AirGon
GeoCue Group

AirGon Support
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Revision 2.0

DJI GS Pro (also known as Ground Station Pro) is an iOS app that allows the user to plan and fly missions with DJI aircraft. This document will demonstrate how to use DJI GS Pro for photogrammetric mapping missions.

Planning

1. Open DJI GS Pro and select *New* at the bottom left of the screen. Select *3D Map Area*, then select *Tap.* This allows us to plan our flight boundary by tapping on the screen.
2. Tap the button to the right of the mission name to rename the mission.

3. Tap once in the center of the project area to create a rectangular flight pattern around that point. Once the flight pattern appears, the boundary can be edited.

(Initial Flight Pattern)

4. To edit the boundary, tap the white points on the flight boundary to select the point. Once the point is selected (turns blue), drag and drop the point anywhere on the map. To add a point, press and hold the plus signs between the boundary markers. Tap 🗑 at the bottom left of the flight parameters settings window to delete the selected point.
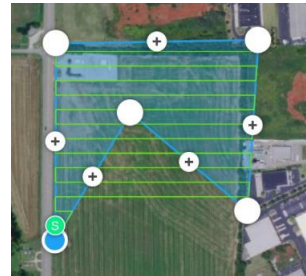

(Flight Pattern after moving and adding points)

5. Once the flight boundary has been defined, set the parameters under the *Basic* tab.
    a. Camera Model: Select the camera model being used.
    b. Shooting Angle: *Parallel to Main Path.*
    c. Capture mode: *Capture at Equal Dist. Interval*
    d. Flight Course Mode: *Scan* or *Inside*
        i. Inside Mode- Generates a flight path completely within our boundary.
        ii. Scan Mode- Generates the fastest flight path to cover an area.
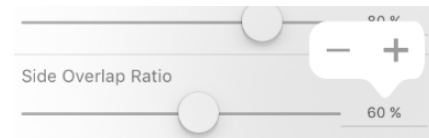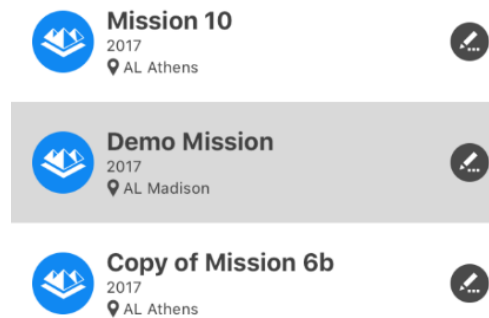

(Inside Mode)   (Scan Mode)

    e. Speed is not adjustable
    f. Altitude: Set altitude based on desired resolution.
6. Next, set the parameters under the Advanced tab.
    a. *Front Overlap Ratio: 80%.*
    b. *Side Overlap Ratio: 60%.*
    c. Course Angle: *0°*
    d. Margin: *0.0 M*
    e. Gimbal Pitch Angle: *-90°*
    f. End-Mission Action: *Return to Home*

Note: Use slide bar, or press and hold numbers to adjust.

        i. Set the altitude at which the aircraft will return home. Consider all obstacles between the end of the flight and the home location when setting this altitude.
        ii. Other options for this item include *Hover* and *Land.* *Hover* will cause the aircraft to hover at the last waypoint until the Pilot gives the command to return home. *Land* tells the aircraft to land at the last waypoint.

7. Check the flight time estimator and determine if enough batteries are available to complete the flight. GS Pro can continue a mission from a breakpoint, so multiple batteries can be used to complete a flight.
8. Save the mission by tapping ⬜ in the upper left corner of the map window. The flight plan can now be opened and loaded to the aircraft.
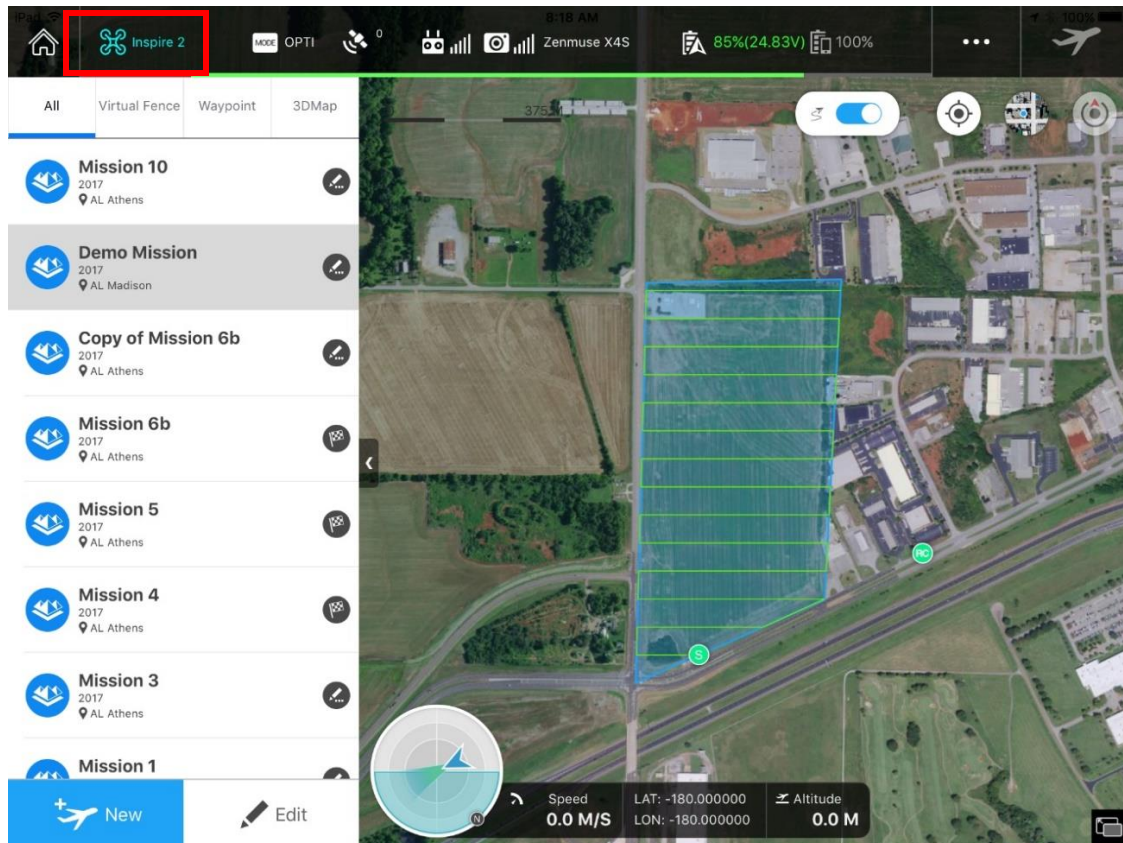
Flying a Mission

1. Connect the controller to the iPad with a USB cable.
2. Open DJI GS Pro and select a previously saved mission from the mission library on the left side of the screen. When the mission is selected, tap the *Edit* button
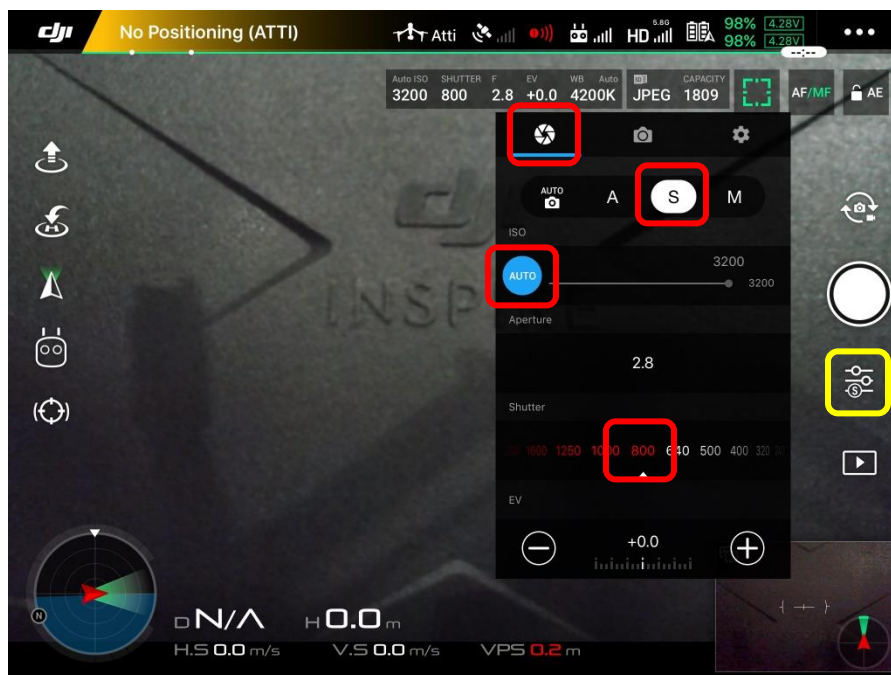

3. Power on the controller.
4. Place the aircraft on the ground near a control point.
5. Power on the aircraft and wait for the gimbal to initialize.
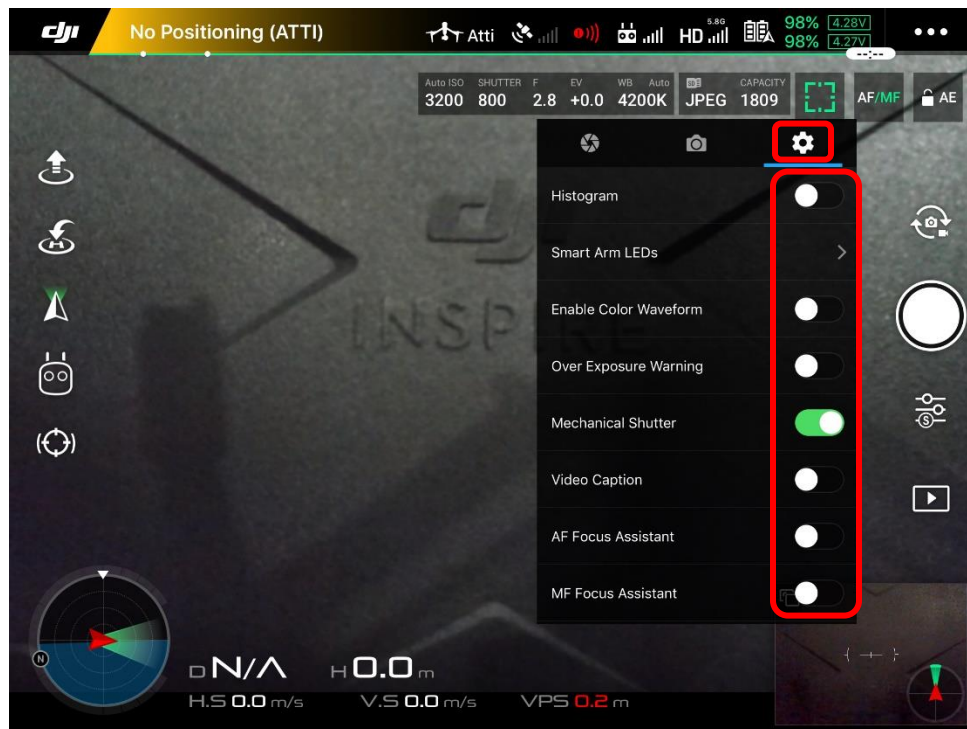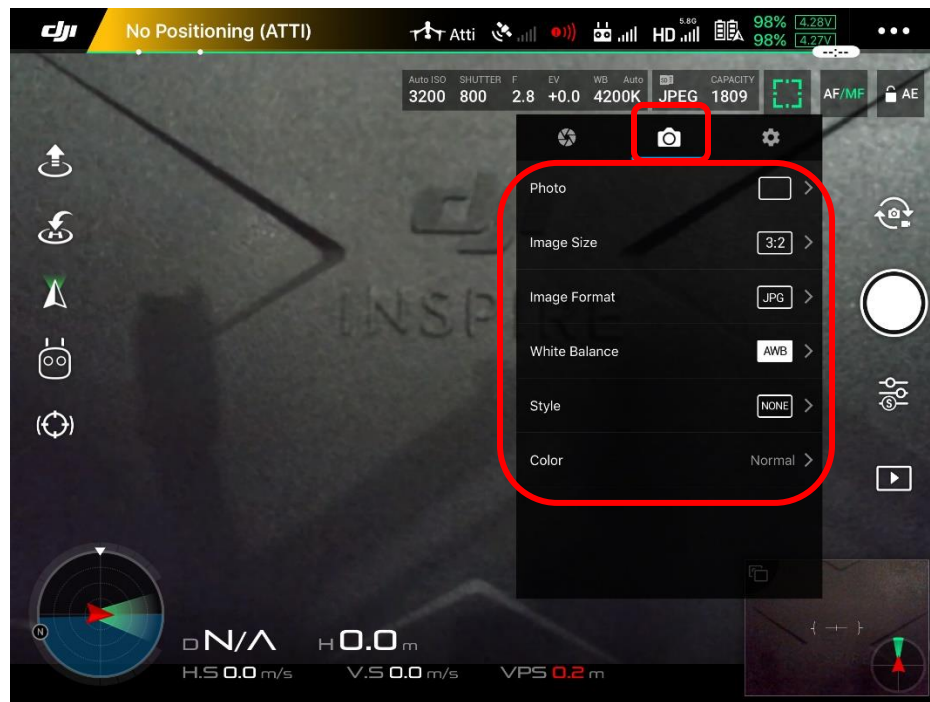6. Wait until DJI GS Pro Identifies the Aircraft.

7. Open DJI Go 4 and check camera settings: (Access camera settings through Go 4, not GS Pro)
   a. Verify that manual focus is selected and set to Infinity:
   b. Tap to focus mode should be selected (Green Square).
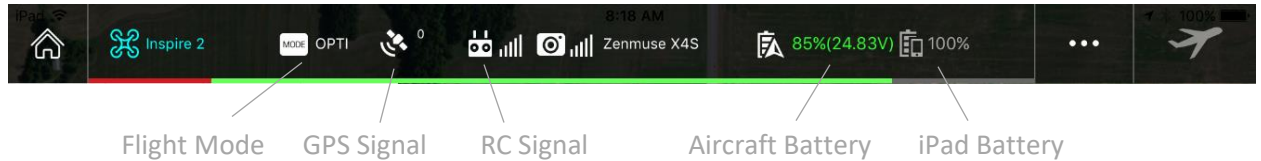

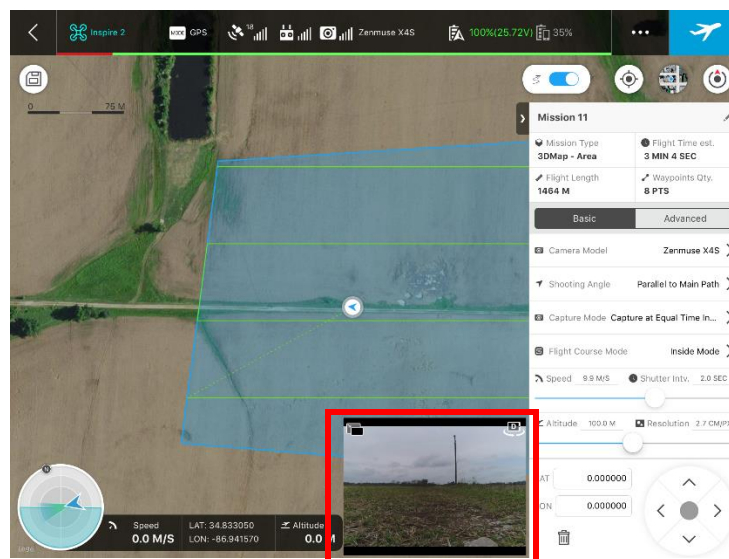   c. Open camera settings (Yellow Box) and set as shown for each of the top three menus:

d. Set *White Balance* to sunny or cloudy depending on conditions

8. Once settings have been verified, close DJI Go 4 and reopen GS Pro
9. Check the battery and GPS status.

Flight Mode   GPS Signal   RC Signal   Aircraft Battery   iPad Battery

10. Verify that the area is clear of personnel and obstacles.
11. Take a ground photo. (This is critical for processing and must be done before each flight.)
    a. To take a ground photo, tap the camera view.

    b. When the camera is at full screen, tap the shutter button to take the photo.

c. When the photo has been taken, return to DJI GS Pro by tapping the small window at the bottom right of the screen (The same way the camera view was opened)

12. When all settings have been verified, tap the *Prepare for Flight* button in the upper right corner of the screen.

This will display a checklist and load the mission to the aircraft.

(End-Mission Action will always be yellow as a reminder)

13. When all checks and safety measures have been made, tap *Start to Fly* and the aircraft will lift off and fly the mission.

14. If at any point the mission needs to be aborted, press the *Return to Home* (RTH) button on the controller. The aircraft will climb, or descend, to a preset altitude and then travel to the home location. Obstacle avoidance will be disabled during RTH mode so be sure to set a safe altitude before each flight.

Note: The aircraft will climb to the preset height so if the aircraft is hovering below objects when RTH is pressed, the aircraft will climb and crash into those objects.

15. If the mission is complete before the battery gets low, the aircraft will return to the home location and land. Occasionally the aircraft will pause 1 meter above the ground and wait for the pilot to give the command to land via the DJI GS Pro app.
16. If the mission reaches the low battery warning before the mission is complete, tap the **pause** button in the upper right corner of DJI GS Pro to pause the mission. (Pausing the mission allows the pilot to return to the last completed waypoint without losing the flight progress.)
17. Press and hold RTH on the controller and the aircraft will return to the home location.
18. When the aircraft lands and the propellers stop, power off the aircraft. Swap the batteries and power on the aircraft.   Do **not** close out DJI GS Pro or power off the controller. If connection is not made with the aircraft, unplug the cable from the iPad and plug it back in.

Note: If *End Mission* is selected instead of *Pause Mission*, the break point will not be saved and the mission must be re-flown from the beginning.

19. When the aircraft reconnects to DJI GS Pro, press *Resume Mission* (upper right corner) and the prepare for flight dialog appears.
20. Tap *Start to Fly* and the aircraft will take off and continue the mission. Repeat this step for multiple battery flights.