

DJI TERRA

User Manual

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Disclaimer

Read this disclaimer and the terms in DJI TERRA™ (hereinafter referred to as “product”) carefully before using this product. By using this product, you hereby agree to this disclaimer and the Terms of Use and signify that you have read it fully. Please install and use this product in strict accordance with the User Manual. SZ DJI TECHNOLOGY CO., LTD. and its affiliated companies assume no liability for damage(s) or injuries incurred directly or indirectly from using this product improperly.

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This disclaimer is produced in various languages. In the event of variance among different versions, the Chinese version shall prevail when the product in question is purchased in China, and the English version shall prevail when the product in question is purchased in any other region.

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.
3. The aircraft will continue its mission, meaning Failsafe RTH will not be triggered, if the remote controller signal is lost during the mission.
4. When the GNSS signal is strong and the RTH button is pressed and held during a mission, the aircraft will stop the mission immediately and begin RTH. Users can resume the mission if required.
5. When there is only sufficient battery power for RTH during a mission, the remote controller will alert for a few moments, the aircraft will pause the mission, and begin RTH. After replacing the battery, the mission can resume from the paused point
6. When using an aircraft with obstacle avoidance function, check that the Sensing System is operational in the current surroundings. If it is not, disable it in DJI Terra (go to  > ), or flight may be adversely affected.
7. All of the altitude values in DJI Terra are relative to the altitude of the takeoff 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 Terra is a PC software designed to improve mission performance efficiency for industrial applications including — but not limited to — agricultural plant protection, search and rescue, and firefighting. It can control a DJI aircraft* to fly along a planned 2D or 3D route and provides functions such as 2D map reconstruction, 3D model reconstruction, field planning, and more.

* Support for DJI devices will be added as testing and development continues. Visit the DJI Terra product page on [dji.com](https://www.dji.com/dji-terra) for a complete list. <https://www.dji.com/dji-terra>

DJI Terra has four versions: Basic, Pro, and Electricity. To purchase DJI Terra, visit the DJI Online Store or the official DJI website. After purchasing, activate licenses and bind devices using DJI Terra. For more information, refer to “More Functions” on p. 46.

Basic version includes functions such as real-time 2D mapping, 2D map reconstruction (for field and fruit tree scenes), 2D multispectral reconstruction, and agriculture applications.

Pro version includes all the functions from Basic version with additional functions such as importing KML files, importing image POS data, 2D map reconstruction (for urban scenes), ROI reconstruction,

output coordinate system settings, multi-GPU reconstruction, 3D model reconstruction, 3D Mission Planning, and GCP management.

Electricity version includes all the functions from Pro version with additional functions such as 3D model reconstruction (for power lines scenes) and detailed inspection.

NOTE: The Basic version is only available in China.

Download and Launch

DJI Terra is supported on Windows 7 (64-bit) or later.

Your computer should meet certain hardware requirements for optimal use of some of the advanced functions such as reconstruction.

Hardware	Real-time 2D Mapping	2D Map Reconstruction / 3D Model Reconstruction / Real-time 3D Mapping
CPU	i5 or later	
GPU	NVIDIA graphics card is recommended	GeForce GTX TITAN X, GeForce RTX 2080 Ti GeForce GTX 1080 Ti, GeForce GTX 1080 GeForce GTX 1070 Ti, GeForce GTX 1070 GeForce GTX 1060, GeForce GTX 1050 Ti GeForce GTX 970, GeForce GTX 960 Other NVIDIA graphics cards with a compute capability of no less than 3.0
VRAM	No less than 4GB	No less than 4GB
RAM	No less than 8GB	No less than 16GB
HDD	50GB Free (basic requirement) or SSD+50GB Free (better)	

NOTE:

- The requirements for 2D map reconstruction / 3D model reconstruction / real-time 3D mapping are equally applicable to real-time 2D mapping. There are no mandatory requirements on the graphics card for real-time 2D mapping. However, using a low-performance computer for real-time 2D mapping may result in delayed performance. If using an NVIDIA graphics card, the processing speed will be faster.
- It is recommended to use the graphics cards listed above. If using other models, please contact DJI Support before use.
- Make sure that the graphics card driver is up-to-date regardless of the models.

1. Visit the DJI Terra product page on dji.com using your computer to download and install the software.
2. Launch DJI Terra and log in with your DJI account. If an offline license was purchased, offline login is required. Refer to the Guide for DJI Terra Offline Licenses for more information.



DJI devices must be activated before using DJI Terra.

Connect the Remote Controller and Aircraft

Using Phantom 4 RTK / Phantom 4 Pro V2.0 / Phantom 4 Pro+ V2.0

Connect the remote controller to the computer using a USB-C cable (for the Phantom 4 RTK) or Micro USB cable (for the Phantom 4 Pro V2.0 / Phantom 4 Pro+ V2.0), then power on the remote controller and aircraft. The location and status information of the aircraft will display on DJI Terra.



- When using the Phantom 4 Pro V2.0, make sure to connect the remote controller to the computer first and then power it on. Otherwise, DJI Terra cannot recognize the device.
- Currently, the Phantom 4 RTK (SDK) remote controller (which refers to the Phantom 4 RTK remote controller without a display device) is not supported by DJI Terra.

Using Other Devices

1. Switch remote controller communication mode to PC mode.
 - a. Power on the remote controller. Make sure the flight mode is P-mode. Then, connect the remote controller (Micro USB port) to PC (USB port) via a Micro USB cable.
 - b. Launch DJI Terra, enter  > , choose "Switch to PC Mode." The status LED of the remote controller will blink red (blink green if the aircraft is connected), indicating that the remote controller is in PC mode. Restart the remote controller to enable PC mode.
2. Remove the Micro USB cable. Connect the remote controller (USB port) to PC (USB port) via an A male to A male USB cable, then power on the aircraft. The location and status information of the aircraft will display in DJI Terra.



If you want to use DJI GO 4 or other apps on a mobile device connected to the USB port on the remote controller, be sure to switch the remote controller communication mode to App mode in DJI Terra. The switching procedure is similar to the one above. The only difference is choosing "App Mode."

Mission Type

Flight Route Missions

Waypoints



Set a waypoint flight path, then define waypoint actions for each waypoint.

Mapping



DJI Terra automatically generates efficient flight paths after user has set their required flight area and camera parameters. The aircraft will then follow this route throughout its mission. Real-time 2D mapping or real-time 3D mapping (of low accuracy) during a mission can be enabled. After the mission is complete, users can also import the original images into DJI Terra for 2D map reconstruction or 3D model reconstruction (of high accuracy).

Oblique



This function automatically generates five flight paths after users have set their required flight area and parameters. These include a single flight path with a gimbal pitch angle of -90° , indicating a downward facing direction. Subsequently, this is followed by four flight paths with a customizable gimbal pitch of more than -90° to capture photos from multiple angles such as forward, backward, leftward, and rightward. After the mission is complete, users can import the original images onto DJI Terra for 3D model reconstruction of different resolutions.

Corridor



DJI Terra automatically generates corridor flight area and several independent flight paths after the user has set the corridor points, expansion distance, and flight band cutting distance. After the mission is complete, users can import the original images into DJI Terra for 2D map or 3D model reconstruction.

Detailed Inspection



DJI Terra automatically generates waypoints to make up the inspection flight path after the user has imported models from 3D reconstruction results using DJI Terra or third-party LAS point cloud files, added target points on the model, and set shooting distance, flight route speed, and other parameters. After planning the flight path, users can export a KML file and upload it to the DJI Pilot app (using the Phantom 4 RTK (SDK) or Matrice 300 RTK) or to a Waypoints mission in DJI Terra (using the Phantom 4 RTK) to perform it.

Reconstruction Missions

2D Map



Use the original photos captured by the camera to obtain a high-precision 2D map. After a map has been produced, users have the option to add annotations and perform a variety of measurements.

2D Multispectral Map



Use the original photos captured by the multispectral cameras to obtain a high-precision 2D multispectral map. After a map has been produced, users have the option to add annotations and perform a variety of measurements and agriculture applications.

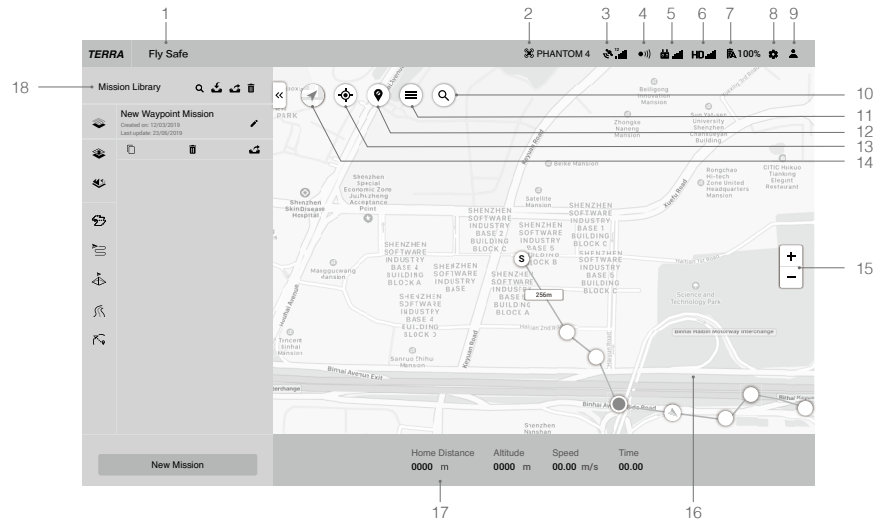
3D Model



Use the original photos captured by the camera to obtain a high-precision 3D model. After a model has been produced, users have the option to add annotations and perform a variety of measurements.

Interface Introduction

Main Screen



1. System Status Bar

Fly Safe : Indicates the aircraft flight status and displays various warning messages.

2. Aircraft Connection Status

 : Shows the current connection status between DJI Terra and the aircraft.

3. GNSS signal Strength

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

4. Obstacle Avoidance System Status

 : Shows if the obstacle avoidance system is functioning properly.

5. Remote Controller Signal Strength

 : Shows the strength of the remote controller signal.

6. HD Video Link Signal Strength

HD  : Shows the strength of the HD video downlink connection between the aircraft and remote controller.

7. Aircraft Battery Level

 100% : Shows the current battery level.

8. Settings

Click to enter the Settings menu.

 : Flight Controller Settings — Includes RTH altitude, flight distance limit, altitude limit, etc.

 : Gimbal and Camera Settings — Includes, photo quality, metering mode, etc.

 : Remote Controller Settings — Includes customizing Button C1 and C2, selecting stick mode, and switching the remote controller communication mode between PC mode and app mode.

 : Obstacle Avoidance Settings — Enable or disable the obstacle avoidance function.

 : General Settings — Includes length unit, area unit, language, cache directory, etc.

9. Account Information

 : Log into/out of your account, activate license(s), check the unlocking license(s), version number, read the privacy policy, and configure privacy data settings.

10. Search

 : Input names to search on the map.

11. Self Mapping List

 : Click to show a self mapping list. Choose a map or multi maps to display in the map view. Maps will not display if not chosen.

12. Show/Hide GEO Zones

 : Click to show or hide the DJI GEO Zones on the map.

13. Positioning

 : If the aircraft is connected, click the icon to center the map around the aircraft's location. If the aircraft is disconnected, the map will be centered around the current network location. If there is no available internet connection, it will be centered around the defaulted initial location or the location when quitting from the software.

14. Map Mode

 : Tap to switch between Regular Map, Satellite Map, and Road Map.

15. Map Zoom

Click +/- to zoom in or out of the map.

16. Map View

Displays the map. Scroll the scroll wheel on the computer mouse to zoom in/out. Press and hold the left button on the computer mouse to move the map.

17. Flight Telemetry

Home Distance: Horizontal distance from the Home Point.

Altitude: Vertical distance from the Home Point.

Speed: Movement speed across a horizontal distance.

Time: Aircraft operating time from motors started for the first time.

Photo Count (Downloaded/Captured): In a Mapping mission, this function displays the photo count downloaded from the aircraft to DJI Terra and the total number of photos captured. The photos will be downloaded to DJI Terra only if Real-Time 2D Mapping or Real-Time 3D Mapping is enabled. If it is disabled, by default the downloaded photo count is set to 0.

18. Mission Library

Missions will be assorted by types in mission library. Click each tag to display all missions of the corresponding type. Click the arrow  on the right of the library to collapse or expand it.

 : Search — Click and input keywords in the text box to search a mission.

 : Import — Click to import missions.

 : Export — Click to enter mission managing mode. Choose missions and export them. The export function here is the same as the one mentioned below in the text about the export function for a selected mission.

 : Manage — Click to enter mission managing mode. Choose missions and delete them.

New Mission: Click to choose a mission type and create a new mission.

Click a mission to select it and:

 : Edit — This icon can only be clicked before a mission starts. Click to enter mission editing mode and set parameters.

 : Continue — If a mission is stopped and "Back to Mission List" is chosen in the prompted menu, this icon will appear when the same mission is selected in the mission library. Click to choose the next operation from the prompted menu.

 : View — This icon will appear after a mission is completed. Click to view the parameters.
NOTE: Parameters cannot be edited.

 : Reconstruction — This icon will only appear in Reconstruction missions. The icon will also appear in Flight Route missions if the reconstruction was created using DJI Terra v2.3.0 or earlier. Click to enter the reconstruction page for 2D map reconstruction or 3D model reconstruction. For more information, refer to [“Reconstruction Missions”](#) on p. 28.

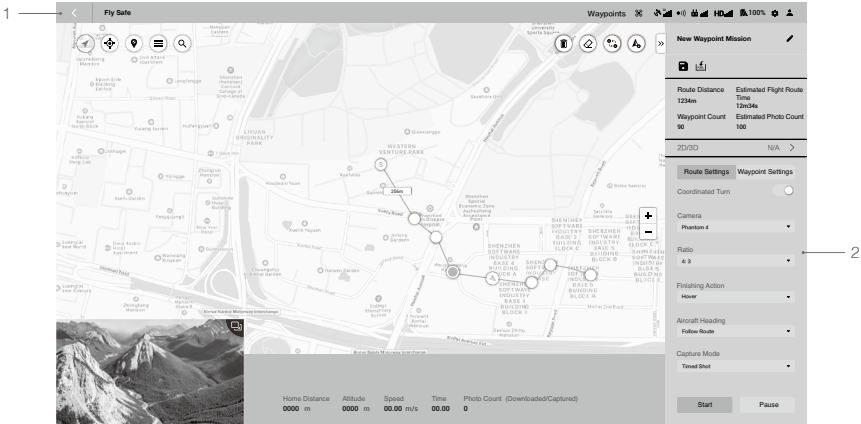
 : Copy — Click to create a copy of this mission. The flight path and parameter settings will be the same.

 : Open Folder — Click to open the folder where the current mission is located.

 : Delete — Click to delete the mission.

 : Export — Click to export the mission with the current settings and its files such as photos, 2D maps, and 3D models. The exported file can be used to create a mission via “Import”. The mission name of the exported mission is the same as the one in DJI Terra. It will not be changed when importing it to create a mission even if the exported file’s name is changed.

Flight Route Mission Editing View



- 1. Back
Click to return to the main screen.
- 2. Parameter List
This list includes the common screen elements below. The other settings vary according to different mission types. Refer to Parameter Setting Introduction for details.
 : Collapse / Expand — Click to collapse or expand the list.
Mission Name: Click the button on the right to edit the mission name.
 : Save — Click to save current settings.
 : KML Import — Click to import a KML file. The data in the KML file will be converted to waypoints or edge points and displayed on the map for planning. Refer to [“Create a Mission”](#) on p. 9 for details.
 : KML Export — This icon will appear only in Waypoints and Detailed Inspection missions. Click to export the current flight route as a KML file. The exported file can be used to plan the flight path in a Waypoints mission via “Import KML”. For KML files exported from Detailed

Inspection missions, users can also import the file into the Library in the DJI Pilot app to perform the mission.

Mission Information: Information varies according to different mission types. These include: route distance, estimated flight route time, estimated total flight route time, waypoint count, cover area, estimated photo count, etc.

Sliders and +/-: Move to the left or right to adjust values. Click +/- for fine-tuning.

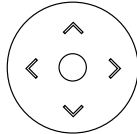
Waypoint / Edge Point Edit:

Longitude

114.201491394043

Latitude

22.707180906966



Click the box to input values. Click the arrow keys on the right for fine tuning. Up and down adjust latitude while left and right adjust longitude.

Mission Button (aircraft connection is required):

- Start: Click to start the mission after parameters are set.
- Stop: During the mission, click to stop the mission. The aircraft hovers and records its location as a breakpoint and users can control the aircraft manually. Users can then choose an operation after stopping the mission from the prompted list in the software.
- Pause / Continue: During a Waypoints mission, click to pause the mission, and the aircraft will hover. Users can control the aircraft to fly forward or backward along the flight path, but the aircraft heading cannot be controlled. Click "Continue," and the aircraft continues the mission from its current position.

Flight Route Missions

Create a Mission

1. New Mission

Create a mission via the following two methods:

- Click the "New Mission" button on the lower left corner, choose the mission type, input the mission name, and then click "OK" to enter Mission Editing mode.
- Click  in the right section of the mission library to import a mission file from the computer. Click to select the imported mission and then click  to enter Mission Editing mode. The imported mission cannot be edited, if it has already been finished before export.

2. Mission Settings

For a Detailed Inspection mission, there will be a prompt for route planning instructions after a mission is created to guide users throughout the basic procedure. Click "OK" after reading the instructions and enter the Mission Settings page to edit the mission name, select aircraft and desired model. The list in this page will list the models from 3D reconstruction results using DJI Terra. Users can also click "Import Point Cloud" to import third-party LAS point cloud files as the model to use. After configuration, click "OK" to enter Mission Editing mode.



Make sure that the accuracy of the imported models or point clouds meets the operation requirements.

3. Plan Flight Path

Waypoints missions are flight paths with waypoints. When using a Phantom 4 RTK aircraft, the waypoint quantity should not exceed 199. While using other aircraft, the waypoint quantity should not exceed 99.

For Mapping missions or Oblique missions, DJI Terra automatically generates flight paths after the user has set their required flight area and parameters.

For Corridor missions, DJI Terra automatically creates a flight area extending from the center line and generates flight paths after the user has set their required corridor points and parameters.

Add points via the following methods:

- Click on the map to add a point.
- Fly the aircraft to the desired position and then click  on the upper right corner to set the aircraft position as a point.
- Click  in the parameter list to import a KML file. The data in the file will be converted to points and displayed on the map. This is a premium function included in DJI Terra Pro version and Electricity version. Please purchase a license and then activate it before use. For more information related to purchase and activation, refer to ["More Functions"](#) on p. 46.

For Waypoints missions, users can plan flight paths based on a 2D map, 3D model or point cloud generated in DJI Terra. Make sure that there is no waypoint added, then click  on the right of the 2D/3D section in the parameter list, select a desired 2D map or 3D model, and click "Import." The imported map or model will be displayed in the map view. Add waypoints based on the 2D map or 3D model using the above methods.

The functions for importing 2D maps or 3D models, flight path planning based on a 2D map, and flight path planning based on a 3D model (called "3D Mission Planning" in a Waypoints mission) are included in the DJI Terra Pro version. Please purchase a license and then activate it before use. For information related to purchase and activation, refer to ["More Functions"](#) on p. 46.



During 3D mission planning, waypoints can only be added when the 3D model is displayed in top view. Click  to switch to the top view automatically.

For a Detailed Inspection mission, click on the model to add a target point, and then configure the parameters. DJI Terra will generate its corresponding waypoint. All the waypoints make up the flight path. When using a Phantom 4 RTK aircraft, the waypoint quantity should not exceed 199.

4. Edit Points

Click a point to select it and the selected point will turn from white to blue. Drag the point to change the area shape or flight path (except Detailed Inspection missions). In a Mapping mission or Oblique mission, click on the map, and a new point will be added between the two points. These points will be situated near the location you have clicked on.

For a Detailed Inspection mission, click the target point to select it and the selected point will turn from green to red. Drag the target point to change its position. Select a waypoint or target point, then click the desired position for a new target point on the model, and a new point will be added between the selected point and its next point.

Other operations can also be performed via the buttons below:

-  : Delete selected waypoint/edge point — Click a point to select it and it will turn to blue. Then click this button to delete it.
-  : Delete all waypoints/edge points — Click to delete all the waypoints or edge points in this mission.
-  : Switch start and endpoints — Click to swap the start and endpoints to reverse the flight path.
-  : Set your aircraft's current position as a waypoint/edge point — Click to set the aircraft position as a waypoint or edge point.

During 3D Mission Planning, hold down the mouse wheel and drag to adjust the display view of the 3D model, and different icons will be displayed on the selected waypoint to indicate the directions in which this waypoint can be adjusted.  indicates that the position in horizontal direction can be adjusted, and  indicates that the position in vertical direction can be adjusted. Drag the waypoint in the corresponding direction to adjust its position. The image of viewing the model from the selected waypoint's perspective is displayed on the lower right corner on the screen.



- Edge points of a flight area should not be too close. Otherwise, it will fail to generate flight path.
- The above requirements are also applicable when importing a KML file to plan a flight path.
- There are different limits depending on the models of the aircraft when planning and editing a Waypoint mission.

For Phantom 4 RTK, Phantom 4 Pro+ V2.0, and Phantom 4 Pro V2.0 aircraft: The distance between two waypoints should not exceed 200 km. The total distance of the flight path has no limits.

For Phantom 4 Pro+, Phantom 4 Pro, Phantom 4 Advanced, and Phantom 4 aircraft: The distance between two waypoints should not exceed 2 km. The total distance of the flight path cannot exceed 40 km.

For a Detailed Inspection mission, users can also perform the operations below.

 /  : To display or hide the target name. When the target name is displayed, click the text box near the target point on the map to edit its name.

In the 3D model view, hold down the mouse wheel and drag to adjust the display view of the 3D model. Click the buttons on the right of the screen to adjust the display of the 3D model in specific views and to zoom in or out.

In "Waypoint Settings", edit and configure each waypoint separately. Refer to "[Parameter Setting Introduction](#)" on p. 14 for more details.

4. Parameter Settings

Set each item in the parameter list and click  to save when complete. Refer to "[Parameter Setting Introduction](#)" on p. 14 for more details.

Perform Mission

For a Detailed Inspection mission, if the Phantom 4 RTK aircraft is selected in the Mission Settings, import the flight route KML file to a Waypoints mission in DJI Terra or import the file into Library in DJI Pilot to perform the mission. If the Matrice 300 RTK aircraft is selected, to perform the mission, the flight route KML file can only be imported into Library in DJI Pilot.



- To perform the mission using KML files exported from Detailed Inspection missions, aircraft firmware and DJI Pilot app of the corresponding version are required. Pay attention to the release notes of the related products.
- Before performing the mission, make sure that the aircraft positioning is in the RTK FIX status to avoid accidents.

For other missions, follow the descriptions below.

Start Mission

1. Select a mission in the mission library. Click "Edit" and then click "Start." A flight preparation list will appear.
2. Wait for the flight path to upload to the aircraft. Check and adjust the aircraft according to the list 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.
3. Click "Start." The aircraft will fly along the pre-set flight path to perform the mission.
4. In a Mapping mission, if Real-Time 2D Mapping or Real-Time 3D Mapping is enabled, the real-time mapping result will display on the map during the mission as follows:
 - a. The aircraft flies to the starting point of the flight path and start shooting.
 - b. When photo count (shown in the flight telemetry at the bottom of the screen) is more than 10, the real-time mapping pictures or 3D point cloud will be shown at the corresponding position on the map. No picture display may be due to the map display level. Zoom in or out to view the result.
 - c. As the mission progresses, the mapping result of the flight area will be shown on the map gradually.

Stop Mission

During a mission, click the "Stop" button on the screen and the aircraft will hover in place and record the current position as a breakpoint. The aircraft can then be flown freely and a menu will pop up with additional control options. In a Mapping mission, the pop-up menu display will vary depending on whether "Real-Time 2D Mapping" or "Real-Time 3D Mapping" is enabled.

Real-Time 2D Mapping or Real-Time 3D Mapping Enabled

Click the "Stop" button, and there will be a prompt indicating that real-time 2D mapping or real-time 3D mapping is paused. Click "OK", and then choose from the options below.

Resume from break point: The aircraft will continue the mission from the recorded breakpoint.

End Current Mission and Start Image Processing: The aircraft will stop the current mission, and DJI Terra will start post-processing for the captured photos to reconstruct a 2D map or 3D point cloud/model.

Cancel Mission: The aircraft will stop the mission. DJI Terra will not process the photos.

Real-Time 2D Mapping or Real-Time 3D Mapping Disabled

Click the "Stop" button, and then choose from the options below.

Save waypoint route info and mission status: DJI Terra will save the breakpoint information and exit from the current mission.

Cancel Mission: The aircraft will stop and exit from the current mission. The mission cannot be continued.

If "Save waypoint route info and mission status" is chosen, users can select from the list below as required after connecting the aircraft and entering the same mission again:

Resume from break point: The aircraft will continue the mission from the recorded breakpoint.

Resume from previous waypoint: The aircraft will continue the mission from the previous waypoint before the recorded breakpoint.

Resume from next waypoint: The aircraft will continue the mission from the next waypoint after the recorded breakpoint.

Restart: The aircraft will fly to the start point and restart the mission.

Cancel Mission: DJI Terra will clear the recorded breakpoint information in the current mission and exit from the mission.

Back to Mission List: Back to the mission library. To check this menu again, select the required mission and click "Continue".

Special Cases

1. 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.
2. **Smart Low-Battery Level:** When there is only sufficient battery level for RTH, an audio prompt will emit from the remote controller. After a few seconds, the aircraft will stop 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.
3. **Low Battery Level / Critically Low Battery Level:** When the battery level is lower than the Low Battery value pre-set in the app*, an audio prompt will sound from the remote controller. When the battery level is lower than the Critically Low Battery value pre-set in the app, an audio prompt will sound from the remote controller. The aircraft will stop 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.

* App refers to all the apps used with the aircraft, for example DJI GO 4.

Mission Complete

After finishing a mission, the aircraft will perform the pre-set "Finishing Action." The aircraft can be controlled freely afterward.

For a Mapping mission:

If Real-Time 2D Mapping or Real-Time 3D Mapping is enabled, DJI Terra will enter post-processing stage after mission completion to process the captured photos again for mapping result of higher accuracy with more zoom levels. After post-processing completion, users can zoom in to view the more accurate result.

If the option is disabled, after mission completion, users can create a Reconstruction mission to process the captured photos for reconstruction. Refer to ["Reconstruction Missions"](#) on p. 28 for details.

Parameter Setting Introduction

Select a mission in the mission library. Click “Edit” to enter mission editing mode for parameter settings.

Waypoints Settings

Route Settings

Route Settings Waypoint Settings

Coordinated Turn ☒

Camera
Phantom 4

Ratio
4:3

Finishing Action
Hover

Aircraft Heading
Follow Route

Capture Mode
Timed Shot

Interval 2.5 s

Route Altitude 100 m

Route Speed 4 m/s

Initial Speed 10 m/s

Gimbal Pitch Angle -20°

1. Coordinated Turn

If enabled, the aircraft will fly on a smooth curve when passing a waypoint. Set a “Turn Radius” in “Waypoint Settings.” However, be aware that only Waypoint Actions on the start and endpoints will be performed, while the Waypoint Actions on other points will not.

If disabled, 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.

2. Camera

DJI Terra can recognize the camera model of the aircraft. Unless otherwise specified, users don't need to set it.

3. Ratio

Refers to the ratio of the width and height of the photos captured during the mission.

4. Finishing Action

Aircraft action after mission complete.

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

Return to Home: 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. The RTH altitude can be set in Flight Controller Settings.

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

Return and Hover: The aircraft will return to the starting point of the flight path and hover after the mission is complete. The altitude when returning to the starting point is the same as RTH altitude.

-
-  Make sure that the endpoint of the flight path is suitable for landing when finishing action is set to "Land" to avoid potential flight accidents.
-

5. Aircraft Heading

Aircraft heading when performing the mission.

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

Set Waypoint Separately: Set aircraft heading at each waypoint in "Waypoint Settings".

6. Capture Mode

Waypoint Hovering Shot: 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.

Timed Shot: The aircraft will capture in a fixed time interval as it flies along the path. The aircraft will not hover during capturing unless there is a waypoint action. Users can set the time interval. In this mode, operation is fast. However, short exposure times are required.

7. Interval

This setting will appear when capture mode is set to Timed Shot.

8. Route Altitude

The relative altitude between the aircraft and the takeoff point during flight. This can be set from 0 to 500 m. You can also set the altitude of each waypoint in "Waypoint Settings".

During 3D mission planning, the altitude at each waypoint is the relative altitude between the aircraft and the scene in the 3D model below the corresponding waypoint.

9. Route Speed

The flight speed when flying along a waypoint flight path.

10. Initial Speed

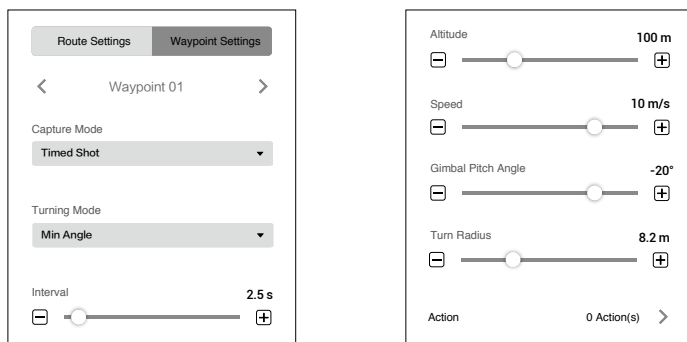
Flight speed when not flying along the waypoint-determined flight path. This includes the flight speed from the aircraft position to the starting point of the flight path when starting a mission, or returning speed after mission completion.

11. Gimbal Pitch Angle

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°.

-
-  If capture mode, route speed, or gimbal pitch angle are set in "Route Settings," the capture mode, speed, or gimbal pitch angle setting in "Waypoint Settings" will automatically change to the same as the one in "Route Settings."
-

Waypoint Settings



Select a waypoint (it will turn blue when selected) then set waypoint parameters. Click **<** or **>** to switch to the previous or next waypoint. The keyboard shortcut “Ctrl+ ←” or “Ctrl+ →” can also be used to switch accordingly.

1. Capture Mode

Waypoint Hovering Shot: The aircraft will hover and capture at the selected waypoint.

Time Shot: The aircraft will capture in a fixed time interval as it flies from the selected waypoint to the next waypoint. The aircraft will not hover during capturing. Users can set the time interval.

2. Turning Mode

The aircraft rotation direction when flying to the next waypoint. This option will be available only if “Set Waypoint Separately” is set for “Aircraft Heading” in “Route Settings”. “Min Angle” and “Max Angle” respectively indicate that the aircraft will rotate in the direction with a min or max rotation angle to adjust its heading to the pre-set value of the next waypoint.

3. Interval

This setting will appear when capture mode is set to Timed Shot.

4. Altitude

Set the relative altitude of each waypoint between the aircraft and the takeoff point. The range can be set from -120 m to 500 m with a negative value lower than the takeoff point and a positive value higher than the takeoff point. When the altitude of the start point is set to a negative value, indicating that the start point is lower than the takeoff point, make sure to click ⓘ for the setting, read and comply with the warning message: To ensure flight safety, when the altitude of the first waypoint is lower than the takeoff point altitude, fly the aircraft to an obstacle-free environment before starting the flight mission.

During 3D mission planning, the altitude at each waypoint is the relative altitude between the aircraft and the scene in the 3D model below the corresponding waypoint.

5. Speed

The aircraft will ascend/descend to the flight speed set here when flying to the selected waypoint and then continues flying at this speed. The range can be set from 0.2 to 13 m/s.

6. Gimbal Pitch Angle

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° . The gimbal will tilt gradually to the angle pre-set at the next waypoint if the values at the two consecutive waypoints are different.

7. Turn Radius

This is the aircraft's turn radius when flying past a waypoint. Radius can range from 0.2 to 1000 m. This option will be available only if "Coordinated Turn" is enabled in "Route Settings". Note that the "Turn Radius" setting is unavailable for start and stop points, and the sum of the turn radius of two neighboring waypoints should not exceed the distance between the two waypoints.

8. Action

Click to enter. Up to 15 actions can be added. Delete actions or re-order them.

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

- Hover: The aircraft will hover at the waypoint. Set hovering time from 0 to 30000 ms.
- Capture: Capture on arrival at a waypoint. Note that Capture cannot be performed if the camera is recording.
- Start Recording: Start recording on arrival at a waypoint.
- Stop Recording: Stop recording on arrival at a waypoint.
- Aircraft Heading: Adjust the aircraft heading on arrival at a waypoint. North is 0° with a negative value representing clockwise and the range is -180° to 180° .
- Gimbal Pitch: 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 "Waypoint Settings", the aircraft will fly to the waypoint with the defined Gimbal Pitch Angle then adjust it according to the Gimbal Pitch settings defined when adding an Action for the current waypoint.

Delete Action: Click  on the right side of the desired action to delete it.

Re-Order: Click and hold  on the left side of the desired action, drag it to the desired position and release.



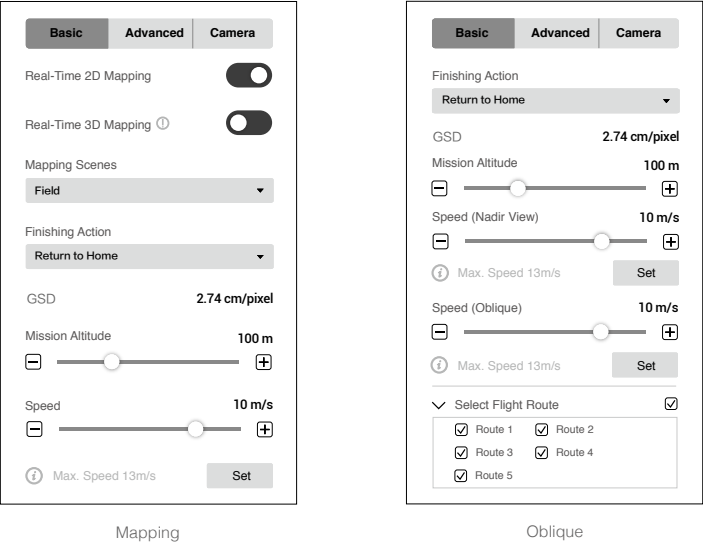
- DO NOT add Start Recording after Capture. Otherwise recording cannot be started.
- DO NOT add Capture after Stop Recording. Otherwise a picture cannot be captured.

Mapping / Oblique Settings

The settings for Mapping and Oblique missions are similar. Unless otherwise specified, the descriptions below are compatible with both types of missions.

For Oblique missions, parameters such as overlap ratio and speed can be set separately for the nadir view flight path and oblique flight paths. During mission settings, click the numbers 1 to 5 in the map view to preview each flight path. 1 refers to the nadir view flight path, and 2 to 5 refer to the four oblique flight paths respectively.

Basic Settings



1. Real-Time 2D Mapping (for Mapping only)

If enabled, DJI Terra will process the photos captured during a mission and display the mapping results on the map in real time. However, the results will be less accurate. Users can import the original photos into DJI Terra after the mission is complete for mapping with higher accuracy. If disabled, there will not be any real-time results.

2. Real-Time 3D Mapping

This is a premium function. Please purchase a license and then activate it before use. For more information, refer to [“More Functions”](#) on p. 46.

If enabled, DJI Terra will process the photos captured during a mission and display the 3D point cloud results on the map in real time. Users can import the original photos into DJI Terra after the mission is complete for 3D model reconstruction with higher accuracy. The default real-time 3D mapping results include both the point cloud and model results. The real-time model results can be removed by unchecking the model option box.

If disabled, there will not be any real-time results.

 Real-time 3D mapping is only available when using the Phantom 4 RTK, Phantom 4 Pro V2.0+ or Phantom 4 Pro V2.0 aircraft. The real-time 2D mapping and real-time 3D mapping cannot be enabled simultaneously.

3. Mapping Scenes (for Mapping only)

Choose mapping scenes such as field and urban according to application requirements. It is recommended to choose field in open areas where objects have a minor difference in height. Use urban for surroundings with more buildings. The urban option is included in DJI Terra Pro and Electricity versions. Please purchase a license and then activate it before use. For more information, refer to "More Functions" on p. 46.

4. Finishing Action

Aircraft action after mission complete.

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

Return to Home: 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. The RTH altitude can be set in Flight Controller Settings.

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



Make sure that the end point of the flight path is suitable for landing when finishing action is set to "Land" to avoid potential flight accidents.

5. GSD

Ground Sample Distance. This value is the actual ground distance represented by each pixel in the original image captured, and is automatically calculated by DJI Terra based on the flying altitude and camera model.

6. Mission Altitude

The relative altitude between the aircraft and the area being mapped.

7. Speed / Speed (Nadir View) / Speed (Oblique)

The flight speed of the aircraft during mission. When flying out of the flight path such as flying from the current position to the starting point when mission starts, or flying back after mission completion, the flight speed will be 13 m/s, which cannot be customized.

For Oblique missions, "Speed (Nadir View)" refers to the speed at which the aircraft is flying along the nadir view flight path. "Speed (Oblique)" refers to the speed at which the aircraft is flying along the oblique flight paths.

8. Max Speed

DJI Terra will calculate a maximum flight speed at which images meeting mapping requirements can be captured according to the altitude, camera model, and advanced settings. Click "Set" to set the flight speed to this max speed.

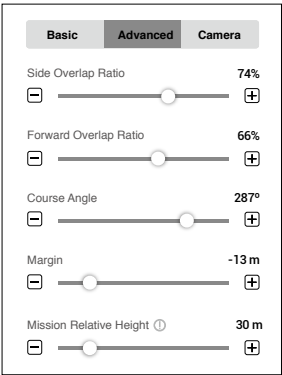
9. Select Flight Route

Check the corresponding box to select the desired flight route. The unchecked flight route will not be executed.

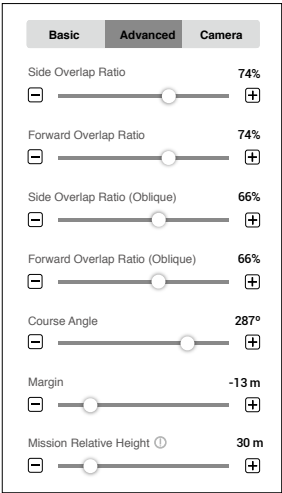


For Oblique missions, if required, users can adjust the location of the start point for each flight route after planning the routes. Click the start point or end point to switch the two.

Advanced Settings



Mapping



Oblique

1. Side Overlap Ratio / Side Overlap Ratio (Oblique)

The overlap ratio of two pictures on two parallel main paths. The range can be set from 10% to 90%.

For Oblique missions, “Side Overlap Ratio” refers to the overlap ratio for the nadir view flight path, and “Side Overlap Ratio (Oblique)” refers to the overlap ratio for the oblique flight paths.

2. Forward Overlap Ratio / Forward Overlap Ratio (Oblique)

The overlap ratio of two consecutive pictures captured along the same main path. The range can be set from 10% to 90%.

For Oblique missions, “Forward Overlap Ratio” refers to the overlap ratio for the nadir view flight path, and “Forward Overlap Ratio (Oblique)” refers to the overlap ratio for the oblique flight paths.

3. Course Angle

The angle of the main path. North is 0°, with a positive value when it is clockwise. The range can be set from 1° to 360°.

4. Margin

Expand (positive value) or narrow (negative value) the area margin for control over the area of flight. The range can be set from -30 to +30m.

5. Mission Relative Height

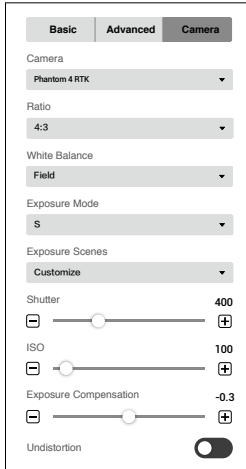
The relative height between the takeoff point and the area being mapped.

NOTE: Make sure to set the correct relative height. Otherwise, the overlap ratios will be affected which may have a negative effect on the mapping results.

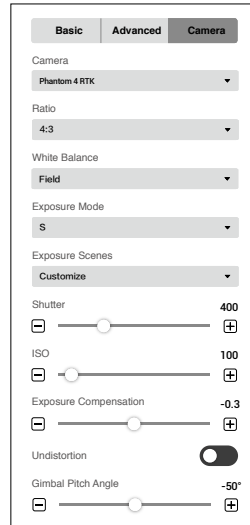


Users can adjust the overlap ratios, altitude, and gimbal pitch angle (for Oblique mission only) according to actual situations. Reduce overlap ratio accordingly for areas with less terrain fluctuations. Increase overlap ratio accordingly for areas with more terrain fluctuations. However, it is recommended to set a side overlap ratio of no less than 60% and a forward overlap ratio of no less than 65%. For objects that require highly detailed results, create multiple missions to cover more perspectives of the desired area or object.

Camera Settings



Mapping



Oblique

1. Camera

DJI Terra can recognize the camera model of the aircraft. Unless otherwise specified, users don't need to set it.

2. Ratio

Set the photo ratio of the photos captured during the mission. 4:3 is recommended.

3. Balance

Field is set by default. Users can select other options according to the application.

4. Exposure Mode

Choose from Auto or S (shutter priority). If S is set, choose from Sunny, Cloudy, Low light, and Customize for the Exposure Scenes setting. If Customize is set, users can adjust shutter, ISO, and exposure compensation.

5. Undistortion

This option will appear when using the Phantom 4 RTK. It is disabled by default. If enabled, the software can automatically correct the distortion when capturing, but the quality of the photos captured may be lower than the photo quality when this option is disabled. It is recommended to disable this option when original photos are needed for post processing.

6. Gimbal Pitch Angle (for Oblique only)

The gimbal pitch angle at which the aircraft is flying along the oblique flight path. The range for the gimbal pitch angle can be set from -85° to -40° .

Corridor Settings

Basic Advanced Camera

Route Preview ☒

Include center line? ☒

Adjust expansion distance at the same time? Yes ☒

Expansion Distance to Left 31 m

Expansion Distance to Right 31 m

Flight Band Cutting Distance 2000 m

Basic Advanced Camera

GSD 2.74 cm/pixel

Mission Altitude 100 m

Speed 10 m/s

Max. Speed 13m/s Set

Finishing Action Return to Home

Select Flight Route ☒

☒ Route 1 ☒ Route 2

Basic Settings

1. Route Preview

When enabled, the flight route generated according to the current settings can be previewed on the map. During route preview, users cannot edit the corridor points on the center line.

2. Include center line

To set if the center line will be included the flight paths generated. The center line refers to the line consisting of the corridor points added when planning the Corridor mission.

3. Adjust expansion distance at the same time

To set if expansion distance for both sides will be adjusted at the same time. If yes, the expansion distance for one side will follow the adjustment for the other side. If no, each expansion distance can be adjusted separately.

4. Expansion Distance to Left/Right

To adjust the expansion distance to left or right for the corridor flight area. Left or right refer to the left or right side of the center line when the front direction is defined by the line from one of the corridor points pointing to its previous point.

5. Flight Band Cutting Distance

DJI Terra will divide corridor flight areas with a long center line into multiple segments according to this flight band cutting distance. Each segment has a sub mission with an independent flight route. Users can check the corresponding box in the Select Flight Route setting at the bottom of the screen to select the desired flight route before performing the mission. Click the area of each sub mission to view the mission information. For each sub mission, a starting point, end point, and several white points will be displayed on the map. Click one of these points to set it as the starting point of the sub mission flight route.

6. GSD

Ground Sample Distance. This value is the actual ground distance represented by each pixel in the original image captured, and is automatically calculated by DJI Terra based on the flying altitude and camera model.

7. Mission Altitude

The relative altitude between the aircraft and the area being mapped.

8. Speed

The flight speed of the aircraft during mission. When flying out of the flight path such as flying from the current position to the starting point when mission starts, or flying back after mission completion, the flight speed will be 13 m/s, which cannot be customized.

9. Max Speed

DJI Terra will calculate a maximum flight speed at which images meeting mapping requirements can be captured according to the altitude, camera model, and advanced settings. Click "Set" to set the flight speed to this max speed.

10. Finishing Action

Aircraft action after mission complete.

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

Return to Home: 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. The RTH altitude can be set in Flight Controller Settings.

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



Make sure that the end point of the flight path is suitable for landing when finishing action is set to "Land" to avoid potential flight accidents.

11. Select Flight Route

Check the corresponding box to select the desired flight route. The unchecked flight route will not be executed.

Advanced Settings

Basic Advanced Camera

Collection Mode
Full Coverage ▼

Side Overlap Ratio 74%
[-] [Slider] [+]

Forward Overlap Ratio 74%
[-] [Slider] [+]

Mission Relative Height 30 m
[-] [Slider] [+]

1. Collection Mode

The image capture area varies by modes, which also affects the generated flight route.

Full Coverage: An additional route will be added on both left and right edges of the corridor flight area when generating the flight route.

High Efficiency: The generated flight route can only cover the corridor flight area.

2. Side Overlap Ratio

The overlap ratio of two pictures on two parallel main paths. The range can be set from 10% to 90%.

3. Forward Overlap Ratio

The overlap ratio of two consecutive pictures captured along the same main path. The range can be set from 10% to 90%.

4. Mission Relative Height

The relative height between the takeoff point and the area being mapped.

NOTE: Make sure to set the correct relative height. Otherwise, the overlap ratios will be affected which may have a negative effect on the mapping results.

Camera Settings

The screenshot shows the 'Camera' settings panel in DJI Terra. It has three tabs: 'Basic', 'Advanced', and 'Camera', with 'Camera' being the active tab. The settings are as follows:

- Camera:** Phantom 4 RTK (dropdown menu)
- Ratio:** 4:3 (dropdown menu)
- White Balance:** Field (dropdown menu)
- Exposure Mode:** S (dropdown menu)
- Exposure Scenes:** Customize (dropdown menu)
- Shutter:** 400 (slider with +/- buttons)
- ISO:** 100 (slider with +/- buttons)
- Exposure Compensation:** -0.3 (slider with +/- buttons)
- Undistortion:** A toggle switch that is currently turned off.

1. Camera

DJI Terra can recognize the camera model of the aircraft. Unless otherwise specified, users don't need to set it.

2. Ratio

Set the photo ratio of the photos captured during the mission. 4:3 is recommended.

3. Balance

Field is set by default. Users can select other options according to the application.

4. Exposure Mode

Choose from Auto or S (shutter priority). If S is set, choose from Sunny, Cloudy, Low light, and Customize for the Exposure Scenes setting. If Customize is set, users can adjust shutter, ISO, and exposure compensation.

5. Undistortion

This option will appear when using the Phantom 4 RTK. It is disabled by default. If enabled, the software can automatically correct the distortion when capturing, but the quality of the photos captured may be lower than the photo quality when this option is disabled. It is recommended to disable this option when original photos are needed for post processing.

6. Gimbal Pitch Angle

The gimbal pitch angle at which the aircraft is flying along the oblique flight path. The range for the gimbal pitch angle can be set from -85° to -40° .

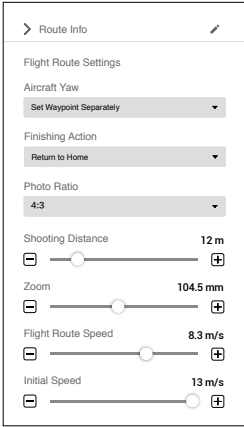
Detailed Inspection Settings

When none of target points are added, there will be a parameters list on the right screen, including flight route information and flight route settings. After a target point is added, there will also be a Waypoint Settings page on the left screen. Click  /  to collapse or expand the page.

Route Info

Click  to collapse the route information. Information based on the current parameter settings will be displayed, including flight route distance, estimated flight route time, waypoint count, estimated photo count, aircraft, height mode, and model. Click  to enter the Mission Settings page again to change the mission name, aircraft and model.

Flight Route Settings



> Route Info 

Flight Route Settings

Aircraft Yaw
Set Waypoint Separately

Finishing Action
Return to Home

Photo Ratio
4:3

Shooting Distance 12 m

Zoom 104.5 mm

Flight Route Speed 8.3 m/s

Initial Speed 13 m/s

Unless otherwise specified, the flight route settings below will only be applied to the waypoints that are added after the configuration.

1. Aircraft Yaw

Aircraft yaw when performing the mission.

Set Waypoint Separately: The aircraft yaw will change gradually to the angle pre-set at the next waypoint if the values at the two consecutive waypoints are different.

Follow Flight Route Direction: The front of the aircraft is always aligned to the direction of the two consecutive waypoints when flying between the two waypoints.

2. Finishing Action

Aircraft action after mission complete.

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

Return to Home: 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. The RTH altitude can be set in Flight Controller Settings.

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

Return and Hover: The aircraft will return to the starting point of the flight path and hover after the mission is complete. The altitude when returning to the starting point is the same as RTH altitude.



Make sure that the endpoint of the flight path is suitable for landing when finishing action is set to "Land" to avoid potential flight accidents.

3. Photo Ratio

Set the photo ratio of the photos captured during the mission. 4:3 is the default setting for Matrice 300 RTK that cannot be changed by users.

4. Shooting Distance

Set the distance between the aircraft and target point when shooting. The range is 1 to 50 m.

5. Zoom

Set the focal length of the camera when shooting. The range is 31.7 to 200 mm. The parameter will appear only when the aircraft is set to Matrice 300 RTK.

6. Flight Route Speed

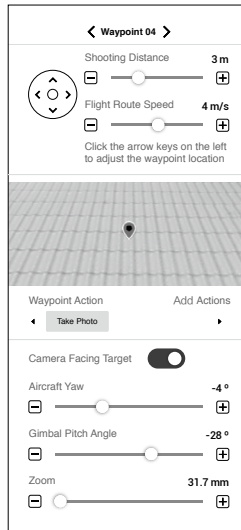
The flight speed when flying along a waypoint flight path. The range can be set from 0.2 to 13 m/s.

7. Initial Speed

Flight speed when not flying along the waypoint-determined flight path. This includes the flight speed from the aircraft position to the starting point of the flight path when starting a mission, or returning speed after mission completion.

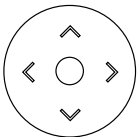
Waypoint Settings

Select a waypoint (it will turn blue when selected) then set waypoint parameters. Click < or > to switch to the previous or next waypoint. The keyboard shortcut "Ctrl+ ←" or "Ctrl+ →" can also be used to switch accordingly.



1. Arrow Keys

Click to adjust the waypoint location on upward, downward, left and right directions.



2. Shooting Distance

Set the distance between the aircraft and target point when shooting. The range is 1 to 50 m.

3. Flight Route Speed

The flight speed when flying along a waypoint flight path. The range can be set from 0.2 to 13 m/s.

4. Simulated Camera View

Displays the expected image from the camera's perspective with the current settings.

5. Waypoint Action

Add actions the aircraft will perform at each waypoint. Name, delete, and order the added actions. Add Actions: Click the button and then select the desired action.

- Hover: The aircraft will hover at the waypoint. Set hovering time from 0 to 30 s.
- Take Photo: Capture on arrival at a waypoint. Users can set the parameters about taking photos below.

Camera Facing Target — ① When this is enabled, the camera will always face the target point whatever the other parameter settings are. Users cannot set the aircraft yaw and gimbal pitch angle. During mission, users can manually adjust the aircraft yaw and gimbal pitch angle at the waypoint. Note that the operations will change the aircraft position. ② When this is disabled, users can set the aircraft yaw and gimbal pitch angle here. During mission, if users adjust the aircraft yaw or gimbal pitch angle at the waypoint, the aircraft position will not change.

Zoom — Set the focal length of the camera when shooting. The range is 31.7 to 200 mm. The parameter will appear only when the aircraft is set to Matrice 300 RTK.

Name Actions, Delete Actions: Hover the mouse over the added action. Then click  to edit the name of the action. Click  to delete the action.

Re-Order: Drag the added action to the desired position and release.

Reconstruction Missions

Users can use the Reconstruction function with the original photos captured by the aircraft to obtain a high-precision 2D map or 3D model. After a model has been produced, users have the option to add annotation and perform a variety of measurements. For photos captured in Mapping and Corridor missions, both 2D reconstruction and 3D reconstruction are achievable, and agriculture-specific functions can be done based on a 2D map. For photos captured in Oblique missions, only 3D reconstruction is available. If the imported photos include a PPK result file from the Cloud PPK Service of the Phantom 4 RTK, this PPK file can be used for 2D or 3D reconstructions at a higher accuracy. If the imported photos are captured using the P4 Multispectral, you can reconstruct 2D multispectral maps. You can also import image POS data and generate reconstructions in the designated coordinate system.

Importing Image POS Data

After adding the photos, import the image POS data that has already converted to the designated coordinate system, set the corresponding coordinate system, and generate reconstructions to get results in the desired coordinate system.

- Follow the instructions in 2D or 3D reconstruction to import the photos.
- Import image POS data using one of the two methods:
 - After importing photos captured by a DJI aircraft, click  to export the image POS data, convert the coordinates and relevant data in a third-party software, and then click  to import the converted POS data to DJI Terra.
 - Click  to import custom POS data.
- After the POS data is imported, you will see the page to edit the format and properties. There are four sections: File Format, Preview, Data Properties, and Define Data Column.

File Format

Lines to Skip From Top: Select the number of the lines to skip from the top when reading the data.

Decimal Separator: Select the decimal separator of the data. Choices are: period (.) and comma (,).

Column Separator: Select the separator of the data columns. Choices are: comma (,), period (.), semicolon (;), space (), and tab.

Treat combined separators as one: If the box is checked, the software will treat combined decimal separators or column separators as one when they exist in the data.

Preview

Preview the content of the imported file. Click  on the upper right corner to add another POS data file.

Data Properties

POS Data Coordinate System: Select the coordinate system the POS data used and set the elevation and height offset.

Euler Angles: Set the euler angles of the POS data.

- N/A: The imported POS data does not include euler angles. Default settings from DJI Terra will be used.
- Omega, Phi, Kappa: The imported POS data includes euler angles of Omega, Phi, and Kappa.
- Yaw, Pitch, Roll: The imported POS data includes euler angles of Yaw, Pitch, and Roll.

POS Data Accuracy: Set the accuracy of the POS data.

- Use Default DJI Terra Accuracy: The imported POS data does not include accuracy. Default settings from DJI Terra will be used. When using images with RTK positioning, the horizontal accuracy is 0.03 m, and the vertical accuracy is 0.06 m. When using images with non-RTK positioning, the horizontal and vertical accuracies are 2 m and 10 m respectively.
- Use Custom Accuracy: Use the horizontal accuracy and vertical accuracy in the POS data file.

Define Data Column

Define each column in the POS data file, including photo name, latitude (X/E), longitude (Y/N), Altitude (Z/U), Omega (Yaw), Phi (Pitch), Kappa (Roll), Horizontal Accuracy, and Vertical Accuracy.

Define Data Column Total Rows: 25

Undefined	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
Name	Latitude	Longitude	Altitude	Yaw	Pitch	Roll
100_0001_171...	123.103553535	31.75678992	23.13423423	-179.9633456	-89.476576546	0
100_0001_172...	123.103689989	31.75689223	23.36525445	-179.9663678	-89.637746546	0
100_0001_173...	123.103469989	31.75646378	23.26243534	-179.9645676	-89.987976789	0
100_0001_174...	123.103359979	31.75711232	23.56464565	-179.9879788	-89.768798546	0
100_0001_175...	123.103345346	31.75699889	23.67648356	-179.5789868	-89.786586465	0
100_0001_176...	123.103398979	31.75677782	23.13443545	-179.9885777	-89.989605456	0
100_0001_177...	123.103422424	31.75669682	23.89876454	-179.9898599	-89.786965764	0



- Photo name, latitude (X/E), longitude (Y/N), and altitude (Z/U) are required.
- You cannot select the same definition for multiple columns.

- After setting the format and properties, click the preview button to view the configured data, and click the import button after checking the data to import the data for reconstruction.
- Users can also click  on the right of the Image POS Data section in Reconstruction page to view the POS data after import. If any setting is incorrect, click the edit button in the preview page to make changes.
- Refer to the section below for the remaining instructions on reconstruction.

Using the PPK Result Files

Use PPK result files from the Cloud PPK Service of the Phantom 4 RTK only.

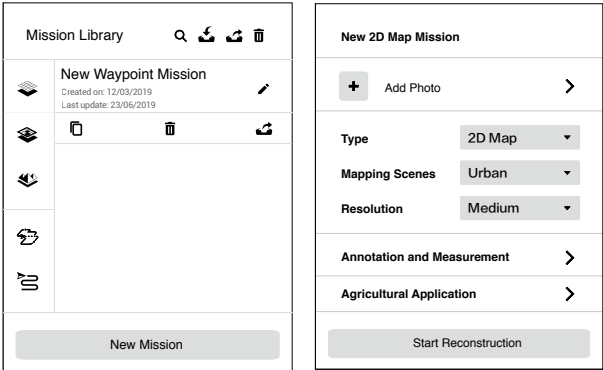
- Name the result file from Phantom 4 RTK's Cloud PPK Service as "result.csv", and store it in the same folder as the photos you want to import.

- 2. Follow the instructions in 2D or 3D reconstruction to import the photos.
- 3. The POS data in the PPK result file will also be imported with the photos. Click  on the right of Image POS Data to view and edit the POS data in the PPK result file.
- 4. If users want to use the GPS positioning information included in the photos for reconstruction, remove the PPK result file in the photo folder before importing photos.
- 5. Refer to the section below for the remaining instructions on reconstruction.

2D Map Reconstruction

Reconstruction Procedure

- 1. Create a mission via the following two methods:
 - a. Click the “New Mission” button on the lower left corner, choose the mission type, input the mission name, and then click “OK” to enter Mission Editing mode.
 - b. Click  in the right section of the mission library to import a mission file from the computer. Click to select the imported mission and then click  to enter Mission Editing mode.



- 2. Click  or . Select photos corresponding to the Mapping mission to add photos.

 It is recommended to select at least six photos on two main paths for reconstruction.

- 3. After import, the icon  will appear on the upper right corner of the map view. Click to turn it blue indicating that capture location display is enabled. The corresponding location of the photos captured will be displayed on the map as a dot. Click  on the right to manage the photos. The photos are grouped by the folders they are located. Expand the list to view and manage photos. If capture location display is enabled, click the name of the photo to turn it blue and the corresponding dot on the map will turn orange. Similarly, when you click the dot on the map, its corresponding photo name in the list will turn blue. Double-click a photo to view in a large size and zoom in or out. Click “Manage,” select photos and then click “Delete” to delete photos. Click “Cancel” to exit management. Click  to return to the reconstruction page.

4. Select "2D Map" as the reconstruction type.
5. Select the desired mapping scene. Field is suitable for open areas with objects of small height difference such as farmland, Urban is suitable for areas with more buildings, and Fruit Tree is suitable for areas with objects of large height difference such as orchard.
DJI Terra will recognize in the reconstruction result to mark different areas such as fruit trees, buildings, and ground. After reconstruction, in Agriculture Application page, users can add boundary points of a flight area and calibration point(s) and DJI Terra can automatically generate a flight path according to the recognition results. For more information, refer to ["Agricultural Application"](#) on p. 34.
6. Select the desired resolution. High refers to the original resolution, Medium refers to 1/2 of the original resolution (i.e. the length and width are both 1/2 of the original photo), and Low refers to 1/3 of the original resolution (i.e. the length and width are both 1/3 of the original photo). For example, if the original photo resolution is 6000x6000, the high resolution is the same, while the medium resolution is 3000x3000, and the low resolution is 2000x2000.
7. Set the ROI, output coordinate system and manage GCPs if required. Refer to the section below for details.
8. Click "Start Reconstruction," a pop-up window will appear to ask if a user wants to copy the photos to the mission folder. If a user chooses to save a copy, the added photos will be copied to the current mission folder and they will be included in the mission file when exporting a mission. If the user does not save a copy, the added photos will not be copied and will not be included when exporting a mission. Then click "Continue" to start reconstruction. The progress bar at the bottom will show the mapping progress. Click "Stop" to stop mapping, and the progress will be saved.
9. Multiple reconstruction missions can be started. Before the first mission finishes, other missions will be lined up and processed in order.
10. After mapping, the result will be shown in the map view. Zoom in or out to view the map at different levels. Annotation and measurement and agriculture applications are also available.
11. Click "Quality Report" to view and save a report in html format. The report includes reconstruction result overview, RTK status, camera calibration information and process information. Refer to the document How to Read a DJI Terra Quality Report for 2D Maps on the official DJI website for details.

File Format and Storage Path of 2D Maps

The 2D map reconstruction result is raster data in GeoTIFF format which can be used in third party software compatible with GeoTIFF format.

The default storage path of the 2D map files is as below. This cache directory can be changed in Settings.

C:\Users\<computer name>\Documents\DJI\DJI Terra\<DJI account name>\<mission code>\map\result.tif
In the reconstruction page, users can open the current mission folder using the keyboard shortcut "Ctrl+Alt+F".



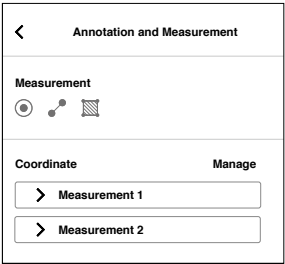
- If PC GS Pro has been used on your computer, after DJI Terra has been installed, the cache directory will still be as follows:

C:\Users\<computer name>\Documents\DJI\Groundstation\Missions\<DJI account name>

- The mission code is the number generated by the software automatically when a mission is created. It cannot be changed by users.

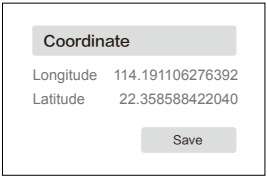
Annotation and Measurement

Click  on the right of Annotation and Measurement bar to enter the page. Users can add coordinates, measure distance and area.



Coordinate

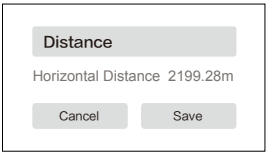
1. Click  to enter Coordinate Adding mode.
2. Click on the map to add a coordinate. Drag to adjust its position. Click  on top to delete the coordinate. The box below the coordinate shows the name, longitude, and latitude, indicating that the coordinate is in editing status. Click the text box of the name to input the name, then click "Save" to exit editing.



3. The coordinate list displays the added coordinates. Click  to expand the information to view the longitude and latitude and change the name.
4. Make sure that there is no coordinate in editing status. Click "Manage," and select coordinates (the outer box of the coordinate will turn blue when selected) to export or delete them.

Distance

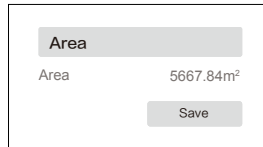
1. Click  to enter distance measurement mode.
2. Click the left mouse button on the map to add measurement points. Drag to adjust the position. The selected point is red, while the unselected point is gray. Click  on top to delete the selected point. Click  to delete all the points in this measurement. Click the right mouse button to end measurement. The box below the line shows the name and horizontal distance. Click the text box of the name to input the name, then click "Save" to exit editing. A distance measurement is in editing status when the measurement is not ended or saved. To exit editing status, end the measurement and save.



3. The process to view and manage distance measurements is the same as the one used for coordinates.

Area

1. Click  to enter area measurement mode.
2. As with distance measurement, the procedure to add measurement points for area is similar. The only difference is that there are three measurements points required before ending the measurement, which is achievable by clicking the right mouse button.



2D Multispectral Map Reconstruction

2D multispectral map reconstruction is only supported when using photos captured by the P4 Multispectral. The reconstruction procedure is similar to that of 2D map reconstruction. Users can view the supported vegetation index outputs. Radiometric correction is available before reconstruction to improve the reliability of the output index when images of the calibration board and the camera reflectance factor can be obtained.

Annotations and measurements can be done the same way you would after a 2D map reconstruction. Click  on the right of Agricultural Application bar to enter the page. Users can plan operations on the 2D multispectral map. For more information, refer to ["Agricultural Application" on p. 34](#).

Radiometric Correction

Radiometric correction can reduce the effects on images caused by weather and time and helps to output more reliable indexes in reconstruction missions. Multispectral images with radiometric correction can be reconstructed to a 2D multispectral map with an output of reflectance. Click  on the right of Radiometric Correction bar to enter the page. After configuration, return to the reconstruction page to start reconstruction with radiometric correction.

Importing Calibration Board Data

Users should import at least one group of images of the calibration board in each band and up to three groups. The groups are named Calibration Board 1, 2, and 3.

1. Select Calibration Board 1, 2, or 3.
2. Click Import Calibration Photo and select photos including the calibration board in blue, green, red, red edge, and near infrared bands to import.
3. Click the photo in the desired band and the photo will be displayed on the main screen on the left.
4. Click  or  to replace or delete the selected photo.
5. Input the corresponding reflectance factor in the text box for each band.

Marking the Calibration Board

1. Click the photo displayed on the main screen on the left to add a point as a mark of the edge of the calibration board in the photo.
2. Drag the edge point to adjust the position.
3. Click  to delete all the points in the selected photo.
4. Mark the calibration board for each photo accordingly.
5. The marks of the calibration board will be applied to the next group of images of the calibration board. Drag the edge points to adjust if needed.

Vegetation Index Outputs

DJI Terra supports 5 types of vegetation indices: NDVI, LCI, GNDVI, OSAVI, and NDRE, each requiring photos from different spectral bands. DJI Terra will display the indices that can be calculated according to the imported photos. There will be notifications under output index if any photos are missing in the required band. After reconstruction, click the buttons for different indices to view the results.



Even if only one photo is missing from a required band for the desired vegetation index, it is considered that the information of that whole band is missing. Users can view which photos are missing in the required band in the photo list.

File Format and Storage Path of 2D Multispectral Maps

The 2D multispectral map reconstruction results are raster data in the GeoTIFF format which can be used in third party software compatible with GeoTIFF format. The results include multispectral index maps for each index, 2D orthographic maps in RGB and for each of the spectral bands. The default storage path of the 2D multispectral map files can be found below. In the reconstruction page, users can open the current mission folder using the keyboard shortcut "Ctrl+Alt+F". This cache directory can be changed in Settings.

The default storage path of the multispectral index maps is

C:\Users\<computer name>\Documents\DJ1\DJ1 Terra\<DJI account name>\<mission code>\map\index_map

The default storage path of the 2D orthographic maps in RGB and for each of the spectral bands is

C:\Users\<computer name>\Documents\DJ1\DJ1 Terra\<DJI account name>\<mission code>\map

The result.tif file is the RGB 2D orthographic map. The result_XXX.tif file is the 2D orthographic map for the spectral band corresponding to "XXX" in the file name.

Agricultural Application

For 2D map reconstruction (Field and Fruit Tree) and 2D multispectral map reconstruction, click  on the right of the Agricultural Application bar to enter the page. Users can plan operations for fields or fruit trees on the map.

Field

  	
Result Display	☒
Result Correction	>
Task Area Planning	 
Farmland 1	Boundary Points 6
Area 221597.72	
Generate Route	

1. If Display Result is enabled, recognition for different areas such as fruit trees, buildings, ground, water, and poles will be displayed on the map.
2. Click Modify Result to use the corresponding brush for each type of area to paint on the map to modify the recognition result.
3. Click  and  to add boundary points and calibration points in the area that includes fields.
4. Click "Generate Route." DJI Terra will automatically generate a route for field operations. Users can enable or disable route display and obstacle avoidance, and configure altitude, route width, and route angle.
5. Click  to save the mission. Click  and the mission will be uploaded to DJI Agras Management Platform. Agras aircraft users can download the mission from the platform to the compatible app. Click  and the mission will be exported to the microSD card in the remote controller connected to the computer. Insert the card into the Agras remote controller and import the mission in the pop-up menu in the app.

Fruit Tree

 	
Spraying Type	Continuous Spraying
Flight Route Plan Type	Distance Interval (Auto)
Display Result	☒
Modify Result	
Task Area Planning	   
Generate 3D Flight Route	

1. Select Spraying Type. When using an Agras aircraft to perform the flight mission generated by DJI Terra, the aircraft will spray according to the selected type.

Continuous Spraying refers to spraying when flying within a recognized fruit tree area and is suitable for orchards with moderately sized and evenly distributed fruit trees.

Spot Spraying refers to spraying only when flying to the center of the tree crown in the recognized fruit tree area and is suitable for orchards that have scattered trees with thick crowns.

2. Select Flight Route Plan Type. The plan type varies for different spraying type. Continuous spraying corresponds to Distance Interval (Auto), Tree Crown Center (Auto), Semi-automated, and Manual, while Spot spraying corresponds to Tree Crown Center (Auto) and Semi-automated.

Six planning methods are available for different operation scenarios when combining the parameters above: Continuous Spraying - Distance Interval (Auto), Continuous Spraying - Tree Crown Center (Auto), Continuous Spraying - Semi-automated, Continuous Spraying - Manual, Spot Spraying - Tree Crown Center (Auto), and Spot Spraying - Semi-automated. Refer to the descriptions below.

3. If Display Result is enabled, recognition for different areas such as fruit trees, buildings, ground, water, and poles will be displayed on the map.
4. Click Modify Result to modify the recognition result manually. Operation varies for different spraying types:
 - When Continuous Spraying is selected, use the corresponding brush for each type of area to paint on the map to modify the recognition result.
 - When Spot Spraying is selected, circles will be displayed on the map to mark the tree crown centers. Click  to edit them. Click the recognized tree crown center to select it, then click  to delete. Click on the map to mark a new tree crown center.
5. Click  and  to add farmland points and calibration points in the area that includes fruit trees. Click the icon  or  to show or hide the planned farmland and calibration points. The farmland points that can be added vary for different flight route plan type, such as boundary points and waypoints. Refer to the description below.
6. Click "Generate 3D Flight Route." DJI Terra will automatically generate a route for fruit tree operations. Users can enable or disable route display and obstacle avoidance, and configure route altitude, route width, route angle and terrain follow accuracy.
7. Click  to save the mission. Click  and the mission will be exported to the microSD card in the remote controller connected to the computer. Insert the card into the Agras remote controller and import the mission in the pop-up menu in the app.

Continuous Spraying - Distance Interval (Auto)

After adding boundary points and calibration points, click "Generate 3D Flight Route." DJI Terra will automatically generate a zig-zag route with a same line spacing in the field. This function fits the needs of most large orchards.

Continuous Spraying - Tree Crown Center (Auto)

After adding boundary points and calibration points, click "Generate 3D Flight Route." DJI Terra will automatically generate a route including all the tree crown centers. This is suitable for orchards with evenly distributed trees and where continuous spraying is required.

Continuous Spraying - Semi-automated

Click on the map to add waypoints along the fruit trees. The flight route will contain the waypoints. Click "2D Flight Route Preview." DJI Terra will adjust the waypoints according to the location of the tree crown centers. Click "Back" after the preview, then click "Generate 3D Flight Route" to generate the final flight route. This is suitable for orchards with trees distribution following some kind of pattern and where continuous spraying is required.

Continuous Spraying - Manual

Click on the map to add waypoints along the fruit trees. The flight route will contain the waypoints. Click "Generate 3D Flight Route." DJI Terra will automatically generate a route. This is suitable for orchards with unevenly distributed trees and where a custom flight route is required.

Spot Spraying - Tree Crown Center (Auto)

After adding boundary points and calibration points, click "Generate 3D Flight Route." DJI Terra will automatically generate a route including all the tree crown centers. This is suitable for orchards with evenly distributed trees and where only spraying on the top of the trees is required.

Spot Spraying - Semi-automated

Click on the map to add waypoints along the fruit trees. The flight route will contain the waypoints. Click "2D Flight Route Preview." DJI Terra will generate a route that connects all the tree crown centers within 1.5 m of the waypoints. Click "Back" after the preview, then click "Generate 3D Flight Route" to generate the final flight route. This is suitable for orchards with a tree distribution following some kind of pattern and where only spraying on the top of the trees is required.

2D Multispectral Map

Display Result	☒
Modify Result	>
Prescription Map	☒
Parameter Configuration	
Average	4.00 L (kg) / Ha
Estimated Total	131.87 L (kg)
Good Growth	3.00 L (kg) / Ha
Poor Growth	5.00 L (kg) / Ha
Apply	
Task Area Editing	
Generate Route	

- 1. If Display Result is enabled, recognition for different areas such as fruit trees, buildings, ground, water, and poles will be displayed on the map.
- 2. Click Modify Result to use the corresponding brush for each type of area to paint on the map to modify the recognition result.
- 3. Click  and  to add boundary points and calibration points in the area that includes fields.
- 4. Select a planned field and set the material amount for average, good, and poor growth in Parameter Configuration. Click  to view the detailed descriptions for the parameters.
- 5. Click Apply and wait for the software to generate the prescription map. Users can select to show or hide the prescription map.

The prescription map is used for Agras aircraft to conduct variable rate fertilizer application. Users can adjust the parameters to change the prescription map. When a prescription map is shown in NDVI view, each field on the map will be displayed in a color corresponding to its material amount according to the color bar on the left. Hover the mouse on the map to view the specific amount.
- 6. Click “Generate Flight Route.” DJI Terra will automatically generate a route for field operations. Users can enable or disable obstacle avoidance and configure route altitude, route width, and route angle.
- 7. Click  to save the mission. Click  and the mission will be uploaded to DJI Agras Management Platform. Agras aircraft users can download the mission from the platform to a compatible app. Click  and the mission will be exported to the microSD card in the remote controller connected to the computer. Insert the card into the Agras remote controller and import the mission in the prompted menu in the app.

3D Model Reconstruction

Reconstruction Procedure

- 1. The method to enter the reconstruction page and add photos is similar to that used for 2D reconstruction.

3D reconstruction occupies more computer resources. To ensure smooth 3D reconstruction processes by adding an adequate amount of photos, refer to the number of photos corresponding to the following computer configurations.

Graphic Card	RAM	Max Photo Amount	Photo Resolution
GeForce GTX 1050Ti with a VRAM of 4GB	16GB	1600	4864x3648
	32GB	3200	
	48GB	4800	
	64GB	6400	
	128GB	12800	

- 2. Set the reconstruction type to “3D Model”.
- 3. Select the desired resolution. High refers to the original resolution, Medium refers to 1/2 of the original resolution (i.e. the length and width are both 1/2 of the original photo), and Low refers to 1/3 of the original resolution (i.e. the length and width are both 1/4 of the original photo). For example, if the original photo resolution is 6000x6000, the high resolution is the same, while the medium resolution is 3000x3000, and the low resolution is 1500x1500.

4. Select mapping scenarios. Normal works for most scenarios, including oblique and nadir view. Circle is suitable for scenarios where images are captured by flying around vertical structures or assets such as a communications towers, power towers, or wind turbines. Electricity is suitable for scenarios with power lines.
5. Enable or disable the options below to select the desired reconstruction results.

Aerotriangulation option: This option is enabled by default to generate the aerotriangulation measurement result, and cannot be disabled. The format will be a Terra file by default. Users can change the output to the XML format, i.e., Context Capture Blocks Exchange.

Point Cloud option: If enabled, a 3D point cloud will be generated. The default format for the point cloud is pnts. Users can set to other formats. LAS refers to the ASPRS LASer format for the 3D point cloud file. S3MB refers to the s3mb format for the SuperMap LOD 3D point cloud file.

Model option: If enabled, a 3D model will be generated. The default format for the LOD model is b3dm. Users can also output into other formats. OSGB refers to the osgb format for the LOD model. OBJ refers to the obj format for non-LOD models. PLY refers to the ply format for non-LOD models. S3MB refers to the SuperMap LOD models. I3S refers to the i3s format for LOD models that can be viewed in the ArcGIS client server or web page.
6. Set the ROI, output coordinate system and manage GCPs if required. Refer to the section below for details.
7. Click "Start Reconstruction," a pop-up window will appear to ask if users want to copy the photos to the mission folder. If a user chooses to save a copy, the added photos will be copied to the current mission folder and they will be included in the mission file when exporting a mission. If a user does not save a copy, the added photos will not be copied and will not be included when exporting a mission. Then click "Continue" to start reconstruction. The progress bar at the bottom will show the mapping progress. Click "Stop" to stop modeling, and the progress will be saved. If a user selects to continue after stopping a modeling session, DJI Terra will track back slightly from the saved progress and then continue modeling.
8. Multiple reconstruction missions can be started. Before the first mission finishes, other missions will be lined up and processed in order.
9. After modeling, users can translate and rotate the model, and zoom in or out to view it from different angles.

There will be three icons on the right screen and the model can be viewed at different settings.

 : Shows the orthographic projection of the 3D model. In this view, hold down the left mouse button and drag to translate model.

 /  : Displays the 3D model in top view or front view. In any of the two views, hold down the left mouse button and drag to translate the model, scroll the mouse wheel or hold down the right mouse button and drag to zoom in or out, and hold down the mouse wheel and drag to rotate.
10. Click "Quality Report" to view and save a report in html format. The report includes an overview of the reconstruction result, RTK status, camera calibration information and process information. Refer to the document How to Read a DJI Terra Quality Report for 3D Models on the official DJI website for details.

File Format and Storage Path of 3D Reconstruction Results

DJI Terra can output aerial triangulation results in the following formats: Terra and XML.

DJI Terra can output 3D point clouds in the following formats:

1. Non-LOD point cloud file in the las format.
2. LOD cloud file in pnts and s3mb formats. Format conversion is not supported.

DJI Terra can output 3D models in the following formats:

1. Texture mesh file in ply and obj formats.
2. LOD model file in b3dm, osgb, i3s, and s3mb formats. Format conversion is not supported.

The default storage path of the 3D reconstruction files is as follows:

C:\Users\<computer name>\Documents\DJI\DJI Terra\<DJI account name>\<mission code>\models\pc\0

In the reconstruction page, users can open the current mission folder using the keyboard shortcut "Ctrl+Alt+F".

NOTE: This cache directory can be changed in Settings.



- If PC GS Pro has been used on your computer, after DJI Terra has been installed, the cache directory will still be as follows:

C:\Users\<computer name>\Documents\DJI\Groundstation\Missions\<DJI account name>

- The mission code is the number generated by the software automatically when a mission is created. It cannot be changed by users.
-

Annotation and Measurement

Click  on the right of Annotation and Measurement bar to enter the page. Users can add coordinates, measure distance, area and volume based on a specified coordinate system. For example, when using the photos captured by a Phantom 4 RTK aircraft in WGS84 coordinate system, the altitude involved in Annotation and Measurement refers to the ellipsoidal height. If using other coordinate systems, the altitude corresponds to the elevation in the coordinate system that the photos use.

The method to add coordinates, measure distance and area is similar to the one in 2D reconstruction, but the data included is different. When measuring the volume, it is required to select the base plane. The following is a description of the data of coordinate, distance, area and volume in 3D reconstruction.

Coordinate: The three-dimensional coordinate of the added coordinate point, including longitude, latitude and altitude. The altitude corresponds to the elevation in the coordinate system that the photos use.

Distance: The horizontal distance is the length of the horizontal projection of the line segment between the two added measurement points, the vertical distance is the height difference between the two points, and the straight distance refers to the spatial distance between the two points, i.e., the length of the line segment between two points. If a polyline is added, the straight distance is the sum of the straight distances for each segment.

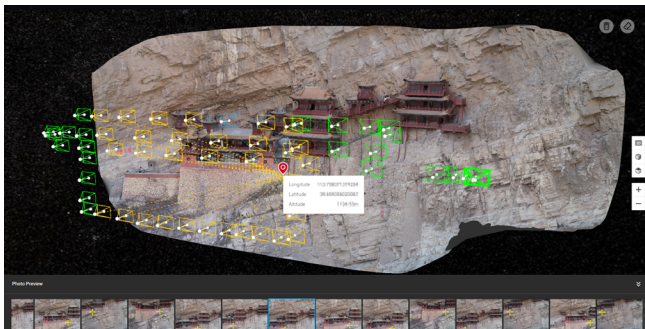
Area: Refers to the projected area of the polygon area formed by the added measurement points along the elevation direction.

Volume: When projecting the polygon area formed by the added measurement points along the elevation direction, a polyhedron is produced. With reference to the specified base plane, the volume refers to the cut and fill volume of the model. The portion above the base plane (the direction in which the elevation is increased) is the cut, and the portion below the base plane (the direction in which the elevation is reduced) is the fill. There are two options for the base plane, the Mean Plane and the Lowest Point.

- **Mean Plane:** A plane (possibly an inclined plane) fitted with multiple measurement points as the reference plane.
- **Lowest Point:** Use the plane of the lowest elevation point among the measurement points as the base plane.

The Annotation and Measurement of the 3D model also includes the function to display the camera pose when adding coordinates.

1. Enable "Camera Pose" and the green patterns indicates the camera pose when the photo was captured.
2. Click  to enter Coordinate Adding mode.
3. Click on the model to select a point. The camera pose display of the photos including the selected point will turn yellow, and a photo preview from the camera's perspective will be displayed at the bottom of the screen.



4. The yellow cross in the preview photo indicates the position of the point on the model in the photo. Click the photo, and the corresponding camera pose display will turn blue. Double-click the photo to view in a large size and zoom in or out.

ROI Reconstruction

During 2D or 3D reconstruction, users can select a region of interest (ROI) for reconstruction after adding photos, which will save the time of reconstruction and improve efficiency. Click  on the right of the ROI Reconstruction bar to enter the page and define the ROI. Follow the instructions below. After configuration, return to the reconstruction page to start reconstruction, then the reconstruction will be carried out in the defined ROI.

Aerial Triangulation

Aerial triangulation should be performed before defining the ROI.

1. Click “Aerotriangulation” on the lower right corner to start aerial triangulation and wait until it's completed.
2. Click “Aerotriangulation Report” to view the report and make sure that the data is correct.

Define ROI

There are four methods to define the ROI for reconstruction. The coordinate system used here is the same as the one in Output Coordinate System settings.

1. Click “KML Import” to convert the points in the KML file into the edge points of the ROI.
2. Input the min and max latitude, longitude, and height or XYZ values of the ROI in the text boxes, and then click “Apply” to define the ROI.
3. In the “Reset Region” option, click “Auto” or “Max Region”, and DJI Terra will generate the corresponding ROI automatically.
Auto: DJI Terra will calculate a proper cuboid region automatically according to the point cloud distribution.
Max Region: The cuboid region covering the whole point cloud.
4. Click  on the top of the screen to enter editing mode. Click on the map to add the edge points of the ROI, and then input the height in the height text box to define the ROI.

Translate ROI

Click  to enter translation mode, and then drag the defined ROI to translate it.

Edit ROI

Click  to enter editing mode.

1. Click on the map to add edge points of the ROI.
2. Drag the edge point to adjust its location and the shape of the ROI.
3. Select the edge point, and then click  to delete it.
4. Click  to delete all the edge points.
5. Click  to exit from editing mode.

Other Information and Settings

1. When the ROI is a cuboid, its length, width, and height will appear on the top of the page.
2. Show Camera Pose: Show or hide the camera pose of the added photos.
3. Display Region: Show or hide the defined ROI.

Output Coordinate System Settings

When generating 2D or 3D reconstructions, users can set the output coordinate system after importing images. The coordinates in the reconstruction result will be converted to the designated coordinate system.

Click  on the right of Output Coordinate System Settings bar to enter the settings page. If the images imported do not include GPS information, the output coordinate system will be automatically set to “Any Coordinate System” defined by DJI Terra. If the images include GPS information, the output coordinate system will be automatically set to “Known Coordinate System” and converted to

a projected coordinate system in WGS 84. Users can select other known coordinate systems and set the altitude. Follow the instructions below.

1. Known Coordinate System Settings

There are two methods to set the known coordinate system, importing a PRJ file and searching in DJI Terra.

Importing a PRJ file: Search and download the .prj file for the desired coordinate system on the website <https://spatialreference.org>. Then click "Import PRJ" in DJI Terra to import.

Searching in DJI Terra: Click "Search", input the coordinate system name or authorization code, select the desired coordinate system in the searching results. Then click "Apply".

2. Altitude Settings

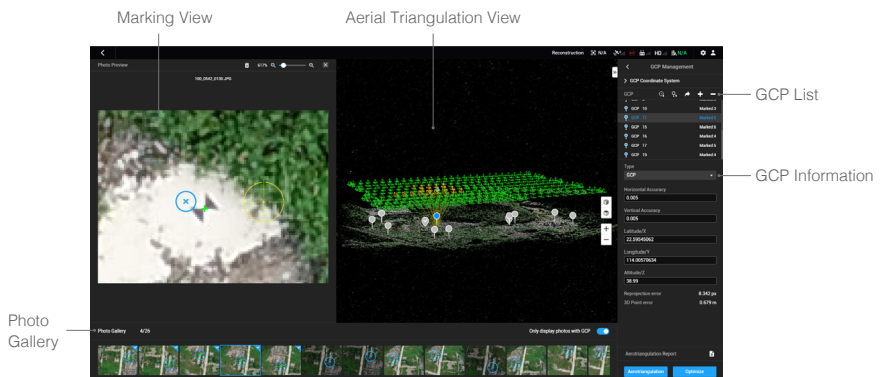
DJI Terra supports Default (ellipsoid height), EGM96, EGM2008, NAVD88, NAVD88 (ftUS), NAVD88 (ft), JGD2011 (vertical).

GCP Management

 Ground Control Points (GCPs) are marked points on the ground with known coordinates and are clearly visible in an image. GCPs can be obtained using photogrammetry methods such as GPS-RTK or a total station. GCPs are used to optimize the result of aerial triangulation. There are also check points that are used to check for the absolute accuracy of aerial triangulation.

When generating 2D or 3D reconstructions, users can import GCPs after importing images to help increase the robustness and accuracy of aerial triangulation, check the accuracy of the aerial triangulation against actual measurements, and convert the aerial triangulation result into the one in the GCP's coordinate system. Note that the positioning and pose of the camera should be included in the added images or be imported after images added.

Click  on the right of GCP Management bar to enter the page. The page includes GCP list, GCP information, photo gallery, aerial triangulation view, and marking view. The marking view will appear on the left of the aerial triangulation view after an image is selected in the photo gallery, as shown below. Users can add GCPs, mark points, and conduct aerial triangulation calculation and optimization.



Aerial Triangulation

In the GCP management page, DJI Terra will process the added images, and the camera positioning and attitude information will be shown on the map when complete. Click "Aerotriangulation" at the bottom of the screen to start aerial triangulation calculation. The result will be shown on the screen when complete, including camera positioning and attitude and aerial triangulation points.

GCP Coordinate System

Click  on the left of GCP Coordinate System bar to set the GCP coordinate system by following the same instructions as the ones for output coordinate system configuration.

Optimization

Import a GCP file and mark points on the images to optimize the aerial triangulation.

Importing GCP Files

1. Preparing GCP Files

The GCP data in the file should be in this order: point name, latitude/X/E, longitude/Y/N, height/Z/U, horizontal accuracy, vertical accuracy. Accuracy data is optional. Each column is separated with a space or a tab. The example is as shown below. Note that in the projected coordinate system, X represents the East, and Y represents the North.

Name	Latitude	Longitude	Height
1	22.0	113.0	1.0
2	22.5	113.5	2.0
a	23.0	114.0	3.0
b	23.5	114.5	4.0

2. Importing GCPs

Click , and select the desired GCP file to import it. Users can also import GCPs with marked points by clicking . After importing, the GCPs will be shown in both the aerial triangulation view and GCP list.

 You can only import GCP files in the json format that are exported in DJI Terra when using  to import GCPs.

3. Editing GCPs

Click to select a GCP. It will turn blue in the aerial triangulation view and GCP list when selected. The camera position of the images that contain the selected GCP will turn yellow. The blue cross on the thumbnail in the photo gallery represents the GCP's projected result on the image. When "Only display photos with GCP" is enabled, only the images on which the current GCP can be projected and images including marking points will be displayed. Press and hold the Ctrl key on the keyboard and click the GCPs to select multiple GCPs. Click  to delete the selected GCPs.

Click  to add a GCP. Set the GCP as a control point  or a check point , and input its horizontal accuracy, vertical accuracy, and coordinates in the coordinate system the GCPs are in.

Marking

1. Select a GCP, and click one of the images including the selected GCP in the photo gallery. The marking view will display on the left of the aerial triangulation view. The blue cross in the marking view represents the GCP's projected result on the image.
2. In the marking view, hold the left button on the mouse to drag the image, scroll to zoom in and out. Click on the image using the yellow cross to mark the GCP's actual location in the image. The marked point is displayed in the marking view and photo gallery with a green cross, and there will be a check mark on the upper right corner of the image in the photo gallery, indicating that this is an image with a marked point.
3. Delete marked points: Select the images with marked points in the photo gallery, and press the Delete key on the keyboard or click  on the top of the marking view.
4. Export GCP file: Click  to export a json file including GCPs and marked points, which can be applied to other missions including the same images with marked points.
5. For the same GCP, the blue cross location will be updated according to the marked point location after each marking from the third image on. The reprojection error and 3D point error will also be updated.



To ensure the robustness of the post aerial triangulation optimization, it is recommended to mark at least four images for each GCP and make sure that the GCPs with marked points are as evenly distributed as possible in the mapping area. The recommended number of GCPs is no less than four (the type of the point should be set to GCP). Check points can be set according to the demand of the mission.

Using Image POS Data in Calculation

If image POS data is imported, users can enable "Constrain with Image POS Data" on the bottom of the page. The image POS data will be used for georeferencing the RMSE.

Optimization

1. After marking points, click "Optimize" at the bottom of the screen for aerial triangulation optimization. The aerial triangulation display will be updated when complete.
2. Select one of the GCPs to view the reprojection error and 3D point error after aerial triangulation optimization in the GCP information section. If the 3D point error is too large, adjust the marked points and repeat optimization until the error meets your requirements.



Aerial triangulation optimization can be done repeatedly. Remember to click "Optimize" to update the aerial triangulation result once you adjust the marked points, change the coordinate system, and edit the GCPs. If optimization is not run after adjustment, when you back to the reconstruction page, the reconstruction will be done using the previous aerial triangulation result.

More Functions

KML files can be imported onto DJI Terra to add waypoints or edge points of a flight area. In a Waypoints mission, 2D / 3D Mission Planning based on an existing or newly created reconstruction is available. For Reconstruction missions, there are various functions available such as 2D Map Reconstruction (urban scenes), Output Coordinate System Selection, ROI Reconstruction, Multi-GPU Reconstruction GCP Management, and 3D Model Reconstruction. These are premium features. Purchase a license according to the features you require.

See the table below which provides an overview of DJI Terra's more advanced features and functions.

Features	Basic (Online Version)	Pro (Online and Offline Versions)	Electricity (Online and Offline Versions)
Real-time 2D Mapping	√	√	√
Agricultural application	√	√	√
2D Reconstruction (Field/Fruit Tree)	√	√	√
2D Multispectral Reconstruction		√	√
KML file import		√	√
2D Reconstruction (Urban)		√	√
Output Coordinate System		√	√
Image POS data import		√	√
ROI Reconstruction		√	√
3D Reconstruction (Normal/Circle)		√	√
3D Mission planning		√	√
Multi-GPU Reconstruction		√	√
GCP		√	√
3D Reconstruction (Power Lines)			√
Detailed Inspection			√

Purchase Licenses

Users can purchase online licenses for DJI Terra Pro or Electricity version on the product page on the official DJI website. DJI will send the activation code via an email once purchased successfully. See the details below.

Launch DJI Terra >  > Activated License(s) > Buy New License(s). Users will be redirected to the official DJI website to get the details about the functions of different versions. Users can also be redirected to the official DJI website by clicking the corresponding button where Real-Time 2D Mapping, Real-Time 3D Mapping, Reconstruction, Output Coordinate System, GCP Management, Agriculture, KML File Import, or 2D/3D function is required.

To purchase DJI Terra Pro or Electricity, visit the DJI Terra product page at <https://www.dji.com/dji-terra>. Input your information on the contact form, and then wait for a DJI authorized dealer to respond to your request.

Pro version and Electricity version support offline login. Users can contact an authorized DJI dealer via the product page on the official DJI website to purchase an offline license. DJI will send the exchange code via an email once purchased successfully. Refer to the Guide for DJI Terra Offline Licenses for more information on how to activate the offline license and bind a device.

Activate Online Licenses and Bind Devices

To use the licenses with the desired DJI accounts and on the desired computers, license activation and device binding are required. Activate licenses in DJI Terra or via an activation link. Each license can be bound to up to three computers. Contact DJI Support to unbind the license if needed.

1. Enter the activation page via the two methods below:

DJI Terra: Launch DJI Terra >  > Activated License(s) > Activate a New License. A window prompt will appear.

Activation Link: Visit <https://license.dji.com/en>

2. Input the activation code you received and the desired DJI account that you want to use the license with, then click "Activate."
3. After successful activation, view the ID, expiry time, and device binding status of the license. If activating the license via the link, re-enter the Activated License(s) page to view the information.
4. Click "Device Binding" and then click "Bind" to bind the license to the current computer used. "Bound" will be displayed next to the license of the corresponding ID in Activated License(s).

View and Export Logs

DJI Terra will generate a log file when performing a mission. If there is a software error or the software crashes during a mission, users can have access to the corresponding log file in the storage path below according to the time the mission was performed. Then export it and send to DJI Support for analysis.

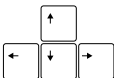
C:\Users\<computer name>\AppData\Roaming\DJI Terra\log

Users can open the log storage directory using the keyboard shortcut "Ctrl+Alt+L" after launching DJI Terra.

Software Shortcuts

In DJI Terra, users can perform some functions and operations using shortcuts. The table below lists the shortcuts that can be used in different pages in DJI Terra.

Page	Functions / Operations	Shortcuts
Mission Library	Create mission	Ctrl+N
	Switch mission type when creating a mission	Tab
	Switch mission type	Tab
	Switch mission	Up: ↑ , Down: ↓
	Switch operation for mission	Left: ← , Right: →
	Delete mission	Delete
	Select all missions when deleting or exporting multi missions	Ctrl+A
Map	Map Zoom In/Out	Zoom In: +, Zoom Out: -

Mission Editing	Save the current mission	Ctrl+S
	Delete the selected waypoint	Delete
	Switch parameter	Tab
	Adjust parameter value	More: ↑ , Less: ↓
Waypoints or Detailed Inspection Mission Editing	Switch waypoint	Previous: Ctrl+ ← Next: Ctrl+ →
Detailed Inspection Mission Editing	Adjust waypoint location	
Reconstruction	Open the current mission folder	Ctrl+Alt+F
3D Model Map	Switch model display view	Orthographic projection: F1 Front view: F2 Top view: F3
	Switch between aerotriangulation, point cloud, and model result	F4
Photo Management	Select the photos in series in the same folder	Shift+click the first and last photo
	Delete multi photos in the same folder	Delete
GCP Management	Edit the name of the selected GCP	Enter
	Switch GCP	Up: ↑ , Down: ↓
	Switch parameter	Tab
Annotation and Measurement	Switch object for measurement	Tab
	Expand or collapse measurement results	Ctrl+Q
Measurement Result Management	Select results in series	Shift+click the first and last measurement results
	Select all results	Ctrl+A
Flight Route Plan in Agricultural Application	Delete the selected farmland point or calibration point	Delete
	Switch between farmland points or calibration points	Tab
	Save the current mission	Ctrl+S
	Show or hide recognition result	F5
	Modify fruit trees recognition result	Ctrl+Left Mouse Button
	Show or hide prescription map	F6
	Enable or disable obstacle avoidance	F7
	Show or hide flight route	F8
All Pages	Open the log storage directory	Ctrl+Alt+L

This content is subject to change.

Download the latest version from
<http://www.dji.com/dji-terra>

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

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