UAS into the NAS in controlled, safe working environments such as those proposed in this Petition. Granting this Petition for Exemption helps fulfill Congress' goal in passing Section 333(a) through (c) of the Reform Act—the FAA Administrator's assessment of whether certain UAS may operate safely in the NAS before completion of the statutorily required rulemaking. The granting of this petition will also help lead the way for a better controlled environment in the commercial use of UASs.

The proposed UAS operations in this Petition for Exemption significantly improve safety and reduce risk by alleviating the public's exposure to danger and emissions associated with traditional agricultural & real estate aerial survey and inspection methods. Specifically speaking, full size fixed-wing aircraft and rotorcraft are traditionally used for these types of surveys. Vineyard Aviation intends to use a battery powered light weight quad-copter which creates no emissions. Moreover, in the unlikely event that the Petitioner has a UAS crash, there is no fuel to ignite and explode. Any incident involving the Petitioner's lightweight UAS will present significantly less danger to the pilot and other individuals on the ground than one that would involve a full size helicopter or fixed-wing aircraft.

Moreover, the agricultural modeling and imaging resulting from Vineyard Aviation's UAS will provide farmers and growers with valuable information needed so that they can produce more from their land while conserving valuable resources like water and energy. The ability to pinpoint and precision spray pesticides reduces human exposure to pesticides and also mitigates negative side-effects on the ecology of the farm associated with overuse of pesticides. The public as a whole will benefit from an agricultural industry that can harness the power of new technologies to produce better crops in a cost-effective, sustainable and environmentally conscious manner.

Vineyard Aviation's imaging capabilities will also provide builder and community geographical awareness in real estate development. The use of a UAS will provide a more cost-effective method of imaging that isn't afforded to small private business, allowing them to be more competitive in the marketplace. A small UAS without people on board will also allow the operator to obtain images that aren't currently able to be viewed without extreme measures via helicopter or fixed-winged aircraft. The small size and extreme maneuverability of the UAS will allow the PIC to avoid hazards quickly and safely without the risks of catastrophic crash associated with full scale aircraft.

VII. Privacy

All Vineyard Aviation's UAS operations will be conducted in accordance with applicable federal, state, or local laws regarding privacy. Vineyard Aviation will not conduct flight operations over property that it does not own or control without the prior consent and knowledge of the property owner.

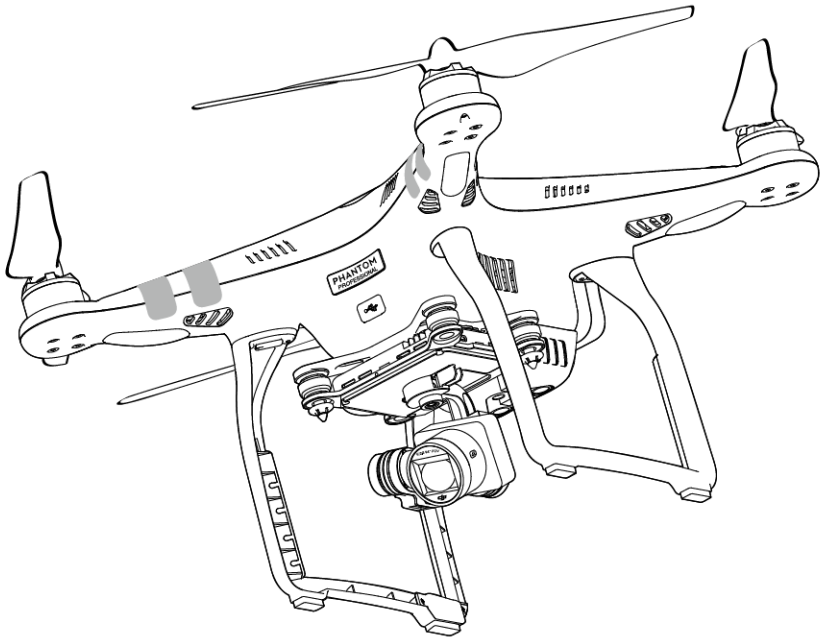
VIII. UAS Manufacturer's Manual

PHANTOM 3

PROFESSIONAL

User Manual V1.0

2015.04



Using this manual

Legends

Warning Important Hints and Tips Reference

Read Before the First Flight

Read the following documents before using the Phantom 3 Professional:

1. *In the Box*
2. *Phantom 3 Professional User Manual*
3. *Phantom 3 Professional Quick Start Guide*
4. *Phantom 3 Professional / Advanced Safety Guidelines and Disclaimer*
5. *Phantom 3 Professional / Advanced Intelligent Flight Battery Safety Guidelines*

We recommend that you watch all tutorial videos on the official DJI website and read the Disclaimer before you fly. Prepare for your first flight by reviewing the Phantom 3 Professional Quick Start Guide and refer to the User Manual for more detailed information.

Video Tutorials

Please watch the tutorial videos at the link below, which demonstrates how to use Phantom 3 Professional safely:

http://www.dji.com/product/phantom-3/video

Download the DJI Pilot app

Download and install the DJI Pilot app before using the aircraft. Scan the QR code to the right to download the latest version.

The Android version of the DJI Pilot app is compatible with Android 4.1.2 or later.
The iOS version of the DJI Pilot app is compatible with iOS 8.0 or later.

Contents

Product Profile

This section introduces the Phantom 3 Professional and lists the components of the aircraft and remote controller.

Product Profile

Introduction

The Phantom 3 Professional represents the next generation of DJI quadcopters. It is capable of capturing 4K video and transmitting an HD video signal out of the box. The built-in camera has an integrated gimbal to maximize stability while minimizing both weight and size. Even when no GPS signal is available, the Vision Positioning System allows the aircraft to hover accurately in place.

Feature Highlights

Camera and Gimbal: With the Phantom 3 Professional, you're shooting 4K video at up to 30 frames per second and capturing 12 megapixel photos that look crisper and cleaner than ever. An enhanced sensor gives you greater clarity, lower noise, and better pictures than any previous flying camera.

HD Video Downlink: The low-latency long range HD downlink is powered by an enhanced version of DJI Lightbridge.

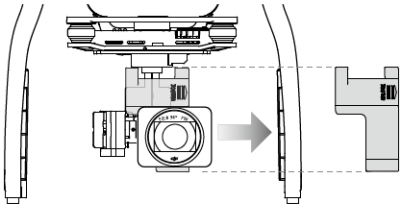
DJI Intelligent Flight Battery: The 4480 mAh DJI Intelligent Flight Battery features upgraded battery cells and an advanced power management system.

Flight Controller: The next-generation flight controller has been updated to provide a safer, more reliable flight experience. A newly implemented flight recorder stores critical data from each flight and the Vision Positioning System enhances hovering precision when flying indoors or in environments where GPS is unavailable.

Preparing the Aircraft

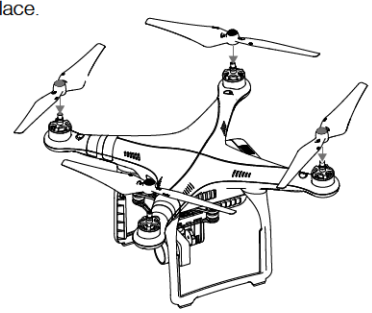
Removing Gimbal Clamp

Remove the gimbal clamp by sliding it to the right (when facing the nose of the aircraft), as shown below.



Attaching the Propellers:

Mount the propellers with black dots on to motors with black axes and spin counter-clockwise to secure. Mount the propellers with sliver dots on to motors with sliver axes and spin clockwise to secure. Be sure all propellers are securely in place.

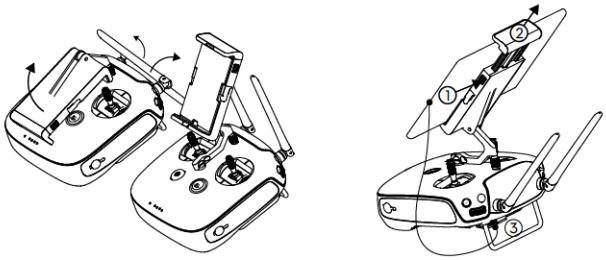


⚠ Place all propellers onto the correct motors and tighten by hand to lock them in position.

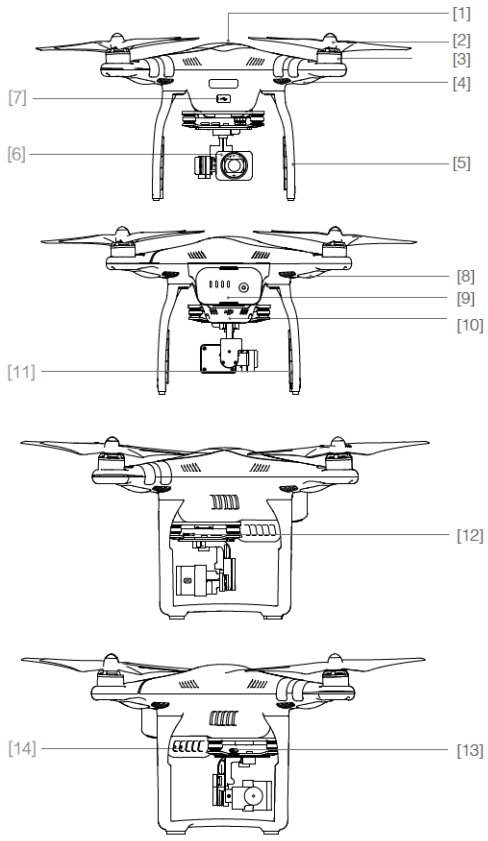
Preparing the Remote Controller:

The mobile device holder is designed for securing tablet or mobile device. Tilt the mobile device holder to the desired position, then adjust the antennas so they are facing outward.

1. Press the button on the top right side of the mobile device holder to release the clamp, then adjust the clamp to fit the size of your mobile device.
2. Secure your mobile device in the clamp by pressing down, and connect your mobile device to the remote controller using a USB cable.
3. Plug one end of the cable into the mobile device, and the other end into the USB port on the back of the remote controller.



Aircraft Diagram



[1] GPS

[2] Propeller

[3] Motor

[4] Front LED Indicator

[5] Landing gear

[6] Gimbal and Camera

[7] Aircraft Micro-USB Port

[8] Aircraft Status Indicator

[9] Intelligent Flight Battery

[10] Vision Positioning Sensors

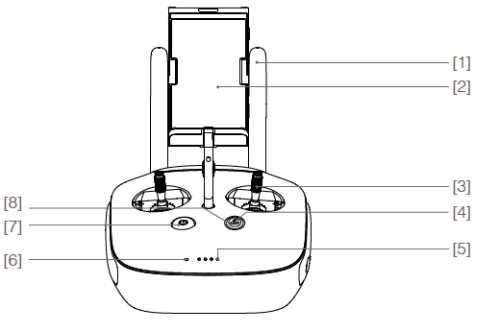
[11] Antennas

[12] Camera Micro-SD Card Slot

[13] Camera Micro-USB Port

[14] Link Button

Remote Controller Diagram



[1] Antennas

Relays aircraft control and video signal.

[2] Mobile Device Holder

Securely mounts your mobile device to the remote controller.

[3] Control Stick

Controls the orientation and movement of the aircraft.

[4] Return Home (RTH) Button

Press and hold the button to initiate Return to Home (RTH).

[5] Battery Level LEDs

Displays the battery level of the remote controller.

[6] Status LED

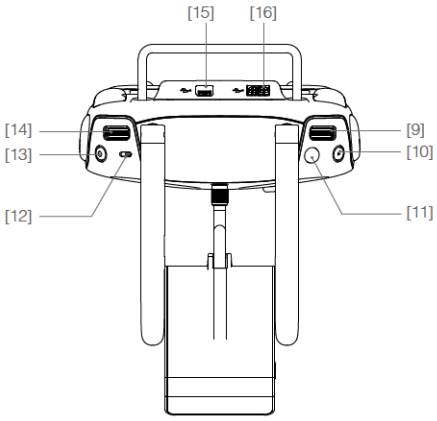
Displays the remote controller's system status.

[7] Power Button

Used to turn the remote controller on and off.

[8] RTH LED

Circular LED around the RTH button displays RTH status.



[9] Camera Settings Dial

Turn the dial to adjust camera settings. (Only functions when the remote controller is connected to a mobile device running the DJI Pilot app.)

[10] Playback Button

Playback the captured images or videos. (Only functions when the remote controller is connected to a mobile device running the DJI Pilot app.)

[11] Shutter Button

Press to take a photo. If burst mode is selected, the set number of photos will be taken with one press.

[12] Flight Mode Switch

Switch between P-mode, A-mode, and F-mode.

[13] Video Recording Button

Press to start recording video. Press again to stop recording.

[14] Gimbal Dial

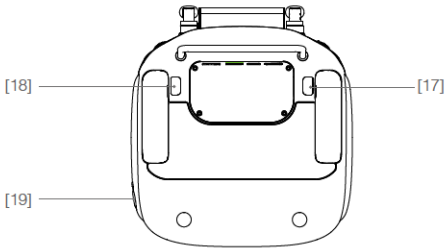
Use this dial to control the tilt of the gimbal.

[15] Mircro-USB Port

Connect to a SD card reader to upgrade the firmware.

[16] USB Port

Connect to mobile device or to a USB port for firmware upgrade.



[17] C1 Button

Customizable through the DJI Pilot app.

[18] C2 Button

Customizable through the DJI Pilot app.

[19] Power Port

Connect to the DJI Phantom 3 Charger to charge the battery of the remote controller.

Aircraft

This section introduces the features of the Flight Controller, Vision Positioning System, and the Intelligent Flight Battery

Aircraft

Flight Controller

The Phantom 3 Professional's flight controller features several important upgrades, including a new flight mode. Safety modes include Failsafe and Return-to-Home. These features ensure the safe return of your aircraft if the control signal is lost. The flight controller can also save critical flight data from each flight to the on-board storage device. The new flight controller also provides increased stability and a new air braking feature.

Flight Mode

Three flight modes are available. The details of each flight mode are found below:

P-mode (Positioning) : P-mode works best when GPS signal is strong. There are three different states of P-mode, which will be automatically selected by the Phantom 3 Professional depending on signal strength of GPS and Vision Positioning sensors :

P-GPS: GPS and Vision Positioning both are available. The aircraft is using GPS for positioning.

P-OPTI: Vision Positioning is available but the GPS signal strength is not sufficient. The aircraft is using only the Vision Positioning System for positioning.

P-ATTI: Neither GPS nor Vision Positioning is available. The aircraft is using only its barometer for positioning, so only altitude can be stabilized.

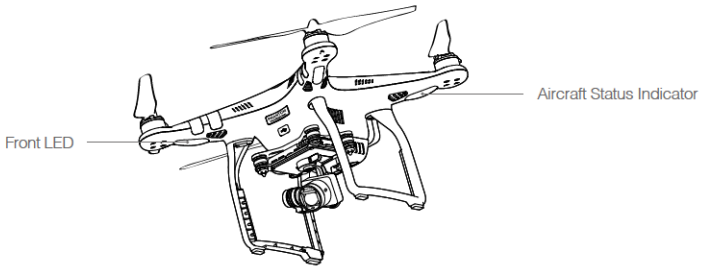
A-mode (Attitude): GPS and Vision Positioning System are not used for stabilization. The aircraft only uses its barometer. The aircraft can still automatically return to the home point if the control signal is lost and the Home Point was recorded successfully.

F-mode (Function): Intelligent Orientation Control (IOC) is activated in this mode. For more information about IOC, refer to the IOC section in the Appendix.

Use the Flight Controller mode switch to change the flight mode of the aircraft, refer to the "Flight Mode Switch" on Page 26 for more information.

Flight Status Indicator

The Phantom 3 Professional has Front LEDs and Aircraft Status Indicators. The positions of these LEDs are shown in the figure below:



The Front LEDs show the orientation of the aircraft. The Front LEDs glow solid red when the aircraft is turned on to indicate the front (or nose) of the aircraft. The Aircraft Status Indicators communicate the system status of the flight controller. Refer to the table below for more information about the Aircraft Status Indicators:

Aircraft Status Indicator Description

Normal	
R G Y ····· Red, Green and Yellow Flash Alternatively	Turning On and Self Diagnostic Testing
G Y ····· Green and Yellow Flash Alternatively	Warming Up
G ····· Green Flashes Slowly	Safe to Fly (P-mode with GPS and Vision Positioning)
G X2 ····· Green Flashes Twice	Safe to Fly (P-mode with Vision Positioning but without GPS)
Y ····· Yellow Flashes Slowly	Safe to Fly (A-mode but No GPS and Vision Positioning)
Warning	
Y ····· Fast Yellow Flashing	Remote Controller's Signal Lost
R ····· Slow Red Flashing	Low Battery Warning
R ····· Fast Red Flashing	Critical Battery Warning
R ····· Red Flashing Alternatively	IMU Error
R —— Solid Red	Critical Error
R Y ····· Red and Yellow Flash Alternatively	Compass Calibration Required

Return-to-Home (RTH)

The Return-to-Home (RTH) function brings the aircraft back to the last recorded Home Point. There are three types of RTH procedures: Smart RTH, Low Battery RTH, and Failsafe RTH. This section describes these three scenarios in detail.

	GPS	Description
Home Point		If a strong GPS signal was acquired before takeoff, the Home Point is the location from which the aircraft was launched. The GPS signal strength is indicated by the GPS icon ( ). The aircraft status indicator will blink rapidly when the home point is recorded.

Smart RTH

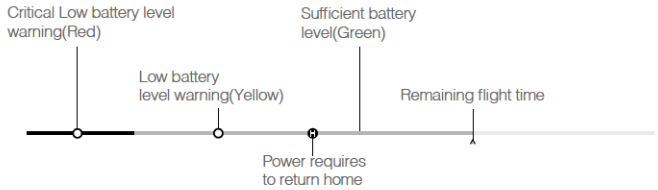
Use the RTH button on the remote controller (refer to "RTH button" on page 26 for more information) or tap the RTH button in the DJI Pilot app and follow the on-screen instructions when GPS is available to initiate Smart RTH. The aircraft will then automatically return to the last recorded Home Point. You may use the remote controller's control sticks to control the aircraft's position to avoid a collision during the Smart RTH process. Press and hold the Smart RTH button once to start the process, and press the Smart RTH button again to terminate the procedure and regain full control of the aircraft.

Low Battery RTH

The low battery level failsafe is triggered when the DJI Intelligent Flight Battery is depleted to a point that may affect the safe return of the aircraft. Users are advised to return home or land the aircraft immediately when prompted. The DJI Pilot app will display a notice when a low battery warning is triggered. The aircraft will automatically return to the Home Point if no action is taken after a ten-second countdown. The user can cancel the RTH procedure by pressing the RTH button on the remote controller. The thresholds for these warnings are automatically determined based on the aircraft's current altitude and distance from the Home Point.

The aircraft will land automatically if the current battery level can only support the aircraft long enough to descend from its current altitude. The user can still use the remote controller to alter the aircraft's orientation during the landing process.

The Battery Level Indicator is displayed in the DJI Pilot app, and is described below:



Battery level Indicator

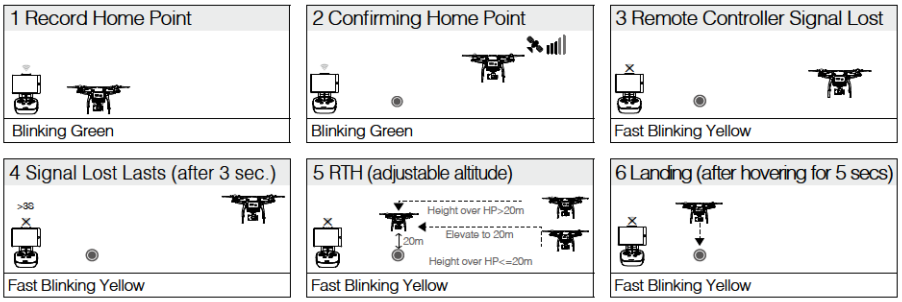
Battery Level Warning	Remark	Aircraft Status Indicator	DJI Pilot app	Flight Instructions
Low battery level warning	The battery power is low. Please land the aircraft.	Aircraft status indicator blinks RED slowly.	Tap "Go-home" to have the aircraft return to the Home point and land automatically, or "Cancel" to resume normal flight. If no action is taken, the aircraft will automatically go home and land after 10 seconds. Remote controller will sound an alarm.	Fly the aircraft 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.	Aircraft status indicator blinks RED quickly.	The DJI Pilot app display will flash red and the aircraft will start to descend. The remote controller will sound an alarm.	Allow the aircraft to descend and land automatically.
Estimated remaining flight time	Estimated remaining flight based on current battery level.	N/A	N/A	N/A

- When Critical battery level warning is triggered and the aircraft begins to land automatically, you may push the throttle upward to make the aircraft hover at its current altitude, giving you an opportunity to navigate to a more appropriate landing location.
- The colored zones and markers on the battery level indicator bar reflect the estimated remaining flight time. They are automatically adjusted according to the aircraft's current location and status.

Failsafe RTH

If the Home Point was successfully recorded and the compass is functioning normally, Failsafe RTH will be automatically activated if the remote controller signal is lost for more than three seconds. The Return-to-Home process may be interrupted and the operator may regain control of the aircraft if the remote controller signal connection is re-established.

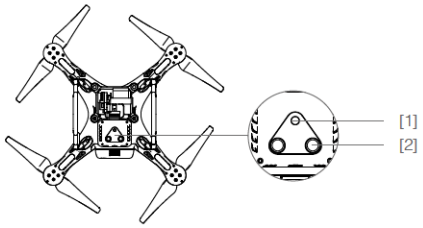
Failsafe Illustration



- The aircraft cannot avoid obstruction during the Failsafe RTH, therefore, it is important to set an suitable Failsafe altitude before each flight. Launch the DJI Pilot app and enter "Camera" and select "MODE > Advanced Settings > Failsafe mode" to set the Failsafe altitude.
- The aircraft will stop its ascent and return to the Home Point immediately if the throttle stick is moved during the Failsafe RTH procedure.

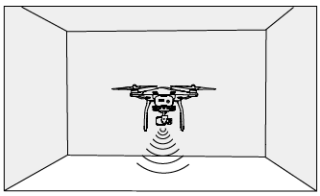
Vision Positioning System

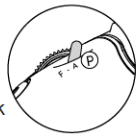
The DJI Vision Positioning System uses ultrasound and image data to help the aircraft maintain its current position. With the help of Vision Positioning, your Phantom 3 Professional can hover in place more precisely and fly indoors or in other environments where a GPS signal is not available. The main components of the Vision Positioning System are located on the bottom of your Phantom 3 Professional; they include [2] two ultrasonic sensors and [1] one monocular camera.



Using Vision Positioning

Vision Positioning is activated automatically when the Phantom 3 Professional is turned on. No further action is required. Vision Positioning is typically used in indoor environments, where GPS is unavailable. Using the sensors that are built into the Vision Positioning system, the Phantom 3 Professional can hover precisely even without GPS.





Follow the steps below to use Vision Positioning:

1. Toggle the flight mode switch to P-mode.
2. Place the aircraft on a flat surface. Note that the Vision Positioning system cannot work properly on surfaces without clear pattern variations.
3. Turn on the aircraft. The aircraft status indicator will flash green two times, which indicates the Vision Positioning system is ready. Gently push the throttle up to lift off and the aircraft will hover in place.

⚠ The performance of your Vision Positioning System is affected by the surface over which it is flying. The ultrasonic sensors may not be able to accurately measure distances when operating above sound-absorbing materials. In addition, the camera may not function correctly in suboptimal environments. The aircraft will switch from P-mode to A-mode automatically if neither GPS nor Vision Positioning System are available. Operate the aircraft with great caution in the following situations:

- Flying over monochrome surfaces (e.g. pure black, pure white, pure red, pure green).
- Flying over a highly reflective surfaces.
- Flying at high speeds(over 8 m/s at 2 meters or over 4 m/s at 1 meter).
- Flying over water or transparent surfaces.
- Flying over moving surfaces or objects.
- Flying in an area where the lighting changes frequently or drastically.
- Flying over extremely dark (lux < 10) or bright (lux > 100,000) surfaces.
- Flying over surfaces that can absorb sound waves (e.g. thick carpet).
- Flying over surfaces without clear patterns or texture.
- Flying over surfaces with identical repeating patterns or textures (e.g. tiles with the same design).
- Flying over inclined surfaces that will deflect sound waves away from the aircraft.

- Keep the sensors clean at all times. Dirt or other debris may adversely affect the effectiveness of the sensors.
- Vision Positioning is only effective when the aircraft is at altitudes of 0.3 to 3 meters.
- The Vision Positioning System may not function properly when the aircraft is flying over water.
- The Vision Positioning System may not be able to recognize pattern on the ground in low light conditions (less than 100 lux).
- Do not use other ultrasonic devices with frequency of 40 KHz when Vision Positioning system is in operation.
- Vision Positioning System may not be able to stabilize the aircraft when flying close to the ground (below 0.5 meters) at fast speeds..

⊘ Keep the animals away from the aircraft when Vision Positioning system is activated. The sonar sensor emits high frequency sounds that are only audible to some animals.

Flight Recorder

Flight data is automatically recorded to the internal storage of the aircraft. This includes flight telemetry, aircraft status information, and other parameters. To access these data, connect the aircraft to the PC through the Micro-USB port and launch the DJI Pilot app.

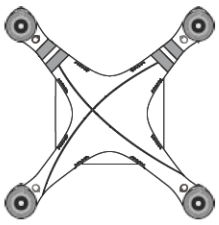
Attaching and Detaching the Propellers

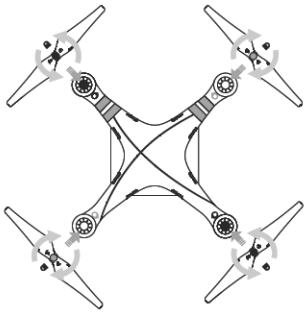
Use only DJI approved propellers with your Phantom 3 Professional. The grey and black nuts on the propeller indicate where they should be attached and in which direction whey should spin. To attach the propellers properly, match the nut color with the motor axis color.

Propellers	Silver Dot	Black Dot
Figure		
Attach On	Motors with a grey axes	Motors with a black axes
Legends	Lock : Turn the propellers in the indicated direction to mount and tighten. Unlock : Turn the propellers in the indicated direction to loosen and remove.	

Attaching the Propellers

1. Be sure to remove the warning stickers from the motors before attaching the propellers.
2. Attach the propellers with silver dots onto the motors with silver axes and spin the propellers clockwise to secure them in place. Attach the propellers with black dots onto the motors with black axes and spin the propellers counter-clockwise to secure them in place. Be sure to tighten each propeller by hand before flight.





⚠ • Ensure propellers are attached to its corresponding motors, otherwise the aircraft cannot take off.
• Wear gloves when handling propellers.
• Hand tighten each of the propellers on the corresponding motors to ensure it is attached firmly.

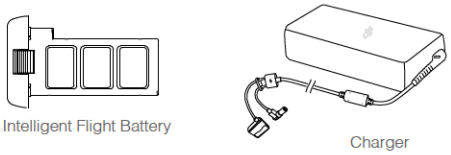
Detaching the Propellers

Hold the motor in place with one hand, then spin the propeller in the indicated unlock direction.

⚠ • Check that the propellers and motors are installed correctly and firmly before every flight.
• Ensure that all propellers are in good condition before each flight. DO NOT use aged, chipped, or broken propellers.
• To avoid injury, STAND CLEAR of and DO NOT touch propellers or motors when they are spinning.
• ONLY use original DJI propellers for a better and safer flight experience.

DJI Intelligent Flight Battery

The DJI Intelligent Flight Battery has a capacity of 4480 mAh, a voltage of 15.2 V, and a smart charge/discharge functionality. It should only be charged using an appropriate charger that has been approved by DJI.



Intelligent Flight Battery Charger

⚠ The Intelligent Flight Battery must be fully charged before using it for the first time. Refer to "Charging the Intelligent Flight Battery" for more information.

Be aware that the output power of the supplied Phantom 3 Professional charger is 100W.

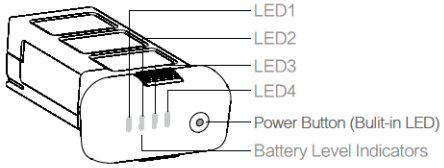
DJI Intelligent Flight Battery Functions

1. Battery Level Display: the LED indicators display the current battery level.
2. Battery Life Display: the LEDs display the current battery power cycle.
3. Auto-Discharging Function: To prevent swelling, the battery automatically discharges to below 65% of total power when it is idle for more than ten days. It takes around two days to discharge the battery to 65%. It is normal to feel moderate heat being emitted from the battery during the discharge process. Discharge thresholds can be set in the DJI Pilot app.
4. Balanced Charging: Automatically balances the voltage of each battery cell when charging.
5. Overcharge Protection: Charging automatically stops when the battery is fully charged.
6. Temperature Detection: The battery will only charge when the temperature is between 0°C (32°F) and 40°C (104°F).
7. Over Current Protection: The battery stops charging when high amperage (more than 8 A) is detected.
8. Over Discharge Protection: To prevent over-discharge damage, discharging automatically stops when the battery voltage reaches 12 V.
9. Short Circuit Protection: Automatically cuts the power supply when a short circuit is detected.

10. Battery Cell Damage Protection: The DJI Pilot app displays a warning message when a damaged battery cell is detected.
11. Battery Error History: Browse the battery error history in the DJI Pilot app.
12. Sleep Mode: To save power, the battery enters sleep mode after 20 minutes of inactivity.
13. Communication: Information pertaining to the battery's voltage, capacity, current, etc. is transmitted to the aircraft's main controller.

⚠ Refer to *Phantom 3 Professional / Advanced Intelligent Flight Battery Safety Guidelines* before use. Users take full responsibility for all operations and usage.

Using the Battery



Turning ON/OFF

Turning On: Press the Power Button once, then press again and hold for 2 seconds to turn on. The Power LED will turn red and the Battery Level Indicators will display the current battery level.

Turning Off: Press the Power Button once, then press again and hold for 2 seconds to turn off. The battery power LED will flash when powering off the Phantom to allow automatically stopping of a recording during the event recording wasn't stopped.

Low Temperature Notice:

1. Battery capacity is significantly reduced when flying in low temperature (< 0°C) environments.
2. It is not recommended that the battery be used in extremely low temperature (< -10°C) environments. Battery voltage should reach the appropriate level when operating environment with temperatures between -10°C and 5°C.
3. End the flight as soon as the DJI Pilot app displays the "Low Battery Level Warning" in low temperature environments.
4. Keep the battery indoors to warm it before flying in low temperature environments.
5. To ensure optimal performance of the battery, keep the battery temperature above 20°C.
6. The charger will stop charging the battery if the battery cell's temperature is not within the operating range (0°C ~ 40°C).

⚠ In cold environments, insert the battery into the battery compartment and allow the aircraft for approximately 1-2 minutes to warm up before taking off.

Checking the Battery Level

The Battery Level Indicators display how much power remains. When the battery is turned off, press the Power Button once. The Battery Level Indicators will light up to display the current battery level. See below for details.

The Battery Level Indicators will also show the current battery level during charging and discharging. The indicators are defined below.

: LED is on. : LED is flashing.
: LED is off.

Battery Level				
LED1	LED2	LED3	LED4	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

Battery life refers to how many more times the battery can be discharged and recharged before it must be replaced. When the battery is turned off, press and hold the Power Button for 5 seconds to check the battery life. The Battery Level Indicators will light up and/or blink for two seconds, as shown below:

Battery Life				
LED1	LED2	LED3	LED4	Battery Life
▯	▯	▯	▯	90%~100%
▯	▯	▯	▯	80%~90%
▯	▯	▯	▯	70%~80%
▯	▯	▯	▯	60%~70%
▯	▯	▯	▯	50%~60%
▯	▯	▯	▯	40%~50%
▯	▯	▯	▯	30%~40%
▯	▯	▯	▯	20%~30%
▯	▯	▯	▯	below 20%

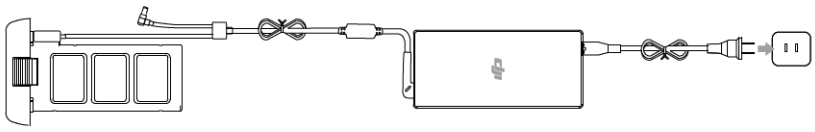
⚠ When battery life reaches 0%, it can no longer be used.

For more information about the battery, launch the DJI Pilot app and check the information that is listed under the battery tab.

Charging the Intelligent Flight Battery

1. Connect the Battery Charger to a power source (100-240 V 50/60 Hz).
2. Open the Protection Cap and connect the Intelligent Flight Battery to the Battery Charger. If the battery level is above 95%, turn on the battery before charging.
3. The Battery Level Indicator will display the current battery level as it is charging.
4. The Intelligent Flight Battery is fully charged when the Battery Level Indicators are all off.
5. Air-cool the Intelligent Flight Battery after each flight. Allow its temperature to drop to room temperature before storing it for an extended period.

⚠
- We do not recommend charging the Intelligent Flight Battery and remote controller with the standard charger at the same time, otherwise the charger may overheat.
- Always turn off the battery before inserting it or removing it from the Phantom 3 Professional. Never insert or remove a battery when it is turned on.



Intelligent Flight Battery Charger Power Outlet

Battery Level Indicators While Charging				
LED1	LED2	LED3	LED4	Battery Level
▮	□	□	□	0%~25%
▮	▮	□	□	25%~50%
▮	▮	▮	□	50%~75%
▮	▮	▮	▮	75%~100%
□	□	□	□	Fully Charged

Battery Protection LED Display

The table below shows battery protection mechanisms and corresponding LED patterns.

Battery Level Indicators while Charging					
LED1	LED2	LED3	LED4	Blinking Pattern	Battery Protection Item
□	▮	□	□	LED2 blinks twice per second	Over current detected
□	▮	□	□	LED2 blinks three times per second	Short circuit detected
□	□	▮	□	LED3 blinks twice per second	Over charge detected
□	□	▮	□	LED3 blinks three times per second	Over-voltage charger detected
□	□	□	▮	LED4 blinks twice per second	Charging temperature is too low
□	□	□	▮	LED4 blinks three times per second	Charging temperature is too high

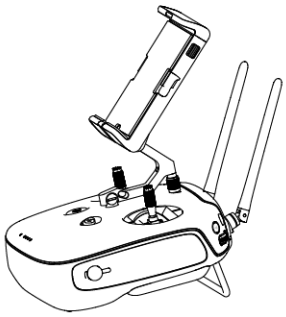
After these issues are resolved, press the Power Button to turn off the Battery Level Indicator. Unplug the Intelligent Flight Battery from the charger and plug it back in to resume charging. Note that you do not need to unplug and plug in the charger in the event of a room temperature error; the charger will resume charging when the temperature is within the allowable range.

⚠ DJI does not take any responsibility for damage caused by third-party chargers.

How to discharge your Intelligent Flight Battery:
Slow : Place the Intelligent Flight Battery into the Phantom 3 Professional's Battery Compartment and turn it on. Leave it on until there is less than 8% of power left, or until the battery can no longer be turned on. Launch the DJI Pilot app to check battery levels.
Rapid : Fly the Phantom 3 Professional outdoors until there is less than 8% of power left, or until the battery can no longer be turned on.

Remote Controller

This section describes the features of the remote controller and includes instructions for controlling the aircraft and the camera.



Remote Controller

Remote Controller Profile

The Phantom 3 Professional remote controller is a multi-function wireless communication device that integrates the video downlink system and aircraft remote control system. The video downlink and aircraft remote control system operate at 2.4 GHz. The remote controller features a number of camera control functions, such as taking and previewing photos and videos, as well as controlling gimbal motion. The remote controller is powered by a 2S rechargeable battery. The battery level is displayed via LED indicators on the front panel of the remote controller.

- **Compliance Version:** The remote controller is compliant with both CE and FCC regulations.
- **Operating Mode:** Control can be set to Mode 1 or Mode 2, or to a custom mode.
- **Mode 1:** The right stick serves as the throttle.
- **Mode 2:** The left stick serves as the throttle.

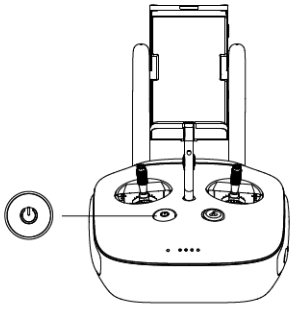
⚠ To prevent transmission interference, do not operate more than three aircrafts in the same area.

Using the Remote Controller

Turning the Remote Controller On and Off

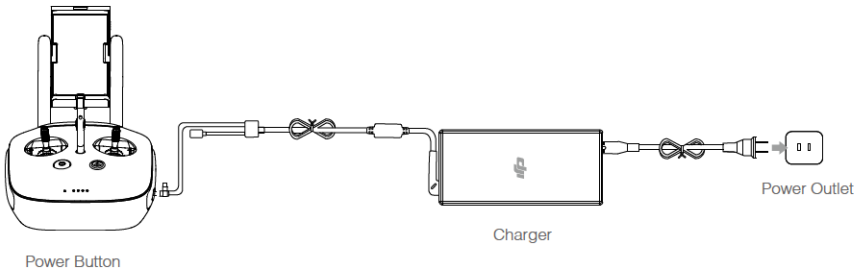
The Phantom 3 Professional remote controller is powered by a 2S rechargeable battery that has a capacity of 6000 mAh. The battery level is indicated via the Battery Level LEDs on the front panel. Follow the steps below to turn on your remote controller:

1. When the remote controller is turned off, press the Power Button once. The Battery Level LEDs will display the current battery level.
2. Press and hold the Power Button to turn on the remote controller.
3. The remote controller will beep when it is turned on. The Status LED will rapidly blink green, indicating that the remote controller is linking to the aircraft. The Status LEDs will glow solid green when linking is complete.
4. Repeat Step 2 to turn off the remote controller.



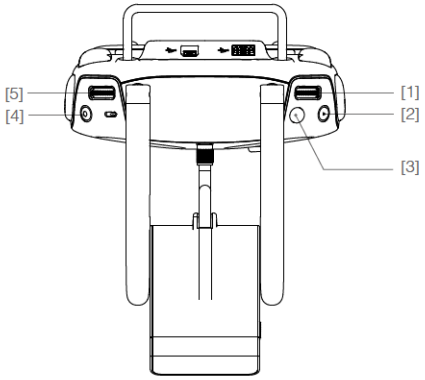
Charging the Remote Controller

Charge the remote controller using the included charger. Refer to the figure on next page below for more details.



Controlling the Camera

Shoot videos/pictures, view recorded images, and adjust camera settings via the Shutter Button, Camera Settings Dial, Playback Button, and Video Recording Button on the remote controller.



[1] Camera Settings Dial

Turn the dial to adjust camera settings such as ISO, shutter speed, and aperture without letting go of the remote controller. Move the dial to left or right to scroll through pictures and videos in playback mode. Press down on the dial to toggle between these settings.

[2] Playback Button

Press to view images and videos that have already been captured.

[3] Shutter Button

Press to take a photo. If burst mode is activated, multiple photos will be taken with a single press.

[4] Video Recoding Button

Press once to start recording video, then press again to stop recording.

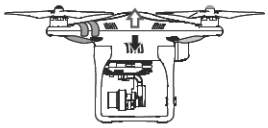
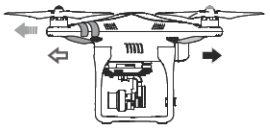
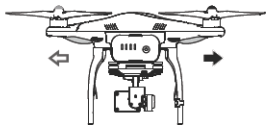
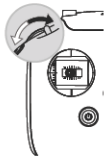
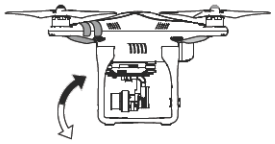
[5] Gimbal Dial

Use this dial to control the tilt of the gimbal.

Controlling Aircraft

This section explains how to control the orientation of the aircraft through the remote controller. The Remote Control is set to Mode 2 by default.

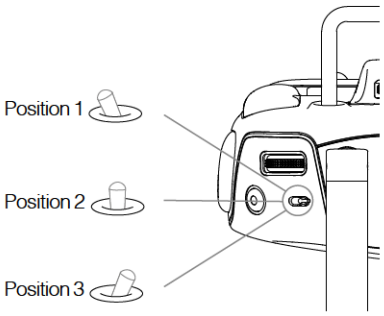
Stick Neutral/Mid-Point: Control sticks are in the center position.
Moving the Control Stick: The control stick is pushed away from the center position.

Remote Controller (Mode 2)	Aircraft (● Indicates Nose Direction)	Remarks
		Moving the left stick up and down changes the aircraft's elevation. Push the stick up to ascend and down to descend. When both sticks are centered, the Phantom 3 Professional will hover in place. The more the stick is pushed away from the center position, the faster the Phantom 3 Professional will change elevation. Always push the stick gently to prevent sudden and unexpected elevation changes.
		Moving the left stick to the left or right controls the rudder and rotation of the aircraft. Push the sick left to rotate the aircraft counter-clockwise, push the stick right to rotate the aircraft clockwise. If the stick is centered, the Phantom 3 Professional will maintain its current orientation. The more the stick is pushed away from the center position, the faster the Phantom 3 Professional will rotate.
		Moving the right stick up and down changes the aircraft's forward and backward pitch. Push the stick up to fly forward and down to fly backward. Phantom 3 Professional will hover in place if the stick is centered. Push the stick further away from the center position for a larger pitch angle (maximum 30°) and faster flight.
		Moving the right stick control left and right changes the aircraft's left and right pitch. Push left to fly left and right to fly right. The Phantom 3 Professional will hover in place if the stick is centered.
		Gimbal Dial: Turn the dial to the right, and the camera will shift to point upwards. Turn the dial to the left, and the camera will shift to point downwards. The camera will remain in its current position when dial is static.

Flight Mode Switch

Toggle the switch to select the desired flight mode. You may choose between; P-mode, F-mode and A-mode.

Position	Figure	Flight Mode
Position 1		F-mode
Position 2		A-mode
Position 3		P-mode



P-mode (Positioning): P-mode works best when the GPS signal is strong. There are three different versions of P-mode, which will be automatically selected by the Phantom 3 Professional depending on GPS signal strength and the Vision Positioning sensors:

P-GPS: GPS and Vision Positioning both are available; the aircraft is using GPS for positioning.

P-OPTI: Vision Positioning is available but a sufficient GPS signal is not available. Aircraft is using only Vision Positioning for position holding.

P-ATTI: Neither GPS nor Vision Positioning is available, the aircraft is using only its barometer for positioning, so only altitude is maintained.

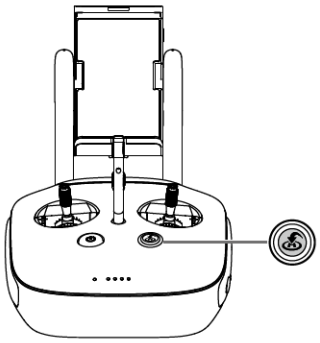
A-mode (Attitude): GPS and Vision Positioning System are not used for stabilization. The aircraft uses only its barometer to stabilize. The aircraft can automatically return to the Home Point if remote controller signal is lost and the Home Point was recorded successfully.

F-mode (Function): Intelligent Orientation Control (IOC) is activated in this mode. For more information about IOC, refer to the IOC section in the Appendix.

By default, the Flight Mode Switch is locked to P-mode. To unlock other flight modes, launch the DJI Pilot app, enter the “Camera” page, and tap “Mode”, then activate “Multiple Flight Mode”.

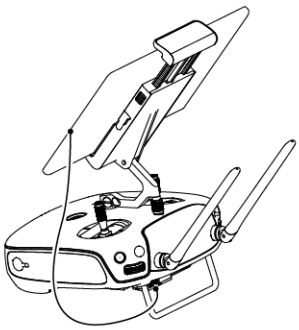
RTH Button

Press and hold the RTH button to start the Return-to-Home (RTH) procedure. The LED ring around the RTH Button will blink white to indicate that the aircraft is entering RTH mode. The aircraft will then return to the last recorded Home Point. Press this button again to cancel the RTH procedure and regain control of the aircraft.



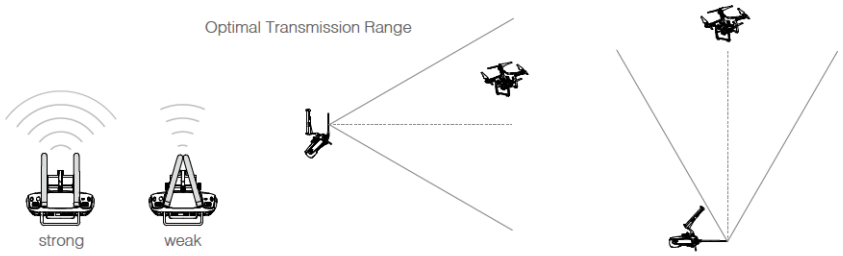
Connecting Your Mobile Device

Tilt the mobile device holder to the desired position. Press the button on the side of the mobile device holder to release the clamp, and then place your mobile device into the cradle. Adjust the clamp down to secure the mobile device. To connect your mobile device to the remote controller using a USB cable, plug one end of the cable into your mobile device and the other end into the USB port on the back of the remote controller.



Optimal Transmission Range

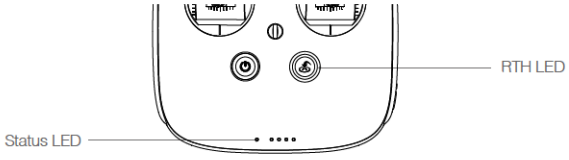
The transmission signal between the aircraft and the remote controller is most reliable within the area that is depicted in the image below:



Ensure that the aircraft is flying within the optimal transmission zone. To achieve the best transmission performance, maintain the appropriate relationship between the operator and the aircraft.

Remote Controller Status LED

The Status LED reflects the strength of the connection between the remote controller and the aircraft. The RTH LED indicates the Return-to-Home status of the aircraft. The table below contains more information about these indicators.



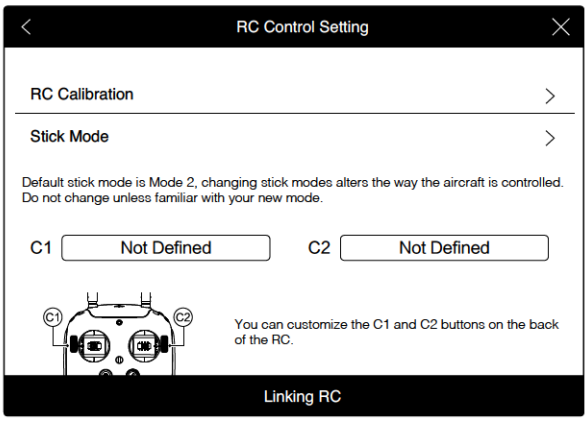
Status LED	Alarm	Remote Controller Status
R —— Solid Red	♪ Chime	The remote controller is disconnected from the aircraft.
G —— Solid Green	♪ Chime	The remote controller is connected to the aircraft.
R ····· Slow Blinking Red	D-D-D·····	Remote controller error.
R G / R Y ····· Red and Green/ Red and Yellow Alternate Blinks	None	HD downlink is disrupted.
RTH LED	**Sound**	**Remote Controller Status**
W —— Solid White	♪ Chime	Aircraft is returning home.
W ····· Blinking White	D · · ·	Sending Return-to-Home command to the aircraft.
W ····· Blinking White	DD ·· ·· ··	Return-to-Home procedure in progress.

⚠ The Remote Status Indicator will blink red and sound an alert, when the battery level is critically low.

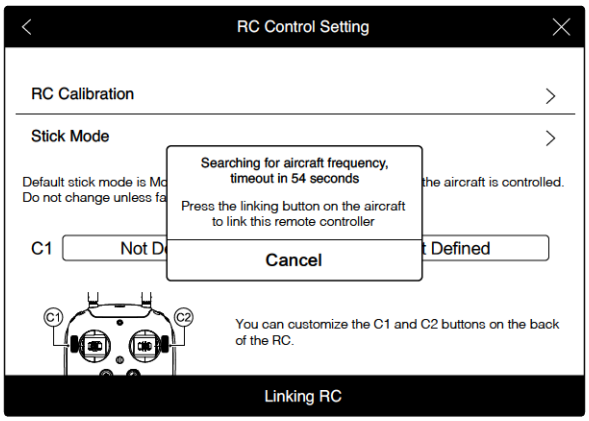
Linking the Remote Controller

The remote controller is linked to your aircraft before delivery. Linking is only required when using a new remote controller for the first time. Follow these steps to link a new remote controller:

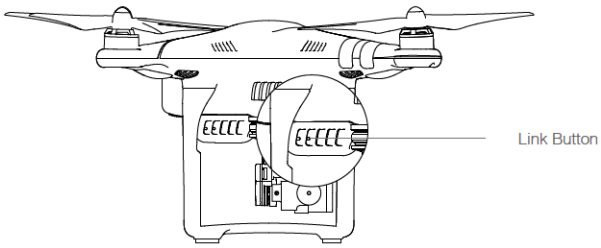
1. Turn on the remote controller and connect to the mobile device. Launch the DJI Pilot app.
2. Turn on the Intelligent Flight Battery.
3. Enter "Camera" and tap on and then tap "Linking RC" button as shown below.



4. The remote controller is ready to link. The Remote Controller Status Indicator blinks blue and a beep is emitted.



5. Locate the linking button on the side of the aircraft, as shown in the figure below. Press the link button to start linking. The Remote Controller Status Indicator LED will display a solid green once the remote controller is successfully linked to the aircraft.



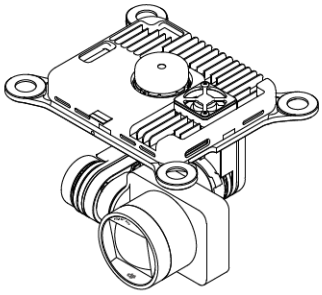
⚠ • The remote controller will un-link itself from an aircraft if a new remote controller is linked to the same aircraft.

Remote Controller Compliance Version

The remote controller is compliant with both CE and FCC requirements.

Camera and Gimbal

This section provides the technical specifications of the camera and explains the gimbal's operation modes.



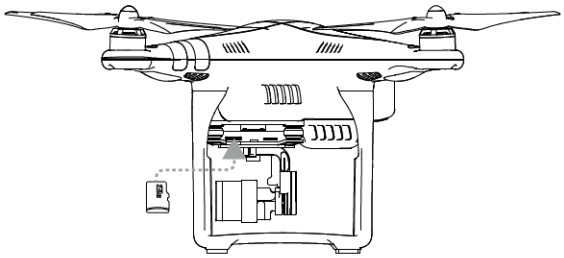
Camera and Gimbal

Camera Profile

The on-board camera uses the 1/2.3 inch CMOS sensor to capture video (up to 4096x2160p at 24fps or 4K at up to 30fps with the Phantom 3 Professional) and 12 megapixel stills. You may choose to record the video in either MOV or MP4 format. Available picture shooting modes include burst, continuous, and time-lapse mode. A live preview of what the camera sees can be monitored on the connected mobile device via the DJI Pilot app.

Camera Micro-SD Card Slot

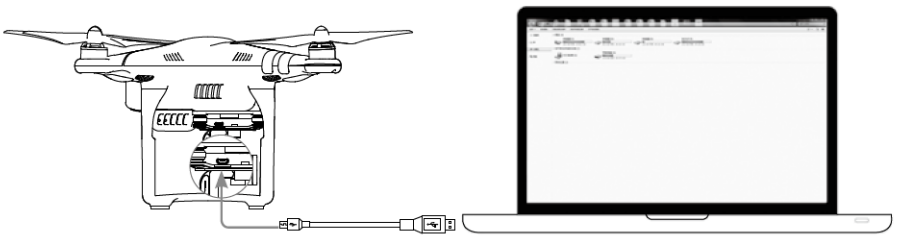
To store your photos and videos, insert the Micro-SD card into the slot, as shown below, before turning on the Phantom 3 Professional. The Phantom 3 Professional comes with a 16 GB Micro-SD card and supports Micro-SD cards up to 64 GB. A UHS-1 Micro-SD card is recommended due to their fast read and write speeds allowing you to save high-resolution video data.



⊘ Do not remove the Micro-SD card from the Phantom 3 Professional when it is turned on.

Camera Data Port

Turn on the Phantom 3 Professional and connect a USB cable to the Camera Data Port to download photos and videos to your computer.



⚠ The aircraft must be turned on before attempting to access the files on the Micro-SD card.

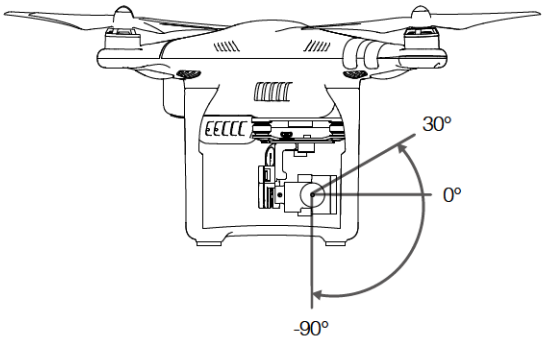
Camera Operation

Use the Shutter and Video Recording buttons on the remote controller to shoot the images or videos through the DJI Pilot app. For more information about how to use these buttons, refer to "Controlling the Camera Page 24".

Gimbal

Gimbal Profile

The 3-axis gimbal provides a steady platform for the attached camera, allowing you to capture clear, stable images and video. The gimbal can tilt the camera within a 120° range.



Use the gimbal dial on the remote controller to control the tilt movement of the camera.

Gimbal Operation Modes

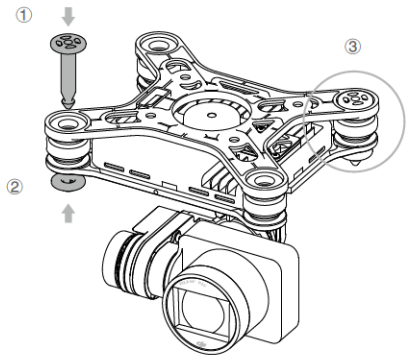
Two gimbal operation modes are available. Switch between the different operation modes on the camera settings page of the DJI Pilot app. Note that your mobile device must be connected to the remote controller for changes to take effect. Refer to the table below for details:

	Follow Mode	The angle between gimbal's orientation and aircraft's nose remains constant at all times.
	FPV Mode	The gimbal will synchronize with the movement of the aircraft to provide a first-person perspective flying experience.

- A gimbal motor error may occur in these situations: (1) the aircraft is placed on uneven ground or the gimbal's motion is obstructed (2) the gimbal has been subjected to an excessive external force, such as a collision. Please take off from flat, open ground and protect the gimbal at all times.
- Flying in heavy fog or clouds may make the gimbal wet, leading to temporary failure. The gimbal will recover full functionality after it dries.

Anti-Drop Kit

The anti-drop kit helps keep the gimbal and camera connected to the aircraft. Two pins have been mounted prior to shipping. If new or additional pins are required, see the diagram below. Press Part ① through the hole of the vibration absorber and into the center hole of Part ②, then lock them together as shown ③. Mounting the anti-drop kit pins diagonally from each other is recommended.

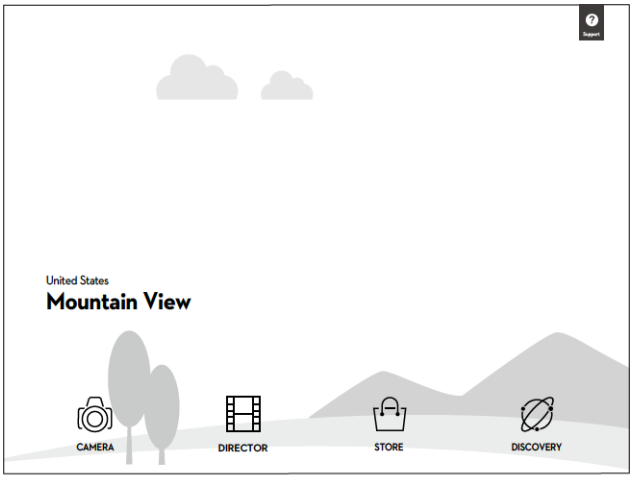


DJI Pilot App

This section introduces the four main functions of the DJI Pilot app.

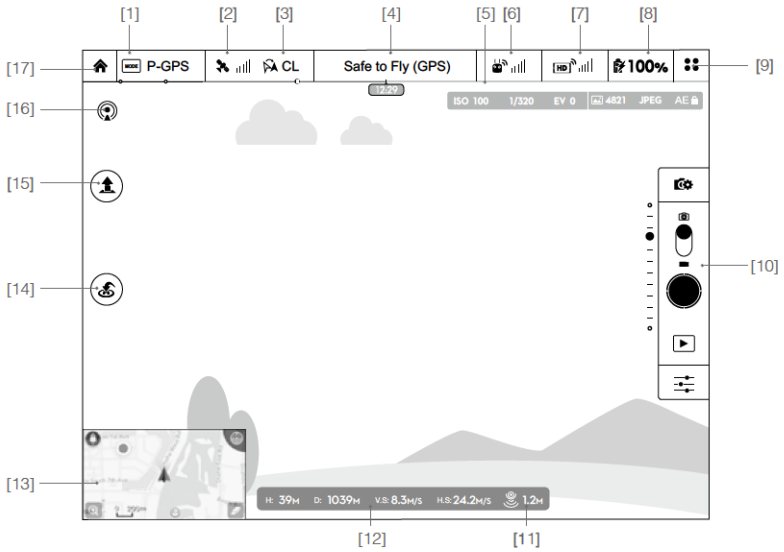
DJI Pilot App

The DJI Pilot app is a mobile application designed specifically for the Phantom 3 Professional. Use this app to control the gimbal, camera, and other aircraft functions. The app also features Map, Academy, and User Center, which are used for configuring your aircraft and sharing your photos and videos with others. It is recommended that you use a tablet for the best experience.



Camera

The Camera page contains a live HD video feed from the Phantom 3 Professional's camera. You can also configure various camera parameters from the Camera page.



[1] Flight Mode

MODE: The text next to this icon indicates the current flight mode.
Tap to configure the MC (Main Controller) Settings. These settings allow you to modify flight limits, perform compass calibration, and set the gain values.

[2] GPS Signal Strength

: This icon shows the current strength of GPS signals. Green bars indicate adequate GPS strength.

[3] IOC Settings

CL : This icon displays the IOC setting when the aircraft has entered F-mode. Tap to view the IOC settings menu and select the desired IOC setting.

[4] System Status

Safe to Fly (GPS) : This icon indicates the current aircraft system status and GPS signal strength.

[5] Battery Level Indicator

: The battery level indicator provides a dynamic display of the battery level. The colored zones on the battery level indicator represent the power levels needed to carry out different functions.

[6] Remote Controller Signal

: This icon shows the strength of remote controller's signal.

[7] HD Video Link Signal Strength

HD : This icon shows the strength of the HD video downlink connection between the aircraft and the remote controller.

[8] Battery Level

100%: This icon shows the current battery level.

Tap to view the battery information menu, set the various battery warning thresholds, and view the battery warning history.

[9] General Settings

: Tap this icon to view the General Settings page. From this page, you can set flight parameters, reset the camera, enable the quick view feature, adjust the gimbal roll value, and toggle the flight route display.

[10] Camera Operation Bar

Shutter and Recording Settings

: Tap to enter various camera value settings, including color space for the recording, resolution of the videos, image size and so on.

Shutter

: Tap this button to take a single photo. Press and hold this button to select single shot, triple shot or time-lapsed shooting modes.

Record

: Tap once to start recording video, then tap again to stop recording. You can also press the Video Recording Button on the remote controller, which has the same functionality.

Playback

: Tap to enter the playback page. You can preview photos and videos as soon as they are captured.

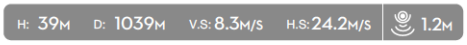
Camera Settings

: Tap to set ISO, shutter and auto exposure values of the camera.

[11] Vision Positioning

: This icon shows the distance between the surface and the Vision Positioning System's sensors.

[12] Flight Telemetry



The Vision Positioning Status icon is highlighted when the Vision Positioning is in operation.

Flight attitude is indicated by the flight attitude icon.
(1) The red arrow shows which direction the aircraft is facing.
(2) Light blue and dark blue areas indicate pitch.
(3) The angle of the boundary between the light blue and dark blue areas indicates the roll angle.

[13] Map

Display the flight path of the current flight. Tap to switch from the Camera GUI to the Map GUI.

[14] Return to Home (RTH)

: Initiate RTH home procedure. Tap to have the aircraft return to the last recorded home point.

[15] Auto Takeoff/Landing

: Tap to initiate auto takeoff or landing.

[16] Livestream

: Livestream icon indicates the current video feed is broadcasting live on YouTube. Be sure the mobile data service is available on the mobile device.

[17] Back

: Tap to return to the main GUI.

Director

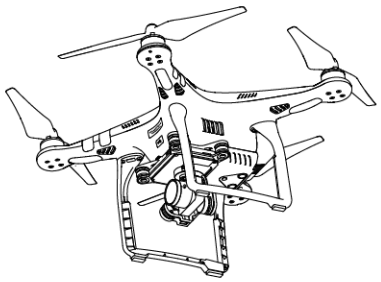
Director is an automatic video editor built into the DJI Pilot app. After recording several video clips, simply tap "Director" from the app's home screen. You can then select a template and a specified number of clips, which are automatically combined to create a short film that can be shared immediately.

Store

Tap "Store" to visit the official DJI Online Store to see the latest information about DJI products and easily buy new products.

Discovery

Sync pictures and videos to your mobile device, view flight logs, and check your DJI account status in "Discovery". Use your registered DJI account to login to "Discovery".



Flight

This section describes safe flight practices and flight restrictions.

Flight

Once pre-flight preparation is complete, it is recommended that you use the flight simulator in the DJI Pilot app to hone your flight skills and practice flying safely. Ensure that all flights are carried out in an open area.

Flight Environment Requirements

1. Do not use the aircraft in severe weather conditions. These include wind speeds exceeding 10 m/s , snow, rain and fog.
2. Only fly in open areas. Tall structures and large metal structures may affect the accuracy of the on-board compass and GPS system.
3. Avoid obstacles, crowds, high voltage power lines, trees, and bodies of water.
4. Minimize interference by avoiding areas with high levels of electromagnetism, including base stations and radio transmission towers.
5. Aircraft and battery performance is subject to environmental factors such as air density and temperature.Be very careful when flying at altitudes greater than 19, 685 feet (6000 meters) above sea level, as the performance of the battery and aircraft may be affected.
6. The Phantom 3 Professional cannot operate within the polar areas.

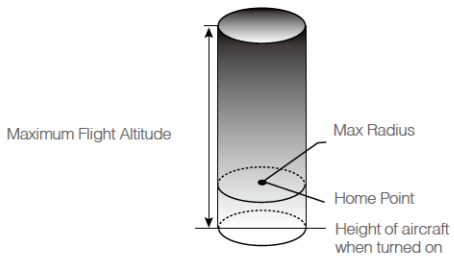
Flight Limits and No-Fly Zones

All unmanned aerial vehicle (UAV) operators should abide by all regulations set forth by government and regulatory agencies including the ICAO and the FAA. For safety reasons, flights are limited by default, which helps users operate this product safely and legally. Flight limitations include height limits, distance limits, and No-Fly Zones.

When operating in P-mode, height limits, distance limits, and No-Fly Zones function concurrently to manage flight safety. In A-mode, only height limits are in effect, which by default prevent the aircraft altitude from exceeding 1640 feet (500 m) .

Maximum flight altitude & Radius Limits

Maximum flight altitude and radius limits may be changed in the DJI Pilot app. Be aware that the maximum flight altitude cannot exceed 1640 feet (500 meters). In accordance with these settings, your Phantom 3 Professional will fly in a restricted cylinder, as shown below:



GPS Signal Strong (G) ····· Blinking Green			
	Flight Limits	**DJI Pilot app**	**Aircraft Status Indicator**
Maximum Flight Altitude	Aircraft's altitude cannot exceed the specified value.	Warning: Height limit reached.	None.
Max Radius	Flight distance must be within the max radius.	Warning: Distance limit reached.	Rapid red flashing (R) ····· when close to the max radius limit.

GPS Signal Weak (Y) ····· Blinking Yellow			
	Flight Limits	**DJI Pilot app**	**Aircraft Status Indicator**
Maximum Flight Altitude	Height is restricted to 400 feet. (120m) and under.	Warning: Height limit reached.	None.
Max Radius	No limits		

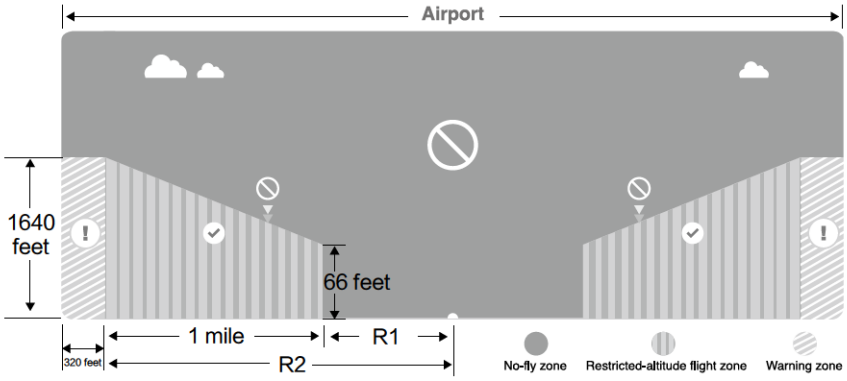
⚠
- If you fly out of the limit, you can still control the Phantom 3, but cannot fly it any father. If the Phantom 3 flies out of the max radius in Ready to Fly (non-GPS) mode, it will fly back within range automatically.
- If the Phantom 3 flies out of the max radius in Ready to Fly (non-GPS) mode, it will fly back within range automatically.

No-Fly Zones

All No-Fly Zones are listed on the DJI official website at http://flysafe.dji.com/no-fly. No-Fly Zones are divided into Airports and Restricted Areas. Airports include major airports and flying fields where manned aircraft operate at low altitudes. Restricted Areas include border lines between countries or sensitive institute. The details of the No-Fly Zones are explained as follow:

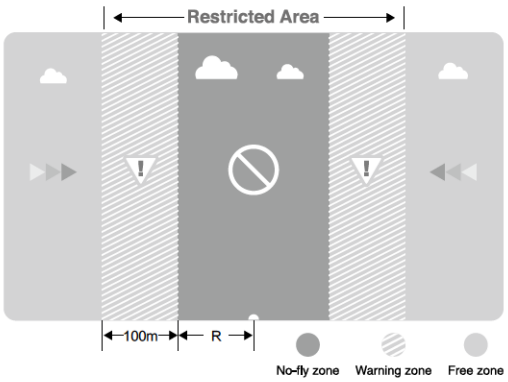
Airport

(1) Airport No-Fly Zone are comprised of Take-off Restricted zones and Restricted Altitude Zones. Each zone features circles of various sizes.
(2) R1 miles (value of the R1 depends on the size and shape of the airport) around the airport is a Take-off restricted zone, inside of which take off is prevented.
(3) From R1 mile to R1 + 1 mile around the airport the flight altitude is limited to a 15 degree inclination. Starting at 65 feet (20 meters) from the edge of airport and radiating outward. The flight altitude is limited to 1640 feet (500 meters) at R1+1 mile
(4) When the aircraft enters within 320 feet (100 meters) of No-Fly Zones, a warning message will appear on the DJI Pilot app.



Restricted Area

(1) Restricted Areas does not have flight altitude restrictions.
(2) R miles around the designated restriction area is a Take-off Restricted area. Aircraft cannot take off within this zone. The value of R varies based on the definition of the restricted areas.
(3) A "warning zone" has been set around the Restricted Area. When the aircraft approaches within 0.6 miles (1 km) of this zone, a warning message will appear on the DJI Pilot app.



GPS Signal Strong Ⓖ ····· Blinking Green			
Zone	Restriction	DJI Pilot App Prompt	**Aircraft Status Indicator**
No-fly Zone	Motors will not start.	Warning: You are in a No-fly zone. Take off prohibited.	Ⓡ ····· Red flashing
	If the aircraft enters the restricted area in A-mode, but is switched to P-mode, the aircraft will automatically descend, land, and stop its motors.	Warning: You are in a no-fly zone. Automatic landing has begun.	
Restricted-altitude flight zone	If the aircraft enters the restricted area in A-mode, but is switched to P-mode, it will descend to an appropriate altitude and hover 15 feet below the altitude limit.	R1: Warning: You are in a restricted zone. Descending to safe altitude. R2: Warning: You are in a restricted zone. Maximum flight altitude is restricted to between 20m and 500m. Fly cautiously.	
Warning zone	No flight restriction applies, but there will be a warning .	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.

- When flying in a safety zone, the aircraft's status indicator will blink red rapidly 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 blinking red.
- For safety reasons, please do not fly close to airports, highways, railway stations, railway lines, city centers, or other sensitive areas. Fly the aircraft only within your line of sight.

Preflight Checklist

1. Remote controller, Intelligent Flight Battery, and mobile device are fully charged.
2. Propellers are mounted correctly and firmly.
3. Micro-SD card has been inserted, if necessary.
4. Gimbal is functioning normally.
5. Motors can start and are functioning normally.
6. The DJI Pilot app is successfully connected to the aircraft.

Calibrating the Compass

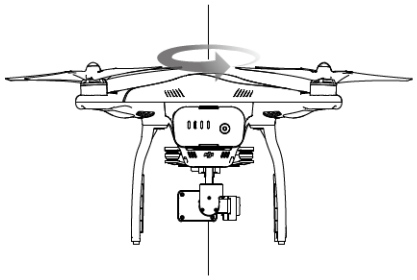
IMPORTANT: Always calibrate the compass in every new flight location. The compass is very sensitive to electromagnetic interference, which can produce abnormal compass data and lead to poor flight performance or flight failure. Regular calibration is required for optimal performance.

- Do not calibrate your compass where there is any possibility of strong magnetic interference. Sources of potential interference include magnetite, parking structures, and subterranean metal structures
- Do not carry ferromagnetic materials with you during calibration such as keys or cellular phones.
- Do not calibrate in direct proximity to large metal objects.
- DO NOT calibrate indoors.

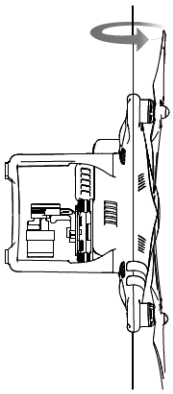
Calibration Procedures

Choose an open area to carry out the following procedures.

1. Ensure that the compass is calibrated. If you did not calibrate the compass as part of your pre-flight preparations, or if you have moved to a new location since the last calibration, tap "Mode" in the app and select "Compass Calibration", then follow the on-screen instructions.
2. Hold the aircraft horizontally and rotate 360 degrees. The Aircraft Status Indicators will display a solid green light.



3. Hold the aircraft vertically, with nose pointing downward, and rotate it 360 degrees around the center axis. Recalibrate the compass if the Aircraft Status Indicator glows solid red.



⚠ If the Aircraft Status Indicator blinks red and yellow after the calibration procedure, move your aircraft to a different location and try again.

Calibrate the compass before each flight. Launch the DJI Pilot app and follow the on-screen instructions to calibrate the compass. DO NOT calibrate the compass near metal objects such as a metal bridge, cars, scaffolding.

When to Recalibrate

1.When compass data is abnormal and the Aircraft Status Indicator is blinking green and yellow.
2.When flying in a new location or in a location that is different from the most recent flight.
3.When the mechanical or physical structure of the Phantom 3 Professional has been changed.
4.When severe drifting occurs in flight, i.e. Phantom 3 Professional does not fly in straight line.

Auto Takeoff and Auto Landing

Auto Takeoff

Use auto takeoff only if the Aircraft Status Indicators are blinking green. Follow the steps below to use the auto takeoff feature:

1. Launch the DJI Pilot app, and enter "Camera" page.
2. Ensure the aircraft is in P- mode.
3. Complete all steps on the pre-flight checklist.
4. Tap"⏫", and confirm that conditions are safe for flight. Slide the icon to confirm and takeoff.
5. Aircraft takes off and hovers at (1.5 meters) above ground.

⚠ Aircraft Status Indicator blinks rapidly when it is using the Vision Position System for stabilization. The aircraft will automatically hover below 3 meters. It is recommended to wait until there is sufficient GPS lock before using the Auto Take-off feature.

Auto-Landing

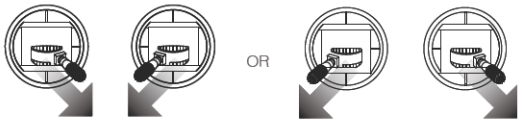
Use auto-landing only if the Aircraft Status Indicators are blinking green. Follow the steps below to use the auto-landing feature:

1. Ensure the aircraft is in P- mode.
2. Check the landing area condition before tapping "⬇", to begin landing. Then follow the on-screen instructions.

Starting/Stopping the Motors

Starting the Motors

A Combination Stick Command (CSC) is used to start the motors. Push both sticks to the bottom inner or outer corners to start the motors. Once the motors have started spinning, release both sticks simultaneously.

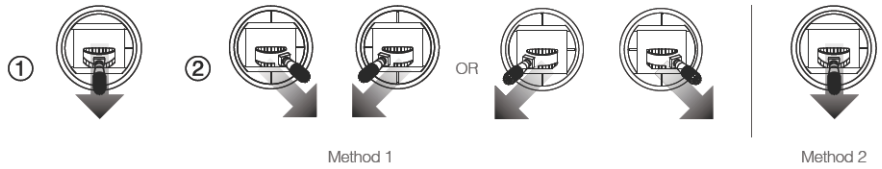


Stopping the Motors

There are two methods to stop the motors.

Method 1: When Phantom 3 Professional has landed, push the throttle down①, then conduct the same CSC that was used to start the motors, as described above②. Motors will stop immediately. Release both sticks once motors stop.

Method 2: When the aircraft has landed, push and hold the throttle down. The motors will stop after three seconds.



⚠ Do not perform a CSC when the aircraft is in midair, otherwise the motors will suddenly stop.

Flight Test

Takeoff/Landing Procedures

1. Place the aircraft in an open, flat area with the battery level indicators facing towards you.
2. Turn on the remote controller and your mobile device, then turn on the Intelligent Flight Battery.
3. Launch the DJI Pilot app and enter the Camera page.
4. Wait until the Aircraft Indicators blink green. This means the Home Point is recorded and it is now safe to fly. If they flash yellow, the Home Point has not been recorded.
5. Push the throttle up slowly to take off or use Auto Takeoff.
6. Shoot photos and videos using the DJI Pilot app.
7. To land, hover over a level surface and gently pull down on the throttle to descend.
8. After landing, execute the CSC command or hold the throttle at its lowest position until the motors stop.
9. Turn off the Intelligent Flight Battery first, then the Remote Controller.

⚠
- When the Aircraft Status Indicators blink yellow rapidly during flight, the aircraft has entered Failsafe mode.
- A low battery level warning is indicated by the Aircraft Status Indicators blinking red slowly or rapidly during flight.
- Watch our video tutorials for more flight information.

Video Suggestions and Tips

1. Go through the full pre-flight checklist before each flight.
2. Select the desired gimbal operation mode in the DJI Pilot app.
3. Only shoot video when flying in P-mode.
4. Always fly in good weather and avoid flying in rain or heavy wind.
5. Choose the camera settings that suit your needs. Settings include photo format and exposure compensation.
6. Perform flight tests to establish flight routes and preview scenes.
7. Push the control sticks gently to keep the aircraft's movement smooth and stable.

FAQ

Troubleshooting (FAQ)

What is the difference between the Phantom 3 Professional and the Phantom 3 Advanced?

The biggest difference between the Phantom 3 Professional and the Phantom 3 Advanced is in the camera. The Phantom 3 Professional is capable of shooting spectacular 4K video at up to 30 frames per second, and the Phantom 3 Advanced is capable of shooting at resolutions up to 1080p60. Both models shoot 12 megapixel photos.

The other main difference is the Intelligent Flight Battery charger. The Phantom 3 Advanced comes with a 57-watt charging unit and the Phantom 3 Professional comes with a 100-watt charger, the latter of which allows for shorter charging times.

Can I remove the camera and attach my own?

No. The cameras that come with both models are permanently attached. Attempting to remove, replace, or modify the camera may damage the product and will void your warranty.

Can I charge my Remote Controller and Intelligent Flight Battery at the same time?

While the Remote Controller charger and Intelligent Flight Battery charger have been integrated into one unit for your convenience, it is recommended that you only charge one item at a time. We recommend that you never charge both items using the same charger at the same time.

What are the buttons on the back of my Remote Controller for?

The two buttons on the back of the Remote Controller can be customized and assigned to function as you choose through the DJI Pilot app. Refer to the manual for more information.

How far can I fly my Phantom 3?

The signal transmission distance will vary depending on environmental conditions, but the Phantom 3 series can reach distances of up to 1.2 miles (2 kilometers) away from the pilot.

What app should I use with my Phantom 3?

The Phantom 3 is compatible with the DJI Pilot app for iOS and Android, which is already used with the DJI Inspire. The app will detect which aircraft is connected and automatically adjust accordingly.

Which mobile devices are compatible with the app?

The DJI Pilot app is only compatible with devices running iOS 8.0 or later or Android v4.1.2 or later.

The following devices are recommended:

iOS: iPhone 5s, iPhone 6, iPhone 6 Plus, iPad Air, iPad Air Wi-Fi + Cellular, iPad mini 2, iPad mini 2 Wi-Fi + Cellular, iPad Air 2, iPad Air 2 Wi-Fi + Cellular, iPad mini 3, and iPad mini 3 Wi-Fi + Cellular. This app is optimized for iPhone 5s, iPhone 6, and iPhone 6 Plus

Android: Samsung S5, Note 3, Sony Z3 EXPERIA, Google Nexus 7 II, Google Nexus 9, Mi 3, Nubia Z7 mini

Support for additional Android devices will become available as testing and development continues.

How do I use the Director automatic video editor?

Director is an automatic video editor built into the DJI Pilot app. After recording several video clips, simply tap "Director" from the app's home screen. You can then select a template and a specified number of clips, which are automatically combined to create a short film that can be shared immediately.

How do I change the control mode of my Phantom 3?

By default, the Remote Controller is set to Mode 2. This means that the right control stick controls the movement of the aircraft and the left control stick controls the throttle and orientation of the aircraft. These controls can be changed to Mode 1 or set to a customized configuration in the DJI Pilot app. This is only recommended for advanced users.

Can I use a Phantom 2 Remote Controller with the Phantom 3?

No. The Phantom 2 Remote Controller operates on a different frequency. The Phantom 2 Remote Controller operates at 5.8 GHz and the new Phantom 3 Remote Controller operates at 2.4 GHz.

Can I use a Phantom 2 Intelligent Flight Battery with the Phantom 3?

No. The Phantom 3 uses a newly designed Intelligent Flight Battery with greater power. The Phantom 3 has a 4 cell battery with a capacity of 4480 mAh and a voltage of 15.2 V.

My Phantom 3 does not turn off right away, is something wrong?

This is normal. After you attempt to power off the Intelligent Flight Battery, it may remain on for a few seconds as any video data is saved to the Micro SD card. This helps prevent your data from being lost or corrupted.

Do I have to buy the Remote Controller separately?

No, there is no need to buy a separate Remote Controller. Your Phantom 3 comes with a Remote Controller that is already linked to the aircraft.

Does my Phantom 3 support dual Remote Controllers?

No. The included Remote Controller can be used to control both the aircraft and the gimbal tilt at the same time.

What does the "P, A, F" switch on the Remote Controller do?

This switch, called the Flight Mode Switch, allows you to toggle different flight modes:

P-mode, or Positioning mode, indicates that both GPS and the Vision Positioning System are active and your Phantom 3 will attempt to stabilize using both.

In A-mode, or Attitude mode, the aircraft does not use GPS or the Vision Positioning System. Only the barometer is used for stabilization. The aircraft can still return to the Home Point as long as a sufficient GPS signal is available.

F-mode, or Function mode, activates Intelligent Orientation Control (IOC) functionality. Refer to the IOC section in the Appendix of the User Manual.

By default, only P-mode may be used. Refer to your user manual for instructions on unlocking the other modes.

What is the Phantom 3 flight time?

Flight times will vary depending on environmental conditions and usage patterns, but the Intelligent Flight Battery is designed to provide up to 23 minutes of uninterrupted flight time when fully charged.

How can I restore a video file if the power is turned off during recording?

Do not remove the Micro-SD card from the camera. If it has been removed, place it back in the camera. Turn the Phantom 3 on and wait approximately 30 seconds as the video file is restored.

How can I ensure that my pictures and videos will be synchronized to my iOS album?

You may need to adjust the settings of your mobile device. Open the Settings menu, select the Privacy tab, select the Photos tab, and then toggle the switch next to the DJI Pilot app icon. If the Pilot app has not been granted access to your albums, the photos and videos cannot be synchronized.

What should I do to land my Phantom 3 smoothly as possible?

Hover the aircraft over a flat, level surface. Slowly pull the throttle stick down until the aircraft touches the ground.

Why is the discharge time of the battery not zero, even though I have never used it?

Every battery is tested prior to being packaged and shipped. This affects the discharge time of a new battery and is the reason that the discharge time is not zero. The battery is safe to use.

Can the mobile device holder be used on the Phantom 2 series Remote Controller?

No, it cannot.

How to safely operate the aircraft when encountering compass error?

A compass error may occur when the aircraft is flying close to strong electric magnetic sources (e.g. power transmission lines). Aircraft Status Indicators blink red and yellow rapidly when a compass error occurs and the DJI Pilot app will display one of the following messages:

- Compass error, calibration required

  This warning message indicates the aircraft is receiving abnormal compass readings. It is recommended to power off the aircraft and re-calibrate the compass at a different location and then resume the flight.
- Compass error, exit P-GPS Mode

  This warning message indicates that the aircraft is drifting severely. Bring the aircraft to a higher altitude to gain enough GPS satellite locks when this warning message is prompted. The flight controller will automatically adjust the orientation of the aircraft in the midair to mitigate the drifts. The aircraft will switch back to P-GPS mode when the automatic adjustment is completed.

Appendix

Appendix

Specifications

Aircraft	
Weight (Battery & Propellers Included)	1280 g
Max. Ascent Speed	5 m/s
Max. Descent Speed	3 m/s
Max. Speed	16 m/s (ATTI mode, no wind)
Max. Flight Altitude	6000 m
Max. Flight Time	Approximately 23 minutes
Operating Temperature	0°C to 40°C
GPS Mode	GPS/GLONASS
Gimbal	
Controllable Range	Pitch: - 90° to + 30°
Vision Positioning	
Velocity Range	< 8 m/s (2 m above ground)
Altitude Range	30 cm-300 cm
Operating Range	30 cm-300 cm
Operating Environment	Brightly lit (lux > 15) patterned surfaces
Camera	
Sensor	Sony EXMOR 1/2.3" Effective pixels:12.4 M (total pixels: 12.76 M)
Lens	FOV 94° 20mm(35mm format equivalent) f/2.8
ISO Range	100-3200(video) 100-1600(photo)
Electronic Shutter Speed	8s -1/8000s
Image Max. Size	4000 x 3000
Still Photography Modes	Single shot Burst shooting: 3/5/7 frames Auto Exposure Bracketing (AEB): 3/5 Bracketed frames at 0.7EV Bias Time-lapse
Supported SD Card Types	Micro SD Max. capacity: 64 GB. Class 10 or UHS-1 rating required
Video Recording Modes	UHD : 4096x2160p 24/25, 3840x2160p24/25/30 FHD:1920x1080p 24/25/30/48/50/60 HD:1280x720p 24/25/30/48/50/60
Max. Bitrate Of Video Storage	60 Mbps
Supported File Formats	FAT32/exFAT Photo: JPEG, DNG Video: MP4/MOV (MPEG-4 AVC/H.264)
Operating Temperature Range	0°C to 40°C

Remote Controller	
Operating Frequency	2.400 GHz-2.483 GHz
Transmitting Distance	2000 m (Outdoor And Unobstructed)
Video Output Port	USB
Operating Temperature Range	0°C- 40°C
Battery	6000 mAh LiPo 2S
Mobile Device Holder	Tablets and smartphones
Transmitter Power(EIRP)	FCC: 20 dbm; CE:16 dbm
Working Voltage	1.2 A @7.4 V
Charger	
Voltage	17.4 V
Rated Power	100 W
Intelligent Flight Battery (PH3-4480 mAh-15.2 V)	
Capacity	4480 mAh
Voltage	15.2 V
Battery Type	LiPo 4S
Energy	68 Wh
Net Weight	365 g
Operating Temperature	-10°C- 40°C
Max. Charging Power	100 W

Aircraft Status Indicator Description

Normal	
R G Y ····· Red, Green and Yellow Flash Alternatively	Turning on and Self-Diagnostics
G Y ····· Green and Yellow Flash Alternatively	Aircraft Warming Up
G ····· Green Flashes Slowly	Safe to Fly (P-mode with GPS and Vision Positioning)
G X2 ····· Green Flashes Twice	Safe to Fly (P-mode with Vision Positioning but without GPS)
Y ····· Yellow Flashes Slowly	Safe to Fly (A-mode but No GPS and Vision Positioning)
Warning	
Y ····· Fast Yellow Flashing	Remote Controller Signal Lost
R ····· Slow Red Flashing	Low Battery Warning
R ····· Fast Red Flashing	Critical Battery Warning
R ····· Red Flashing Alternatively	IMU Error
R —— Solid Red	Critical Error
R Y ····· Red and Yellow Flash Alternatively	Compass Calibration Required

Intelligent Orientation Control (IOC)

IOC allows users to lock the control orientation of the aircraft in different modes. There are three working modes for IOC that can be selected in the DJI Pilot app. IOC only works when the aircraft is in F-mode, therefore the user must toggle the flight mode switch to activate IOC. Refer to the table below:

Course Lock (CL)	The nose direction, at the time that CL is set, will remain the forward direction regardless of how the orientation and position of the aircraft changes. This will remain fixed until you reset it or exit CL mode.
Home Lock (HL)*	Record a Home Point (HP) and enter HL mode. The forward and backward controls will move the aircraft farther from and closer to the established Home Pont, regardless of how the orientation and position of the aircraft changes.
Point of Interest (POI)*	Point of Interest. Record a point of interest (POI). The aircraft can then circle around the POI and the nose will always points toward the POI.

*Home Lock and Point of Interest feature are coming soon.

IOC Requirements

IOC is only available under the following conditions:

Modes IOC	GPS enabled	GPS counts	Flight Distance Limits
Course Lock	No	None	None
Home Lock	Yes		Aircraft ≥10m Home Point
POI	Yes		Aircraft 5m~500m Point of Interest

Using IOC

Toggle the Flight Mode Switch F-mode and follow the instructions prompted on the DJI Pilot app to select the desired IOC mode.

Appendix

FCC Compliance

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Compliance Information

FCC Warning Message

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

IC RSS warning

This device complies with Industry Canada licence-exempt RSS standard (s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent areil est conforme aux CNR d'Industrie Canada licables aux areils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:
(1) l'areil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'areil doit accepter tout brouillage radioélectrique subi, même si le brouillage est

susceptible d'en compromettre le fonctionnement.

IC Radiation Exposure Statement:

This equipment complies with IC RF radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

KCC Warning Message

"해당무선설비는 운용 증 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다 ."
"해당 무선설비는 운용 증 전파혼신 가능성이 있음"

NCC Warning Message

低功率電波輻射性電機管理辦法
第十二條經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
第十四條低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

The content is subject to change.

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If you have any questions about this document, please contact DJI by sending a message to **DocSupport@dji.com.**

IX. Summary the FAA may publish in Federal Register

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the FEDERAL REGISTER, should it be determined that publication is needed:

Petitioner seeks an exemption from the following rules in Title 14 of the Code of Federal Regulations: Part 21, Subpart H; Part 27; 45.23(b); 45.27(a); 91.7(a); 91.9(b)(2); 91.9(c); 91.103; 91.109(a); 91.119; 91.121; 91.151(a); 91.203 (a) & (b); 91.405(a); 91.407(a)(1); 91.409(a)(1) & (2); 91.417 (a) & (b).

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent agricultural aerial surveys and inspections with conventional fixed-wing aircraft, rotorcraft, or other methods.

X. Conclusion

Vineyard Aviation's Petition for Exemption satisfies the criteria articulated in Section 333 of the Reform Act of 2012 including weight, speed, operating capabilities, proximity to airports and populated areas, operation within VLOS and national security. The proposed UAS operations will benefit the public as a whole by improving safety and reducing risk by alleviating human exposure to danger and having a current FAA ATP rated PIC actively involved in the UAS business community. In consideration of the foregoing, this Petition for Exemption provides the FAA with more than adequate justification for granting the requested exemptions allowing Vineyard Aviation to use UASs for aerial imaging to enhance individual and company awareness in relation to agricultural, geological, and real estate survey and inspection.

I thank you for your prompt consideration of the requested exemptions. Should you have any questions, or if you need any additional information to support the requested exemptions, please feel free to contact me at:

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