Unboxing and Pre-Flights

Checks and Operation Considerations

Micro-UAS Remote Pilot Course

Objective

The aim of this module is to help you

1. Demonstrate the aircraft and its components
2. Understand how they are assembled.

Expectation

From the session

Unboxing and Assembly or the MUAS

From us

Training and support to enable you operate MUAS Safely.

From you

Operate MUAS safely

What is in the bag

United Nations | UNITED NATIONS C4ISR ACADEMY FOR PEACE OPERATIONS

Accessories

United Nations | UNITED NATIONS C4ISR ACADEMY FOR PEACE OPERATIONS

Controller

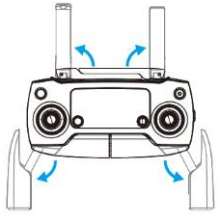
United Nations | UNITED NATIONS C4ISR ACADEMY FOR PEACE OPERATIONS

Aircraft

Remote Control

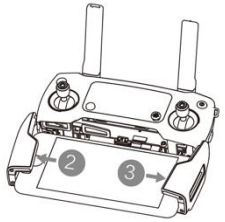
1. Remove the RC from the box.

2. Unfold the antennas and mobile device clamp.

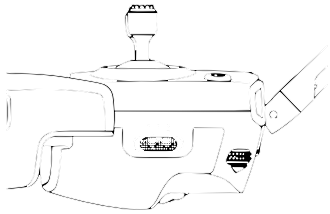


3. Select and insert the correct RC cable

4. Attach device, plug the RC cable, secure the clamp.

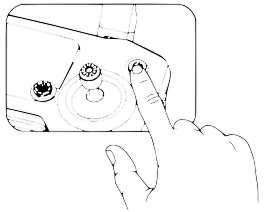


5. Ensure flight mode switch is set to P mode.



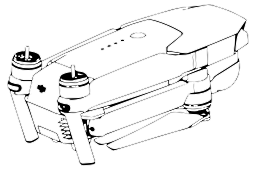
6. Arrange the aerial direction for maximum transmission.

7. Check the battery



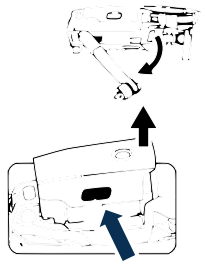
Aircraft UAS

1. Remove the aircraft from the box and place on flat surface

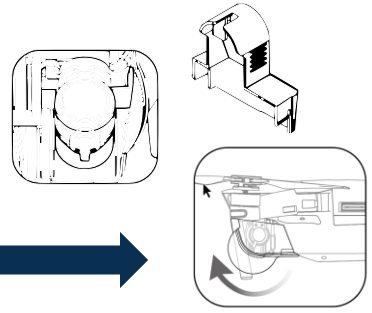


2. Unfold the arms

3. Install the aircraft battery.

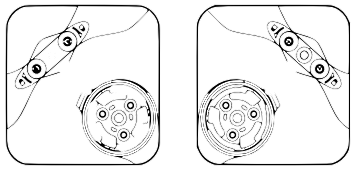


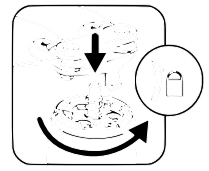
4. Remove the gimbal protector.



5. Inspect the Engine form damage or debris.

6. Inspect and mount the propellers them for damage and mount it on the engine (match marked / unmarked propeller with the corresponding engine)





Objective

- Understand what preflight check must be performed.
- Understand what postflight check must be performed.

Expectation

- From the session
  - Preflight checks

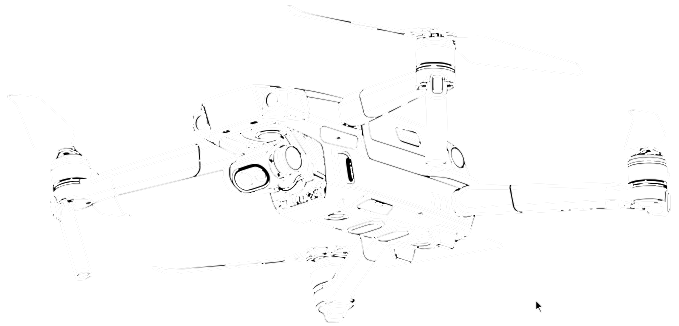
- From US
  - Training and support to enable you operate MUAS Safely.

- From you
  - Operate MUAS

Preflight Checks

Ensure

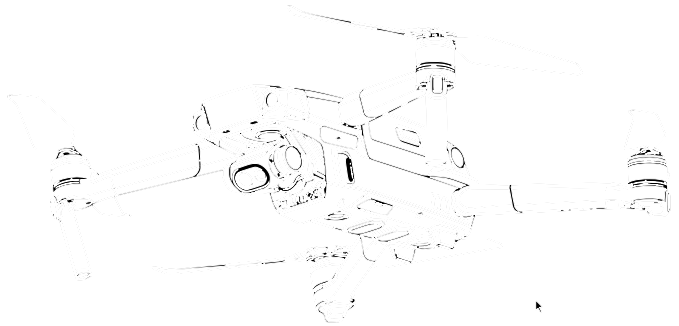
- The camera lens, vision system and infrared sensing are clean and free of stain (not covered by stickers).
- Remove gimble cover before powering on.
- Remote controller, aircraft and mobile phones battery are fully charged.
- Aircraft arms are unfolded.
- The intelligent battery is mounted firmly.



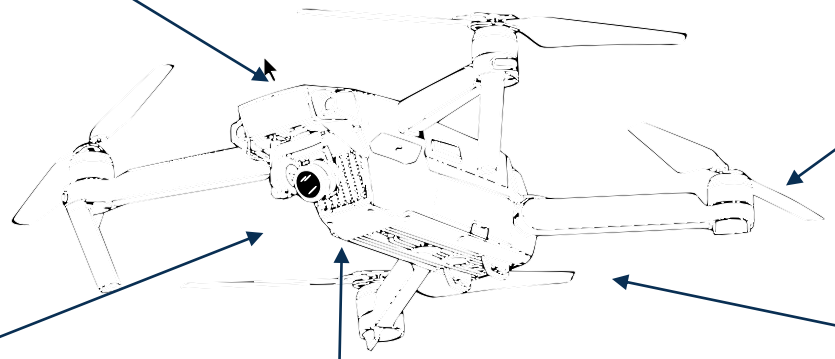
Preflight Checks

Ensure

- The propellers are in good condition and securely tightened.
- Nothing obstructing the motors.
- Aircrafts firmware and DJI app is updated, DJI app is properly launched.
- Check and be familiar with the flight mode.
- Flight conditions and flight area are suitable for flying the aircraft.
- Compass is calibrated when prompted by the app and/or status indicator.



Aircraft UAS



Inspect the Airframe

Check the light cover

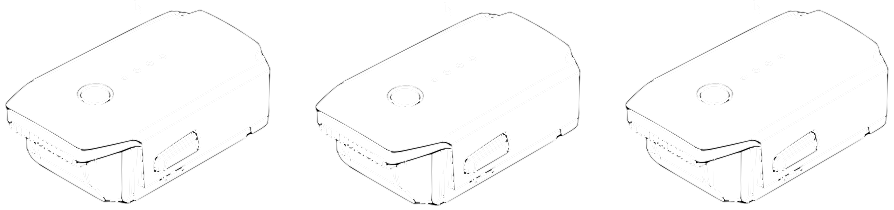
Inspect the Sensors (not obstructed)

Inspect the gimbal

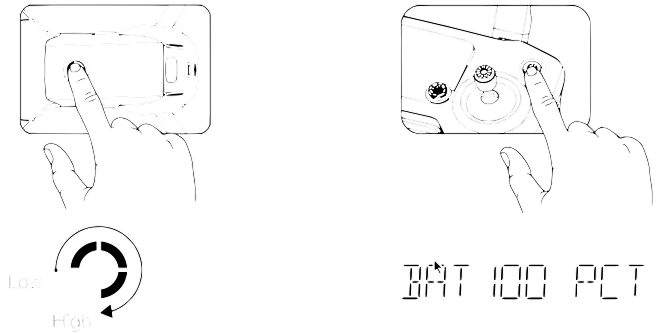
Check for missing or lose bolts

Aircraft Batteries

Check all the batteries for damage or leak



Ensure all batteries are charged (RC, GS Controls Device, Aircraft)

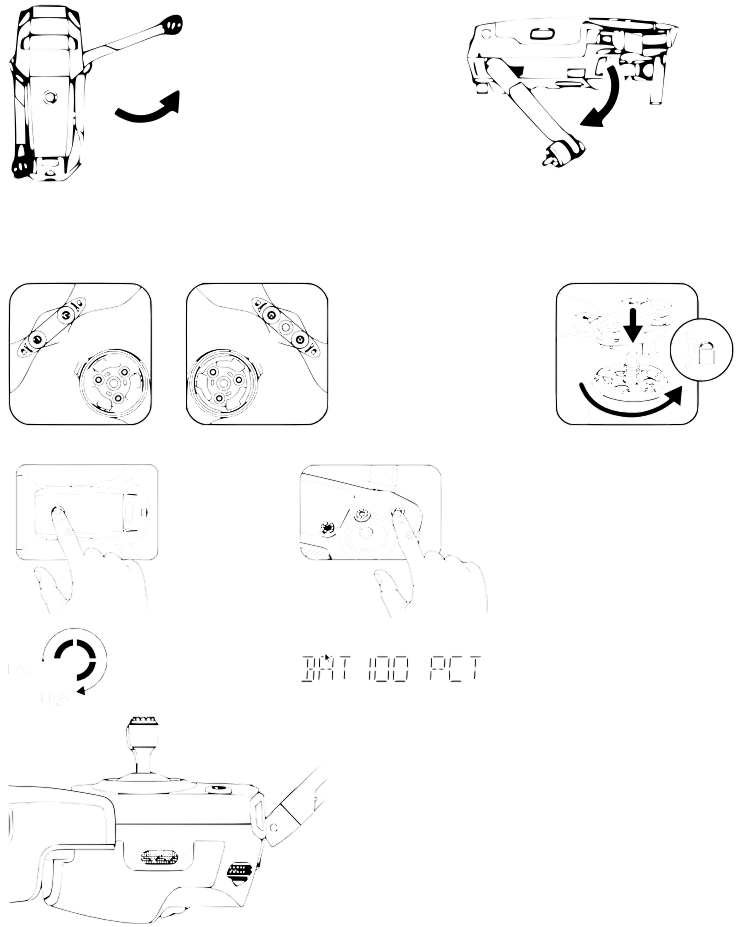


Radio Batteries

- Check batteries are charged.
- Set the correct frequency

Flight – Getting Ready

- Unfold Arms
- Remove gimble clam / camera cover
- Mount Propellers - Marked / Unmarked
- Check battery
- Check Flight Mode * P S A(T)

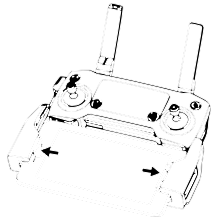


UAS GCS Setup

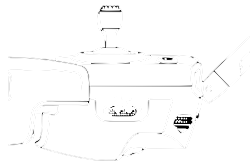
1. Place the UAS on the takeoff / landing pad.

2. Turn on the remote controller

3. Enable Airplane mode on the GS Control Device (if is phone) , also adjust the brightness

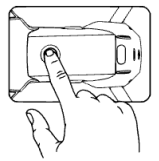


4. Set flight mode on the controller (Choose P for training purpose)



5. Ensure the Gimbal on the aircraft is unobstructed and can move freely.

6. Power on the UAS / wait for the aircraft to initialize (do not move the aircraft while initializing or use the controller).



7. Run the appropriate flight management application on the GCS*.

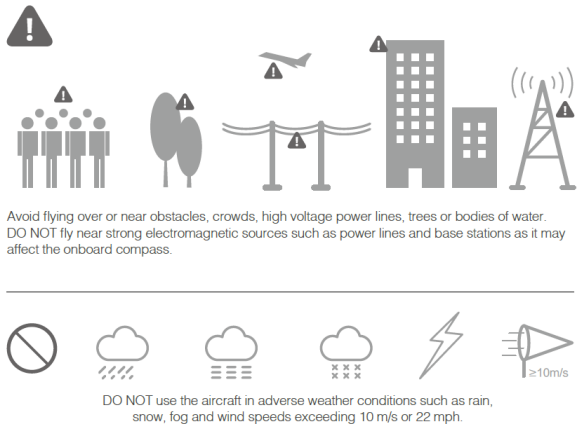
UAS GCS Setup

Use the app to check

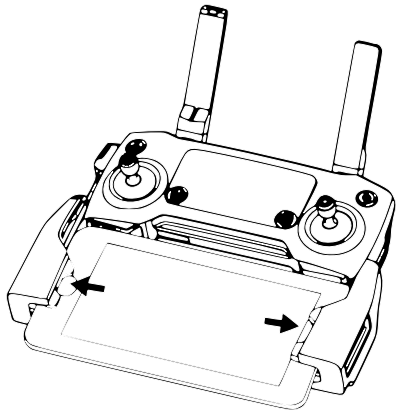
1. Distance limitation
2. Height limitation
3. RTH
4. Obstacle avoidance
5. Check the firmware
6. Perform compass calibration if error is displayed

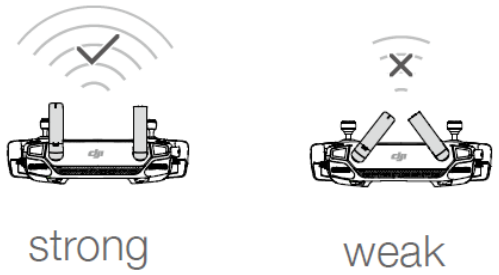
Check the surrounding for factors that may affect safe flight.

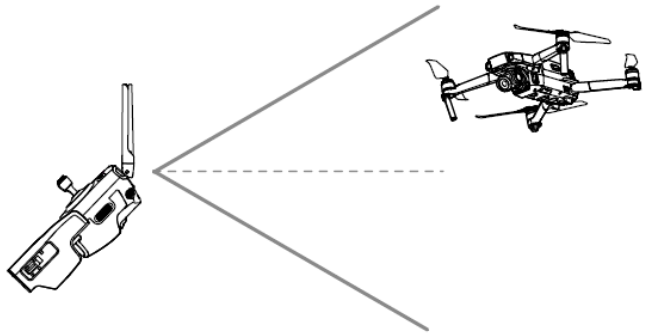
1. Wind
2. Air traffic
3. Obstacles or Structure

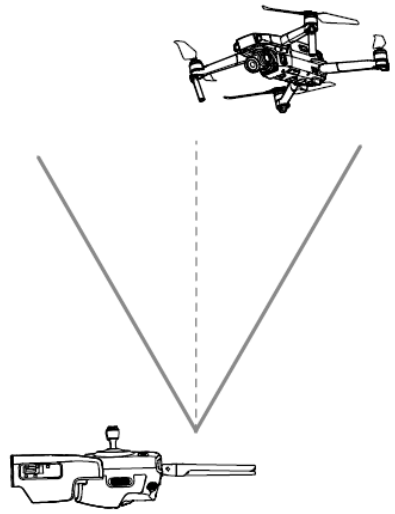


Antenna direction and Mobile device attachment





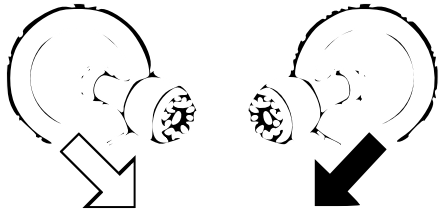


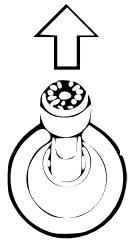


Start

1. Check flight data screen
    1. Aircraft status
    2. GPS

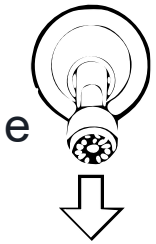
2. Start the Engine





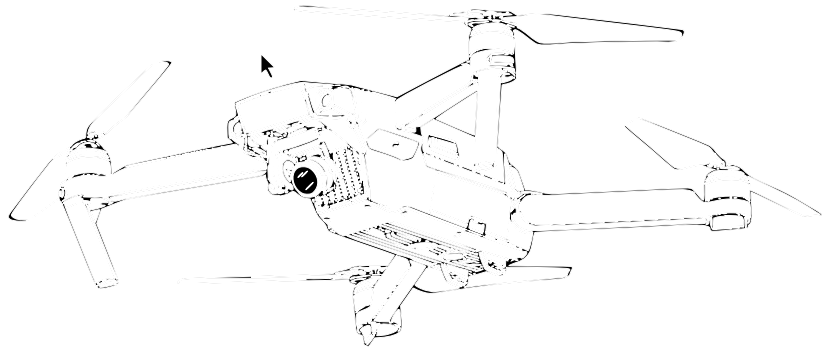
2. Take off and hover at 1 meter above the ground, observe if the aircraft is functioning properly
3. Check aircraft is responding correctly to RC Commands
4. Conduct your Flight

4. Land and stop the Engine



After propeller has stopped

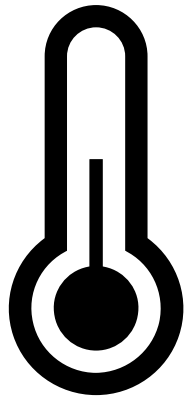
1. Power of the Aircraft, remote control (GCS Device).
2. Remove and check battery for swelling and overheating
3. Inspect the Aircraft for damage (Including propeller).
4. Clean Aircraft – Check for missing items or cracks
5. Check the battery for swelling or excessive heat.
6. Remove propeller.
7. Reattach Gimble guard.
8. Fold the arms.
9. Securely pack the aircraft, RC and its accessories



10. Complete postflight paperwork / data transfer.
11. Incase of accident / incident follow the procedure to record and report damages.

Environment Consideration

- Fly at a location that are clear of magnetic or radio interference and obstacles.
- Temperature between 14 to 104-degree Fahrenheit (-10 to 40 degree centigrade)
- Wind speed less that 10 m/s or 22kmph
- Caution while flying
  - Indoors
  - Above 6000 ASL (19685 ft)
- Do not fly above or near large crowds.
- Avoid flying above 400ft (120 m)



NOTE: Night flying is generally not permitted, flying is allowed in the 30 minutes of twilight. Missions may be conducted at night after obtaining waiver for night flying.

Operation consideration

DO

- Stay away from rotating propeller and motors.
- Maintain visual line of sight. *
- Land in safe location when there is low battery or high wind warning.
- Return to home altitude is set higher than the surrounding.
- Ensure accessories are mounted correctly.

- Keep control of the aircraft at all time (do not entirely depend on obstacle avoidance and precision landing features).
- During the RTH operation you can adjust the altitude of the aircraft to avoid obstacle.

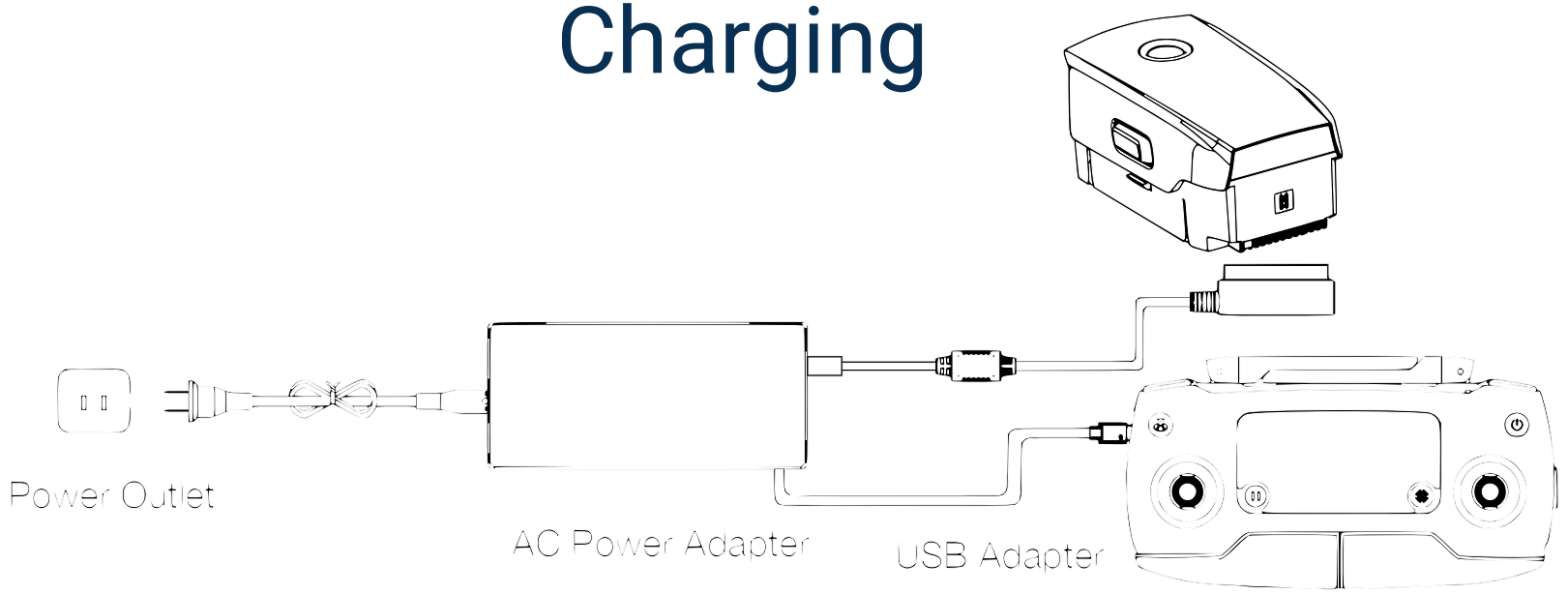
* May be waived

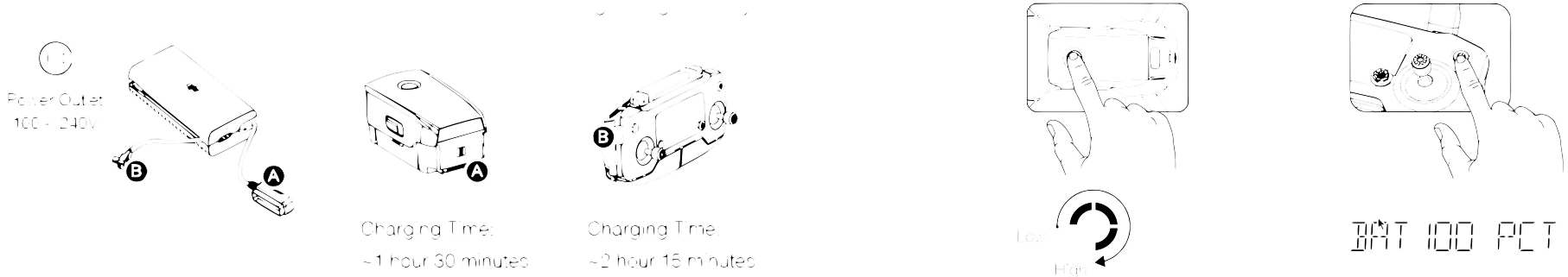
Operation Consideration

DO NOT

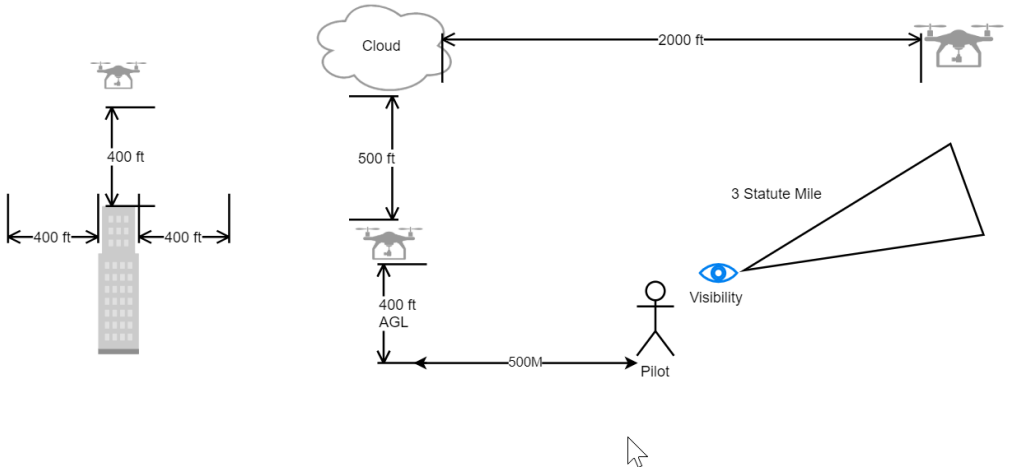
- Start the motor before unfolding the arms.
- Touch the battery buckles while carrying the aircraft.
- Answer incoming call or text while flying the aircraft (use airplane mode or DND).
- Fly under the influence of alcohol or drugs.
- Fly close to reflective surface.
- Point spotlight or Beacon at the human eye.
- Use the speaker to close to people (noise sensitive area).

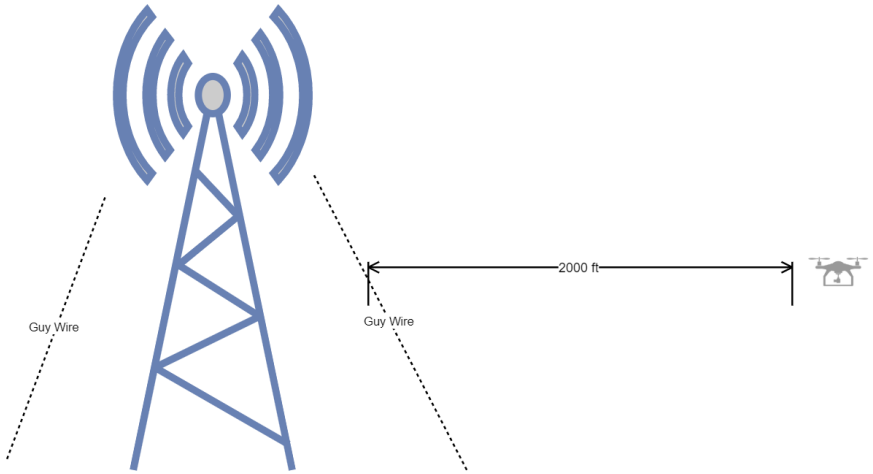
Charging


Power Outlet
AC Power Adapter
USB Adapter

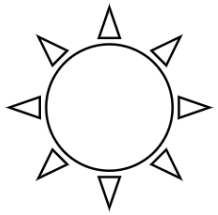

Power Outlet
100 ~ 240V
B
A
Charging Time:
~1 hour 30 minutes
B
A
Charging Time:
~2 hour 15 minutes
Low
High
BAT 100 PCT

Flight - Consideration





Flight - Consideration



30 min before sunrise

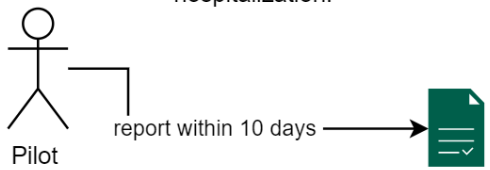
30 min after sunset

Anti collition light visible for 3 SM

Waiver apply 90 days before planned flight

$500 Damage not including cost of drone.

48 hours or more hospitalization.

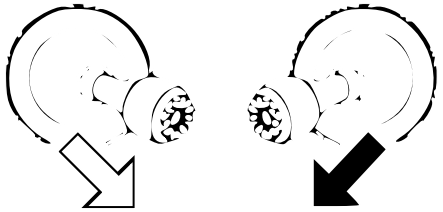


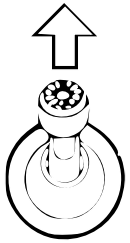
Flight – DJI App

- Firmware / SW
- GPS
- Aircraft status
- RTH , obstacle Sensing / Avoidance setting
- Flight altitude / distance setting.
- Remote control setting
- Check battery health
- Emergency Procedure

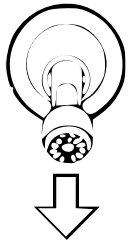
Flight – Ready to Go

1. Start the Engine





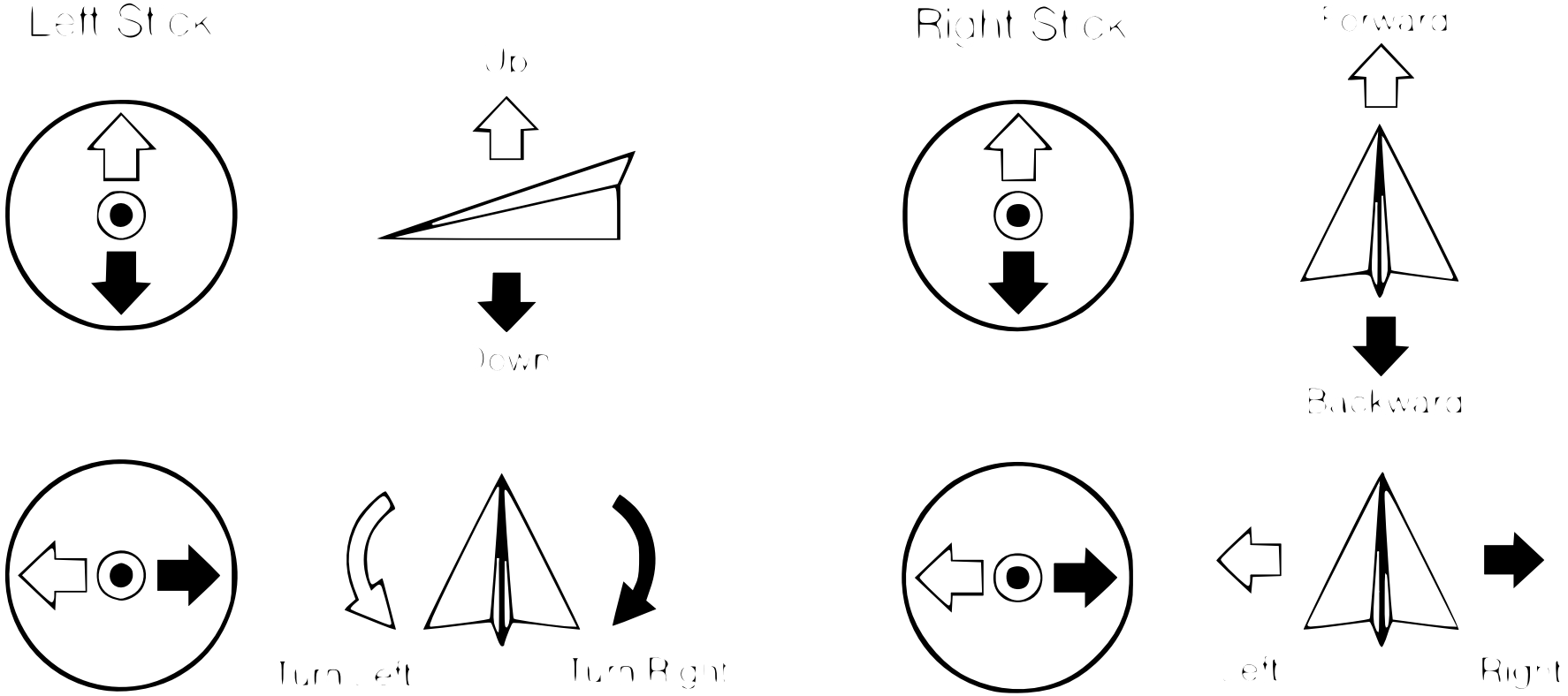
2. Take off and hover at 1 meter above the ground, observe if the aircraft is functioning properly



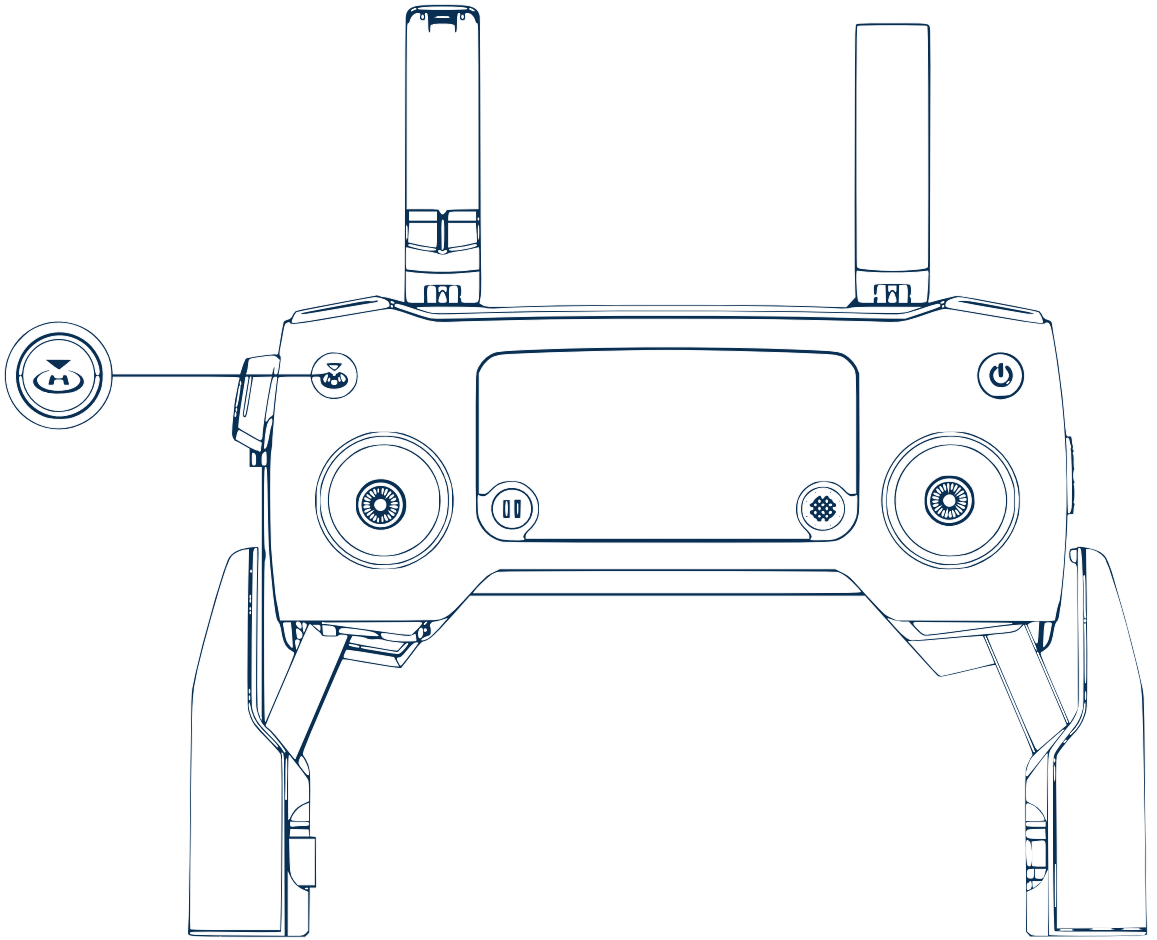
3. Check all controls are working as expected.

4. Land and stop the Engine

Flight – RC Mode 2



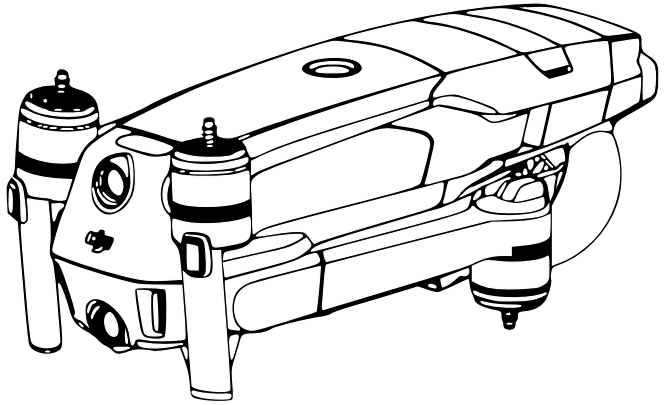
Flight – Emergency procedure



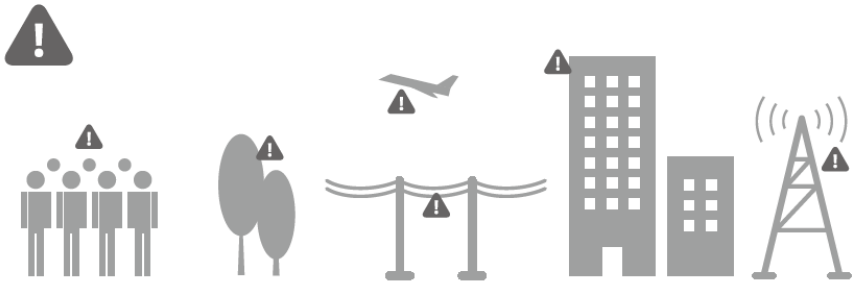
Post Flight

DO

- After landing , switch off motor > Switch off the battery.
- Switch off the RC.
- Inspect the Aircraft for damage (Including propeller).
- Clean Aircraft – Check for missing items or cracks
- Check the battery for swelling or excessive heat.
- Remove propeller.
- Reattach Gimble guard.
- Fold the arms.
- Securely pack the aircraft, RC and its accessories.

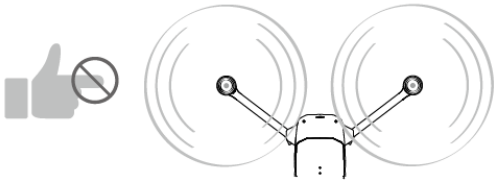


Revision



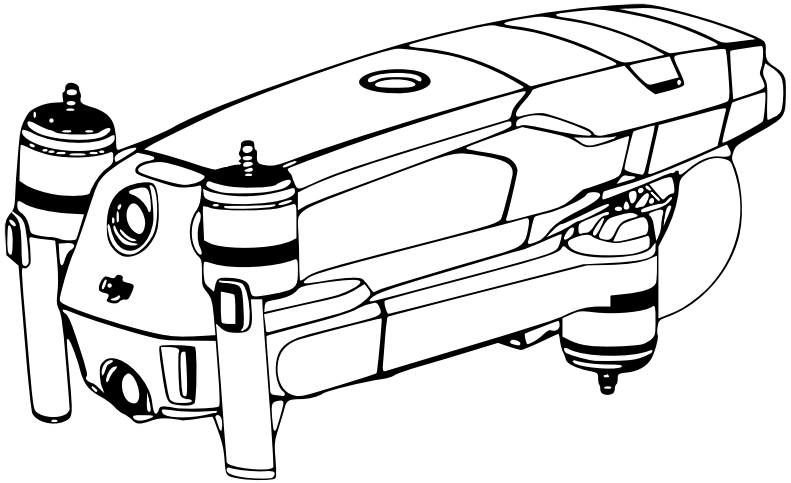
Avoid flying over or near obstacles, crowds, high voltage power lines, trees or bodies of water. DO NOT fly near strong electromagnetic sources such as power lines and base stations as it may affect the onboard compass.

DO NOT use the aircraft in adverse weather conditions such as rain, snow, fog and wind speeds exceeding 10 m/s or 22 mph.



Stay away from the rotating propellers and motors.

Learn more at:
http://www.dji.com/flysafe



Fly in Open Areas + Strong GPS Signal + Maintain Line of Sight + Fly Below 400 feet (120 m) =

Objective

The aim of this module is to help you

1. Navigate through the DJI Pilot app that is used
2. Understand what preflight check must be performed.

Expectation

- From the session
  - Preflight checks

- From US
  - Training and support to enable you operate MUAS Safely.

- From you
  - Operate MUAS

UAS – DJI APP

- Aircraft Status
- MC Settings
- Visual Navigation Settings
- Remote Controller Settings

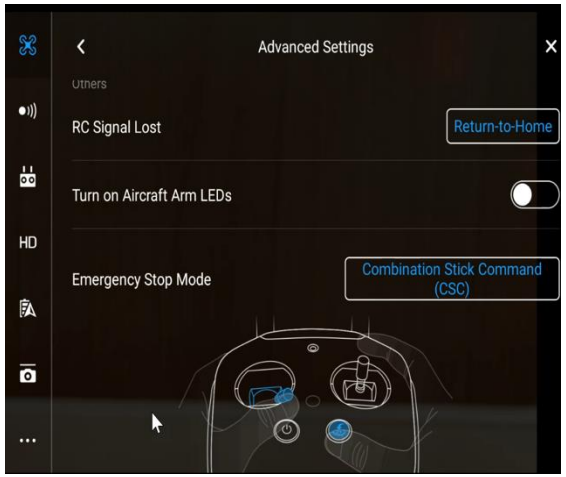
UAS – Interface

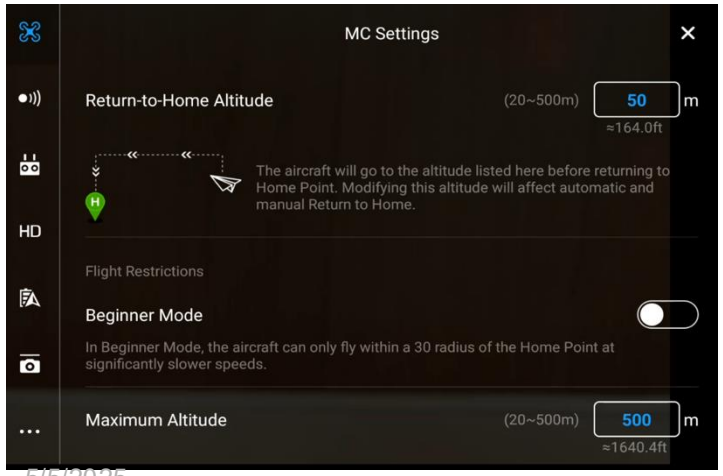
1. System Status
2. Battery Level Indicator
3. Flight Mode:
4. GPS Signal Strength
5. Wi-Fi Settings
7. 3D Sensing System Status
8. Battery Level
9. General Settings
10. Photo/Video Toggle

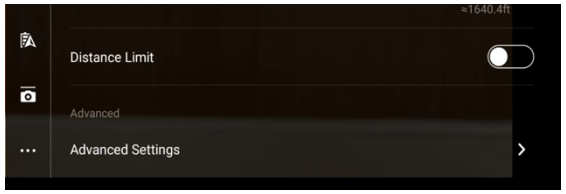
UAS – Aircraft Status

- Compass – lets you know where you are , needs to be calibrated specially if you are flying from new location.
- IMU Inertia measurement unit – Barometer (measures air pressure)+ Gyroscope (Measuring and maintaining orientation)
- ESC Electronic Speed Control – tells you the status of your motor.
- Vision Sensor – Checks for obstacle

UAS – MC Setting

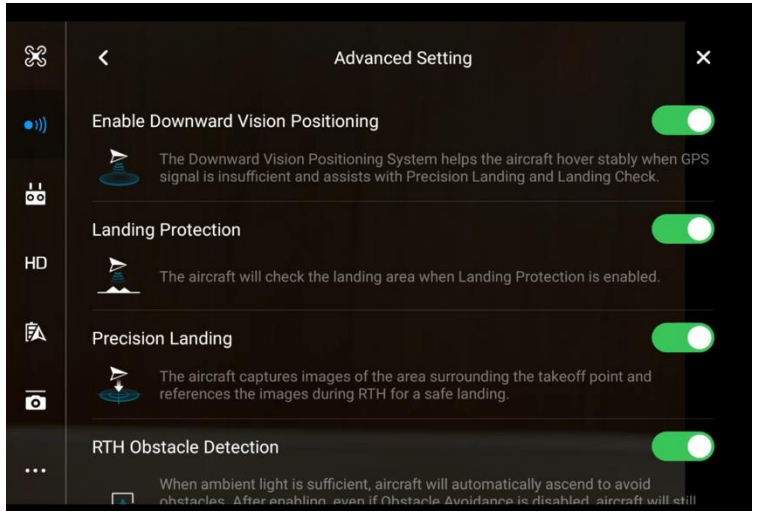


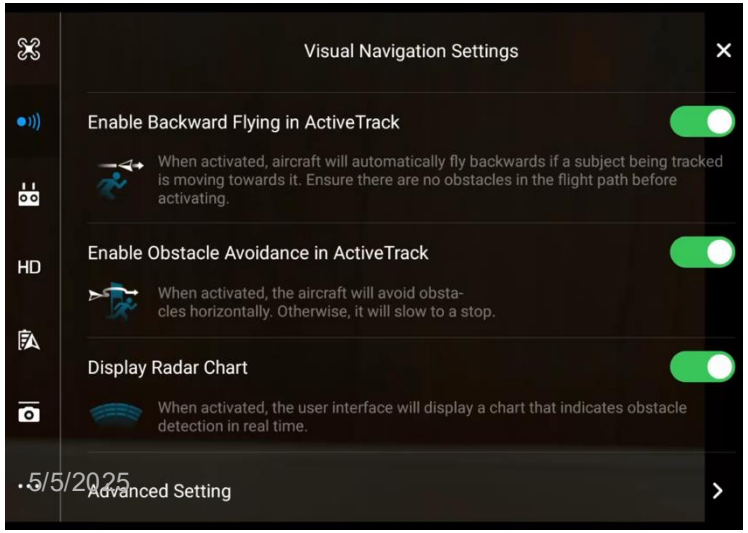




- Home point settings: Aircraft or Controller location.
- RTH Altitude: Altitude taken when RTH is triggered.
- Beginner Mode: Flies only Good GPS signal, and its flight distance, height, and speed will be limited.
- Maximum Altitude and Distance Limit.
- Advanced – RC Signal Lost – Action to be taken

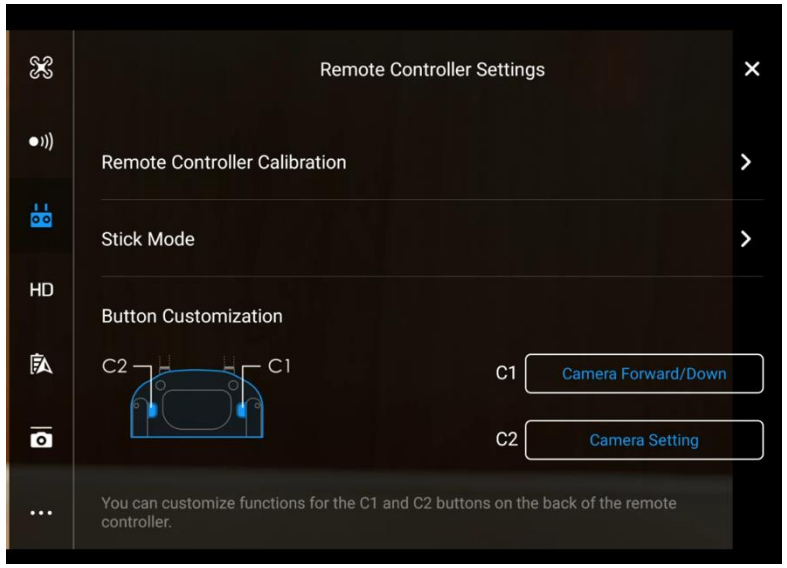
UAS – Visual Navigation Settings

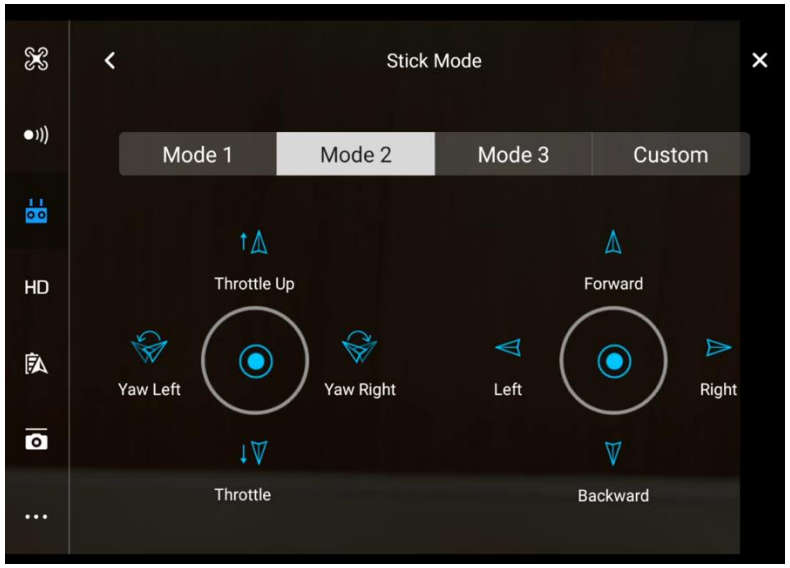




- Obstacle Sensing
- Obstacle avoidance
- Landing Protection

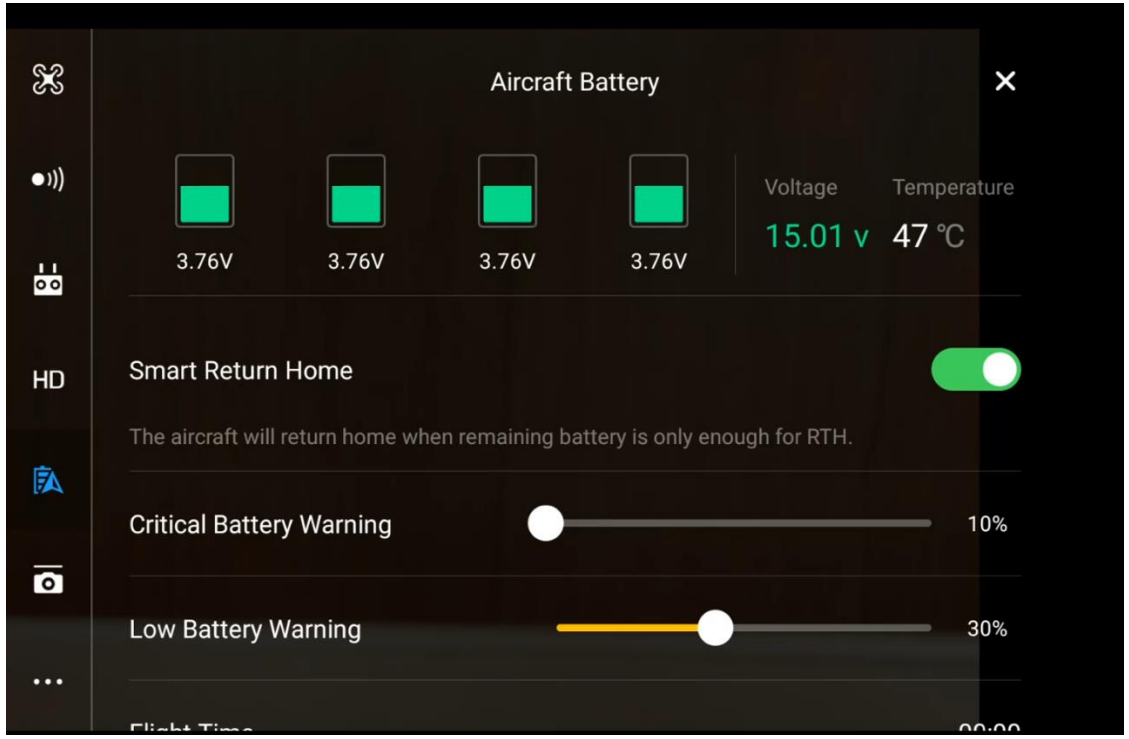
UAS – Remote Controller Settings

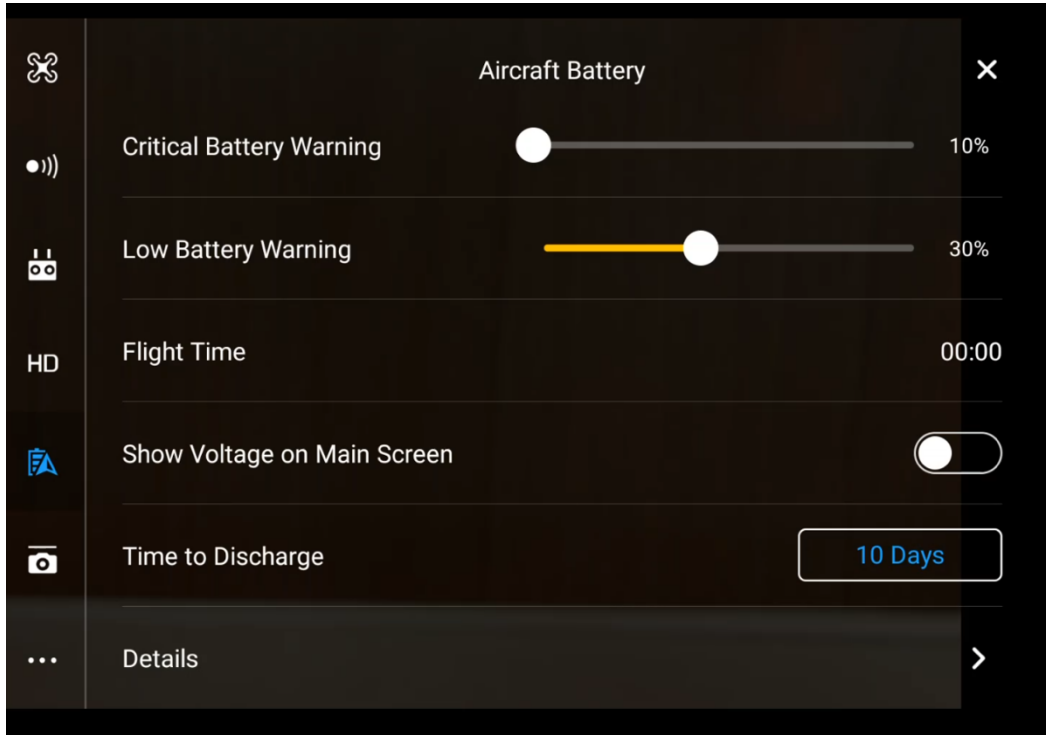




- Remote Controller Calibration.
- Stick mode : Default is mode 2
- Remote Controller Linking

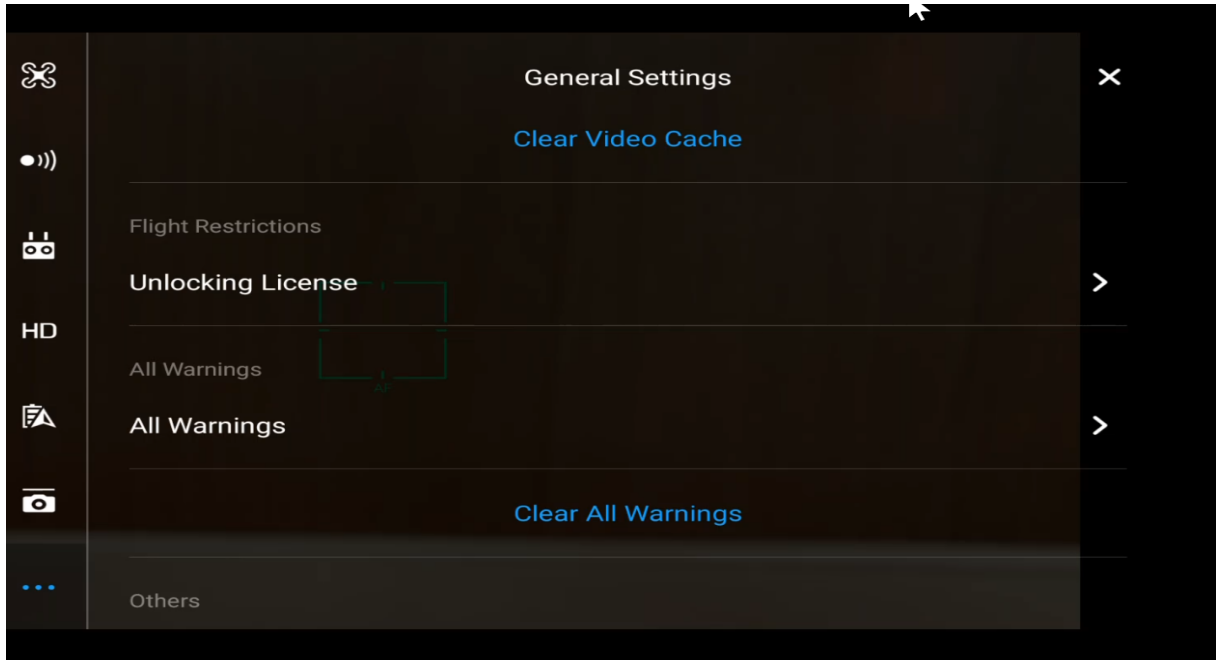
UAS – Battery Settings

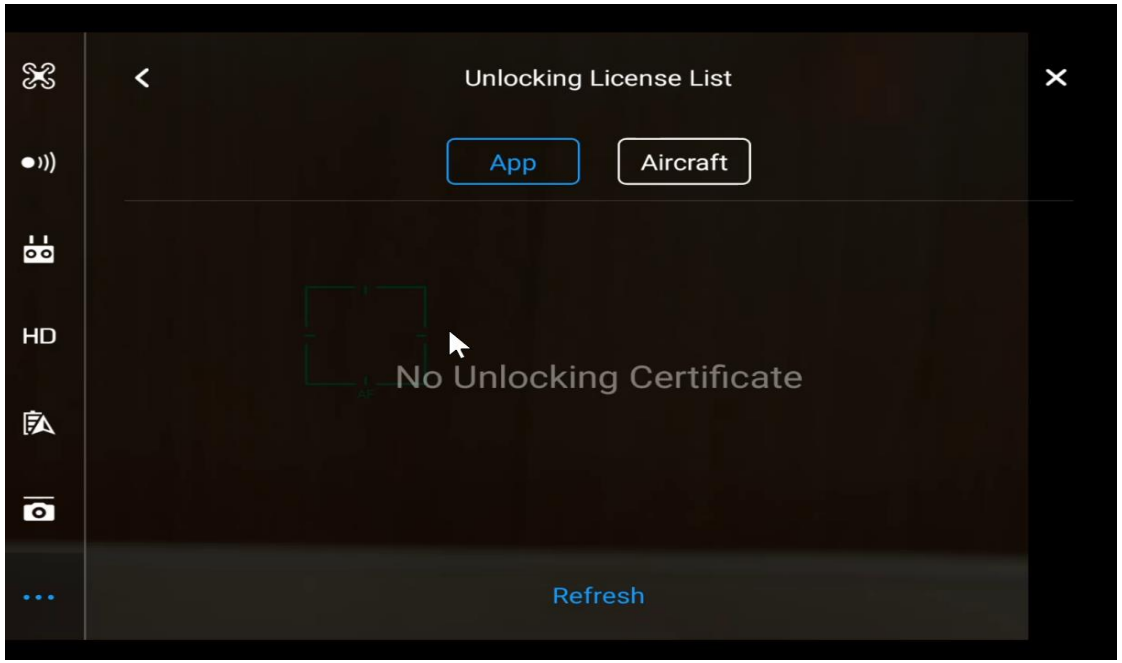




- Battery Health, Warning Level and Discharge settings.

UAS – General Settings





- Unlocking your aircraft to fly in restricted zone.

Questions?

Thank You