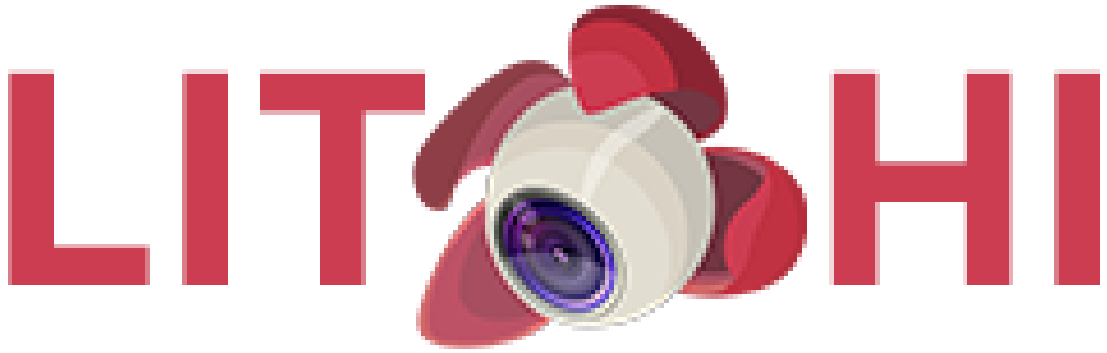

Unlocking the full potential of your DJI aircraft with **Litchi**

Software Manual for the Litchi flight control software and Flylitchi.com Mission Hub site.

by Don Wiley, Gold Wingnut Productions, LLC
Revision date: 14 February 2020

About this document

The following manual is a user's guide for the Litchi flight control software produced by VC Technology Ltd. based from information presented on their Flylitchi.com website, other online sites and sources, and the author's personal experience with using the Litchi software. This document is current to the best of the author's knowledge as of the date of the update and compilation of the information. VC Technology Ltd. has no responsibility for the creation of the document. The end user is always responsible for the verification of the accuracy of the information presented herein and its use. Neither VC Technology Ltd., flylitchi.com, nor is the author creating this document responsible any direct, indirect, incidental, or coincidental damages, or any loss or injury that may result from the use of this document.

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Acknowledgements

VC Technology Ltd. has created a valuable piece of software for flying current model DJI aircrafts. This platform fills in many holes and improves upon the capabilities of the manufacturer's DJI Go/Go 4 software while seamlessly integrating with the hardware platform. Like many software applications the weakness is not in the design, operability, nor features, it is in the documentation of the functions and features. Many software companies employ technical writers to work with the software engineers to create documentation; documentation that usually also lacks in clarity to the end users because the writers themselves are also engineers and have limited real world knowledge of how the product or equipment is used on a day-to-day basis. This is not my first foray into filling this gap and writing technical manuals, hopefully my efforts and skills will make flying and using Litchi more enjoyable and understandable for all.

This manual would not be possible without the assistance and generosity of members of the Drone Flyers Club in The Villages Florida, who generously and courageously allowed me to fly their aircraft to gain first-hand knowledge of the workings of Litchi on aircraft I did not personally own. Thanks guys, for trusting me with your birds and providing me with encouragement to move ahead with this manual.

Many thanks to Côme de Monits and Victor Mazzia of VC Technology Ltd. who are responsible for creating Litchi and the baseline documentation on the FlyLitchi.com website, they deserve immense credit for the incredible amount of work they've put in. I hope that you will find my work a complement to your own work and creation.

To the many YouTube content providers, bloggers, websites, and pilots who have shared your knowledge and experiences with the public, thank you, you've all helped putting the pieces of the puzzle together to make this document a success, you've been invaluable resources. This truly took a team effort to produce.

Lastly, to my wife Debbie, thank you for putting up with me these many late nights I was working on this manual, my OCD behavior in this effort, and not getting too upset with the neglected Honey-Do-List that now still awaits me. Most importantly, thank you for buying me that first drone three years ago, I'm sure you didn't see where it would lead to back then.

Don Wiley

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I. General Information

A. Compatibility

This document is up-to-date as of the November 2019 update of Litchi: iOS device version 2.8.0 (26/11/19) and Android version 4.17.0 (29/11/19). As of these updates Litchi is compatible with the Mavic 2 (Zoom/Pro), Mavic (Air/Pro), Phantom 4 (Standard/Advanced/Pro/ProV2), Phantom 3 (Standard/4K/Advanced/Professional), Inspire 1 series, Inspire 2 series, and Spark aircraft. Waypoint/Orbit mode support for the DJI Spark drone model is experimental. This manual does not include specifics for

the Inspire series of aircraft, but the information and principles presented here still apply.

While aircraft compatibility is important in the overall basic use of Litchi, compatibility of the tablet or phone which is used to run Litchi is absolutely critical. The Apple family of devices is the simplest to narrow down; if the device has an A8 processor or later you should be good to go. The A8 processor first appeared in the iPhone 6 and iPad Mini 4. I've been regularly using an iPad Mini 4 with Litchi for over two years now with no problems.

The Android platform is a much more difficult platform to identify a compatible device. With over a dozen manufactures and hundreds of different models to choose from the selections of a device can be hit or miss. Check some of the online forums for Litchi to help with selecting a compatible device. Generally, a table or phone with a modern processor (64-bit and <3 years old) from a top tier manufacture usually work fine. A tablet running a highly customized android OS, such as the Amazon Fire devices, may not make the best platform for Litchi. The DJI CrystalSky, Mavic Smart Controller, and the Phantom 4 Plus series of controllers are android OS based devices and can run Litchi using a side load method to install it. I have a Phantom 4 Pro+ controller with Litchi loaded on it. It works, but the small screen and getting the DJI Go 4 software to shutdown are more headache than it's worth and I go back to the standard Phantom 4 controller with my iPad Mini 4 or Samsung Galaxy Tab A tablet.

Another factor to consider is the screen size of the device. Phones, in my opinion, are too small for day-to-day flying. Full size tablets tend to be both heavy and excessively bulky to use with the standard remotes. The Goldilocks of devices is an iPad Mini 4 or similar sized android device for size, weight, and ease of viewing and use.

Which platform you use is a personal choice. My experience has been that the Apple product family is a much more stable and consistent platform due in no small part to having a single manufacturer and API across all devices. The android platform is generally a more cost-effective device but because of the multiple hardware, OS, and API variants available the reliability is not always the best. But the Litchi app seems

to have better interface and additional features and functions on the android version not available on the Apple device.

One final thought on compatibility, why take chances! You have an aircraft that cost you anywhere for $600 to $2000+, is it worth taking a chance losing the aircraft to save maybe $50 on an off-brand device? Use a quality device, protect your investment, and minimize your headaches.

B. Manual Conventions and Layout

Throughout this manual there are various callouts, footnotes, and pictures used to bring attention to different items of importance.

Stick Motion:

When control stick movement is described it is assumed that the control sticks are in Mode 2 where the Left Stick controls Rotation/Yaw and Altitude and the Right Stick controls Pitch/Forward-Reverse movement and Roll/Left-Right movement.

Callouts:

NOTE: This is an information items that warrants special attention either due to platform limitations, known issues, compatibility issues, or general information items of significance.

WARNING: This is information related to possible personal safety or equipment control which may involve possible injury or aircraft control or stability issues. Be sure you fully understand these warnings before using Litchi.

Footnotes:

Footnotes are provided at various locations to provide clear text URLs for videos or websites that may be of further interest to the reader or provide additional clarifications or examples. Any URLs listed were current and functional at the time of this writing.

Pictures & Graphics:

Pictures and graphics used throughout this manual may have either a blue border, a yellow border, or no border. Those pictures with a blue border are specific to the android platform. Pictures with a yellow border are specific to the Apple iOS platform. Pictures without a colored border are either generic in nature or apply to both platforms. The captions below each picture will also identify the android/iOS platform the picture is applicable to.

Figure 1 - Main Screen - Android

Figure 2 - Main Screen - iOS

II. Getting Started

A. Purchasing Litchi

Litchi is available for download from either the Apple App Store, Google Play Store, and from the Amazon Appstore. While you can install Litchi on multiple devices associated with each source (I have the iOS version installed on 3 iPads and my iPhone) at no additional cost, cross platform licensing is not supported. If you utilize multiple platforms you will need to purchase a license for each platform.

If you are using Litchi on one of the DJI controllers utilizing the sideload method from the Amazon Appstore, you may also have to purchase a license through the Google Play Store for other standard android device due to cross platform integration issues.

VC Technologies, Ltd. has made Litchi very affordable so buying multiple licenses isn't very painful and given the features of Litchi, well worth any extra money spent.

B. Litchi Account

To make full use of all the features of Litchi you will need to setup an account with at the www.flylitchi.com website, the account is free. Click on the Log In menu selection at the upper right corner of the screen and either log in with your Facebook credentials or create an account for Litchi. Once logged in the Log In option will change to the account name you chose.

Figure 3 - Litchi Log In

C.Initial Litchi Startup

When starting the app for the first time after installation, you will need an Internet connection in order to register the app with the DJI servers, the aircraft does not have to be connect to register the app. This is a background process and you shouldn't notice it happening unless there is a problem; if this happens you will get an error message. Some internet connections (*e.g.* mobile devices) may experience difficulties connecting to DJI servers, if this happens try a different and more robust internet connection such as a home or public Wi-Fi.

D. Connecting Litchi to your aircraft

When you install Litchi from any of the online sources you will be downloading the latest version which is written to support the latest DJI drone, controller firmware, and mobile device OS. Ensure the aircraft, remote, and display mobile display device are all at the latest revision before using Litchi to prevent unanticipated problems and control issues. The latest DJI firmware can be installed in the newer aircraft by using DJI Go, selecting the General Setting menu (the 3 dots in the upper right-hand corner ⋯), selecting About at the very bottom of the menu, and checking the version. If an update is needed you will be prompted to download and install it. Ensure all the firmware and databases are updated I the aircraft and controller. Some updates my require the use

of the DJI Assistant software to install, see DJI's website[1] for the correct software version and instructions. Older supported aircraft may require manual installation of firmware updates available for download from DJI's website, follow the directions provided by DJI for these updates.

Once the firmware and OS versions are updated, follow the appropriate steps given below based on you mobile device platform.

E.Android Devices Connection

For remote controllers with a USB connection (Mavic series, Phantom 3 Adv/Pro, Phantom 4 series, Inspire series), these directions apply:

1) Ensure no DJI-based apps (including Litchi, DJI Go/Go4, and any other app designed to control a DJI drone or Osmo device) are running in the background. Force Kill all of these if any are running.
2) Force Kill any apps not absolutely essential for flying that may be running to give Litchi as much CPU availability as possible.
3) If you have an app already set as the default for the remote controller USB connection you will must clear the defaults for that app in your mobile device settings. Go to Settings - Apps - DJI Go (or other app name that may be the default) - Clear Defaults. Some devices will automatically set an app you start as default, if this happens you may have to repeat this process every time you want to switch flying apps (*e.g.* from DJI Go to Litchi and vice versa)
4) Start your remote control, THEN your aircraft, and let them complete initialization and connecting.
5) Connect the remote controller to the mobile device.

NOTE: For Mavic series drones the remote has two USB ports, you can use either for connecting to your display device and both will work equally well however, only one cable can be plugged in at a time, if the phone connector (USB type b or c) on the upper left side of the remote has

[1] Select Software at https://www.dji.com/downloads?site=brandsite&from=nav and download the correct version for you aircraft.

a cable plugged into it the bottom connector (USB type A) is disabled. To ensure a proper connection ensure both USB ports are empty before plugging the cable into the USB port to want to use.

6) You should see a popup window asking which app to start, select Litchi in the popup to initiate connection. For some display devices you may have to manually start the desired app (Litchi).

NOTE: VC Technologies has a video that documents connecting and android device.[2]

For the drones that use a Wi-Fi connection to connect to the display device (Phantom 3 Standard/4K/SE, Spark), follow these steps:

1) Ensure no DJI-based apps (including Litchi, DJI Go/Go4, and any other app designed to control a DJI drone or Osmo device) are running in the background. Force Kill all of these if any are running.
2) Force Kill any apps not absolutely essential for flying that may be running to give Litchi as much CPU availability as possible.
3) Force close all apps (including DJI Go and other third party DJI drone/Osmo apps). To force close an app, go to your mobile device Settings - Apps - *app name* - Force close
4) Start your remote control, THEN your aircraft, and let them complete initialization and connecting.
5) Connect to the Wi-Fi network of the aircraft.
6) Start Litchi.

F.iOS Devices Connection

1) Make sure no DJI-based apps (including Litchi, DJI Go/Go4, and any other app designed to control a DJI drone or Osmo device) are running in the background. Force Kill all of these if any are running.

[2] Connecting android device video:
https://www.youtube.com/watch?v=tERjIMHTufs

2) Start your remote control, THEN your aircraft, and let them complete initialization and connecting.
3) If you have a Wi-Fi based drone (P3 Standard/4K/SE, Spark): connect to the Wi-Fi network presented by the aircraft.
4) If you have a USB-based connected remote controller, plug the remote controller into the mobile device.

NOTE: For Mavic series drones the remote has two USB ports, you can use either for connecting to your display device and both will work equally well however, only one cable can be plugged in at a time, if the phone connector (USB type b or c) on the upper left side of the remote has a cable plugged into it the bottom connector (USB type A) is disabled. To ensure a proper connection ensure both USB ports are empty before plugging the cable into either USB port that you want to use.

5) Start Litchi.

G. Safe Flying and Performance Guidance

- For iOS devices use v9 or higher operating system, the latest version is preferred.
- iOS devices need to be a 64-bit processor based (A7 processor or newer) device, an iPad Mini 4, iPhone 6, 5th generation iPad, iPad Air, or newer model should be considered a minimum[4].
- Shutdown all apps on your device except for Litchi. If both Litchi and DJI Go 4 are running at the same time shut down both apps and then restart only the one to be used.
- Enable the Hardware Decoding in the iOS general setting of Litchi.
- Ensure you display device does not have any low power or power savings modes enabled. Screen blanking delay should be disabled or set to maximum delay.
- Set the Preview quality to 4Mbps for Lightbridge based drones and ensure Full HD Stream is disabled. Display quality and resolution should generally be set to the lowest value and bandwidth

[4] See https://en.wikipedia.org/wiki/Apple-designed_processors for device and processor information.

utilization setting possible, higher values do not yield any significant increase in display experience.

- Turn off the Histogram unless you need the information for you photo/video work.
- Do not use any 3rd party screen recording app or any other app not critical to flying.
- Put you display device in Do Not Disturb mode to prevent message notifications and any incoming calls from distracting you during flying.
- Always test fly your aircraft before beginning a mission.
- Never takeoff or land you aircraft with the camera facing the pilot. Pilot and aircraft should face the same direction for best control during takeoffs and landings.
- Ensure you have enough battery power (aircraft, remote, and display device) to complete your mission and account for any extra power requirement caused by winds aloft. Whenever possible use a fully charged battery.
- When starting a mission ensure the flight path to the first Waypoint is clear.
- Ensure you flight path and all Waypoints are above any surrounding obstacles.
- Use Litchi Virtual Mission to test fly Waypoint missions prior to actual flights.
- Using the automatic takeoff function places the aircraft at an inherently dangerous altitude where potential serious injury can easily occur due to either inattention, operator error, or control system error. It is highly recommended that immediately after takeoff the aircraft altitude be increased to 8 to 10 feet to prevent serious injury should a problem occur with the aircraft or control system.

III. The Main Screen

The main screen in Litchi is where you will spend the vast majority of your time when flying so it is important to understand the meaning of

each of the icons/buttons on the screen. There are two different main screen views in Litchi, the Map View and the Camera View.

In both views a Small Window appears in the lower right corner of the screen that show the other view. Tapping the Small Window will cause the main view and the Small Window to switch.

In the upper left corner of the Small Window there is a minus icon ⊖ that when touched will cause the Small Window to be minimized and be replaced by a plus icon ⊕ in the lower right corner of the main view. Touching the plus icon ⊕ will restore the Small Window.

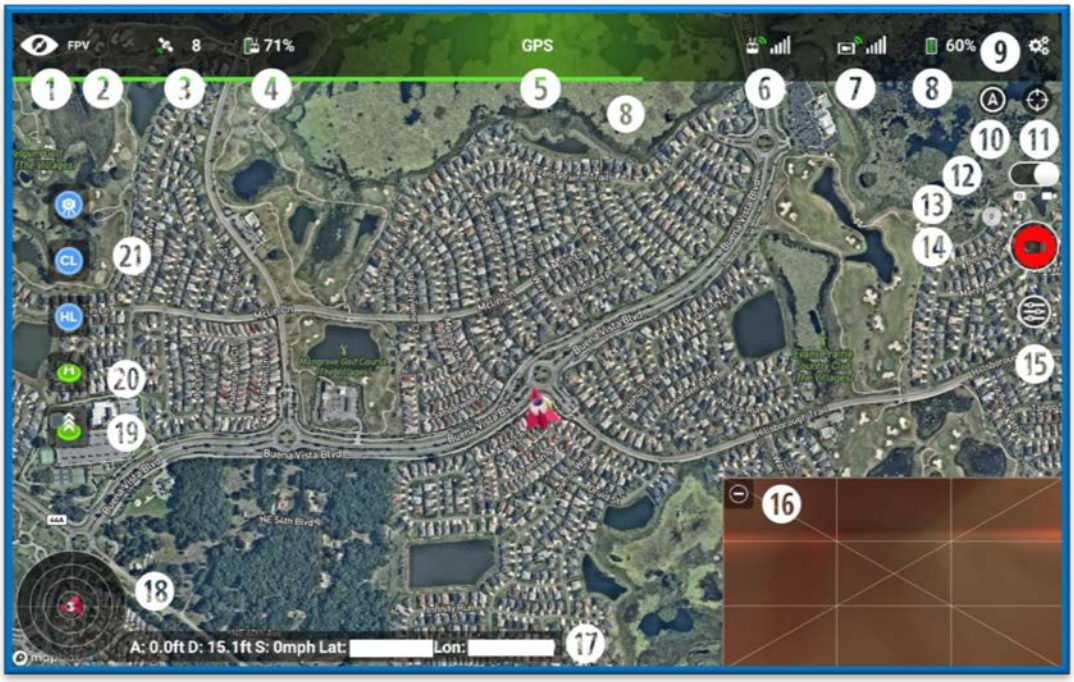


Figure 4 – Main Screen Map View Details – Android (large device)

Figure 5 - Main Screen Camera View Details – Android (large device)

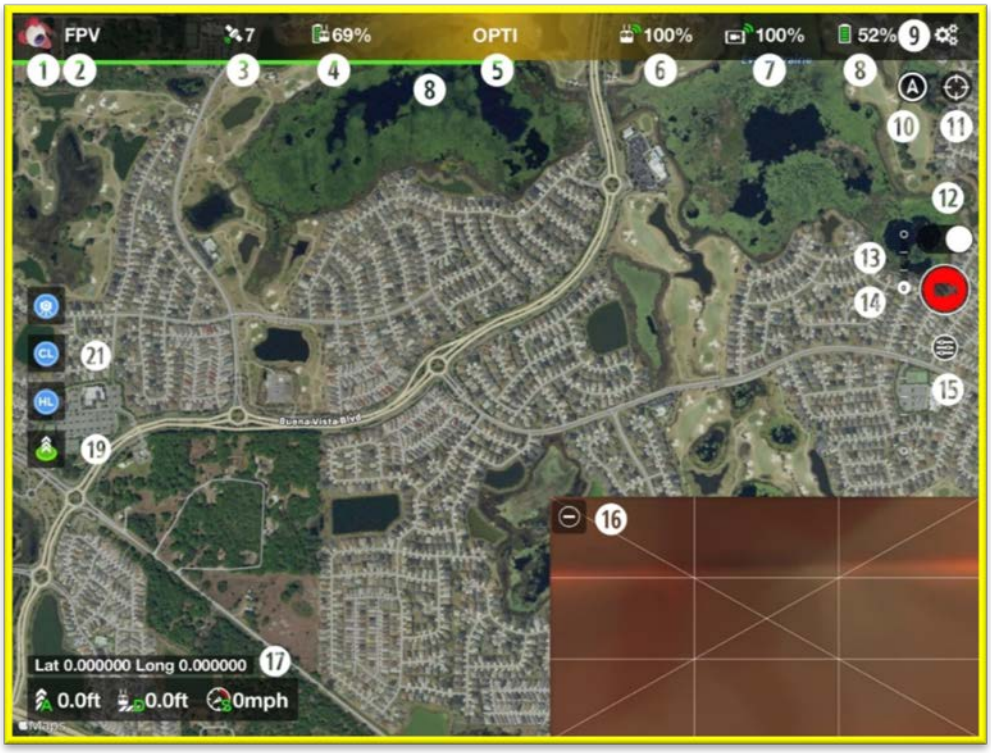


Figure 6 - Main Screen Map View Details - iOS (large device)

Figure 7 - Main Screen Camera View Details - iOS (large device)

1) **Flight Modes Menu Button**: Use this dropdown to change the flight mode.
2) **Flight Mode**: Currently selected flight mode.
3) **Satellite Count**: This show the number of satellites the aircraft has a lock on.
4) **Remote Controller Battery/Virtual Joystick**: The percent power remaining in the battery of the remote controller. If this aircraft is being flown with virtual joysticks on the display device instead of a remote controller this will toggle the joystick display off and on.
5) **Aircraft Status**: The current status of the aircraft and operating mode.
6) **Control Signal**: Strength of the telemetry and control data signal.
7) **Video Signal**: Strength of the video signal being received from the aircraft.
8) **Aircraft Battery:** The percent power remaining in the battery of the aircraft. Battery status is also represented graphicly by a red and green bar across the top of the main display window. The red

portion of the bar indicates the battery power required to return home under ideal no-wind conditions.

9) **Setting Menu Button:** Use this button to access the setting menu for Litchi.
10) **Map Orientation**: By default, the map is oriented North up. Tap the icon to have the map rotation continuously adjust to match the mobile device's position relative to north.
11) **Zoom to Mobile Device**: Tap to center the map on the current mobile device location and scale/zoom it to include both the aircraft and mobile device.
12) **Photo/Video Switch**: Use this switch to change between photo and video modes.
13) **Gimbal Pitch Indicator**: Shows the current pitch of the gimbal, the numerical angle value is shown in the center of the marker. At zero degrees the marker is centered with the Photo Take/Record button to its right. The angel indicated with the graticule scale goes from 0 to -90 degrees and, if enabled, 0 to +30 degrees.
14) **Take Photo/Record Button**: Tap this icon to take a picture in photo mode and start/stop recording while in video mode. These same functions are more conveniently performed by the dedicated buttons on the aircraft's remote controller.
15) **Camera Settings**: Tap this icon to open the setting for the camera for both photo and video modes.
16) **Small View Show/Hide**: The Small View window shows either the camera view or the Map View, whichever is not shown in the full screen view. Tapping the Small View window will toggle between the Map and Camera View. Touching the ⊖ icon will reduce the Small view to a ⊕ icon in the lower right corner of the full screen view.
17) **Flight Telemetry**: Shows the aircraft longitude and latitude, altitude relative to take-off elevation, distance from home point to aircraft, and combined speed on all axis. In Follow mode, the distance between the mobile device and the aircraft is shown.
18) **Radar**: (Android Only) Shows the position of the aircraft relative to the display device.

19) **Takeoff Button**: This performs an automatic takeoff of the aircraft to approximately 4 feet.

WARNING: Using the automatic takeoff function places the aircraft at an inherently dangerous altitude where potential serious injury can easily occur due to either inattention, operator error, or control system error. It is highly recommended that immediately after takeoff the aircraft altitude be increased to 8 to 10 feet to prevent serious injury should a problem occur with the aircraft or control system.

1) **Return-to-Home (RTH):** (Android Only) This icon initiates an automatic return-to-home (RTH) function. The aircraft will exit any automatic flight mode, ascend to the preset RTH altitude if below it, turn towards and fly directly to the home point, and then automatically land. This safe function is also available and more conveniently performed by double-tapping the dedicated RTH button on the aircraft's remote controller.
2) **Flight Mode Buttons**: This icons enable the sub-modes of the various flight modes and will vary with the flight mode.
3) **AFC**: Tapping this icon will toggle between Auto Focus Continuous (AFC) mode and manual focus mode. Enable AFC mode after you are in flight then touch the location on the screen that you want the camera to focus on. In Manual mode the focus settings will come up and you can manually adjust the area of interest. There have been many issues noted on the internet with the AFC mode hunting (continuously refocusing) with the general consensus for resolving is to switch to Manual mode and then do a long press on the main screen to manually focus the camera to infinity (∞).
4) **Camera Settings**: This displays the current exposure mode, settings, and focus distance.
5) **Share Video Stream**: Tapping this icon will allow you to share your current live video stream. With an internet connection you can share video to Facebook Live. On an iOS display device, you can also share the video stream to a nearby Litchi Vue app.
6) **VR Mode:** Tapping this icon will put Litchi into virtual reality mode and allow the use of most VR goggles.

Figure 8 - Main Screen Device Icons

Three additional device icons appear on the main screen when in map mode that depict the positions of key devices.

1) **Aircraft**: (red triangle with the Litchi eye logo) This icon shows the aircraft location on the map. Tap this icon to add a Waypoint or Point of Interest at the aircraft location in some flight modes.
2) **Mobile Device/Remote Controller**: (blue and white dot) This icon shows the mobile device/remote controller location on the map. Tap this icon to add a Waypoint or Point of Interest at the mobile device location in some flight modes.
3) **Home Point**: (white H in a green dot) This icon shows the home point location (where the aircraft took off from) on the map. Once in the air, the home point can be adjusted by dragging this icon to a new location on the map.

A. Small Screen Displays

Litchi is designed to work on both large (tablet) and small (phone) display devices. Because of the size and resolution differences the screen arrangement are slightly different between the large and small devices, Figure 4 and Figure 6 above are tablet/large display devices and Figure 9 and Figure 10 below show the layout for phone/small display devices.

Figure 9 - Main Screen Details - Android (small device)

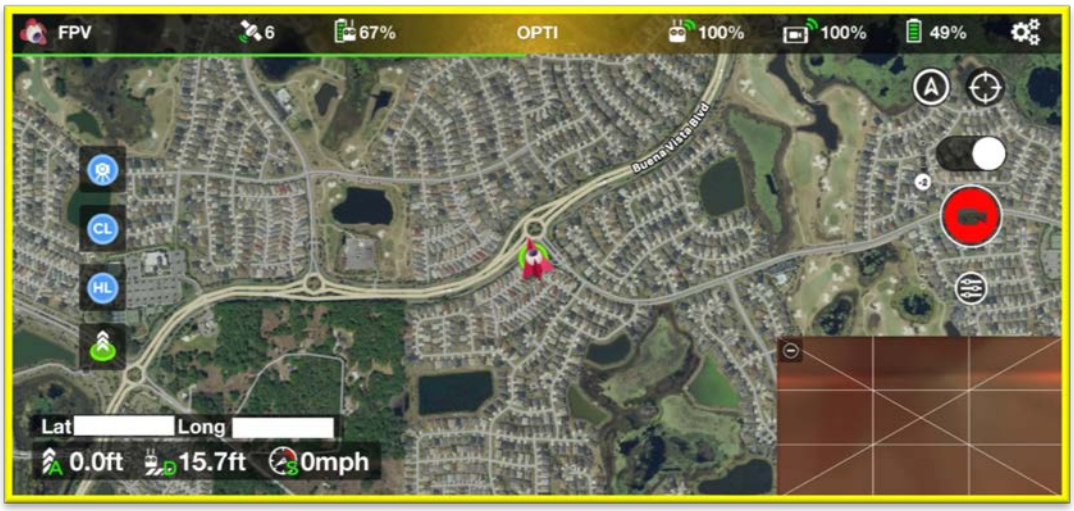


Figure 10 - Main Screen Details - iOS (small device)

IV. Regaining Control

When the aircraft flies in any of the autonomous or advanced modes autonomously, you can regain control or cancel the mode at any time using the Remote Controller's Flight Mode switch.

For the Mavic series, Phantom 4 series, Spark, and Inspire 2 series aircraft toggle the flight mode switch from P to S(Sport) and back to P mode to regain manual control of the aircraft.

For Phantom 3 series and Inspire 1 series aircraft toggle the flight mode switch from F to P and back to F mode to regain manual control.

For the Mavic series and Spark aircraft when flown without a Remote Controller use the red stop button in the left button bar to stop an autonomous flight and regain manual control of the aircraft.

WARNING: If the aircraft is in an autonomous flight mode such as a Waypoint mission and it loses communications with the Remote Controller DO NOT use these methods to regain control until communications have been fully restored. If you cancel the mode and the aircraft momentarily regains telemetry communications the mode will be canceled but you may not have manual control if communications are lost again, the aircraft will remain stationary at the point of disconnect. Wait until you have reliable communications again before canceling to prevent possible aircraft loss.

V. Flight Modes

Multiple flight modes are available in Litchi, each with multiple functions or sub-modes available in each. The flight mode is selected by taping the Flight Mode Menu button in the upper left corner of the main screen and selecting the desired flight mode.

Figure 11 - Flight Mode Menu - Android

Figure 12 - Flight Mode Menu – iOS

A. FPV Mode

Figure 13 - FPV Mode - Android

Figure 14 - FPV Mode - iOS

The FPV mode allows you to fly the aircraft manually using the Sticks and has several enhanced manual flight modes.

1) **Auto Take Off/Land**: This icon will cause the aircraft to take off and hover at about 4 feet (1.2 meters). The icon changes to the Auto Land icon once the aircraft is airborne. The auto land icon will land the aircraft at the its current location regardless of what is there (water, trees, people, etc.), use with cautions

WARNING: Using the automatic takeoff function places the aircraft at an inherently dangerous altitude where potential serious injury can easily occur due to either inattention, operator error, or control system error. It is highly recommended that immediately after takeoff the aircraft altitude be increased to 8 to 10 feet to prevent serious injury should a problem occur with the aircraft or control system.

2) **Return-to-Home:** (Android only) This icon will cause the aircraft to end its advanced flight mode and execute a return-to-home.

1.Home Lock

3) **Home Lock**: Home Lock mode controls aircraft motion relative to the Home Point or point of takeoff. The Right Stick motion changes from forward and backwards to Away From and Towards the home point. Left and right motion remain the same. Left stick controls remain the same.

   The aircraft motion is relative to the home point and not to the direction the front of the aircraft; when the Right Stick is moved Forward/Away From the aircraft will move away from the home point regardless of the direction the aircraft is pointing. Moving the right stick Back/Towards will bring the aircraft back to the home point, the aircraft will stop when it reaches the home point.

   Moving the Right Stick to the Roll Left or Roll Right position will cause the aircraft to move to the left or right of the home point. The direction of movement is perpendicular to the forward motion direction, not curved around the home point.

   Consider Home Lock as having a rail that the aircraft will move along where one end is anchored at the home point and the other is free to rotate round the home point. Right Stick forward moves the aircraft farther out the rail and Right Stick left/right rotates the rail around the home point.

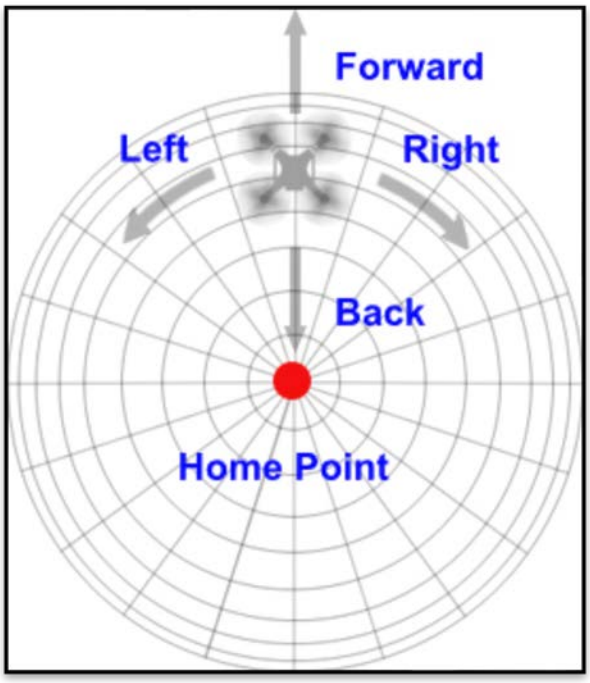


Figure 15 – FPV Home Lock Right Stick Operation

2.Course Lock

4) **Course Lock**: Course Lock mode controls the aircraft relative to a predefined direction or course. The Right Stick motion changes so that Forward is always in the direction of the original course and Back moved the aircraft 180° opposite the original course. Left and Right motion of the right stick will move the course like left and right. When enabled, moving the right joystick up/down (mode 2) will move the aircraft forward/backward in the direction defined by its heading at the time Course Lock was enabled.

   In Figure 16 the course line is the vertical red line with the initial course being North or up. Moving the Right Stick Forward will move the aircraft up and parallel to the field and moving it Back moves the aircraft down and parallel to the field. The direction of motion is independent of the direction of the front of the aircraft.

   Moving the Right Stick to Roll Left or Roll Right will move the course line left or right while the direction remains the same. Roll Left

would move the course line closer to the field and Roll Right would move the course line farther form the filed.

The Left Stick operation remains unchanged.

In Figure 16 the course is locked parallel to the side line, the aircraft would be rotated left to point to the field and then the Right Stick would be moved Forward and Back to follow the action on the field as if it were attached to a rail. Close in or far side filed shots would be accomplished by moving the Right Stick Roll Left to bring the course line farther left.

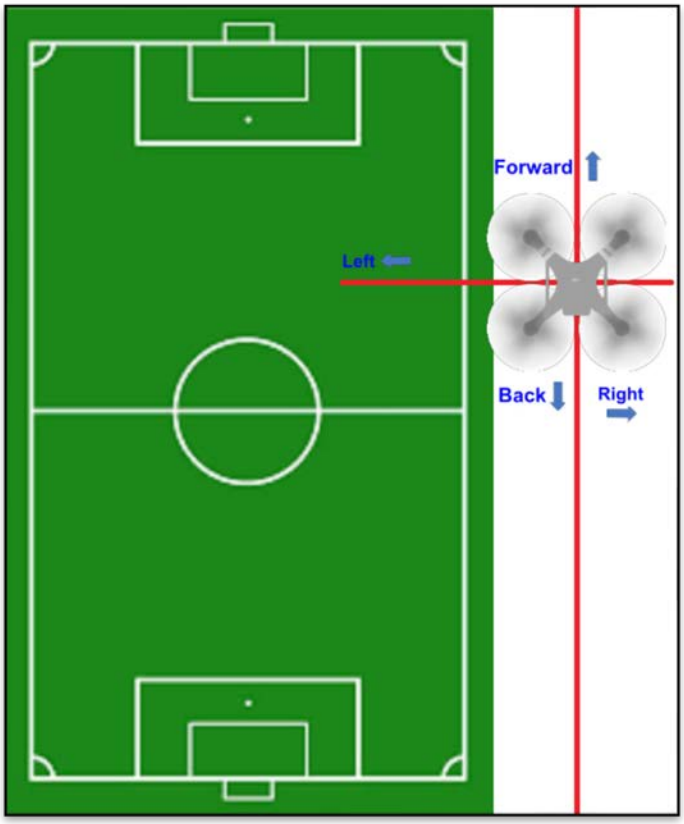


Figure 16 - FPV Course Lock Right Stick Operation

3.Tripod Mode

5) **Tripod Mode**: In Tripod mode set the maximum speed of the aircraft to 2.2mph (3.6kph) and reduces the responsiveness to Stick movements for smoother and more controlled movements in manual flight control. Tripod mode is only supported by the newer aircraft models (Phantom 4 series, Inspire 2 series, Spark, Mavic series).
6) **Video Streaming**: With an available internet connection this allows the aircraft's video stream to be shared on Facebook Live. Tap to share your video stream. Additionally, on iOS devices the video stream can be shared with another iOS device using the Litchi Vue app. See the appropriate sections for further information and setup directions.
7) **VR Mode**: Tap this icon to enter Virtual Reality mode. See the appropriate section for VR Mode operation.

H. Waypoint Mode

Waypoint mode allows for the creation of predetermined flights based on a series of locations called Waypoints. In addition to Waypoints you can set one or more Point-Of-Interest (POI) withing a mission.

Waypoints are specific points on the map with parameters and/or actions for the aircraft to carry out. In addition to the location (longitude and latitude) the aircraft altitude, speed, and direction can be set. Camera commands such as taking a picture, starting and stopping video recording, direction, and gimbal angle can be set at each Waypoint. Waypoint behaviors such as flight path curve radius, pausing, and transition modes are also set for each Waypoint.

POI points can be set within a mission to provide the camera specific targets at each Waypoint to focus on. POIs are three dimensional and contain the altitude as well as the longitude and latitude of the point. The altitude is a key parameter for image and video capture and is used to determine if the camera is pointed for example at the base of a building, the top of a building, or some point in-between.

The Waypoint mission's instructions are automatically downloaded into the aircraft before the mission begins and the aircraft is capable of performing the entire mission even if the signal from the remote controller is lost. Waypoint missions can be planned and modified without the use of the aircraft using the Mission Hub[5] of the Litchi website and tested using the Google Chrome Litchi Virtual Mission[6] add-in. The complete flight autonomy, off-line planning, and virtualized testing ability gives Litchi's Waypoint mode a huge advantage over other software packages.

1. Waypoint Screen

Enter into Waypoint mode by pressing the Flight Mode icon at the top left of the Litchi main screen and select the Waypoint mode.

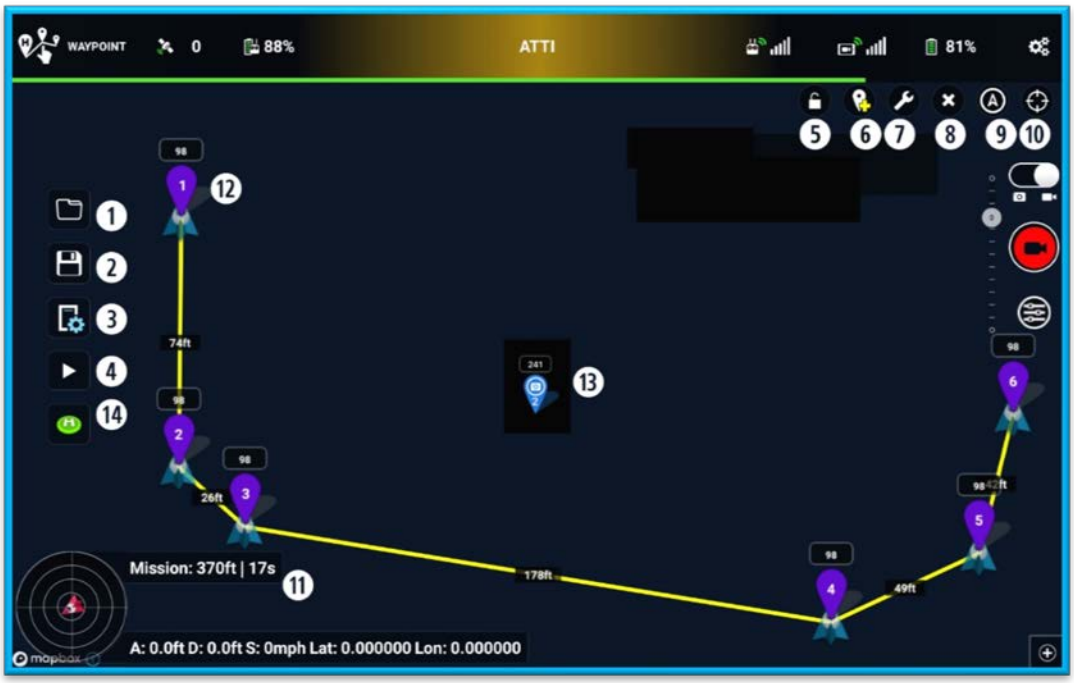


Figure 17 - Waypoint Mission - Android

[5] https://flylitchi.com/hub

[6] https://chrome.google.com/webstore/detail/chrome-litchi-virtual-mis/ccpleclnjidgphbmhphdfeejfifeekak?hl=en

Figure 18 - Waypoint Mission - iOS

1) **Load Mission**: Use this icon to load a previously saved mission if an internet connection is available. Missions are saved to your account on the Litchi Mission Hub.
2) **Save Mission**: Use this icon to save the current mission plan.
3) **Mission Settings**: This icon will display the default mission settings.
4) **Start/Pause/Resume Mission**: In edit mode, tap this button to show the pre-flight report and then start the mission. While in a mission, this button will allow you to pause and resume the Waypoint mission.
5) **Lock Mission**: Use this icon to lock and unlock the mission for editing. A mission's Waypoints cannot be edited until the mission is unlocked. By default, missions are locked after they are loaded. If Above Ground altitude settings were used when developing the mission on the Litchi Mission Hub, the Above Ground settings are lost when edited on a mobile device.

6) **Add POI/Waypoint**: Use this icon to Toggle between adding a POI and a Waypoint when in edit mode and the screen is touched
7) **Batch Edit/Drawing Tool**: Use this icon to enter Batch Edit or Drawing mode. Batch Edit allows editing of multiple Waypoints at once. The drawing tool allows you to draw a line/path on the screen to automatically create Waypoints on the map.
8) **Clear All**: Use this icon to erase the mission on the screen.
9) **Map Orientation:** By default, the map is oriented North up. Tap the icon to have the map rotation continuously adjust to match the mobile device's position relative to north.
10) **Zoom to Mobile Device:** Tap to center the map on the current mobile device location and scale/zoom it to include both the aircraft and mobile device.
11) **Mission Info**: Shows general mission information. In edit mode, the total distance and time will be shown. During a mission, the target Waypoint number will be shown, as well as the current state of the aircraft.
12) **Waypoint:** The purple pointer with a number inside indicates a Waypoint, the small number is the altitude of the Waypoint above the takeoff point, if a second number is present in parentheses this indicates that the above ground level option is turned on this second number indicates the altitude above the Waypoint ground level.
13) **Point-Of-Interest:** The blue pointer with the camera enclosed in a circle and number below is a Point-Of-Interest (POI) and is used as a camera focus point. The number above the POI icon is the altitude of the POI above the takeoff point, if a second number is present in parentheses this indicates that the above ground level option is turned on and this second number is the POI altitude above the POI location ground level.
14) **Home**: This icon will stop the current mission and initiate a RTH action (Android only). Return to Home can also be triggered using the remote controller's dedicated button or cycling the S2 switch at least twice on the Phantom 3 Standard and SE controllers.

WARNING: Ensure the Return-To-Home altitude is set to a value high enough to clear any objects between the aircraft's location and the home point.

2. Loading A Mission

Missions can be planned either on you tablet/phone or on your computer using the Litchi Mission Hub; unlike other application you do not need to be connected to and have the aircraft on to plan a mission.

To load a mission, tap the load icon ① in the left side of the screen, select the mission then click LOAD.

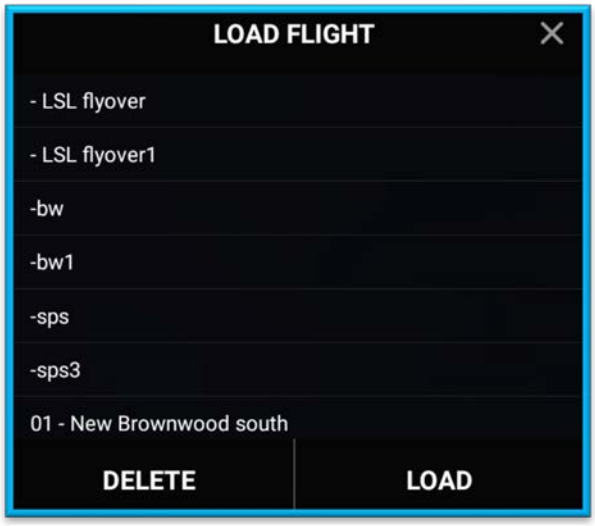


Figure 19 - Load Mission - Android

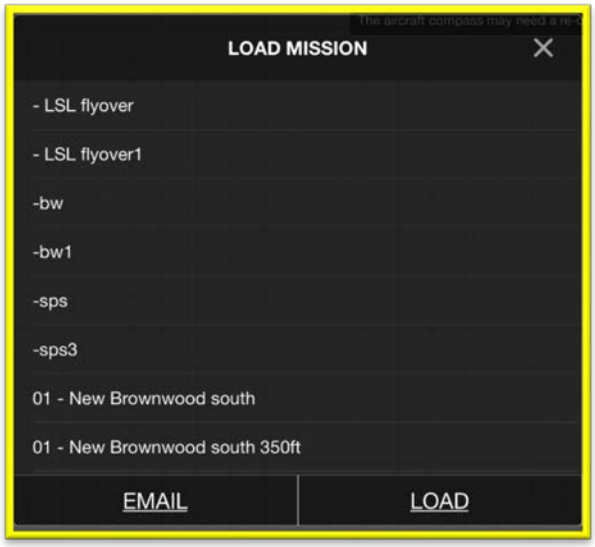


Figure 20 - Load Mission - iOS

When logged in to your Litchi account and have an internet connection, missions will be synced automatically across all of your devices as well as on the Mission Hub. Missions are cached on the display device when loaded, if you know that you will be without an internet connection at you flying site, start Litchi while you have an internet connection and then press the Open Mission icon ① to ensure you have the missions available. Don't close the Litchi app, leave it running in the background until you are ready to use it.

By default, missions synced in your account will be private and not visible to anyone unless you set them to public in the Mission Hub.

On iOS devices missions can be email to others from the Load Mission screen.

3. Save A Mission

To save a mission, tap the Save icon ② on the left side of the screen. Enter a filename, click Ok and the mission will then be saved in the Litchi App/missions (missions on iOS) folder located in the mobile device's internal storage.

4. Mission Settings

Figure 21 - Mission Settings - iOS

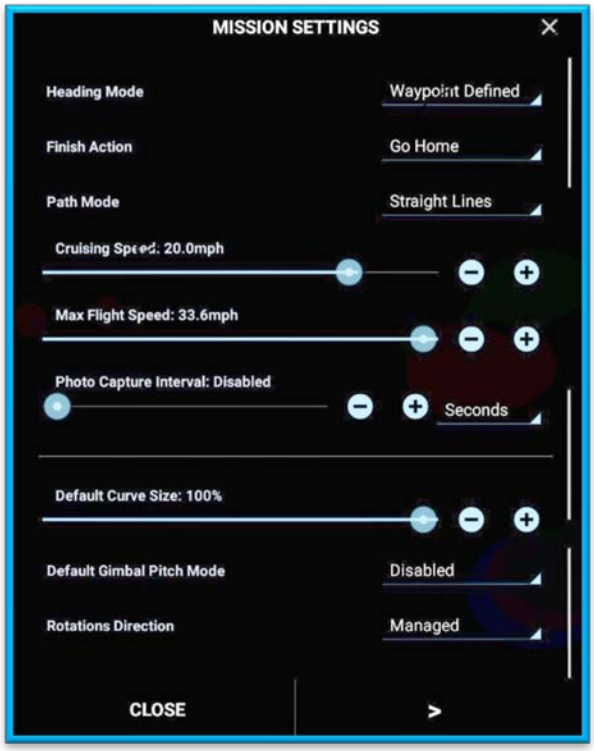


Figure 22 - Mission Settings - Android

Mission Settings ③ determine the default values of you mission and mission Waypoints. You may override some of these parameters for Waypoints. Some parameter overrides, such as flight speed, may not function if communications between the controller and the aircraft are lost in flight. In these cases, the aircraft will keep its current value for the parameter until communications are restored.**Heading Mode**: Defines the heading of the aircraft (what the camera will point at) during the mission.

- **Toward Next Waypoint/Auto:** The aircraft will point toward the next Waypoint and the direction of travel.

- **Initial Direction/Initial:** The aircraft will keep the same heading it has when the mission is started.
- **User Controlled/Manual:** The operator manually controls the heading of the aircraft during the mission using the Left Stick Yaw, this does not affect the aircraft direction of travel.
- **Waypoint Defined/Custom:** The aircraft will use the headings defined at each Waypoint. When using this setting with Curved Turns mode the aircraft will smoothly transition between each successive Waypoint's programmed heading.

2) **Finish Action**: The action that the aircraft will perform at the completion of the mission.
   - **None:** The aircraft will stop and hover at the final Waypoint location and altitude.
   - **Go Home/RTH:** The aircraft executes an RTH command (recommended setting).
   - **Land:** The aircraft lands at the current location (final Waypoint) regardless of what may be below it (water, trees, etc.)
   - **Back To First Waypoint/Back To 1st:** The aircraft makes a direct flight back to Waypoint 1 and hovers upon completion of the mission.
   - **Reverse:** The aircraft hovers at the final Waypoint at the completion of the mission, using the Right Stick pull back (Reverse) and the aircraft follows and executes the route and settings in reverse, if the Right Stick is subsequently released, the aircraft will restart the flying the mission from its current location. To end the mission, it must be manually stopped.

3) **Path Mode**: This determines how the aircraft will proceed between two Waypoints. Two mode are available:
   - **Straight Lines:** The aircraft will fly a straight path to each Waypoint then change direction and other settings and perform any defined Waypoint actions at the new Waypoint, then proceed to the next Waypoint. The aircraft's course is shown using a yellow line between Waypoints.
   - **Curved Turns:** The aircraft does not stop at Waypoints but instead takes a curved path between Waypoints. If other setting changes are programmed at a Waypoint these will also perform a

smooth transition from one Waypoint settings to the next. The new Waypoint settings will be in effect at the apex of the curve. The curved radius depends on each Waypoint's curved size setting. The aircraft's calculated flightpath is shown with a blue line in this mode, the straight-line path between each Waypoint is also shown in yellow.

4) **Cruising Speed**: This setting defines the default autonomous flight speed of the aircraft. This speed can be overridden by either programming a speed at an individual Waypoint or by using the remote controller's Right Stick during the mission. This can be set to negative values if you want the aircraft to travel backwards autonomously through the mission and can be adjusted while the mission is in progress.
5) **Max Flight Speed**: Using the remote controller's Right Stick while the mission is in progress, you can increase the aircraft speed up to the Max Flight Speed. The maximum speed available is 33 MPH/54 KPH. The actual maximum flight speed may be less than this setting depending on the aircraft model.
6) **Photo Capture Interval:** This setting defines the time or distance interval in seconds, feet, or meters when two photos are taken as the aircraft moves from this Waypoint to the next. The interval can be set between 0 and 100 seconds, feet, or meters. The first photo will be taken as the aircraft leaves the current Waypoint. If the requested interval exceeds the camera's capability, the photos will be taken at the maximum possible speed.

NOTE: Photo Capture Interval is ignored if the aircraft is recording video even on aircraft capable of capturing images while recording video (*e.g.* Phantom 4 Pro).

7) **Default Curve Size**: When adding a new Waypoint, the previous Waypoint's curved size will be set to the default curve size percentage of the minimum length available on both adjacent sides of the Waypoint.
8) **Default Gimbal Pitch Mode**: Default Gimbal Pitch Mode to be used for newly added Waypoints.

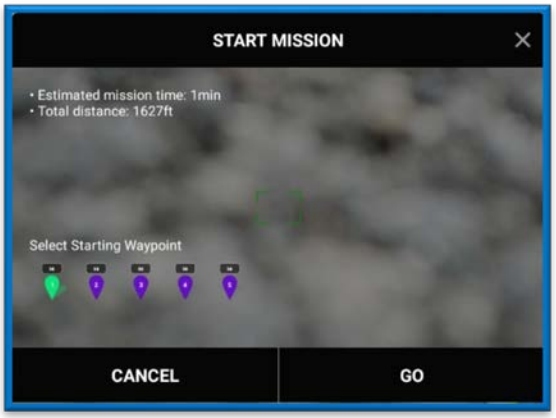
- **Disabled**: No gimbal pitch commands are sent at each Waypoint.
- **Focus POI**: The gimbal will automatically adjust to focus on the closest POI to the Waypoint that was programmed when the Waypoint was created.
- **Interpolate**: This setting accomplishes the same function for the gimbal angle as the Curved Turns does for the direction of flight. When this setting and Curved Turns are used together this provides very smooth camera motion when recording video.

9) **Rotations Direction**: When set to Managed the aircraft will rotate from Waypoint to Waypoint in the shortest direction (clockwise/anticlockwise-counterclockwise) possible. When set to Manual the rotation direction is controlled by each Waypoint, the default being Clockwise.

5. Running a mission

Press the Play ▶ button located in the left button bar to show the mission preflight report. If the mission is valid, you will be able to tap the Go button in the report window to start the mission. When you start a mission Litchi will give you the option of which Waypoint you would like to start the mission at. Select the desired Waypoint them press Start Now or GO to begin the mission. Litchi will download the mission into the aircraft. Once downloaded the mission will start by ascending to the altitude of the starting Waypoint and then flying a straight-line path to the starting Waypoint to start the mission.

WARNING: To prevent collisions ensure that there are no objects are between the takeoff point and the starting Waypoint that are less than the altitude of the starting Waypoint.



6. Pausing a mission

Once a mission is started the Play ▶ icon will become the Pause ⏸ icon. Pausing a mission can be done by tapping on the Pause ⏸ button in the left bar.

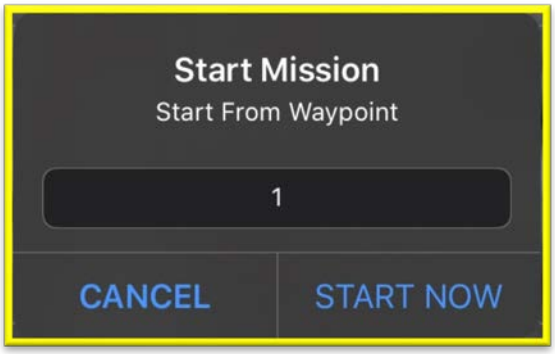
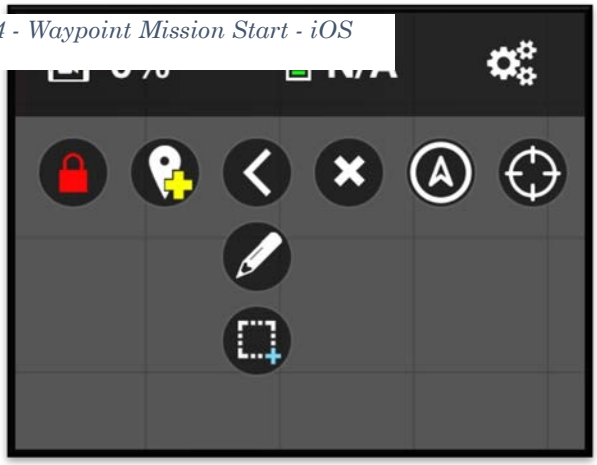


Figure 23 - Waypoint Mission Start - Android

Figure 24 - Waypoint Mission Start - iOS

7. Stopping a mission

Stopping a mission can be done using the red stop button in the left button bar, by moving the flight mode switch on the remote controller out of P-mode, or by initiating an RTH command.



8. Drawing Tool

The drawing tool allows quickly setting a Waypoints mission by drawing the path you want the aircraft to follow on the map.

Figure 25 - Waypoint Tools Menu

Enter drawing mode by taping the Tools (wrench) icon located in the top right corner of the map and select Draw (pencil) icon.

Using a finger or stylus draw the mission path on the map.

When done Batch Waypoint settings window will appear to set global settings for the Waypoints that will be created.

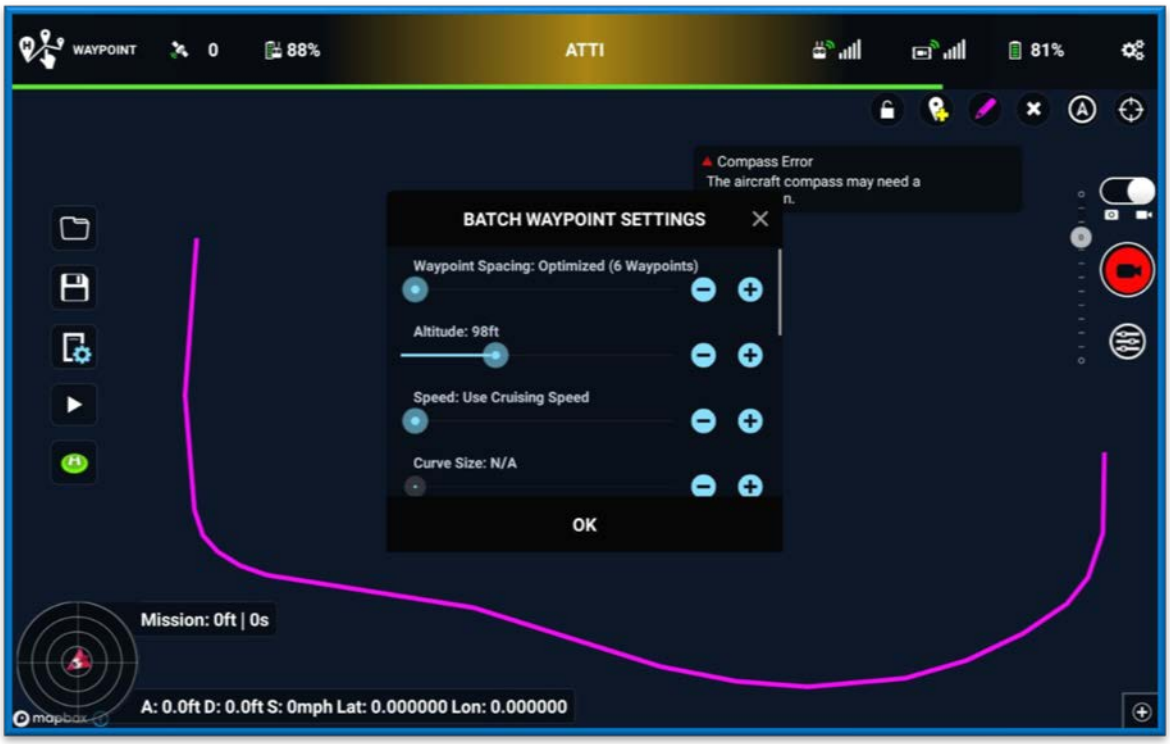


Figure 26 - Waypoint Draw - Android

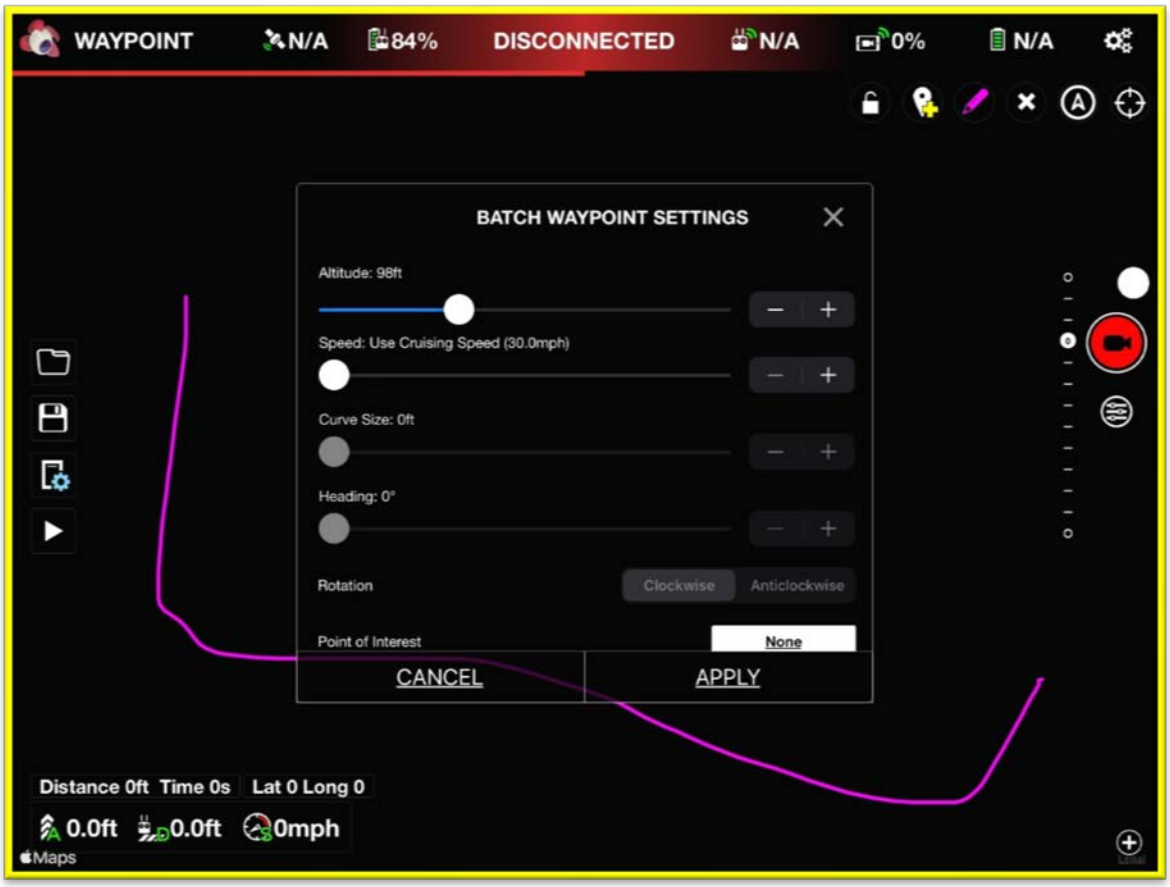


Figure 27 - Waypoint Draw - iOS

Waypoint Spacing is the minimum distance between Waypoints that will form the drawn flightpath. Slide it all the way to the left to select Optimized which will automatically determine the minimum Waypoints required to form the drawn flightpath.

9. Batch Edit

The Batch Edit tool allows selecting multiple Waypoints at once for editing.

Tap the Tools (wrench) icon then tap the Batch Edit icon in the top right corner of the map (see Figure 25 - Waypoint Tools Menu). If a mission is locked you will be prompted to unlock the mission.

Select Waypoints by tapping on the Waypoint's marker. You can select as many Waypoints as you want. Selected Waypoints icons will change from purple to green.

The Batch Edit menu buttons at the bottom left of the screen which can be used to select all Waypoints (Select All), edit the selected Waypoints (Edit), delete the selected Waypoints (Delete) or exit Batch Edit mode (Cancel).

Figure 28 - Waypoint Batch Edit Menu

To edit the selected Waypoints tap the Edit button the button bar. The Waypoint settings menu opens that contains the same settings as when editing a single Waypoint. When changes are made a star appears next to the item label. Multiple settings can be changed at one time, when done tap Apply or OK at the bottom to apply the changes you made to all selected Waypoints. Only modified settings with the star icon will be changed on the selected Waypoints.

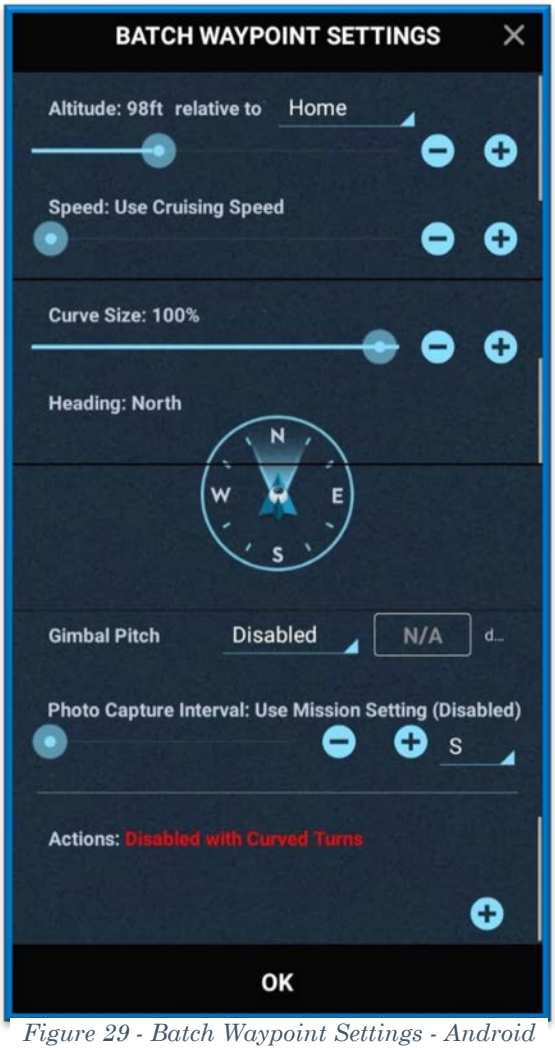


Figure 29 - Batch Waypoint Settings - Android

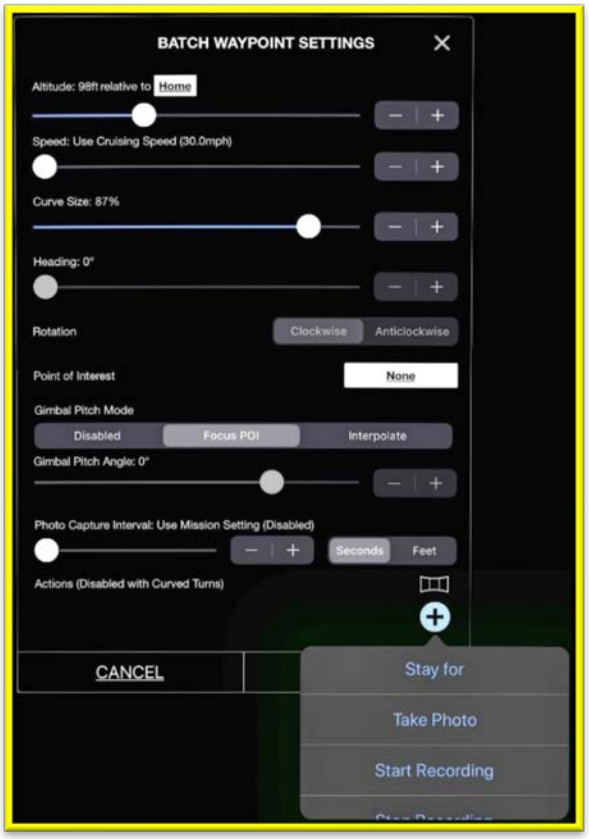


Figure 30 - Batch Waypoint Settings - iOS

The altitude setting has three options when making batch edits: Home, Current, and Ground.

The Home setting is the normal mode for editing and will set the selected Waypoint altitude relative to the home point at takeoff. Depending on the ground elevation at takeoff it is possible to have the aircraft greater than 400 feet above ground level. This is the some mode used when editing a single Waypoint.

The Current is used to increase or decrease multiple Waypoint altitudes by the amount shown. This is an offset and not the absolute value for the altitude setting. If you set the altitude to +100 feet relative to Current then all selected Waypoints will have their current altitudes increased by 100 feet.

WARNING: Great care should be taken with the Current altitude setting to prevent exceeding 400 feet AGL or crashing the aircraft into objects or the ground. If an altitude is above the maximum altitude setting the Waypoint mission will not start.

The Ground option makes Litchi automatically calculate the correct Waypoint altitudes relative to the ground elevation at each Waypoint When using this mode two altitudes will be shown for each Waypoint, the yellow value is the altitude above the specific Waypoint, and the white value in parentheses will be the altitude above the

Figure 31 - Above Ground Waypoint Altitude

home point. In Figure 31 the Waypoint altitude is 196 feet but the actual altitude is 199 feet above the home point (Waypoint 1), indicating a 3-foot elevation change for Waypoint 5. For the safest results and because Waypoint 1 is used as a reference, the takeoff point should be as close to Waypoint 1 as possible. To use the Above Ground option an internet connection is required to access the Google, Apple, or Mapbox elevation data.

WARNING: Care should be taken with the Above Ground altitude setting to prevent exceeding 400 feet AGL. If an altitude is above the maximum altitude setting the Waypoint mission will not start.

10. Waypoints Settings

Each Waypoint has multiple settings for location, heading, speed, and camera actions. Setting these parameters properly and understanding their interactions will greatly improve the quality of videos and still images that are captured during Waypoint missions.

Some key points about Waypoint placement to remember are:

1) The maximum number of Waypoints in a mission is 99, more than this and your aircraft will reject the information.
2) There must be at least 0.5 meters between any two Waypoints and no more than 2000 meters between any two Waypoints. These distances are three-dimensional measurements so both elevation and distance are measured to determine the distance.
3) Placing Waypoints too close together will slow the speed of the aircraft significantly. Even though Waypoints can be placed up to 2000 meters apart you are still limited by current law to maintaining your aircraft with line of sight, generally about 600 meters under good conditions.

Figure 32 - Waypoint Add & Remove Icons

4) To add a Waypoint, tap anywhere on the map and the next Waypoint in the series will be added.

5) To remove a Waypoint, open the Waypoint settings and they press the Waypoint delete icon in the upper left corner (white Waypoint icon with a red minus sign).
6) To view a Waypoint's settings, tap the Waypoint icon and the settings menu will open.
7) To move a Waypoint, do a long press on the Waypoint and then move it to the desired location.
8) To add a Waypoint between two Waypoints, tap the first Waypoint (lower numbered) to open its settings, then tap the Waypoint Add icon at the top left corner of the settings window. A new Waypoint will then be inserted in the exact middle between the selected Waypoint and the next Waypoint.

NOTE: If you insert a Waypoint between two others with long curve radiuses and then move the new Waypoint the Waypoint may appear to be a Straight-Line Waypoint and unable to adjust the curve radius. To correct this, reduce the curve radius of the Waypoint before and after the affected Waypoint and you will then be able to apply a curve radius to the new Waypoint.

Figure 34 - Waypoint Settings - iOS

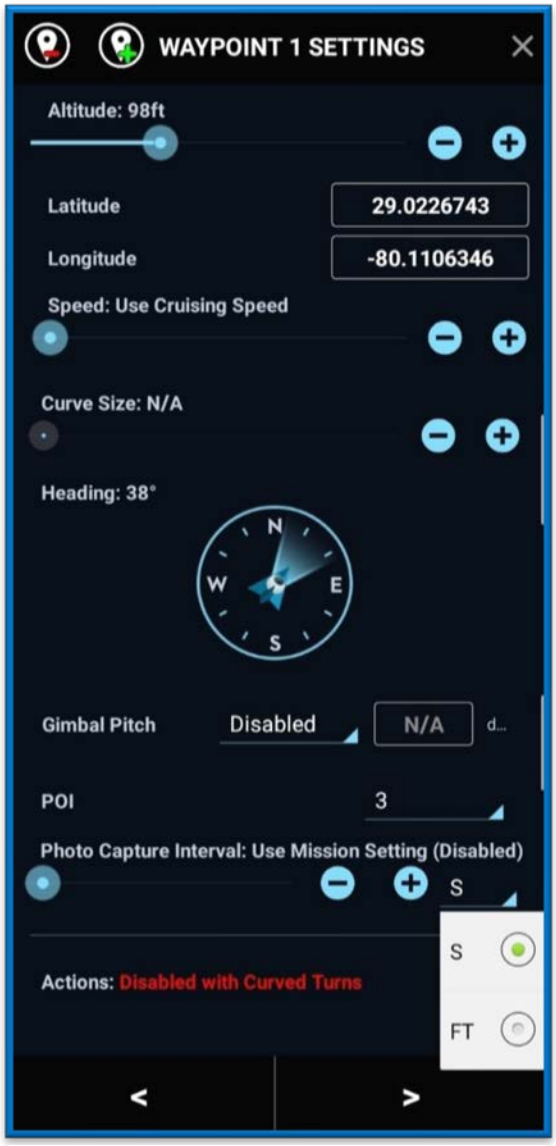


Figure 33 - Waypoint Settings - Android

a) Waypoint Settings

1) **Altitude**: The altitude of the Waypoint relative to the elevation of the aircraft where it took off or home point. The Waypoint's altitude is also shown above the Waypoint marker on the map. If the Above Ground option was used (in Batch Edit or Mission Hub) two altitudes will be show, the altitude above the Waypoint and the altitude above the takeoff point.
2) **Speed**: The speed at which the aircraft travels from this Waypoint to the next. By default, the aircraft will use the mission's cruising speed setting. The cruising speed can be overridden for each Waypoint using this setting. If Waypoints are close together and making multiple course changes the actual speed may be less than programmed.

WARNING: This setting is only in effect if the aircraft is in range of the remote controller. If the signal is lost during the mission, the aircraft will continue the mission at the speed it was travelling at when it lost signal.

3) **Curve Size**: This defines the radius of the curved turn at this Waypoint. Longer means the aircraft will start the turn earlier while travelling to this Waypoint. This setting only applies when the mission setting Path Mode is set to Curved Turns. It also does not apply to the first and last Waypoints as there are no turns at these Waypoints. The path of the curve is drawn in blue on the map and will update as you adjust the curve size setting.
4) **Heading**: The direction the camera will be looking relative to North when arriving at this Waypoint (0° is North, 90° is East) or apex of the curve for the Waypoint. This setting only applies when the mission setting Heading Mode is set to Waypoint Defined or Custom (iOS). When two sequential Waypoints have different headings, the aircraft will transition smoothly between the Waypoints. The Waypoint heading is graphically represented by the blue aircraft icon on top of each Waypoint.
5) **Rotation**: When consecutive Waypoints have different headings, the aircraft will smoothly rotate from the one heading to the next. If the Mission Setting for rotation is set to Managed this option is unavailable and the aircraft will rotate the most direct route to the

next setting. If the Mission Setting is set to Manual this option becomes available the user can select if the aircraft will rotate Clockwise or Anti-Clockwise as it transitions between Waypoints. The direction defaults to Clockwise.

6) **Point of Interest**: Use this setting to change which POI a Waypoint will focus on. By default, when adding a Waypoint, it will focus on the nearest POI, if there is one.
7) **Gimbal Pitch**: This setting determines how and if automatic gimbal pitch repositioning occurs. Three settings are available:
   - **Disabled:** No automatic gimbal positioning occurs, and the operator can manually position gimbal in flight.
   - **Focus POI:** In this mode Litchi will automatically control the gimbal pitch to keep the selected POI in the center of the frame, the POI used is select below. If the POI focus changes from Waypoint to the next the aircraft and gimbal will smoothly transition between POIs.
   - **Interpolate:** The gimbal angel is set at each Waypoint in this mode. To work two or more consecutive Waypoints must be set to Interpolate, then Litchi will then automatically adjust the gimbal pitch angle to smoothly transition while travelling between Waypoints.
8) **Actions**: Each Waypoint can have up to 15 different actions. These are described below.
9) **Next - Previous**: At the bottom of the Waypoint Settings window are left and right arrows that will move to the previous or next Waypoint to allow adjusting their settings. If at the first Waypoint and the left arrow is pressed the Waypoint Mission Settings are displayed.

b) Waypoint Actions

If Straight Line flights are selected then predefined Actions can be performed when the aircraft arrives at the Waypoint. The aircraft will pause at the Waypoint to execute these actions and once complete move on to the next Waypoint. There are six Waypoint actions that can be executed, three of these accept an additional parameter.

NOTE: Waypoint actions are ignored when the mission Path Mode is set to Curved Turns.

Up to 15 actions for each Waypoint can be defined. The available actions are:

- **Stay For**: This inserts a pause at the Waypoint and between other actions. Enter the time in seconds that the aircraft should pause at the Waypoint, the maximum duration is 32 seconds.
- **Take Photo**: This directed the aircraft camera to take one picture. For this action to work, recording must of off, this includes aircraft that have the ability to take pictures and video at the same time (*e.g.* Phantom 4 Pro).
- **Start Recording**: This will start the camera video recording.
- **Stop Recording**: This will stop the camera video recording.
- **Rotate Aircraft**: The aircraft will rotate to the entered angle relative to North. that the aircraft should rotate to (0° is North, 90° is East), if the aircraft is already pointing the requested direction no action will be taken.
- **Tilt Camera**: The gimbal will tilt to the specified angle. The valid value range is +0° to -90° (look straight down), angles greater than 0º are not supported even if enabled in the camera settings.

b) Panorama Preset

Tapping the small white panorama icon next to the Actions settings of the Waypoint will automatically add 14 actions for a full 360° panorama made up of seven Take Photo (51° angle variation) and seven Rotate Aircraft commands.

Ensure the aircraft is not recording when it arrives at a Waypoint for a panorama sequence as the Take Photo does not stop recording automatically. Only 15 actions are available at a Waypoint so it is not possible to Stop Recording, perform the panorama sequence, and Start Recording in one Waypoint. If it is desired to record video before and after the panorama Waypoint a second Waypoint will need to be defined either before or after the desired panorama Waypoint location to perform the additional Start Recording or Stop Recording command. The second Waypoint must meet the 0.5 meter separation requirement.

For best results:

- Avoid sunrise and sunset panorama shots due to difficulties caused by aiming directly at the sun.
- Avoid taking panorama shots under windy conditions.
- Ensure you have a high quality and high-speed microSD card in your aircraft to be able to keep up with image writes, especially if RAW images are being captured.

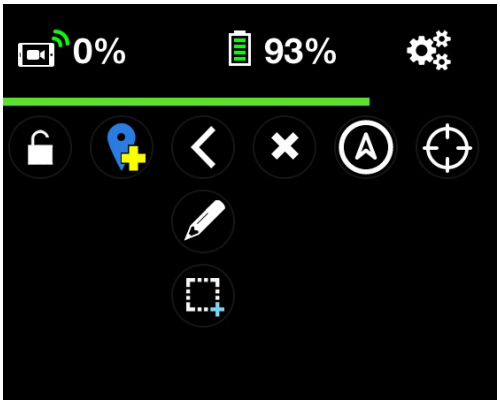


Figure 35 - POI Icon

c) Point of Interest

A Point of Interests (POI) is a three-dimensional point on the map that is used for various functions. The primary uses are in defining the camera direction or aircraft heading during a Waypoint mission when the mission Heading Mode is set to Waypoint Defined or Custom. The POI is also used for the Focus POI Waypoint gimbal setting.

To add a POI tap the Waypoint icon on the map and it will change from white to blue indicating POI mode.

In POI mode touching the map screen will add a POI at that location. The POI will have the altitude of the POI displayed above it. If Above Ground mode is used then two altitudes will be show, the altitude above ground at this location and the altitude above the start point, just like that shown for Waypoints.

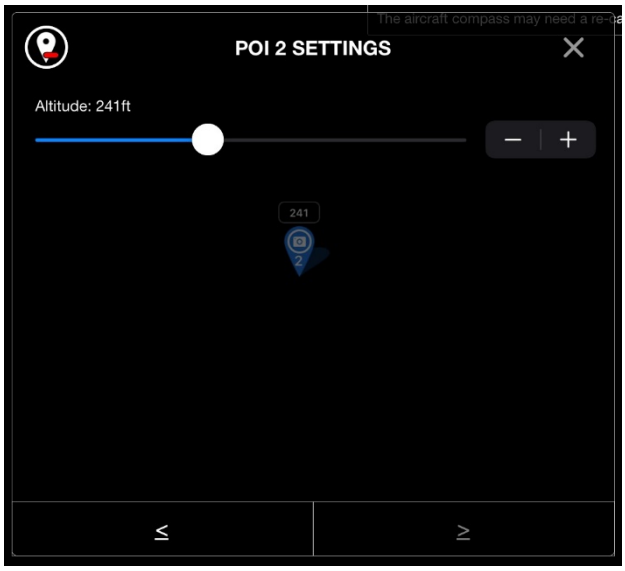


Figure 36 - POI Settings

When adding a new POI, any Waypoints which have no assigned POI will have their heading setting adjusted to target the new POI.

To move a POI, do a long press on the POI, then move it around. This will automatically adjust the heading setting of the Waypoints that are currently associated with the POI.

To view the POI settings, tap on the desired POI icon. The only setting for a POI is its altitude which is used for the Focus POI Waypoint gimbal setting.

To delete a POI tap the top left corner delete icon of the POI Settings. When deleting a POI, Waypoints which had the now-deleted POI will be automatically reassign the nearest POI.

I. Follow Mode

Follow causes the aircraft to follow the movements of a subject. The subject is either the mobile device that is connected to the aircraft, a POI on the map, or a second connected mobile device running the Litchi Magic Leash app.

NOTE: Follow Mode is currently only available on the Android platform devices.

The maximum aircraft speed in this mode is about 37 MPH or 60 KPH.

Enter the Follow mode by pressing the Flight Mode icon at the top left of the Litchi screen. Select Follow. Press the Follow Settings icon on the left side of the screen.

Figure 37 - Follow Mode - Android

1. **Mobile Device GPS Accuracy**: The estimated accuracy of your mobile device's location, in meters/feet. If you draw a circle centered at your mobile device's location, and with a radius equal to the accuracy, then there is a relatively high probability that the true mobile device's location is inside the circle. If this number is red, it means your current location accuracy is over the Maximum Location Accuracy general aircraft setting and you will cannot start Follow. If you are having difficulties getting a good location accuracy, try another area, another mobile device, or increase the Maximum Location Accuracy general aircraft setting. Setting the Maximum Location Accuracy to a higher value will allow for a bigger margin of error for the mobile device GPS signal, but the follow me movements may be less precise.
2. **Follow Touch Mode**: Tap to toggle the Follow Touch mode. In this mode, the aircraft will follow the Touch mode marker instead of the mobile device.
3. **Follow Settings**: Tap to display the follow settings (see below).

4. **Touch Mode Marker**: When the Follow Touch Mode is enabled, tap anywhere on the map to set this marker, which the aircraft will follow. The marker is also draggable.

1.Follow Mode Settings

Figure 38 - Follow Mode Settings

For Follow to work, the app needs to know the position of the subject in relation to the aircraft. The easiest way to set these relative values is to fly the aircraft at the relative position the aircraft should be in when the subject begins to move, and press the Set from Aircraft Position.

All settings except Altitude Reference can be altered in while the aircraft is operating in Follow Mode.

- **Set from Aircraft Position**: Sets the relative altitude, distance, and heading from the aircraft's current position.
- **Altitude**: The altitude the aircraft should follow the subject.
- **Distance**: The distance the aircraft should follow the subject.
- **Heading Mode (North/Course)**: Heading mode North means that the aircraft will point its nose to the angle you set relative to North. For example, if you set it to 0, the nose will point to North while keeping the subject in the center of the frame. In heading mode Course the aircraft will point its nose to the angle you set relative to the subject's course (only works if the subject is moving faster than 1m/s or 2.25 MPH – a fast walk). For example, if the heading is set to 0º, the aircraft will follow the subject from behind

as if it were on a leash. If the heading is set to 180º the aircraft will lead the subject from the front. The default value is North.

- **Heading**: The angle from which the aircraft should follow the subject (the reference is defined by the Heading Mode).
- **Gimbal Control (Auto/Manual)**: When set to auto the gimbal to point at the subject automatically. If set to manual the user will be required to control the gimbal manually. Auto is the default setting.
- **Subject Height**: The height of the subject that the camera should point at.
- **Subject Offset**: Change this setting when you want the aircraft to follow the subject's movements while looking in another direction relative to the subject. The default 0º degrees causes the aircraft to face the subject. An offset of 180º degrees will cause the aircraft to face completely away from the subject.
- **Altitude Reference (Power-on Elevation/Mobile Device Elevation)**: This sets the reference point for the aircraft altitude in Follow mode. In Power-on Elevation the aircraft will fly at the altitude set relative to the elevation where the aircraft was powered on (home point). When set to Mobile device elevation, the aircraft will fly at the altitude set relative to the mobile device elevation which will continuously adjust its altitude as the subject moves up or down in altitude (*e.g.* if the subject moves up a hill). Mobile Device Elevation is only available if your mobile device has a pressure sensor. Power-on Elevation is the default value.

NOTE: When using Mobile Device Elevation, Litchi expects you to start the Follow session with a power-on elevation similar to the mobile device's current elevation. If the aircraft is already in the air, ensure that it was powered on at an elevation similar to the mobile device's current elevation.

- **RC Joystick (enabled/disabled - disabled by default)**: When Enabled you can adjust the altitude using the left joystick up/down, the distance using the right joystick up/down, and the follow heading using the left joystick left/right. The follow heading is the heading of the aircraft relative to the subject, so moving the left joystick to the right and holding it there will result in the aircraft doing an orbit

around the subject in a clockwise direction. Disabled is the default value.

- **Horizontal Movements (enabled/disabled - enabled by default)**: When set to off, horizontal movements will be disabled and only the aircraft's altitude, yaw and gimbal will be controlled by Litchi. This can be useful to simulate a fixed camera in the sky.

2. Running a Follow session

Press Follow on the flight mode pull down list. The Follow button will change to a Pause button that can be used to pause the Follow session.
Initiate and the aircraft will rise to about 12 feet/4m altitude. If the aircraft is not flying when starting Follow mode, it will only take off if the Automatic Take Off' general setting is enabled.
Move the aircraft to the designated relative position as indicated in the settings. The aircraft will now move as the subject moves
To stop a Follow session, press the red stop button in the left button bar or move the flight mode switch out of P-Mode

J. Orbit Mode

In Orbit mode the aircraft will circle around a POI. During the orbit the camera-gimbal will focus on the POI or can be mode to focus in a specific direction relative to the aircraft travel.

The orbit parameters radius, altitude, and speed, can be adjusted in flight.

Enter the Orbit mode by pressing the Flight Mode icon at the top left of

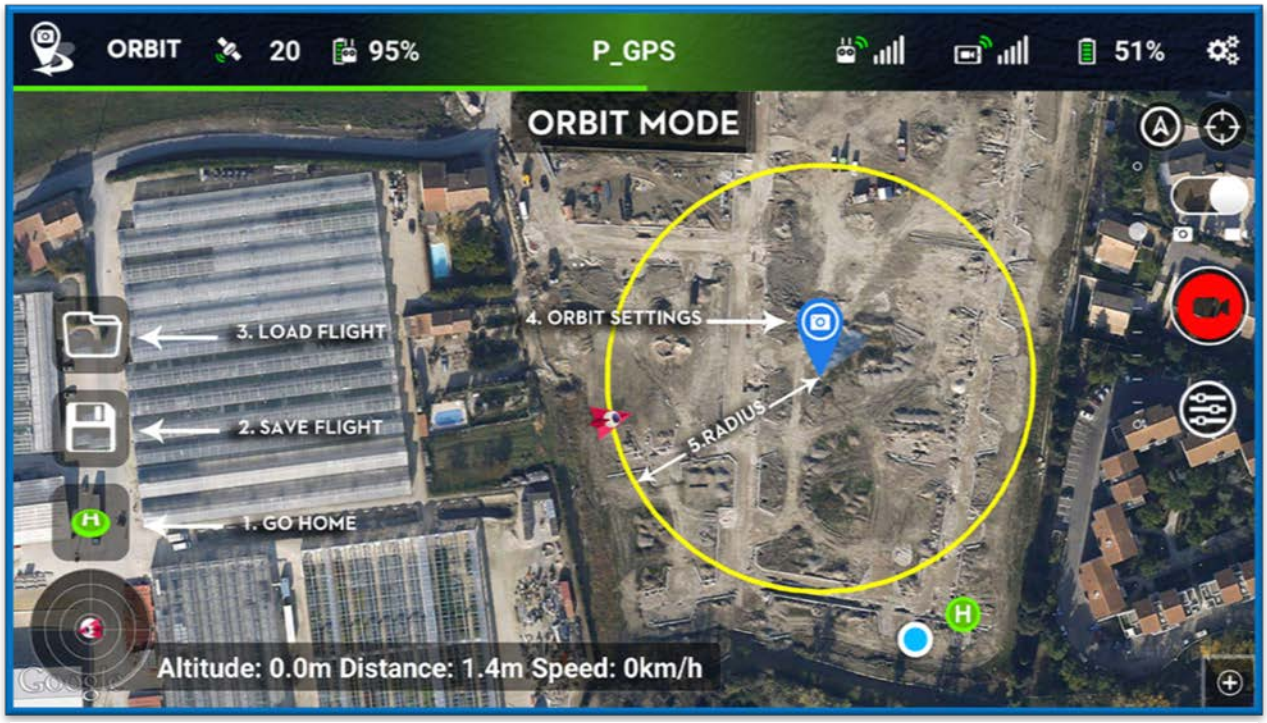


Figure 39 - Orbit Mode - Android

the Litchi screen. Select Orbit.

1. **Go Home (Android only)**: Tap to initiate Return to Home at any time. Return to Home can also be triggered using the remote controller on both Android and iOS platforms.
2. **Save Flight**: Tap to save the current Orbit parameters.
3. **Load Flight**: Tap to load a previously saved Orbit flight.
4. **Orbit Settings**: Tap the point of interest marker to bring up the Orbit settings window (details below).
5. **Radius**: The orbit circle is displayed on the map with a yellow line. It is updated in real-time if you change it during an Orbit session.

1.Orbit Settings

To bring up the Orbit settings window, place a point of interest marker on the map, then tap on it.

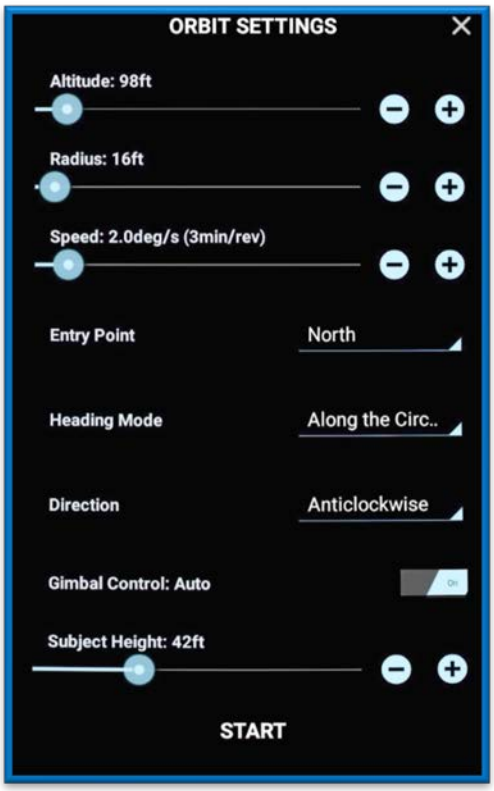


Figure 40 - Orbit Settings

- **Altitude**: The altitude at which the aircraft will orbit. The altitude can be changed inflight using the Left stick up or down.
- **Radius**: The distance the aircraft will orbit from the POI. The flight radius can be changed inflight using the right stick. Push the Right stick up to reduce the radius or down to increase the radius.
- **Speed**: The speed the aircraft will orbit in degrees per second. The maximum selectable speed will vary depending the selected radius. The speed can be changed inflight using the Right stick. Push the Right stick to the right to increase the clockwise speed and left to increase the counterclockwise speed.
- **Entry Point**: This is the point on the circle where the aircraft will start orbiting relative to North.
- **Heading Mode**: This determines the aircraft/camera orientation while orbiting. Can be set to Center, Along the circle (Forward), Along the circle (Backward), Outwards or User Controlled (Manual). The heading can be changed inflight using the Left stick. Push the Left stick to the left to turn left and right to turn right.
- **Direction (Rotation)**: Defines the orbit direction, clockwise or counterclockwise.
- **Gimbal Control (auto/manual)**: In auto the gimbal will point at the orbit center automatically. If set to manual the user can control the gimbal manually. Auto is the default mode.
- **Subject Height**: The height of the orbit subject that the camera gimbal will point at. If Gimbal Control is set to auto, the Remote

Controller's gimbal wheel can be used to adjust to subject height during the Orbit session.

2. Running an Orbit session

1. Press the Start button at the bottom of the settings screen to initiate the Orbit session.
2. When initiated the aircraft will first rise to the preset altitude, then proceed to the entry point on the Orbit circle. The aircraft will automatically start orbiting.
3. If the aircraft is not flying when starting Orbit, it will only take off if the Automatic Take Off general setting is enabled.
4. Stopping an Orbit session can be done using the red stop button in the left button bar or moving the fight mode switch out of P-Mode

WARNING: If signal is lost between the aircraft and the Remote Controller, the aircraft will continue the Orbit session until it reaches the critical battery level. It will then land in place automatically, even if your failsafe is Return to Home.

K. Focus Mode

Focus mode keeps a subject (POI or Mobile Device) in the video frame while flying the aircraft manually.

Aircraft yaw and gimbal pitch are controlled by Litchi as well as the gimbal yaw for Inspire 1-2.

Focus mode is compatible with Litchi Magic Leash (Android only) making it possible to focus on an external mobile device.

Enter the Focus mode by pressing the Flight Mode icon at the top left of the Litchi screen and select Focus.

Figure 41 - Focus Mode - Android

1. **Focus Settings**: Tap to bring up the Focus settings window.
2. **Point of Interest**: The point of interest marker.
3. **Forward/Backward Axis**: Represents the Joystick Reference pitch axis along which the aircraft course is locked. Shown when Aircraft Rotation is enabled and a custom Joystick Reference is selected.
4. **Left/Right Axis**: Represents the Joystick Reference roll axis along which the aircraft course is locked. Shown when Aircraft Rotation is enabled and a custom Joystick Reference is selected.

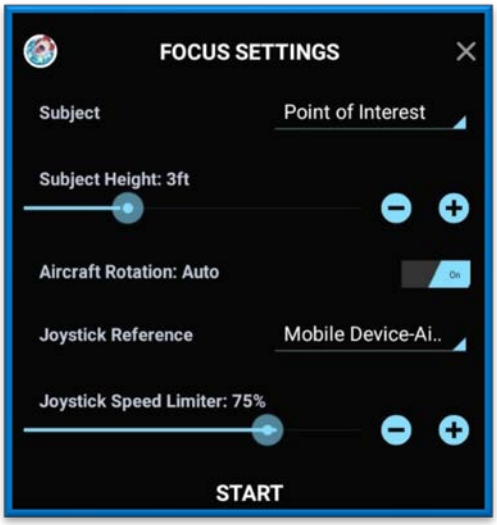


Figure 42 - Focus Settings

1.Focus Settings

- **Subject**: Choose between the POI (to be placed on the map) or the Mobile Device.
- **Subject Height**: The height of the subject that the camera will point at.

The Remote Controller's gimbal wheel can be used to adjust to subject height inflight.

- **Aircraft Rotation**: When enabled, Litchi will control the yaw of the aircraft. Recommended for Spark, Mavic and Phantom 3-4 users.

WARNING: There is lag in the stick controls when this setting is enabled.

- **Joystick Reference**: Choose between:
  - **Default:** Sticks respond as normal.
  - **Aircraft Heading:** The course is locked based on current aircraft heading, similar to Course Lock and can be changed inflight the Left stick and can be reset using C1/C2 Course Lock custom function.
  - **Mobile Device Orientation/Device Heading:** The course is locked based on the mobile device orientation.
  - **Home-Aircraft (H-A) Bearing:** The course is locked based on the bearing between the home point and the aircraft location.
  - **Mobile Device-Aircraft (D-A) Bearing:** The course is locked based on the bearing between the mobile device and the aircraft location.
  - For each option except Default, the axes will be drawn on the map for reference, the large magenta axis is the pitch axis (forward/backward) and the small blue axis is the roll axis (left/right). This only applies when Aircraft Rotation is enabled.

- **Joystick Speed Limiter**: This setting will slow down the overall speed of the aircraft. Only applies when Aircraft Rotation is enabled.

2. Running a Focus session

1) If your subject is a Point of Interest, place it on the map before starting the session.
2) Press the Start button at the bottom of the settings screen to initiate a Focus session.
3) Stopping a Focus session by using the red stop button in the left button bar or by moving the flight mode switch out of P-Mode.

L. Panorama Mode

Panorama mode allows you to easily shoot horizontal, vertical and spherical panoramas.

Enter the Panorama mode by pressing the Flight Mode icon at the top left of the Litchi screen and select Panorama.

Figure 43 - Pano Mode - iOS

1. **Panorama Settings**: Tap to bring up the Panorama settings window.
2. **Panorama Database**: Tap to show the Panorama Database which lists all your panoramas (iOS only).
3. **Auto Pano**: Tap to start an Auto Pano.

1. Panorama Settings

- **Width**: The width of the panorama in degrees.
- **Columns**: The width is divided in columns which define the aircraft/gimbal yaw angles where photos are taken.
- **Height**: The height of the panorama in degrees. The height will be centered on the gimbal's pitch when starting the panorama. If the Nadirs setting is set to 1 or more, the height of the panorama will be clamped to the bottom of the panorama. For example: with Height

set to 40° and Nadirs set to 0, the panorama will be shot from -20° to +20° (assuming the gimbal is at 0° at the beginning of the panorama); with Height set to 90° and Nadirs set to 1, the panorama will be shot from -90° to +0°.

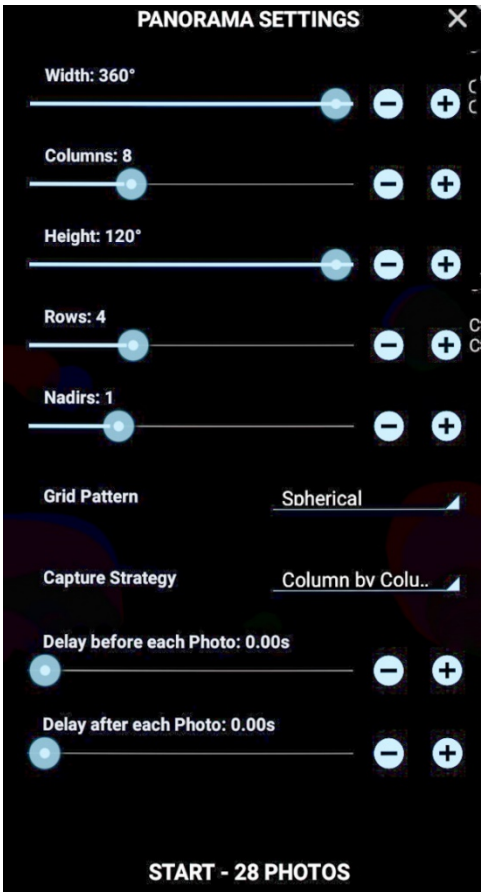


Figure 44 - Panorama Settings

- **Rows**: The height is divided in rows which define the gimbal pitch angles where photos are taken.
- **Nadirs**: The number of Nadirs (bottom shots) that will be taken. If the Width is set to less than 360° or if Columns is set to 1, no Nadirs shots will be taken.
- **Grid Pattern**: Choose between Linear and Spherical. In Linear mode, the Columns setting applies to each row (*e.g.* in an 8 Columns x 4 Rows panorama, the aircraft will take 8 photos for each one of the 4 rows). In Spherical mode, the Columns setting applies to the horizon row only (+0°). Less photos will be taken at lower and higher rows, reducing the total number of photos taken while still producing a stitchable output.
- **Capture Strategy**: Choose between Column by Column and Row by Row.
- **Mode**: Choose between Aircraft Rotation and Gimbal Rotation. This setting is only available for gimbals which are able to yaw (e.g. Inspire 1-2). If Gimbal Rotation mode is selected, the gimbal will rotate instead of the aircraft.
- **Delay before each Photo**: Additional time that the aircraft waits before taking each photo, can help to stabilize shots.
- **Delay after each Photo**: Additional time that the aircraft waits after taking each photo, can help to stabilize shots.
- **Save to Panorama Database**: Choose Yes to save this panorama to the Panorama Database (iOS only).

2. Shooting a Panorama

1) Fly the aircraft to the location and altitude you want to take the panorama
2) Press the Start button at the bottom of the settings screen to initiate the shot.
3) Stopping a Panorama shot can be done using the red stop button in the left button bar or moving the flight mode switch out of P-Mode.

3.Auto Pano

Auto Pano uses preset parameters to shoot a 360° spherical panorama.

In addition, Litchi will use optimized camera settings and panorama settings to improve the chances of a successful stitch in Litchi's Panorama Database (iOS only).

NOTE: If using a camera which has variable focus, make sure to set the focus before starting the Auto Pano.

3. Panorama Database (BETA - iOS only)

The Panorama Database (BETA) lets you stitch, view and share the panoramas you have shot all within Litchi.

The Panorama Database is not automatically backed up or synced (like POIs), uninstalling Litchi will also permanently delete the Panorama Database.

After selecting a panorama in the database, select the desired stitching quality and tap on Create Panorama to stitch it within Litchi.

WARNING: Avoid stitching a panorama while the aircraft is in the air as the stitching process can take a while and during that time you will not be able to use Litchi.

There are 2 available quality settings for stitching:

- **Low**: Uses the preview images automatically downloaded by Litchi after a panorama is shot. Can be done without downloading the high-quality images from the aircraft but produces a lower quality panorama.

- **High**: Requires downloading the high-quality images from the aircraft to produce a higher quality panorama.

WARNING: Some older devices may not have the required resources to successfully stitch a panorama. Try using Low quality if you have issues with High quality.

To improve the chances of a successful stitch, please follow these steps:

- Use the Auto Pano feature, which will optimize the camera and panorama settings
- Avoid starting the Panorama shot with the aircraft facing the sun

Once the panorama is stitched, you will be presented with the below interface:

1. **Reset**: Tap to un-stitch the panorama, this will allow you to re-stitch it in a different quality.
2. **Toggle Tiny Planet**: Tap to switch between equirectangular and tiny planet mode.
3. **View Sphere**: Tap to view the panorama in 3D.
4. **Delete**: Tap to delete this panorama.

5. **Share**: Tap to share the panorama. In equirectangular mode, the panorama will be shared in 3D if the recipient supports it (e.g. Facebook).
6. **Export Movie**: In tiny planet mode, tap to export a movie of the tiny planet rotating. After exporting it, you will be able to share it.
7. **Browse Panorama Photos**: In equirectangular mode, swipe left/right to browse through the panorama's photos.
8. **Zoom/Rotate**: Use the pinch to zoom gesture to zoom an image. In tiny planet mode, you can also rotate the image using circular finger motions.

4. Stitching a Panorama Outside of Litchi

Here is a non-comprehensive list of software you can use to stitch the photos together outside of Litchi:

- Autopano - http://www.kolor.com/autopano/
- PTGui - https://www.ptgui.com/
- Image Composite Editor - http://research.microsoft.com/en-us/um/redmond/projects/ice/
- Easypano - http://www.easypano.com/
- Hugin - http://hugin.sourceforge.net/

G. Track Mode

In Track mode, Litchi uses state of the art computer vision algorithms to track a selected object on the video preview and keep it in the frame.

You have the choice to either fly the aircraft manually while Litchi keeps the object in the frame, use the Orbit feature to instruct the aircraft to Orbit around the tracked object, or start Follow where the aircraft will autonomously follow the tracked object.

The aircraft yaw and gimbal pitch angle are controlled by Litchi as well as the gimbal yaw for Inspire 1-2.

Enter the Track mode by pressing the Flight Mode icon at the top left of the Litchi screen and select Track.

WARNING: Because Litchi decodes the video, runs the algorithms to track the object and renders the video, all of this in real-time, a high-performance mobile device is required. Be sure to close all background applications and screen recorders before using Track. Video lag will kill

tracking.

1. **Track Settings**: Tap to bring up the Track settings window.
2. **Stop Tracking**: Tap to stop the current Track session.
3. **Start/Stop Orbit**: Tap to start or stop an autonomous Orbit around the tracked object. The speed at which the aircraft will orbit can be changed in the Track settings.
4. **Forward/Backward Axis**: Represents the Joystick Reference pitch axis along which the aircraft course is locked. Shown when Aircraft Rotation is enabled and a custom Joystick Reference is selected.

Figure 45 - Track Mode - iOS

5. **Left/Right Axis**: Represents the Joystick Reference roll axis along which the aircraft course is locked. Shown when Aircraft Rotation is enabled and a custom Joystick Reference is selected.
6. **Tracked Object**: A green rectangle around the object means Litchi is confident it is tracking the correct target, an orange rectangle indicates less confidence, a red rectangle indicates a very low confidence.
7. **Start/Stop Follow**: Tap to start or stop an autonomous Follow.

1. Track Settings

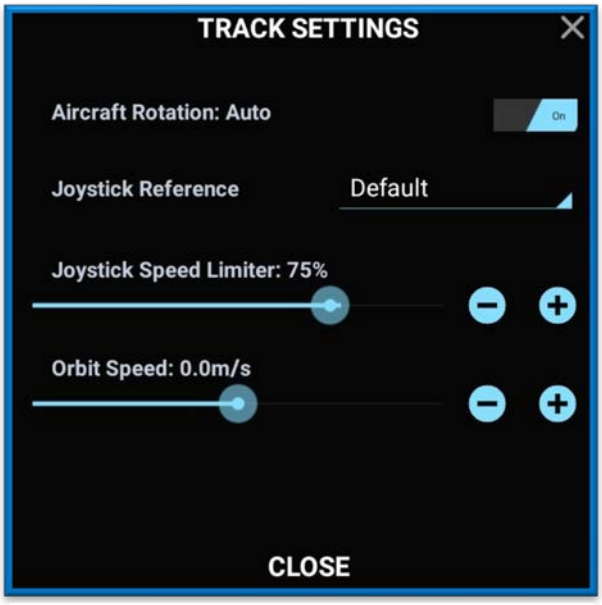


Figure 46 – Track Settings - Android

- **Aircraft Rotation**: When enabled, Litchi will control the yaw of the aircraft. Recommended for Spark, Mavic and Phantom 3-4 users.

WARNING: There is lag with Stick controls when this setting is enabled, use carefully.

- **Joystick Reference**: Choose from:
  - **Default**: Sticks respond as normal
  - **Aircraft Heading:** The course is locked based on current aircraft heading, similar to Course Lock, can be changed inflight using the Left stick and can be reset using C1/C2 Course Lock custom function
  - **Mobile Device Orientation/Device Heading:** The course is locked based on your mobile device orientation
  - **Home-Aircraft (H-A) Bearing:** The course is locked based on the bearing between the home point and the aircraft location
  - **Mobile Device-Aircraft (D-A) Bearing:** The course is locked based on the bearing between the mobile device and the aircraft location

- For each option except Default the axes will be drawn on the map for reference, the large magenta axis is the pitch axis and the small blue axis is the roll axis. This only applies when Aircraft Rotation is enabled.

- **Joystick Speed Limiter**: This setting slows down the overall speed of the aircraft. Only applies when Aircraft Rotation is enabled.
- **Orbit Speed**: This Controls the speed of the Orbit around the tracked object when active.

2. Running a Track session

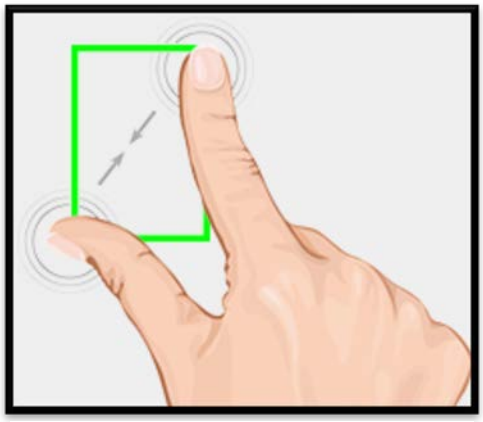


Figure 47 - Track Session Pinch Gesture

1) Select the object you wish to track on the video preview using the Pinch gesture (with 2 fingers, see Figure 47).
II. Once selected release your fingers from the screen and Track will automatically start.
III. It is recommended to start Track while the aircraft is airborne.
IV. To select a different object, simply start the procedure again.
V. Stopping a Track session can be done using the Stop Tracking button in the left button bar or moving the flight mode switch on the Remote Controller out of the P-Mode position.

NOTE: To recenter the current selection, double tap where you want the new object center to be on the video preview.

For optimal tracking, ensure the background scene is not cluttered and there is contrast between the tracked object and its surroundings. Avoid including too much background in the selection and make ensure the object to be tracked is not too small on the video preview.

WARNING: Under non-optimal conditions, Litchi may fail to keep track of the object causing the aircraft to follow an unwanted path. Always be ready to intervene and regain control using the remote controller mode switch or the Stop Tracking button.

a) Orbit

- During a Track session, you can start an Orbit using the Start Orbit button in the left button bar.
- The Orbit speed can be changed in the Track settings.
- While in Orbit mode the aircraft's altitude, pitch, and Orbit speed can be controlled using the control sticks.

b) Follow

- In Follow mode, Litchi takes entire control of the aircraft to have it follow the tracked object. The maximum aircraft speed in this mode is about 22 MPH or 10m/s.
- The altitude of the aircraft while Follow can be controlled using the Left stick.
- For an optimal Follow, avoid selecting an object that is horizontally or vertically aligned with the aircraft's field of view.
- Follow should not be used where the terrain has elevation changes as the aircraft will not adjust its altitude should the tracked object change altitude.

VI. Virtual Reality

Available in all flight modes, the VR mode immerses you into a real First-Person View, the video stream appears right in front of your eyes.

You also have the ability to control the gimbal by moving your head. VR mode requires a remote controller.

Note: By harnessing the power of your mobile phone, the VR mode brings you the most immersive FPV experience at less than a quarter the cost of the least expensive FPV glasses solution.

To start VR mode, tap on the goggle's icon located the top right corner of the video screen.

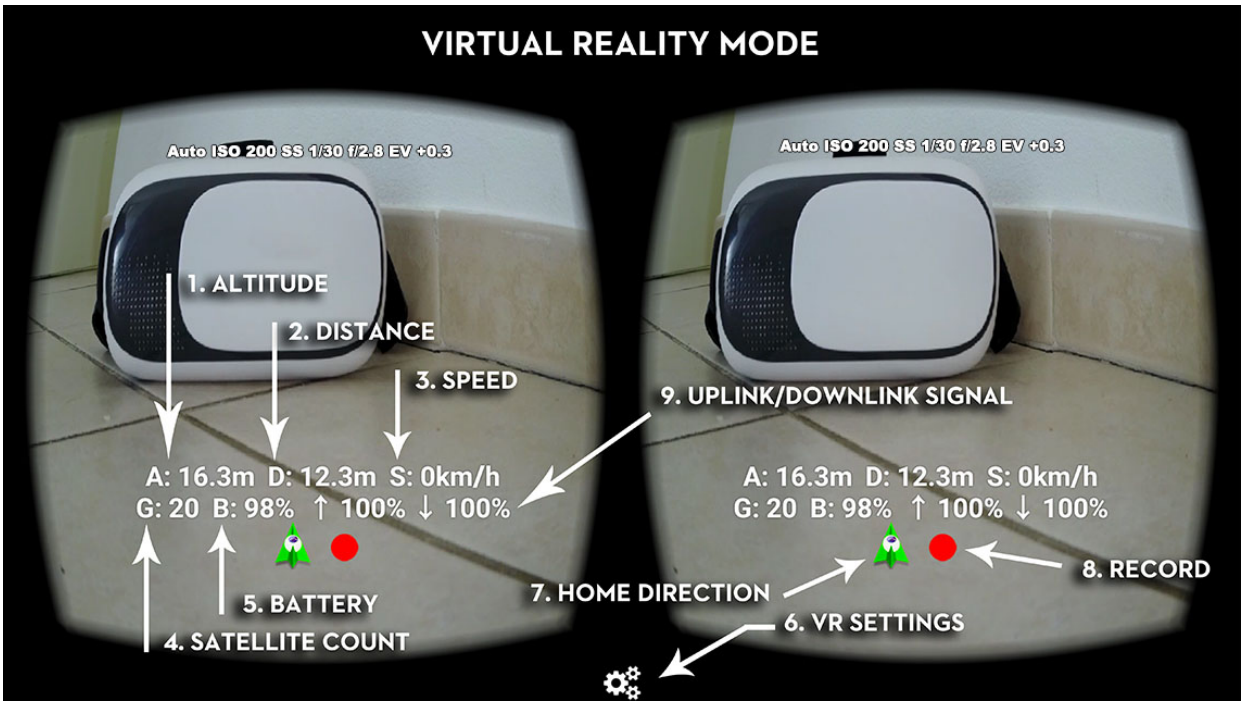
The VR mode requires the use of a phone together with external mobile VR goggles. Litchi is compatible with most VR goggles.

Below are some recommendations:

- BlitzWolf VR (no camera opening) - http://www.blitzwolf.com/BlitzWolf-Virtual-Reality-3D-Movies-Games-Glasses-Google-Cardboard-Upgraded-Version-for-3.5-to-6.0-inch-Android-Samsung-Galaxy-Note,-IOS-iPhone-6-6s-Plus-p-41.html
- Freefly VR (no camera opening) - http://www.freeflyvr.com/
- Homido - http://www.homido.com/
- VR Box - https://www.amazon.com/Amerzam-Virtual-Reality-SamsungGalaxy-smartphone/dp/B01DNDLUJU/
- Durovis - https://www.durovis.com/
- Google Cardboard - https://www.google.co.uk/get/cardboard/
- Gear VR (for P3 Standard and Samsung supported devices only) - http://www.samsung.com/global/microsite/gearvr/gearvr_features.html

It is highly recommended to get a pair of goggles with a head strap, not all of them comes with one. Additionally, if your goggles expose the mobile device camera to the outside, you will be able to take advantage of the mobile device camera toggle in Litchi (except for P3 Standard).

WARNING: The VR mode blocks your awareness of your actual surrounds, be aware of your surroundings and use a spotter to maintain line of site of your aircraft.



1. **Altitude**: Displays the altitude of the aircraft relative to the elevation where it was powered on.
2. **Distance**: Displays the distance from home point to aircraft. In Follow mode, displays the distance between the mobile device and the aircraft.
3. **Speed**: Displays the current aircraft speed.
4. **Satellite Count**: Shows the number of satellites that the aircraft is locked onto.
5. **Battery**: Shows the remaining aircraft battery percentage.
6. **VR Settings**: Tap to bring up the VR settings (more details below).
7. **Home Direction**: Shows the heading of the aircraft relative to the home point. When this icon points towards the bottom of the screen, it means the aircraft is heading towards the home point.
8. **Record**: This icon will be displayed when the camera is recording video.
9. **Uplink/Downlink Signal**: Displays the uplink and downlink signal strength.

A. VR Settings

- **Exit VR**: Tap this button to exit VR mode.
- **Display OSD**: Turn this on to display the On-Screen Display (altitude, distance, speed, etc.).
- **Depth Offset**: Increase or decrease the OSD depth offset to make it more comfortable to your eyes.
- **Gimbal Head Tracking**: Turn this on to enable moving the gimbal using head movements.
- **Gimbal Speed**: Defines how responsive the gimbal will be to your head movements. A higher value means it will move faster.
- **Aircraft Head Tracking**: Choose between Off, Immersive or Joystick to enable rotating the aircraft using head movements.

B. Aircraft Head Tracking

In **Immersive** mode, rotating your head left/right causes the aircraft to rotate left/right mirroring the angle you are looking at relative to the reference which is established when VR mode is started.

In **Joystick** mode, rotating your head left/right is similar to using the left joystick's left/right axis. As an example, the more you rotate your head to the left, the faster the aircraft will rotate to the left. The zero point, at which the aircraft will not rotate, is set when VR mode starts using the current mobile device orientation at that time.

C.Mobile Device Camera

For remote controllers with C1/C2 custom buttons (all aircrafts except P3 Standard), you can bind the custom function Toggle Mobile Device Camera (VR) to either C1 or C2.

This allows you to switch between your aircraft's camera view and your mobile device's camera view, making it very easy to keep track of your surroundings with the goggles on.

VII. Settings

NOTE: Not all settings apply to both platforms, some settings may be located in different areas or sequences in the settings menus.

A. General

Figure 48 - General Settings - Android

- **Units**: Use to switch between Metric or Imperial units.
- **Map Engine**: Use to switch the map engine used by Litchi. Android only.
- **Map Type**: Use to switch between Standard (no imagery), Satellite (imagery), Terrain (topographic) and Hybrid (imagery + street names).

- **Map Auto Zoom**: Enable/disable map auto zoom. Android only.
- **Map Safe Area Radius**: When not 0, a red circle will be drawn on the map to represent a safe distance area. This is only a visual help and will not limit you in any way should you wish to go out of the bounds of this circle. Android only.
- **Show GEO Warning Zones**: Show/hide GEO Enhanced Warning

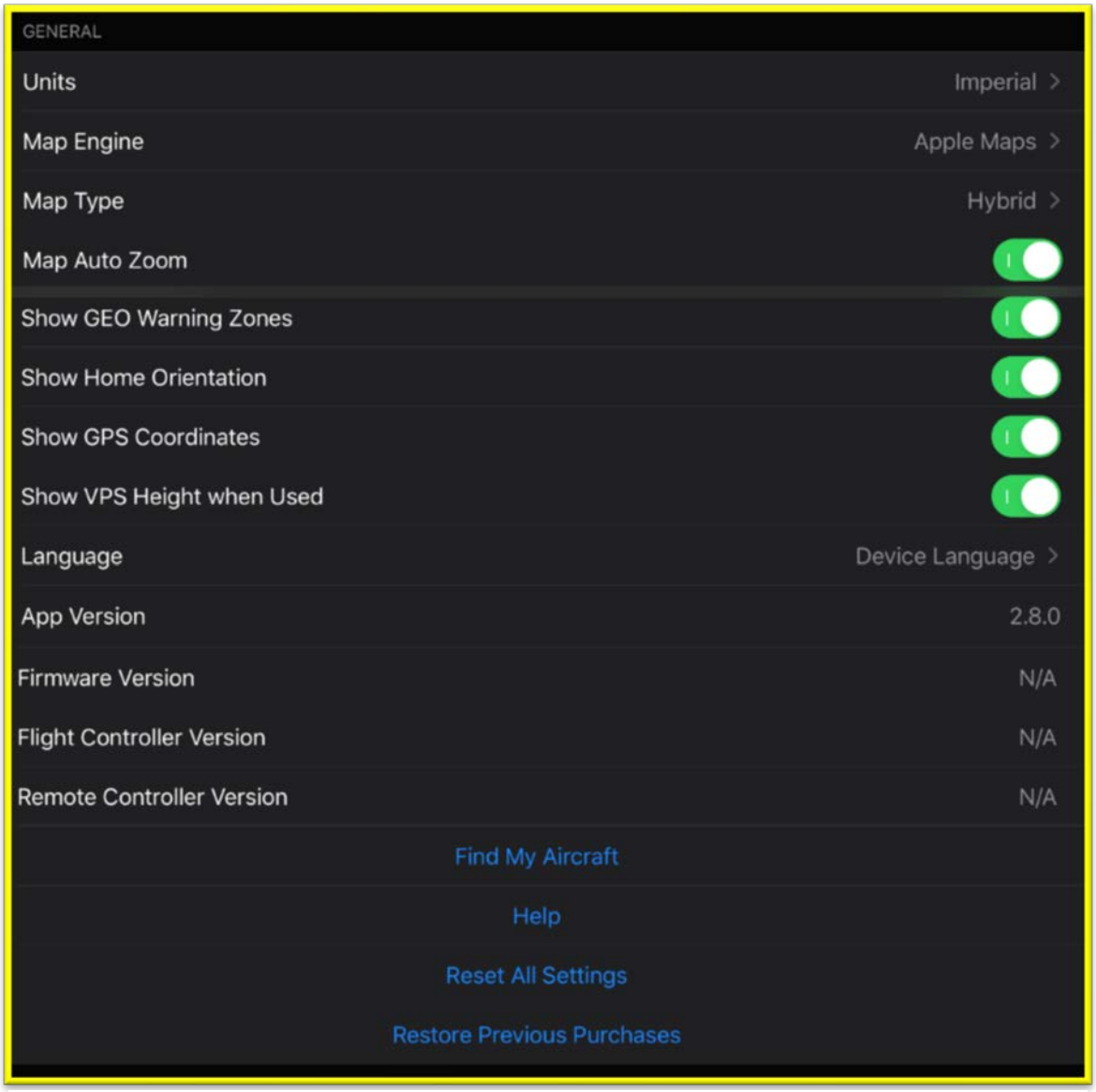


Figure 49 - General Settings - iOS

and Warning zones on the map. iOS only.

- **Use Amap Imagery (for China Mainland)**: To be used in conjunction with the Calibrate Map for China Mainland setting.

When the map is calibrated, Google's imagery will not map to their true location, enable this setting to fix it. iOS only.

- **Calibrate Map for China Mainland**: If you are in mainland China, enable this setting to get correct GPS coordinates on the map. iOS only.
- **Show Home Orientation**: When enabled shows a line between the home point and the aircraft on the map.
- **Show GPS Coordinates**: When enabled, shows the current latitude and longitude of the aircraft next to the altitude, distance and speed indicators at the bottom left of the screen. In addition, when enabled this setting allows you to edit Waypoint coordinates in Waypoint mode.
- **Show VPS Height when Used**: When this setting is enabled and when the Visual Positioning System is active (5m or less above the ground), the more precise ultrasonic height will be shown instead of the barometric altitude.
- **Show Battery Voltage**: When enabled, shows the lowest aircraft battery cell voltage under the battery percentage.
- **Language**: Changes the language of the application. Requires a restart.
- **Find My Aircraft**: Tap to enter a map screen which will display the last known location of your aircraft.
- **Help**: Tap to view this help page. Requires an Internet connection to access the first time. After that, it will be cached for offline use.
- **Reset All Settings**: Tap to reset all settings. Requires a restart.

B. Aircraft

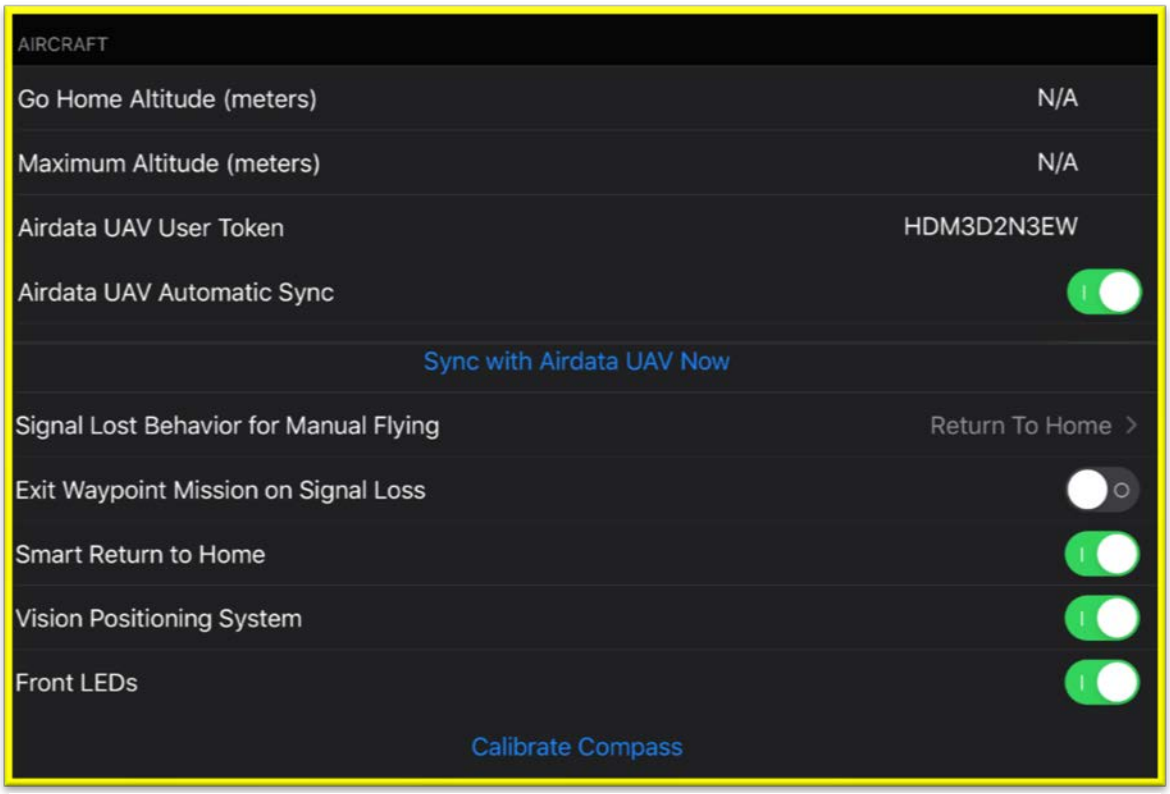


Figure 50 - Aircraft Settings - iOS

- **Go Home Altitude**: Use this to set the altitude that the aircraft will return at when Return-To- Home is triggered.
- **Maximum Altitude**: Sets the maximum flight altitude.
- **Dynamic Homepoint**: When enabled, the home point will continuously be updated to the current location of your mobile device. Recommended in Follow mode. Android only.
- **Log Flights**: Enable/disable flight logs. Flight logs are saved in the mobile device's internal storage in the LitchiApp/flightlogs folder. Android only - on iOS flight logs cannot be disabled.
- **Airdata UAV User Token**: Enter the token from your https://airdata.com/ account here. Your token should look like this: HD12345678. This token is a secure way to associate your flight logs with your account when they are uploaded to Airdata UAV.

NOTE: Click here to learn more about how to setup Airdata UAV with Litchi. https://app.airdata.com/litchi

- **Airdata UAV Automatic Sync**: When enabled, and if your user token is valid, your flight logs will be automatically synced with your Airdata UAV account given the presence of an Internet connection.
- **Sync Photo/Video Previews**: Photo preview screenshots and video preview screenshots will be automatically taken by Litchi during flights. Using this setting, you can allow Litchi to automatically sync up to 4 or 10 photo/video previews per flight log to your Airdata UAV account. Android only.

WARNING: This setting will increase the data usage of the app significantly.

- **Sync with Airdata UAV Now**: Use this button to manually trigger a sync of your flight logs with your Airdata UAV account.
- **Signal Lost Behavior for Manual Flying**: This defines the behavior of the aircraft if signal is lost while flying manually, choose between Hover, Landing or Return-To-Home.
- **Smart Return to Home**: Enables/disables the Smart Return-To-Home (RTH) feature. When it is enabled, aircraft will request to go home when remaining battery is only enough for completing the go-home action.
- **Collision Avoidance**: Enables/disables collision avoidance. Mavic/Phantom 4/Inspire 2/Spark only.
- **Active Obstacle Avoidance**: Enables/disables active obstacle avoidance. When enabled, and an obstacle is moving towards the aircraft, the aircraft will actively fly away from it. If while actively avoiding a moving obstacle, the aircraft detects another obstacle in its avoidance path, it will stop. Collision Avoidance must also be enabled. Mavic/Phantom 4 (Advanced/Pro/ProV2)/Inspire 2/Spark only. iOS only.
- **Landing Protection**: Enables/disables landing protection. During auto-landing, the downward facing vision sensor will check if the ground surface is flat enough for a safe landing. If it is not and landing protection is enabled, then landing will abort and need to be manually performed by the user. Mavic/Phantom 4/Inspire 2 only.

- **Precision Landing**: Enables/disables precision landing. When enabled, the aircraft will record its take-off location visually (as well as with GPS). On a Return-To-Home action the aircraft will attempt to perform a precision landing using the additional visual information. This method only works on a Return-To-Home action when the home location is successfully recorded during take-off, and not changed during flight. Mavic/Phantom 4 only.
- **Vision Positioning System**: Enables/disables the vision positioning system. Mavic/Phantom 4/Inspire 2/Spark only.
- **Front Aircraft LEDs**: Switches the aircraft's front LEDs on or off.
- **Calibrate Compass**: Tap to start calibration procedure. The aircraft LEDs will turn solid yellow and you can then start the calibration dance.
- **Auto Take Off (Follow mode)**: When enabled, you will be able to start Follow sessions from the ground. If disabled, the aircraft will be required to be in the air before starting an autonomous flight. Android only.

- **Maximum Location Accuracy**: This setting defines the maximum location accuracy required for Follow mode to work. If the mobile device GPS shows a higher accuracy than this value, Follow sessions will fail to start. Additionally, if during a Follow session the mobile

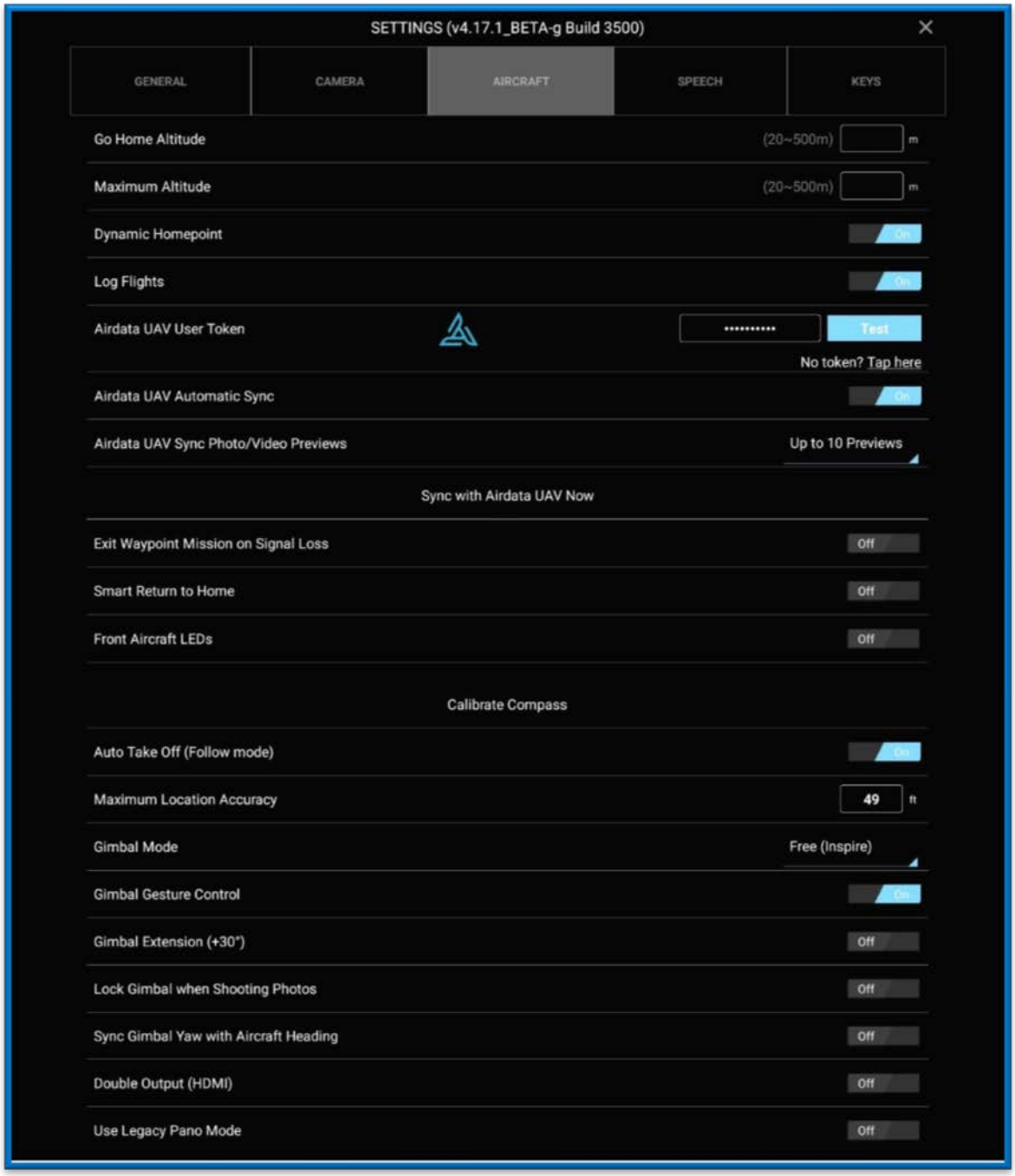


Figure 51 - Aircraft Settings - Android

device GPS accuracy jumps to a value that is higher than this setting, the aircraft will stop moving until the accuracy comes back to a healthy level. As a result, it is important to set this value correctly. It defaults to 15 meters, but if you are having issues with GPS accuracy and depending on your environment, you may want to increase the default value. Android only.

- **Gimbal mode**: Switch between the FPV mode, Yaw Follow mode (default) and Free (Inspire series only). In FPV mode, the gimbal's roll will mirror the right joystick's movements (left/right, mode 2).
- **Gimbal Gesture Control**: When enabled, tap the video screen and scroll up or down (as well as left/right for the Inspire 1-2) to move the gimbal.
- **Gimbal Extension (+30°)**: When enabled, the gimbal's maximum pitch angle is extended to +30° above horizon, instead of the default 0°. Not applicable for Spark.
- **Lock Gimbal when Shooting Photos**: Enables this to lock the gimbal when the camera is shooting a photo. The gimbal will keep the attitude when starting to shoot the photo.
- **Gimbal Endpoint Auto Release**: When enabled, the Inspire 2 will automatically rotate when the gimbal reaches the yaw angle limit. Inspire 2/iOS only.
- **Sync Gimbal Yaw with Aircraft Heading**: Enables this to make the gimbal rotate simultaneously with the aircraft's heading when

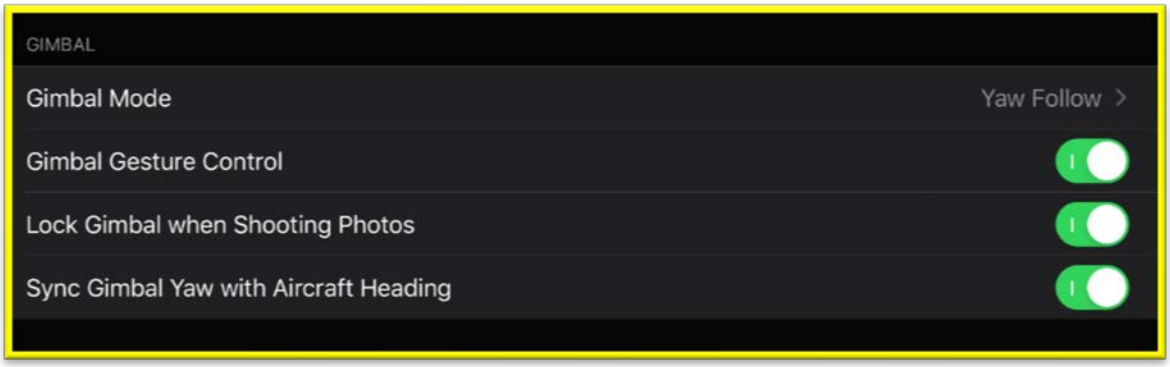


Figure 52 - Aircraft Gimbal Settings - iOS

you control the aircraft's heading with the remote controller.

- **Preview Quality**: For Lightbridge-based drones only (P3/P4/I1/I2). Select the quality of the video stream from 4/6/8/10 Mbps or Auto.

When set to Auto, both the channel and preview quality will be selected automatically.

- **Transmission Channel**: For Lightbridge-based and WiFi drones (Spark/Mavic Air/P3/P4/I1/I2). Select a specific transmission channel or Auto. When set to Auto, both the channel and preview quality will be selected automatically.
- **Ocusync Preview Quality**: For Ocusync-based drones only (Mavic Pro). Select the channel bandwidth between 10MHz and 20MHz or Auto. On Auto, both the channel and preview quality will be selected automatically.
- **Ocusync Transmission Channel**: For Ocusync-based drones only (Mavic Pro). Select a transmission channel or Auto. On Auto, both the channel and preview quality will be selected automatically.
- **Double Output (HDMI)**: Enable to have the video stream output to the HDMI module in addition to the app.

Figure 53 - Aircraft Transmission Setting - iOS

- **Display Secondary Video Feed**: Switches between the main and secondary cameras for the video stream displayed. Only for drones which have more than one camera.
- **Lightbridge 2 Video Source**: For Lightbridge 2 drones only. Select the video source that will be displayed in the app.
- **Frequency Band**: Sets the frequency band. It is only supported by Inspire 2, Phantom 4 Pro and Phantom 4 Pro V2.

C.Camera

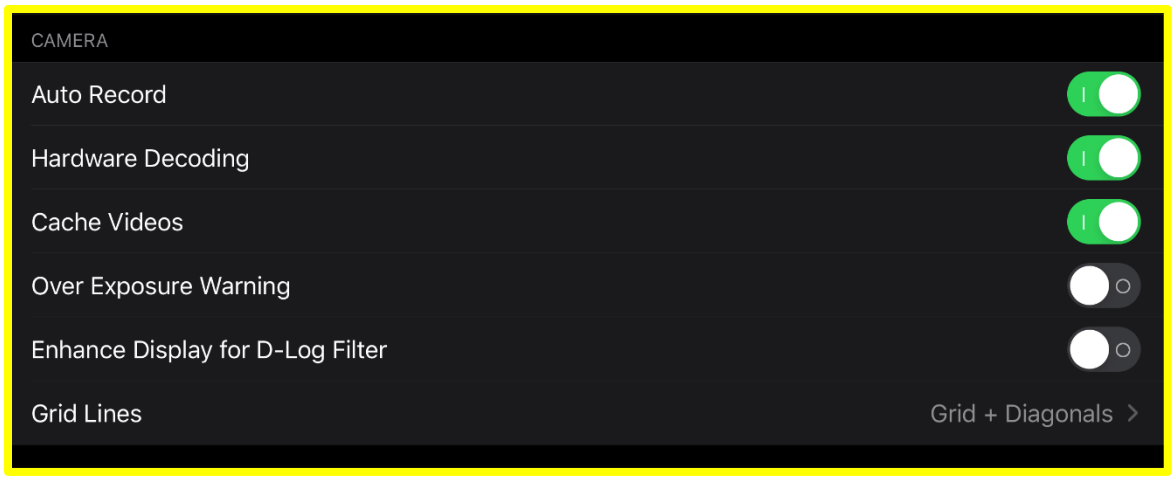


Figure 54 - Camera Settings - iOS

- **Auto Record**: Enable/disable Auto recording. Auto record starts/stops when motors start/stop.
- **Hardware Decoding**: Enable/disable hardware video decoding for the live video preview. Some devices may perform better with the hardware video decoder. iOS only.
- **Cache Videos**: When enabled, recording videos with the aircraft will also cause Litchi to save the video to the Litchi Video Cache album in the Photos app. iOS only.

- **Cache Photos**: When enabled, photos you take will be saved to the Litchi Photo Cache album (in the Photos app). Photo Caching does not work when the image format is set to RAW or when using the

Figure 55 - Camera Settings - Android

  Interval capture mode. Photo Caching does not work during Waypoint, Pano and Track sessions. iOS only.
- **Photo Preview**: Requires Cache Photos setting to be enabled. When enabled, after taking a photo a preview will be shown along with a share button providing an easy way to share the photo to Facebook. iOS only.
- **Peak Focus Threshold**: For cameras which have variable focus, this setting will highlight the areas that are in focus. iOS only.
- **Over Exposure Warning**: Highlights overexposed areas on the video preview. iOS only.
- **Enhance Display for D-Log Filter**: When using the D-Log digital filter, the video preview will be enhanced for better visibility. iOS only.
- **Grid Lines**: Show/hide grid lines on the video screen, useful to help framing a shot.

D. Speech

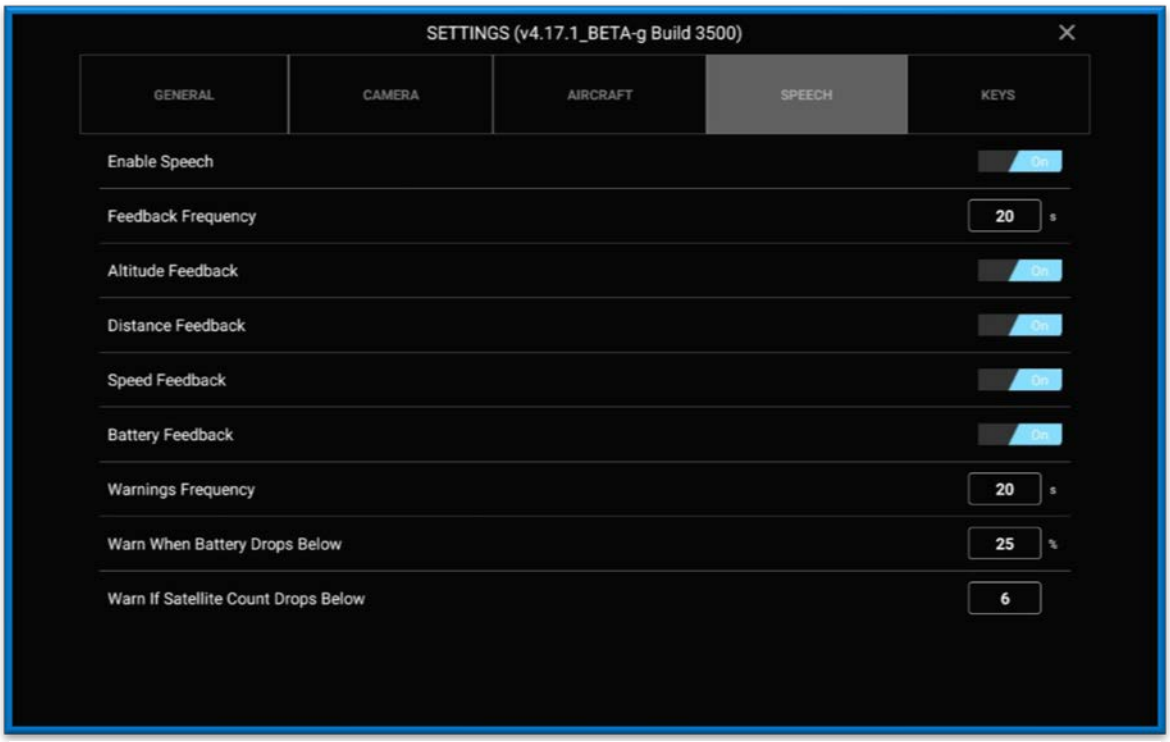


Figure 57 - Speech Settings - Android

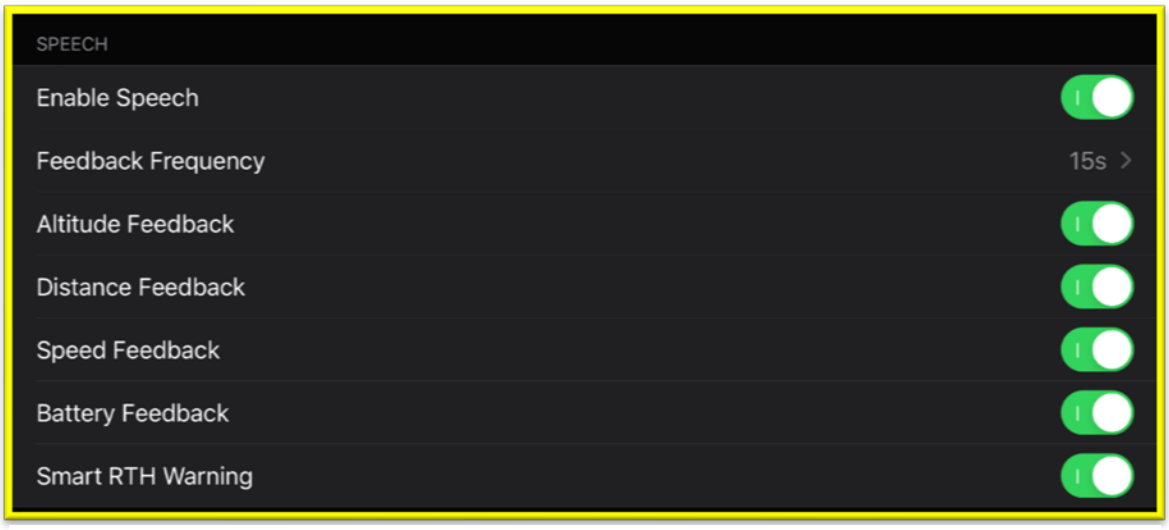


Figure 56 - Speech Settings - iOS

- **Enable Speech**: Enables/disables voice announcements and warnings.

- **Feedback Frequency**: In seconds, determines the minimum frequency at which the voice feedback will be made.
- **Altitude Feedback**: Enables/disables continuous altitude feedback.
- **Distance Feedback**: Enables/disables continuous distance feedback.
- **Speed Feedback**: Enables/disables continuous speed feedback.
- **Battery Feedback**: Enables/disables continuous battery feedback.
- **Smart RTH Warning**: Enables/disables smart RTH voice warning when flying in VR mode. iOS only.
- **Warnings Frequency**: In seconds, determines the minimum frequency at which the voice warnings will be made. Android only.
- **Warn When Battery Drops Below**: Voice warnings for the aircraft battery will start at this percentage. Android only.
- **Warn If Satellite Count Drops Below**: There will be voice warnings for the satellite count whenever it drops below this value. Android only.

E.Keys

You can set up to 2 different custom functions, for the C1 (left) and C2 (right) custom keys located in the back of the remote controller.

You can also bind 2 different custom functions to C1 Long press and C2 Long press.

For the Spark and Mavic Air, C1 is also called the Fn button.

In addition, for Mavic Pro you can bind custom functions to any of the 5

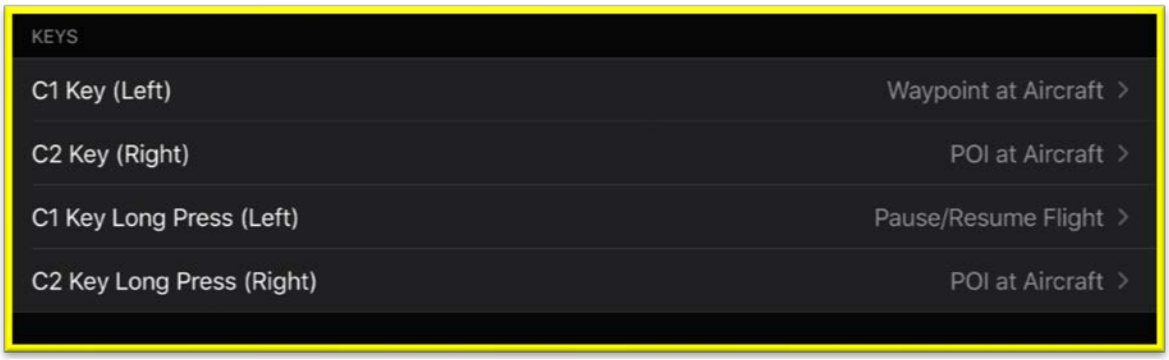


Figure 58 - Keys Settings - iOS

buttons of the 5D joystick.

- **Map/Video Switch**: Switches between the video and map as full screen/Small View screen.
- **Reset Gimbal**: For the Mavic/Phantom 3-4/Spark: toggles the gimbal between horizon and looking down. For the Inspire 1-2: resets the gimbal yaw.
- **Gimbal Pitch/Yaw**: Inspire 1-2 only, switches between pitch and yaw gimbal control for the remote controller wheel.
- **VR mode**: Toggles VR mode.
- **Pause/Resume Flight**: Depending on the current autonomous flight mode status, pauses/stops or resumes the flight.
- **Home Point at Aircraft**: Moves the Home Point to the aircraft's current location. You must be flying in order to move the Home Point.
- **Home Point at Device**: Moves the Home Point to the mobile device's current location. You must be flying in order to move the Home Point.
- **Front LEDs**: Switches the aircraft's front LEDs on or off.
- **Toggle Mobile Device Camera (VR)**: In VR mode, use this to switch between the aircraft's camera view and the mobile device's camera view. Useful if your goggles expose the mobile device's camera to the outside.
- **Toggle VR Immersive**: In VR mode, use this to enable/disable the Aircraft Head Tracking mode Immersive.

- **Toggle VR Joystick**: In VR mode, use this to enable/disable the

Figure 59 - Keys Settings - Android

Aircraft Head Tracking mode Joystick.

- **Center Autofocus**: For cameras with variable focus, this custom function will trigger autofocus at the center of the video preview.
- **Digital Zoom In**: Zooms in up to 2x. Only works for supported cameras and resolutions.
- **Digital Zoom Out**: Zooms out. Only works for supported cameras and resolutions.
- **Toggle Portrait Mode**: Toggle the camera's Portrait mode. Mavic Pro only.
- **AE Lock/Unlock**: Auto exposure lock/unlock.

- **Focus to Infinity**: Sets the camera focus to Infinity (everything in focus). Before using this function, we recommend calibrating the lens in the camera settings.
- **Toggle Tripod Mode**: Enable/disable Tripod mode. In Tripod mode, the maximum speed is limited to 2.2mph (3.6kph). Responsiveness to joystick movements is also reduced for smoother and more controlled movements. Tripod mode is only supported by newer drone models (Phantom 4 Advanced/Pro/ProV2, Inspire 2, Spark, Mavic Air/Pro)
- **Switch Video Feed**: Switches between the main and secondary cameras when the aircraft supports more than one camera.
- **Course Lock (FPV, Focus)**: In FPV mode, Toggles Course Lock. In Focus mode, resets the Joystick Reference setting when Aircraft Rotation is enabled and Joystick Reference is set to Aircraft Heading.
- **Home Lock (FPV)**: Toggles Home Lock.
- **POI at Aircraft (Waypoint, Orbit, Focus)**: In Waypoint, Orbit and Focus mode, adds a Point of Interest at the aircraft location.
- **POI at Device (Waypoint, Orbit, Focus)**: In Waypoint, Orbit and Focus mode, adds a Point of Interest at the mobile device location.
- **Waypoint at Aircraft (Waypoint)**: In Waypoint mode, adds a Waypoint at the aircraft location. The newly added Waypoint will have its altitude, heading and gimbal pitch angle automatically set to the current aircraft altitude, heading and gimbal pitch angle.
- **Waypoint at Device (Waypoint)**: In Waypoint mode, adds a Waypoint at the mobile device location.
- **Follow Heading Mode (Follow)**: In Follow mode, switches the heading mode between North and Course.
- **Follow from Aircraft Position (Follow)**: In Follow mode, sets the relative altitude, distance and heading from the aircraft's current position.
- **Subject Offset from Aircraft (Follow)**: In Follow mode, sets the subject offset setting based on the current aircraft heading relative to the follow heading setting.
- **Orbit at Aircraft (Orbit)**: In Orbit mode, sets the radius and altitude from the aircraft location. Only works if the Orbit center is already set.

F. Camera Settings

General camera settings as well as shooting modes (Single, HDR, Burst, AEB, and Interval) can be adjusted after a tap on the camera settings icon under the shutter/record button.

An exposure info panel is also shown at the top of the video screen when connected to the aircraft.

To set the ISO, Shutter Speed, Aperture, and Exposure Compensation tap on the Camera Settings button, then Exposure Settings.

1. Camera Focus

For cameras with adjustable focus, the camera focus mode can be changed in the camera settings. Available modes are Auto, AFC, and Manual.

To set the focus on a specific location, make sure you are in Auto or AFC focus mode then tap anywhere on the video preview to trigger autofocus at that location.

To set the focus to Infinity, switch to Manual focus mode then tap on the Infinity (∞) button, a long press anywhere on the video preview, or use the custom function Focus to Infinity. Before using Infinity focus for the first time, it is recommended to calibrate the lens. Tap on Calibrate Lens in the camera settings then follow the steps on-screen.

2. Exposure Metering

Exposure metering is set to Center mode by default. If your camera supports adjustable focus, you can set the exposure metering to Spot mode by following these steps:

- Do a long press on the green square icon at the top left of the video preview to switch to Metering mode.
- Tap anywhere on the video preview to set Spot metering at that location.

To go back to Center metering mode, tap again on the Spot metering icon and the icon will disappear.

3. Camera Zoom

Optical zoom: For cameras which support optical zoom, hold the Remote Controller's C2 button and use the left Remote Controller wheel to adjust the focal length.

Digital zoom: For cameras which support digital zoom, use the custom function Digital Zoom In/Out.

4. Gimbal Roll Adjustment

To adjust the gimbal's roll angle, hold the Remote Controller's C2 button and use the right REMOTE CONTROLLER wheel.

VIII. Bluetooth Controllers

Litchi allows you to control Wi-Fi based drones (Spark, Phantom 3 Standard, Mavic Air/Pro) with a Bluetooth controller when no DJI remote controller is connected.

If you are looking for a compatible Bluetooth controller, the Mad Catz CTRL-I for iOS has been proven compatible.

Litchi will automatically recognize and accept input from a Bluetooth controller after it is paired with your mobile device.

1. **Left and Right Joysticks**: Used to control the aircraft the same way you would control a aircraft with a DJI remote controller in mode 2.
2. **A**: Take a photo.
3. **X**: Start/Stop recording.
4. **B**: Triggers the custom function bound to C1.
5. **Y**: Triggers the custom function bound to C2.
6. **Directional Pad - Y axis**: Moves the gimbal up/down.

IX. Litchi Mission Hub

The Litchi Mission Hub is a powerful Waypoint mission planning tool that is one of the strong points of the Litchi platform. Mission Hub lets you plan Waypoint missions from a desktop or laptop PC/Mac, save them to your Litchi account and fly them on your mobile display devices. The Litchi Mission Hub is only used for Waypoint missions, other advanced

flight modes are not supported and must be planned on your mobile display device.

If you are logged into your Litchi account, saving a mission will automatically synchronize it across all devices where you are also logged in.

In addition, Mission Hub lets you browse missions from other users around the world or publish your own missions and videos for other users to see.

An Extension to Google Chrome is available that works with the Litchi Mission Hub to create Litchi Virtual Missions that can play your missions virtually before actually flying to help confirm mission settings are correctly set.

NOTE: For the best experience, we recommend using the Google Chrome

Figure 60 - Litchi Virtual Mission web page

browser to access Mission Hub.

1. **Clear All**: Removes all Waypoints and points of interest.

2. **Move Mission**: Click to enable the move tool. Once enabled, you can move the entire mission by dragging any Waypoint. Additionally, you can click anywhere on the map to move the mission to that location.
3. **Scale Mission**: Click to enable the scaling tool. Once enabled, you can scale the entire mission by clicking on a Waypoint, holding the click and moving the mouse.
4. **Rotate Mission**: Click to enable to rotate tool. Once enabled, you can click anywhere on the map to place the rotation's center. Then, click on any Waypoint, hold the click and rotate around the center to rotate the entire mission.
5. **Login/Logout**: Click to login to or logout of your Litchi account. Once logged in, saved missions will automatically synchronize across all devices where you are also logged in.
6. **Missions Menu**: Hover to show the main menu, described in the Missions Menu section below.

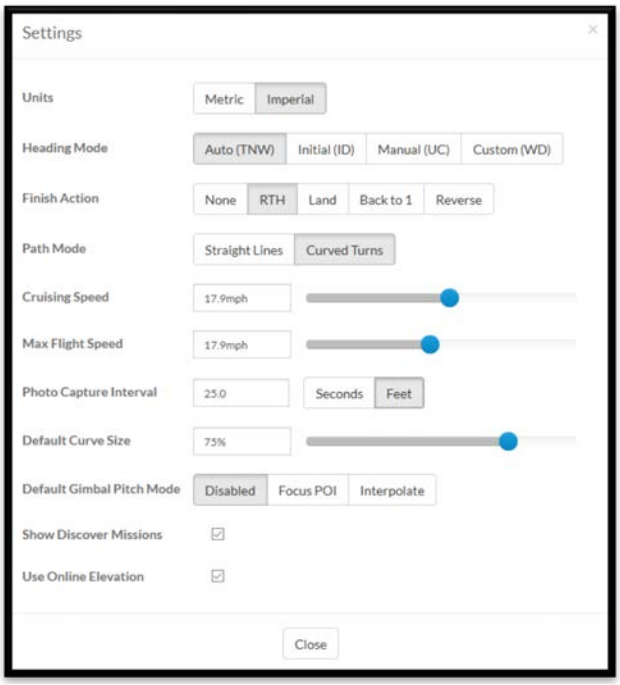


Figure 61 - Mission Hub Mission Settings

7. **Mission Settings**: Click to open the mission settings. These settings are similar to the ones you will find in the mobile Litchi mission planner, please refer to the Waypoint tab to learn more about each setting.
8. **Help**: Click to show useful shortcuts as well as a link to this help page.
9. **Home**: Click to zoom the map to your current location. If the laptop/desktop PC/Mac you use has no GPS sensor, your router will be used to determine your location and it may not be very accurate.
10. **Discover**: Click to fully zoom the map out. This allows quick access to missions around the world.

11. **Discover Mission**: Missions from other users which are public and have a video attached to them are shown on the map with a Litchi icon on yellow background. Click on it to load the mission. Double-click on it to watch the attached video.
12. **Mission Cluster**: Mission clusters represent multiple missions in one location, click on it to zoom in closer at that location and see all missions within that cluster.
13. **Mission Info**: Shows the mission's name ("new" when no name) as well as the total distance of the mission and the estimated time it will take to complete.

A. Missions Menu

- **New**: Click to create a new mission.
- **Open...**: Click to open the mission browser. In the mission browser's My Missions tab, you can open your own missions and view/edit them. Attaching a video to a mission and disabling the Private checkbox will make it appear on the map for other users. The mission browser's Discover tab lists public missions from other Litchi users.
- **Save...**: Click to save the current mission. At least 2 Waypoints required.
- **Import...**: Click to import a mission into Mission Hub. Supported file formats are CSV, KML and Litchi Mission files.
- **Export as CSV**: Click to export the current mission as a CSV file.
- **Export as KML 3D Path**: Click to export the current mission as a KML file. This can then be imported in Google Earth Pro to view the planned mission in 3D.

B. Mission Planning

Missions are planned in the Mission Hub in the same manner as on the mobile display device; the biggest difference is the ability to use a mouse or other pointing device to place Waypoints and POIs instead of your finger on the touch screen. This allows for more accurate and generally faster planning of missions.

C.Altitude Modes

By default, Waypoint altitudes are relative to the take off point (which is also generally the home point).

If you enable the Above Ground option in the Waypoint settings, the altitude you enter will be relative to the ground below the Waypoint.

When Above Ground is enabled for a Waypoint, the Waypoint's icon will show 2 altitudes, the altitude above ground (yellow) and the calculated altitude (white) relative to the take off point which will be the altitude sent to the aircraft.

NOTE: To calculate these altitudes, it is assumed the first Waypoint is in the same location as the take off.

X. Virtual Mission Planning

Using Google Earth Pro, you have the ability to plan a Waypoint mission in 3 dimensions. This enables you to frame your shots easily and to position the camera exactly where you want it for each Waypoint. You can then import the mission into Mission Hub. To learn more about this planning method, please watch the following tutorial video.

https://www.youtube.com/watch?v=M9QrXfaX8XU or
https://youtu.be/M9QrXfaX8XU

Virtual Litchi Mission application

https://mavicpilots.com/threads/virtual-litchi-mission.31109/

Litchi Virtual Mission download for Chrome add-in

https://chrome.google.com/webstore/detail/chrome-litchi-virtual-mis/ccpleclnjidgphbmhphdfeejfifeekak?hl=en

Download DJI Cameras - Field of View.kml for more accurate camera framing in virtual missions.

https://flylitchi.com/assets/DJI%20Cameras%20-%20Field%20of%20View.kml

Google Earth Pro download

https://www.google.com/earth/versions/#earth-pro

XI. Litchi Vue Streaming

PLATFORM NOTE: Litchi Vue is only available on iOS at this time.

Litchi Vue allows streaming the aircraft video from the pilot's mobile device to a second mobile device using a Wi-Fi connection. This feature

has a trial version that lets you stream for up to 20 minutes, and can be purchased to unlock unlimited streaming.

The following video explains how to use Litchi Vue: https://youtu.be/f7VdFifx6to

WARNING: Bluetooth must be turned off on at least one of the 2 devices before using Litchi Vue.

Follow these steps to setup Litchi Vue:

1. Ensure both mobile devices are connected to the same Wi-Fi network (via a personal hotspot or external Wi-Fi router, Internet is NOT required).
2. Connect the aircraft to the pilot's mobile device (device A) and start Litchi.
3. On device A, tap on the Litchi Vue streaming button at the top right corner of the video view. The icon will turn yellow indicating you are now available for streaming.
4. Start the Litchi Vue app on the second mobile device (device B), you should then see the name of device A appear in the list of the available streams. Tap on it to connect.
5. The aircraft's video stream will now be displayed on both mobile devices. On device A, the Litchi Vue icon turns green indicating you are connected to a nearby device.

Within the Litchi Vue app, you can enable VR mode for better immersion.

PLATFORM NOTE: Because Litchi Vue requires a Wi-Fi connection between the 2 devices, it is not compatible with Wi-Fi based aircraft models such as the P3 Standard and the P3 4K.

XII. Litchi Magic Leash

Download Litchi Magic Leash on the Play Store:

https://play.google.com/store/apps/details?id=com.flylitchi.lml

Or Download Litchi Magic Leash on the Apple Store:

https://itunes.apple.com/gb/app/id1031764016

Litchi Magic Leash allows the subject of the Follow mode to be a different mobile device from that which is connected to the Remote Controller. In other words, the aircraft will follow a mobile device that is not connected to the Remote Controller. Both mobile devices must be connected to the internet for Magic Leash to work.

WARNING: At this time, Litchi Magic Leash does not transfer pressure data. This means that if you go up or down a hill using Litchi Magic Leash, the aircraft will not adjust its altitude.

Follow these steps in order to setup Litchi Magic leash (mobile device connected to Remote Controller is device A, second device is B):

1. On device A, start Litchi, connect to the aircraft, switch to Follow mode, and tap the Magic Leash Button (top left corner of Follow settings) to connect, then remember the PIN code that pops up
2. On device B, start Litchi Magic Leash, tap the Magic Leash icon to connect, then enter the PIN code from step 1
3. Your two mobile devices are now paired. Start the Follow session on device A.

The following video explains how to use Magic Leash: https://youtu.be/Xwyw3LDkQ-w

XIII. FAQs

1. Why is Litchi not connecting to my DJI drone?

   Please refer to the General tab section Connecting Litchi to your drone.

2. Autonomous flights (Waypoint, Orbit, Follow, etc) fail to start, why?

   When using a remote controller, its mode switch needs to be in the F position (or P for Mavic/Phantom 4/Inspire 2/Spark) in order for the aircraft to perform autonomous flights. If the problem persists, double check that you are using the latest supported firmware.

3. How to regain control of my aircraft during an autonomous flight when using a remote controller?

Flip the remote controller mode switch into the P position (or Sport for Mavic/Phantom 4/Inspire 2/Spark). The aircraft will then stop the autonomous flight and you will regain control instantly.

4. Will the aircraft avoid obstacles if there are any?

   For the Mavic/Phantom 4/Inspire 2/Spark obstacle avoidance will work when it is enabled. For all other aircrafts, obstacles will not be avoided.

5. Which firmware version do I need to use Litchi?

   The latest public firmware.

6. Is my Android device supported by Litchi?

   As a general rule, Litchi supports most mid to high-end Android devices. There are many Android devices and versions out there, and even two similar devices can yield very different results, for this reason there is no list of supported devices. The best way to find out if your device is supported by Litchi is to purchase the application and give it a try. If it ends up not working, you can ask for a refund during the 2 hours window. Please do let us know if you find a problem, and we will do our best to fix it.

7. Follow mode fails to start with error: Your GPS location is not accurate enough to start Follow mode, why?

   This error means that your mobile device GPS is not accurate enough, not to be confused with the aircraft's GPS signal. The Accuracy number at the bottom left of the screen shows how good your mobile device GPS signal is. If it is red, you will see this error as your mobile device is not able to determine a precise enough location. Many things can affect your mobile device GPS signal such as weather conditions, your location and environment, etc. In most cases it should be relatively easy to get less than 10 meters accuracy which is the default requirement for Follow to even start. Note that you can adjust this minimum requirement with the Location accuracy setting. Setting it to a higher value will allow for a bigger

margin of error for the mobile device GPS signal, but the Follow movements may be less precise.

8. What is the difference between Litchi for Android and Litchi for iOS?

   Currently Litchi for iOS allows you to fly in Waypoint, Orbit, Pano, Focus, VR and Track modes. Android also has Follow mode which will be added to iOS soon. Litchi Vue Streaming is currently only supported on iOS.

9. I am experiencing lag/freezes with the video stream; how can I fix it?

   First make sure you are using the latest public firmware on both the aircraft and the remote controller if you are using one. Then ensure there are no apps running in the background, including screen recorders. If you have a P3 Standard, P3 4K or Spark on Android, prior to starting Litchi make sure that you force close DJI Go (or any other SDK apps) by going to your device Settings -> Apps -> DJI Go -> Force Close. For lightbridge-based drones (P3/P4/I1/I2), make sure you are using 4Mbps as preview quality. If you are still having issues, it is likely that your device is either not compatible or not powerful enough to run Litchi.

10. I purchased the app on one device, can I install it on other devices?

    You can install the app on as many devices as you want as long as they use the same platform and the same main account (Google, Apple or Amazon) that was used for the original purchase. If you wish to use Litchi on two or more platforms you will need to purchase it on each one.

11. I won't have Internet access where I want to fly, will I still be able to see the maps?

    If you cache the maps prior to the flight, you will be able to see them even when offline. To cache maps while connected to Internet, drag the map around where you are planning to fly, zoom in and zoom out. You can exit Litchi in between but avoid restarting the mobile device as it may clear the cache.

12. I am experiencing disconnections while mid-flight on Android with a USB-based remote controller, how can I fix it?

In your mobile device settings, make sure Settings -> System -> Developer Options -> USB Debugging is turned off. If that does not fix the problem, try a different USB cable.