DJI GS PRO

User Manual

V2.0   2017.11

dji

Video Tutorials

Virtual Fence Mission

3D Map Area Mission

3D Map POI Mission

Waypoint Flight Mission

Contents

Disclaimer

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Warning

1. Ensure your flight area is safe before each flight.
2. Be sure to maintain a visual line of sight (VLOS) to your aircraft at all times. DJI GS Pro does not save in-app flight records. If lost while using DJI GS Pro, an aircraft cannot be located with the assistance of such records.
3. The aircraft will continue its mission or exit it according to the settings but only if remote controller signal is lost or disconnected during a mission.
   Go to ● ● ● > Advanced Settings to enable or disable "Exit Mission When Signal Lost" (disabled by default). If disabled, the aircraft will continue the mission, meaning Failsafe will not be triggered. If enabled, the aircraft will pause the mission and record a breakpoint. Then it will perform as the setting in "Remote Controller Signal Lost" in the DJI GO™ / DJI GO 4 app. Users can resume the mission after the signal recovers.
4. When the GNSS signal is strong, if the RTH button is pressed and held during a mission, the aircraft will stop the mission immediately and begin RTH. The mission cannot be continued and will need to be restarted.
5. When the battery level or voltage is low during mission, the DJI GS Pro will prompt a Low Battery Level Warning, and the aircraft will pause the mission and begin RTH or landing. The mission can be continued after replacing battery. The low battery threshold is the value pre-set in DJI GO / DJI GO 4 app.
6. Enabling iPad sound is strongly recommended to avoid missing important hints and warnings that help ensure a safe flight.
7. Aircraft with obstacle avoidance will have this capability enabled by default in DJI GS Pro to ensure flight safety. Check that the Sensing System is operational in the current surroundings. If it is not, disable it in the "Prepare for Flight" checklist, or the mission will not be able to start.
8. All of the altitude values in DJI GS Pro are relative to the altitude of the take-off point. In the same mission, the altitude above sea level for the same point during the mission will vary if taking off at different altitudes.

Introduction

DJI GS Pro (also known as Ground Station Pro) is an iPad app designed for industrial applications including but not limited to, aerial imaging, architecture, precision agriculture, electrical inspections, search and rescue, safety control, and more. It provides easy mission planning through different methods such as tapping on the map, setting points using the aircraft, or importing files, and automated aircraft control during the planned mission. DJI GS Pro is compatible with the iPad product line and many DJI aircraft, flight controllers, cameras and accessories*.

Download DJI GS Pro

Search for "DJI GS Pro" on the App Store, and install the app on your iPad.

⚠ • DJI GS Pro is supported on iOS 9.2 (or later).
  • First-time use requires an internet connection for activation.

💡 Your DJI devices can be activated in DJI GS Pro instead of DJI GO / DJI GO 4 app.

Connect the Aircraft

Connect the aircraft to DJI GS Pro as if using the DJI GO / DJI GO 4 app.

* Support for DJI devices will be added as testing and development continues. Visit the DJI GS Pro product page on dji.com for a complete list. http://www.dji.com/ground-station-pro

Mission Type

PhotoMap

DJI GS Pro automatically generates efficient flight paths after the user has set their required flight area and camera parameters. The aircraft will then follow this route to complete its aerial photography tasks. The user can then import photos directly into DJI GS Pro, and a photomap can be composited* automatically in the app, providing a reference for information for other missions. Users can also manually calibrate the composite result to reconstruct the actual environment more accurately.

Virtual Fence

A virtual fence defines a specific area of flight and is useful in scenarios where some areas of a site are no-fly zones or if flight should only happen within one area, such as during manual pesticide spraying or flight training. As the aircraft approaches the boundaries of the virtual fence it will slow to a hover, ensuring it stays within the flight area.

3D Map

3D Map Area: DJI GS Pro automatically generates efficient flight paths after the user has set their required flight area and camera parameters. The aircraft will then follow this route throughout its mission. The image data captured during these flights can be input into 3D reconstruction software to generate 3D maps.

3D Map POI**: 3D Map POI excels at gathering critical data from physical structures. Its parameter settings are similar to 3D Map Area, such as flight area and action, parameters, and overlap ratio. With new customizable features like Circle and Vertical, 3D Map POI provides complete accuracy for effective structural management.

Waypoint Flight

Set a waypoint flight path, define waypoint actions then start flying with a tap.

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* PhotoMap composite is a premium feature. By creating this type of mission, aerial photography and importing photos to DJI GS Pro will be enabled. Each account comes with five free trials to composite a photomap using aerial images. Please make a purchase via the prompt page for follow-up use and refer to the description in the app for details.

**3D Map POI is a premium feature. Creating and editing this type of mission is permitted but performance is disabled when left unpaid. Please make a purchase via the prompt page when starting a new mission. Please refer to the description in the app for details.

DJI GS Pro Interface
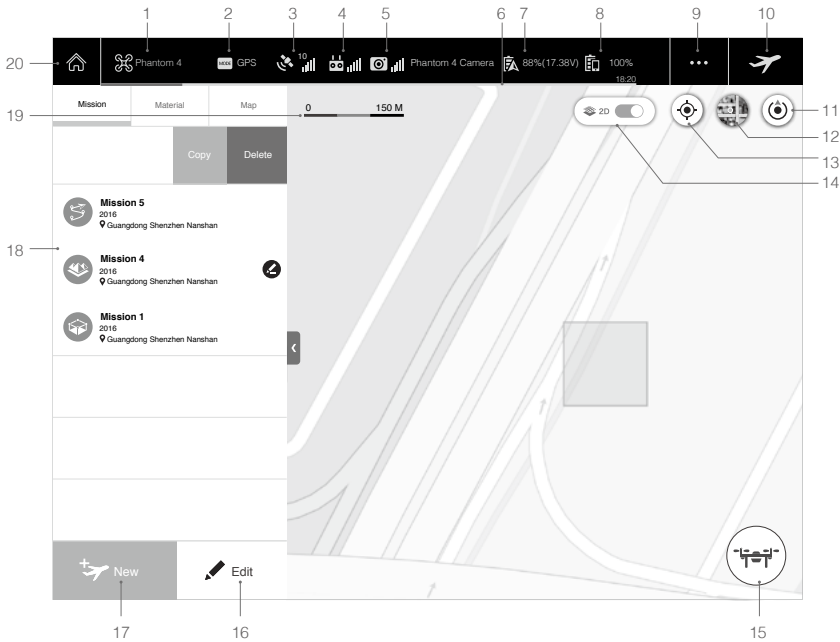
1. **Aircraft / Flight Controller Connection**

   ✂ : Shows the current connection status between DJI GS Pro and the aircraft or flight controller.

2. **Flight Mode**

   MODE : Shows the current flight mode of the aircraft.

3. **GNSS Signal Strength**

   📡 : Shows the current GNSS signal strength and number of connected satellites.

4. **Remote Controller Signal Strength**

   📶 : Shows the strength of the remote controller signal.

5. **Camera Model**

   📷 : Shows the camera model used and the strength of the video downlink.

6. **Battery Level Indicator**

   —— : Provides a dynamic display of the remaining flight time. The red zone represents critically low battery level.

7. **Aircraft Battery Level**

   📊88%(17.38V) : Shows the current battery level and battery voltage if using DJI Intelligent Flight Batteries, or it shows the current battery voltage if using other batteries.

8. iPad Battery Level
    🔋 100% : Shows the current battery level of the iPad.

9. General Settings
    • • • : Tap for compass calibration, stick mode, fly zone manager, and in-app purchase functions. Tap Advanced to display WGS84 coordinates (enable Map Optimization first), measurement unit settings, and aircraft action when the signal is lost. Tap Help for app or aircraft components versions (tap to switch), terms of use and user manual, etc.

10. Prepare for Flight / Pause Mission / Resume Mission / End Mission / Composite Map / Calibrate Map / Reset Calibration
    🛩 / 🛫 Prepare for Flight: Tap to enter the checklist after setting parameters.
     II Pause Mission: Tap to pause the mission during PhotoMap, 3D Map or Waypoint Flight missions. A menu for further actions will appear.
    ▶ Resume Mission: After pausing a mission, enter Edit mission, and tap this button. A menu will appear allowing you to resume a mission or carry out a different operation.
    🛩 End Mission: Tap to end a Virtual Fence mission, disabling the fence.
    🖼 Composite Map: After choosing photos corresponding to a PhotoMap mission and configuring parameters, tap to composite a photomap. Please refer to PhotoMap (p. 25) for details.
    ⊕ Calibrate Map: After a photomap composite, add the calibration point pairs and tap the icon to calibrate the composite result. Please refer to PhotoMap (p. 25) for details.
    ↻ Reset Calibration: Tap to reset the calibration map to the original one before the calibration is saved. Refer to PhotoMap (p. 25) for details.

11. Rotation Lock
    ◉ : Rotation is locked by default, i.e. the map view will not follow iPad rotation, and North is at the top. Tap the Rotation Lock button during mission editing to unlock rotation and have the map view follow the iPad rotation.

12. Map Mode
    🗺 : Tap to switch between Standard Map, Satellite Map or Hybrid Map.

13. Location
    ◈ : Tap to center the map around the iPad location.

14. 2D Switch
    ⚬▬⚫ : The switch will show up in any other interface except the Map tag on the Navigation Pane. After generating maps through the imported files or compositing photomap in GS Pro, if the maps are pinned, and the 2D switch is enabled, then the corresponding geometries or photomap will be displayed on the screen all the time. If the 2D switch is disabled, they will disappear.

15. Flight Telemetry and Camera Preview
    ⊕ : Tap this icon and the screen will display the flight telemetry and the camera preview. For more details, please refer to Parameter Setting Introduction (p. 15).

16. Edit Mission
    ✎ : Choose one mission in the mission list then tap this button to enter parameter settings.

17. **New Mission**
     ↳ : Tap to add a new mission then select mission type and waypoint setting method. Refer to Create Mission for more details.

18. **Navigation Pane**
     The Navigation Pane includes Mission, Material, and Map tag. Tap the arrow on the right of the list to collapse or expand it.
     Mission: View all missions, and tap a mission to select it. To copy or delete a mission, swipe it to the left and choose the appropriate option.
     Materials: Includes Files and Photos.
     Files will list all imported KML/SHP/KMZ/ZIP files or folders. Tap "Files" > "Start Import" to import KML/SHP files into GS Pro. Refer to Create a Mission for details.
     Photos will list all image data corresponding to PhotoMap missions. Tap ↓ or swipe to the left to select the image source and import them. Refer to PhotoMap (p. 25) for details.
     Map: You can view two kinds of map including vector maps generated through the imported KML/SHP files (refer to Create a Mission) and maps composited through a PhotoMap mission (refer to PhotoMap on p. 25).

19. **Scale**
     0 ────────150 M : Shows the current scale of the map.

20. **Back**
     ⌂ : Tap to return to the main menu.

Create a Mission

Create a mission via the following two methods:
Import KML/SHP files to generate maps for creating mission (3D Map Area POI excluded).
Tap on the screen or set points using the aircraft to create a mission.

Through Files

☀ • GS Pro supports KML, SHP, KMZ, and ZIP formats. When opening files on the iPad, GS Pro will automatically decompress KMZ and ZIP files. When uploading files to the server, only KML and SHP formats are supported.
   • GS Pro can generate polygons, line strings, and points. Points cannot be used to create a flight mission, yet can be used as a reference for GCP (Ground Control Point) setup.
   • Currently, WGS-84 is the only coordinate system supported by GS Pro.

Importing Files
You can import files in GS Pro, or choose GS Pro when opening files on the iPad.

Importing Files Using the Material tag in GS Pro
1. Go to the Navigation Pane in GS Pro, tap Material > Files > Start Import. A pop-up box will appear.
2. Enter the file server IP address in the box into the browser on your PC or Mac, then upload the KML/SHP files on the webpage.

3. After the upload is completed, tap "Done" in GS Pro. You can find the files in GS Pro under "Files". To delete the file, swipe it to the left and choose an option.

☀️ • Ensure that the iPad and the PC/Mac are connected to the same LAN when importing files. Otherwise, the file server cannot be accessed.
• The file server cannot be accessed by tapping "Done" in GS Pro. To enable the server again, tap "Start Import" in GS Pro.

Opening Files on the iPad
Download KML/SHP/KMZ/ZIP files on the iPad via Safari, email or another app. Then open the file and choose "DJI GS Pro" to import files into GS Pro. It will automatically decompress KMZ and ZIP files to their corresponding folders. You can find the files or folders in GS Pro under "Files". To delete the file, swipe it to the left and choose an option.

Generating and Managing Maps

☀️ Users can use the import function without limitation, while map generation can be used only five times for free on each iPad. Purchase more in GS Pro.

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1. Go to Files, swipe the desired KML/SHP file to the left, and then tap "Import". GS Pro will automatically process the file and generate geometries in the Map tag.
2. There will be a red dot on the Map tag after import. Tap the tag to find a group of maps for each KML/SHP file. Tap to expand or collapse them.
3. There are three kinds of geometries in the maps, polygons, line strings and points.
   Tap the geometry file, and the screen will show up the corresponding geometry.
   Swipe to the left to Create Mission, Pin or Delete an operation. Please note that there is no Create Mission option for points.
   Tap and hold the map on the list to enter the multi-select mode to Pin or Delete more than one map.
4. If geometry files are pinned, the screen will show them up all the time when viewing maps under the Map tag. In any other interface, use the 2D switch on the right side of the screen to enable/disable the display.

Creating a Mission

1. Under the Map tag, swipe the desired geometry file (points excluded), and then tap "Create Mission".
2. Choose an appropriate mission type.

Mission types will vary according to different geometries. Select PhotoMap, Virtual Fence or 3D Map Area for polygons or Waypoint Flight for line strings.
3. Flight areas or routes generated by a geometry will appear on the screen. Tap any point to select it, and it will turn from white to blue. Drag the point to change the area shape or flight

path. Add a point by dragging ⊕ onto the map. To delete a selected point, tap 🗑 in the bottom left corner of the parameter settings page.

4. Set each item in the parameter settings list and tap the "Save" button in the top left corner of the screen when complete. Refer to the Parameter Setting Introduction (p. 15) for more details.

Through the Screen or Aircraft

Tap on the screen or set points using the aircraft to generate flight areas or routes.

1. New Mission

Tap the New Mission button in the bottom left corner of the screen.

2. Choose Mission Type

Choose an appropriate mission type.

3. Choose Point Set Method

There are several methods for setting Virtual Fence boundaries, PhotoMap or 3D Map Area, building radius, and flight radius for 3D Map POI or flight waypoints. Once the points are confirmed, up to 99 waypoints can be included with the generated flight path. If the number of waypoints exceeds this, the mission will fail.

Tap: Tap on the map to create a boundary point of an area, flight waypoint, or center of a building to be circled.

Tapping the desired flight location on the map once will create a corresponding area or waypoint according to different types of mission.

Tapping in PhotoMap, Virtual Fence or 3D Map Area will create a rectangular flight zone around that point, while tapping in Waypoint Flight mission will create a single waypoint. Tap any point to select it and it will turn from white to blue. Drag the point to change the area shape or flight path. Drag ⊕ onto the map to add a point. To delete a selected point, tap 🗑 in the bottom left corner of the parameter settings page.

Tapping in 3D Map POI will create two concentric circles centered by that point. The black one indicates the circle of the building radius, and the blue one indicates the circle of the flight radius. Drag ⊕ towards the middle to adjust the center circle. Drag the white dot on each circle to adjust its corresponding radius.

Aircraft: You can fly the aircraft to the desired position and set the location as a boundary point in Virtual Fence or 3D Map Area as a waypoint in Waypoint Flight mission, or set the building and flight radius calculated through several places.

⚠ : In 3D Map POI, fly the aircraft to several positions around the building and tap the icon to select. At least two or more points are required to determine the radius of the center of the building. Tap ✓ to finish setting the building radius. Next, fly the aircraft to the desired position and tap ⚠ to set the flight radius. In other missions, tap to set the aircraft position as a boundary point or a waypoint.

↺ : Tap to delete the last point.

✓ : Tap to finish after setting all the required points.

Aircraft (Record Altitude): This method can only be used for Waypoint Flight missions. The instructions are the same as "Aircraft" above. In addition, both position and altitude will be recorded. When performing the mission, the aircraft will fly the preset position and altitude.

The flight area will be generated according to the order the points were set.

⚠ The area generated according to the order that the points were set cannot intersect otherwise a flight area cannot be generated. DJI GS Pro will decide if points can be used to generate a flight area. If not, the "Finish" button will be grayed out and cannot be tapped.

4. Parameter Settings

Set each item in the parameter setting list and tap the "Save" button in the top left corner of the screen when complete. Refer to the Parameter Setting Introduction (p. 15) for more details.

Perform Mission

Safety Instructions

Please pay careful attention when flying and shooting in 3D Map POI. Vertical and Circle (below) are the two modes in Flight Course Mode settings.

1. In Circle and Vertical mode, the aircraft will fly in a straight path between waypoints, although the actual distance between the aircraft and the structure may sometimes be shorter than the preset flight radius. During Capture at Equal Distance/Time Interval mode, the aircraft will fly along a parabola and the distance to the shooting target may be longer than the preset radius, so please make sure the surrounding area is open and large enough to avoid collision risks. To ensure flight safety, operators on the ground should move along with the aircraft to maintain line of sight as the aircraft flies around the structure.

2. In Vertical mode, the aircraft will fly up and down many times at a relatively low speed (1~4 m/s, although speed varies from different aircraft modes), which will lead to a longer shooting time and faster consumption of the battery level.

3. When resuming operations in Circle or Vertical mode, the aircraft will first ascend directly to a height equal to the previous waypoint, than fly towards it. To avoid collision risks, be sure there are no ceilings or buildings above the aircraft.

Pre-flight Checklist

Choose a mission in the mission list, tap "Edit" then tap "Prepare for Flight" in the top right corner of the screen. Check and adjust the aircraft according to the checklist that appears until all items are green, indicating that takeoff is permitted. Items in yellow require adjustment but the aircraft can take off without doing so. Only flying when all items are green is highly recommended.

Start to Fly

Tap "Start to fly" at the bottom of the checklist when ready. An aircraft's actions will vary depending on its mission. The Aircraft Status Bar will show the current aircraft status, mission progress, etc.

Please enter the fence

Speed
0.1M/S

LAT: 35.635709
LON: 139.788572

Height
54.9M
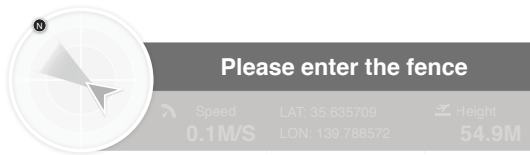
Virtual Fence

After starting, if the aircraft's latitude, longitude or altitude is outside of the fence boundaries, there will be visual and audio prompts on the iPad. The Virtual Fence will be disabled at this time and the aircraft can be flown freely. The Virtual Fence will be automatically enabled when the aircraft enters fence boundaries. Once inside, if the aircraft approaches the boundaries of the fence, it will slow to a hover and audio prompts will sound from the iPad.

PhotoMap / 3D Map / Waypoint Flight

After starting, the aircraft will fly to the start point automatically. In 3D Map POI, the altitude of the start point will be the preset maximum altitude.

Pause Mission

During PhotoMap, 3D Map or Waypoint Flight missions, tap the "Pause Mission" button on the top right corner of the screen to pause the mission. The aircraft will hover in place and record the last performed waypoint. The aircraft can then be flown freely and a menu will pop up with additional control options.

Resume from Last Stopped Point: The aircraft will continue the mission from the point where recording stopped.
Start Over: The aircraft will fly to the start point and restart the mission.
Cancel Current Mission: The aircraft will stop and exit from the current mission. The mission cannot be continued.
Back to Mission List: Back to the mission list. To check this menu again, select the required mission and tap edit then tap "Resume Mission".

Special Cases

1. During a Virtual Fence mission, if the aircraft flies out of the fence due to external forces i.e. strong wind, a prompt will appear in the Aircraft Status Bar, an audio prompt will sound from the iPad, and the fence will be disabled. Users must stop the mission and restart it.
2. During a Virtual Fence mission if the flight mode switch on the remote controller is toggled, the fence will be disabled immediately. The aircraft will stop and exit from the current mission, a prompt will appear in the Aircraft Status Bar, and an audio prompt will sound from the iPad.
3. During any mission, the aircraft will exit from its mission and enter a normal flight mode if positioning is not available due to a weak GNSS signal. Users can choose to continue the mission if the signal is strong. When continuing, the aircraft will continue from its last recorded point.
4. Low Battery Level Warning: When the battery level or voltage is lower than the value pre-set, an audio prompt will sound from the remote controller. After a few seconds, the aircraft will pause the mission and begin RTH. Users can cancel the RTH by pressing the Smart RTH button on the remote controller. The mission can be continued and the aircraft will continue the mission from the point where recording stopped after replacing battery.
5. Critically Low Battery Level Warning: When the battery level or voltage is lower than the value pre-set, an audio prompt will sound from the remote controller. The aircraft will pause the mission and land automatically. The mission can be continued and the aircraft will continue the mission from the point where recording stopped after replacing battery.

Mission Complete

After finishing a Virtual Fence mission, tap "End Mission" in the top right corner of the screen. After completing a PhotoMap, 3D Map or Waypoint Flight mission, the aircraft will perform the pre-set "End-Mission Action." The aircraft can be controlled freely after that. For PhotoMap missions, GS Pro will prompt a page with options where users can choose to download photos from the aircraft either immediately or later.

Parameter Setting Introduction

This section introduces the common screen elements for all mission types, then introduces separate parameters for each mission type.

Screen Elements
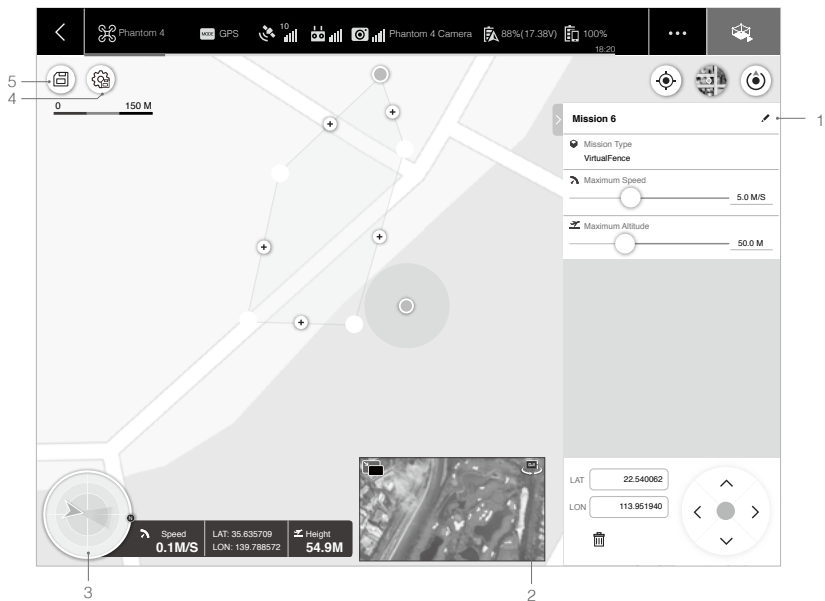
1. Parameter List

   ⟩ Collapse / ⟨ Expand: Tap to collapse or expand the list.

   Mission 6 ✎ Mission Name: Tap the button on the right to edit the mission name.

   🛡 🕐 ✎ ⤢ Mission Information: Information varies according to different mission types. These include: mission type, flight length, waypoint quantity, cover area, estimated flight time, estimated photos, batteries needed, capture interval (F: interval of two consecutive pictures captured along the same main path and S: interval of two pictures on two parallel main paths), camera settings (exposure mode, shutter speed, focus mode), motion blur (the ground sample distance due to motion blur with the current shutter speed and flight speed), etc. Swipe to view all.

   ⊸ Sliders: Slide left or right to adjust values.

   5.0 M/S Text Box: Tap and hold to show fine tuning buttons. Tap to adjust.

   Boundary Point / Building Center / Waypoint Edit

15
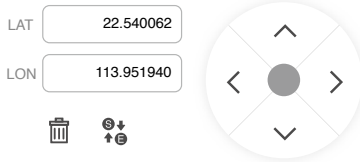
a. Latitude & Longitude: Tap the box to input values. Tap the arrow keys on the right for fine tuning. Up and down adjust latitude while left and right adjust longitude.
b. Delete: Select a point then tap this button to delete it.
c. Reverse Path: This option will appear in Waypoint Flight missions. Tap it to swap the start and end points to reverse the flight path. "S" refers to the start point.

2. **Camera Preview**

    / : The real-time camera view will be shown here once the image feed is received. Tap   to minimize the preview. Tap the window to enter Camera View for camera settings. For more details, please refer to Camera View.

      : If using a DJI A3 or Matrice 600 series device equipped with a DJI gimbal, camera, or other HDMI/AV camera, tap this icon to configure available preview sources and the bandwidth ratio between sources.

3. **Flight Telemetry**
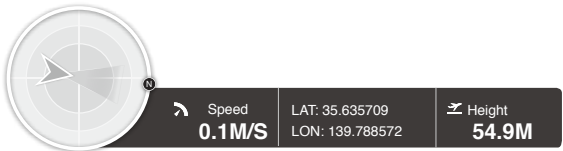
    Flight Attitude and Radar Functions
    The aircraft's flight attitude is indicated by the circular icon.
    a. The blue arrow indicates the aircraft and shows the direction it is facing.
    b. The ratio of the grey and blue areas indicate aircraft pitch.
    c. The horizontal level of the grey area indicates the aircraft's roll angle.

    Flight Parameters
    Speed: Movement speed of the aircraft.
    Latitude & Longitude: Two values that define aircraft location.
    Altitude: Vertical distance from the takeoff point.
    North: indicates North according to the iPad location. This North is unrelated to North on the map.
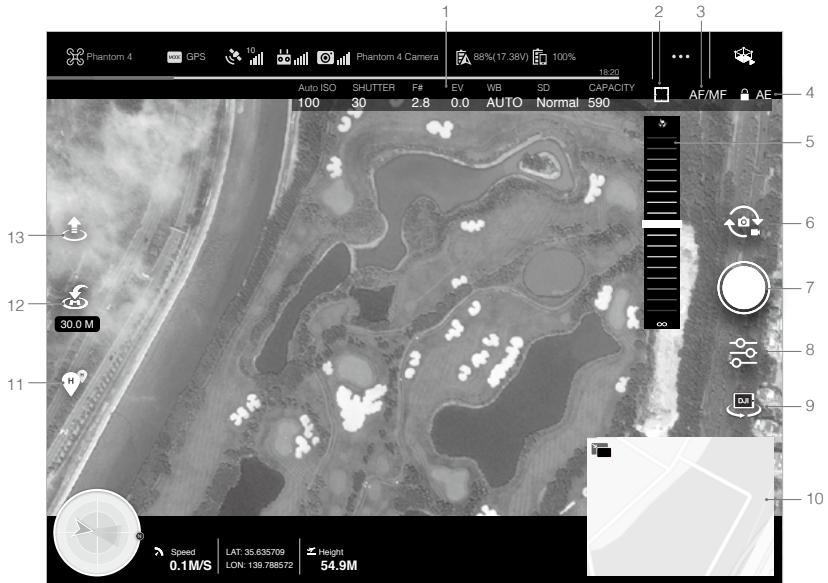
4. **Saving Default Settings**
      : Tap to save the current settings as the default settings. These settings will now be used for missions created hereafter.

5. **Save**
      : Tap to save current settings.

Camera View

1. **Camera Parameters**

   Displays camera settings parameters and capacity of the Micro SD card.

Auto ISO	SHUTTER	F#	EV	WB	SD	CAPACITY
100	30	2.8	0.0	AUTO	Normal	590

2. **Focus / Metering Button**

   ⌖ / ⊙ : Tap to switch between focus and metering mode. Tap to select object for focusing or metering. Auto Focus-Continuous will be triggered automatically according to the status of the aircraft and camera after enabling Auto Focus.

3. **Auto Focus / Manual Focus**

   AF/MF : Tap to switch between Auto Focus and Manual Focus. If using Auto Focus, tap an object on screen to focus. If using Manual Focus, slide the Focal Length Slider to focus.

4. **Auto Exposure Lock / Unlock**

   🔓AE / 🔒AE : Tap this to lock an exposure value, and tap again to unlock it.

5. **Focal Length Slider**

   If using Manual Focus, slide this slider to focus.

6. **Photo / Video Toggle**

   ⟳ : Tap to switch between photo and video recording modes.

7. **Shoot / Record Button**

◉ / ● : Tap this to shoot photos or record video. When recording video, there will be a time code under the button to show how long the camera has been recording. Alternatively, you can press the Shutter Button or Video Recording Button on the remote controller.

8. **Camera Settings**

⚙ : Tap to set the ISO, Shutter Speed, F-number and Exposure Value of the camera, Capture Mode, Image Size, Image Format and White Balance, AF Assistant, MF Assistant and Grid.

9. **Available Preview Sources**

▦ : If using a DJI A3 or Matrice 600 series device equipped with a DJI gimbal, camera, or other HDMI/AV camera, tap this icon to configure available preview sources and the bandwidth ratio between sources.

10. **Map**

Tap the map to return to the main interface. Tap the icon in the left top corner to minimize the map.
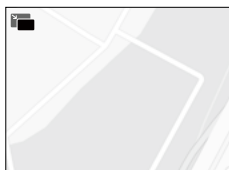
11. **Home Point Setting Button**

⌂ : Tap this to set the aircraft location or device location as Home Point.

12. **Smart RTH**

⟲ : Tap this to initiate the Return to Home (RTH) function. The aircraft will return to the last recorded home point, land and stop the motors. Tap the text under the icon to set an RTH altitude.

13. **Auto Takeoff / Landing**

⤴ / ⤵ : Tap to initiate auto takeoff or landing.

Virtual Fence

1. **Maximum Speed**
   Aircraft speed limit. This is 5m/s by default. The range is 1 to 12m/s.

2. **Maximum Altitude**
   Aircraft altitude limit. This is 50m by default. The range is 2 to 150m.

PhotoMap / 3D Map

The settings of PhotoMap, 3D Map Area and 3D Map POI are similar. Unless otherwise specified, the descriptions below are compatible with all the three types of missions.

Main Path: The flight path on which shooting is required is called the Main Path in a 3D Map mission.

Flight Path Display

Displays the generated flight path if enabled. The path will be hidden if disabled.

Basic

Basic	Advanced
Camera Model	Phantom 4 Camera >
Shooting Angle	Parallel to Main Path >
Capture Mode	Capture at Equal Dist. Interval >
Flight Course Mode	Scan Mode >
Speed 2.5 M/S	Shutter Intv. 2.0 SEC
Altitude 93.3 M	Resolution 4.0 CM/PX

Basic	Advanced
Camera Model	Phantom 4 Camera >
Flight Course Mode	Vertical Mode >
Capture Mode	Capture at Equal Dist. Interval >
Speed 2.5 M/S	
Flight Rad. 146.1 M	Resolution 2.9 CM/PX
Building Radius	78.3 M
Min Alt. 50.0 M	Max Alt. 118..2 M

PhotoMap / 3D Map Area | 3D Map POI

1. **Camera Model**
   Always set parameters according to the camera and lens used in order to calculate the optimal flight path.
   Fixed Lens: Includes DJI Phantom 3 series, Phantom 4 series and Mavic Pro, Zenmuse X3, and Zenmuse X4S cameras. The app will choose the corresponding camera when an aircraft is connected.
   Variable Lens (Zenmuse X5 / Zenmuse X5R / Zenmuse X5S / Zenmuse Z3): Tap to enter, set the parameters according to the lens or zoom level used then tap "Add Camera".
   Custom Camera: Tap "New Custom Camera", set the parameters according to the camera and lens used (input "1", if you're not sure about distortion) then tap "Add Camera".

2. **Shooting Angle (for PhotoMap and 3D Map Area only)**
   Choose the direction of the camera when flying along the path.

   Parallel to Main Path: The camera is parallel to the main path, i.e. the angle of the camera pan axis is the same as the angle of the main path. The pictures captured on the main path will be put in order as shown.

Vertical to Main Path: The camera pan axis is vertical to the main path. The pictures captured on the main path will be put in order as shown.

3. **Capture Mode**

   Hover & Capture at a Point: The app will calculate the flight path and waypoint quantity according to the parameters. When performing a mission, the aircraft will hover and capture at each waypoint. In this mode, shooting is stable, but the time required will be long. The number of waypoints required may be large, which will also make mission times longer.

   Capture at Equal Dist. Interval / Time Interval: In Capture at Equal Dist. Interval / Time Interval Modes, the aircraft will not hover during capturing as it flies along the main path. Users can set the shutter interval. The flight speed is calculated automatically according to the camera features and the altitude (resolution) setting. In this mode, operation is fast. However, short exposure times are required.

   ⚠ If the interval is too small, Equal Dist. Interval / Time Interval are not be available due to the short shooting interval or the minimum speed of the aircraft. If this occurs, a warning will pop up and the aircraft will switch to Hover & Capture at a Point automatically.

   ☀ Flight controller version 3.2.10 or later is required for Distance Interval / Time Interval. If using an older version, a prompt will appear warning that this is not available. This capture mode can be used after a firmware update. Go to General Settings > Help > App Version, to check the current flight controller version.

4. **Flight Course Mode**

   In PhotoMap or 3D Map Area, choose between Scan and Inside Mode.

   Scan Mode: Generate a flight course by scanning line by line. For a concave polygon, the course may be beyond the area boundaries.

   Inside Mode: Every part of the flight course generated will be inside the area. For a convex polygon, the course will be the same as the one generated in scan mode. For a concave polygon, the course will be optimized for accuracy so the flight course may intersect.

   In 3D Map POI, choose between Vertical and Circle Mode.

   Vertical Mode: The flight course generated will be a square zigzag route with the vertical path as the main path. When shooting along the main path is completed, the aircraft will shift to the next one and then continue shooting.

   Circle Mode: The flight course generated will be a circular path at different altitudes. Each circular path is the main path. The aircraft will fly and shoot from top to the bottom. When shooting along one of the main paths is completed, it will descend to the next one at the starting point and then continue shooting.

5. **Speed**

   Flight speed can only be set in Hover & Capture at a Point. Speed is defined as 5m/s by default and can be set between 1 to 15m/s. In Distance Interval / Time Interval, the speed is calculated automatically, so it cannot be adjusted here.

6. **Shutter Interval**

   Tap this and hold to set a shutter interval when the capture mode is set as "Capture at Equal Dist. Interval" or "Time Interval". If an error prompt appears, follow the on-screen instructions to adjust the corresponding settings.

7. **Altitude (for PhotoMap and 3D Map Area only)**

   Adjust the flight altitude or the corresponding resolution. It is defined as 50m by default and can be set between 5 to 500m.

8. Flight Radius and Building Radius (for 3D Map POI only)

Adjust the flight radius and building radius or the corresponding resolution. The maximum flight radius can be 500m, while the minimum building radius can be 1m.
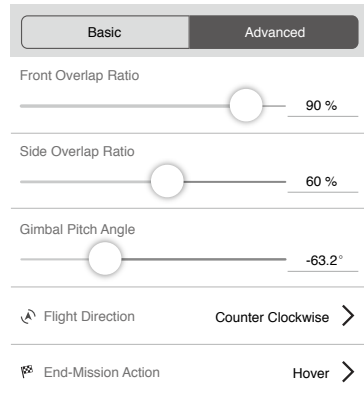
9. Min Alt. and Max Alt. (for 3D Map POI only)

Set the minimum and maximum flying altitude. The flight course generated will be in this range. It can be set between 1 to 500 m.

Advanced
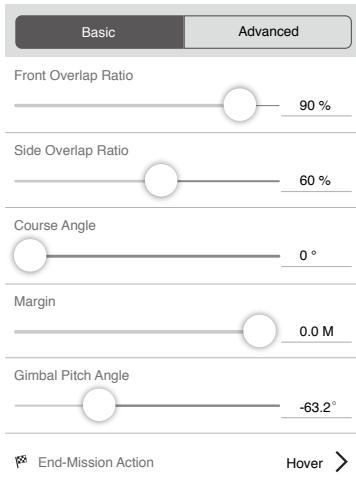
PhotoMap / 3D Map Area   3D Map POI

1. **Front Overlap Ratio**

The overlap ratio of two consecutive pictures captured along the same main path. This is defined as 90% by default and can be set from 10% to 99%.

2. **Side Overlap Ratio**

The overlap ratio of two pictures on two parallel main paths. This is defined as 60% by default and can be set from 10% to 99%.

3. **Course Angle** (for 3D Map Area only)

The angle of the main path. East is 0°, with a positive value when it is counterclockwise and a negative value when it is clockwise. The range can be set from 0° to 360°.

4. **Margin** (for 3D Map Area only)

Expand (positive value) or narrow (negative value) the area margin for control over the area of flight. The margin range is defined as -30 to +30m in scan mode and -30 to 0m in inside mode.

5. **Gimbal Pitch Angle** (for 3D Map Area and 3D Map POI only)

The gimbal pitch angle at the selected waypoint. Pitch angle can range from -90° to 0°, with downward represented by -90° and forward represented by 0°.

For a 3D Map Area mission, the flight course will be moved for a distance in the rear direction of the aircraft according to the gimbal pitch angle.

The distance will be automatically calculated based on the gimbal pitch angle to ensure that the camera is always facing the flight area. When the pitch angle exceeds -45°, the distance will remain at the value when the pitch angle is set at -45°.

6. **End-Mission Action**

Aircraft action after completing a mission.

Return to Home: Tap to enter and set the RTH altitude. If the aircraft altitude is higher than this pre-set value, it will return to home at its mission completion altitude. If the aircraft altitude is lower than the pre-set value it will ascend to the RTH altitude after mission completion before returning to home.

Hover: The aircraft will hover at the final waypoint after mission completion. Then users can then control the aircraft directly.

Land: The aircraft will land at the final waypoint and stop motors automatically after mission completion.

7. **Flight Direction (for 3D Map POI only)**

The flight course around the building when performing a mission. Choose between Clockwise and Counter Clockwise.

☼ Since up to 99 waypoints can be set for a mission, users can adjust the capture mode, flight radius, flight altitude, or overlap ratio to reduce waypoint quantity, if too many.

Waypoint Flight

All Points

1. **Speed**

Auto: The aircraft will fly at a constant speed during a Waypoint Flight mission. Slide the slider to set a flight speed from 1 to 15m/s.

Manual: Flight speed during a Waypoint Flight mission can be controlled manually. Slide the slider to set a maximum flight speed from 1 to 15m/s.

2. **Altitude**

The relative altitude between the aircraft and the takeoff point during flight. This can be set from 1 to 500m. You can also set the altitude of each point in "Each Point" settings.

3. **Aircraft Heading**

Course Aligned: The aircraft's nose is always aligned to the direction of the next two waypoints.

Defined Per Point: Set aircraft heading at each waypoint in "Each Point" settings.

Manual: Users manually control the aircraft heading using the control sticks.

4. **Gimbal Pitch Angle**

Manual: Users manually control gimbal pitch through the gimbal dial.

Defined Per Point: Set gimbal pitch angle at each waypoint in "Each Point" settings.

5. **Cornering**

Straight: The aircraft will fly to a waypoint and perform Waypoint Actions. If no Waypoint Actions are set on a waypoint, the aircraft will stop at the waypoint, adjust its heading and fly to the next waypoint.

Curved: The aircraft will fly on a smooth curve when passing by a waypoint. Set a "Cornering Radius" for each waypoint in "Each Point" settings. However, be aware that Waypoint Actions will be disabled if "Cornering" is set to "Curved".

6. **End-Mission Action**

Aircraft action after mission complete.

Return to Home: Tap to enter and set the RTH altitude. If the aircraft altitude is higher than this pre-set value, it will return to home at its mission completion altitude. If the aircraft altitude is lower than the pre-set value it will ascend to the RTH altitude after mission completion before returning to home.

Hover: The aircraft will hover at the final waypoint after mission completion. Then users can then control the aircraft directly.

Land: The aircraft will land at the final waypoint and stop motors automatically after mission completion.

Each Point

Select a waypoint (it will turn blue when selected) then set waypoint parameters. Tap " < " or " > " on the right of "Each Point" to switch to the previous or next waypoint.

1. Altitude

    If disabled, the altitude will be set according to "All Points" settings. If enabled, the altitude of each waypoint can be set separately. Then range can be set from 1 to 500m. The aircraft will ascend and descend automatically during flight according to the value of each waypoint.

2. Aircraft Heading

    This option will be available only if "Defined Per Point" is set for "Aircraft Heading" in "All Points" settings. North is 0°, with a positive value indicating clockwise. The available range is from -180° to 180°.

3. Aircraft Rotation Direction

    The aircraft rotation direction when flying to the next waypoint. This option will be available only if "Defined Per Point" is set for "Aircraft Heading" in "All Points" settings. Choose from Clockwise, Counter Clockwise and Auto.

4. Gimbal Pitch Angle

    The gimbal pitch angle at the selected waypoint. This option will be available only if "Defined Per Point" is set for "Gimbal Pitch Angle" in "All Points" settings. Pitch angle can range from -90° to 0°, with downward represented by -90° and forward represented by 0°. The gimbal will tilt gradually to the angle pre-set at the next waypoint if the values at the two consecutive waypoints are different.

5. Cornering Radius

    This is the aircraft's cornering radius when flying past a waypoint. This option will be available only if "Cornering" is set to "Curved" in "All Points" settings. Note that the "Cornering Radius" setting is unavailable for start and stop points.

6. Waypoint Action

    Tap to enter. Up to 15 actions can be added. Delete actions, re-order them or copy them to other waypoints.

    Add Waypoint Actions: Tap to add. Actions will be performed in the order they are added unless re-ordered.

    a. Hover: The aircraft will hover at the waypoint. Tap to set hovering time.

    b. Photo Capture: Capture on arrival at a waypoint. Note that Photo Capture cannot be added if the camera is recording.

    c. Start Recording: Start recording on arrival at a waypoint. Note that Start Recording cannot be added if the camera is already recording.

    d. Stop Recording: Stop recording on arrival at a waypoint. Note that Stop Recording cannot be added if the camera is not recording.

    e. Aircraft Rotation: Adjust the aircraft heading on arrival at a waypoint. Tap to set the rotation angle. North is 0° with a negative value representing clockwise and the range is -180° to 180°.

    f. Gimbal Pitch Rotation: Adjust the gimbal pitch angle on arrival at this waypoint. Pitch angle can range from -90° to 0°, with downward represented by -90° and forward represented by 0°. If "Gimbal Pitch Angle" is set as a value in "Each Point" settings, the aircraft will fly to the waypoint with the defined Gimbal Pitch Angle then adjust it according to the Gimbal Pitch Rotation settings defined when adding a Waypoint Action for the current waypoint.

    Delete Action: Slide the desired action in the action list left then tap Delete.

    Re-Order: Tap to enter. Tap and hold the desired action, drag it to the desired position and release. After all the actions are in the desired position, tap Re-Order Finished.

    Propagate Actions: Tap to copy all actions to all other waypoints.

PhotoMap

When a PhotoMap mission is completed, users can import images into GS Pro to composite a 2D map. Calibration can also be applied to the composite result.

Importing Photos

After a mission, GS Pro will show a prompt window to remind users to download photos from the aircraft. A new material item will also be generated under the Material tag for the photo set of the current flight. Follow the instructions below to import photos if you missed the prompt window.

1. Tap the "Material" tag in the Navigation Pane. It will show photo materials which have the same name as their corresponding PhotoMap missions.
2. Tap the icon ⬇ on the right of the desired mission, and then choose a photo source between "From Photo Library" on the iPad and "From Aircraft."
   a. If you want to choose "From Photo Library" on the iPad, a Lightning to SD Card Camera Reader is required to import the photos to the Micro SD card of the aircraft to "Photos" on the iPad. Next, tap "From Photo Library" in GS Pro; it will display photos matching the current mission. Users can choose part or all of the photos and then tap "Import."
   b. If "From Aircraft" is selected, ensure that the aircraft is connected to the remote controller. GS Pro will download the corresponding aerial photos automatically. Make sure that the Micro SD card of the aircraft includes all of the pictures taken during this flight. Otherwise, the import will fail.

   ⚡ Since downloading photos from the aircraft takes long time, it is recommended to import a large number of photos to the iPad through a Lightning to SD Card Camera Reader.

3. After photos have been imported, if there is an update, swipe the mission to the left and then tap "Import" to select the photo source again. This operation is the same as Step 2.

Compositing a Map

1. Tap the desired mission in the "Material" tag to enter the editing page.
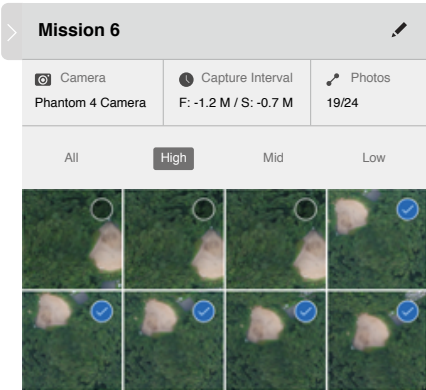
⟩ Collapse / ⟨ Expand: Tap to collapse or expand the editing page.

`Mission 6` ✎ Material Name: Tap the button on the right to edit its name.

⊙ Camera: Displays the camera model used.

🕐 Capture Interval: F indicates the interval of two consecutive pictures captured along the same main path, and S indicates the interval of two pictures on two parallel main paths. The intervals will vary according to the number of selected photos.

🔦 Photo Number: Displays the number of selected photos and all photos.

All / High / Mid / Low: Select the number of photos used to composite a map (the four options are listed as the number of photos from more to less). The more the photos you select, the more precise the composite map may be, and also the more system resources will be used. The GS Pro will select the corresponding photos automatically according to different options. Users can also manually select photos required in the Photo Preview section.

🖼 Photo Preview and Select: Click the photo to view it in full screen, and click the circle in the upper right corner to select the photo or deselect.

2. Coordinates of each photo, when captured, will be displayed in the map view. A yellow dot indicates that the corresponding photo has been selected, and the white dot indicates that it has not been selected.

3. After photos have been selected, tap the composite button on the upper right corner and wait for the composite to complete. If the composite gets canceled halfway, it will start over after tapping the button again.

4. There will be a red dot on the Map tag after the composite. Tap the tag to find folders with the same name as each PhotoMap mission. Tap to expand or collapse them.

Managing Maps

1. In the photomap list under the Map tag, tap a map, and the screen will show up the corresponding composite result.

2. Swipe to the left to Calibrate, Pin or Delete the map. Please note that there is no Calibrate option for calibrated maps. Select Calibrate for composite map calibration. Refer to Calibrating Maps for details.

3. Tap and hold the map on the list to enter the multi-select mode to Pin or Delete more than one map.

4. If maps are pinned, the screen will show them up all the time when viewing maps under the Map tag. In any other interface, use the 2D switch on the right side of the screen to enable/disable the display.

Calibrating Maps

There will be an offset between the photomap composited by aerial photos and its actual position due to aircraft positioning deviation when capturing and also photo quality. Select three or more references as reference points and obtain their exact coordinates for map calibration in GS Pro.

1. Under the photomap list, swipe the desired map to the left, then tap Calibrate to enter the map calibration page.

〉 Collapse / 〈 Expand: Tap to collapse or expand the editing page.

Composition 1 ✎ Map Name: Tap the button on the right to edit its name.

Control Point 1 Control Point Pair List: Displays the added control point pairs including reference points and correction points. Tap to select from them.

⚲ Offset: Shows the offset between the selected correction point and reference point. For example, "West 1.5m, North 1.0m" indicates that the correction position is away from the reference point 1.5m in the west and 1.0m in the north.

Reference Correction Reference Point / Correction Point: Tap to select the reference point or correction point in the point pair, and then change the values or delete the point in the editing section under it.

Longitude / Latitude: Displays the longitude and latitude of the selected point. Tap the text box or arrow keys to adjust the values.

🗑 Delete: Tap to delete the selected reference point or correction point.

Ⓐ Aircraft: Tap to set the current position of the aircraft as the correction point position corresponding to the selected reference point. Ensure that the aircraft is connected to GS Pro when using this function.

2. Tap the map and a point pair for calibration will be generated automatically. All the point pairs are listed in order. The yellow points on the map are reference points, which correspond to the on-map position of each reference, while the blue points are correction points, which are the actual positions corresponding to the reference points.

3. Drag the point on the map to change its position. Tap a point on the map to select it, and it will be lit up. Next, edit it in the editing section.

4. After adding three or more calibration point pairs, tap the calibration button on the upper right corner to start calibration.
5. The screen will show up the calibrated map when calibration is completed.
6. If re-calibration is needed, tap the reset button in the upper right corner. The map will go back to the original one.
   Tap the return button on the upper left corner and then tap Save to save the current calibration.
7. There will be a calibrated map in the map list if saved. Swipe to the left or tap and hold to Pin or Delete it.

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