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

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

July 15, 2015

Exemption No. 12048
Regulatory Docket No. FAA–2015–1514

Mr. William D. Janicki
Mr. William V. O'Connor
Morrison & Foerster LLP
Counsel for SunPower Corp.
12531 High Bluff Drive
San Diego, CA 92130

Dear Messrs. Janicki and O'Connor:

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 6, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of SunPower Corp. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial data collection.

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 are the SenseFly eBee and DJI Phantom 2.

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, SunPower Corp. 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, SunPower Corp. 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 SenseFly eBee and DJI Phantom 2 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 July 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

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Re: ***Petition of SunPower Corp. for an Exemption Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 to Operate Unmanned Aircraft Systems***

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. Part 11, SunPower Corp. hereby applies for an exemption from the Federal Aviation Regulations identified below to allow for the commercial operation of the SenseFly eBee ("eBee"), and the DJI Phantom 2 ("Phantom 2") unmanned aircraft systems for aerial data collection.

SunPower requests that the FAA review this petition pursuant to its "summary grant" process as the FAA has already granted exemptions similar in all material respects to this petition to use the eBee and the Phantom 2 for aerial data collection. See FAA Grant of Exception Nos. 11062, 11109, 11112, and 11213.

I. REGULATIONS FOR WHICH EXEMPTION IS REQUESTED

SunPower requests exemption from the following regulations:

- 14 C.F.R Part 21, Subpart H;
- 14 C.F.R Part 27;
- 14 C.F.R § 45.23(b);
- 14 C.F.R. § 45.27(a);
- 14 C.F.R § 61.113;
- 14 C.F.R § 91.7(a);
- 14 C.F.R § 91.9(b)(2);
- 14 C.F.R § 91.9(c);
- 14 C.F.R § 91.103;
- 14 C.F.R § 91.109(a);
- 14 C.F.R § 91.119;
- 14 C.F.R § 91.121;
- 14 C.F.R § 91.151(a) & (b)

- 14 C.F.R § 91.203 (a) & (b);
- 14 C.F.R § 91.405(a);
- 14 C.F.R § 91.407(a)(l);
- 14 C.F.R § 91.409(a)(2);
- 14 C.F.R § 91.417 (a) & (b).

This petition incorporates the material contained in the SunPower UAS Operations and Maintenance Manual, SenseFly eBee Extended User Manual, SenseFly eBee Maintenance Procedures, SenseFly eBee Training Documentation, SenseFly eBee Justification of Airworthiness and Safety Assessment, Phantom 2 Vision Plus User Manual, Phantom 2 Vision Plus Quick Start Guide, Phantom 2 Vision Plus Pilot Training Guide, and Smart Flight Battery Safety Guidelines (together, the "Manuals").

The Manuals are submitted herewith as confidential under 14 C.F.R. § 11.35(b), because they contain commercial and proprietary information that SunPower has not and will not share with others, is not available to the public, and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*

II. STATUTORY AUTHORITY FOR REQUESTED EXEMPTIONS

This petition for exemption is submitted in accordance with Section 333 of the 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 operation of an unmanned aircraft system ("UAS") where it does not create a hazard to users of the national airspace system ("NAS") or the public or pose a threat to national security based on the following considerations:

- The size, weight, speed and operational capability;
- Operation in proximity to airports and populated areas; and
- Operation within visual line of sight of the operator.

Furthermore, the Federal Aviation Act grants the FAA Administrator 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. *See* 49 U.S.C. §§ 106(f), 44701-44716, *et seq.* A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would 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.

III. DESCRIPTION OF SUNPOWER AND ITS SERVICES

SunPower is a global solar technology energy services company and supplier of solar power systems for the residential, commercial, and utility solar energy markets. SunPower designs, manufactures, and delivers the highest efficiency, highest reliability solar panels and systems available. Headquartered in San Jose, California, SunPower has offices in North and South America, Europe, Australia, Africa, and Asia.

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IV. DESCRIPTION OF PROPOSED OPERATIONS

SunPower is requesting exemptions from applicable Federal Aviation Regulations (FARs) pursuant to Section 333 of the Reform Act to perform aerial imagery and data collection for solar construction sites, potential solar construction sites, and utility plants under construction. Examples of solar sites that are representative of the type of sites that SunPower would conduct UAS operations are shown in Figures 1 and 2 below.

This type of aerial imagery and data collection is currently performed for SunPower by helicopter or fixed wing aircraft. Use of a UAS will reduce safety risks because the UAS will not carry flammable fuel or a pilot, and UAS operations can be performed at considerable savings. The UAS will also allow for better imagery of facilities than can be produced by using a helicopter or fixed wing aircraft.

The UAS operations in this petition are similar in all material respects to relief previously granted by the FAA in Grant of Exception Nos. 11062, 11109, 11112, and 11213. The reasons stated by the FAA in granting the exemptions listed above also apply to this petition, and the grant of this petition is in the public interest.

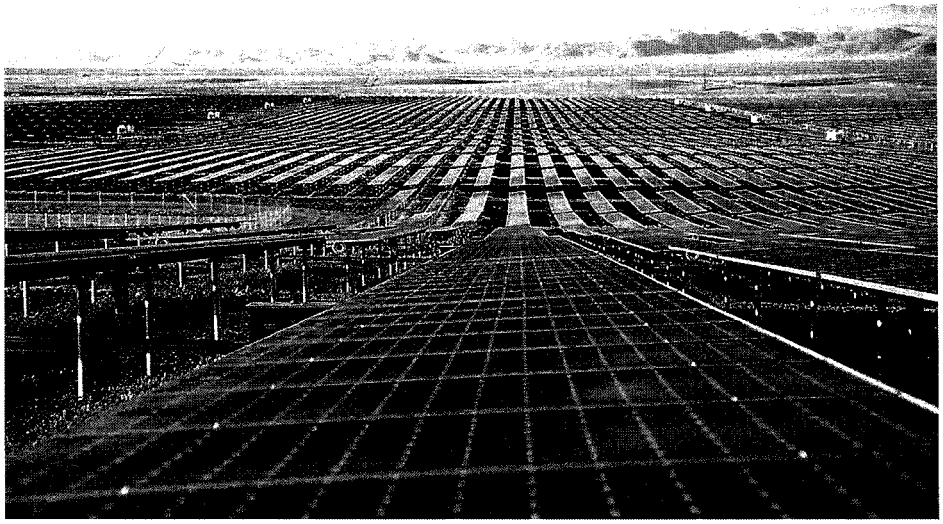

Figure 1 – California Valley Solar Ranch Near San Luis Obispo, CA

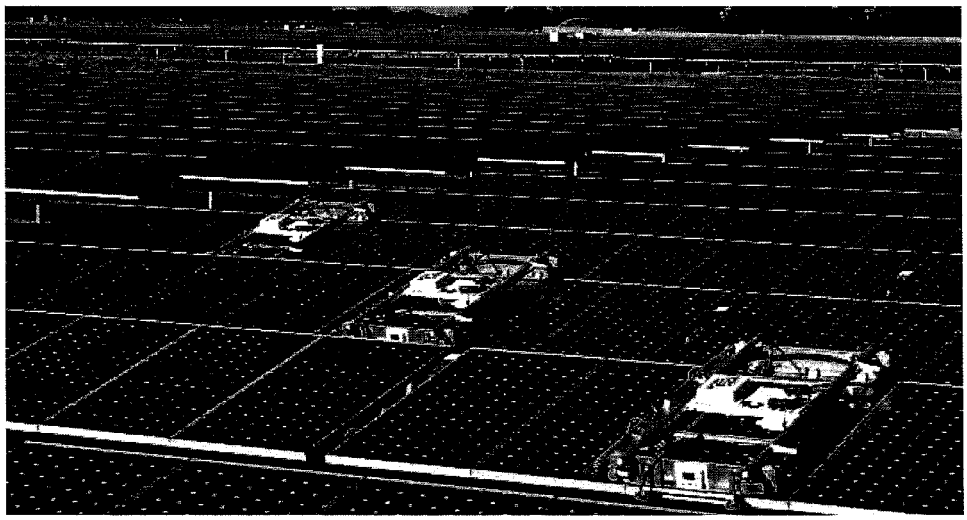

Figure 2 – McHenry Solar Plant for Modesto Irrigation District

A. Aircraft to be Operated

1. The SenseFly eBee

SunPower will operate the SenseFly eBee for aerial imaging and data collection operations. The FAA has already approved the eBee for commercial use in FAA Exemption No. 11257 (FAA Docket No. FAA-2014-0889) and FAA Exemption No. 11374 (FAA Docket No. 2015-0091). The eBee is a battery powered fixed wing UAS made of flexible foam with a maximum weight of less than two pounds. Flight time is approximately 50 minutes. The eBee is shown in Figure 3 below.

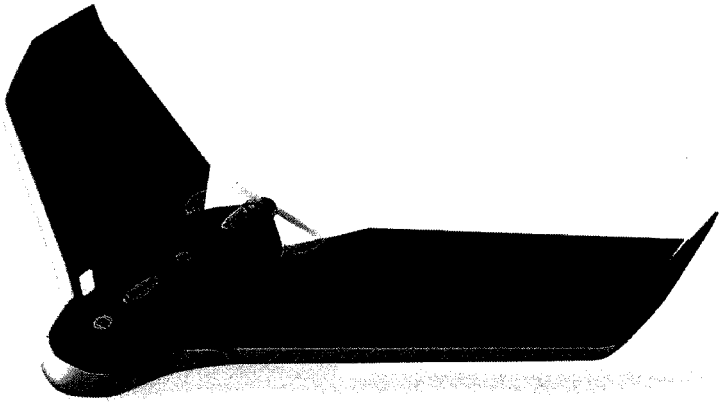

Figure 3– SenseFly eBee

The eBee is more fully described in the SenseFly eBee Extended User Manual.

2. DJI Phantom 2

SunPower will also operate the DJI Phantom 2 for aerial imaging and data collection operations. The FAA has already approved the Phantom 2 for commercial use in FAA Exemption No. 11396 (FAA Docket No. FAA-2015-0163) and FAA Exemption No. 11420 (FAA Docket No. 2015-0178). The Phantom 2 is a battery powered quadcopter with a maximum weight of less than 3 pounds. Flight time is approximately 24 minutes. The Phantom 2 is shown in Figure 4 below.

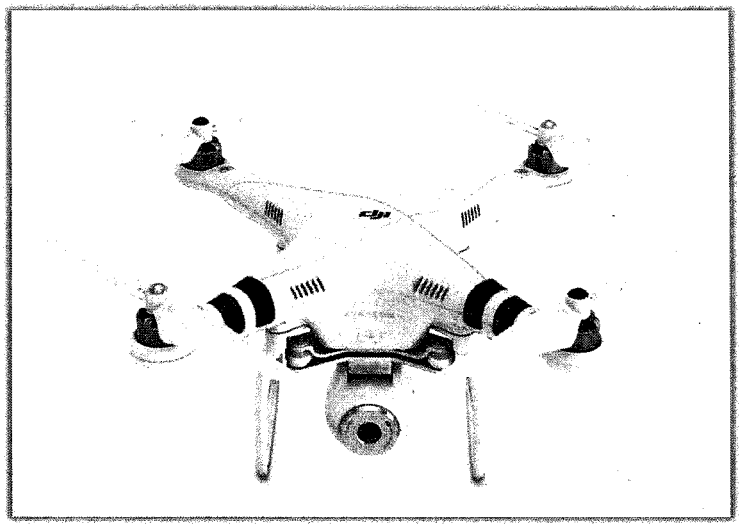

Figure 4– DJI Phantom 2

The Phantom 2 is more fully described in the DJI Phantom 2 User Manual.

B. SunPower's Proposed Operations Demonstrate an Equivalent Level of Safety

1. General Description of Proposed Flight Operations

SunPower proposes to operate within the limitations and performance specifications listed in the eBee and Phantom 2 Manuals. These limitations provide for at least an equivalent, or higher, level of safety for operations under the current regulatory structure because the proposed operations are safer than conventional operations using helicopters or fixed wing aircraft which carry an operator and flammable fuel. The proposed flight operations are similar in all material respects to operations already approved by the FAA and are therefore subject to the FAA's "summary grant" process.

The proposed operations do not create any hazard to users of the national airspace system or pose a threat to national security. The aircraft are battery operated with a maximum flight time of less than 50 minutes. The vehicles weigh less than 10 pounds. The vehicles will be operated at or below 400 feet AGL within the visual line of sight of the pilot in command. SunPower's operations will be over private or controlled access property with the permission of the owner/controller or authorized agent.

Manned aircraft are at risk of fuel spillage and fire in the event of an incident or accident. The proposed UAS carry no fuel, and therefore the risk of fire following an incident or accident due to fuel spillage is eliminated. Compared to manned aircraft, the UAS being operated by the petitioner reduces the risk to participating persons in close proximity to the aircraft due to the limited size, weight, operating conditions, and design safety features.

The FAA has determined that the risk of not having an electronic means to monitor and communicate with other aircraft, such as transponders or sense and avoid technology, is mitigated by placing limits on altitude, requiring stand-off distance from clouds, permitting daytime operations only, and requiring that the aircraft be operated within visual line of sight and yield right of way to all other manned operations.

The petitioner's aircraft have the capability to operate safely after experiencing certain in-flight failures, as specified in the Manuals. The aircraft are also able to respond to a lost-link event with a pre-coordinated, predictable, automated flight maneuver.

2. Specific Limitations on Proposed Flight Operations

Given the small size involved, the restricted environment within which they will operate, the procedures listed below, and pilot certification requirements, SunPower's proposed operations using the eBee and the Phantom 2 would "not create a hazard to users of the national airspace system or the public or pose a threat to national security." Reform Act Section 333(b)(1).

1. The aircraft weigh less than 10 pounds.

2. Each aircraft will be identified by serial number, registered with the FAA, and have identification (N-Number) markings as large as practicable.

3. Flights will be operated within visual line of sight of the pilot in command (PIC).

4. Prior to each flight, a zero altitude initiation point will be established and confirmed for accuracy by PIC.

5. The PIC will ensure that before each flight, there is enough available power for the UAS 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.

6. The aircraft will be operated during daylight and in VFR conditions.

7. Flights will not exceed 400 feet AGL.

8. Flights will be operated at a lateral distance of at least 500 feet from any persons or property not associated with the operation who have not given prior permission.

9. Flights will be limited to a groundspeed of 100 mph.

10. Minimum crew for each flight will consist of a PIC and an Observer.

11. The PIC will hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC will also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state or the Federal Government. The PIC will also meet the flight review requirements specified in 14 CFR § 61.56.

12. Prior to the flight, a Mission Plan will be created setting forth the limitations for the flight as well as contact information for the PIC.

13. The flight operations will yield the right of way to other manned aircraft operations.

14. All persons who are not involved with SunPower's operations will be required to be at least 500 feet from flight operations.

15. The aircraft will only operate over private or controlled access property with the permission of the owner/controller or authorized representative.

16. The UAS will not operate within 5 nautical miles of an airport unless a letter of agreement is obtained.

17. All required permissions and permits will be obtained from territory, state, county or city jurisdictions prior to flight.

18. Prior to commencing operations, SunPower will obtain a Certificate of Waiver or Authorization (COA) from the FAA.

19. If the aircraft loses communications, it will have the capability to return to a pre-determined location within the operational area and land.

20. If the aircraft loses its GPS signal it will have the capability of being flown manually to a predetermined location within the operational area and land.

21. The flight will be aborted in case of unpredicted obstacles or emergencies.

22. UAS operations will be conducted within the parameters of the Manuals.

3. Flight Recovery, Lost Communications, and Lost GPS Procedures

The flight recovery, lost communications, and lost GPS procedures are more fully documented in the attached UAS Manuals.

V. SPECIFIC FAR EXEMPTIONS REQUESTED

SunPower seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45, 61, and 91 for purposes of conducting the requested operations using the eBee and Phantom 2. Listed below are (1) the specific FAR sections for which exemption is sought, and (2) the operating procedures and safeguards that SunPower has established which will ensure a level of safety better than or equal to the rules from which exemption is sought. *See* 14 C.F.R. § 11.81 (e).

A. 14 C.F.R. Part 21, Subpart H – Airworthiness Certificates and 14 C.F.R. § 91.203(a)(1)

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 with this petition, and therefore no exemption is needed. *See* Grant of Exemption No. 11062, Docket No. FAA 2014-0352 at 13-14, 22. If, however, the FAA determines that there are some characteristics of the eBee or the Phantom 2 that fail to meet the requirements of the Reform Act, an exemption is requested.

Equivalent Level of Safety: The eBee and Phantom 2 are safe when taking into account their size, weight, speed, and operational capability. They weigh less than 10 pounds and will be flown at speeds less than 100 miles per hour, and in visual line of sight of the operator. The UASs do not carry pilots, passengers, explosive materials, or flammable liquid fuels. The UASs will be operated within the parameters of their respective Manuals.

The proposed operations will be at least as safe as, or safer than, conventional rotorcraft or fixed wing aircraft operating with an airworthiness certificate without the restrictions and conditions proposed here.

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

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the eBee or Phantom 2 would otherwise require certification under Part 27, SunPower 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.

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

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) states:

> **Rotorcraft.** 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.

14 C.F.R. § 91.9(c) states:

> No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

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 CFR part 45, Subpart C if the markings are "as large as practicable." *See* Exemption No. 11062, Docket No. FAA 2014-0352, at p. 14.

Equivalent Level of Safety: SunPower will mark all eBee and Phantom 2 aircraft with their N-Number in a prominent spot on the fuselage with markings that are as large as practicable.

D. 14 C.F.R. § 61.113: Private Pilot Privileges and Limitations

SunPower seeks exemption from 14 CFR § 61.113, which restricts private pilots from flying aircraft for compensation or hire and would also require a second class medical certificate. The purpose of Part 61 is to ensure that the skill and competency of any PIC matches the airspace in which the PIC will be operating, as well as requiring certifications if the pilot is carrying passengers or cargo for hire.

While the UAS will be operated as part of a commercial operation, they carry neither passengers nor cargo. In the Grant of Exemption in FAA Docket No. FAA-2014-0352, the FAA determined that the unique characteristics of UAS operation outside of controlled

airspace did not warrant the additional cost and restrictions attendant with requiring the PIC to have a commercial pilot certificate and a class II medical certificate. The FAA has also determined that the required knowledge for a commercial pilot covers the same fundamental principles as a private pilot.

The FAA has also granted exemptions allowing operations by people who hold an airline transport, commercial, private, recreational, or sport pilot certificate with a current FAA airman medical certificate or a valid U.S. driver's license issued by a state or the Federal Government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56. See FAA Exemption No. 11374.

SunPower will ensure the PIC will meet the requirements listed in the above paragraph. SunPower will also ensure the PIC will have completed the manufacturers' training guidelines outlined in the Manuals.

The FAA stated in its grant of an exception to Astraeus Aerial the "the FAA considers the overriding safety factor for the limited operations proposed by the petitioner to be the airmanship skills acquired through UAS-specific flight cycles, flight time, and specific make and model experience, culminating in verification through testing." See Exemption No. 11062, Docket No. FAA 2014-0352, at p. 18. The proposed operations can achieve an equivalent level of safety by requiring the knowledge and experience in eBee and Phantom 2 operations described above.

The restrictions SunPower has placed on its UAS operations meet or exceed the restrictions similarly imposed on Astraeus Aerial in FAA Docket No. FAA-2014-0352 and those listed in the FAA's "summary grant" process.

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

SunPower 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 to the extent that the requirements of Part 21 are waived or found inapplicable. Accordingly, SunPower requests that the requirements for Section 91.7 be treated in accordance with FAR Part 21 Subpart H. *See* Grant of Exemption No. 11062, p. 19.

F. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft; 14 C.F.R. §§ 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration

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.

SunPower does not request an exemption from this section but instead notifies the FAA that, in accordance with FAA Office of Chief Counsel's Opinion dated August 8, 2014, the UAS flight manual, registration certificate and other documentation will be kept at the control station with the PIC during flight. The Chief Counsel's Office has held that for all UAS operations, this alternate method constitutes full compliance with the regulations. *See also* Grant of Exemption No. 11062, pp. 19-20, and Grant of Exemption No. 8607.

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

SunPower seeks an 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. The aircraft will not have a Flight Manual on board. The PIC will take all actions including reviewing weather, flight battery requirements, landing and takeoff distances and aircraft performance data before initiation of flight. Under these circumstances, the FAA has stated that no exemption is required. *See* Grant of Exemption No. 11062, p. 20. An exemption is requested to the extent that an FAA-approved Flight Manual is required.

Equivalent Level of Safety: An equivalent level of safety will be provided by following the Manuals. The PIC will take all required preflight actions - including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas - before initiation of flight. The Manuals will be kept at the ground station with the operator at all times.

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

SunPower seeks an exemption from 14 C.F.R. § 91.109(a), which provides 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 the Ground Control Station (GCS) that communicates with the aircraft via radio communications.

Equivalent Level of Safety: When flight instruction is performed, no pilots will be on board the aircraft and the GCS will be a safe distance from the aircraft and the public, causing no safety hazard. Given the size and speed of the UAS, an equivalent level of safe training can still be achieved without dual controls because no pilot or passengers are aboard the aircraft, and all persons will be a safe distance away in the event that the aircraft experiences any difficulties during flight instruction. In addition, SunPower will conduct flight training at a remote facility away from population centers. These training flights will comply with the provisions in the Manuals. Accordingly, SunPower's proposed method of operation provides superior levels of safety.

I. 14 C.F.R. § 91.119(c): Minimum Safe Altitudes in Uncongested Areas

SunPower requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119(c). Section 91.119(c) prescribes that an aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. The Manuals provide for SunPower operations at least 500 feet from persons and structures not involved in the operations. The FAA has already determined that relief from Section 91.119(c) is warranted for UAS operations in uncongested areas with similar flight restrictions as those imposed by SunPower. *See* Grant of Exemption No. 11062, p. 20-21.

Equivalent Level of Safety: Compared to flight operations with rotorcraft or fixed wing aircraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel, 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 as the locations where it is operated . In order to avoid any risk to aircraft, flight operations will be restricted to 400 feet AGL or below. Other aircraft are already prohibited from operating closer than 500 from structures where SunPower proses to operate. This is airspace where other aircraft do not normally operate. As set forth in the Manuals and herein, the UAS will be operated in the remote sites, away from persons or structures not involved in the operation. All persons who are not involved with SunPower's operations will be required to be at least 500 feet from flight operations. This will pose no risk to the public because other aircraft are not operating in these areas.

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

This petition 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. The UASs proposed here use both barometric pressure sensors and GPS to determine altitude but do not have the ability to set in a current altimeter setting. An exemption is required to the extent that the UAS does not have a barometric altimeter setting. The altitude of the UAS is monitored by the PIC on the ground control station and by the visual observer.

Equivalent Level of Safety: The FAA has stated that an equivalent level of safety can be achieved if the aircraft will be operated at or below 400 feet AGL and within visual line-of-sight in addition to GPS based altitude information relayed in real time to the operator. *See* Grant of Exemption No. 11062, p. 20-21. As the attached Manuals indicate, the UAS will be operated at or below 400 feet AGL and otherwise comply with the limitations in the Grant of Exemption No. 11062.

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

SunPower 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 the UAS battery power means that no meaningful flight operations can be conducted while maintaining a 30 minute reserve. The aircraft are battery powered with a maximum flight time of approximately 50 minutes for the eBee and 24 minutes for the Phantom 2. The PIC will ensure that before each flight, there is enough available power for the UAS 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.

Equivalent Level of Safety: The FAA has stated that an equivalent level of safety is provided if the UAS flight is conducted under daytime VFR flight conditions using VLOS, and terminated with at least 25% reserve battery power still available. *See* Grant of Exemption No. 11062, p. 21-22. The FAA's "summary grant" process provides that the PIC is

prohibited from beginning a flight unless there is enough available power 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. *See* FAA Exemption No. 11374 (FAA Docket No. 2015-0091 at p. 5). The Manuals here provide that the PIC will ensure that before each flight, there is enough available power for the UAS 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.

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

SunPower seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(l), 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 "[s]hall 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 proposed here will not have.

Equivalent Level of Safety: An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the Manuals. This includes maintenance, overhaul, replacement, and preflight inspection requirements. *See* Exemption No. 11062 (FAA Docket No. 2014-0352, at p. 14-15) and Exemption No. 11374 (FAA Docket No. 2015-0091, at p. 4).

SunPower will follow the UAS manufacturer's maintenance requirements. As provided in the Manuals, flights will not be conducted unless a flight operations checklist is performed that includes all of the aircraft's components.

VI. PUBLIC INTEREST

Granting SunPower's petition for exemption furthers the public interest. National policy set by Congress favors early integration of UAS into the NAS in controlled, safe working environments such as proposed in this petition. By granting this petition, the FAA will fulfill Congress's intent of allowing UAS to operate safely in the NAS before completion of the rulemaking required under Section 332 of the Reform Act.

Moreover, use of UAS will improve efficiency and reduce costs for SunPower's solar customers by reducing the time and expense necessary to collect aerial imagery. The use of the UAS propped here will also decrease safety-related incidents involving traditional

aircraft. The public has an interest in reducing the hazards and emissions associated with alternate use of helicopters and small airplanes to conduct similar imaging operations.

SunPower's proposed use of UAS will have real-world benefits for the renewable energy industry and the public. UAS operations will speed up and reduce the costs of site identification for solar development. It will improve solar site construction, by allowing for real-time monitoring of construction. And it will also reduce costs and improve efficiency for solar energy generation.

VII. PRIVACY

All flights will occur over private property either owned by SunPower or with the owner's consent. All flights will be conducted in accordance with any federal, state or local laws regarding privacy.

VIII. SUMMARY FOR 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:

SunPower Corp. seeks an exemption from the following rules for the commercial operation of a small unmanned aerial system to inspect wind turbine blades and towers for the renewable energy industry: 14 C.F.R Part 21, Subpart H; 14 C.F.R Part 27; 14 C.F.R § 45.23(b); 14 C.F.R. § 45.27(a); 14 C.F.R § 61.113; 14 C.F.R § 91.7(a); 14 C.F.R § 91.9(b)(2); 14 C.F.R § 91.9(c); 14 C.F.R § 91.103; 14 C.F.R § 91.109(a); 14 C.F.R § 91.119; 14 C.F.R § 91.121; 14 C.F.R § 91.151(a) & (b) 14 C.F.R § 91.203 (a) & (b); 14 C.F.R § 91.405(a); 14 C.F.R § 91.407(a)(l); 14 C.F.R § 91.409(a)(2); 14 C.F.R § 91.417 (a) & (b).

The exemption will enhance safety by reducing risk to the operator, the general public and property owners from the substantial hazards associated with performing equivalent work using traditional conventional aircraft and rotorcraft.

SunPower requests that the FAA grant this petition using the "summary grant" process such that publication in the Federal Register is not required. This petition would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

IX. ATTACHMENTS

Attachment 1:	SunPower Operations and Maintenance Manual
Attachment 2:	SenseFly eBee Extended User Manual
Attachment 3:	SenseFly eBee Maintenance Procedures
Attachment 4:	SenseFly eBee Training Documentation
Attachment 5:	SenseFly eBee Justification of Airworthiness and Safety Assessment

Attachment 6:	Phantom 2 Vision Plus User Manual
Attachment 7:	Phantom 2 Vision Plus Quick Start Guide
Attachment 8:	Phantom 2 Vision Plus Pilot Training Guide
Attachment 9:	Smart Flight Battery Safety Guidelines

Attachments are confidential documents submitted under 14 C.F.R. § 11.35(b) and are exempt from disclosure under the Freedom of Information Act, 5 U.S.C. § 552 et seq., and any other requirements established by the FAA pursuant to Section 333 of the Reform Act). If you have any questions or require any additional information, please do not hesitate to contact the undersigned attorneys for SunPower Corp.

X. CONCLUSION

Satisfaction of the criteria provided in Section 333 of the Reform Act - size, weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight, and national security considerations - provides more than adequate justification for the grant of the requested exemptions to permit SunPower to operate the UASs proposed here. Furthermore, this petition warrants review by the FAA under the "summary grant" process for immediate approval.

Granting the requested exemption will benefit the public interest as a whole in many ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger; (2) improving the quality of services SunPower can provide to its customers; and (3) decreasing operating costs compared with traditional aerial imaging

Respectfully submitted,
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SUNPOWER®

UAS Operations and Maintenance Manual

sd-660959

Table of Contents

I. UAS FLIGHT OPERATIONS

A. Company Organization and Authority

SunPower will designate a Flight Operations Manager for UAS Operations. The Flight Operations Manager will ensure the UAS Operations and Maintenance Manual and all other UAS Manuals are up to date and made available to all personnel involved with its UAS operations.

The Flight Operations Manager will ensure that all pilots are appropriately trained according to the UAS manufacturer's guidelines and will be responsible for coordinating pilot training, pilot proficiency, and mission preparation.

The Flight Operations Manager will appoint a pilot in command (PIC) for each flight and will ensure the PIC is qualified, trained, and has access to the necessary information to conduct a safe flight. The Flight Operations Manager will ensure that all aircraft are airworthy before being scheduled for a flight.

The Flight Operations Manager will be the main liaison with regulatory authorities. The Flight Operations Manager will make an internal report of all accidents or incidents and, if required, will submit a report to the Federal Aviation Administration.

B. UAS Operating Procedures and Limitations

1. SunPower with conduct UAS flight operations using a SenseFly eBee or a DJI Phantom 2 weighing less than 55 pounds including payload.

2. UAS operations will not be conducted for closed-set motion picture or television filming.

3. The UAS will not be operated at airspeeds greater than the maximum airspeed recommended by the manufacturer and will not exceed 87 knots (100 miles per hour).

4. The UAS will operated at an altitude of no more than 400 feet above the ground level.

5. The UAS will be operated within the visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided b any device other than corrective lenses.

6. The UAS will be operated utilizing a visual observer (VO). The UAS will be operated within the 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 the PIC will be able to communicate verbally at all times and will not use electronic messaging or texting during flight operations. The PIC will be designated before the flight and will not transfer his designation for the duration of the flight. The PIC will ensure the VO can perform the duties required of the VO.

7. All documents needed to conduct flight operations including the FAA grant of exemption will be accessible during UAS operations and made available to the Administrator upon

request. The conditions and limitations contained in the FAA grant of exemption take precedence over any other operating documents. If there is no conflict with the FAA grant of exemption, then the procedures outlined in the operating documents will be followed.

8. Any UAS that has undergone maintenance or alteration 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. Functional test flights may only be conducted by a PIC with a VO and must remain at 500 feet from other people. The functional test flight will be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. SunPower will be 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 will conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection will 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 found to be in a condition for safe flight.

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

12. Each UAS will comply with will all manufacturer safety bulletins.

13. The PIC will hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC will 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 will 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. SunPower will 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 the FAA exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency will be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training 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 the FAA exemption are permitted. However, training operations will 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 will operate the UAS with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

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

16. The UAS will 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 will be made available to the Administrator or any law enforcement official upon request.

17. The UAS will 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 UAS will return to a pre-determined location within the private or controlled-access property.

19. The PIC will 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 UAS 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 will be conducted in accordance with an ATO-issued COA.

22. All aircraft will 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 will be as large as practicable.

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

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

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

26. All Flight operations will 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 UAS and/or debris in the event of an accident. SunPower will 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 UAS, flight operations will 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 will 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 will be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

II. UAS MAINTENANCE PROCEDURES

SunPower will be responsible for maintaining and inspecting each UAS to ensure that it is in a condition for safe operation. SunPower will follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components. Each UAS will comply with will all manufacturer safety bulletins.

eBee

senseFly

Extended User Manual

eBee and eBee Ag

Revision 14 / December 2014

senseFly

a Parrot company

GENERAL INFORMATION

READ THIS USER MANUAL CAREFULLY BEFORE USING A SENSEFLY LTD PRODUCT.

senseFly Ltd products are intended for professional use only.

Applicable Regulations

senseFly Ltd products are subject to Civil Aviation regulations. Regulations may vary depending on the country where you intend to operate your product.

ANY USE OF SENSEFLY LTD PRODUCTS IN BREACH OF THE LAW OF THE COUNTRY WHERE YOU OPERATE THE PRODUCT IS UNDER YOUR SOLE RESPONSIBILITY.

INFORM YOURSELF BEFORE USING THE PRODUCT. SOME COUNTRIES MAY HAVE LAWS THAT LIMIT THE USE OF UNMANNED AIRCRAFT TO 'LINE-OF-SIGHT' OPERATIONS AND/OR PROHIBIT THE USE OF UNMANNED AIRCRAFT AT ALL OR IN SPECIFIC AREAS.

Privacy

Recording and circulating an image of an individual may constitute an infringement of their image and privacy for which you can be liable. Ask for authorization before taking pictures of an individual, particularly if you want to keep your recordings and/or circulate images on the Web or any other medium. Do not circulate degrading images or ones that could undermine the reputation or dignity of an individual. Check that your use of the cameras on board senseFly Ltd products comply with the legal provision on privacy in the country where you operate your product.

Limited Warranty

SenseFly Ltd warrants that the product will be free from defects in material and workmanship for a period of twelve (12) months from the date of delivery. SenseFly Ltd further warrants that the product will perform substantially in accordance with its specification. During the warranty period senseFly Ltd's sole liability shall be at senseFly Ltd's sole option, either to repair or to replace the defective product with another product or a product with similar specifications, at no charge, or to reimburse the purchase price of the product, or if repair or replacement is not possible, issue a credit note; provided however, that the defect has been confirmed by senseFly Ltd and that the defective product is returned to senseFly Ltd in accordance with the support and repair form together with all required flight logfiles.

Warranty does not apply, without limitation, in case: a) the products are not stored and used according to their specifications, b) the products are damaged due to carelessness, negligence, or wrong use by the user, and c) for defects due to normal wear and tear including, but not limited to, deterioration to the airframe after first flight, normal degradation, misuse, moisture or liquids, proximity or exposure to heat, accidents, excessive strain, abuse, neglect, misapplication, repairs or modifications made by third party other than senseFly Ltd, damage due to manual operation, damage due to take-off or landing location with obstacles, damage due to low altitude flight, damage due to loss of data radio connection, damage due to strong wind, rain or humidity, or other causes for which senseFly Ltd has no control.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF SENSEFLY LTD.

Limitation of liability

TO THE EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT WILL SENSEFLY LTD BE LIABLE FOR ANY LOSS OF REVENUE, LOSS OF PROFIT, LOSS OF DATA, OR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF SENSEFLY LTD HAS BEEN NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES, AND WHETHER THIS LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT OR OTHERWISE, WITH THE EXCEPTION OF GROSS NEGLIGENCE AND DEATH.

YOU SHALL AT ALL TIMES OPERATE THE PRODUCT IN AREAS OR UNDER CIRCUMSTANCES SO AS TO GUARANTY SECURITY AND SAFETY OF PEOPLE, PROPERTY AND ANIMALS.

FCC and iC Compliance statement :

This device complies with part 15 of the FCC Rules and Industry Canada License-exempt RSS standard(s).

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.

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 a reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and uses 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, wich 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:

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

This Class B digital apparatus complies with Canadian ICES-003.

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.

2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Disposal of this product at the end of its life

At the end of this product's life, please do not dispose of this product in your general household waste. Instead, in order to prevent possible harm to the environment or human health from uncontrolled waste disposal, please dispose of this product separately in accordance with your local laws and regulation. For more information on the separate collection systems for waste electrical and electronic equipment that are available for consumers, near your home, free of charge, please contact your local municipal authority.

You can also contact senseFly Ltd or the reseller from which you purchased your drone who may provide recycling services or be part of a recycling scheme.

Copyrights

senseFly Ltd reserves the right to make changes to specifications and product descriptions contained in this document at any time without notice. Please consult www.sensefly.com for the latest release.

Address

senseFly Ltd
Route de Genève 38
1033 Cheseaux-Lausanne
Switzerland

Website: http://www.sensefly.com

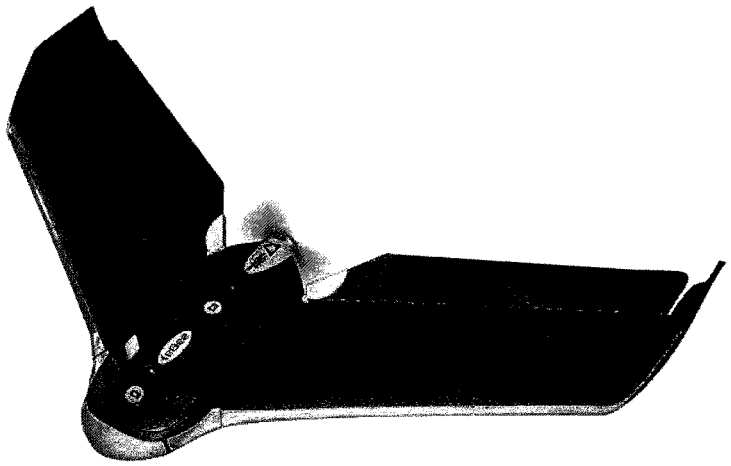
Technical support

If you have questions about any of your senseFly products:

- Try our Knowledge Base. You can find it within my.senseFly (http://my.sensefly.com).
- Send an email to support@sensefly.com.

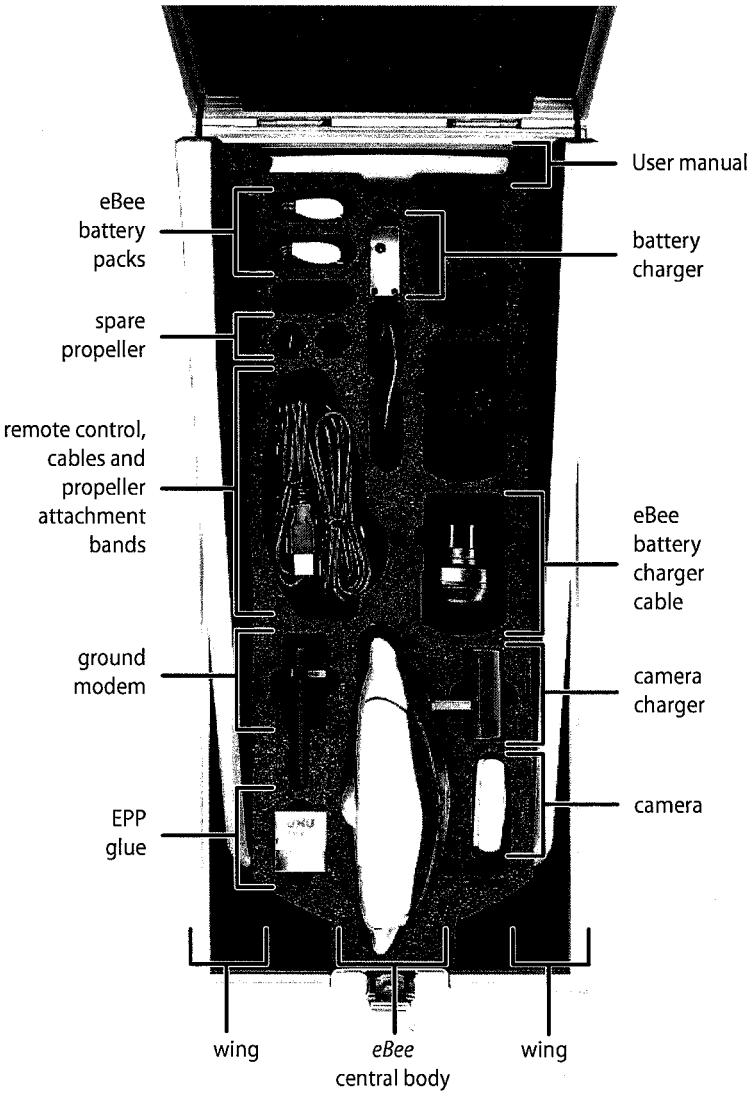
Welcome to your *eBee*

Congratulations on your purchase of the *eBee*, a complex and powerful yet intuitive autonomous mapping system. We take great care to develop and design the best possible hardware and software tools for quick, high-quality and easy-to-use 2D and 3D aerial mapping.



Note: This manual refers to the version 2.4 of *eMotion* and version 3.2 of *Postflight Terra 3D* software. Check the software version included in your package and consult the Release Notes for potential changes included in more recent versions of the software.

Package contents



The standard *eBee* package contains the following items:

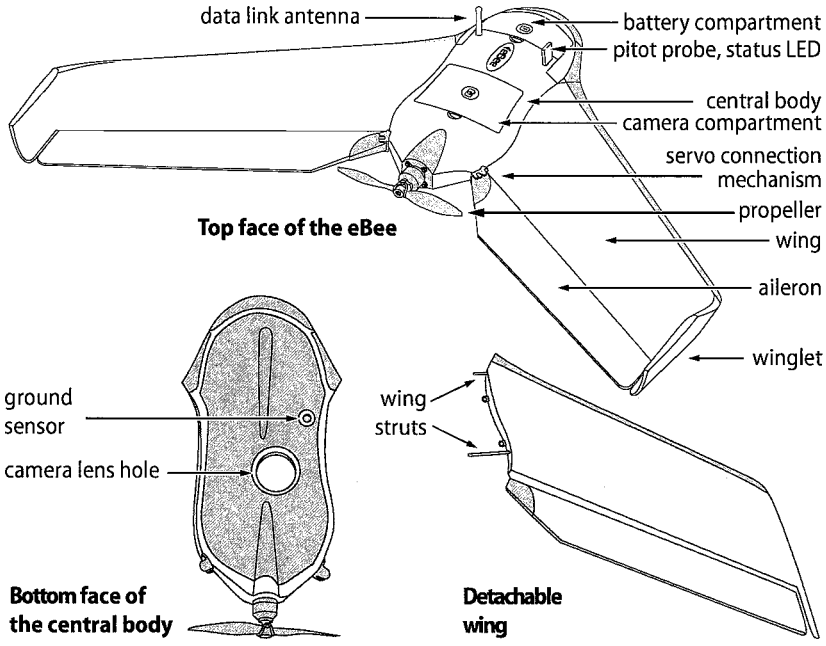
- 1x carrying case with foam protection
- 1x *eBee* central body with built-in autopilot
- 1x pair of detachable wings
- 1x spare propeller
- 10x spare propeller attachment rubber bands
- 2x Lithium-Polymer battery packs
- 1x Lithium-Polymer battery charger (including cables)
- 1x 2.4 GHz USB ground modem (FCC ID: 2AC2VGMEBEE) for radio data link (including USB cable)
- 1x 2.4 GHz remote control (including including 3 AA batteries)
- 1x still camera (including memory card, battery and charger)
- 1x USB cable for interfacing with camera and on-board autopilot
- 1x EPP glue
- 1x *eBee* User Manual
- 1x camera User Manual

Depending on your order, your package may also include other items, such as additional payloads. Please verify upon delivery that your package is complete. In case of a missing item, please contact your *eBee* reseller immediately.

Note: Camera user manuals are also available to download from our Knowledge Base, part of my.senseFly*.

* http://my.sensefly.com

Hardware features



The *eBee* is an autonomous flying drone comprised of the following components:

- **Central body:** This is the core of the *eBee* and includes all the electronics, actuators and communications hardware on-board the drone.
- **Wing:** The two wings of the *eBee* are detachable for storage and replacement. Each wing has two wing struts and two clips to hold it in place within the central body.

- **Winglets:** These structures add aerodynamic stability to the drone while it is in flight.
- **Ailerons:** Used to control the *eBee* while in flight.
- **Servo connection mechanism:** The ailerons are connected to the servo-motors within the central body of the drone through this connection mechanism.
- **Propeller:** Used to generate thrust while it is in flight.

Caution: When attached to the motor the propeller spins at high speeds and can be potentially dangerous if it comes into contact with exposed skin. Be sure to always keep your hands clear of the propeller when the battery is attached to the *eBee*.

- **Battery compartment:** The *eBee* is powered by a LiPo (Lithium Polymer) battery stored within the battery compartment.

Caution: Proper care of your battery is essential. Please read section 'Proper battery care' on page 140 before using your drone for the first time.

- **Camera compartment:** The *eBee* features a built-in camera for taking aerial images stored within the camera compartment.
- **Data Link Antenna:** Used by the drone to communicate with the *eMotion* software through the USB ground modem.
- **Pitot probe:** This is the sensor used by the *eBee* to detect airspeed, wind and altitude. It must be kept clean and clear of obstructions to function properly.
- **Status LED:** This coloured LED displays the current state of the *eBee*. It is housed underneath the pitot probe and thus illuminates the entire transparent probe in various colours depending on the drone's state.

- **Ground sensor:** The ground sensor, composed of a high-speed optical sensor and lens assembly, is used to detect the proximity of the ground.

Software features

The *eBee* package allows you to download and use *eMotion** and *Postflight Terra 3D* *† at no extra cost.

eMotion 2
senseFly

eMotion is the integrated software package that allows you to interact with your *eBee*. Its easy-to-use interface allows you to plan a mapping flight intuitively from the comfort of your office or directly in the field. Once the drone is launched, you can use *eMotion's* wireless connection with your *eBee* to track its position, monitor the progress of your mapping flight and send commands if desired.

Postflight Terra
Powered by Pix4D

Once your *eBee* returns after an aerial mapping flight it is the turn of *Postflight Terra 3D* to process the captured images fully automatically. *Postflight Terra 3D* is a full-featured mapping solution: with just a few mouse clicks it can create high-quality geo-referenced 2D and 3D orthomosaics and digital elevation/surface models (DEM/DSM). While you are still in the field *Postflight Terra 3D* analyses the quality of the captured images and generates an easy to understand report, letting you know immediately if the data you captured meets your mapping requirements.

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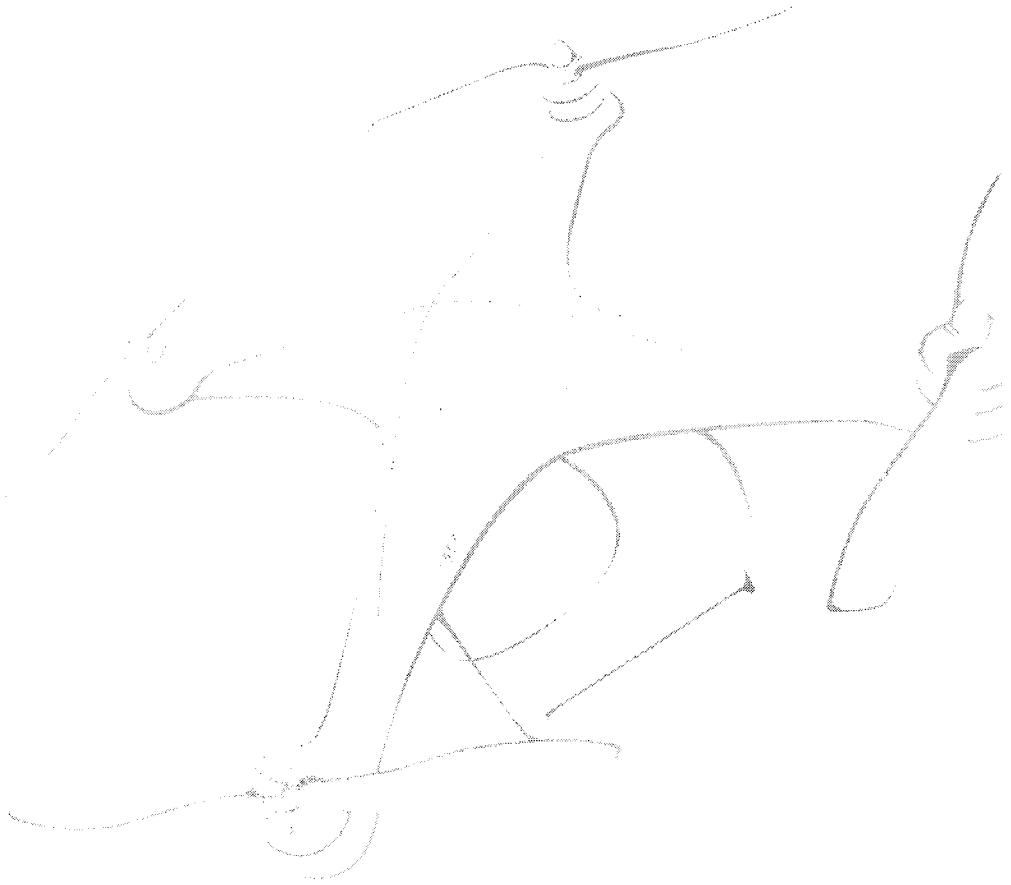
* Software access terms and conditions apply
† Postflight Terra 3D works with eBee images only

Contents

PHANTOM 2 VISION+

User Manual V1.8

2015.01



Phantom 2 Vision + User Manual

V1.8 2015.01

Please read this manual carefully before using the product.

Important Safety Notice

Use your Phantom carefully. It contains sensitive electronic components and may be damaged when dropped, crashed or exposed to water. Never fly a damaged Phantom.

Maintenance

Do not open or attempt to repair Phantom by yourself as doing so may cause damage to the Phantom or cause injury. If the Phantom is not operating normally or has come into contact with liquid, contact a DJI authorized dealer or DJI customer service. Learn more at www.dji.com/support

Battery

Never disassemble, pinch, crush, burn, drop or tread on the DJI smart flight battery. Never short or allow the metal contacts on the battery terminal to touch. Do not expose batteries to extreme temperatures. Always use the DJI approved charger to charge the battery. Keep the DJI battery away from children and store it in a cool, dry place.

Please read the Disclaimer before using your Phantom 2 Vision+.

Using This Manual

Key

Warning | Important | Hints and Tips | References or Definitions

Important

Except when specifically stated, all descriptions in this manual are for Phantom mode, not Naza-M mode.

Before Flight

The following tutorials and manuals have been produced to ensure you to make full use of your Phantom 2 Vision+.
(1) Disclaimer
(2) Phantom 2 Vision+ Quick Start Guide
(3) Phantom 2 Vision+ User Manual
(4) Phantom Pilot Training Guide
Watching all the tutorial videos and reading the Disclaimer before flight is recommended. Afterwards, prepare your first flight using the Phantom 2 Vision+ Quick Start Guide. Improve your flying skills in subsequent flights using the Phantom Pilot Training Guide. Refer to this manual for more comprehensive information. Experienced users, particularly those with DJI Phantom 2 Vision experience should skip to the Phantom 2 Vision+ Quick Start Guide to begin preparing for flight.

Watch the Tutorial Videos

Please watch the tutorial videos below to learn how to use Phantom 2 Vision+ correctly and safely.
http://www.dji.com/phantom2visionplus/training/
Phantom 2 Vision+ official tutorial videos

Download DJI VISION App

Download and install the DJI VISION App. Choose one of the download methods below.

Search "DJI VISION" on the App Store then follow instructions for iOS version.
Search "DJI VISION" on Google Play then follow instructions for Android version.

Available on the iPhone App Store
iOS6.1 or above

Get it on Google play
Android 4.0 or above

Contents

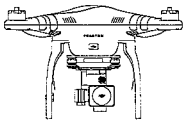
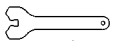
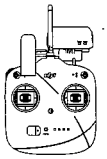
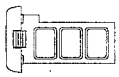
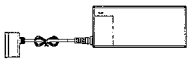
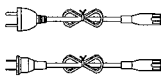
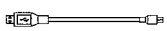
Overview

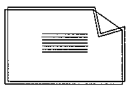
The Phantom 2 Vision+ is the next evolution of the Phantom 2 Vision. It features the same App enabled First Person View (FPV), high performance camera, remote camera control and in-flight content sharing, but adds to it a high performance 3- axial camera stabilization system. It is ideal for aerial creativity whether photo or video. In addition, it provides ground station function which allows users to plan the flight mission and enables aircraft to flight automatically.

FPV: First Person View, see the world from the perspective of the craft and feel a true flying experience.

1 In the Box

Check that all of the following items have been included in your package before use. If anything is missing, please contact your local dealer.

NO.	Name	Picture	Qty.	Remarks
1	Aircraft		1	Integrated gimbal and camera
2	Propeller Pairs		4	4 with black nut, 4 with grey
3	Micro-SD Card		1	Inserted in aircraft Micro-SD slot
4	Lens Cap		1	Fixed to camera lens
5	Gimbal Clamp		1	Attached to the gimbal
6	Prop Wrench		1	In maintenance packet
7	Remote Controller		1	Includes attached Phone Holder and Range Extender
8	DJI Smart Flight Battery		1	Inside aircraft
9	Charger		1	110-240V Adaptive
10	Power Cables		2	GB & CE
11	Plug Adaptors		2	SAA & BS
12	Micro-USB Cable		1	For range extender charging and firmware upgrade

13	Manuals		4	Including: Disclaimer, Phantom Pilot Training Guide, Phantom 2 Vision+ Quick Start Guide, User Manual
14	Stickers		2	Colors: Pink, Blue
15	Vibration Absorber		4	In maintenance packet
16	Anti-drop Kit		2	In maintenance packet
17	Spare Screws		11	In maintenance packet M3X5(6pcs); M3X8(5pcs)
18	Landing Pad		4	In maintenance packet

2 Introduction

The Phantom 2 Vision+ package includes: Phantom, Camera, Gimbal, Propulsion System, Flight Control System, Remote Controller and Wi-Fi Communication System. 5.8 GHz Remote Controller Receiver, Flight Control System and 2.4 GHz Wi-Fi Module are inside the Phantom.

Remote Controller	Outside	Working Modes	Inside
5.8GHz 2 sticks, 7 channels	3-axial Stabilized Gimbal Camera Motors and Props	Phantom-Ready to Fly and Ready to Fly(non-GPS) NAZA-M-GPS, ATTI, Manual and Failsafe	Flight Control System 2.4GHz Wi-Fi Module 5.8GHz Receiver Electronic Speed Controls(ESCs)

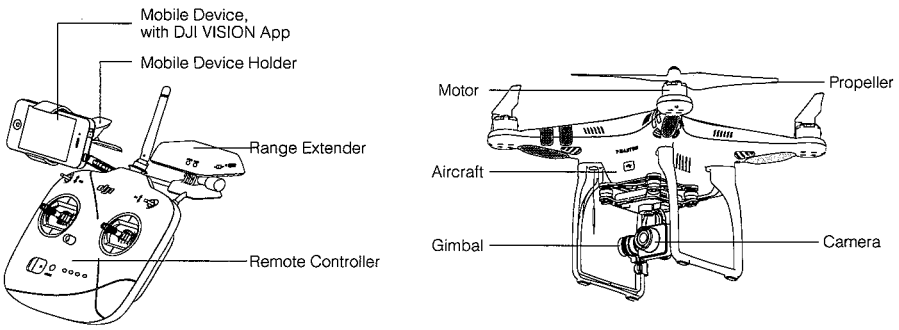


Figure 1

Choose between Phantom and Naza-M working modes using Phantom 2 Vision+ Assistant. If using Naza-M mode, please refer to the NAZA-M V2 Quick Start Manual for related instructions.

- Phantom: Flight settings will be selected automatically depending on whether 6 or more satellites have been found. This mode allows users to configure the Remote Controller and gain values, and use Failsafe and battery level warnings.
- Naza-M: Flight settings will be identical to the Naza-M V2. Users can choose between GPS, Attitude, or Manual mode. They can also access advanced settings including Intelligent Orientation Control (IOC). Rear LED Flight Indicators will display the flight status according to the Naza-M indicator.
- Ready to Fly: When 6 or more GPS satellites have been found, the Flight Control System will lock its home point and Rear LED Flight Indicators will blink a slow green (G ·····). This mode is ideal for beginners.
- Ready to Fly (non-GPS): When less than 6 GPS satellites have been found, the Flight Control System will stabilize itself less than in full Ready to Fly mode and will require more skilled flying. Rear LED Flight Indicators will blink a slow yellow (Y ·····).

Assembly and Use

Follow the below instructions to prepare for flight.

1 Removing Gimbal Clamp

Pull gimbal clamp in the direction indicated to remove.

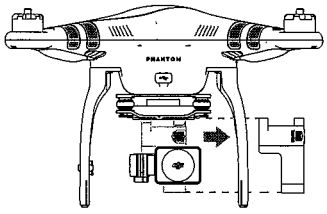


Figure 2

To avoid damage to the gimbal, remove Gimbal Clamp before powering up the Phantom.

Attach the Gimbal Clamp during transportation or long term storage to avoid damage.

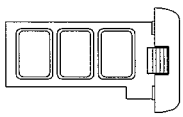
2 Preparing the Battery

Ensure all related devices are fully charged before flying the Phantom 2 Vision+.

Device	Power supply
Remote Controller	2000mAh rechargeable LiPo battery
Range Extender	Charge fully through Micro-USB slot. See Charging the Range Extender (Page 20) for details.
Aircraft (including gimbal and camera)	DJI Smart Flight Battery.
Mobile Device	Fully charge before using the DJI VISION App.

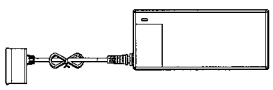
2.1 DJI Smart Flight Battery

This battery has been specially designed for the Phantom 2 series. It has a battery capacity of 5200mAh, voltage of 11.1V and charge-discharge management functionality. It can only be charged with a DJI charger or Phantom 2 Car Charger.



Smart Flight Battery

Figure 3



DJI Charger

Figure 4

DJI Smart Flight Battery Functions

(1) Balance Charging	Automatically balances the voltage of each battery cell during charging.
(2) Capacity Display	Displays current battery levels.
(3) Communication	Communicates with Flight Controller about battery voltage, capacity, current and other relevant information.
(4) Overcharge Protection	Charging stops automatically when battery voltage reaches 12.8V to prevent overcharge damage.
(5) Over Discharge Protection	Discharging stops automatically when battery voltage reaches 8.4V to prevent over discharge damage.
(6) Short Circuit Protection	Automatically cuts power supply when a short circuit is detected.
(7) Sleep Protection	Sleep mode is entered after 10 minutes of inactivity to save power.
(8) Charging Temperature Detection	The battery will charge only when the temperature is between 0°C (32°F) and 40°C (104°F).

Battery Specifications

Type	LiPo
Capacity	11.1V, 5200mAh
Charging Environment Temperature	0°C~40°C
Discharging Environment Temperature	- 20°C~50°C
Charging/Discharging Environment Relative Humidity	<80%

⚠ Please read the user manual, disclaimer, and battery warnings before use. Users take full responsibility for all operations and usage.

2.2 Usages

Powering on/off

Powering on: Press Circular Power Button once, then press again and hold for 2 seconds to power on. Power Light will go red and Battery Level Indicators will show the current battery level.

Powering off: Press Circular Power Button once, then press again and hold for 2 seconds to turn off. Battery Level Indicators will all go out.

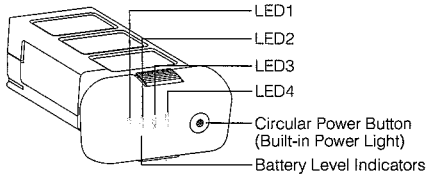


Figure 5

Checking the battery level

When the battery is powered off, press the Circular Power Button once. Battery Level Indicators will light up to show battery level. See below for details.

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

LED is on LED blinks
LED is off

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

Battery life

When the battery is powered off, press and hold the Circular Power Button for 5 seconds to check battery life. Battery Level Indicators will show light up and the Battery Power Indicators will blink for 10 seconds. All lights will then turn off. For details, please see below.

Battery life				
LED1	LED2	LED3	LED4	Current battery life
▯	▯	▯	▯	90%~100%
▯	▯	▯	▯	80%~90%
▯	▯	▯	▯	70%~80%
▯	▯	▯	▯	60%~70%
▯	▯	▯	▯	50%~60%
▯	▯	▯	▯	40%~50%
▯	▯	▯	▯	30%~40%
▯	▯	▯	▯	20%~30%
▯	▯	▯	▯	Less than 20%

⚠ When batter life reaches 0, it is no longer operational.

📖 More battery information is available in the battery tab of the Phantom 2 Vision+ Assistant.

2.3 Charging the Flight Battery

(1) Connect charger to wall socket (100-240V, 50/60Hz, using the Plug Adaptors if necessary).
(2) Connect battery to charger. If the current capacity of the battery is over 75%, you should turn it on before beginning to charge.
(3) Battery Level Indicators will display current capacity level as the battery charges.
(4) Battery is fully charged when Battery Level indicator lights are off. Disconnect the charger and battery when charging is complete.

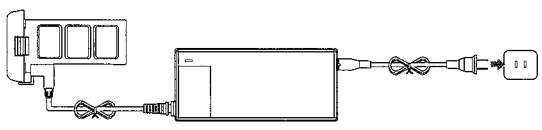


Figure 6

Charging process				
LED1	LED2	LED3	LED4	Current battery level
▯	▯	▯	▯	0%~25%
▯	▯	▯	▯	25%~50%
▯	▯	▯	▯	50%~75%
▯	▯	▯	▯	75%~100%
▯	▯	▯	▯	Fully charged

The Smart Flight Battery can be charged using an optional Phantom 2 Car Charger. This can charge the battery in-car or through 3S-6S Li-Po batteries. Contact your authorized dealer or DJI customer service for details.

⚠ • Battery should only be charged with the charger provided by DJI. DJI does not take any responsibility for damage caused by third party chargers.
• If current battery level is over 75%, the battery should be turned on before charging.

2.4 Battery Installation

Push battery into battery compartment according to the below diagram. When you hear a click, the battery has been properly installed.

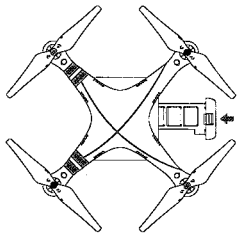


Figure 7

⚠ An incorrectly installed battery may cause
• Bad contact,
• Unavailable battery information,
• Unsafe flight,
• Inability to take off.

2.5 Correct Battery Usage Notes

(1) When the battery is turned on, do not connect it to or disconnect it from the Phantom.
(2) Charge and discharge the battery completely once every 20 charge/discharge cycles. Discharge the battery until there is less than 8% power or until it can no longer be turned on, then recharge it to maximum capacity. This power cycling procedure will optimize the battery.
(3) For long term storage, place the battery with only a 40~50% charge in a strong battery box. Discharge and charge the battery once every 3 months to keep it in good condition. Charge amount should be varied in these maintenance charges - (40%~50%)—0%—100%—(40%~50%).
(4) Purchase a new battery after your current battery has been discharged over 300 times. Completely discharge a battery prior to disposal. Please dispose of batteries properly.
(5) Purchase a new battery if your current battery swells up or is damaged in any way.
(6) Never recharge or fly with a battery that is swollen or damaged in any way.
(7) Never charge batteries unattended. Always charge batteries on a non-flammable surface such as concrete and never near any flammable materials.
(8) Safety is extremely important. For more information, please see the Disclaimer.

Discharging methods:
Slow: Place battery in Phantom and turn on. Leave on until there is less than 8% of power left or until the battery can no longer be turned on. See DJI VISION App for battery levels. Motors do not need to be turned on, reducing wear.
Fast: Fly the Phantom outdoors until there is less than 8% of power left or until the battery can no longer be turned on.

3 Preparing the Phantom 2 Vision+

The Phantom 2 Vision+ is a quadrotor with a built-in Flight Control System with integrated gimbal and camera. It features an FC Assistant Port, Camera Data Port and a specialized battery compartment for its flight battery. All these features make the Phantom 2 Vision+ easy to assemble and configure.

3.1 Introduction

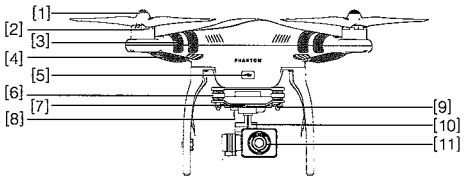


Figure 8

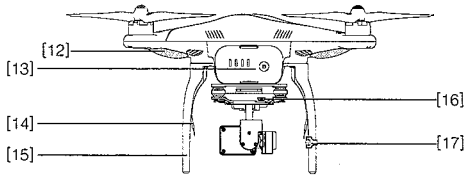


Figure 9

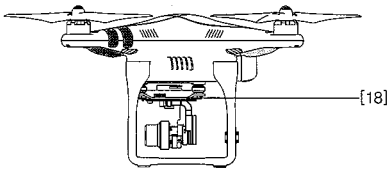


Figure 10

[1] Propeller (P15)
[2] Motor
[3] Front Sticker
[4] Front LED (P12)
[5] FC Assistant Port (Micro-USB slot) (P46)
[6] Vibration Absorber
[7] Camera LED Indicator (P15)
[8] Camera Function Button (P14)
[9] Anti-drop Kit (P13)
[10] 3-axial Stabilized Gimbal (P12)
[11] Camera Lens (P14)
[12] Rear LED Flight Indicator (P12)
[13] DJI Smart Flight Battery (P7)
[14] Receiver Antenna (P17)
[15] Landing Gear
[16] Camera Data Port (Micro-USB slot) (P14)
[17] Compass (P25)
[18] Micro-SD Slot (P13)

3.2 Built-in Flight Control System

The Phantom 2 Vision+ is equipped with a DJI Naza-M V2 Flight Control System. This provides incredible ease of use and stability. Pilots can control the Phantom's movements in many directions, including pitch (forwards and backwards), roll (left and right), elevator (up and down) and yaw (turn left or right). The flight control system also can provide IOC, Failsafe and battery level warnings.

Modules	Functions
Flight Controller	Acts as the brains of the complete flight control system, responsible for connecting and controlling all the modules together.
IMU	Has a built-in inertial sensor and a barometric altimeter that measures both attitude and altitude.
GPS & Compass	The compass reads geomagnetic information and assists the GPS (Global Position System) to accurately calculate the position and height of the aircraft.
LED Flight Indicators	Indicates the status of flight control system.

FC Assistant Port

The flight control system communicates with the PC Assistant through a Micro-USB cable between the Phantom FC Assistant Port and the PC. Users can use Assistant to configure the aircraft and upgrade the Phantom firmware. Please refer to Using the Phantom 2 Vision+ Assistant (Page 46) for details.

3.3 LED Flight Indicator Descriptions

LED flight indicators are found at the front and the rear of the Phantom. Front LEDs are for indicating where the nose of the aircraft is. They light up solid red after motors have started spinning. Rear LED Flight Indicators light up to show the aircraft's current flight status once the flight battery is powered on. For details, please see the below table.

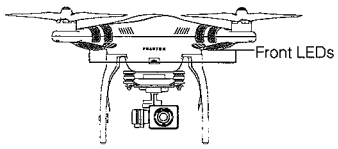


Figure 11

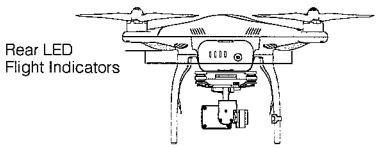


Figure 12

Rear LED Flight Indicators	Normal	Notes
Ⓡ-Ⓖ-Ⓨ····· Red, Green, Yellow flashing in turn	Power On Self-Test	
Ⓨ-Ⓖ····· Yellow,Green flashing in turn	Warming Up	Aircraft cannot take off.
Ⓖ····· Slow Green flashing	Ready to Fly	More than 6 GPS satellites are found.
Ⓨ····· Slow Yellow flashing	Ready to Fly (non-GPS)	Less than 6 GPS satellites are found.

Rear LED Flight Indicators	Abnormal	Notes
Ⓨ····· Quick Yellow flashing	Remote Controller Signal Lost	Refer to Failsafe Function (Page27) for details.
Ⓡ····· Slow Red flashing	Low Battery Level Warning	DJI VISION App will also show warning message.
Ⓡ····· Quick Red flashing	Critical Low Battery Level Warning	DJI VISION App will show warning message.
Ⓡ····· Three Red flashing off and on	Not Stationary or Sensor Bias is too big	Keep aircraft stationary or perform IMU calibration.
Ⓡ —— Solid red	Error	Cannot fly.
Ⓡ-Ⓨ····· Red, Yellow flashing in turn	Compass Needs Calibration	Refer to Calibrating the Compass (Page25) to get details.

⚠ If a solid red Ⓡ LED indicator appears, connect to the Phantom 2 Vision+ Assistant for details and resolution. This may be caused by:

- IMU calibration required: Recalibrate IMU using Assistant.
- IMU is abnormal: Repair required.
- Compass is abnormal: Repair required.
- Remote Controller mid-point is set abnormally: Refer to How to solve large margin(s) mid-point error? (Page 49)

3.4 3-axial Stabilized Gimbal

The 3-axial stabilized gimbal of the Phantom 2 Vision+ will power on and self-check each time the flight battery is installed and powered on. Its pitch can be controlled using the DJI VISION App. This gimbal has two working modes, Non-FPV mode and FPV mode, with the Non-FPV mode set as default. This can be configured in Phantom 2 Vision+ Assistant or the DJI VISION App.

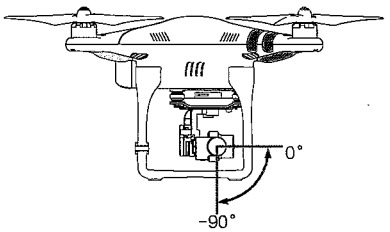


Figure 13

Gimbal specifications	
Control accuracy	±0.03°
Controllable range	Pitch : -90°~0°
Maximum angular velocity	Pitch : 90°/s

• **Non-FPV Mode:** the gimbal will stabilize across 3-axial for smooth aerial creativity.
• **FPV Mode (First Person View Mode):** Gimbal will lock to the movements of the Phantom for a FPV experience.

Anti-drop Kit

The Anti-drop Kit helps keep the gimbal and camera connected to the aircraft. Two have been mounted on delivery. If new ones are required, take the gimbal and press part [1] through the center hole of the Vibration Absorber the center hole of part [2]. Lock them together as shown in [3]. Mounting the Anti-drop Kit diagonally is recommended.

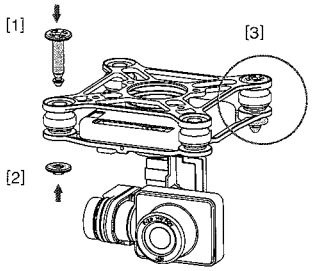


Figure 14

⚠ Once part [1] and part [2] are connected, the Anti-drop Kit cannot be disconnected and reused.

Micro-SD Slot

With flight battery powered off, make sure the Micro-SD card is inserted correctly into the Micro-SD Slot before taking any photos or recording any video.

The Phantom 2 Vision+ comes with a 4GB Micro-SD card and can support cards up to 32GB. The DJI VISION App may not be able to read some Micro-SD cards. Using the DJI VISION App to reformat new Micro-SD cards is recommended.
Refer to Format Micro-SD Card (Page 37) for details.

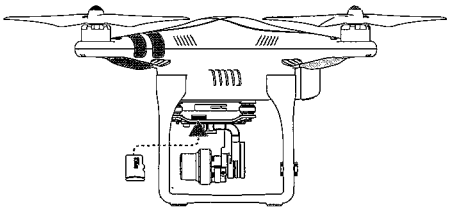


Figure 15

⊘ Do not insert or remove Micro-SD card when flight battery is powered on.

Gimbal Error Warnings

Before the aircraft takes off, if a gimbal motor error is detected or the gimbal clamp is not removed, there will be a warning prompt on the camera page of the DJI VISION App. This will disappear after the problem is resolved.

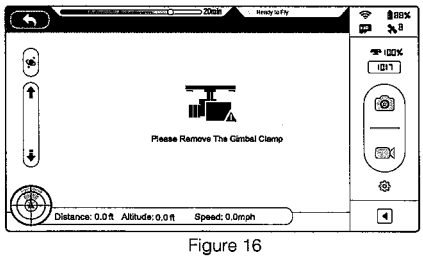


Figure 16

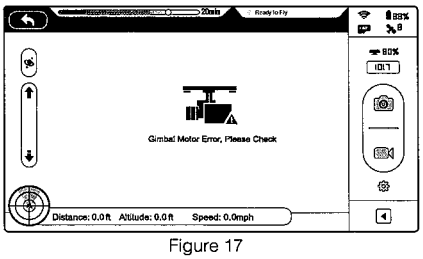


Figure 17

⚠
- Remove gimbal clamp before powering on flight battery.
- Gimbal motor error may occur in these situations: (1) Gimbal is placed on uneven ground. (2) Gimbal has received an excessive external force, e.g. a collision. Please take off from flat, open ground and protect the gimbal after powering up.
- Flying in heavy fog or cloud may make the gimbal wet, leading to a temporary failure. The gimbal will recover when it dries out.

3.5 Camera

The Phantom 2 Vision+ camera powers up when the flight battery has been installed and switched on. Photos and videos can be shot by pressing either the onboard button or the DJI VISION App. For aerial photography it supports burst shots, continuous capture and timed capture, and exports to both Adobe DNG Raw and JPEG. For aerial video, it shoots in full HD at (1080p30/1080i60) and can even shoot 720p60 for internet ready slow motion.

Camera specifications	
Sensor Size	1/2.3"
Pixels	14 Megapixels
Resolution	4384x3288
HD Recording	1080p30 /1080i60/720p60
Recording FOV	110° / 85°

Lens cap removal

Remove lens cap before use and replace it when shooting is complete to protect the camera lens.

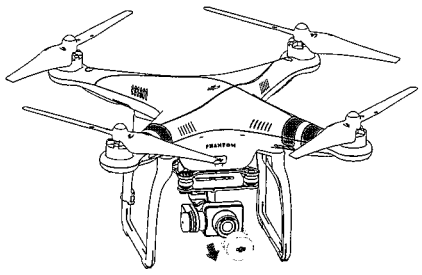


Figure 18

Camera Function Buttons

Capture: Press (hold less than 2 seconds) to take a single capture.

Record: Press (hold more than 2 seconds) to begin recording. Press again to stop.

Camera Data Port

Connect the Camera Data Port to a PC using a Micro-USB cable to copy files to a PC.

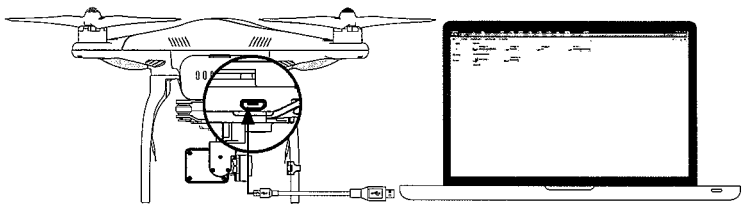


Figure 19

⚠ Photos and videos can only be copied when the flight battery is powered on.

Camera LED Indicator

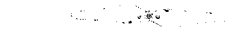
Camera LED Indicator lights up after the flight battery is powered on. It provides information on the working status of the camera.

Camera LED Indicator	Wi-Fi status	Camera status
Ⓖ Green Solid	OFF	Power On; Idle
Ⓖ Slow Green Blink (0.2s on, 1.8s off)	ON	Idle
Ⓖ Green Blink(0.1s on, 0.3s off, 0.1s on, 1.8s off)	ON	Micro-SD card connected to PC
Ⓖ Fast Green Blink (0.1s on, 0.3s off)	ON	Synchronizing
Ⓞ Orange Solid	OFF	Recording
Ⓞ Orange Blink Once (0.2s on, 0.3s off)	ON / OFF	Taking a single picture.
Ⓞ Orange Blink 3 Times(0.1s on, 0.1s off)	ON / OFF	Taking 3 or 5 photos per shot
Ⓞ Orange Fast Blink (0.1s on, 0.3s off)	ON / OFF	Firmware Upgrading
Ⓖ-Ⓞ Green, Orange (0.2s green, 1.8s orange)	ON	Recording
Ⓡ Red Solid	ON / OFF	Critical error
Ⓡ Slow Red Blink (0.2s on, 1.8s off)	ON / OFF	CMOS sensor error
Ⓡ Red Blink Once (0.2s on, 0.3s off)	ON / OFF	Operation failed
Ⓡ Red Blink 3 Times(0.1s on, 0.1s off)	ON / OFF	Micro-SD card error
Ⓡ Fast Red Blinks (0.1s on, 0.3s off)	ON / OFF	Upgrade error
Ⓖ-Ⓞ-Ⓡ Fast Green, Orange and Red Blink (0.1s on, 0.3s off)	ON / OFF	Overheated Camera

4 Attaching the Propellers

Always use original 9-inch propellers, classified by the color of each central nut.

4.1 Introduction

Propellers	Grey Nut (9450)	Black Nut (9450 R)
Diagram		
Assembly Location	Attach to motor without black dot.	Attach to motor with black dot.
Fastening/ Un-fastening Instructions	Lock: Tighten propeller in this direction. Unlock: Loosen propeller in this direction.	

4.2 Assembly

(1) (Figure 20) Remove warning cards from motors after you have read them.
(2) (Figure 21) Spin grey marked propellers clockwise onto unmarked motors and black marked propellers anti-clockwise for black marked motors.

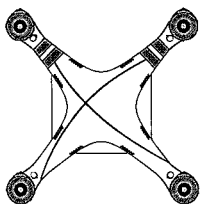


Figure 20

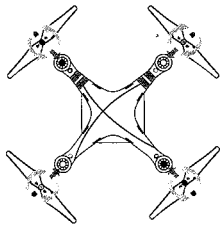


Figure 21

Propellers self tighten during flight. DO NOT use thread locker.

- Always match marked props with the corresponding motor.
- Protective gloves are recommended during propeller assembly and removal.

4.3 Removing the Propellers

(Figure 22) Prevent motor rotation using the included wrench or a hand, then remove propeller according to the un-fastening instructions.

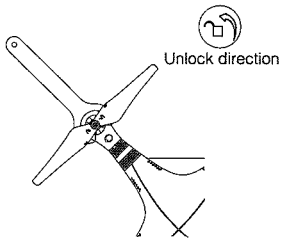


Figure 22

4.4 Notes

(1) Check that propellers and motors are installed correctly and firmly before every flight.
(2) Ensure that all propellers are in good condition before each flight. DO NOT use any ageing, chipped, or broken propellers.
(3) To avoid injury, STAND CLEAR of and DO NOT touch propellers or motors when they are spinning.
(4) ONLY use original DJI propellers for a better and safer flight experience.

For beginner flyers, Phantom 2 Prop Guards are recommended. Contact your authorized dealer or DJI customer service to purchase if necessary.

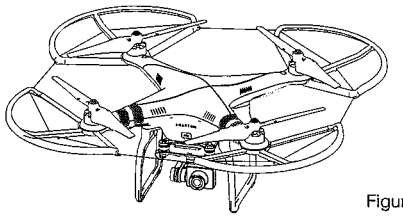


Figure 23

5 Preparing the Remote Controller

The Phantom 2 Vision+ Remote Controller is a wireless communication device using the 5.8GHz frequency band. Remote Controller and Phantom are paired before delivery.
For upgraded remote controller (models: NPVT581, NDJ6 or NRC900), select "Upgrade Version" in Phantom Assistant. For basic remote controller (models: PVT581, DJ6 or RC900), select "Basic Version" in Phantom Assistant.
The Remote Controller is set to Mode 2 by default. This can be adjusted in the PHANTOM RC Assistant. See Using the PHANTOM RC Assistant (Page 47) for details. You can also adjust the power of your Remote Controller according to national regulations. Please refer to Compliance Version Configuration (Page 19).

- **Compliance Version:** The Phantom 2 Vision+ Remote Controller is compliant with CE and FCC (see the FCC ID) regulations.
- **Operating Mode:** Mode 1 and Mode 2 refer to different channel mappings.
- **Mode 1:** The right stick controls throttle.
- **Mode 2:** The left stick controls throttle.

The Range Extender and Phone Holder are already mounted on the Remote Controller. Twist the Mobile Device Holder to face outwards and fix it in position for mobile device installation.

Large smartphones and tablets are not recommended for the Phone Holder as they do not fit.

5.1 The Remote Controller

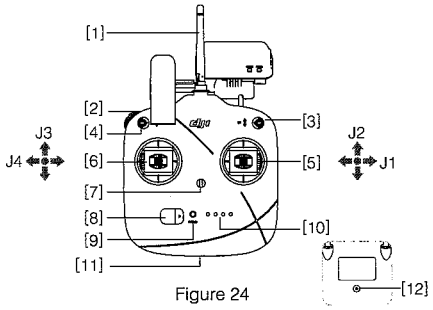
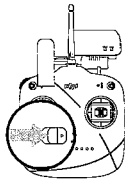


Figure 24

[1] Antenna
[2] Left Dial
[3] Switch S1
[4] Switch S2 (Reserved)
[5] Right Stick: J1, Roll [left & right], J2, Pitch [front & back]
[6] Left Stick: J3, Throttle [up & down], J4, Yaw [rotation]
[7] Neck Strap Attachment
[8] Power Switch
[9] Power Indicator
[10] Battery Level Indicator
[11] Battery Charge & RC Assistant Port (use the supplied micro-USB cable to charge or upgrade the remote controller)
[12] Training Port (on back)

5.2 Power on the Remote Controller

(1) Set S1 and S2 switches to the upper most position and place all sticks in the mid-point.
(2) Toggle power switch to the right to switch on.
(3) There will be a power on indicator beep. If the remote controller is set to be CE compliant, then there will be one beep, while the FCC compliant version will emit two beeps. The battery level indicator displays the current battery level. The indicator will blink green quickly, indicating the remote controller and receiver are linking. Once fully linked, the power indicator will change to a solid green.



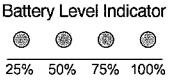
⚠ • If the low voltage warning alert sounds (refer to Remote Controller Power LED Status Information (Page 17) for details), please recharge the battery as soon as possible.
• Using the incorrect type of charging cable may cause damage.
• Following long term storage, recharge the battery before use.

5.3 Remote Controller Power LED Status Information

Power LED Indicator	Sound	Remote Controller Status
Ⓖ — Solid Green	None	Functioning normally.
Ⓡ — Solid Red	None	Charging(remote controller is powered off)
Ⓨ — Solid Yellow	None	Remote controller joysticks calibration error, need to be re-calibrate.
Ⓡ — Solid Red	BB—BB—BB	Low voltage (from 3.5V-3.53V), recharge the remote controller.
Ⓡ ····· Quick Red flashing	B-B-B.....	Critical low voltage (from 3.45V-3.5V). Recharge the remote controller immediately.
Ⓖ ····· Slow Green flashing	B--B--B.....	Alert will sound after 15 minutes of inactivity. It will stop once you start using the remote controller.

5.4 Battery Level Indicator

Built-in LiPo Battery: The remote controller includes a rechargeable LiPo battery with a capacity of 2000mAh. You can monitor the current battery level using the LED indicators on the front panel of the remote controller as the figure shown:



⚠ The remote controller will show a blinking LED and sound an alert when the voltage drops below 3.45V, then automatically power off after 3 seconds. This process will repeat even if you power cycle the remote controller. If this low voltage warning occurs during flight, the remote controller will automatically power off, causing the aircraft to enter Failsafe mode, which cannot be interrupted (refer to Failsafe Function (Page27) for details). It is strongly recommended that you recharge the battery immediately when the 3.45V-3.5V low voltage warning occurs.

5.5 Antenna Orientation

Keep the antennas pointing skyward, perpendicular to the ground for maximum remote controller range during flight.

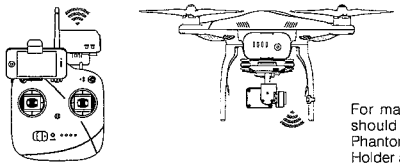


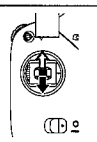
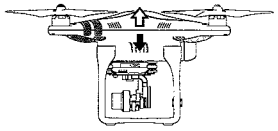
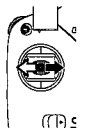
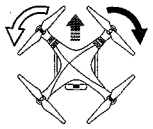
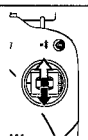
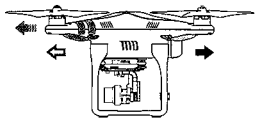
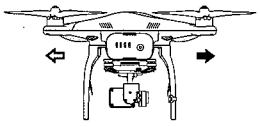
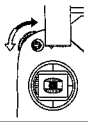
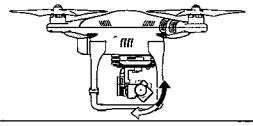
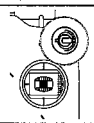
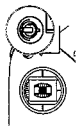
Figure 25

For maximum range and reliability, Remote Controller antenna should point skywards with no obstructions between it and the Phantom. Obstacles may cause Return to Home to trigger. Phone Holder and Range Extender should not block the antenna.

5.6 Remote Controller Operation

The Remote Controller is set to Mode 2 by default.

- Stick Neutral/ mid point: Control sticks of the Remote Controller are placed at the central position.
- Move the Stick: The control stick is pushed away from the central position.

Remote Controller (Mode 2)	Aircraft (indicates nose direction)	Operation details
		Vertical movements on the left stick control elevation. Push the stick up to ascend and down to descend. When both sticks are centered the Phantom will hover in place. Push the throttle stick upward beyond the centered (neutral) position to take off. Push the throttle gently to prevent sudden and unexpected elevation.
		Horizontal movements on the left stick control the rudder. Push left to rotate counter clock-wise and right for clockwise. If the stick is centered, the Phantom will fly straight. The more the stick is moved, the faster the Phantom will rotate.
		Vertical movements on the right stick control forward and backward pitch. Push up to fly forward and down to fly backward. The Phantom will hover in place if the stick is centered. Push the stick further for a larger pitch angle (maximum 35°) and faster flight.
		Horizontal movements on the right stick control left and right pitch. Push left to fly left and right to fly right. The Phantom will hover in place if the stick is centered. Push the stick further for a larger pitch angle (maximum 35°) and faster flight.
		Left 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 keep its current position if the dial is static.
	 Position 1 Position 2 Position 3	The S1 switch is used for compass calibration. Toggle the S1 from position 1 to position 3 and back approximately 5 times to enter into compass calibration mode. In Naza-M mode, the S1 switch is used to switch between control modes and enter compass calibration.
	 Position 1 Position 2 Position 3	S2 is used to record a Home point manually. After a Home point has been recorded automatically, flipping S2 from position 1 to position 3 and back 5 times (or more) rapidly will move the Home point to the Phantom's current location. In addition, you can enable Dynamic Home Point feature in DJI VISION App. In Naza-M working mode, S2 is be used for IOC.

⚠ • In 'Ready to Fly' mode, the Phantom will hover when all sticks are released.
• In 'Ready to Fly (non-GPS)' the Phantom will lock its altitude but will not have horizontal positioning.

5.7 Linking the Remote Controller and Receiver

A 5.8G receiver is built in to the Phantom 2 Vision+. Its link button and indicator are located on the underside of the phantom, as shown in Figure 26.
The Remote Controller and the receiver are paired before delivery. Only use this button if you have replaced your Remote Controller or receiver.

Linking Procedures

(1) Power off the Remote Controller, power on the aircraft. You will see the link indicator blinking red.
(2) Press the link button with a thin object and hold until the link indicator blinks yellow. Release the link button.
(3) Power on the Remote Controller. Link indicator will switch off, showing that a link has been successfully established.

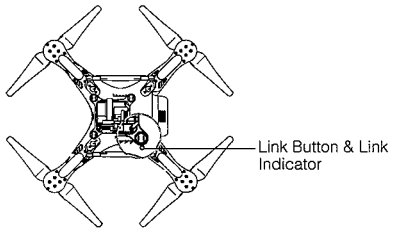


Figure 26

Link Indicator

Link Indicator	Description	Next Operation
Ⓡ ····· Red flashing	No signal received.	Switch on the Remote Controller or perform a link procedure.
Ⓨ ····· Yellow flashing	Ready to link.	Switch on the Remote Controller.

5.8 Compliance Version Configuration

As power levels vary between regulators, the Phantom Remote Controller's power output can be adjusted by twisting the CE/FCC Control Knob (Figure 27) on the back of the Remote Controller using a flathead screwdriver. For CE compliance, set the Remote Controller to CE with a full counterclockwise turn. For FCC compliance, set the Remote Controller to FCC with a full clockwise turn. Be sure to follow relevant local regulations.
Compliance can be configured using the PHANTOM RC Assistant. Select CE compliance version in Assistant to set it, or do the same with FCC compliance version.

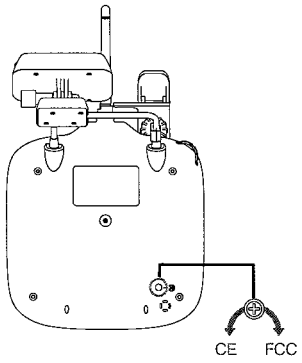


Figure 27

⚠ • Turn the CE/FCC Control Knob gently to avoid damage.
• CE compliant devices have an effective remote controller range of 400 meters in open spaces due to power limitations.
• FCC compliant devices have an effective range of 800 meters in open spaces.
• Watch your flight distance as the Phantom 2 Vision+ will enter Failsafe mode (auto-landing or go home and land) if it flies beyond the relevant range limits.
• Always follow local laws and regulations.

• It is recommended to use a Φ2.4mm flathead screwdriver for adjustments.
• There is another potentiometer for reserved use.

6 Preparing the Range Extender

The Phantom 2 Vision+ Range Extender is a wireless communication device that operates within the 2.4 GHz frequency band. It is used to extending the effective range of communication between a Smartphone and the Phantom 2 Vision+. In an open, unobstructed area, the transmission distance can reach up to 700 meters. This can be reduced by trees, buildings and other sources of the same frequency. Before every flight, it is suggested that you ensure the Range Extender is functioning properly; otherwise communication issues between the mobile device and the Phantom 2 Vision+ may occur.

Each Range Extender has a unique MAC address and network name (SSID), details of which are printed on the label as 'Phantom_XXXXXX'. The 'XXXXXX' represents the last 6 letters or numbers of the MAC address for the Range Extender. This can be renamed in the DJI VISION App.

6.1 Introduction

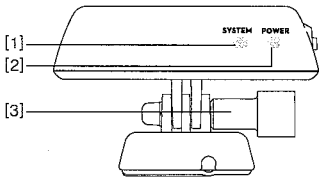


Figure 28

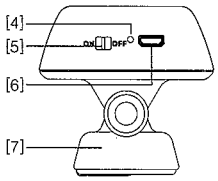


Figure 29

[1] SYSTEM Indicator
[2] POWER Indicator
[3] Locking Screw
[4] Binding Reset Button
[5] Power Switch
[6] Charging Port(Micro-USB slot)
[7] Mounting Bracket

SYSTEM Indicator

Shows Wi-Fi status of the Range Extender.

SYSTEM Indicator	Description
Green flashing	The Wi-Fi network is functioning normally.
Off	The Wi-Fi network is functioning abnormally.

POWER Indicator

Shows power levels of the Range Extender.

POWER Indicator	Description
Solid green	Fully charged.
Solid red	Low voltage alert, re-charge required.
Solid Yellow	Charging.

⚠ If the power indicator is a solid red light, the Ranger Extender may stop working at any moment. Land and recharge as soon as possible.

Binding Reset Button

When the Binding Reset Button is pressed, it will reset and restart the Range Extender. You will need to bind it with the Phantom 2 Vision+ again to recreate its Wi-Fi network. Failure to do so will cause the DJI VISION App to fail to connect with the camera.

6.2 Using Range Extender

Charging the Range Extender

Charge the Range Extender by connecting the charging port to a power supply device such as a PC or a USB charger using a Micro-USB cable. Make sure to charge the Range Extender completely before using it for the first time. This takes 3~4 hours depending on USB power output.

⚠ Make sure the Range Extender has enough power before each use.

Powering on the Range Extender

(1) Flick the power switch to the ON position.
(2) Wait for approximately 30 seconds. The Wi-Fi signal indicator will blink green indicating the Range Extender is communicating properly.
(3) Keep the Range Extender facing the aircraft during flight for the best communication link.

⚠ Power off the Range Extender after every flight to avoid discharging the battery.

Checking the Battery Level

The battery level of the Range Extender can be checked in the camera page of the DJI VISION App as shown below. When the battery level drops to 20% or lower, the battery level icon will go red as a charging reminder.

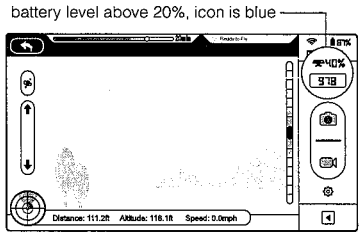


Figure 30

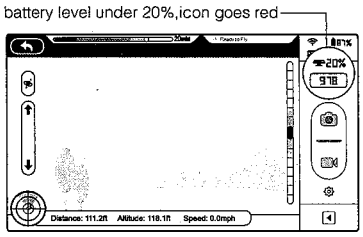


Figure 31

6.3 Rename Range Extender SSID

Make your Range Extender SSID easier to remember by changing its name.

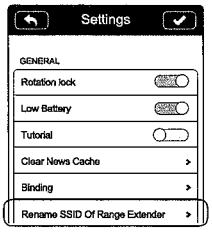


Figure 32

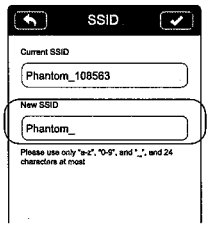


Figure 33

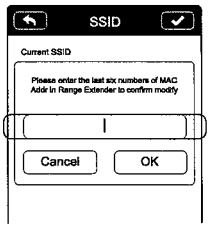


Figure 34

(1) Tap "Rename SSID of Range Extender" in the Settings page. Enter a new SSID name (e.g. Phantom_Tom) in the textbox.
(2) Tap ✔ and you will be asked to enter the last six characters of your MAC address on the Range Extender to confirm the change. The MAC address can be found on the sticker on your Range Extender. If your MAC address is 60:60:1F:60:41:E7, then enter 6041E7.
(3) Tap "OK" to confirm the change. The Range Extender will automatically restart and the App will return to the settings page. Approximately 30 seconds later, the new network name can be found in the Wi-Fi list of your mobile device. Select and connect the renamed network to use the DJI VISION App.

6.4 Binding the Phantom 2 Vision+ and Range Extender

If the connection between the Phantom 2 Vision+ and the Range Extender fails, or one of them needs to be repaired or replaced, a camera and Range Extender binding will need to be performed through the DJI VISION App.

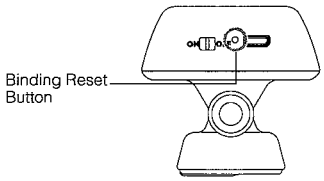


Figure 35

(1) Power on the camera and Range Extender.
(2) Approximately 30 seconds later, press the Binding Reset Button on the Range Extender with a pin until the SYSTEM Indicator turns off. The Range Extender will then restart automatically.
(3) Approximately 30 seconds later, the SYSTEM Indicator will start to blink green, indicating that the Range Extender is ready for binding.
(4) Enable Wi-Fi on your mobile device then select "Phantom_XXXXXX" the (SSIDof your Range Extender) from theWi-Fi network list.
(5) Run the DJI VISION App then tap -> Settings -> General -> Binding (Figure 36). Select 'Scan QR Code' to scan the camera QR code on the bottom of aircraft (Figure 37). Get the camera SSID (E.g. FC200_xxxxxx) and the MAC address (Figure 38). You can also skip the scan and enter the camera MAC address directly (Figure 39). The MAC address can be found on the camera label.
(6) Tap the tick ✔ in the top right corner. The Range Extender should automatically restart. Binding is now complete.

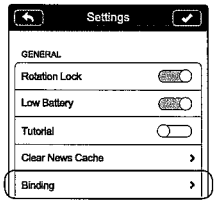


Figure 36

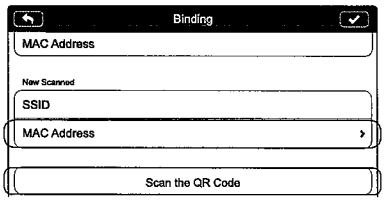
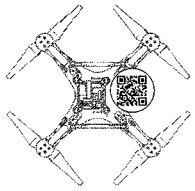


Figure 37



Scan the camera QR code on the bottom of aircraft

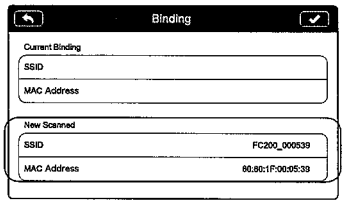


Figure 38

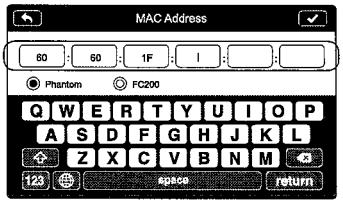


Figure 39

⊘ DO NOT push the Binding Reset Button of the Range Extender unless you are ready to rebind the Range Extender and the camera. This will unbind your camera so you must follow the steps above for rebinding.

⚠ If both the Phantom 2 Vision+ and the Range Extender are powered on and working normally, you will be able to find the SSID on the Wi-Fi list of your mobile device.

- The QR code is located on the bottom cover of the Phantom 2 Vision+. If you cannot find the QR code, please contact DJI customer service and provide your camera serial number (printed on the label of the camera) so they can generate a new QR code for you.
- Photographing and saving the QR code is recommended to prevent loss.

7 Downloading and Installing the DJI VISION App

7.1 Download and Install

Download DJI VISION App
Download and install the DJI VISION App. Choose one of the download methods below.

Search "DJI VISION" on the App Store then follow instructions for iOS version.
Search "DJI VISION" on Google Play then follow instructions for Android version.

Available on the iPhone App Store
iOS6.1 or above

Get it on Google play
Android 4.0 or above

Supported mobile devices

iOS (iOS6.1 or above) Recommended: iPhone4S, iPhone5, iPhone5S, iPhone5C,iPhone6, iPhone6 Plus, iPod Touch4, iPod Touch5; Available but not recommended: iPad3, iPad4, iPad mini, iPad Air.

Android (4.0 or above): Samsung Galaxy S3, S4, Note2, Note3 or mobile devices of similar configuration.

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

The DJI website is regularly updated. Check back often for latest App updates.

7.2 Register and Login

Access the Internet to register and login.

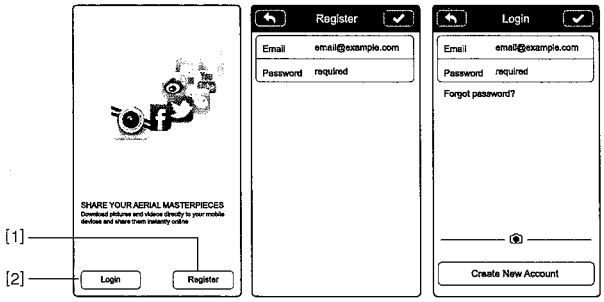


Figure 40 Figure 41 Figure 42

[1] Register

Tap 'Register' to enter the registration page. Fill in your Email and Password information and then tap ✔ to create a new account.

The DJI account works with all DJI Assistant and Apps.

[2] Login

Tap 'Login' to enter the login page. Fill in your registered Email and Password and then tap ✔ to login.

Log in to your account the first time you use the DJI VISION App.

Tap "Forgot Password" if you have forgotten your login details.

[3] Usage tips

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

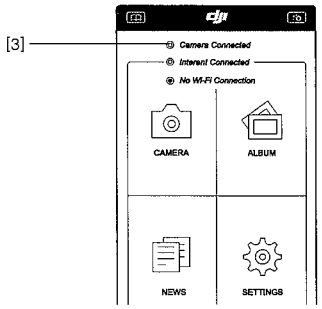


Figure 43

Enable the "Tutorial" switch in the Settings page to get hints and tips the first time you use the DJI VISION App.

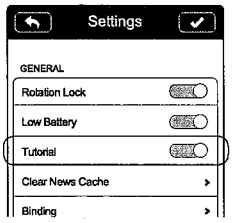


Figure 44

8 Connecting the Camera

Before flight, always connect your smartphone to the Phantom's Wi-Fi network. This is required for the camera control and FPV.

8.1 Connecting Procedures

Follow these instructions to connect a mobile device to the Phantom 2 Vision+ camera.

(1) Power on the Remote Controller and the Range Extender.
(2) Power on the Phantom 2 Vision+.
(3) Enable the Wi-Fi on your mobile device; wait for about 30 seconds, and then select "Phantom_XXXXXX" from theWi-Fi network list (Figure45).
(4) Run the DJI VISION App on your mobile device. When the Wi-Fi Computer Connection status on the App main menu goes green, the connection is good (Figure46).
(5) Tap the "CAMERA" icon and the DJI VISION App will begin a live camera preview (Figure47). This means everything is functioning normally.

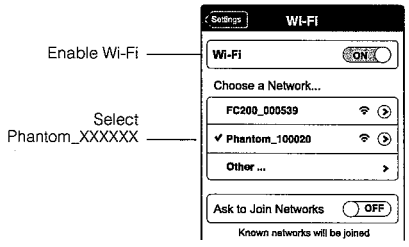


Figure 45

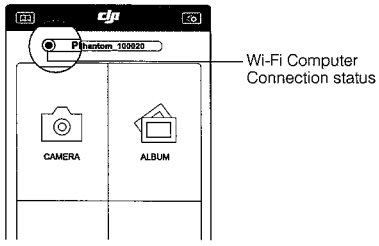


Figure 46

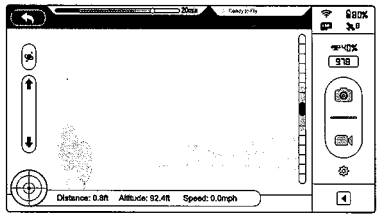


Figure 47

Wi-Fi Computer Connection Status Description

Icon		Description
	Solid green	Wi-Fi is connected to the Phantom 2 Vision+.
	Solid blue	Wi-Fi is connected to another Wi-Fi network, not to the Phantom 2 Vision+.
	Off	No Wi-Fi connection.

- The SSID is unique for each Phantom 2 Vision+ It will appear as Phantom_XXXXXX in your Wi-Fi list.
- Android users can tap the SSID button on the main page to mobile device Wi-Fi settings directly.

Flight

Once pre-flight preparation is complete, it is recommended to carry out the tasks in the Phantom Pilot Training Guide to prepare for more complex flight maneuvers and learn to fly safely. Ensure that all flights are carried out in a suitable location.

Flight Environment Requirements

(1) Do not use the aircraft in severe weather conditions. These include wind speed exceeding category 4, snow, rain and smog.
(2) Fly in open fields as high buildings or steel structures may affect the accuracy of the onboard compass.
(3) Keep the Phantom away from obstacles, crowds, high voltage power lines, trees or bodies of water when in flight.
(4) Reduce the chance of electromagnetic interference by not flying in areas with high levels of electromagnetism, including base stations or radio transmission towers.
(5) The Phantom cannot operate within the polar areas.
(6) Do not fly the aircraft within no-fly zones specified by local laws and regulations.

Preflight Checklist

(1) Remote Controller, smart battery, Range Extender and smartphone are fully charged.
(2) Propellers are mounted correctly.
(3) Gimbal clamp has been removed.
(4) Damping absorbers are in good condition, not broken or worn.
(5) Anti-drop kits have been mounted correctly.
(6) Camera lens cap has been removed.
(7) Micro-SD card has been inserted if necessary.
(8) Gimbal is functioning as normal.
(9) Motors can start and are functioning as normal.
(10) DJI VISION App can connect to the camera.

IMPORTANT: Make sure to calibrate the compass in every new flight location. The compass is very sensitive to electromagnetic interference, which can cause abnormal compass data leading to poor flight performance or even flight failure. Regular calibration is required for optimum performance.

- DO NOT calibrate your compass where there is a chance of strong magnetic interference, such as magnetite, parking structures, and steel reinforcements underground.
- DO NOT carry ferromagnetic materials with you during calibration such as keys or cellular phones.
- DO NOT calibrate beside massive metal objects.

1.1Calibration Procedures

Choose an open space to carry out the following procedures. Watch the Phantom 2 Vision+ quick start video for more details.

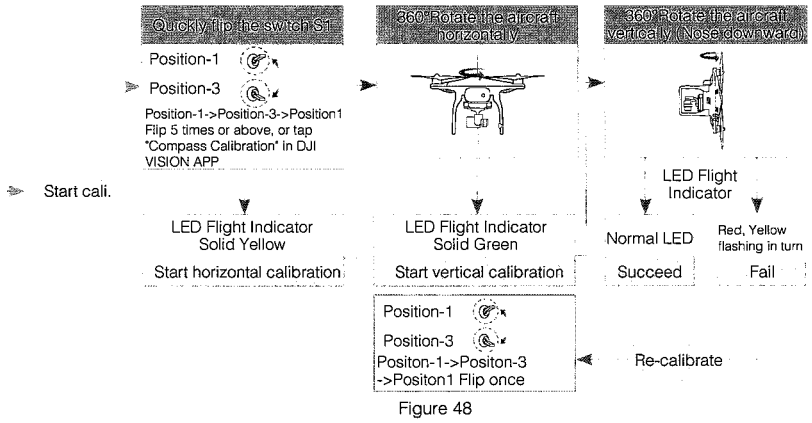


Figure 48

If compass calibration is needed before flight, a prompt will appear on the DJI VISON App's camera page. It will disappear after successful calibration.

1.2 When to Recalibrate

(1) When compass data is abnormal, the rear LED flight indicator will blink red and yellow.
(2) Flying in different location to last flight.
(3) Mechanical structure of the Phantom has changed, i.e. changed mounting position of the compass.
(4) Severe drifting occurs in flight, i.e. Phantom does not fly in straight lines.

2 Starting/Stopping the Motors

2.1 Starting Motors

A Combination Stick Command (CSC) is used to start the motors instead of simply pushing the stick up. Push both sticks to their bottom corners to start the motors. Once the motors have spun up, release both sticks simultaneously.

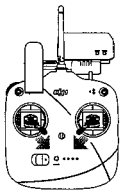


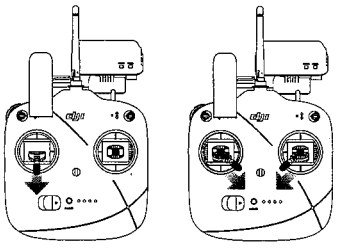
Figure 49

2.2 Stopping Motors

There are two methods to stop the motors.

Method 1: When the Phantom has landed, push the throttle down, then conduct CSC. Motors will stop immediately. Release both sticks once motors stop.

Method 2: When the aircraft has landed, push the throttle down and hold. Motors will stop after 3 seconds.



[1] [2]

Figure 50

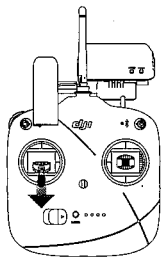


Figure 51

Do not execute CSC during normal flight. This will stop the motors and cause the aircraft to drop without control.

- Conduct the CSC as neatly as you can. Release the sticks once motors start/stop.
- Pull down the throttle stick to descend. The stick will lock into place and the aircraft will descend steadily. Push the throttle stick upward to release throttle lock.

3 Flight Test

3.1 Take off/Landing Procedures

(1) Place the Phantom 2 Vision+ on open flat ground with battery indicators facing towards you.
(2) Power on the Remote Controller and Range Extender, then the Smart Flight Battery.
(3) Launch the DJI VISION App and start bind it with your smartphone then enter the camera preview page.
(4) Wait until the Rear LED Flight Indicator blinks green. This means it has initialized and is Ready to Fly. If it flashes yellow, it is in Ready to Fly (non-GPS) mode and will require more careful flight. Execute the CSC command to start motors.
(5) Push the throttle up slowly to take off. Refer to Remote Controller Operation (Page 18) for more details.
(6) Shoot photos and videos using the DJI VISION App. Refer to DJI VISION App Usage (Page 32) for more details.
(7) To land, hover over a level surface and gently pull down on the throttle gently to descend.
(8) After landing, execute the CSC command or hold the throttle at its lowest position for 3 seconds or more until the motors stop.
(9) Turn off the smart battery, Range Extender and Remote Controller.

- When the Rear LED Flight Indicator blinks yellow rapidly during flight, the aircraft has entered Failsafe mode. Refer to Failsafe Function(Page 27) for details.
- A low battery level warning is indicated by the Rear LED Flight Indicator blinking red slowly or rapidly during flight. Refer to the Low Battery Level Warning Function(Page 28) for details.
- View tutorials about flight for more flight information:www.dji.com/phantom2visionplus/training.
- Aircraft and battery performance is subject to environmental factors such as air density and temperature. Be very careful when flying 3000 meters (9800 feet) or more above sea level, as battery and aircraft performance may be reduced.

3.2 Video Suggestions and Tips

(1) Work through the check list before each flight.
(2) Set the gimbal working mode to Stabilized.
(3) Aim to shoot when flying in Ready to Fly only.
(4) Always fly in good weather, such as sunny or windless days.
(5) Change camera settings to suit you. These include FOV, photo format and exposure compensation.
(6) Take flight tests to establish flight routes and scenes.
(7) Push the sticks gently to make aircraft movements stable and smooth.

4 Failsafe Function

The Phantom will enter Failsafe mode when its connection to the Remote Controller is lost. The Flight Control System will automatically control the aircraft to return to home and land to prevent injury or damage.

Home Point: When the Phantom enters 'Ready to Fly' from the 'Ready to Fly status (non-GPS)', the GPS coordinates will be recorded and set as the home point.
- When Remote Controller signal is lost, the aircraft will return to the recorded home point coordinates and land.
- Home point coordinates are used to calculate the horizontal distance of the aircraft (shown as "Distance" on the GUI of the DJI VISION App).
- After successfully record the home point, rear LED flight indicators blink fast green.

Dynamic Home Point: The Home point will be reset to position of the mobile device at specific time intervals.
- Enable dynamic home point in DJI Vision app or Phantom 2 Assistant.
- Dynamic home point is only available to the GPS-enabled mobile device. Turn on GPS and data service to obtain higher accuracy of the mobile device position.
- Dynamic home point is useful in situations when you are in motion and require a Home point that is different from the takeoff point.

4.1 When Will Failsafe Activate?

(1) The Remote Controller is powered off.
(2) The Phantom has flown out of effective remote controller range.
(3) The signal between the Remote Controller and the Phantom has been blocked.
(4) There is interference causing a signal problem with the Remote Controller.

4.2 Failsafe Procedure

Initiating the Failsafe mode from different flying statuses will results in different landing processes.

Ready to Fly(non-GPS)— Automatic landing

The Flight Control System will keep the aircraft level during descent and landing. It may be drift during the descent and landing process.

Ready to Fly— Automatic go home and land

The Flight Control System will automatically control the aircraft to fly back to the home point and land.

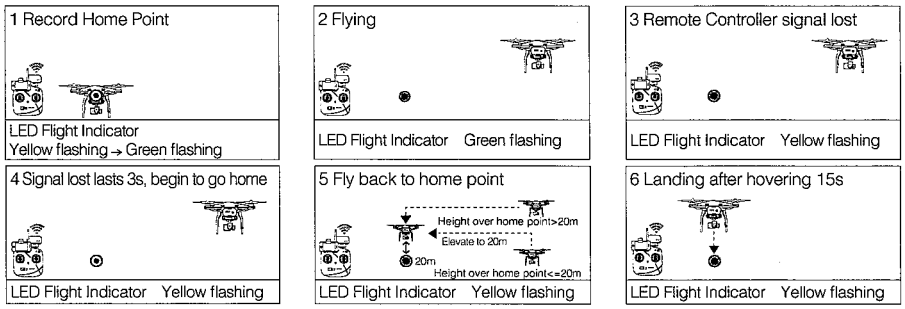


Figure 52

- To ensure the aircraft successful return to home after Failsafe activation, aim to only fly in Ready to Fly mode.
- The Phantom will automatically descend during the Failsafe process if there are less than 6 GPS satellites detected for more than 20 seconds.
- When the aircraft is landing automatically, users can control the aircraft's position and altitude if the remote controller signal is recovered.
- Aircraft cannot navigate around vertical obstacles on its return home course during Failsafe. However, you can set return home altitude value in Phantom Assistant to avoid hitting vertical obstacles through DJI Phantom Assistant.

Quickly flipping the S2 switch of the Remote Controller from top to bottom 5 times or more will reset the current aircraft position as a new home point. Rear LED flight indicators will blink green rapidly when successful.

Failsafe on the DJI VISION App

The DJI VISION App will provide information during Failsafe.

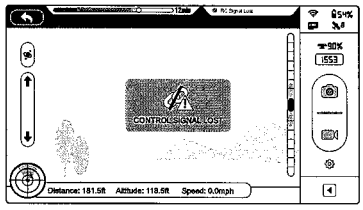


Figure 53

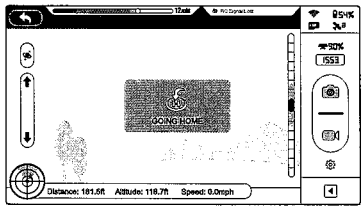


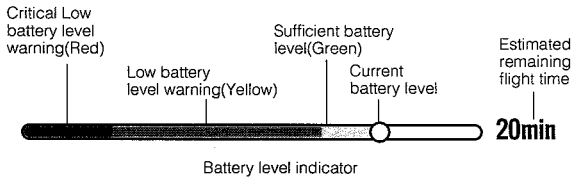
Figure 54

4.3 Regaining Control During Failsafe Procedures

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

5 Low Battery Level Warning Function

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



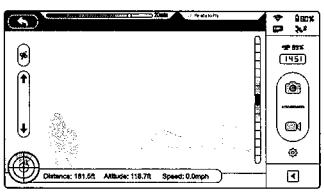
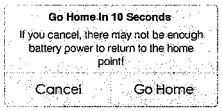


Figure 55

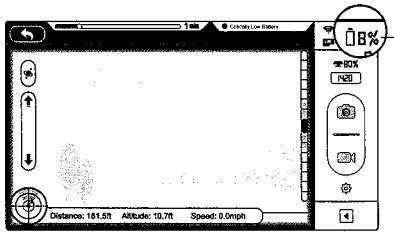
Battery Level Warning	Remark	Rear LED Flight Indicator	DJI VISION App	Flight Instructions
Sufficient battery level	Sufficient battery level	Green LED blinks slowly	No message prompts	Operating normally, no specific action needed
Low battery level warning	The battery power is low. Please land the aircraft.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

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

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

Low Battery Level Warning on the DJI VISION App

Battery level warnings will show on the camera page of the DJI VISION App when the battery level is low.
(1) A red light will flash along the edges of the app screen.
(2) Audible alarm. Make sure sound is turned on and volume is turned up on your mobile device.
(3) The aircraft battery icon will turn red.



The aircraft battery icon will turn red

Figure 56

6 Flight Limits

All unmanned aerial vehicle (UAV) operators should abide by all regulations from such organizations as the ICAO (International Civil Aviation Organization) and their own national airspace regulations. For safety reasons, the flight limits function is enabled by default to help users use this product safely and legally. The flight limits function includes height, distance limits and No Fly Zones.

In Ready to Fly mode, height, distance limits and No Fly Zones work together to manage flight. In Ready to Fly (non-GPS) status, only height limits work and flights cannot go higher than 120m.

Default parameters in Assistant are compliant within the definitions of class G ruled by ICAO. (Refer to Airspace Definition to get more details). As each country has its own rules, make sure to configure these parameters to comply with these rules before flying.

6.1 Max Height & Radius Limits

Max Height & Radius limits flying height and distance. Configuration can be done in the Phantom 2 Vision+ Assistant (Figure 57). Once complete, your Phantom will fly in a restricted cylinder (Figure 58).

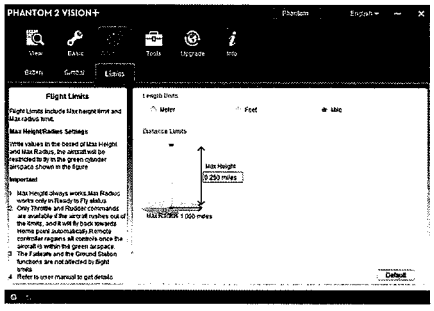


Figure 57

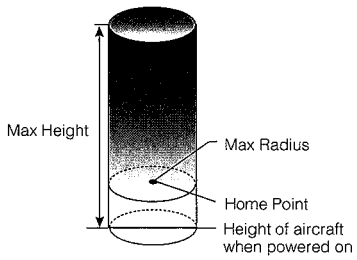


Figure 58

Ready to Fly (G) ····· Green flashing			
	Limits	DJI VISION App	Rear LED flight indicator
Max Height	Flight height must be under the set height.	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.

Ready to Fly(non-GPS) (Y) ····· Yellow flashing			
	Flight Limits	DJI VISION App	Rear LED flight indicator
Max Height	Flight height restricted to 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, but cannot fly it further.
- If the Phantom flies out of the max radius in Ready to Fly (non-GPS) mode, it will fly back within range automatically.

6.2 Flight Restriction of Restricted Areas

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

Category A Safety Zone

(1) The category A "safety zone" is comprised of a small "no-fly zone" and a range of "restricted-altitude zones". Flight is prevented in the "no-fly zone" but can continue with height restrictions in the restricted-altitude zone.
(2) 1.5 miles (2.4 km) around a designated safety zone is a no-fly zone, inside which takeoff is prevented.
(3) 1.5 miles (2.4 km) to 5 miles (8 km) around restricted areas are altitude restricted, with maximum altitude going from 35 feet (10.5 m) at 1.5 miles (2.4 km) to 400 feet (120 m) at 5 miles (8 km).
(4) A "warning zone" has been set around the safety zone. When you fly within 320 feet (100m) of the safety zone, a warning message will appear on the DJI Vision app.

Category B Safety Zone

(1) Category B "safety zone" is comprised of a "no-fly zone" and a "warning zone".
(2) 0.6 miles (1 km) around the safety zone is a designated "no-fly zone".
(3) A "warning zone" has been set around the safety zone. When you fly within 0.6 miles (1Km) of this zone, a warning will appear on the DJI Vision app.

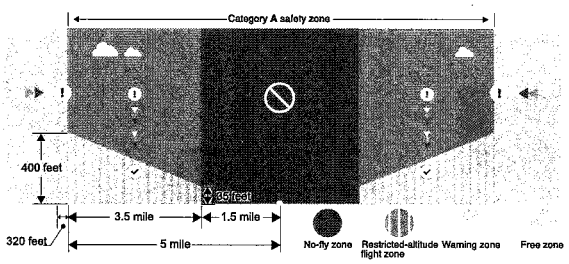


Figure 59:Category A

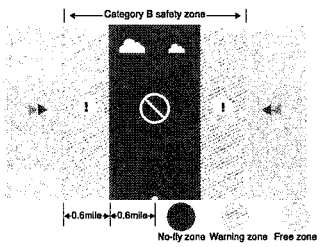


Figure 60: Category B

Ready to Fly (G) ····· Green flashing			
Zone	Restriction	DJI VISION App Notification	Rear LED Flight Indicator
No-fly Zone ●	Motors will not start.	Warning: You are in a No-fly zone. Take off prohibited.	(R) ····· Red flashing
	If the Phantom enters the restricted area in Ready to Fly (non-GPS) mode but Ready to Fly mode activates, the Phantom will automatically descend to land then stop its motors after landing.	Warning: You are in a No-fly zone, automatic landing has begun. (If you are within 1.5 mile radius)	
Restricted-altitude flight zone	If the Phantom enters a restricted area in Ready to Fly (non-GPS) mode and Ready to Fly mode activates, it will descend to a safe altitude and hover 15 feet below the safe altitude.	Warning: You are in a restricted zone. Descending to safe altitude. (If you are between the range of 1.5 mile and 5 mile radius) Warning: You are in a restricted zone. Max flight height restricted to between 10.5m and 120m. Fly Cautiously.	
Warning zone	No flight restriction applies, but there will be warning message.	Warning: You are approaching a restricted zone, Fly Cautiously.	
Free zone	No restrictions.	None.	None.

Semi-automatic descent: All stick commands are available except the throttle stick command during the descent and landing process. Motors will stop automatically after landing. Users will regain control once the motors have stopped. There is no need to toggle the S1 switch.

- When flying in the safety zone, LED flight indicators will blink red (R) ·····quickly and continue for 3 seconds, then switch to indicate current flying status and continue for 5 seconds at which point it will switch back to red blinking.
- For safety reasons, please do not fly close to airports, highways, railway stations, railway lines, city centers and other special areas. Try to ensure the aircraft is visible.

6.3 Conditions of Flight Limits

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

All flights are restricted by height, distance and special areas simultaneously.

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

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

6.4 Disclaimer

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

DJI VISION App Usage

The DJI VISION App controls the Phantom 2 Vision+ camera including capture, recording, settings and pitch angle. It also displays essential flight information including flight parameters and battery level.

1 DJI VISION App Main Menu

After logging in you will see the VISION App home screen. This shows current Wi-Fi connection status and the four main features of the App.

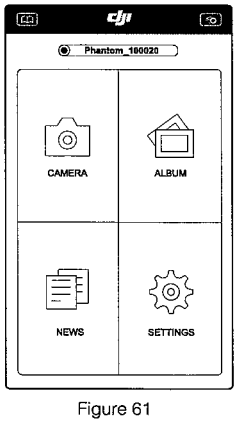


Figure 61

Icons		Description
	Camera	Tap to enter the Camera view screen
	Album	Tap to enter your Album of photos and videos
	News	Tap to read the latest DJI News
	Settings	Tap to change and view app Settings
	Manuals	Tap to view and download manuals
	Checklist	Tap to enter the preflight checklist

⚠
- When using the camera and the SD card album (Page 37), connect your mobile device to the Phantom 2 Vision+ Wi-Fi network.
- Internet access is required for sharing photos, videos and reading DJI news.
- If you receive a phone call during a flight, the live camera preview screen may be interrupted. It's recommended to ignore the call and pay attention to your flight.

2 Camera Page

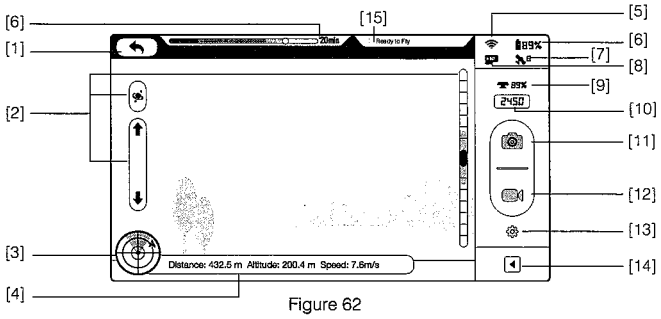


Figure 62

[1] Return [2] Camera Pitch Control [3] Flight Attitude and Radar Function [4] Flight Parameters [5] Wi-Fi Signal Strength [6] Flight Battery Level [7] Aircraft GPS Status [8] Micro-SD Card Status [9] Range Extender Battery Level [10] Remaining Shots [11] Shutter Button [12] Video Recording Button [13] Camera Settings [14] Hide or Show Flight Parameters [15] Rear LED Flight Indicator Status

[1] Return

-Return to the preview page

[2] Camera Pitch Control

-Pitch Control switch is white tap once to highlight it and enter Accelerometer Sensor Mode. Tap again to return to normal.

Normal Mode

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

Gimbal pitch control (Normal Mode)

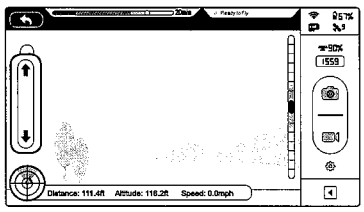


Figure 63

Gimbal pitch movement

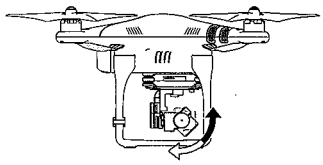


Figure 64

Accelerometer Sensor Mode

The gimbal pitch movement is controlled by moving your mobile device. Pitch forward to pitch camera down and backward to pitch camera up.

Gimbal pitch control (Accelerometer Sensor Mode)

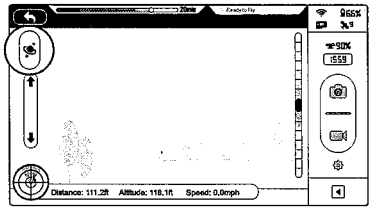


Figure 65

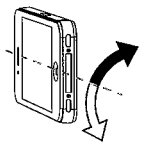


Figure 66

Gimbal pitch movement

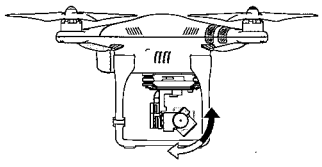


Figure 67

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

[3] Flight Attitude and Radar Function

Figure 68

Flight attitude is indicated by the flight attitude icon.

(1) The red arrow shows which direction the Phantom 2 Vision+ is facing.
(2) Light blue and dark blue areas indicate pitch.
(3) Pitching of the boundary between light blue and dark blue area shows roll angle.
(4) An orange circle around the radar indicates that the dynamic home point is not available. A green circle around the radar indicates that the dynamic home point is available and a new home point has been set.

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

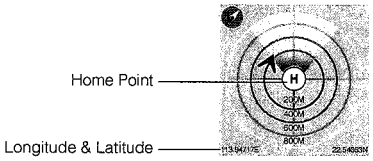


Figure 69

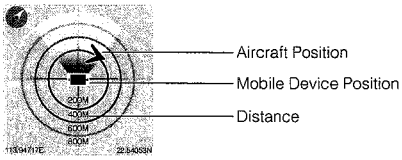
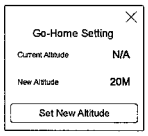


Figure 70

⚠ • By default, the center of the radar indicates the home point recorded by the Phantom 2 Vision+. Tap the center of the radar to switch the center to your mobile device's current location.
• If your mobile device contains a compass, the top portion of the Radar is the direction you are pointing. If not, the radar will be oriented due north.
• Distance units are metric in Figure 69 and Figure 70. Users can switch the unit to imperial in the settings page.

[4] Flight Parameters



Tap to set return home (RTH) altitude.
Distance: Horizontal distance from home point.
Altitude: Vertical distance from home point.
Speed: Horizontal flying speed.

Distance value will show as N/A if the Phantom 2 Vision+ is not in "Ready to Fly" mode.

[5] Wi-Fi Signal Strength

Indicates camera is connected to your mobile device and Wi-Fi is working normally.
The connection between the camera and mobile device may fail if Wi-Fi signal strength is low. Refer to Phantom 2 Vision+ CONNECTION BROKEN for more information.

[6] Flight Battery Level

Show current flight battery level. When battery level is low and the battery icon turns red it is recommended to fly the aircraft back and land it as soon as possible. Please refer to Low Battery Level Warning Function (Page 28) to get more details.

[7] Aircraft GPS Status

GPS status icon display the number of satellites found by the aircraft. The icon is highlighted when more than 6 satellites are found, allow the Phantom to fly in "Ready to Fly" mode.

[8] Micro-SD Card Status

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

[9] Range Extender Battery Level

Shows current battery level of the Range Extender. Refer to Checking the Battery Level (Page 21) for more details.

[10] Remaining Shots

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

(1) Micro-SD card is not inserted.
(2) Micro-SD card is full.

(3) Micro-SD card is damaged.
(4) Connection between the DJI VISION App and camera is broken.

[11] Shutter Button

Tap to take photos.
Single capture: press once for a single capture.
Continuous capture: press once for 3 or 5 captures.
Timed capture: press once to begin a timed capture, press again to stop.

- Shutter button is disabled during video recording.
- Capture modes can be reconfigured in camera settings; refer to the Camera Settings (Page35).

[12] Video Recording Button

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

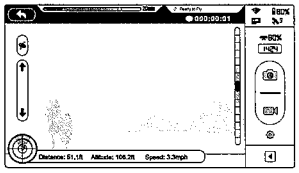


Figure 71

[13] Camera Settings

Tap to open the camera settings menu, refer to Camera Settings (Page 35).

[14] Hide or Show Flight Parameters

Tap to hide flight parameters. Tap again to show.

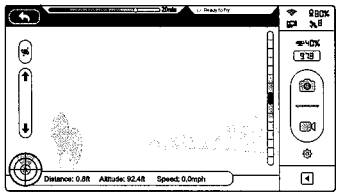


Figure 72

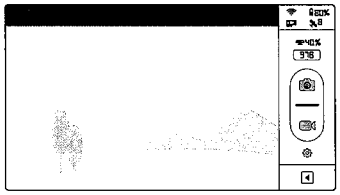


Figure 73

[15] Rear LED Flight Indicator Status

Displays the aircraft's current flight status. Tap for details.

3 Camera Settings

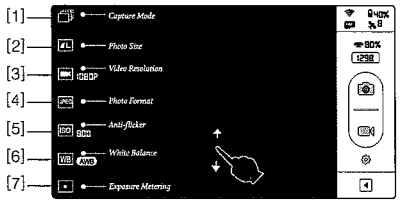


Figure 74

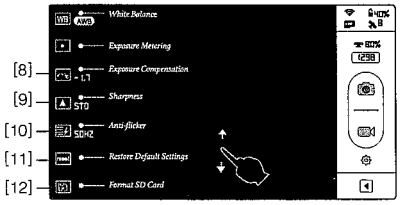


Figure 75

[1] Capture Mode [2] Photo Size [3] Video Resolution [4] Photo Format [5]ISO [6] White Balance [7] Exposure Metering [8] Exposure Compensation [9] Sharpness [10] Anti-flicker [11] Restore Defaults [12] Format Micro-SD Card

[1] Capture Mode

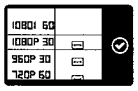
	Single capture.
	3 captures.
	5 captures.
	Configurable timed capture: a) Interval between shots (3~60 s) b) Number of shots (2~254, or number of picture is subject to the capacity of the memory card.)

Capture Button will change according to the mode selected

[2] Photo Size

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

[3] Video Resolution



1920x1080 60i,	16 : 9
1920x1080 30p,	16 : 9
1920x1080 25p,	16 : 9
1280x960 30p,	4 : 3
1280x960 25p,	4 : 3
1280x720 60p,	16 : 9
1280x720 30p,	16 : 9
640x480 30p,	4 : 3(VGA)

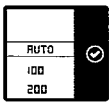
Three Field of View (FOV) options are supported when shooting in 1920x1080 60i, 1920x1080 30p and 1920x1080 25p: Medium (110°) and Narrow (85°).

[4] Photo Format

	JPEG
	RAW The Phantom 2 Vision+ camera shoots in JPEG and RAW file formats simultaneously when this option is selected. See the following table for detailed specifications. JPEG photo size: 4384×3288, 4384×2922, 4384×2466 RAWphoto size: 4384×3288, 4384×2920, 4384×2464

RAW can be edited using the most recent versions of Adobe Camera Raw for Photoshop and Adobe Lightroom.

[5] Selectable ISO



AUTO
100
200
400

[6] White Balance

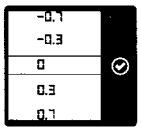
AWB	AWB (auto white balance)
	Sunny
	Cloudy
	Incandescent lamp

[7] Exposure Metering

	Center
	Average
	Spot

- Center: The meter concentrates most on the center of the scene.
- Average: Averages out the light levels for the entire image. This mode is used when the scene has no significant light difference.
- Spot: Measures a small area in the center of the scene. This mode is used in a high contrast scene where the subject must be accurately exposed.

[8] Exposure Compensation



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

[9] Sharpness

STD	Standard
HARD	Hard
SOFT	Soft

[10] Anti-flicker

AUTO	Anti-flicker
50HZ	50Hz
60HZ	60Hz

[11] Restore Defaults

Restores all default camera settings. Flight battery restart is needed to allow restoration to take effect.

[12] Format Micro-SD Card

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

4 Album Page

The DJI VISION App has an SD Card album and a Mobile Device Photo Album. Images and videos on the SD Card album can be synchronized to the Mobile Device Photo Album.

In the DJI VISION App, tap SD to enter into the SD Card album and tap to enter into Mobile Device Photo Album.

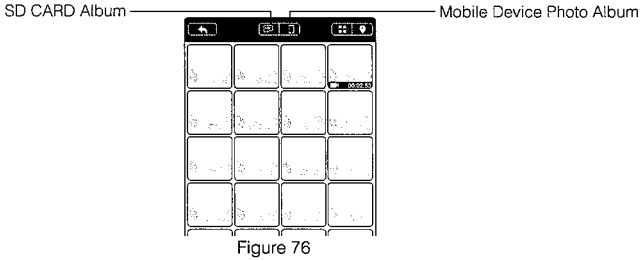


Figure 76

⚠ SD Card album is accessible when the mobile device is connected to Phantom 2 Vision+ Wi-Fi.

4.1 SD Card Album

Pictures stored in the camera are presented using Thumbnails. Tap the corresponding thumbnail to view the picture.

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

[2] All photos and videos that have been synced to your mobile device are marked with .

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

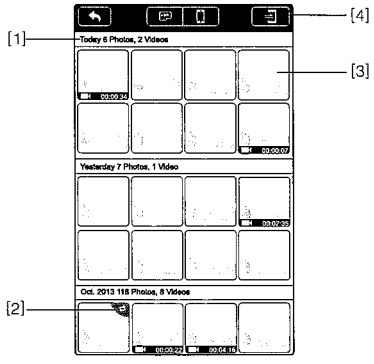


Figure 77

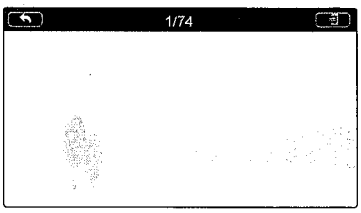


Figure 78

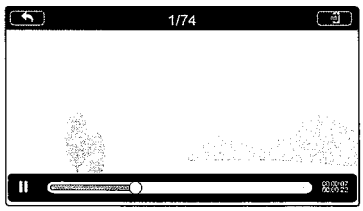


Figure 79

[4] Tap the button to enter multiple synchronization mode (as shown in the following diagram). Tap thumbnails to select photos or videos to synchronize to your mobile device (selected thumbnails are marked with a tick). Select one or more groups to be synchronized by checking the box before the group, then tap to start synchronizing. During the synchronization process, users can tap to cancel synchronization. Photos and videos that have been synchronized to the mobile device will remain.

⚠ Some mobile devices cannot support the synchronization of 1080i60 video files.

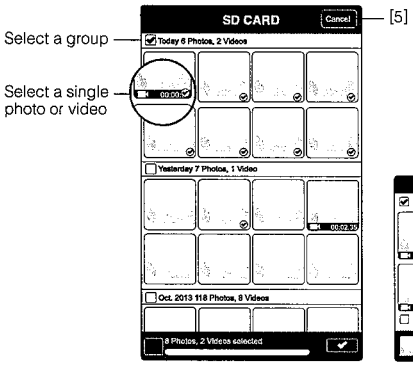


Figure 80

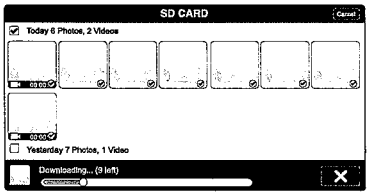


Figure 81

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

Connect camera data port to a PC via a Micro-USB cable to copy photos or videos on the SD card album from the Micro-SD card to the PC conveniently.

4.2 Mobile Device Photo Album

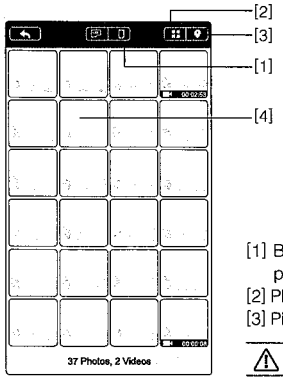


Figure 82

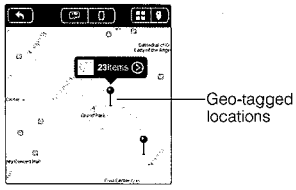


Figure 83

[1] Browse all synchronized photos and videos in the album. Tap to view selected photos or videos.
[2] Photos and videos are displayed using thumbnails and sorted by capture time.
[3] Pictures and videos are sorted by captured/recorded geo-tagged locations.

⚠ Internet access is required for map downloads.

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

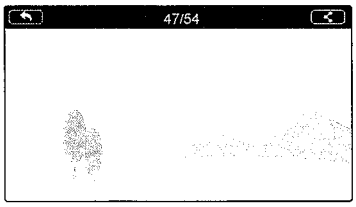


Figure 84

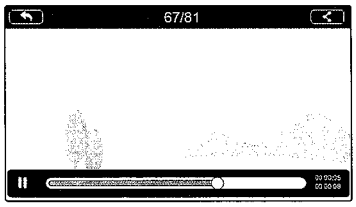


Figure 85

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

⚠ Access to the Internet is required for photo and video sharing.

5 News Page

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

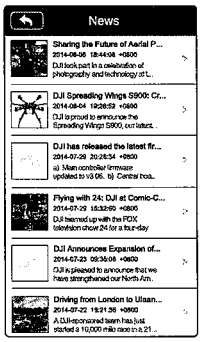


Figure 86

Figure 87

6 Settings Page

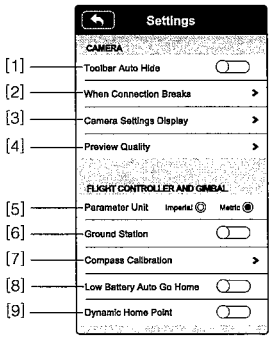


Figure 88

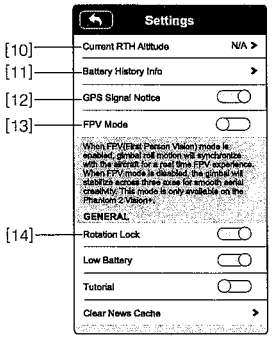


Figure 89

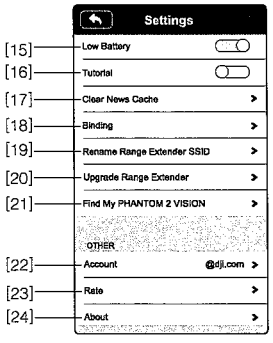


Figure 90

[1] Toolbar Auto Hide

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

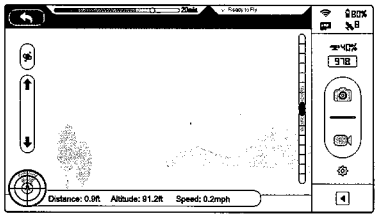


Figure 91: Toolbar Auto Hide Disabled

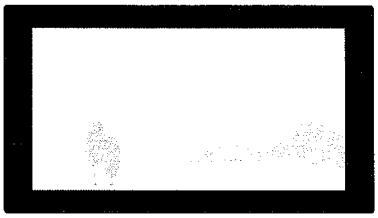


Figure 92: Toolbar Auto Hide Enabled

[2] When Connection Breaks

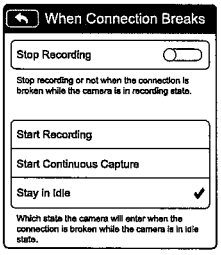


Figure 93

Stop Recording:
Enabled: Stop recording if the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.
Disabled: Keeps recording if the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.

Select the state the camera will enter in the event of a Wi-Fi Connection break between the mobile device and the camera. Use this function to ensure your recording is uninterrupted during the flight.

[3] Camera Settings Display

iOS users will see an enabled item display in the camera settings toolbar and disabled items will be hidden. This feature is not available on Android.

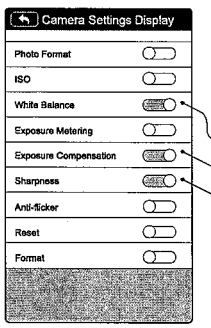


Figure 94

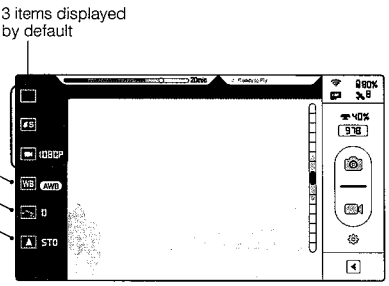


Figure 95

[4] Preview Quality

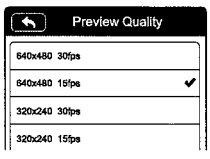


Figure 96

High: 640 x 480@30fps
Medium: 640 x 480@15fps
Medium: 320 x 240@30fps
Low: 320 x 240@15fps (Recommended when there is a lot of interference.)

[5] Parameter Unit

Select imperial or metric units of measurement.

[6] Ground Station

Slide to the right to enable ground station feature.

[7] Compass Calibration

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

[8] Low Battery Auto Go Home

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

[9] Dynamic Home Point

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

[10] Current RTH Altitude

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

[11] Battery History Info

Show the battery history warning records.

[12] GPS Signal Notice

If enabled, the DJI VISION App will display a pop-up tip when attempting to takeoff without a sufficient GPS signal.

[13] FPV Mode

Switched on, the gimbal will work in FPV mode. Switched off, the gimbal will work in Stabilize mode.

[14] Rotation Lock

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

[15] Low Battery Warning

If enabled, an alarm will sound when the battery level is too low.

> ⚠ We recommended adjusting the mobile device volume to the highest level.

[16] Tutorial

Hints and Tips

[17] Clear News Cache

Tap to flush news cache.

[18] Binding

In the event that camera and Range Extender binding is lost or an item has been repaired or replaced, binding must be performed using the DJI VISION App. Refer to Binding the Phantom 2 Vision+ and Range Extender (Page 21) for details.

[19] Rename Range Extender SSID

Tap to rename the SSID of the Range Extender. Refer to Rename Range Extender SSID (Page 21) for details.

[20] Upgrade Range Extender

When upgraded, it is possible to use a mobile device's data network to access internet functions while connected to the Phantom.
This feature is not available on Android.

[21] Find My PHANTOM 2 VISION

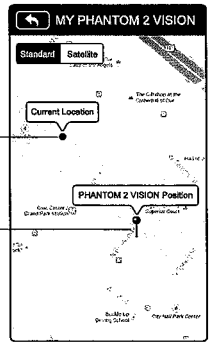


Figure 97

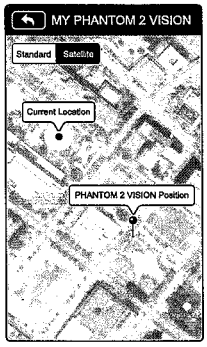


Figure 98

[22] Account

Tap to see user account information.

[23] Rate

Tap to rate the DJI VISION App. Internet access required.

> Android App does not include rating.

[24] About

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

7 Ground Station

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

⚠ Upgrade Phantom firmware to the latest version to enable ground station feature. Refer to "Firmware Upgrade of the Phantom 2 Vision+" (P46) for more information about how to upgrade the firmware.

7.1 Ground Station GUI

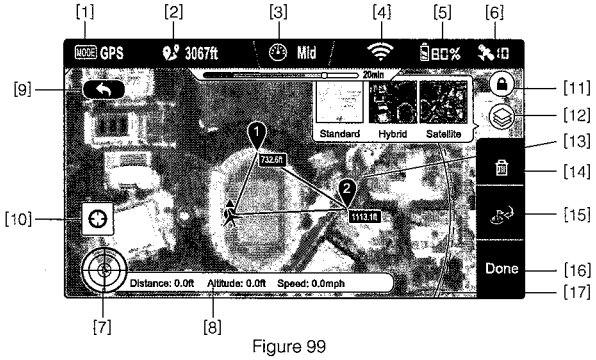


Figure 99

[1] MODE
Modes include
Hover: Hovering
Waypoint: Mission in progress
GoHome: Returning to home point
Take off: Taking off
Landing: Landing
GPS: GPS flight
Atti.: Atti. flight
Manual: Manual flight

[2] Approximated Flight Mission Distance
Planned mission distance. To achieve optimum battery performance, max mission distance is 5km(3miles).

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

[4] Wi-Fi Signal Strength
Wi-Fi signal strength display. Refer to [5] in "Using the DJI Vision App" for details.

[5] Battery Level
Battery level display. Refer to [6] in "Using the DJI Vision app" for details.

[6] GPS
Number of satellites connected. Refer to [7] in "Using the DJI Vision app" for details.

[7] Flight Attitude and Radar
Attitude and Radar display. Refer to [3] in "Using the DJI Vision app" for details.

[8] Flight Parameters
Flight information display. Refer to [4] in "Using the DJI Vision app" for details.

[9] Back
Return to camera GUI.

[10] Home Point Locator
Locate your Home point.

[11] Orientation Lock
Unlock to sync map orientation with aircraft movement.

[12] Map View
Select map view from standard, hybrid or satellite.

[13] Waypoint
Tap each waypoint to set altitude.

[14] Delete
Delete current waypoint.

[15] Go Home
Abort mission, return home and land.

[16] Done
Hit "Done" then tap "GO" to begin mission.

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

7.2 Using Ground Station

Step 1 Launching Ground Station:

Enable ground station in the Settings section of the DJI Vision app. A disclaimer for Ground Station will appear. Read this thoroughly before using Ground Station.

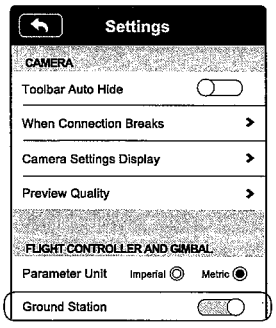


Figure 100

Ensure your mobile device has access to the Internet. Due to the map data required, Wi-Fi connection is recommended. Internet access is required to cache the ground station map, if Wi-Fi is unavailable, mobile data service is required. Open the DJI Vision app camera GUI and swipe left to launch ground station(see Figure 101). DJI Vision app cannot connect to your aircraft while it is accessing the Internet. Hence, you may prompt with the warning message such as "Connection to Phantom Failed". This message will not appear when your aircraft is re-connected to DJI Vision app. Map data of your current location will load. You can then drag the map to cache nearby areas for future use(see Figure 102).

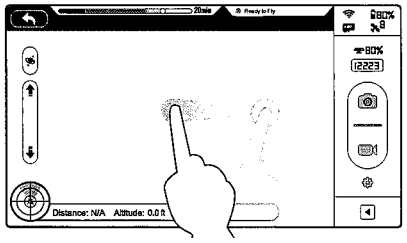


Figure 101

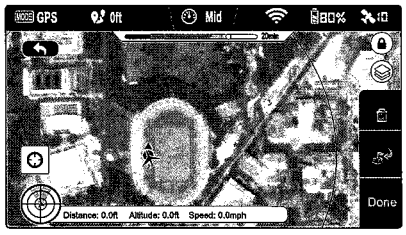


Figure 102

Step 2 Setting a Waypoint:

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

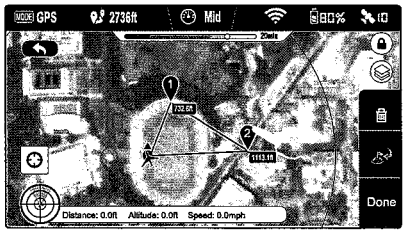


Figure 103

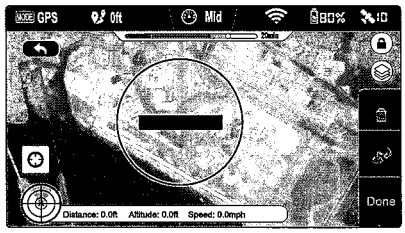


Figure 104

⚠ • A circle on the map, as shown in Figure 104, indicates a restricted, No Waypoint area. Waypoints cannot be placed in this area. For more information, refer to "6.2 Flight Restriction of Restricted Areas (P30)".
• To achieve the optimal video transmission quality, the aircraft is set to operate within a 500m-radius area from Home point.

Tap on a waypoint to open a waypoint properties window. Slide the white dot right to adjust waypoint altitude. The default altitude is set to 98 feet (30 m) and can be adjusted from 0 to 650 feet (200 m). Tap "OK" to save waypoint settings. To delete current waypoint, tap 🗑. Modify longitude and latitude value using the input box.

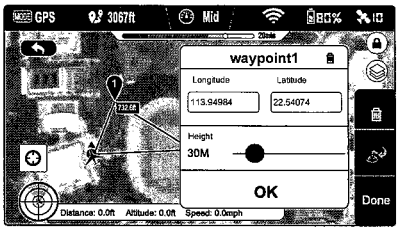


Figure 105

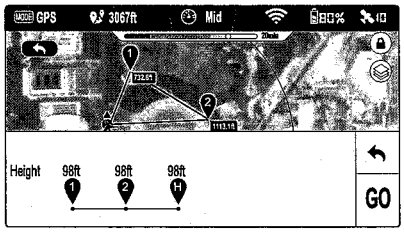


Figure 106

Step 3 Preview a Mission:
Tap "Done" to preview the mission when all waypoints are set. A prompt similar to the one below will appear.
This prompt lists all waypoints and their altitudes. The aircraft will fly to each waypoint listed. If there is a difference in altitude between waypoints, the aircraft will adjust its altitude as it flies between points. When ready, tap "GO" to begin mission.

⚠ Aircraft reacts differently to the "GO" command:
• If aircraft is on the ground, the aircraft takes off automatically and ascend 16 feet (5m) then fly to the first waypoint.
• If aircraft is in the air, the aircraft flies to the first waypoint.

Step 4 Executing Flight Mission
The aircraft flies to each waypoint in numerical order. As it flies, swipe back into the DJI Vision app camera GUI to control camera tilt and capture photos or video. Tap ⏸ to pause the mission during the flight, and aircraft will then start hovering. Tap ▶ to resume mission. If you wish to regain control of the aircraft, toggle the S1 switch on remote controller from (Position-1) to either (Position-2) or (Position-3) to discontinue the current mission.

Step 5 Landing
When all waypoints have been visited, the aircraft will return to its Home point and hover. Regain control of the aircraft and land it manually. You may also tap button to initiate "Go Home" procedure. Aircraft will abort current mission, return to Home point and auto land. When the aircraft is landing automatically, users can control the aircraft's position and altitude. Users can start the motors to take off immediately after the motors have stopped following auto landing.

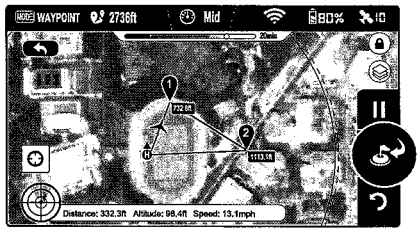


Figure 107

PC / MAC Assistant

For better use of the Phantom 2 Vision+, Phantom 2 Vision+ Assistant and Phantom RC Assistant are required. Both run on Windows or Mac OS X operating systems.

1 Installing Driver and Phantom 2 Vision+ Assistant

1.1 Installing and Running on Windows

(1) Download the driver installer and Assistant installer (.EXE) from the Phantom 2 Vision+ download page.
(2) Connect the Phantom 2 Vision+ to a PC using a Micro-USB cable.
(3) Run the driver installer and follow the prompts to finish installation.
(4) Run the Assistant installer and follow the prompts to finish installation.
(5) Double click the Phantom 2 Vision+ icon on your desktop to launch Assistant.

⚠ Supports Windows XP, Windows 7 and Windows 8 (32 or 64 bit).

1.2 Installing and Running on Mac OS X

(1) Download the Assistant installer (.DMG) format from the Phantom 2 Vision+ download page.
(2) Run the installer and follow the prompts to finish installation.

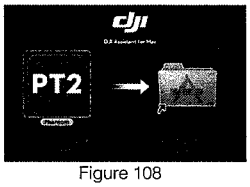


Figure 108

(3) When launching for the first time, if using Launchpad to run the Phantom 2 Vision+ Assistant, Launchpad will not allow access because Assistant has not been reviewed by the Mac App Store.

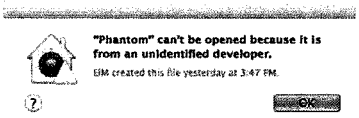


Figure 109

(4) Locate the Phantom 2 Vision+ icon in Finder, press Control then click the icon (or right-click the icon using a mouse). Choose Open from the shortcut menu, then click Open in the prompt dialog box to launch.
(5) After the first successful launch, double click the Phantom 2 Vision+ icon as normal to launch using Finder or Launchpad.

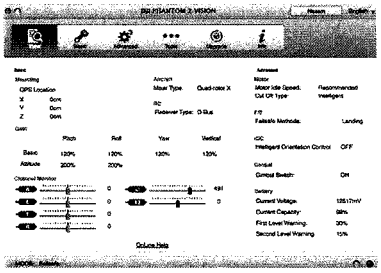


Figure 110

⚠ DMG installer supports Mac OS X 10.9 or above.

Phantom 2 Vision+ Assistant on Mac OS X and Windows are the same. Assistant pages shown in this manual are from the Windows version.

2 Using Assistant

The Phantom 2 Vision+ Assistant is used to configure the flight control system and upgrade firmware. The Phantom RC Assistant is used to configure the Remote Controller and upgrade its firmware.

2.1 Using the Phantom 2 Vision+ Assistant

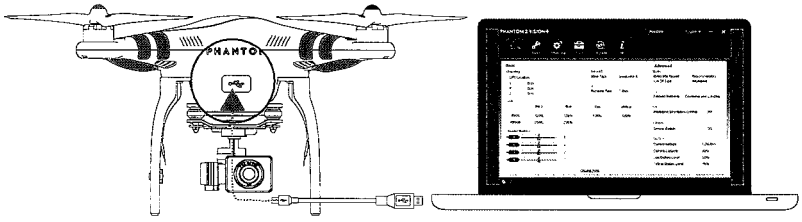


Figure 111

(1) Power on the PC and the Phantom 2 Vision+. Connect the Phantom 2 Vision+ to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.

(2) Run Phantom 2 Vision+ Assistant and wait for the Phantom 2 Vision+ to connect. Watch the indicators Ⓡ-Ⓑ on the bottom of the screen. When connected successfully, the Computer Connection status is Ⓖ and Data Exchange Indicator blinks Ⓑ .

(3) Choose [Basic] or [Advanced] configuration pages.

(4) View and check the current configuration in the [View] page.

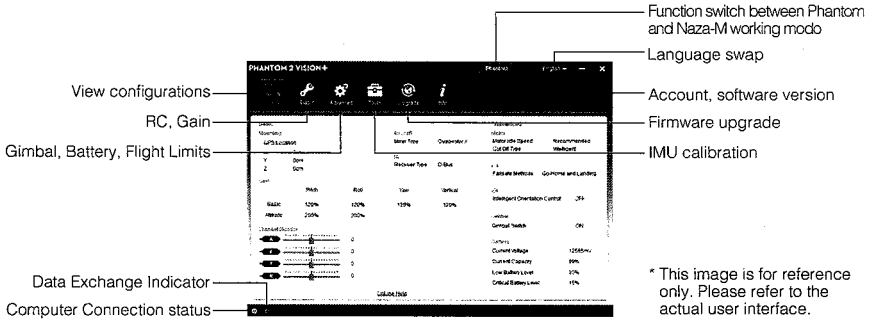


Figure 112

⚠ • Do not enable Naza-M mode before finishing "Advanced Flight Maneuvers" in the "Phantom Pilot Training Guide".

• Enable Phantom mode by tapping the same button if Naza-M mode is enabled. Once changed to Phantom working mode, all parameters will return to factory settings.

2.2 Firmware Upgrade of the Phantom 2 Vision+

(1) Click [Upgrade] icon to check the current firmware version and whether the installed firmware is the latest version. If not, click links to upgrade.

(2) Wait until the Assistant shows "finished". Click OK and power cycle the Phantom 2 Vision+ after 5 seconds. Once complete, firmware is up to date.

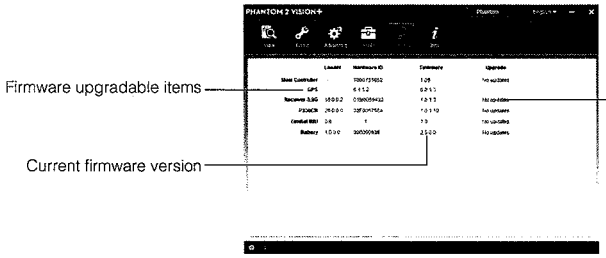


Figure 113

- An internet connection is required to upgrade the Phantom 2 Vision+ firmware.
- DO NOT power off until the upgrade is finished.
- If the firmware upgrade fails, the Flight Controller will enter a waiting for firmware upgrade status automatically. If this happens, repeat the above procedures.

Firmware upgradable items: (1)Flight Controller (2)GPS (3)5.8G Receiver (4) Main Board (P330CB) (5)Battery (6) Gimbal IMU

2.3 Using the Phantom RC Assistant

Use the Phantom 2 Vision+ Assistant to install PHANTOM RC Assistant on your Windows PC or Mac, and then follow the below steps to configure the Remote Controller.

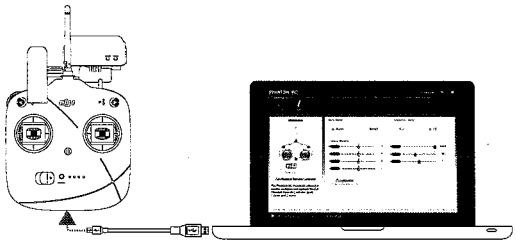


Figure 114

(1) Turn off the Remote Controller and find its Micro-USB slot.
(2) Power on PC and Remote Controller then connect Remote Controller to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.
(3) Run the PHANTOM RC Assistant and wait for the Remote Controller to connect to Assistant. Watch the indicators Ⓡ-Ⓑ on the bottom left of the screen. When connected successfully, the Computer Connection status is Ⓖ and Data Exchange Indicator blinks Ⓑ.
(4) Finish configuration in the [Main] page.
(5) Finish upgrade in the [Info] page if necessary.

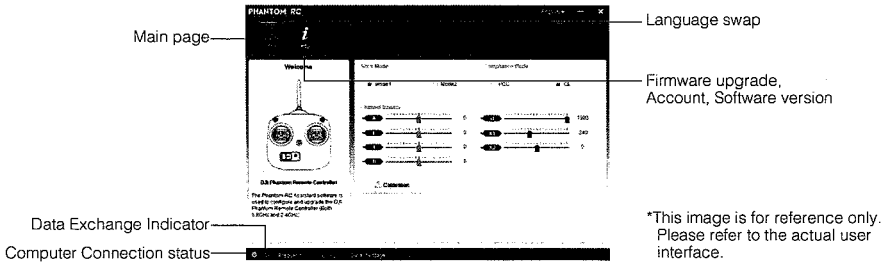


Figure 115

Appendix

1 Rear LED Flight Indicator Status

Rear LED Flight Indicators	Normal status
Ⓡ-Ⓖ-Ⓨ ····· (Red, Green, Yellow flashes in turn)	Power On Self-Test
Ⓨ-Ⓖ ····· (Green, Yellow flashes in turn)	Warming Up
Ⓖ ····· (Slow Green flashes)	Ready to Fly
Ⓨ ····· (Slow Yellow flashes)	Ready to Fly (non-GPS)
Rear LED Flight Indicators	**Abnormal status**
Ⓨ ····· (Quick Yellow flashes)	Remote Controller Signal Lost
Ⓡ ····· (Slow Red flashes)	Low Battery Level Warning
Ⓡ ····· (Quick Red flashes)	Critical Low Battery Level Warning
Ⓡ ····· (Three Red flashes off and on)	Not Stationary or Sensor Bias is too big
Ⓡ —— (Solid red)	Error*
Ⓡ-Ⓨ ····· (Red, Yellow flashes in turn)	Compass Needs Calibration

*You can learn more about error by connecting the Phantom 2 Vision+ to the Assistant.

2 Specifications

Aircraft	
Supported Battery	DJI 5200mAh Li-Po Battery
Weight (Battery & Propellers included) Recommend payload Maximum payload	1242g ≤1300g 1350g
Hovering Accuracy (Ready to Fly)	Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity	200°/s
Max Tiltable Angle	35°
Max Ascent / Descent Speed	Ascent: 6m/s; Descent: 2m/s
Max Flight Speed	15m/s (Not Recommended)
Motor Diagonal Length	350mm
3-axial stabilized Gimbal	
Working Current	Static : 750mA; Dynamic : 900mA
Control Accuracy	±0.03°
Controllable Range	Pitch : -90° - 0°
Maximum Angular Speed	Pitch : 90°/s
Camera	
Operating Environment Temperature	0°C - 40°C
Sensor Size	1/2.3"
Effective Pixels	14 Megapixels
Resolution	4384x3288
HD Recording	1080p30 /1080i60
Recording FOV	110° / 85°

Remote Controller	
Operating Frequency	5.728 GHz - 5.85 GHz
Communication Distance (open area)	CE Compliance: 400m; FCC Compliance: 800m
Receiver Sensitivity (1%PER)	-93dBm
Transmitting Power (EIRP)	CE Compliance: 25mW; FCC Compliance: 100mW
Working Current/Voltage	120mA@3.7V
Battery	2000mAh rechargeable LiPo battery
Range Extender	
Operating Frequency	2412MHz - 2462MHz
Communication Distance (open area)	500m - 700m
Transmitting Power	20dBm
Power Consumption	2W

3 Troubleshooting (FAQ)

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

If the Remote Controller stick(s) mid-point margin of error is too big, the motors will fail to start when you execute the CSC and the Phantom will not take off. The below are some possible fixes for this.

(1) One of the Remote Controller's stick positions (except the throttle stick) is not centered when powering on the Phantom 2 Vision+.
Solution: Place all Remote Controller sticks at their mid-point positions and then power cycle the Phantom 2 Vision+ to re-record the mid-point.

(2) The Remote Controller sticks have been trimmed, leading to a deviation in the mid-point position.
Solution: Use Assistant to perform a Remote Controller calibration.
a) Connect to Assistant, tap Basic -> RC -> Command Sticks Calibration and push all Remote Controller sticks through their complete travel range to see if any stick cannot reach its outermost position.
b) Power cycle the Phantom 2 Vision+. Power cycling is required.
c) Re-attempt Remote Controller calibration in Assistant.

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

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

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

3.3 Failure to acquire the SSID.

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

3.4 What to do if Phantom 2 Vision+ is out of sight and the Wi-Fi connections is lost?

Solution: Turn off the Remote Controller to trigger the Failsafe mode and the aircraft will start to fly back, descend, and land at the Home point. Please make sure there are no obstacles between the Phantom and the home point and that you are familiar with the procedure for regaining control.

3.5 Wi-Fi connection fails all the time.

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

3.6 Files fail to synchronize.

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

3.7 iOS Albums fail to synchronize.

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

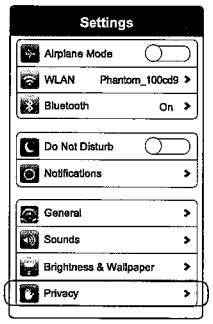


Figure 116

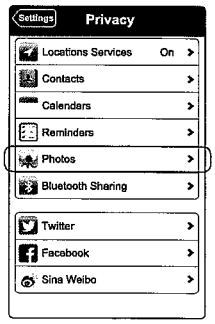


Figure 117

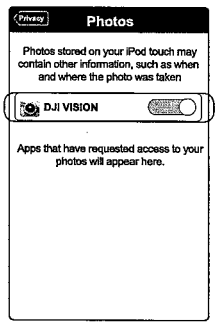


Figure 118

3.8 Failure to share.

Solution: Make sure your mobile device has access to the Internet.

3.9 Some Android devices have a problem connecting to the Phantom 2 Vision+ Wi-Fi Extender.

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

3.10 App tips for mobile devices.

Solution: If using the App on multiple mobile devices turn off the App on the first mobile device then turn it on the second one to ensure normal functions on the second mobile device.

3.11 How to land the aircraft more smoothly?

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

3.12 Why is the discharge time of a battery not zero when unused?

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

3.13 Do I need extra hardware to utilize ground station?

Solution: No extra hardware is required.

3.14 Does ground station support caching map data offline?

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

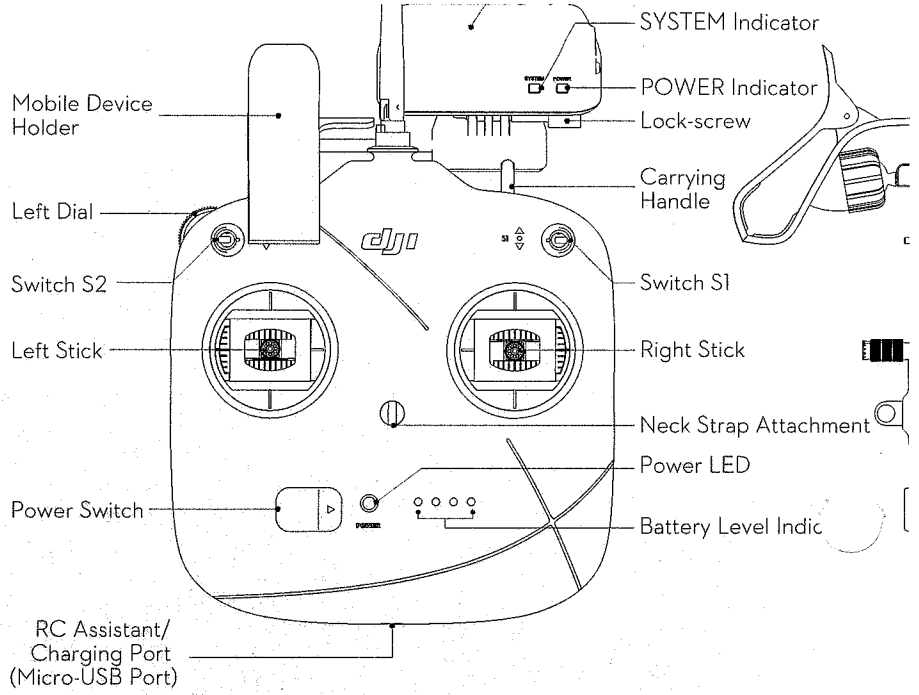
3.15 What if I accidently exit DJI Vision App in ground station mode?

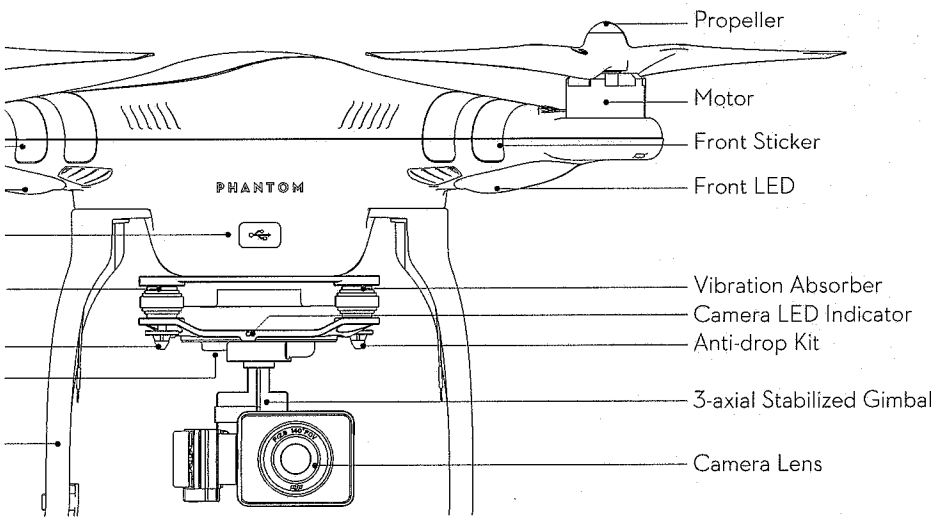
If DJI Vision App is closed when aircraft is executing flight mission, aircraft continues with the remaining flight mission.
If DJI Vision App is closed and failed to re-connect with aircraft within 1 minute, aircraft returns home point automatically.

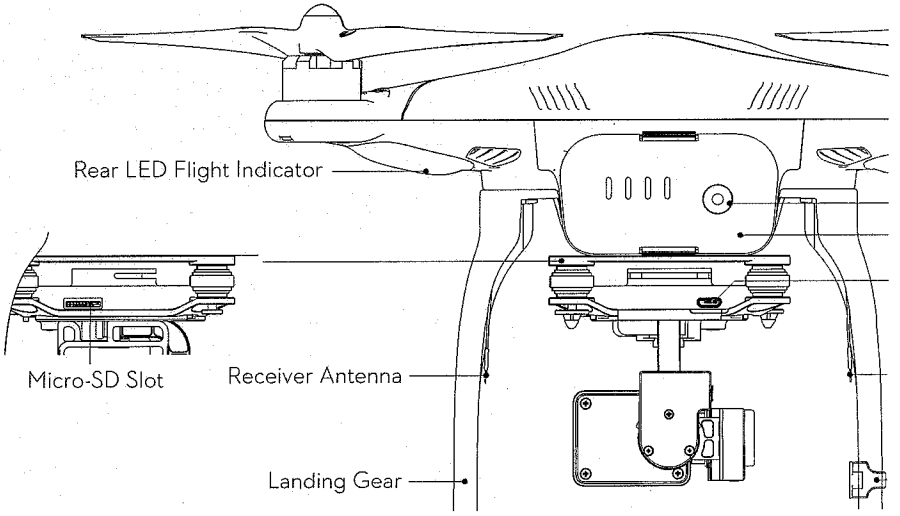
The content is subject to change.

Download the latest version from

http://www.dji.com/product/phantom-2-vision-plus


SYSTEM Indicator
POWER Indicator
Lock-screw
Carrying Handle
Mobile Device Holder
Left Dial
Switch S2
Switch S1
Left Stick
Right Stick
Neck Strap Attachment
Power LED
Power Switch
Battery Level Indic
RC Assistant/ Charging Port (Micro-USB Port)


Propeller
Motor
Front Sticker
Front LED
PHANTOM
Vibration Absorber
Camera LED Indicator
Anti-drop Kit
3-axial Stabilized Gimbal
Camera Lens


Rear LED Flight Indicator
Micro-SD Slot
Receiver Antenna
Landing Gear

lus/training

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Tutorials

tender and Remote Control are fully charged.**

d the disclaimer and manuals thoroughly before

hantom 2 Vision+. It is compatible with iOS and

er manual for charging.

Flight Battery

press again and hold
Battery.

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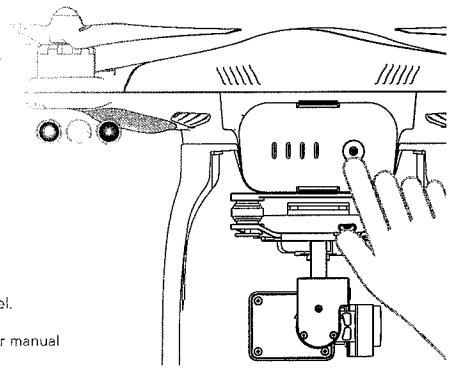
lost.
warning.



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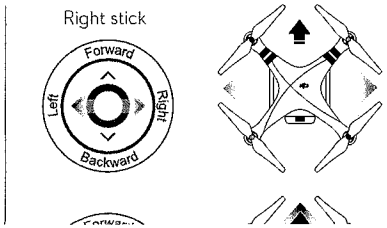
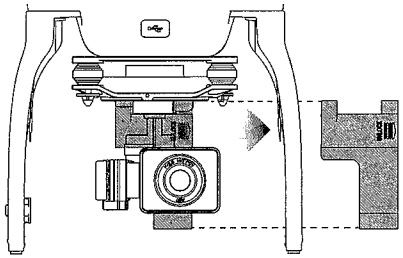
Nose pointing direction

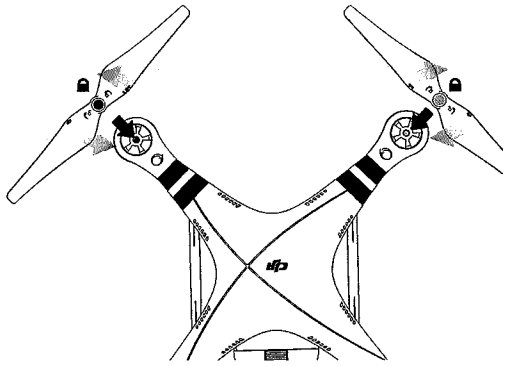
le 2 (left hand controls throttle).



2 Preparing Phantom 2 Vision +

- Remove the gimbal clamp, the lens cap and the four warning cards from motors.
- Screw the propellers, clockwise for grey nuts and anti-clockwise for black nuts, onto the four motors. Be sure to match the black propeller nuts with the black dot motors.
- Make sure your Smart Flight Battery and Micro-SD card are inserted correctly.

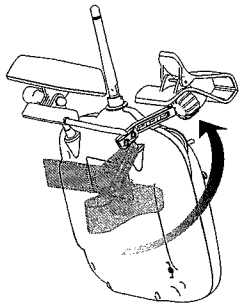




⚠ Important: Remove gimbal clamp before powering on.

3 Preparing Remote C

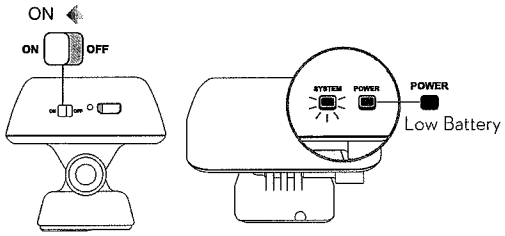
- Twist the Mobile Device Holder to face outwe
- Be sure S1 and S2 are switched to the upper right to power on the Remote Control. The functioning. The Battery Level Indicators displ



⚠ Important: A red blinking and a continuous beep. ...m th
Recharge the Battery when there is only one LE

5 Powering on Range Extender/Linking Camera

- Toggle power switch to ON position. SYSTEM Indicator will blink green to show normal operation.
- Enable Wi-Fi on your mobile device then select Phantom_XXXXXX from Wi-Fi network list.
- Tap **CAMERA** icon in the DJI VISION App for a live camera view to ensure the camera is linked, then clip your mobile device into the Mobile Device Holder.



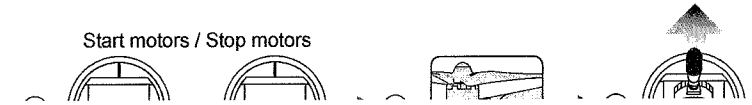
⚠ Important:
1. If the POWER indicator is red, this means battery level is low. Charge your Range Extender by Micro-USB cable.
2. Only if both Range Extender and Smart Flight Battery are powered on, you will be able to link the camera.

6 Calibrating Compass

- Always calibrate compass before your flight.
- Step1 :
  To enter calibration mode, flip S1 switch rapidly fr
  or until Rear LED Flight Indicators turn solid yello
- Step 2:
  Hold Phantom horizontally then rotate 360°around the center axis until Rear LED Flight Indicators go green.
- Step3:
  Hold aircraft vertically with nose pointing to the ground, rotate 360° around the center axis until Rear LED Flight Indicators resume normal blinking patterns.
- If Rear LED Flight Indicators blink red ... yellow, calibration has failed. Re-calibrate by repeating Step 1-3 until normal blinking begins.

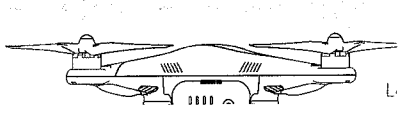
8 Taking off (Outdoors)

- Place the Phantom 2 Vision+ on flat ground in an open space with Rear LED Flight Indicators facing you.
- Power on the Remote Control, the Range Extender and the Smart Flight Battery mounted in Phantom 2 Vision+. Make sure that the DJI VISION App is working properly.
- Start motors by pulling both control sticks to the bottom corners. Release sticks once motors start.
- Wait until Rear LED Flight Indicators go from a slow yellow blinking to a slow green, indicating GPS locked.
- Slowly push the left (throttle) stick up to take off.



9 Landing (Outdoors)

- Pull down the throttle stick to descend. The sti descend steadily.
- When landing on the ground, pull both sticks to
- Press the circular power button once, then press the Smart Flight Battery. Turn off the Remote Cc



PHANTOM PILOT TRAINING GUIDE

Earning Your Stripes V1.1

Learn More: www.dji.com

⚠ CAUTION

AGES **18+**

⚠ WARNING!
Rotating parts may cause injury

This product is not suitable for people under the age of 18. Please carefully read the "Quick Start Guide", "User Manual", "Disclaimer", and fully watch the tutorial videos before using the PHANTOM. Users should make every effort to fly regularly in order to improve their flight skills as an advanced level pilot (★★★). Please fly safely and responsibly.

Please follow these guidelines prior to flying your Phantom:

❶ Always turn on the Remote Controller prior to turning on the Phantom.

❷ Toggle S1, S2 to the top.

❸ Be sure there are no distractions when you're flying.

❹ When starting your training, be sure you are in a very large open area. Be aware of your surroundings. Always fly in areas void of obstacles and away from traffic and people.

❺ Before actually taking off, be sure you have calibrated the compass and you have full GPS satellite reception (Slow Continuous Green Flashing).

❻ Never fly higher than 400 feet.

❼ During training, stay behind your imaginary barrier and never fly behind yourself.

❽ When in doubt, gently pull down on the throttle stick and land.

❾ DO NOT PANIC.

The aircraft nose should face AWAY from the pilot before takeoff.

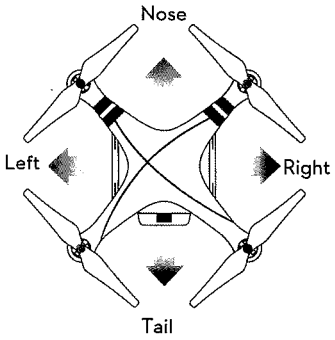
CAUTION

DO NOT fly the Phantom within a radius of 2 meters.

FORBIDDEN

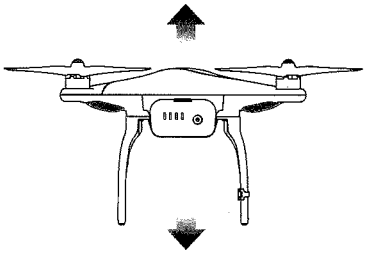
DO NOT touch the propellers after the Phantom has been started.

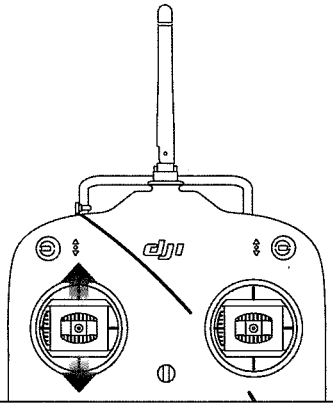
NO TOUCH



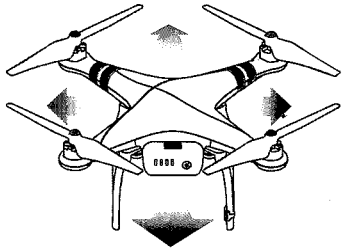
Basic Flight Maneuvers (★)

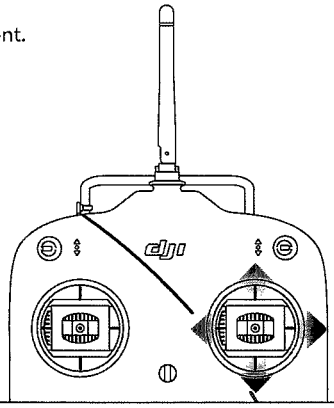
1 Take off and land with battery facing you.



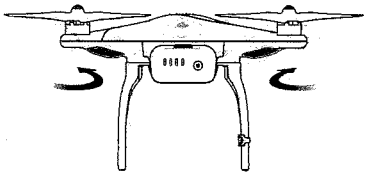


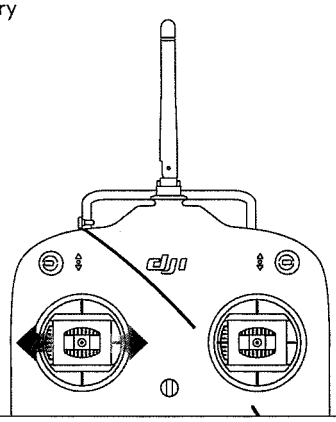
2 Hover in one spot keeping battery facing you, make sure to control Left/Right/Forward/Back movement.





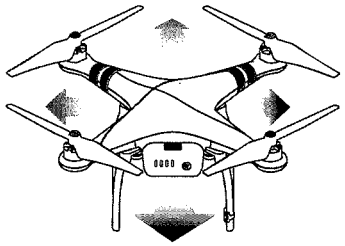
3 Rotate left, rotate right but try to keep the battery pointed at yourself.

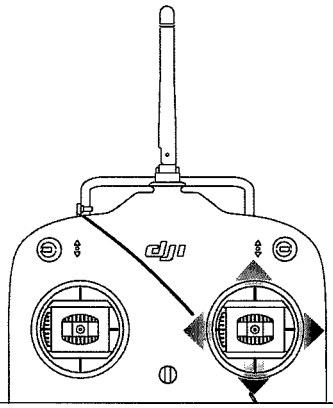




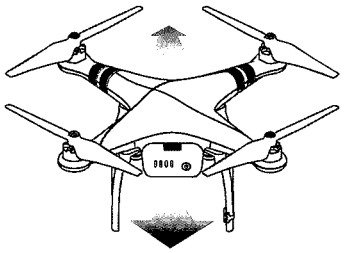
Basic Flight Maneuvers (★)

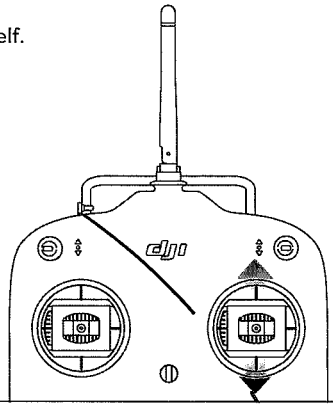
4 Slowly fly forward/back/left/right with back of Phantom pointed at yourself.



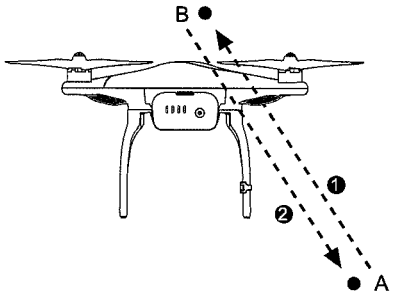


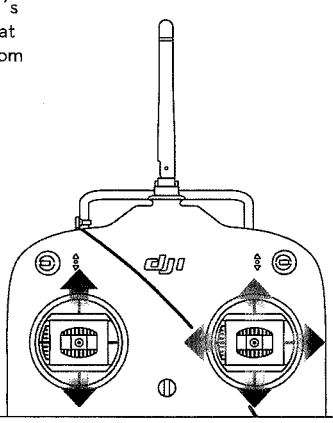
5 Fly forward to a spot 20~30 feet away.
Then fly back keeping the battery pointed at yourself.





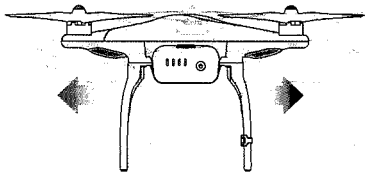
6 Mark a spot (B) on the ground 10ft away from the Phantom's take off point. Hover and fly towards that spot and land at the spot (B). Then go back into a hover and bring the Phantom back to its original position (A) and land again.

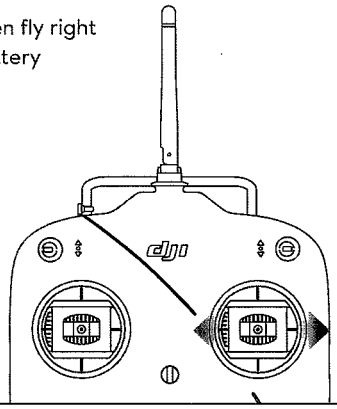




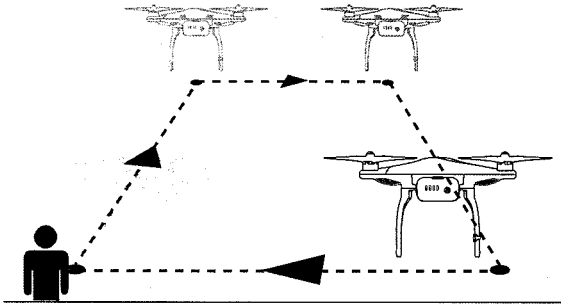
Basic Flight Maneuvers (★)

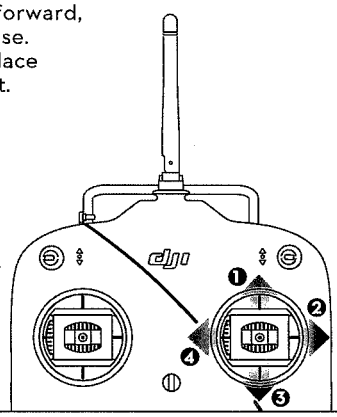
7 Fly left 3 meters away from your take-off point, then fly right 10ft from your take-off point all while keeping battery pointed at yourself.



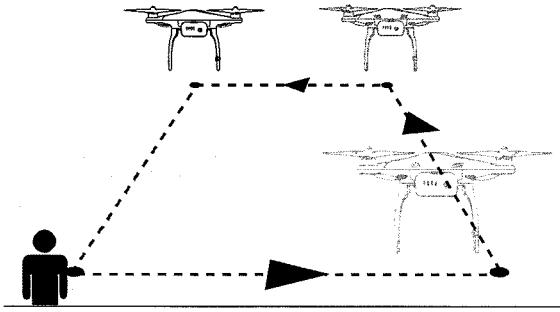


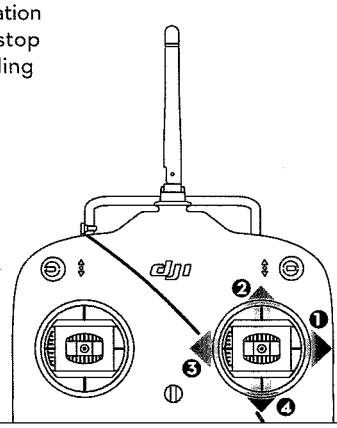
8 Then, while keeping the aircraft nose pointed forward, fly a 4 point square box formation going clockwise. Be sure to be in control and stop and hover in place at each point before proceeding to the next point.





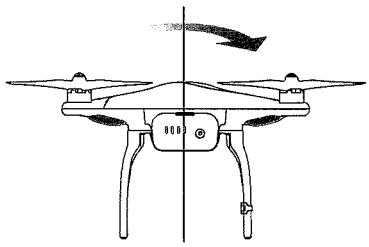
9 Do the same as above but fly the 4 point box formation counter-clockwise. Be sure to be in control and stop and hover in place at each point before proceeding to the next point.

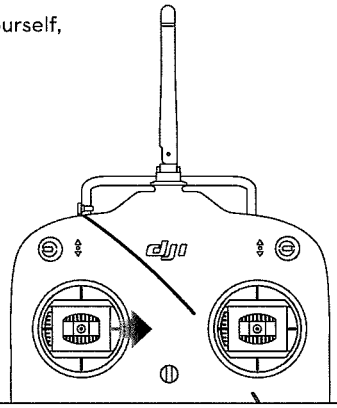




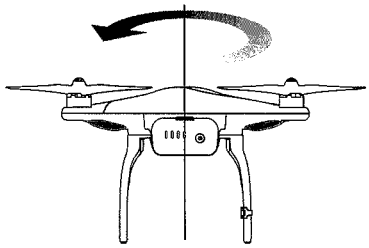
Skilled Flight Maneuvers (★★)

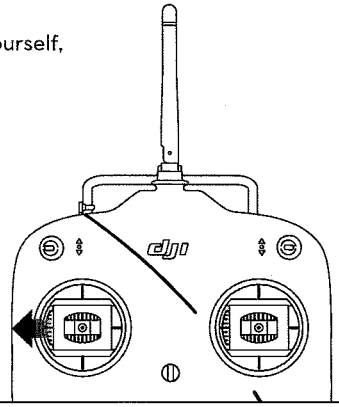
1 In a hover, starting with the battery pointed at yourself, rotate 360 degrees clockwise.



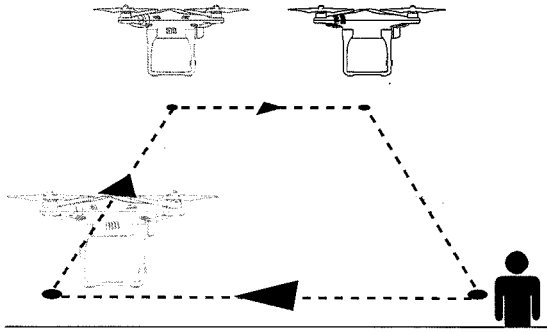


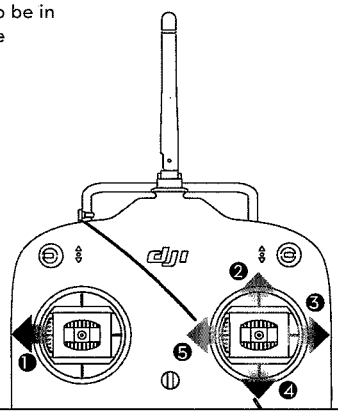
2 In a hover, starting with the battery pointed at yourself, rotate 360 degrees counter-clockwise.





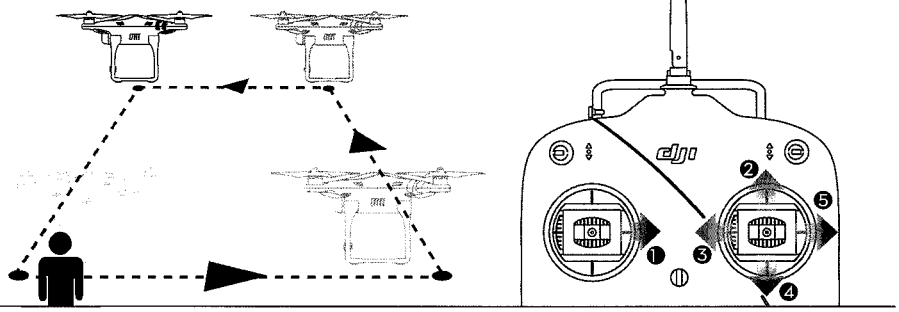
3 Starting with the battery pointed at yourself, go into a hover. Then rotate the Phantom 90 degrees facing left, and fly a 4 point square box formation going clockwise. Be sure to be in control and stop and hover in place at each point before proceeding to the next point.



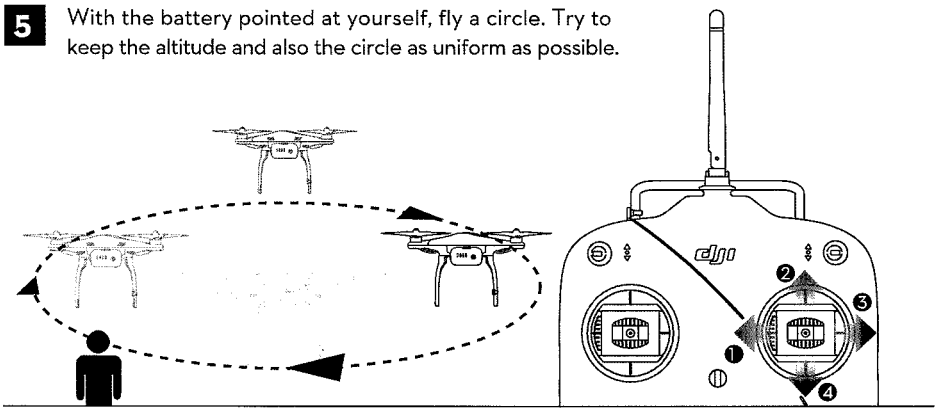


Skilled Flight Maneuvers (★★)

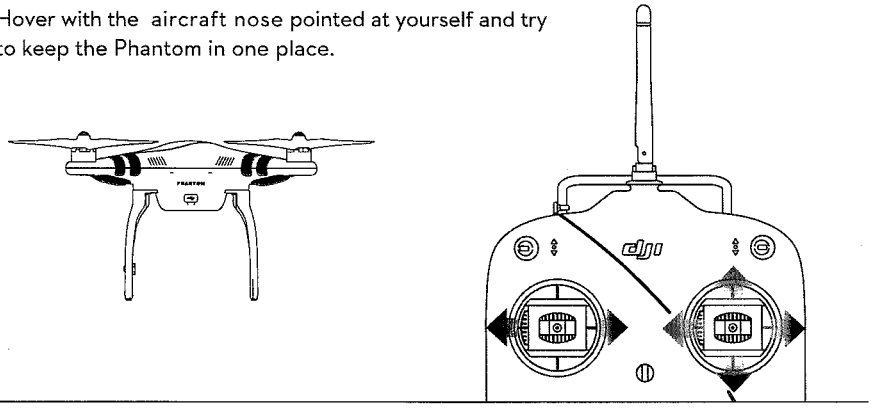
4 Starting with the battery pointed at yourself, go into a hover. Then rotate the Phantom 90 degrees facing right, and fly a 4 point square box formation going counter-clockwise. Be sure to be in control and stop and hover in place at each point before proceeding to the next point.



5 With the battery pointed at yourself, fly a circle. Try to keep the altitude and also the circle as uniform as possible.

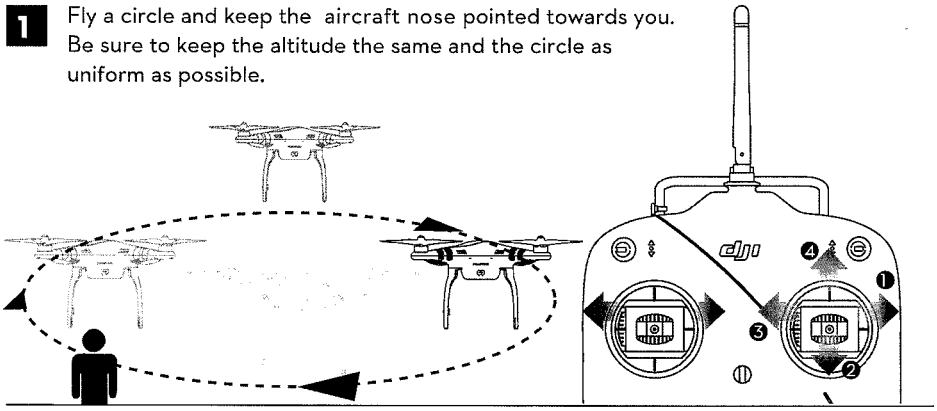


6 Hover with the aircraft nose pointed at yourself and try to keep the Phantom in one place.

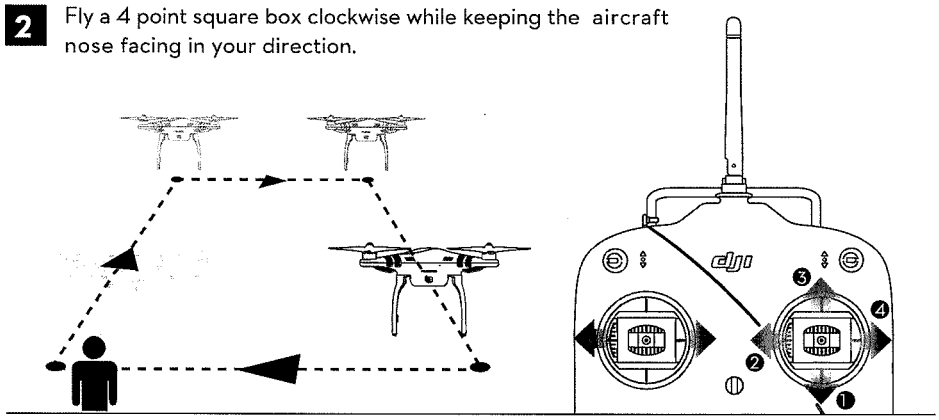


Advanced Flight Maneuvers (★★★)

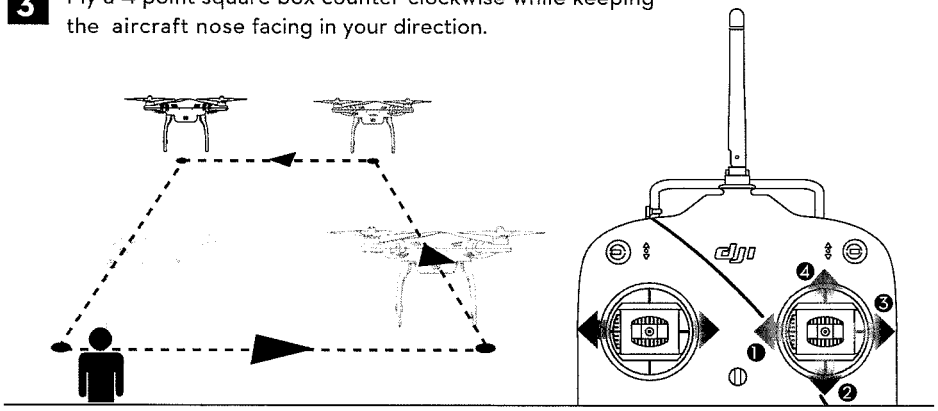
1 Fly a circle and keep the aircraft nose pointed towards you. Be sure to keep the altitude the same and the circle as uniform as possible.



2 Fly a 4 point square box clockwise while keeping the aircraft nose facing in your direction.

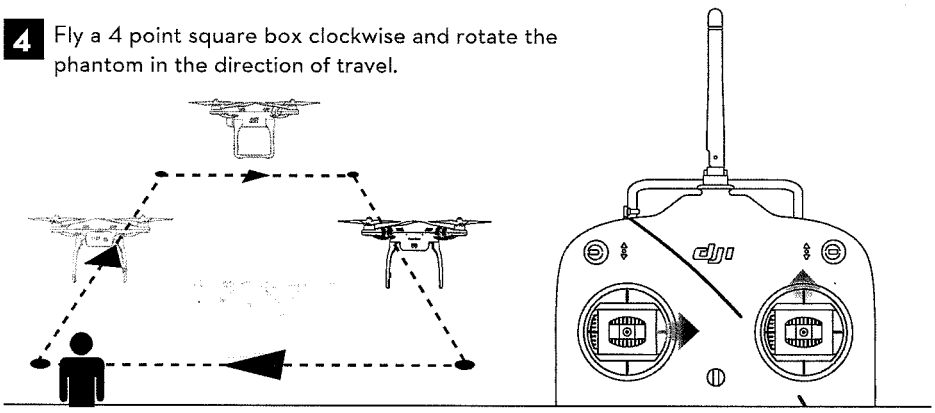


3 Fly a 4 point square box counter-clockwise while keeping the aircraft nose facing in your direction.

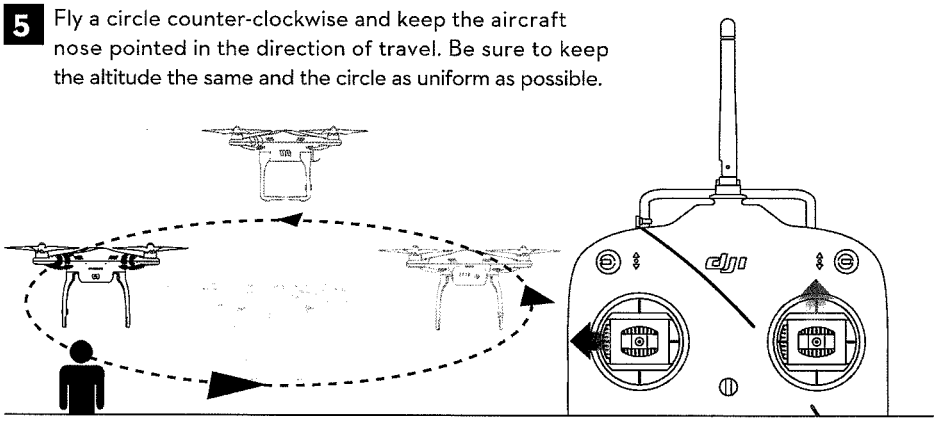


Advanced Flight Maneuvers (★★★)

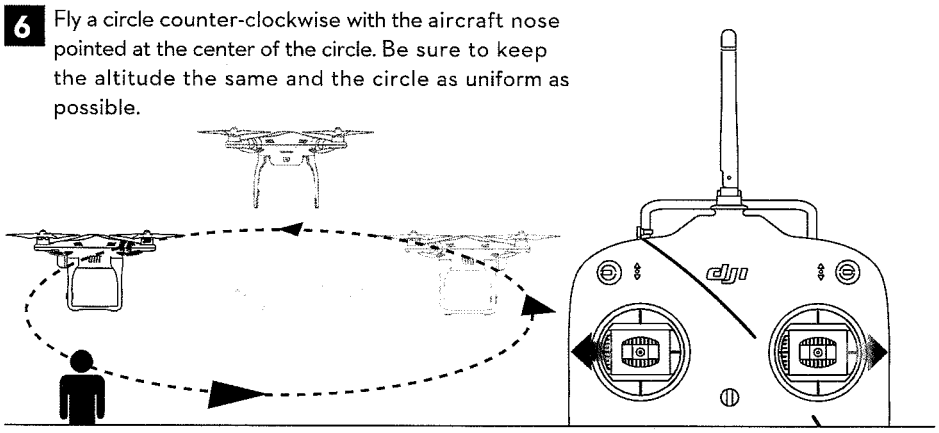
4 Fly a 4 point square box clockwise and rotate the phantom in the direction of travel.



5 Fly a circle counter-clockwise and keep the aircraft nose pointed in the direction of travel. Be sure to keep the altitude the same and the circle as uniform as possible.

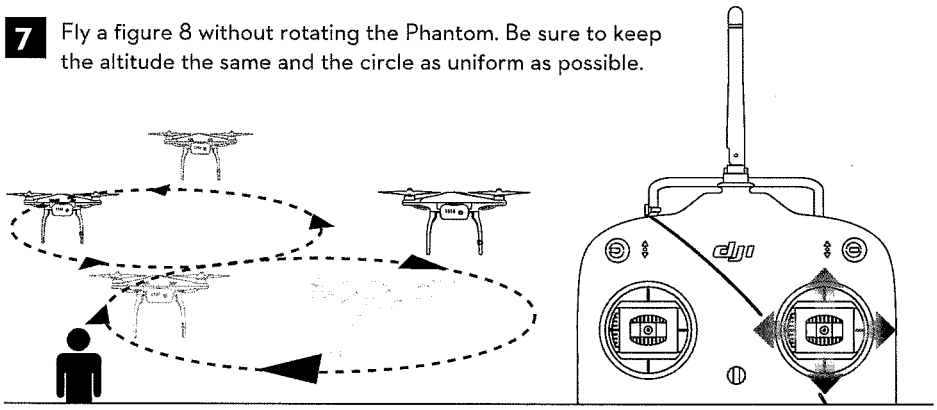


6 Fly a circle counter-clockwise with the aircraft nose pointed at the center of the circle. Be sure to keep the altitude the same and the circle as uniform as possible.

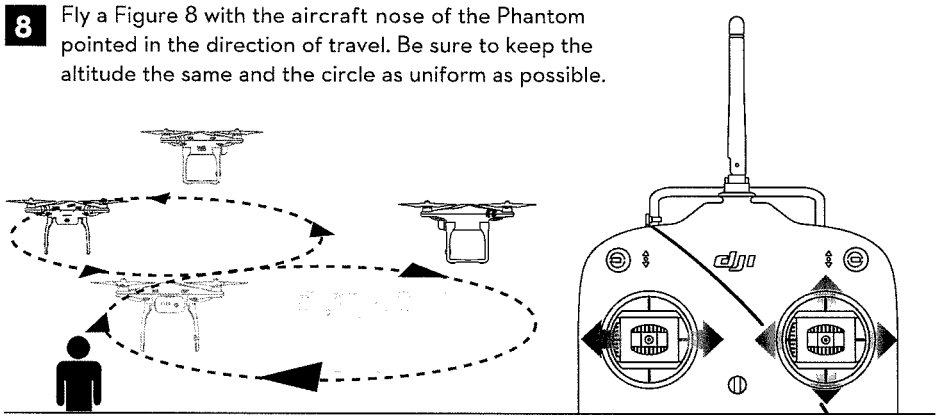


Advanced Flight Maneuvers (★★★)

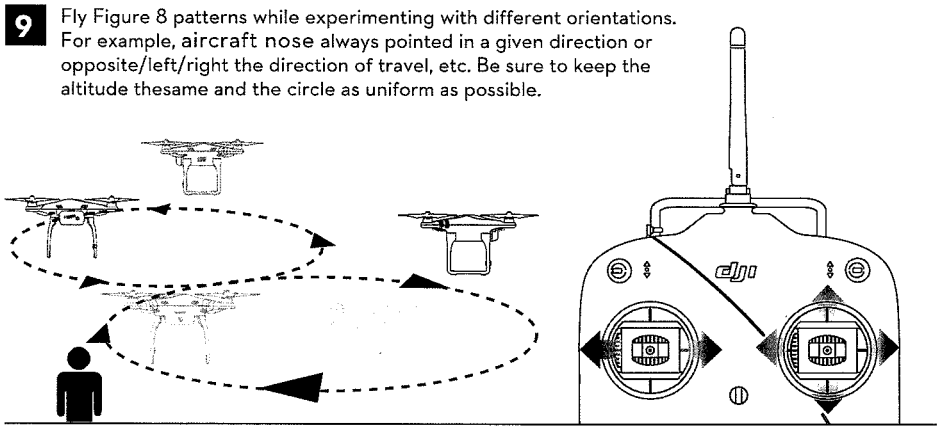
7 Fly a figure 8 without rotating the Phantom. Be sure to keep the altitude the same and the circle as uniform as possible.



8 Fly a Figure 8 with the aircraft nose of the Phantom pointed in the direction of travel. Be sure to keep the altitude the same and the circle as uniform as possible.



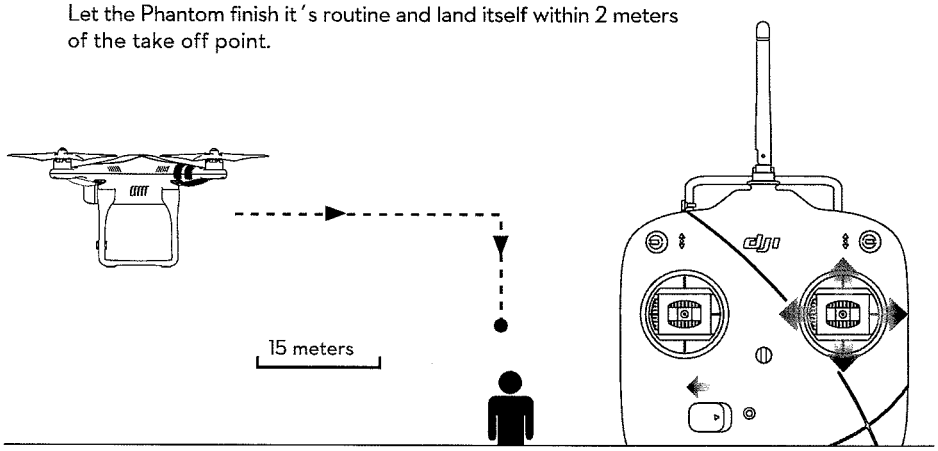
9 Fly Figure 8 patterns while experimenting with different orientations. For example, aircraft nose always pointed in a given direction or opposite/left/right the direction of travel, etc. Be sure to keep the altitude thesame and the circle as uniform as possible.



Emergency Situations

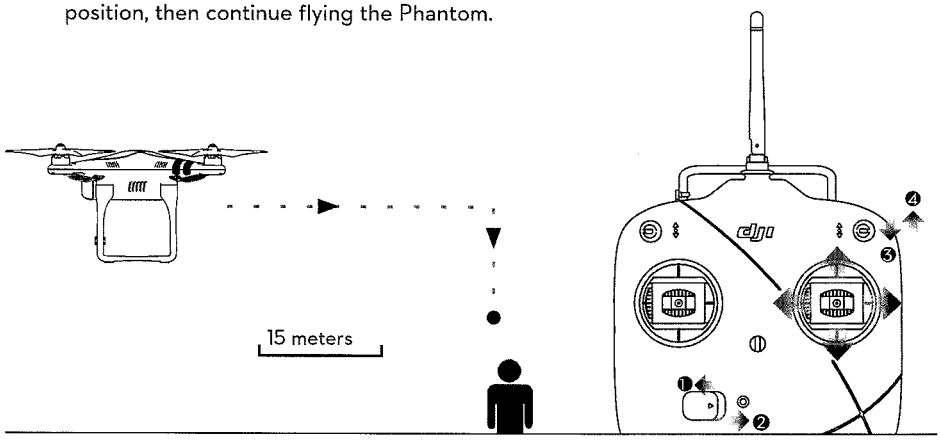
1 Return Home & Land Mode

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



2 Intercepting Return Home & Land Mode

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



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20140325

SMART FLIGHT BATTERY
Safety Guidelines

SMART FLIGHT BATTERIE
Nutzungshinweise

BATTERIES INTELLIGENTES
Guide d'Utilisation

飞行器智能电池
安全使用指引

マルチコプター電池
安全使用ガイド

V1.0 2014.07

English

Battery Use

- Never use non-DJI batteries. Go to www.DJI.com to purchase new batteries. DJI takes no responsibility for any accidents caused by non-DJI batteries.
- Never use or charge a swollen, leaky or damaged battery. If so, contact DJI or its designated dealers for further assistance.
- Do NOT install the battery into the battery compartment on the Phantom when turned on. Turn off the battery before installing it or removing it from the Phantom. Never install or remove the battery from the Phantom when it is turned on.
- The battery should be used in temperatures from -20°C to 40°C. Use of the battery above 50°C can lead to a fire or explosion. Use of battery below -20°C can lead to permanent damage.
- Do not use the battery in strong electrostatic or electromagnetic environments. Otherwise, the battery control board may malfunction and a serious accident may happen during flight.
- Never disassemble or pierce the battery in any way, or the battery may catch fire or explode.
- Electrolytes in the battery are highly corrosive. If any electrolytes splash onto your skin or eyes, immediately wash the affected area with fresh running water for at least 15 minutes then see a doctor immediately.
- Check the condition of the battery if it falls out of the Phantom. Make sure the battery is NOT damaged or leaking before putting it back to the Phantom.
- Land the Phantom immediately when the low battery level warning activates in the DJI VISION App.
- Do not drop the battery into water. If the inside of the battery comes into contact with water, chemical decomposition may occur, potentially resulting the battery catching on fire, and may even lead to an explosion. If the battery falls into water with the Phantom during flight, take it out immediately and put it in a safe and open area. Maintain a far distance from the battery until it is completely dry. Never use the battery again, and dispose of the battery properly as described in Battery Disposal below.
- Put out any battery fire using sand or a dry powder fire extinguisher. Never use water to put out a battery fire.

Charging the Battery

- Batteries must be charged using a DJI approved adapter. DJI takes no responsibility if the battery is charged using a non-DJI charger. Never leave the battery unattended during charging. Do not charge the battery near flammable materials or on flammable surfaces such as carpet or wood.
- Do not charge battery immediately after flight, because the battery temperature may be too high. Do not charge the battery until it cools down to near room temperature. Charging battery outside of the temperature range of 0°C-40°C may lead to leakage, overheating, or battery damage.
- Charge and discharge the battery completely once every 20 charge/discharge cycles. Discharge the battery until there is less than 8% power or until it can no longer be turned on, then recharge it to the maximum capacity. This power cycling procedure will optimize the battery life.

Battery Storage

- Do not leave the battery near heat sources such as a furnace or heater. The ideal storage temperature is 0°C-21°C.
- Keep the battery dry. Never drop the battery into water.
- Do not drop, strike, impale, or manually short-circuit the battery.
- Keep the battery away from metal objects such as necklaces and hairpins.
- Discharge the battery to 30%-50% of the battery level if it will not be used for 7 days or more. This can greatly extend the battery life.

Battery Disposal

- Dispose of the battery into specific recycling boxes only after a complete discharge. Do not place the battery into regular rubbish bins. Strictly follow your local disposal and recycling regulations of batteries.
- If the power on/off button of the smart battery is disabled and the battery cannot be fully discharged, please contact a professional battery disposal/recycling agent for further assistance.

Deutsch

Batterienutzung

- Benutzen Sie ausschließlich originale DJI

Batterien. Gehen Sie auf www.DJI.com, um neue Batterien zu erwerben. Für Schäden, die durch die Verwendung von Nicht-Originalteilen und Zubehör entstehen, ist jedwede Haftung des Herstellers ausgeschlossen.

- Benutzen oder Laden Sie niemals eine angeschwollene, undichte oder beschädigte Batterie. Kontaktieren Sie gegebenenfalls DJI oder unsere ausgewiesenen Händler für weitere Informationen.
- Setzen Sie NIEMALS die Batterie in das Batteriefach des Phantom ein, während die Batterie eingeschaltet ist. Schalten Sie die Batterie aus, bevor Sie diese in das Batteriefach einsetzen oder vom Phantom entfernen. **Setzen Sie niemals die Batterie ins Batteriefach ein oder entfernen sie, wenn diese eingeschaltet ist.**
- Die Batterie sollte nur in einem Temperaturbereich von -20°C bis 40°C benutzt werden. Der Gebrauch der Batterie bei über 50°C kann zu Feuer oder einer Explosion führen. Die Verwendung bei unter -20°C kann zu dauerhaften Schäden führen.
- Verwenden Sie die Batterie nie in starken elektrostatischen oder elektromagnetischen Umfelden. Das Batterie Control Board könnte versagen und **ein schwerer Unfall während des Fluges passieren.**
- Bauen Sie die Batterie niemals auseinander oder durchbohren Sie diese, die Batterie könnte Feuer fangen oder explodieren.
- Die Akkumulatorsäure in der Batterie ist **stark korrosiv**. Säurespritzer im Auge oder auf der Haut sofort unter frischem, laufenden Wasser aus- bzw. abspülen und anschließend sofort einen Arzt aufsuchen.
- Überprüfen Sie den Zustand der Batterie, falls diese aus dem Phantom herausfällt. Stellen Sie sicher, dass die Batterie **NICHT beschädigt ist oder ausläuft**, bevor Sie diese zurück in den Phantom stecken.
- Landen Sie den Phantom umgehend, sobald die Batteriewarnung in Ihrer DJI VISION App erscheint.
- **Lassen Sie die Batterie niemals in Wasser fallen.** Wenn das Innere der Batterie mit Wasser in Kontakt kommt, könnte eine chemische Zersetzung ausgelöst werden, durch die die Batterie möglicherweise Feuer fängt oder sogar explodiert. Falls die Batterie während des Fluges mit dem Phantom in Wasser fällt, entfernen Sie diese unverzüglich aus dem Fluggerät und legen diese in eine sichere und offene Umgebung. Halten Sie großen Abstand zu der Batterie bis diese komplett getrocknet ist. **Benutzen Sie die Batterie niemals erneut und entsorgen Sie die Batterie sachgerecht, wie unten in dem Kapitel Entsorgen der Flugbatterie beschrieben.**
- Löschen Sie jeden Batteriebrand mit Hilfe von Sand oder einem Pulverlöscher. Löschen Sie einen Batteriebrand niemals mit Wasser.

Aufladen der Flugbatterie

- Batterien **müssen mit einem von DJI zugelassenen Adapter geladen werden.** DJI übernimmt keine Haftung für Batterien, die mit einem nicht von DJI autorisierten Ladegerät geladen wurden. Lassen Sie die Batterie während des Ladevorgangs niemals unbeaufsichtigt. Laden Sie die Batterie nicht in der Nähe von entflammbaren Materialien oder Oberflächen wie Teppich oder Holz.
- Laden Sie die Batterie nicht direkt nach dem Flug, die Temperatur der Batterie könnte zu hoch sein. Laden Sie die Batterie erst, sobald sie auf mindestens Raumtemperatur abgekühlt ist. Das Laden der Batterie außerhalb des Temperaturbereichs von 0°C - 40°C kann zu Auslaufen, Überhitzen oder einem Schaden an der Batterie führen.
- Laden und Entladen Sie die Batterie einmal vollständig alle 20 Lade-/Entladevorgänge. Entladen Sie die Batterie bis auf unter 8% bis sie nicht mehr eingeschaltet werden kann, dann laden Sie diese bis zum Maximum ihrer Kapazität auf. Das beschriebene Verfahren optimiert die Lebensdauer Ihrer Batterie.

Lagerung der Flugbatterie

- Lassen Sie die Batterie nicht in der Nähe von Hitzequellen wie einem Ofen oder Heizkörper. Die ideale Lagerungstemperatur liegt zwischen 0°C - 21°C.
- Die Batterie ist sauber und trocken zu lagern. Lassen Sie die Batterie niemals in Wasser fallen.
- Lassen Sie die Batterie nicht fallen, spießen Sie diese nicht auf, schließen Sie sie nicht manuell kurz und wirken Sie nicht mit Gewalt auf die Batterie ein.
- Halten Sie die Batterie fern von Metallobjekten wie Ketten und Haarnadeln.
- Entladen Sie die Batterie bis auf 30% - 50%, falls Sie diese für 7 Tage oder länger nicht benutzen.

Dies kann die Lebensdauer Ihrer Batterie stark verlängern.

Entsorgung der Flugbatterie

- Entsorgen Sie die Battterie, nur nachdem Sie komplett entladen wurde, in speziellen Recycling Tonnen. Werfen Sie die Batterie nicht in die normale Mülltonne. Beachten und befolgen Sie unbedingt die kommunalen Entsorgungs- und Recyclingvorschriften für Batterien.
- Falls der On/Off Knopf der Batterie nicht funktioniert und die Batterie nicht vollständig entladen werden kann, kontaktieren Sie bitte eine professionelle Entsorgungs-/ Recyclingfirma.

Français

Utilisation de la Batterie

- N'utilisez jamais de batterie autre que d'origine. Rendez-vous sur www.DJI.com pour acheter de nouvelles batteries. La responsabilité de DJI ne pourrait être engagée pour tout accident résultant de l'utilisation de batteries non-DJI.
- N'utilisez ni ne chargez jamais de batterie déformée, qui suinte ou qui est endommagée. Si vous constatez un problème contactez DJI ou ses revendeurs agréés pour recevoir l'assistance nécessaire.
- N'installez PAS la batterie dans le compartiment du Phantom si elle est allumée. Eteignez la batterie avant de l'installer ou de la retirer du Phantom. N'installez ou ne retirez jamais la batterie du Phantom lorsqu'il est allumé.
- La batterie peut être utilisée sous des températures allant de -20°C à 40°C. Utiliser la batterie au-delà de 50°C peut causer un incendie ou une explosion. L'utiliser en deçà de -20°C peut causer un dommage irréparable à la batterie.
- N'utilisez pas la batterie dans un environnement électrostatique ou électromagnétique important. Sinon, l'unité de contrôle de la batterie pourrait mal fonctionner et un sérieux accident pourrait survenir pendant le vol.
- Ne désassemblez ou ne percez jamais la batterie d'aucune manière, ou celle-ci pourrait prendre feu ou exploser.
- L'électrolyte dans la batterie est très corrosif. Si de l'électrolyte éclabousse votre peau ou vos yeux, rincez immédiatement la zone affectée à l'eau fraiche courante pendant au moins 15 minutes puis consultez immédiatement un docteur.
- Vérifiez l'état de la batterie si elle tombe du Phantom. Vérifiez que la batterie n'est PAS endommagée ou suintante avant de la remettre dans le Phantom.
- Faites atterrir le Phantom immédiatement dès que l'alerte de faible batterie se déclenche dans l'App DJI VISION.
- N'immergez pas la batterie. Si l'intérieur de la batterie entre en contact avec de l'eau une réaction chimique peut se produire, résultant potentiellement en un incendie ou même en l'explosion de la batterie. Si la batterie tombe à l'eau avec le Phantom lors d'un vol retirez-la immédiatement et mettez-la à l'abri dans un endroit sécurisé et ouvert. Restez à bonne distance de la batterie jusqu'à ce qu'elle soit entièrement sèche. Ne la réutilisez jamais et déposez-la correctement comme décrit plus bas dans le paragraphe sur le Recyclage des Batteries. Eteignez une batterie en flammes en utilisant du sable ou un extincteur à poudre sèche. N'utilisez jamais d'eau pour éteindre une batterie en feu.

Charge de la Batterie

- Les batteries doivent être chargées à l'aide d'un chargeur approuvé par DJI. La responsabilité de DJI ne peut être engagée si la batterie est chargée avec un autre chargeur que celui proposé par DJI. Ne laissez jamais la batterie sans surveillance durant la charge. Ne chargez pas la batterie près d'une source de chaleur, d'un matériau inflammable ou sur une surface inflammable comme un tapis ou du parquet.
- Ne chargez pas votre batterie immédiatement après un vol car la température pourrait être trop élevée. Ne chargez la batterie que lorsque celle-ci aura atteint la température ambiante. Charger la batterie hors de la plage de température comprise entre 0°C et 0°C peut entrainer une fuite, une surchauffe ou une panne de la batterie.
- Chargez et déchargez complètement la batterie tous les cycles de 20 charges/décharges. Déchargez la batterie jusqu'à ce qu'il reste moins de 8% de charge ou jusqu'à ce que la batterie ne puisse plus être allumée puis rechargez-la jusqu'à sa capacité maximale.

Cette procédure de charge cyclique optimisera la durée de vie de votre batterie.

Stockage des Batteries

- Ne laissez jamais la batterie près d'une source de chaleur comme un radiateur ou un poêle. La température idéale de stockage est de 0°C -21°C.
- Maintenez la batterie bien sèche. Ne l'immergez jamais dans un liquide.
- Ne faites pas tomber ni ne cognez la batterie, ne la percez pas, ne provoquez pas volontairement de court-circuit sur la batterie.
- Gardez la batterie éloignée de petits objets métalliques tels que des épingles à cheveux, des trombones, des petits bijoux.
- Déchargez la batterie aux alentours de 30%-50% de son niveau de charge si vous ne l'utilisez pas pendant une semaine ou plus. Ceci augmentera de manière conséquente la durée de vie de votre batterie.

Recyclage des Batteries

- Mettez votre batterie dans une boite de recyclage adaptée uniquement après l'avoir complètement déchargée. Ne mettez pas votre batterie avec les ordures ménagères. Suivez scrupuleusement les consignes locales précises en matière de recyclage des piles et batteries.
- Si le bouton ON/OFF de la batterie intelligente est inopérant et que la batterie ne peut être complètement déchargée, veuillez s'il vous plait contacter un Professionnel du recyclage afin d'obtenir l'assistance nécessaire.

中 文

使 用

- 严禁使用非大疆官方提供的电池。如需更换，请到大疆官网查询。因使用非大疆官方提供的电池而引发的电池事故、飞行故障，大疆概不负责。
- 严禁使用鼓包的、漏液的、包装破损的电池。如有以上情况发生，请联系大疆或者其指定代理商做进一步处理。
- 在将电池安装或者拔出于飞行器之前，请保持电池的电源关闭。请勿在电池电源打开的状态下，拔插电池。
- 电池应在室温为 -20℃至 40℃之间使用。温度过高，会引起电池着火，甚至爆炸。温度过低，电池寿命会受到严重损害。
- 禁止在强静电或者磁场环境中使用电池。否则，电池保护板会失灵，导致飞行器发生严重故障。
- 禁止以任何方式拆解或用尖利物体刺破电池。否则，会引起电池着火甚至爆炸。
- 电池内部液体有强腐蚀性。如有泄露，请远离。如有溅射到人体皮肤或者眼睛里，请立即用清水冲洗至少 15 分钟，并立即就医。
- 若电池从飞行器中摔落，再次使用前，务必确保电池外观无损，无破损、无漏液等问题。
- 若飞机进入电量低报警模式，应尽快降落并停止飞行，更换新电池或者对电池进行充电。
- 请勿将电池浸入水中或将其弄湿。电池内部接触到水后可能会发生分解反应，引发电池自燃，甚至可能引发爆炸。如果电池在 Phantom 飞行过程中或其它情况下意外坠入水中，请立即拔出电池并将其置于安全的开阔区域，这时应远离电池直至电池完全晾干。晾干的电池不得再次使用，应该按照本文的废弃方法妥善处理。
- 若电池发生起火，应立即采用“窒息灭火法”，如使用沙子或固体或干粉灭火器进行灭火。严禁用水来灭火。

充 电

- 智能电池必须使用 DJI 官方提供的专用充电器或车载充电器进行充电。对于使用非 DJI 官方提供的充电器进行充电所造成的一切后果，DJI 将不予负责。
- 请留意充电过程以防发生意外。充电时请将电池和充电器放置在水泥地面等周围无易燃、可燃物的地面。
- 禁止在飞行器飞行结束后，立刻对电池进行充电。此时，电池处于高温状态，强制充电会对电池寿命造成严重损害。建议待电池降至室温，再对电池进行充电。理想的充电环境（0-40℃）可大幅度延长电池的使用寿命。
- 电池每经过约 20 次充放电后，需要进行一次完整的放电和充电过程（将电池充满电，然后放电至电量为 8% 以下或电池自动关闭，再充满电）以保证电池工作在最佳状态。

储 存

- 禁止将电池放在靠近热源的地方，比如火源或加热炉。智能电池的理想的保存温度为 0-21℃。
- 存放电池的环境应保持干燥。请勿将电池置于水中或者可能会漏水的地方。
- 禁止机械撞击电池、碾压、坠落、人为短路、刺穿电池。
- 禁止将电池与金属项链、发夹或者其他金属物体一起贮存或运输。
- 超过 7 天不使用电池，请将电池放电至 30%-50% 电量存放，可大大延长电池的使用寿命。

废 弃

- **务必将电池彻底放完电后，才将电池置于指定的电池回收箱中。**电池是危险化学品，**严禁废置于普通垃圾箱。**相关细节，请遵循当地电池回收和弃置的法律法规。
- 如电池因为电源开关失灵而无法完成彻底放电，请勿将电池直接弃置于电池回收箱，应联系专业电池回收公司做进一步的处理。

日本語

使 用

- 非 DJI 社製の電池を使用することによって発生する事故はDJI社一切の責任を負いません。
- 包装破損、傷づいた電池を使用することが禁じます。上記したものが発生した場合、DJI 社或いは購入先の代理店までご連絡ください。
- 電池の取り付けや取り外しの前は、必ず電源をオフにしてください。電源をオンにしたままで、操作しないでください。
- 電池は温度－ 20℃から 40℃の間で使用してください。温度が高くなると、火事を引き起こします。低くなると、電池の寿命が短縮します。
- 強い静電気または磁気が起こる環境での電池の使用を禁止します。バッテリー保護基板の機能が失い、飛行器の故障につながる可能性があります。
- いかなる方法で電池を解体することは禁じます。火事や爆発事故が発生する原因とみられます。
- 電池内部の液体は腐食性が強いです。液体が漏れると、離れてください。皮膚や目に入った場合、すぐに 15 分以上水で洗い流し、速やかに医師の診察を受けてください。
- 飛行中に電池が墜落したら、再使用する前に電池の外観が破損したかどうかを確認してください。
- 飛行中に低電量アラームがなりましたら、すぐ安全地に着陸して、電池を交換するか充電してください。
- 電池を水に入れないでください。電池内部は水が入ると化学反応が起こり、自然発火して爆発する可能性があります。飛行中、機体が水に落ちた場合、直ちに電池を外して安全地で乾燥してください。乾燥した電池を再利用することは禁じます。本章の廃棄方法で処理してください。
- 電池が発火したら、砂や消火器で消火してください。水での消火を避けてください。

充電について

- 必ず DJI 社の充電器或いはカーチャージャで充電してください。非 DJI 社提供した充電器を使用することで起こった事故など、DJI 社は一切の責任を負いません。
- 充電中の充電状況を常に確認してください。充電時、可燃物の上に置かないでください。
- 飛行が終わった後、電池はまだ高温状態の為、充電してはいけません。電池の寿命が短縮します。推奨の充電温度は 0 ～ 40 度です。
- 電池のベスト状況を確保する為、20 回充電した後、一回完全放電してください。

保管について

- 発熱源の近くで使用したり、保管したりしないでください。0 － 21℃の環境での保管を推奨します。
- 乾燥した環境での保管してください。水中や水漏れの場所に置かないでください。
- バッテリーに衝撃加えたり、墜落させたり、人為的にショートさせてたりしないでください。
- 金属物体或いは金属アクセサリーと一緒に保管したり運送したりしないでください。
- 使用しない期間は 7 日間を超える場合はバッテリー残量を３０%－５０%の状態にすることでバッテリーの寿命を延ばすことが可能です。

破棄について

- バッテリーは化学品の為、破棄するときは火災の原因とならないように、完全に放電を行ってから破棄してください。破棄方法は各エリアの条例を守ってください。
- バッテリーの電源の故障による放電できない場合は回収箱に入れずに、業者に連絡のうえ正しく処理を行ってください。