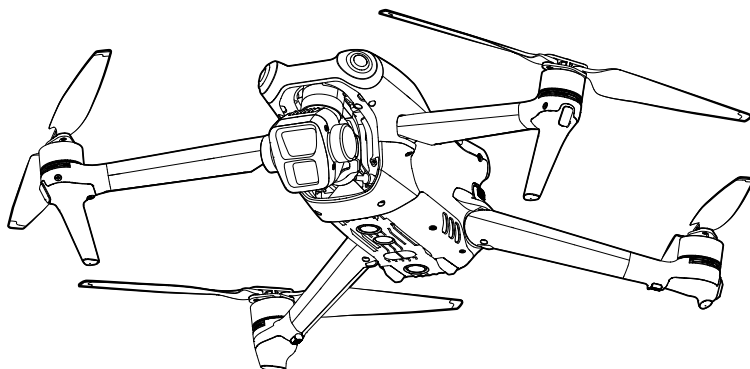


SPECTA^{AIR}

User Manual

v1.0 2023.12





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Searching for Keywords

Search for keywords such as "battery" and "install" to find a topic. If you are using Adobe Acrobat Reader to read this document, press Ctrl+F on Windows or Command+F on Mac to begin a search.

Navigating to a Topic


View a complete list of topics in the table of contents. Click on a topic to navigate to that section.


Printing this Document


This document supports high resolution printing.

Using this Manual

Legend

 Important


 Hints and Tips

 Reference

Read Before the First Flight

COGITO TECH provides users with the following documents:

1. Safety Guide
2. Quick Start Guide
3. User Manual

 • The operating temperature of this product is -10° to 40° C. It does not meet the standard operating temperature for military grade application (-55° to 125° C), which is required to endure greater environmental variability. Operate the product appropriately and only for applications that it meets the operating temperature range requirements of that grade.

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1. Product Profile

1.1. Introduction

SPECTA™ Air features both an omnidirectional vision system and a three-dimensional infrared sensing system, capable of hovering and flying indoors and outdoors, and can automatically Return to Home while sensing and bypassing obstacles in all directions. The aircraft has a maximum flight speed of 47 mph (75.6 kph) and a maximum flight time of 46 minutes.

Specta Air can work with the Specta RC remote controller. Refer to the Specta RC chapter for more information.

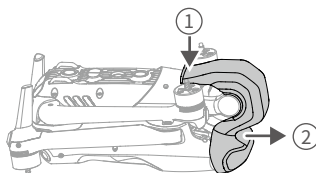
1.2. Using for the First Time

Preparing the Aircraft

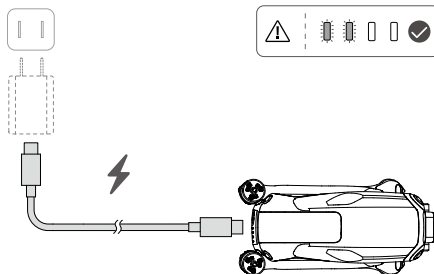
All aircraft arms are folded before the aircraft is packaged. Follow the steps below to unfold the aircraft.

1. Remove the gimbal protector.

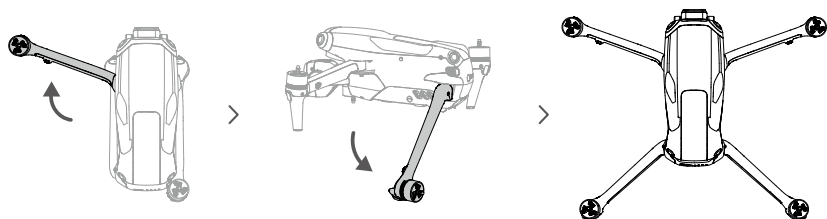
First turn over the aircraft. Press down the gimbal protector slightly to release the clips from the notches at the bottom of the aircraft body ①, then remove the gimbal protector ②.





2. All Intelligent Flight Batteries are in hibernation mode before shipment to ensure safety. Charge to activate the batteries for the first time. There is no charger included in the package. It is recommended to use a 65W USB PD Charger. The battery is activated when it begins charging.

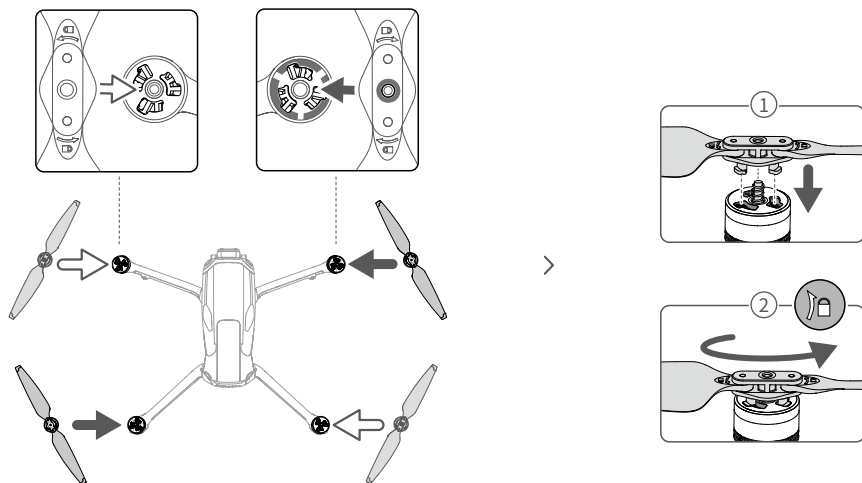


3. Unfold the front arms before unfolding the rear arms.

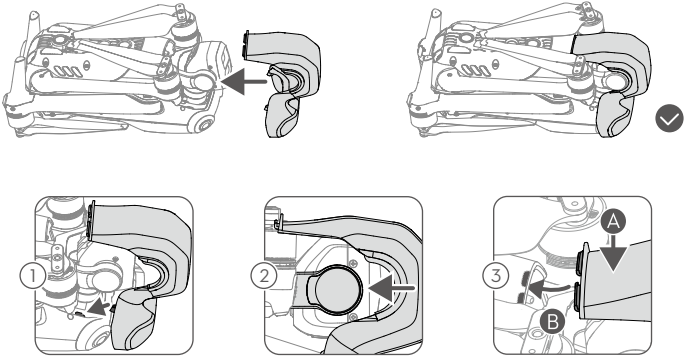


4. Attach the Propellers.

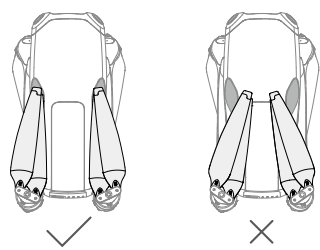
There are two types of propellers in the package of Specta Air. Attach propellers with grey circle markings to the motors with grey markings. Likewise, attach propellers without markings to the motors without markings. Hold the motor with one hand, press the propeller down with the other hand, and rotate in the direction  /  marked on the propeller until it pops up and locks in place. Unfold the propeller blades.



-
- ⚠ • Make sure to unfold the front arms before unfolding the rear arms.
 - Make sure the gimbal protector is removed and all arms are unfolded before powering on the aircraft. Otherwise, it may affect the aircraft self-diagnostics.
 - It is recommended to attach the gimbal protector to protect the gimbal when the aircraft is not in use. First turn over the aircraft and rotate the camera to make it horizontal and forward-facing. To attach the gimbal protector, first insert the two clips on the gimbal protector into the two notches at the bottom of the aircraft nose ① , make sure the curved shape of the gimbal protector fits with the gimbal pitch axis ② , and then slightly press down the gimbal protector to insert the clips into the two notches at the bottom of the aircraft body ③ .



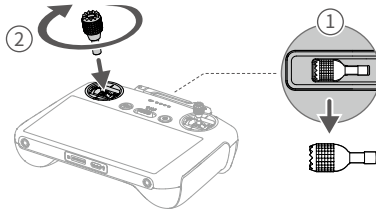
- Make sure to place the propellers of the front arms into the two dents on both sides of the aircraft back. **DO NOT** push the propeller blades onto the back of the aircraft, which may cause the propeller blades to deform.



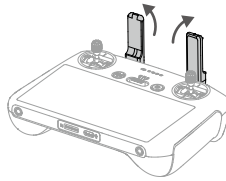
Preparing the Remote Controller

Follow the steps below to prepare the Specta RC remote controller.

1. Remove the control sticks from the storage slots and mount them on the remote controller.



2. Unfold the antennas.



3. The remote controller needs to be activated before first use and an internet connection is required for activation. Press, and then press again and hold the power button to power on the remote controller. Follow the on-screen prompts to activate the remote controller.

Activating the Aircraft

Specta Air requires activation before first use. Press, and then press again and hold the power button to power on the aircraft and remote controller respectively, and then follow the on-screen prompts to activate Specta Air using the SPECTA app. An internet connection is required for activation.

Binding the Aircraft and Remote Controller

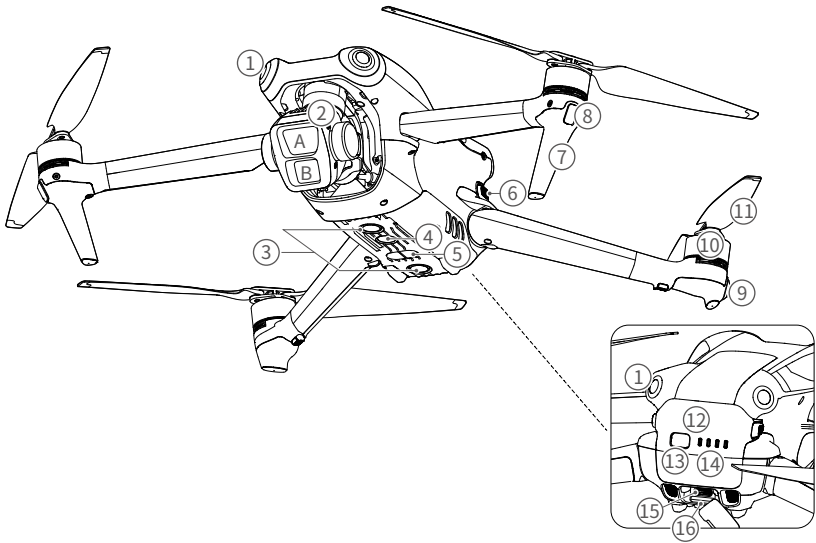
After activation, the aircraft is bound to the remote controller automatically. If automatic binding fails, follow the on-screen prompts on SPECTA app to bind the aircraft and remote controller for warranty services.

Updating Firmware

A prompt will appear in SPECTA app when new firmware is available. Update the firmware whenever prompted to ensure optimal user experience.

1.3. Diagram

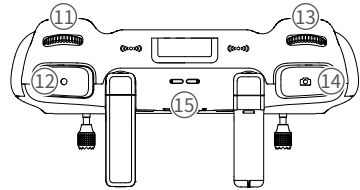
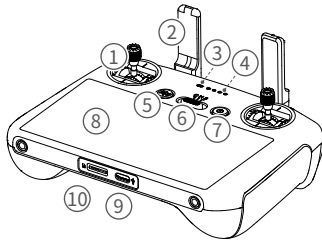
Aircraft



- 1. Omnidirectional Vision System^[1]
- 2. Gimbal and Camera
 - A. Medium Tele Camera
 - B. Wide-angle Camera
- 3. Downward Vision System
- 4. Auxiliary Light
- 5. Three-Dimensional Infrared Sensing System
- 6. Battery Buckles
- 7. Landing Gears (Built-in antennas)
- 8. Front LEDs
- 9. Aircraft Status Indicators
- 10. Motors
- 11. Propellers
- 12. Intelligent Flight Battery
- 13. Power Button
- 14. Battery Level LEDs
- 15. USB-C Port
- 16. microSD Card Slot

[1] The omnidirectional vision system can sense obstacles in horizontal directions and above.

Specta RC Remote Controller



1. Control Sticks

Use the control sticks to control the movement of the aircraft. The control sticks are removable and easy to store. Set the flight control mode in SPECTA app.

2. Antennas

Relay aircraft control and video wireless signals.

3. Status LED

Indicates the status of the remote controller.

4. Battery Level LEDs

Displays the current battery level of the remote controller.

5. Flight Pause/Return to Home (RTH) Button

Press once to make the aircraft brake and hover in place (only when GNSS or Vision Systems are available). Press and hold to initiate RTH. Press again to cancel RTH.

6. Flight Mode Switch

Switch between Cine, Normal, and Sport mode.

7. Power Button

Press once to check the current battery

level. Press, and then press and hold to power the remote controller on or off. When the remote controller is powered on, press once to turn the touchscreen on or off.

8. Touchscreen

Touch the screen to operate the remote controller. Note that the touchscreen is not waterproof. Operate with caution.

9. USB-C Port

For charging and connecting the remote controller to your computer.

10. microSD Card Slot

For inserting a microSD card.

11. Gimbal Dial

Controls the tilt of the camera.

12. Record Button

Press once to start or stop recording.

13. Camera Control Dial

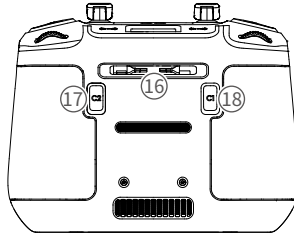
For zoom control. Set the function in SPECTA app by entering Camera View > Settings > Control > Button Customization.

14. Focus/Shutter Button

Press halfway down on the button to auto focus and press all the way down to take a photo.

15. Speaker

Outputs sound.



16. Control Sticks Storage Slot

For storing the control sticks.

17. Customizable C2 Button

Press once to turn the auxiliary light on or off. Set the function in SPECTA app by entering Camera View > Settings > Control > Button > Button Customization.

18. Customizable C1 Button

Switch between recentring the gimbal and pointing the gimbal downward. Set the function in SPECTA app by entering Camera View > Settings > Control > Button Customization.

2. Flight Safety

After completing the pre-flight preparation, it is recommended to train your flying skills and practice flying safely. Pick a suitable area to fly in according to the following flight requirements and restrictions. Strictly abide by local laws and regulations when flying. Read the Safety Guide before flight to ensure the safe use of the product.

2.1. Flight Environment Requirements

1. DO NOT operate the aircraft in severe weather conditions including wind speeds exceeding 12 m/s, snow, rain, fog, hail, ice, and thunderstorm.
2. Only fly in open areas. Tall buildings and large metal structures may affect the accuracy of the onboard compass and GNSS system. Therefore, DO NOT take off from a balcony or anywhere within 5 m of buildings. Keep a distance of at least 5 m from buildings during flight. After takeoff, make sure you are notified with the voice prompt Home Point is updated before continuing flight. If the aircraft has taken off near buildings, the accuracy of the Home Point cannot be guaranteed. In this case, pay close attention to the current position of the aircraft during auto RTH. When the aircraft is close to the Home Point, it is recommended to cancel auto RTH and manually control the aircraft to land at an appropriate location.
3. Avoid obstacles, crowds, high-voltage power lines, trees, and bodies of water (recommended height is at least 3 m above water).
4. Minimize interference by avoiding areas with high levels of electromagnetism such as locations near power lines, base stations, electrical substations, and broadcasting towers.
5. DO NOT take off from an altitude more than 6,000 m (19,685 ft) above sea level. The performance of the aircraft and its battery is limited when flying at high altitudes. Fly with caution.
6. The braking distance of the aircraft is affected by the flight altitude. The higher the altitude, the greater the braking distance. When flying at an altitude above 3,000 m (9,843 ft), the user should reserve at least 20 m of vertical braking distance and 30 m of horizontal braking distance to ensure flight safety.
7. GNSS cannot be used on the aircraft in the polar regions. Use the vision systems instead.
8. DO NOT take off from moving objects such as cars, ships, and airplanes.
9. DO NOT take off from solid-colored surfaces or surfaces with strong reflection such as a car roof.
10. DO NOT use the aircraft, remote controller, battery near accidents, fire, explosions, floods, tsunamis, avalanches, landslides, earthquakes, dust, sandstorms, salt spray, or fungus.
11. Operate the aircraft, remote controller, and battery in a dry environment.
12. DO NOT operate the aircraft in an environment at risk of a fire or explosion.
13. DO NOT operate the aircraft near bird flocks.

2.2. Operating the Aircraft Responsibly

To avoid serious injury and property damage, observe the following rules:

1. Make sure you are NOT under the influence of anesthesia, alcohol, or drugs or suffering from dizziness, fatigue, nausea, or other conditions that could impair the ability to operate the aircraft safely.
2. When landing, power off the aircraft first, then switch off the remote controller.
3. DO NOT drop, launch, fire, or otherwise project any dangerous payloads on or at any buildings, persons, or animals, which could cause personal injury or property damage.
4. DO NOT use an aircraft that has been crashed or accidentally damaged or an aircraft that is not in good condition.
5. Make sure to train sufficiently and have contingency plans for emergencies or when an incident occurs.
6. Make sure to have a flight plan. DO NOT fly the aircraft recklessly.
7. Respect the privacy of others when using the camera. Make sure to comply with local privacy laws, regulations, and moral standards.
8. DO NOT use this product for any reason other than general personal use.
9. DO NOT use it for illegal or inappropriate purposes such as spying, military operations, or unauthorized investigations.
10. DO NOT use this product to defame, abuse, harass, stalk, threaten, or otherwise violate legal rights such as the right to privacy and publicity of others.
11. DO NOT trespass onto the private property of others.
12. Make sure the drone owner is registered at his or her national authority (unless already registered).

2.3. Flight Limits

GEO (Geospatial Environment Online) System

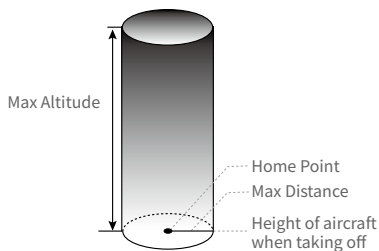
COGITO TECH's Geospatial Environment Online (GEO) System is a global information system that provides real-time information on flight safety and restriction updates and prevents UAVs from flying in restricted airspace. The GEO system may not fully comply with local laws and regulations. Users shall be responsible for their own flight safety and must consult with the local authorities on the relevant legal and regulatory requirements.

Flight Limits

For safety reasons, flight limits are enabled by default to help users operate this aircraft safely. Users can set flight limits on height and distance. Altitude limits, distance limits, and GEO zones function concurrently to manage flight safety when GNSS is available. Only altitude can be limited when GNSS is unavailable.

Flight Altitude and Distance Limits

Max altitude restricts an aircraft's flight altitude, while max distance restricts an aircraft's flight radius around the Home Point. These limits can be changed in the the SPECTA app for improved flight safety.



Home Point not manually updated during flight

Strong GNSS Signal

	Flight Restrictions	Prompt in the SPECTA App
Max Altitude	Altitude of the aircraft cannot exceed the value set in the SPECTA app.	Max flight altitude reached.
Max Distance	The straight-line distance from the aircraft to the Home Point cannot exceed the max flight distance set in the SPECTA app.	Max flight distance reached.

Weak GNSS Signal

	Flight Restrictions	Prompt in the SPECTA App
Max Altitude	<ul style="list-style-type: none"> Altitude is restricted to 30 m from the takeoff point if lighting is sufficient. Altitude is restricted to 3 m above the ground if lighting is not sufficient and the three-dimensional infrared sensing system is operating. Altitude is restricted to 30 m from the takeoff point if lighting is not sufficient and the three-dimensional infrared sensing system is not operating. 	Max flight altitude reached.
Max Distance	No limits	

- ⚠**
- The altitude limit of 3 m or 30 m when the GNSS is weak will be lifted if there was a strong GNSS signal (GNSS signal strength ≥ 2) when the aircraft was powered on.
 - If the aircraft reaches a limit, you can still control the aircraft, but you cannot fly it any further. If the aircraft flies out of the max radius, it will automatically fly back within range when the GNSS signal is strong.
 - For safety reasons, do not fly close to airports, highways, railway stations, railway lines, city centers, or other sensitive areas. Fly the aircraft only within your line of sight.

GEO Zones

COGITO TECH's GEO system designates safe flight locations, provides risk levels and safety notices for individual flights and offers information on restricted Airspace. All restricted flight areas are referred to as GEO Zones, which are further divided into Restricted Zones, Authorization Zones, Warning Zones, Enhanced Warning Zones, and Altitude Zones. Users can view such information in real-time in the the SPECTA app app. GEO Zones are specific flight areas, including but not limited to airports, large event venues, locations where public emergencies have occurred (such as forest fires), nuclear power plants, prisons, government properties, and military facilities. By default, the GEO system limits takeoffs and flights in zones that may cause safety or security concerns.

2.4. Pre-Flight Checklist


1. Make sure the gimbal protector is removed.
2. Make sure the remote controller and Intelligent Flight Battery are fully charged.
3. Make sure the aircraft arms are unfolded.
4. Make sure the Intelligent Flight Battery and the propellers are mounted securely.
5. Make sure the gimbal and camera are functioning normally.
6. Make sure that there is nothing obstructing the motors and that they are functioning normally.
7. Make sure that the SPECTA app is successfully connected to the aircraft.
8. Make sure all camera lenses and sensors are clean.
9. Only use genuine COGITO TECH parts or parts authorized by COGITO TECH. Unauthorized parts may cause the system to malfunction and compromise flight safety.
10. Make sure the Obstacle Avoidance Action is set in the SPECTA app, and the max flight altitude, max flight distance and RTH altitude are all set properly according to the local laws and regulations.

2.5. Basic Flight

Auto Takeoff/Landing


Auto Takeoff


Use the Auto Takeoff function:

1. Launch the SPECTA app and enter the camera view.
2. Complete all steps in the pre-flight checklist.
3. Tap . If conditions are safe for takeoff, press and hold the button to confirm.
4. The aircraft will take off and hover approximately 1.2 m (3.9 ft) above the ground.

Auto Landing

Use the Auto Landing function:

1. Tap . If conditions are safe for landing, press and hold the button to confirm.

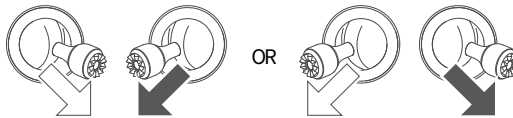
- 2. Auto landing can be cancelled by tapping .
- 3. If the Downward Vision System is working normally, Landing Protection will be enabled.
- 4. Motors will stop automatically after landing.

 • Choose the proper place for landing.

Starting/Stopping the Motors

Starting the Motors

Perform the Combination Stick Command (CSC) as shown below to start the motors. Once the motors have started spinning, release both sticks simultaneously.

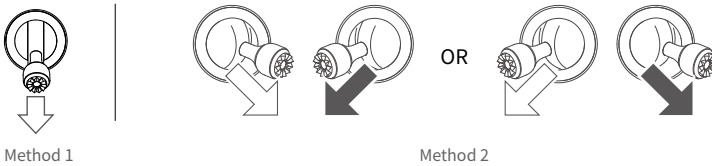


Stopping the Motors

When the aircraft is on the ground and the motors are spinning, there are two ways to stop the motors:

Method 1: When the aircraft has landed, push the throttle stick down and hold until the motors stop.

Method 2: When the aircraft has landed, perform the same CSC used to start the motors until the motors stop.



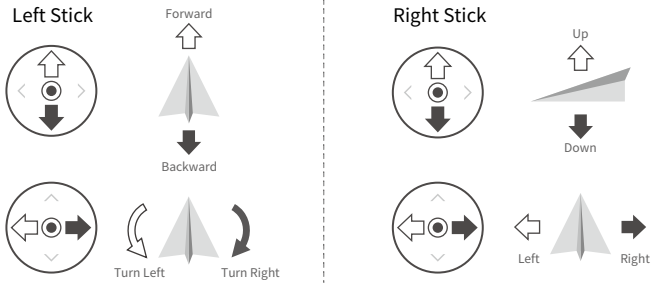
Stopping the Motors Mid-Flight

Stopping the motors mid-flight will cause the aircraft to crash. The default setting for Emergency Propeller Stop in the SPECTA app is Emergency Only, which means that the motors can only be stopped mid-flight when the aircraft is in an emergency situation such as the aircraft is involved in a collision, a motor has stalled, the aircraft is rolling in the air, or the aircraft is out of control and is ascending or descending very quickly. To stop the motors mid-flight, perform the same CSC that was used to start the motors. Note that the user needs to hold the control sticks for two seconds while performing the CSC to stop the motors. Emergency Propeller Stop can be changed to Anytime in the app by users. Use this option with caution.

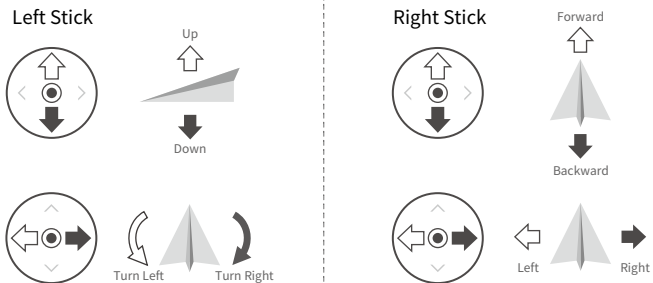
Controlling the Aircraft

The control sticks of the remote controller can be used to control the aircraft movements. The control sticks can be operated in Mode 1, Mode 2, or Mode 3, as shown below. The default control mode of the remote controller is Mode 2. Refer to the Remote Controller section for more details.

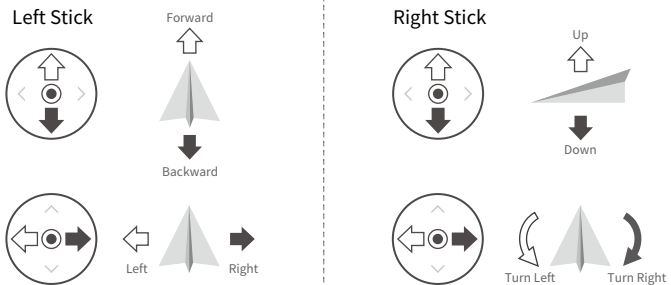
Mode 1



Mode 2



Mode 3



Takeoff/Landing Procedures

1. Place the aircraft in an open, flat area with the rear of the aircraft facing towards you.
2. Power on the remote controller and the aircraft.
3. Launch the SPECTA app and enter the camera view.
4. Tap Settings > Safety, and then set the Obstacle Avoidance Action to Bypass or Brake. Make sure to set an appropriate Max Altitude and RTH Altitude.
5. Wait for the aircraft self-diagnostics to complete. If the SPECTA app does not show any irregular warning, you can start the motors.
6. Push the throttle stick up slowly to take off.
7. To land, hover over a level surface and gently push the throttle stick down to descend.
8. The motors will stop automatically after landing.
9. Power off the aircraft before the remote controller.

Video Suggestions and Tips

1. The pre-flight checklist is designed to help you fly safely and shoot videos during flight. Go through the full pre-flight checklist before each flight.
2. Select the desired gimbal operation mode in the SPECTA app.
3. It is recommended to take photos or record videos when flying in Normal or Cine mode.
4. DO NOT fly in bad weather such as on rainy or windy days.
5. Choose the camera settings that best suit your needs.
6. Perform flight tests to establish flight routes and preview scenes.
7. Push the control sticks gently to ensure smooth and stable movement of the aircraft.



- Make sure to place the aircraft on a flat and steady surface before takeoff. DO NOT launch the aircraft from your palm or while holding it with your hand.
-

2.6. Intelligent Flight Mode

FocusTrack

FocusTrack includes Spotlight, Point of Interest, and ActiveTrack.

- 💡 • Refer to the Controlling the aircraft section in the Remote Controller chapter for more information about the roll, pitch, throttle, and yaw control sticks.
- The aircraft does not automatically take photos or record videos while using FocusTrack. Users need to manually control the aircraft to take photos or record videos.

	Spotlight	Point of Interest (POI)	ActiveTrack
Description	The camera remains locked on the subject. The user needs to manually control the flight.	The aircraft tracks the subject in a circle based on the set radius and flight speed.	The aircraft tracks the subject based on the selected tracking mode.
Control	Using the control sticks to move the aircraft: <ul style="list-style-type: none"> • Move the roll stick to circle the subject • Move the pitch stick to alter the distance from the subject • Move the throttle stick to change the altitude • Move the yaw stick to adjust the frame 	Using the control sticks to move the aircraft: <ul style="list-style-type: none"> • Move the roll stick to change the circling speed of the aircraft around the subject • Move the pitch stick to alter the distance from the subject • Move the throttle stick to change the altitude • Move the yaw stick to adjust the frame 	Using the control sticks to move the aircraft: <ul style="list-style-type: none"> • Move the roll stick to circle the subject • Move the pitch stick to alter the distance from the subject • Move the throttle stick to change the altitude • Move the yaw stick to adjust the frame
Obstacle Avoidance	When the vision systems are working normally, the aircraft will hover if an obstacle is detected, regardless of whether the obstacle avoidance action is set to Bypass or Brake in the SPECTA app. Note: obstacle avoidance is disabled in Sport mode.	The aircraft will bypass obstacles regardless of the flight modes or obstacle avoidance action setting in the SPECTA app when the vision systems are working normally.	

ActiveTrack

- **Trace:** There are eight types of tracking directions: Front, Back, Left, Right, Front Diagonal Left, Front Diagonal Right, Back Diagonal Left, and Back Diagonal Right. After setting the tracking direction, the aircraft will follow the subject from the tracking direction relative to the direction of the subject movements.
- **Parallel:** The aircraft tracks the subject while maintaining the same geographical orientation in relation to the subject.

Using FocusTrack

1. Launch the aircraft.
2. Drag-select the subject in the camera view or enable Subject Scanning under Control settings in the SPECTA app and tap the recognized subject to enable FocusTrack.
 - a. The aircraft enters Spotlight by default and does not fly automatically. The user needs to manually control the flight of the aircraft by using the control sticks. Tap the shutter/record button on the camera view in the SPECTA app or press the shutter/record button on the remote controller to start shooting.
 - b. Tap on the bottom of the screen to switch to Point of Interest. After setting the flight direction and speed, tap GO and the aircraft will automatically start circling around the subject at the current altitude. The user can also move the control sticks to manually control the flight while the aircraft is automatically flying. Tap the shutter/record button on the camera view in the SPECTA app or press the shutter/record button on the remote controller to start shooting.
 - c. Tap on the bottom of the screen to switch to ActiveTrack. In Trace mode, the tracking direction can be changed using the direction wheel (Front, Back, Left, Right, Front Diagonal Left, Front Diagonal Right, Back Diagonal Left, and Back Diagonal Right). The direction wheel will be minimized if there is no operation for an extended period or any other area of the screen is tapped.


Swipe the mode icon in the center of the direction wheel left or right to switch between Trace or Parallel. The tracking direction will be automatically set to back once Trace is selected again. Tap GO, the aircraft will start tracking the subject automatically. The user can also move the control sticks to manually control the flight while the aircraft is automatically flying. Tap the shutter/record button on the camera view in the SPECTA app or press the shutter/record button on the remote controller to start shooting.

Exiting FocusTrack

In Point of Interest or ActiveTrack, press the Flight Pause button once on the remote controller or tap Stop on the screen to return to Spotlight.

In Spotlight, press the Flight Pause button once on the remote controller to exit FocusTrack.

After exiting FocusTrack, tap  to view the footage in Playback.


-
-  • DO NOT use FocusTrack in areas with people and animals running or vehicles moving.
 - DO NOT use FocusTrack in areas with small or thin objects (e.g., tree branches or power lines), transparent objects (e.g., water or glass), or monochrome surfaces (e.g., white walls).
 - Always be prepared to press the Flight Pause button on the remote controller or tap Stop in the SPECTA app to operate the aircraft manually in case any emergency situation occurs.
 - Be extra vigilant when using FocusTrack in any of the following situations:
 - a. The tracked subject is not moving on a level plane.
 - b. The tracked subject changes shape drastically while moving.
 - c. The tracked subject is out of sight for an extended period.
 - d. The tracked subject is moving on a snowy surface.

- e. The tracked subject has a similar color or pattern to its surrounding environment.
 - f. The lighting is extremely dark (<300 lux) or bright (>10,000 lux).
 - Make sure to follow local privacy laws and regulations when using FocusTrack.
 - It is recommended to only track vehicles, boats, and people (but not children). Fly with caution when tracking other subjects.
 - In supported moving subjects, vehicles refer to cars and small to medium-sized yachts. DO NOT track a remotely controlled model car or boat.
 - The tracking subject may be inadvertently swapped to another subject if they pass nearby each other.
 - ActiveTrack is unavailable when the lighting is insufficient and the vision systems are unavailable. Spotlight and POI for static subjects can still be used, but obstacle sensing is not available.
 - FocusTrack is unavailable in the Night video mode.
 - FocusTrack is unavailable when the aircraft is on the ground.
 - FocusTrack may not function properly when the aircraft is flying near flight limits or in a GEO Zone.
 - If the subject is obstructed and is lost by the aircraft, the aircraft will keep flying at the current speed and orientation for 8 seconds to try to re-identify the subject. If the aircraft fails to re-identify the subject in 8 seconds, it will exit ActiveTrack automatically.
-


MasterShots


MasterShots keeps the subject at the center of the frame while executing different maneuvers in sequence to generate a short cinematic video.

Using MasterShots

1. Launch the aircraft and make it hover at least 2 m (6.6 ft) above ground.
2. In the SPECTA app, tap the shooting mode icon to select MasterShots and read the instructions. Make sure you understand how to use MasterShots and there are no obstacles in the surrounding area.
3. Drag-select the subject in the camera view, and set the flight range. Enter the map view to check the estimated flight range and flight paths, and ensure there is no obstacle in the flight range, such as high buildings. Tap Start, the aircraft will start flying and recording automatically. The aircraft will fly back to its original position once recording is finished.
4. Tap  to access the video.

Exiting MasterShots


Press the Flight Pause button once or tap  in the SPECTA app to exit MasterShots. The aircraft will brake and hover in place.


-
-  • Use MasterShots at locations that are clear of buildings and other obstacles. Make sure there are no humans, animals, or other obstacles in the flight path. When the lighting is sufficient and the environment is suitable for vision systems, the aircraft will brake and hover in place if there is an obstacle detected.


- Always pay attention to objects around the aircraft and use the remote controller to avoid collisions or the aircraft getting obstructed.
 - DO NOT use MasterShots in any of the following situations:
 - a. When the subject is blocked for an extended period or outside the line of sight.
 - b. When the subject is similar in color or pattern with the surroundings.
 - c. When the subject is in the air.
 - d. When the subject is moving fast.
 - e. The lighting is extremely dark (< 300 lux) or bright (> 10,000 lux).
 - DO NOT use MasterShots in places close to buildings or where the GNSS signal is weak. Otherwise, the flight path may become unstable.
 - Make sure to follow local privacy laws and regulations when using MasterShots.
 - Only when using the wide-angle camera to take MasterShots will the aircraft automatically select one of the three flight routes based on the subject type and distance (portrait, proximity, or landscape). There is only one flight route when using the medium tele camera to take MasterShots, regardless of the subject type and distance.
-


QuickShots


QuickShots shooting modes include Dronie, Rocket, Circle, Helix, Boomerang, and Asteroid.


 **Dronie:** The aircraft flies backward and ascends with the camera locked on the subject.


 **Rocket:** The aircraft ascends with the camera pointing downward.

 **Circle:** The aircraft circles around the subject.

 **Helix:** The aircraft ascends and spirals around the subject.


 **Boomerang:** The aircraft flies around the subject in an oval path, ascending as it flies away from its starting point and descending as it flies back. The starting point of the aircraft forms one end of the long axis of the oval, while the other end is at the opposite side of the subject from the starting point.

 **Asteroid:** The aircraft flies backward and upward, takes several photos, and then flies back to the starting point. The video generated starts with a panorama of the highest position and then shows the view from the aircraft as it descends.


-
-  • Make sure there is sufficient space when using Boomerang. Allow a radius of at least 30 m (99 ft) around the aircraft and a space of at least 10 m (33 ft) above the aircraft.
- Make sure there is sufficient space when using Asteroid. Allow at least 40 m (131 ft) behind and 50 m (164 ft) above the aircraft.
 - The medium tele camera does not support the Asteroid mode in QuickShots.
-

Using QuickShots


1. Launch the aircraft and make it hover at least 2 m (6.6 ft) above ground.
2. In the SPECTA app, tap the shooting mode icon to select QuickShots and follow the prompts. Make sure you understand how to use QuickShots and there are no obstacles in the surrounding area.

3. Choose a shooting mode, drag-select the subject in the camera view. Tap Start, the aircraft will start flying and recording automatically. The aircraft will fly back to its original position once recording is finished.
4. Tap  to access the video.

Exiting QuickShots


Press the Flight Pause button once or tap  in the SPECTA app to exit QuickShots. The aircraft will brake and hover. Tap the screen again and the aircraft will continue shooting.

Note: if you accidentally move a control stick, the aircraft will exit QuickShots and hover in place.

-
-  • Use QuickShots at locations that are clear of buildings and other obstacles. Make sure there are no people, animals, or other obstacles in the flight path. The aircraft will brake and hover if an obstacle is detected.
 - Always pay attention to objects around the aircraft and use the remote controller to avoid collisions or the aircraft getting obstructed.
 - DO NOT use QuickShots in any of the following situations:
 - a. When the subject is blocked for an extended period or outside the line of sight.
 - b. When the subject is more than 50 m away from the aircraft.
 - c. When the subject is similar in color or pattern with the surroundings.
 - d. When the subject is in the air.
 - e. When the subject is moving fast.
 - f. When the lighting is extremely dark (< 300 lux) or bright (> 10,000 lux).
 - DO NOT use QuickShots in places close to buildings or where the GNSS signal is weak. Otherwise, the flight path will become unstable.
 - Make sure to follow local privacy laws and regulations when using QuickShots.
-

Hyperlapse

Hyperlapse shooting modes include Free, Circle, Course Lock, and Waypoint.

-
-  • After selecting the Hyperlapse shooting mode, go to Settings > Camera > Hyperlapse in the SPECTA app to select the photo type of the original hyperlapse photos to be saved, or select Off to not save any original hyperlapse photos.
-

Free

The aircraft automatically takes photos and generates a timelapse video. Free mode can be used while the aircraft is on the ground. After takeoff, control the aircraft's movements and gimbal angle using the remote controller.

Follow the steps below to use Free:

1. Set the interval time, video duration, and max speed. The screen displays the number of photos that will be taken and the shooting duration.
2. Tap the shutter/record button to begin.

Circle

The aircraft automatically takes photos while flying around the selected subject to generate a timelapse video.

Follow the steps below to use Circle:

1. Set the interval time, video duration, max speed, and circle direction. The screen displays the number of photos that will be taken and the shooting duration.
2. Drag-select a subject on the screen. Use the yaw stick and gimbal dial to adjust the frame.
3. Tap the shutter/record button to begin.

Course Lock

Course Lock allows the user to lock the flight direction. While doing so, the user may either select a subject for the camera to point toward while taking hyperlapse photos, or not select any subject while being able to control the aircraft orientation and gimbal.

Follow the steps below to use Course Lock:

1. Adjust the aircraft to the desired orientation, and then lock the current orientation as the flight direction.
2. Set the interval time, video duration, and max speed. The screen displays the number of photos that will be taken and the shooting duration.
3. If applicable, drag-select a subject. After selecting the subject, the aircraft will automatically adjust the orientation or gimbal angle to center the subject in the camera view. In this case, the frame cannot be adjusted manually.
4. Tap the shutter/record button to begin. Move the pitch stick and roll stick to control the horizontal flight speed and briefly alter the aircraft orientation. Move the throttle stick to control the vertical flight speed.

Waypoints

The aircraft automatically takes photos on a flight path of multiple waypoints and generates a timelapse video. The aircraft can fly in sequence from the first waypoint to the final waypoint or in reverse order.

Follow the steps below to use Waypoints:

1. Set the desired waypoints. Fly the aircraft to the desired locations and adjust the aircraft orientation and the gimbal angle.
2. Set the interval time, video duration, and max speed. The screen displays the number of photos that will be taken and the shooting duration.
3. Tap the shutter/record button to begin.

The aircraft will generate a timelapse video automatically, which is viewable in playback.



• For optimal performance, use Hyperlapse at an altitude higher than 50 m and set a difference of at least two seconds between the interval time and shutter.


- It is recommended to select a static subject (e.g., high-rise buildings, mountainous terrain) located at a safe distance from the aircraft (further than 15 m). Do not select a subject that is too close to the aircraft, people, or a moving car, etc.
 - When the lighting is sufficient and the environment is suitable for the vision systems to operate, the aircraft will brake and hover in place if an obstacle is detected during Hyperlapse. If the lighting becomes insufficient or the environment is unsuitable for the vision systems to operate during Hyperlapse, the aircraft will continue shooting without obstacle sensing. Fly with caution.
 - The aircraft will only generate a video after at least 25 photos have been taken, which is the amount required to generate a one-second video. The video will be generated by default regardless of whether Hyperlapse concludes normally or the aircraft exits from the mode unexpectedly (such as when Low Battery RTH is triggered).
-

Waypoint Flight


Waypoint Flight enables the aircraft to capture images during a flight according to the waypoint flight route generated by the preset waypoints. Points of Interest (POI) can be linked to the waypoints. The heading will point toward the POI during flight. A waypoint flight route can be saved and repeated.

Using Waypoint Flight


1. Enable Waypoint Flight

Tap  on the left of the camera view in the SPECTA app to enable Waypoint Flight.

2. Plan a Waypoint Flight

Tap  on the operation panel to set the parameters for the flight route such as Global Speed, Camera, the behavior of End of Flight, On Signal Lost, and Start Point. The settings apply to all waypoints.

Global Speed	The default flight speed of the entire flight route. Drag the speed bar to set the global speed.
Camera	Select the camera which will perform the preset shooting actions during the entire flight route: 1-3x (wide-angle camera) or 3-9x (medium tele camera).
End of Flight	The behavior of the aircraft after the flight task ends. It can be set to Hover, RTH, Land, or Back to Start.
On Signal Lost	The behavior of the aircraft when the remote controller signal is lost during flight. It can be set to RTH, Hover, Land, or Continue.
Start Point	After selecting the start waypoint, the flight route will be started from this waypoint to the subsequent waypoints.


-  • Make sure to select the camera before pinning waypoints. If 1-3x (wide-angle camera) is selected, the custom range of the zoom ratio for all waypoints on this route is 1-3x. If 3-9x (medium tele camera) is selected, the custom range of the zoom ratio for all waypoints on this route is 3-9x.
-

3. Waypoint Settings

a. Pin Waypoint

Waypoints can be pinned via the map before takeoff.

Waypoints can be pinned via the remote controller, operation panel, and map after takeoff. In this case, GNSS is required.

- Using the Remote Controller: Press once the C1 button to pin a waypoint.
- Using the Operation Panel: Tap  on the operation panel to pin a waypoint.
- Using the Map: Enter the map view and tap on the map to pin a waypoint.

Press and hold on a waypoint to move its position on the map.



- When setting a waypoint, it is recommended to fly to the location for a more accurate and smoother imaging result.
- The aircraft horizontal GNSS position, altitude from the takeoff point, heading, gimbal tilt, and camera zoom ratio will be recorded if the waypoint is pinned via the remote controller or the operation panel.
- If the user need to add waypoints during the flight, make sure to use the camera selected in the flight route parameters. When the user switches to other camera in the camera view while adding waypoints during the flight, the zoom ratio of the waypoints created with the other camera cannot be recorded by the aircraft, and the zoom setting of these waypoints will be restored to manual.
- Connect the remote controller to the internet and download the map before using the map to pin a waypoint. When the waypoint is pinned via the map, only the aircraft horizontal GNSS can be recorded, and the default altitude of the waypoint is set to 50 m.



- The flight route will curve between waypoints, so the aircraft altitude between waypoints may become lower than the altitudes of the waypoints during the flight. Make sure to avoid any obstacles below when setting a waypoint.

b. Settings


Tap the waypoint number for settings. The waypoint parameters are described as follows:

Camera Action	The camera action at the waypoint. Choose between None, Take Photo, and Start or Stop Recording.
Altitude	The altitude at the waypoint from the takeoff point. Make sure to take off at the same takeoff altitude of the original flight to obtain higher accuracy of altitude when a Waypoint Flight is repeated.
Speed	The flight speed from the current waypoint to the next waypoint. <ul style="list-style-type: none">• Global Speed: the aircraft will fly at the set global speed from the current waypoint to the next waypoint.• Custom: the aircraft will smoothly accelerate or decelerate from the current waypoint to the next waypoint, and reach the custom speed during the process.
Heading	The aircraft heading at the waypoint. <ul style="list-style-type: none">• Follow Course: the heading of the aircraft is the same as the horizontal tangent to the flight route.• POI ^[1]: tap the POI number to point the aircraft heading toward the specific POI.• Manual: the aircraft heading can be adjusted by the user during a Waypoint Flight.• Custom: drag the bar to adjust the heading. The heading can be previewed in the map view.

Gimbal Tilt	<p>The gimbal tilt at the waypoint.</p> <ul style="list-style-type: none"> • POI^[1]: tap the POI number to point the camera toward the specific POI. • Manual: the gimbal tilt between the previous waypoint and the current waypoint can be adjusted by the user during a Waypoint Flight. • Custom: drag the bar to adjust the tilt of the gimbal.
Zoom	<p>The camera zoom at the waypoint.</p> <ul style="list-style-type: none"> • Digital Zoom (1-3x / 3-9x): drag the bar to adjust the zoom ratio. • Manual: the zoom ratio between the previous waypoint and the current waypoint can be adjusted by the user during a Waypoint Flight. • Auto^[2]: the zoom ratio from the previous waypoint to the next waypoint will be adjusted smoothly by the aircraft.
Hovering Time	<p>The duration of the aircraft hovering at the current waypoint.</p>

[1] Before selecting POI for heading or gimbal tilt, make sure there are POIs in the flight route. If a POI is linked to a waypoint, the heading and gimbal tilt of the waypoint will be reset to toward the POI.

[2] The zoom of the Start Point and the End Point cannot be set to auto.

All the settings except camera action can be applied to all the waypoints after selecting Apply to All. Tap  to delete the currently selected waypoint.

4. POI Settings

Tap POI on the operation panel to switch to POI settings. Use the same method to pin a POI as used with a waypoint.

Tap the POI number to set the altitude of the POI and link the POI to waypoints.

Multiple waypoints can be linked to the same POI, and the camera will point toward the POI during the Waypoint Flight.


5. Perform a Waypoint Flight






- Check the Obstacle Avoidance Action settings in the Settings > Safety page of the SPECTA app before performing a Waypoint Flight. When set to Bypass or Brake, the aircraft will brake and hover in place if an obstacle is detected during the Waypoint Flight. The aircraft cannot sense obstacles if the Obstacle Avoidance Action is disabled. Fly with caution.
- Observe the environment and ensure there are no obstacles on the route before performing a Waypoint Flight.
- Make sure to maintain visual line of sight (VLOS) of the aircraft. Always be prepared to press the flight pause button in case any emergency situation occurs.





- Tap GO, the aircraft will automatically switch to the camera selected in the flight route parameters setting page. DO NOT switch to the other camera manually.
- When the remote controller signal is lost during flight, the aircraft will perform the action set in On Signal Lost.
- When the Waypoint Flight is finished, the aircraft will perform the action set in End of Flight.


a. Tap Next or ... on the operation panel to enter the flight route parameters setting page and check again. Users can change the Start Point if necessary. Tap GO to upload the waypoint flight task. Tap  to cancel the uploading process and return to the flight route parameters setting page.


- b. The waypoint flight task will be performed after being uploaded. The flight duration, waypoints, and distance will be displayed on the camera view. The pitch stick can be used to change the flight speed during a Waypoint Flight.
- c. Tap  to pause the Waypoint Flight after the task begins. Tap  to continue the Waypoint Flight. Tap  to stop Waypoint Flight and return to the waypoint flight edit status.

6. Library


When planning a Waypoint Flight, the task will be generated automatically and saved every minute. Tap  on the left to enter Library and save the task manually.

- In the flight route library, users can check the saved tasks, and tap to open or edit a task.
- Tap  to edit the name of the task.
- Slide left to delete a task.
- Tap the icon on the top right corner to change the order the tasks are displayed.

: tasks will be sorted based on the date they were saved.

: tasks will be sorted based on the distance between the current position of the remote controller and the start waypoints, from closest to farthest.

7. Exit Waypoint Flight

Tap  to exit Waypoint Flight. Tap Save and Exit to save the task to Library and exit.

Cruise Control

The Cruise Control function enables the aircraft to lock the current control stick input of the remote controller when conditions permit, and to automatically fly at the speed corresponding to the current control stick input. Without the need to continually move the control sticks, long-distance flights become more effortless, and image shaking which often happens during manual operating can be avoided. More camera movements such as spiraling up can be achieved by increasing the control stick input.

Using Cruise Control


1. Set the Cruise Control Button

Go to the SPECTA app, select System Settings > Control and then set the customizable button of the remote controller to Cruise Control.

2. Enter Cruise Control

- Press the cruise control button while pushing the control stick, then the aircraft will automatically fly at the current speed corresponding to the control stick input. Once the cruise control speed is set, the control stick can be released.
- Before the control stick returns to the center, press the cruise control button again to reset the flight speed based on the current control stick input.
- Push the control stick after it returns to the center, the aircraft will fly at the updated speed based on the previous speed. In this case, press the cruise control button again, and the aircraft will automatically fly at the updated speed.

3. Exit Cruise Control

Press the cruise control button without a control stick input, press the flight pause button on the remote controller, or tap  on the screen to exit cruise control. The aircraft will brake and hover.

-
- ⚠ • Cruise control is available when the user is manually operating the aircraft in Normal, Cine, and Sport mode. Cruise control is also available when using APAS, Free Hyperlapse, and Spotlight.
- Cruise control cannot be started without a control stick input.
 - The aircraft cannot enter or will exit Cruise Control in the following situations:
 - a. When near the max altitude or max distance.
 - b. When the aircraft disconnects from the remote controller or the SPECTA app.
 - c. When the aircraft senses an obstacle and thus brakes and hovers in place.
 - d. During RTH or auto landing.
 - Cruise control will exit automatically when switching flight modes.
 - The obstacle sensing in Cruise Control follows the current flight mode. Fly with caution.
-

3. Aircraft

Specta Air includes a flight controller, video downlink system, vision system, propulsion system, and an Intelligent Flight Battery.

3.1. Flight Modes

Specta Air has three flight modes, plus a fourth flight mode that the aircraft switches to in certain scenarios. Flight modes can be switched via the Flight Mode switch on the remote controller.

Normal Mode

The aircraft utilizes GNSS, the omnidirectional vision system, the downward vision system, and the three-dimensional infrared sensing system to locate and stabilize itself. When the GNSS signal is strong, the aircraft uses GNSS to locate itself and stabilize. When the GNSS is weak, but the lighting and other environmental conditions are sufficient, the aircraft uses the vision systems for positioning. When the vision systems are enabled, and lighting and other environmental conditions are sufficient, the maximum pitch angle is 30° and the maximum flight speed is 12 m/s.

Sport Mode

In Sport Mode, the aircraft utilizes GNSS and the downward vision system for positioning, and the aircraft responses are optimized for agility and speed, making it more responsive to control stick movements. The maximum flight speed is 21 m/s. Note that obstacle sensing is disabled in Sport Mode.

Cine Mode

Cine mode is based on Normal mode with a limited flight speed, making the aircraft more stable during shooting.

The aircraft automatically changes to Attitude (ATTI) mode when the vision systems are unavailable or disabled and when the GNSS signal is weak or the compass experiences interference. In ATTI mode, the aircraft may be more easily affected by its surroundings. Environmental factors such as wind can result in horizontal shifting, which may present hazards especially when flying in confined spaces. The aircraft will not be able to hover or brake automatically, therefore the pilot should land the aircraft as soon as possible to avoid accidents.



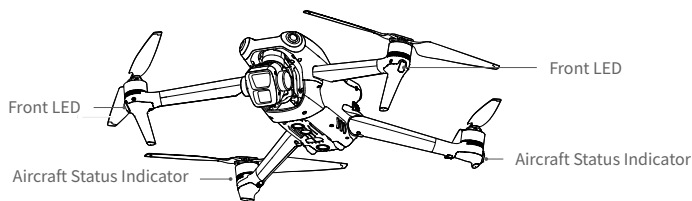
• The flight modes are only effective for manual flight and cruise control.



- The vision systems are disabled in Sport mode, which means the aircraft cannot sense obstacles on its route automatically. The user must stay alert to the surrounding environment and control the aircraft to avoid obstacles.
 - The maximum speed and braking distance of the aircraft significantly increase in Sport mode. A minimum braking distance of 30 m is required in windless conditions.
 - A minimum braking distance of 10 m is required in windless conditions while the aircraft is ascending and descending in Sport mode or Normal mode.
 - The responsiveness of the aircraft significantly increases in Sport mode, which means a small control stick movement on the remote controller translates into the aircraft moving a large distance. Make sure to maintain adequate maneuvering space during flight.
-

3.2. Aircraft Status Indicator

Specta Air has front LEDs and aircraft status indicators.



When the aircraft is powered on but the motors are not running, the front LEDs glow solid green.

When the aircraft is powered on but the motors are not running, the aircraft status indicators will display the current status of the flight control system. Refer to the table below for more information about the aircraft status indicators.

Aircraft Status Indicator Descriptions

Normal States

	Blinks red, yellow, and green alternately	Powering on and performing self-diagnostic tests
	Blinks green slowly	GNSS enabled
	Blinks green twice repeatedly	Vision systems enabled

Warning States

	Blinks yellow quickly	Remote controller signal lost
	Blinks red slowly	Takeoff is disabled, e.g. low battery*
	Blinks red quickly	Critically low battery
	Solid red	Critical error
	Blinks red and yellow alternately	Compass calibration required



* If the aircraft cannot take off while the status indicators are blinking red slowly, view the warning prompt in the SPECTA app.

After the motor starts, the front LEDs blink green, and the aircraft status indicators blink red and green alternately.

- ⚠ • To obtain better footage, the front LEDs turn off automatically when shooting if the front LEDs are set to auto in the SPECTA app. Lighting requirements vary depending on the region. Observe local laws and regulations.


3.3. Return to Home

The Return to Home (RTH) function brings the aircraft back to the last recorded Home Point. The RTH can be triggered in three ways: the user actively triggers RTH, the aircraft has low battery, or the control signal between the remote controller and the aircraft is lost. If the aircraft records the Home Point successfully and the positioning system is functioning normally, when the RTH function is triggered, the aircraft will automatically fly back and land at the Home Point.

	GNSS	Descriptions
Home Point		<p>The first location where the aircraft receives a strong to moderately strong GNSS signal (indicated by a white icon) will be recorded as the default Home Point. The Home Point can be updated before takeoff as long as the aircraft receives another strong to moderately strong GNSS signal. If the signal is weak, the Home Point will not be updated. After the Home Point is recorded, the SPECTA app will issue a voice prompt.</p> <p>If it is necessary to update the Home Point during a flight (such as where the position of the user has changed), the Home Point can be manually updated in Settings > Safety page in the SPECTA app.</p>


Advanced RTH

When Advanced RTH is triggered, the aircraft will automatically plan the best RTH path, which will be displayed in the SPECTA app and will adjust according to the environment.

If the control signal between the remote controller and the aircraft is good, exit RTH by tapping  in the SPECTA app or by pressing the RTH button on the remote controller. After exiting RTH, users will regain control of the aircraft.

Trigger Method

- **The user actively triggers RTH**

Advanced RTH can be initiated either by tapping  in the SPECTA app or by pressing and holding the RTH button on the remote controller until it beeps.

- **Aircraft low battery**

When the Intelligent Flight Battery level is too low and there is not enough power to return home, land the aircraft as soon as possible.

To avoid unnecessary danger caused by insufficient power, the aircraft automatically calculates if the battery power is sufficient to return to the Home Point according to the current position, environment, and flight speed. A warning prompt will appear in the SPECTA app when the battery level is low and only enough to complete an RTH flight. The aircraft will automatically fly to the Home Point if no action is taken after a countdown.

The user can cancel RTH by pressing the RTH button on the remote controller. If RTH is canceled following the warning, the Intelligent Battery may not have enough power for the aircraft to land safely, which may lead to the aircraft crashing or being lost.

The aircraft will land automatically if the current battery level can only support the aircraft long enough to descend from its current altitude. Auto landing cannot be canceled, but the remote controller can be used to control the horizontal movement and the descent speed of the aircraft during landing. If there is sufficient power, the throttle stick can be used to make the aircraft ascend at a speed of 1 m/s.

During auto landing, move the aircraft horizontally to find an appropriate place to land as soon as possible. The aircraft will fall if the user keeps pushing the throttle stick upward until the power is depleted.

- **Loss of remote controller signal**

The action of the aircraft when the remote controller signal is lost can be set to RTH, land, or hover in Setting >Safety > Advanced Safety Settings in the SPECTA app. If the action is set to RTH, the Home Point was successfully recorded and the compass is functioning normally, Failsafe RTH automatically activates after the remote controller signal is lost for more than six seconds.

When the lighting is sufficient and the environment is suitable for the vision systems to work normally, the SPECTA app will display the RTH path that was generated by the aircraft before the remote controller signal was lost. The aircraft will start RTH using Advanced RTH according to the RTH settings. The aircraft will remain in RTH even if the remote controller signal is restored. The SPECTA app will update the RTH path accordingly.

When the lighting is not sufficient or the environment is not suitable for the vision systems to work normally, the aircraft will enter Original Route RTH. The aircraft will enter or remain in Preset RTH if the remote controller signal is restored during RTH. The Original Route RTH procedure is as follows:

1. The aircraft brakes and hovers in place.
2. When RTH begins:
 - If the RTH distance (the horizontal distance between the aircraft and the Home Point) is farther than 50 m, the aircraft adjusts its orientation and flies backward for 50 m on its original flight route before entering Preset RTH.
 - If the RTH distance is farther than 5 m but less than 50 m, it adjusts its orientation and flies to the Home Point in a straight line at the current altitude.
 - The aircraft lands immediately if the RTH distance is less than 5 m.
3. The aircraft begins to land when it reaches above the Home Point.



- If RTH is triggered through the SPECTA app and the RTH distance is farther than 5 m, the SPECTA app will display the two following options: RTH and Landing. Users can select either RTH or directly land the aircraft.
 - The aircraft may not be able to return to the Home Point normally if the positioning system is functioning abnormally. During Failsafe RTH, the aircraft may enter ATTI mode and land automatically if the positioning system is functioning abnormally.
 - It is important to set a suitable RTH altitude before each flight. Launch the SPECTA app and set the RTH altitude. The default RTH altitude is 100 m.
 - The aircraft cannot sense obstacles during Failsafe RTH if the vision systems are unavailable.
 - GEO zones may affect the RTH. Avoid flying near GEO zones.
 - The aircraft may not be able to return to a Home Point when the wind speed is too high. Fly with caution.
 - Pay extra attention to small or fine objects (such as tree branches or power lines) or transparent objects (such as water or glass) during RTH. Exit RTH and control the aircraft manually in an emergency.
-

RTH Procedure

1. The Home Point is recorded.
2. Advanced RTH is triggered.
3. The aircraft brakes and hovers in place. When RTH begins:
 - The aircraft lands immediately if the RTH distance is less than 5 m.
 - If the RTH distance is farther than 5 m, the aircraft will adjust its orientation to the Home Point and plan the best path according to the RTH settings, lighting, and environmental conditions.
4. The aircraft will fly automatically according to the RTH settings, environment, and transmission signal during RTH.
5. The aircraft lands and the motors stop after reaching the Home Point.

RTH Settings

RTH settings are available for Advanced RTH. Go to the camera view in the SPECTA app, tap Settings > Safety, and then RTH.

1. Optimal:



- If the lighting is sufficient and the environment is suitable for the vision systems, the aircraft will automatically plan the optimal RTH path and adjust the altitude according to environmental factors, such as obstacles and transmission signals, regardless of the RTH Altitude setting. The optimal RTH path means the aircraft will travel the shortest distance possible to reduce the amount of battery power used and to increase flight time.
- If the lighting is insufficient or the environment is not suitable for the vision systems, the aircraft will execute Preset RTH based on the RTH Altitude setting.

2. Preset:



Lighting and Environment Conditions		Suitable for Vision Systems	Unsuitable for Vision Systems
RTH distance > 50 m	Current altitude < RTH altitude	The aircraft will plan the RTH path, fly to an open area while bypassing obstacles, ascend to the RTH Altitude, and return to home using the best path.	The aircraft will ascend to the RTH altitude, and fly to the Home Point in a straight line at the RTH altitude.
	Current altitude \geq RTH altitude	The aircraft will return to home using the best path at the current altitude.	The aircraft will fly to the Home Point in a straight line at the current altitude.
RTH distance is within 5-50 m			

When the aircraft is approaching the Home Point, if the current altitude is higher than the RTH altitude, the aircraft will intelligently decide whether to descend while flying forward according to the surrounding environment, lighting, the set RTH altitude, and the current altitude. When the aircraft reaches above the Home Point, the current altitude of the aircraft will not be lower than the set RTH altitude. **Note that when the lighting is insufficient or the environment is not suitable for the vision systems, the aircraft cannot avoid obstacles. Make sure to set a safe RTH altitude and pay attention to the surrounding environment to ensure flight safety.**

The RTH plans for different environments, RTH trigger methods, and RTH settings are as follows:

Lighting and Environment Conditions	Suitable for Vision Systems	Unsuitable for Vision Systems
		The aircraft can bypass obstacles and GEO zones
The user actively triggers RTH aircraft low battery	The aircraft will execute RTH based on the RTH setting: <ul style="list-style-type: none"> • Optimal • Preset 	Preset
Loss of remote controller signal		Original route RTH, Preset RTH will be executed when the signal is restored

- ⚠ During Advanced RTH, the aircraft will adjust the flight speed automatically to suit environmental factors such as wind speed and obstacles.
- The aircraft cannot avoid small or fine objects such as tree branches or power lines. Fly the aircraft to an open area before using RTH.
- Set Advanced RTH as Preset if there are power lines or towers that the aircraft cannot bypass on the RTH path and make sure the RTH Altitude is set higher than all obstacles.
- The aircraft will brake and return to home according to the latest settings if the RTH settings are changed during RTH.
- If the max altitude is adjusted below the current altitude during RTH, the aircraft will descend to the max altitude first and then continue returning to home.
- The RTH Altitude cannot be changed during RTH.

- If there is a large difference between the current altitude and the RTH altitude, the amount of battery power used cannot be calculated accurately due to wind speed difference at different altitudes. Pay extra attention to the battery power prompts and warning prompts in the SPECTA app.
 - During Advanced RTH, the aircraft will enter Preset RTH if the lighting condition or environment becomes unsuitable for the vision systems. In this case, the aircraft cannot bypass the obstacles. An appropriate RTH altitude must be set before entering RTH.
 - When the remote controller signal is normal during Advanced RTH, the pitch stick can be used to control the flight speed, but the orientation and altitude cannot be controlled and the aircraft cannot be controlled to fly to the left or right. Constantly pushing the pitch stick to accelerate will increase the battery power consumption speed. The aircraft cannot bypass obstacles if the flight speed exceeds the effective sensing speed. The aircraft will brake and hover in place and exit RTH if the pitch stick is pushed all the way down. The aircraft can be controlled after the pitch stick is released.
 - If the aircraft reaches the altitude limit of the aircraft current location or of the Home Point while it is ascending during Preset RTH, the aircraft stops ascending and returns to the Home Point at the current altitude. Pay attention to flight safety during RTH.
 - If the Home Point is within the Altitude Zone but the aircraft is not, when the aircraft reaches the Altitude Zone it will descend below the altitude limit, which may be lower than the set RTH altitude. Fly with caution.
 - The aircraft will bypass any GEO zones encountered when it is flying forward during Advanced RTH. Fly with caution.
 - The aircraft will exit RTH if the surrounding environment is too complex to complete RTH, even if the vision systems are working properly.
-

Landing Protection

Landing Protection will activate during RTH.

Landing Protection is enabled once the aircraft begins to land.

1. During Landing Protection, the aircraft will automatically detect and carefully land on suitable ground.
2. If the ground is determined unsuitable for landing, the aircraft will hover and wait for pilot confirmation.
3. If Landing Protection is not operational, the SPECTA app will display a landing prompt when the aircraft descends to 0.5 m from the ground. Tap confirm or push the throttle stick all the way down and hold for one second, and the aircraft will land.

Precision Landing

The aircraft automatically scans and attempts to match the terrain features below during RTH. The aircraft will land when the current terrain matches the Home Point. A prompt will appear in the SPECTA app if the terrain match fails.



• Landing Protection is activated during Precision Landing.

• The performance of Precision Landing is subject to the following conditions:

- a. The Home Point must be recorded upon takeoff and must not be changed during flight. Otherwise, the aircraft will have no record of the terrain features of the Home Point.
 - b. During takeoff, the aircraft must ascend at least 7 m before moving horizontally.
 - c. The Home Point terrain features must remain largely unchanged.
 - d. The terrain features of the Home Point must be sufficiently distinctive. Terrain such as a snow-covered field is not suitable.
 - e. The lighting conditions must not be too bright or too dark.
- The following actions are available during Precision Landing:
 - a. Press the throttle stick down to accelerate landing.
 - b. Movement of any other control stick apart from the throttle stick will be regarded as giving up Precision Landing. The aircraft will descend vertically after the control sticks are released. Landing Protection is still effective in this case.
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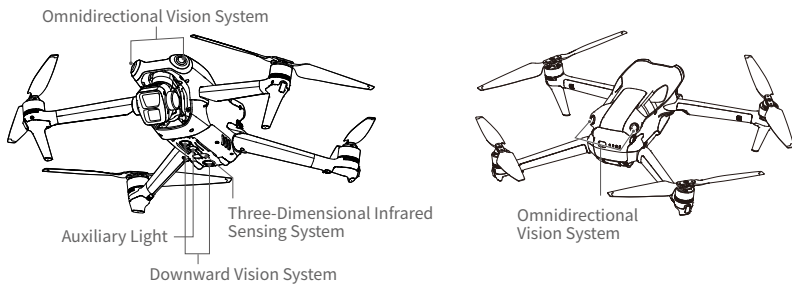
3.4. Vision Systems and Three-Dimensional Infrared Sensing System

Specta Air is equipped with both an omnidirectional vision system (forward, backward, lateral, upward), the downward vision system, and the three-dimensional infrared sensing system, which allows for positioning and omnidirectional obstacle sensing.

The omnidirectional vision system consists of four cameras which are located at the front and rear of the aircraft. The downward vision system consists of two cameras, located at the bottom of the aircraft. The vision systems sense obstacles by image ranging.

The three-dimensional infrared sensing system located at the bottom of the aircraft consists of a three-dimensional infrared emitter and a receiver. The three-dimensional infrared sensing system helps the aircraft to assess the distance to obstacles, the distance to the ground, and calculate the aircraft position together with the downward vision system. The three-dimensional infrared sensing system meets the human eye safety requirement for Class 1 laser products.

In addition, the Auxiliary Light located at the bottom of the aircraft can assist the downward vision system. It will automatically turn on by default in low-light environments when the flight altitude is under 5 m. Users can also turn it on or off manually in the SPECTA app. Each time the aircraft is restarted, the auxiliary light will revert back to the default setting Auto.



Detection Range

Forward Vision System	Precision Measurement Range: 0.5-18 m; FOV: 90° (horizontal), 72° (vertical)
Backward Vision System	Precision Measurement Range: 0.5-18 m; FOV: 90° (horizontal), 72° (vertical)
Lateral Vision System	Precision Measurement Range: 0.5-30 m; FOV: 90° (horizontal), 72° (vertical)
Upward Vision System ^[1]	Precision Measurement Range: 0.5-18 m; FOV: 72° (front and back), 90° (left and right)
Downward Vision System	Precision Measurement Range: 0.3-14 m; FOV: 106° (front and back), 90° (left and right)
Three-Dimensional Infrared Sensing System	Precision Measurement Range: 0.1-8 m (> 10% reflectivity); FOV: 60° (front and back), 60° (left and right)

[1] The omnidirectional vision system can sense obstacles in horizontal directions and above.

Using the Vision Systems

The positioning function of the downward vision system is applicable when GNSS signals are unavailable or weak. It is automatically enabled in Normal or Cine mode.

The omnidirectional vision system will activate automatically when the aircraft is in Normal or Cine mode and Obstacle Avoidance is set to Bypass or Brake in the SPECTA app. The omnidirectional vision system works best with adequate lighting and clearly marked or textured obstacles. Due to inertia, users must make sure to brake the aircraft within a reasonable distance.

-
- ⚠ • Pay attention to the flight environment. The vision systems and the three-dimensional infrared sensing system only work in certain scenarios and cannot replace human control and judgment. During a flight, always pay attention to the surrounding environment and the warnings in the SPECTA app, and be responsible for and maintain control of the aircraft at all times.
 - The downward vision system works best when the aircraft is at an altitude from 0.5 to 30 m if there is no GNSS available. Extra caution is required if the altitude of the aircraft is above 30 m as the vision positioning performance may be affected.
 - In low-light environments, the vision systems may not achieve optimal positioning performance even if the auxiliary light is turned on. Fly with caution if the GNSS signal is weak in such environments.
 - The downward vision system may not work properly when the aircraft is flying near water. Therefore, the aircraft may not be able to actively avoid water below it when landing. It is recommended to maintain flight control at all times, make reasonable judgments based on the surrounding environment, and avoid over-relying on the downward vision system.
 - The vision systems cannot accurately identify large frame structures with frames and cables, such as tower cranes, high-voltage transmission towers, high-voltage transmission lines, cable-stayed bridges and suspension bridges.
 - The vision systems cannot work properly near surfaces without clear pattern variations or where the light is too weak or too strong. The vision systems cannot work properly in the following situations:
 - a. Flying near monochrome surfaces (e.g., pure black, white, red, or green).
 - b. Flying near highly reflective surfaces.
 - c. Flying near water or transparent surfaces.
 - d. Flying near moving surfaces or objects.
 - e. Flying in an area with frequent and drastic lighting changes.
 - f. Flying near extremely dark (< 10 lux) or bright (> 40,000 lux) surfaces.
 - g. Flying near surfaces that strongly reflect or absorb infrared waves (e.g., mirrors).
 - h. Flying near surfaces without clear patterns or textures.
 - i. Flying near surfaces with repeating identical patterns or textures (e.g., tiles with the same design).
 - j. Flying near obstacles with small surface areas (e.g., tree branches and power lines).
 - Keep the sensors clean at all times. DO NOT scratch or tamper with the sensors. DO NOT use the aircraft in dusty or humid environments.

- Vision system cameras may need to be calibrated after being stored for an extended period. A prompt will appear in the SPECTA app and calibration will be performed automatically.
 - DO NOT fly when it is rainy, smoggy, or the visibility is lower than 100 m.
 - Check the following each time before takeoff:
 - a. Make sure there are no stickers or any other obstructions over the glass of the infrared sensing systems and vision systems.
 - b. Use soft cloth if there is any dirt, dust, or water on the glass of the vision systems and infrared sensing system. DO NOT use any cleaning product that contains alcohol.
 - DO NOT obstruct the infrared sensing system and vision systems.
 - The aircraft can fly at any time of the day or night. However, the vision systems become unavailable when flying the aircraft at night. Fly with caution.
-

3.5. Advanced Pilot Assistance Systems (APAS)

The Advanced Pilot Assistance Systems (APAS) feature is available in Normal mode and Cine mode. When APAS is enabled, the aircraft will continue to respond to user commands and plan its path according to both control stick inputs and the flight environment. APAS makes it easier to bypass obstacles, obtain smoother footage, and provide a better flying experience.

Keep moving the control sticks in any direction. The aircraft will bypass obstacles by flying above, below, or to the left or right of the obstacle. The aircraft can also respond to the control stick inputs while bypassing obstacles.

When APAS is enabled, the aircraft can be stopped by pressing the Flight Pause button on the remote controller. The aircraft brakes and hovers for three seconds and awaits further pilot commands.

To enable APAS, open the SPECTA app, enter Settings > Safety, and enable APAS by selecting Bypass. Select Normal or Nifty mode when using Bypass. In Nifty mode, the aircraft can fly faster, smoother, and closer to obstacles, obtaining better footage while bypassing obstacles. However, the risk of crashing into obstacles will increase. Fly with caution.

Nifty mode cannot work normally in the following situations:

1. When aircraft orientation changes rapidly flying near obstacles.
2. When flying through narrow obstacles such as canopies or bushes at high speed.
3. When flying near obstacles that are too small to detect.

Landing Protection

Landing Protection will activate if Obstacle Avoidance is set to Bypass or Brake and the user pulls the throttle stick down to land the aircraft. Landing Protection is enabled once the aircraft begins to land.


- During Landing Protection, the aircraft will automatically detect if an area is suitable for landing, and then land the aircraft.
- If the ground is determined to be unsuitable for landing, the aircraft will hover when the aircraft descends to 0.8 m above ground. Pull down on the throttle stick for at least five seconds, and the aircraft will land without obstacle sensing.

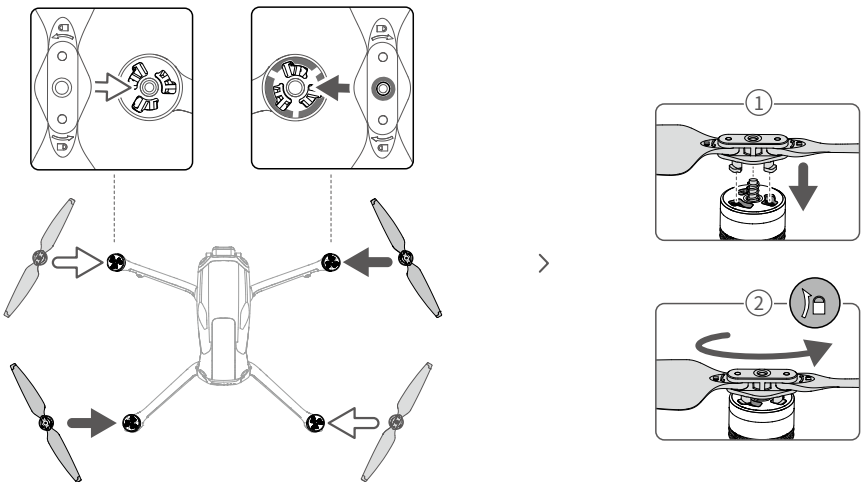
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- ⚠ • Make sure to use APAS when the vision systems are available. Make sure there are no people, animals, objects with small surface areas (e.g., tree branches), or transparent objects (e.g., glass or water) along the desired flight path.
 - Make sure to use APAS when the downward vision systems are available or the GNSS signal is strong. APAS may not function properly when the aircraft is flying over water or snow-covered areas.
 - Be extra cautious when flying in extremely dark (<300 lux) or bright (>10,000 lux) environments.
 - Pay attention to the SPECTA app and make sure APAS is working normally.
 - APAS may not function properly when the aircraft is flying near flight limits or in a GEO zone.
-

3.6. Propellers

There are two types of Specta Air propellers, which are designed to spin in different directions. Marks are used to indicate which propellers should be attached to which motors. Make sure to match the propeller and motor following the instructions.

Attaching the Propellers

There are two types of propellers in the package of Specta Air. Attach propellers with grey circle marks to the motors with grey marks. Likewise, attach propellers without marks to the motors without marks. Hold the motor with one hand, press the propeller down with the other hand, and rotate in the direction  marked on the propeller until it pops up and locks in place. Unfold the propeller blades.



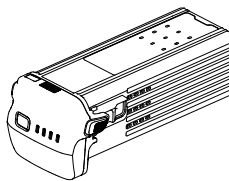
Detaching the Propellers

Press the propellers down onto the motors and rotate them in the unlock direction.

-
- ⚠ • The propeller blades are sharp. Handle with care.
 - Only use official COGITO TECH propellers. DO NOT mix propeller types.
 - Propellers are consumable components. Purchase additional propellers if necessary.
 - Make sure that the propellers and motors are installed securely before each flight.
 - Make sure that all propellers are in good condition before each flight. DO NOT use aged, chipped, or broken propellers.
 - To avoid injury, stay away from rotating propellers or motors.
 - To avoid damaging the propellers, place the aircraft correctly during transportation or storage. DO NOT squeeze or bend the propellers. If propellers are damaged, the flight performance may be affected.
 - Make sure the motors are mounted securely and rotating smoothly. Land the aircraft immediately if a motor is stuck and unable to rotate freely.
 - DO NOT attempt to modify the structure of the motors.
 - DO NOT touch or let hands or body parts come in contact with the motors after flight, as they may be hot.
 - DO NOT block any of the ventilation holes on the motors or the body of the aircraft.
 - Make sure the ESCs sound normal when powered on.
-

3.7. Intelligent Flight Battery

Specta Air Intelligent Flight Battery is a 14.76V and 4241mAh battery with smart charging and discharging functionality.



Battery Features

1. Battery Level Display: the battery level LEDs display the current battery level.
2. Auto-Discharging Function: to prevent swelling, the battery automatically discharges to 96% of the battery level when it is idle for three days, and automatically discharges to 60% of the battery level when it is idle for nine days. It is normal to feel moderate heat being emitted from the battery during the discharging process.
3. Balanced Charging: during charging, the voltages of the battery cells are automatically balanced.

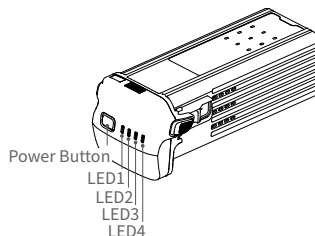
4. Overcharge Protection: the battery stops charging automatically once fully charged.
5. Temperature Detection: to prevent damage, the battery only charges when the temperature is between 5° and 40° C (41° and 104° F).
6. Overcurrent Protection: the battery stops charging if an excess current is detected.
7. Over-Discharge Protection: discharging stops automatically to prevent excess discharge when the battery is not in use. Over-discharge protection is not enabled when the battery is in use.
8. Short Circuit Protection: the power supply is automatically cut if a short circuit is detected.
9. Battery Cell Damage Protection: the app will display a warning prompt when a damaged battery cell is detected.
10. Hibernation Mode: the battery switches off after 5 to 20 seconds of inactivity to save power. If the battery level is less than 5%, the battery enters Hibernation mode to prevent over-discharge after being idle for six hours. In Hibernation mode, the battery level LEDs do not illuminate when the power button is pressed. Charge the battery to wake it from hibernation.
11. Communication: information about the voltage, capacity, and current of the battery is transmitted to the aircraft.
12. Maintenance Instructions: the battery automatically checks the voltage differences between battery cells and decides whether maintenance is required. If maintenance is required, the four battery level LEDs will blink twice every second and blink for two seconds when the user presses the power button to check the battery level. In this case, if the battery is inserted into the aircraft and powered on, the aircraft will not be able to take off, and a prompt for maintenance will appear in the SPECTA app. If the battery level LEDs blink for maintenance or the maintenance prompt appears in the SPECTA app, follow the prompt to fully charge the battery and then let it rest for 48 hours. If the battery still does not work after two times of maintenance, contact COGITO TECH Support.


⚠ • Refer to the Safety Guide and the stickers on the battery before use. Users take full responsibility for any violations of the safety requirements stated on the label.




Using the Battery

































Checking the Battery Level

Press the power button once to check the battery level when the battery is powered off.



 The battery level LEDs display the power level of the battery during discharging. The statuses of the LEDs are defined below:

 : LED is on  : LED is flashing  : LED is off

LED1	LED2	LED3	LED4	Battery Level
				88%-100%
				76%-87%
				63%-75%
				51%-62%
				38%-50%
				26%-37%
				13%-25%
				0%-12%

Powering On/Off

Press the power button once and then press again and hold for two seconds to power the battery on or off. The battery level LEDs display the battery level when the battery is powered on. The battery level LEDs turn off when the battery is powered off.

Low Temperature Notice

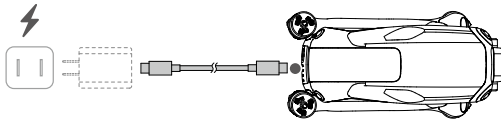
1. Battery capacity is significantly reduced when flying at low temperatures from -10° to 5° C (14° to 41° F). It is recommended to hover the aircraft in place for a while to heat the battery. Make sure to fully charge the battery before takeoff.
2. Batteries cannot be used in extremely low-temperature environments of lower than -10° C (14° F).
3. When in low-temperature environments, end the flight as soon as the SPECTA app displays the low battery level warning.
4. To ensure optimal performance, keep the battery temperature above 20° C (68° F).
5. The reduced battery capacity in low-temperature environments reduces the wind speed resistance performance of the aircraft. Fly with caution.
6. Take extra caution when flying at a high elevation with a low temperature.

Charging the Battery

Fully charge the battery before each use. It is recommended to use a USB PD charger with an output of 65W or above.

Using a Charger

1. Connect a charger to an AC power supply (100-240V, 50/60 Hz; use a power cable with suitable specifications for charging, and use a power adapter if necessary).
2. Connect the aircraft to the charger using the battery charging cable with the battery powered off.
3. The battery level LEDs display the current battery level during charging.
4. The battery is fully charged when all the battery level LEDs are off. Detach the charger when the battery is fully charged.



- ⚠ • DO NOT charge an Intelligent Flight Battery immediately after flight as it may be too hot. Wait for the battery to cool down to room temperature before charging again.
 - The charger stops charging the battery if the battery cell temperature is not within 5° to 40° C (41° to 104° F). The ideal charging temperature is from 22° to 28° C (71.6° to 82.4° F).
 - Fully charge the battery at least once every three months to maintain battery health.
-
- 💡 • It is recommended to discharge the batteries to 30% or lower before transportation. This can be done by flying the aircraft outdoors until there is less than 30% charge left.

The table below shows the battery level LED statuses during charging.

LED1	LED2	LED3	LED4	Battery Level
🟢	🟢	⦿	⦿	0%-50%
🟢	🟢	🟢	⦿	51%-75%
🟢	🟢	🟢	🟢	76%-99%
⦿	⦿	⦿	⦿	100%

Battery Protection Mechanisms

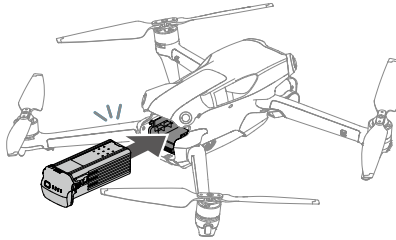
The battery level LEDs can display battery protection notifications triggered by abnormal charging conditions.

Battery Protection Mechanisms					
LED1	LED2	LED3	LED4	Blinking Pattern	Status
⦿	🟢	⦿	⦿	LED2 blinks twice per second	Overcurrent detected
⦿	🟢	⦿	⦿	LED2 blinks three times per second	Short circuit detected
⦿	⦿	🟢	⦿	LED3 blinks twice per second	Overcharge detected
⦿	⦿	🟢	⦿	LED3 blinks three times per second	Over-voltage charger detected
⦿	⦿	⦿	🟢	LED4 blinks twice per second	Charging temperature is too low
⦿	⦿	⦿	🟢	LED4 blinks three times per second	Charging temperature is too high

If any of the battery protection mechanisms are activated, unplug the charger, and plug it in again to resume charging. If the charging temperature is abnormal, wait for it to return to normal. The battery will automatically resume charging without the need to unplug and plug the charger again.

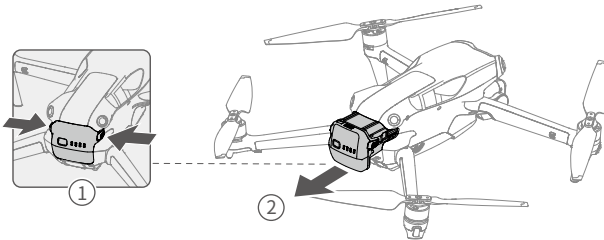
Inserting the Intelligent Flight Battery

Insert the Intelligent Flight Battery into the battery compartment of the aircraft. Make sure the battery is fully inserted with a clicking sound, which indicates the battery buckles are securely fastened.



Removing the Intelligent Flight Battery

Press the battery buckles on the sides of the battery to remove it from the compartment.

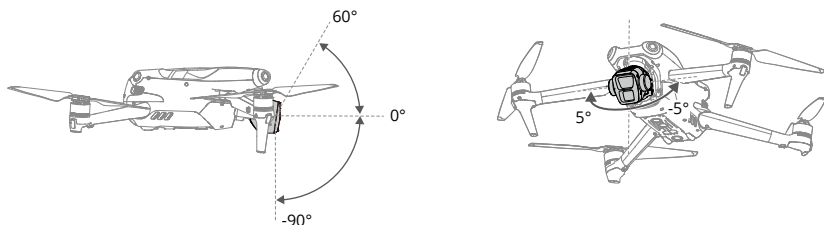


-
- ⚠ • DO NOT insert or remove the battery while the aircraft is powered on.
 - Make sure the battery is mounted securely.
-

3.8. Gimbal and Camera

Gimbal Profile

The 3-axis gimbal stabilizes the camera, allowing you to capture clear and steady images and videos at high flight speed. The gimbal has a control tilt range of -90° to $+60^{\circ}$ and a control pan range of -5° to $+5^{\circ}$.



Use the gimbal dial on the remote controller to control the tilt of the gimbal. Alternatively, do so through the camera view in the SPECTA app. Press and hold the screen until the gimbal adjustment bar appears. Drag the bar up or down to control the tilt and left or right to control the pan.

Gimbal Operation Mode

Two gimbal operation modes are available. Switch between the different operation modes in the SPECTA app.

Follow Mode: the angle of the gimbal remains stable relative to the horizontal plane. Users can adjust the gimbal tilt. This mode is suitable for shooting stills.

FPV Mode: when the aircraft is flying forward, the gimbal synchronizes with the movement of the aircraft to provide a first-person flying experience.

-
- ⚠ • DO NOT tap or knock the gimbal after the aircraft is powered on. Launch the aircraft from open and flat ground to protect the gimbal during takeoff.
 - Precision elements in the gimbal may be damaged by a collision or impact, which may cause the gimbal to function abnormally.
 - Avoid getting dust or sand on the gimbal, especially in the gimbal motors.
 - A gimbal motor may enter protection mode if the gimbal is obstructed by other objects when the aircraft is put on uneven ground or on grass, or if the gimbal experiences an excessive external force, such as during a collision.
 - DO NOT apply external force to the gimbal after the aircraft is powered on.
 - DO NOT add any extra payload other than an official accessory to the gimbal, as this may cause the gimbal to function abnormally or lead to permanent motor damage.
 - Remove the gimbal protector before powering on the aircraft. Attach the gimbal protector when the aircraft is not in use.
 - Flying in heavy fog or clouds may make the gimbal wet, leading to temporary failure. The gimbal will recover full functionality once it is dry.
-

Camera Profile

Specta Air features a dual-camera system which consists of a wide-angle camera and a medium tele camera, suitable for different shooting scenarios.

The wide-angle camera boasts a 1/1.3-in CMOS sensor with 48MP effective pixels. With an aperture of $f/1.7$ and an equivalent focal length of 24 mm, the wide-angle camera can shoot from 1 m to infinity and can take 4K 60fps videos and 48MP photos. In addition, it supports up to 3x zoom.

The medium tele camera boasts a 1/1.3-in CMOS sensor with 48MP effective pixels. With an aperture of $f/2.8$ and an equivalent focal length of 70 mm, the medium tele camera can shoot from 3 m to infinity and can take 4K 60fps videos and 48MP photos. In addition, it supports up to 9x zoom.



- DO NOT expose the camera lens in an environment with laser beams, such as a laser show, or point the camera at intense light sources for an extended period, such as the sun on a clear day, in order to avoid damaging the sensor.
 - Make sure the temperature and humidity are suitable for the camera during use and storage.
 - Use a lens cleanser to clean the lens to avoid damage or poor image quality.
 - DO NOT block any ventilation holes on the camera as the heat generated may damage the device and injure the user.
 - The cameras may not focus correctly in the following situations:
 - a. Shooting dark objects far away.
 - b. Shooting objects with repeating identical patterns and textures or objects without clear patterns or textures.
 - c. Shooting shiny or reflective objects (such as street lighting and glass).
 - d. Shooting flashing objects.
 - e. Shooting fast-moving objects.
 - f. When the aircraft/gimbal is moving fast.
 - g. Shooting objects with varying distances in the focus range.
-

Storing and Exporting Photos and Videos

Storing Photos and Videos

Specta Air has 8 GB of built-in storage and supports the use of a microSD card to store your photos and videos. A SDXC, or UHS-I microSD card is required due to the fast read and write speeds necessary for high-resolution video data. Refer to the Specifications section for more information about recommended microSD cards.

Exporting Photos and Videos

- Connect the aircraft to a computer using a data cable, export the footage in the built-in storage of the aircraft or in the microSD card mounted on the aircraft. The aircraft does not need to be powered on during the exporting process.
- Remove the microSD card from the aircraft and insert it into a card reader, and export the footage in the microSD card through the card reader.

-
- ⚠ • DO NOT remove the microSD card from the aircraft when taking photos or videos. Otherwise, the microSD card may be damaged.
 - To ensure the stability of the camera system, single video recordings are limited to 30 minutes.
 - Check camera settings before use to ensure they are configured correctly.
 - Before shooting important photos or videos, shoot a few images to test whether the camera is operating correctly.
 - Make sure to power off the aircraft correctly. Otherwise, the camera parameters will not be saved, and any recorded videos may be affected. COGITO TECH is not responsible for any loss caused by an image or video recorded in a way that is not machine-readable.
-

4. Specta RC

4.1. Remote Controller Profile

The Specta RC remote controller works at 2.4 GHz and 5.8 GHz frequency bands. It is capable of selecting the best transmission channel automatically and can transmit 1080p 60fps HD live view from the aircraft to the remote controller at a distance of up to 20 km (12.4 mi) (compliant with FCC standards, and measured in a wide open area without interference). Equipped with a 5.5-in touchscreen (1920×1080 pixel resolution) and a wide range of controls and customizable buttons, Specta RC enables users to easily control the aircraft and remotely change the aircraft settings. Specta RC comes with many other functions such as built-in GNSS (GPS+Galileo+BeiDou), Bluetooth and Wi-Fi connection.

The remote controller has detachable control sticks, built-in speakers, a 32GB internal storage, and supports the use of a microSD card for additional storage needs.

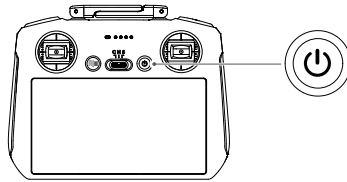
The 6200mAh 22.32Wh battery provides the remote controller a maximum operating time of three hours.

4.2. Using the Remote Controller

Powering On/Off

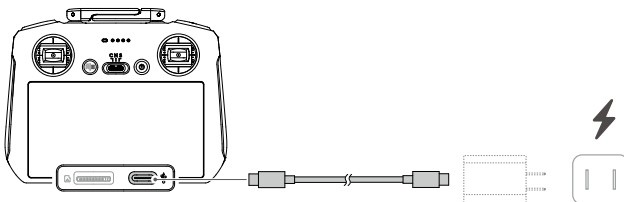
Press the power button once to check the current battery level.

Press once then press again and hold to power the remote controller on or off.



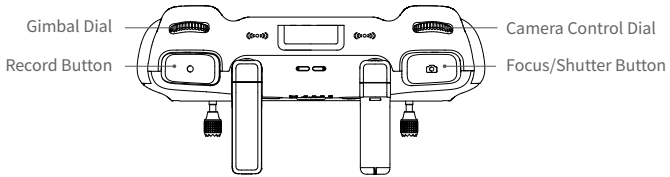
Charging the Battery

Connect a charger to the USB-C port on the remote controller. It takes approximately 1 hour and 30 minutes to fully charge the remote controller (with a 9V/3A USB charger).



Controlling the Gimbal and Camera

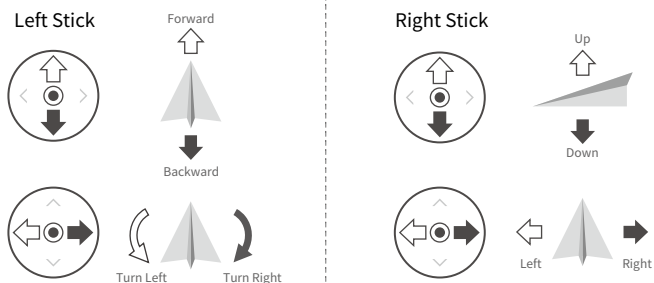
1. **Focus/Shutter Button:** press halfway down to auto-focus and press all the way down to take a photo.
2. **Record Button:** press once to start or stop recording.
3. **Camera Control Dial:** use to adjust the zoom by default. The dial function can be set to adjust the focal length, EV, aperture, shutter speed, and ISO.
4. **Gimbal Dial:** control the tilt of the gimbal.



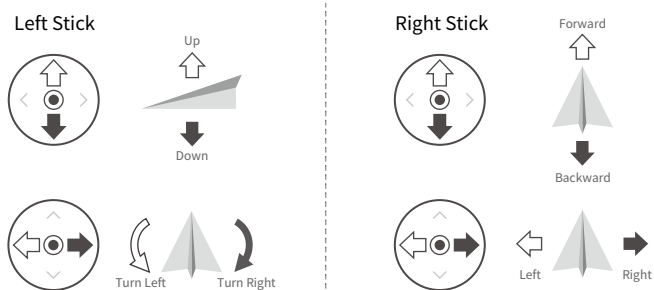
Controlling the Aircraft

Three preprogrammed modes (Mode 1, Mode 2, and Mode 3) are available and custom modes can be configured in the the SPECTA app.

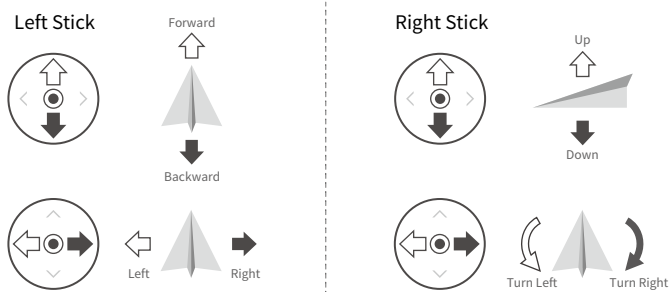
Mode 1



Mode 2



Mode 3



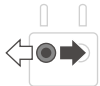







The default control mode of the remote controller is Mode 2. In this manual, Mode 2 is used as an example to illustrate how to use the control sticks.



- Stick Neutral/Center Point: control sticks are in the center.

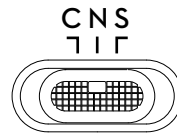
- Moving the control stick: the control stick is pushed away from the center position.

Remote Controller (Mode 2)	aircraft	Remarks
		<p>Throttle Stick: moving the left stick up or down changes the altitude of the aircraft.</p> <ul style="list-style-type: none"> • Push the stick up to ascend and push down to descend. • The aircraft hovers in place if the stick is in the center. • The more the stick is pushed away from the center, the faster the aircraft changes elevation. <p>Use the left stick to take off when the motors are spinning at an idle speed. Push the stick gently to prevent sudden and unexpected changes in altitude.</p>
		<p>Yaw Stick: moving the left stick to the left or right controls the orientation of the aircraft.</p> <ul style="list-style-type: none"> • Push the stick left to rotate the aircraft counterclockwise and right to rotate the aircraft clockwise. • The aircraft hovers in place if the stick is in the center. • The more the stick is pushed away from the center, the faster the aircraft rotates.
		<p>Pitch Stick: moving the right stick up and down to change the pitch of the aircraft.</p> <ul style="list-style-type: none"> • Push the stick up to fly forward and down to fly backward. • The aircraft hovers in place if the stick is in the center. • The more the stick is pushed away from the center, the faster the aircraft moves.
		<p>Roll Stick: moving the right stick to the left or right changes the roll of the aircraft.</p> <ul style="list-style-type: none"> • Push the stick left to fly left and right to fly right. • The aircraft hovers in place if the stick is in the center. • The more the stick is pushed away from the center, the faster the aircraft moves.

Flight Mode Switch

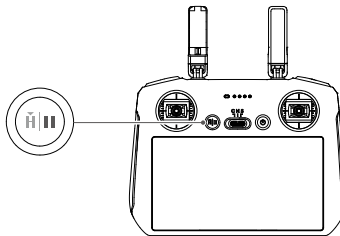
Toggle the switch to select the desired flight mode.

Position	Flight Mode
S	Sport Mode
N	Normal Mode
C	Cine Mode



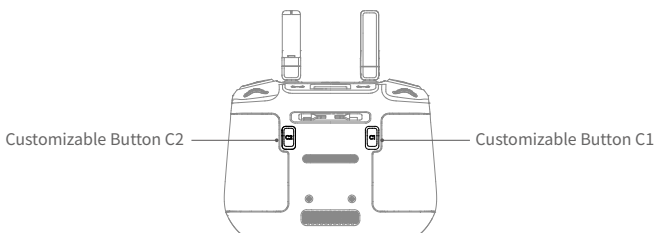
Flight Pause/RTH Button

Press once to make the aircraft brake and hover in place. Press and hold the button until the remote controller beeps and starts RTH, and the aircraft will return to the last recorded Home Point. Press this button again to cancel RTH and regain control of the aircraft.











Customizable Buttons

Go to Settings in the SPECTA app and select Control to set the functions of the customizable C1 and C2 buttons.



















Remote Controller LEDs

Status LED

Blinking Pattern		Descriptions
 —	Solid red	Disconnected from the aircraft.
	Blinking red	The battery level of the aircraft is low.
 —	Solid green	Connected with the aircraft.
	Blinking blue	The remote controller is linking to an aircraft.
 —	Solid yellow	Firmware update failed.
 —	Solid blue	Firmware update successful.
	Blinking yellow	The battery level of the remote controller is low.
	Blinking cyan	Control sticks not centered.

Battery Level LEDs

Blinking Pattern				Battery Level
				76%-100%
				51%-75%
				26%-50%
				0%-25%

Remote Controller Alert

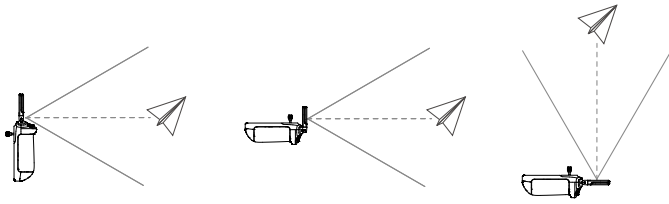
The remote controller beeps when there is an error or warning. Pay attention when prompts appear on the touchscreen or in the SPECTA app. Slide down from the top of the screen and select Mute to disable all alerts, or slide the volume bar to 0 to disable some alerts.

The remote controller sounds an alert during RTH. The alert cannot be canceled. The remote controller sounds an alert when the battery level of the remote controller is low (6% to 10%). A low battery level alert can be canceled by pressing the power button. The critical low battery level alert, which is triggered when the battery level is less than 5%, cannot be canceled.

Optimal Transmission Zone

The signal between the aircraft and the remote controller is most reliable when the antennas are positioned in relation to the aircraft as illustrated below.

The optimal transmission range is where the antennas face toward the aircraft and the angle between the antennas and the back of the remote controller is 180° or 270° .



-
- ⚠️ • DO NOT use other wireless devices operating at the same frequency as the remote controller. Otherwise, the remote controller will experience interference.
 - A prompt will be displayed in the SPECTA app if the transmission signal is weak during flight. Adjust the antennas to make sure that the aircraft is in the optimal transmission range
-

4.3. Linking the Remote Controller

The remote controller is already linked to the aircraft when purchased together as a combo. Otherwise, follow the steps below to link the remote controller and the aircraft after activation.

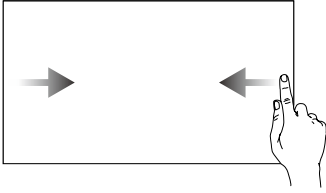
1. Power on the aircraft and the remote controller.
2. Launch the SPECTA app.
3. In camera view, tap ●●● and select Control and then Re-pair to aircraft. During linking, the status LED of the remote controller blinks blue and the remote controller beeps.
4. Press and hold the power button of the aircraft for more than four seconds. The aircraft beeps twice after a short beep, and its battery level LEDs blink in sequence to indicate it is ready to link. The remote controller will beep twice, and its status LED will turn solid green to indicate linking is successful.

-
- 💡 • Make sure the remote controller is within 0.5 m of the aircraft during the linking.
 - The remote controller will automatically unlink from an aircraft if a new remote controller is linked to the same aircraft.
 - Turn off Bluetooth and Wi-Fi for optimal video transmission.
-

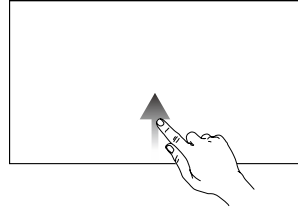
- ⚠️ • Fully charge the remote controller before each flight. The remote controller sounds an alert when the battery level is low.
 - If the remote controller is powered on and not in use for five minutes, an alert will sound. After six minutes, the remote controller automatically powers off. Move the control sticks or press any button to cancel the alert.
 - Fully charge the battery at least once every three months to maintain the battery's health.
 - DO NOT operate the aircraft when the light condition is too bright or too dark using the remote controller to monitor flight. User is responsible for the correct adjustment of display brightness and shall take care of direct sunshine onto the screen during flight operation.
-

4.4. Operating the Touchscreen

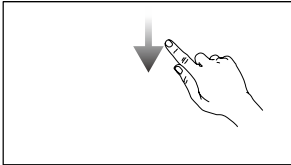
Operations



Slide from the left or right to the center of the screen to return to the previous screen.

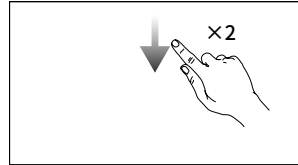


Slide up from the bottom of the screen to return to the SPECTA app.



Slide down from the top of the screen to open the status bar when in the SPECTA app.

The status bar displays the time, Wi-Fi signal, battery level of the remote controller, etc.



Slide down twice from the top of the screen to open Quick Settings when in the SPECTA app.

Quick Settings




1. Notifications


Tap to check system notifications.


2. System Settings

Tap to access system settings and configure settings such as Bluetooth, volume, and network. Users can also view the User Instructions to learn more about the controls and status LEDs.

3. Shortcuts


 : tap to enable or disable Wi-Fi. Hold to enter settings and then connect to or add a Wi-Fi network.

 : tap to enable or disable Bluetooth. Hold to enter settings and connect with nearby Bluetooth devices.

 : tap to enable airplane mode. Wi-Fi and Bluetooth will be disabled.

 : tap to turn off system notifications and disable all alerts.

 : tap to start recording the screen.

 : tap to take a screenshot.

4. Adjusting Brightness

Slide the bar to adjust the screen brightness.


5. Adjusting Volume

Slide the bar to adjust the volume.

4.5. Advanced Features

Calibrating the Compass

The compass may need to be calibrated after the remote controller is used in areas with electromagnetic interference. A warning prompt will appear if the compass of the remote controller requires calibration. Tap the warning prompt to start calibrating. In other cases, follow the steps below to calibrate the remote controller.

1. Power on the remote controller, and enter Quick Settings.
2. Select System Settings , scroll down, and tap Compass.
3. Follow the on-screen instructions to calibrate the compass.
4. A prompt will be displayed when the calibration is successful.

5. The SPECTA App

5.1. Home

Launch the SPECTA app and enter the home screen.

Album

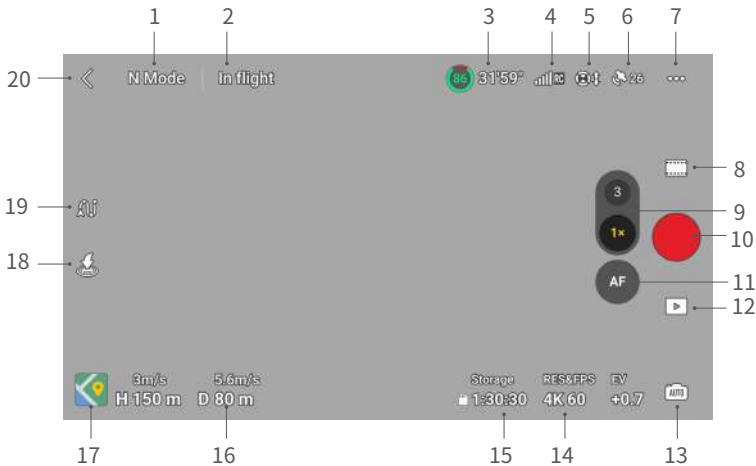
Allows you to view photos and videos from the aircraft album or saved on the local device.

Profile

View account information and flight records, access the Find My Drone feature, offline maps, and other settings such as firmware updates, flight tips, storage, privacy, etc.

5.2. Camera View

Button Descriptions



1. Flight Mode

N Mode: displays the current flight mode.

2. System Status Bar

In Flight: displays aircraft flight status and various warning messages.


3. Battery Information

86 31:59: displays the current battery level and remaining flight time. Tap to view more information about the battery.


4. Video Downlink Signal Strength

Signal strength icon: displays the video downlink signal strength between the aircraft and the remote controller.


5. Vision System Status

 : the left side of the icon indicates the status of the horizontal vision system and the right side of the icon indicates the status of the upward and downward vision systems. The icon is white when the vision system is working normally and turns red when the vision system is unavailable.

6. GNSS Status

 26 : displays the current GNSS signal strength. Tap to check the GNSS signal status. The Home Point can be updated when the icon is white, which indicates the GNSS signal is strong.


7. Settings


 : tap to view or set parameters for safety, control, camera, and transmission. Refer to the Settings section for more information.


8. Shooting Modes


 Photo: Single, AEB, Burst Shooting, and Timed Shot.


 Video: Normal, Night, and Slow Motion.


 MasterShots: drag-select a subject. The aircraft will record while executing different maneuvers in sequence and keep the subject in the center of the frame. A short cinematic video will be generated afterwards.

 QuickShots: Dronie, Rocket, Circle, Helix, Boomerang, and Asteroid.



 Hyperlapse: Free, Circle, Course Lock, and Waypoints.



 Pano: Sphere, 180°, Wide Angle, and Vertical. The aircraft will automatically take several photos and synthesize a panoramic photo based on the selected panoramic photo type.


 • The Night video mode provides better noise reduction and cleaner footage, supports up to 12800 ISO.

 • The Night video mode currently supports 4K 24/25/30fps and 1080P 24/25/30fps.
• FocusTrack is not supported in the Night video mode.

9. Camera Switch Button


Tap  to switch to medium tele camera, tap again to change the zoom ratio. Tap  to switch to the wide-angle camera, tap again to change the zoom ratio.

Tap and hold  or  to bring up the zoom bar to adjust the digital zoom. Use two fingers on the screen to zoom in or out.

 • Digital zoom is only supported in Normal video and Night video modes.

• When zooming in or out, the larger the zoom ratio, the slower the aircraft will rotate to achieve a smooth view.

10. Shutter/Record Button

 : tap to take a photo or to start or stop recording a video.


11. Focus Button

AF/MF: tap to switch between AF and MF. Tap and hold the icon to bring up the focus bar to adjust the focus.

12. Playback

 : tap to enter playback and preview photos and videos as soon as they are captured.


13. Camera Modes Switch

 : tap to switch between Auto and Pro mode. Different parameters can be set in different modes.

14. Shooting Parameters

 : displays the current shootings parameters. Tap to access parameter settings.


15. Storage Information

 : displays the remaining number of photos or video recording time of the current storage. Tap to view the available capacity of the internal storage or the microSD card.

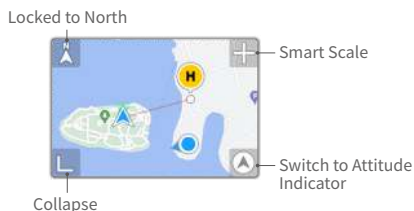
16. Flight Telemetry

Displays the distance between the aircraft and the Home Point, height from the Home Point, aircraft horizontal speed, and aircraft vertical speed.

17. Maps

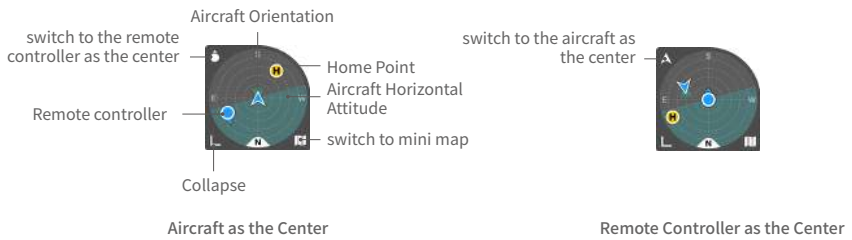
 : tap to expand to the mini map, and tap the center of the mini map to switch from the camera view to the map view. The mini map can be switched to the attitude indicator.

- Mini Map: displays the map in the bottom left corner of the screen so that the user can simultaneously check the camera view, the real-time position and orientation of the aircraft and the remote controller, the Home Point location, and flight paths, etc.



Locked to North	North is locked on the map with North pointing upward in the map view. Tap to switch from Lock to North to the remote controller orientation where the map rotates when the remote controller changes the orientation.
Smart Scale	tap the + / - icon to slightly zoom in or out.
Switch to Attitude Indicator	tap to switch from the mini map to the attitude indicator.
Collapse	tap to minimize the map.

- Attitude Indicator: displays the attitude indicator in the bottom left corner of the screen so that the user can simultaneously check the camera view, the relative location and orientation of the aircraft and the remote controller, the Home Point location, and the aircraft horizontal attitude information, etc. The attitude indicator supports displaying the aircraft or the remote controller as the center.



Switch to the aircraft / remote controller as the center	Tap to switch to aircraft / remote controller as the center of the attitude indicator.
Aircraft Orientation	Indicates the aircraft orientation. When the aircraft is displayed as the center of the attitude indicator and the user is changing the aircraft orientation, all the other elements on the attitude indicator will rotate around the aircraft icon. The arrow direction of the aircraft icon stays unchanged.
Aircraft Horizontal Attitude	Indicates the aircraft horizontal attitude information (including pitch and roll). The deep cyan area is horizontal and in the center of the attitude indicator when the aircraft hovers in place. If not, it indicates that the wind is changing the aircraft attitude. Fly with caution. The deep cyan area changes in real time based on the aircraft horizontal attitude.
Switch to the Mini Map	Tap to switch from the attitude indicator to the mini map.
Collapse	Tap to minimize the attitude indicator.
Home Point	The location of the Home Point. To manually control the aircraft to return home, adjust the aircraft orientation to point towards the Home Point first.
Remote Controller	The dot indicates the remote controller location, while the arrow on the dot indicates the remote controller orientation. Adjust the remote controller orientation during the flight to make sure the arrow points towards the aircraft icon for optimal signal transmission.

18. Auto Takeoff/Landing/RTH

/ : tap the icon. When the prompt appears, press and hold the button to initiate auto takeoff or landing.

: tap to initiate Smart RTH and have the aircraft return to the last recorded Home Point.

19. Waypoint Flight

: tap to enable/disable Waypoint Flight.

20. Back

: tap to return to the home screen.

Screen Shortcuts


Gimbal Angle Adjustment

Press and hold on the screen to bring up the gimbal adjustment bar to adjust the gimbal angle.

Focus/Spot Metering

Tap on the screen to enable focus or spot metering. Focus or spot metering will display differently depending on the shooting mode, focus mode, exposure mode, and spot metering mode.

After using spot metering:

- Drag  next to the box up and down to adjust the EV (exposure value).
- Press and hold the box on the screen to lock the exposure. To unlock the exposure, tap and hold on the box again or tap on other area of the screen.

5.3. Settings

Safety

- Flight Assistance

Obstacle Avoidance Action	Omnidirectional vision system is enabled after setting Obstacle Avoidance Action to Bypass or Brake. The aircraft cannot sense obstacles if Obstacle Avoidance is disabled.
Bypassing Options	Select Normal or Nifty mode when using Bypass.
Display Radar Map	When enabled, the real-time obstacle detection radar map will be displayed.

- Return to Home (RTH): set Advanced RTH, Auto RTH Altitude, and to update the Home Point.
- Flight Protection: set the max altitude and the max distance for flights.
- Sensors: view the IMU and compass statuses and start calibration if necessary.
- Battery: tap to view battery information such as battery cell status, serial number, and number of times charged.
- Auxiliary LED: tap to set the auxiliary LED to auto, on, or off. DO NOT turn on the Auxiliary LED before takeoff.
- Aircraft Front Arm LEDs: tap to set the aircraft front arm LEDs to auto or on. In auto mode, the aircraft front LEDs will be disabled during shooting to ensure the quality is not affected.
- Find My Drone: this feature helps to find the location of the aircraft, either by enabling the aircraft LEDs, beeping, or by using the map.


- Advanced Safety Settings

Signal Lost	The behavior of the aircraft when the remote controller signal is lost can be set to RTH, Descend, or Hover.
Emergency Propeller Stop	Emergency Only indicates that the motors can only be stopped by performing a combination stick command (CSC) for at least 2 seconds mid-flight in an emergency situation such as if there is a collision, a motor has stalled, the aircraft is rolling in the air, or the aircraft is out of control and is ascending or descending very quickly. Anytime indicates that the motors can be stopped mid-flight anytime once user performs a CSC. Stopping the motors mid-flight will cause the aircraft to crash.
AirSense	An alert will appear in the SPECTA app when a manned aircraft is detected if AirSense is enabled. Read the disclaimer in the the SPECTA app prompt before using AirSense.

Control

- Aircraft Settings

Units	Can be set to metric or imperial.
Subject Scanning	When enabled, the aircraft automatically scans and displays subjects in the camera view (only available for single-shot and normal video modes).
Gain and Expo Tuning	Supports the gain and expo settings to be fine-tuned for the aircraft and the gimbal in different flight modes, including the max horizontal speed, max ascent speed, max descent speed, max angular velocity, yaw smoothness, brake sensitivity, expo, and the gimbal max tilt control speed and tilt smoothness.

 • When releasing the control stick, an increased brake sensitivity reduces the braking distance of the aircraft, while a decreased brake sensitivity increases the braking distance. Fly with caution.


- Gimbal Settings: tap to set the gimbal mode, perform gimbal calibration, and recenter or move the gimbal downward.
- Remote Controller Settings: tap to set the function of the customizable button, calibrate the remote controller, switch control stick modes. Make sure to understand the operations of a stick mode before changing the control stick mode.
- Flight Tutorial: view the flight tutorial.
- Re-pair to aircraft (Link): tap to start linking when the aircraft is not linked to the remote controller.

Camera

- Camera Parameter Settings: displays different settings according to the shooting mode.

Shooting Modes	Settings
Photo Mode	Format, Aspect Ratio, Resolution
Record Mode	Color, Coding Format, Video Subtitles
MasterShots	Color, Coding Format, Video Subtitles
QuickShots	Color, Coding Format, Video Subtitles
Hyperlapse	Photo Type, Shot Frame
Pano	Photo Type

- General Settings

Anti-Flicker	When enabled, the footage flicker caused by the light source will be reduced when shooting in environments with lights.  In Pro mode, anti-flicker will only take effect when shutter speed and ISO are set to auto.
Histogram	When enabled, users can check the screen to view whether the exposure is appropriate.
Peaking Level	When enabled in MF mode, the objects in focus will be outlined in red. The higher the peaking level, the thicker the outline.
Overexposure Warning	When enabled, the overexposure area will be identified with diagonal lines.
Gridlines	Enable gridlines such as diagonal lines, nine-square grids, and center point.
White Balance	Set to auto, or manually adjust the color temperature.

- Storage

Storage	Store the recorded files to the microSD card on the aircraft or the internal storage of the aircraft. Specta Air has an internal storage of 8 GB.
Custom Folder Naming	When changed, a new folder will be automatically created on the aircraft storage to store future files.
Custom File Naming	When changed, the new name will be applied to future files on the aircraft storage.
Cache When Recording	When enabled, the liveview on the remote controller will be stored in the remote controller storage when recording video.
Max Video Cache Capacity	When the cache limit is reached, the earliest caches will be automatically deleted.

- Reset Camera Settings: tap to restore camera parameters to the default settings.

Transmission

A livestreaming platform can be selected to broadcast the camera view in real time. The frequency band and channel mode can also be set in the transmission settings.

About

Displays information such as the Device Name, Wi-Fi Name, Model, App Version, Aircraft Firmware, RC Firmware, FlySafe Data, SN, etc.

Tap Reset All Settings to reset settings including camera, gimbal, and safety settings to default.

Tap Clear All Data to reset all settings default, and delete all the data stored in internal storage, and microSD card, including flight log.



- Fully charge the device before launching the SPECTA app.
 - Read all safety prompts, warning messages, and disclaimers carefully. Familiarize yourself with relevant regulations in your area. You are solely responsible for being aware of all relevant regulations and flying in a way that is compliant.
 - a. Read and understand the warning messages before using the auto-takeoff and auto-landing features.
 - b. Read and understand the warning messages and disclaimers before setting the altitude beyond the default limit.
 - c. Read and understand the warning messages and disclaimers before switching flight modes.
 - d. Read and understand the warning messages and disclaimer prompts near or in GEO zones.
 - e. Read and understand the warning messages before using the Intelligent Flight modes.
 - Land the aircraft immediately at a safe location if a prompt appears in the app instructing you to do so.
 - Review all warning messages on the checklist displayed in the app before each flight.
 - Use the in-app tutorial to practice your flight skills if you have never operated the aircraft or if you do not have sufficient experience to operate the aircraft with confidence.
 - The app is designed to assist your operation. Use sound discretion and DO NOT rely on the app to control the aircraft. The use of the app is subject to SPECTA Terms of Use and Privacy Policy. Read them carefully in the app.
-

6. Appendix

6.1. Specifications

Aircraft (Model: TQFDUB2)	
Takeoff Weight	720 g
Dimensions (L×W×H)	Folded (without propellers): 207×100.5×91.1 mm Unfolded (without propellers): 258.8×326×105.8 mm
Max Ascent Speed	10 m/s
Max Descent Speed	10 m/s
Max Horizontal Speed (near sea level, no wind)	21 m/s
Max Takeoff Altitude	6,000 m (19,685 ft)
Max Flight Time ^[1]	46 minutes
Max Hovering Time ^[2]	42 minutes
Max Flight Distance	32 km
Max Wind Speed Resistance	12 m/s
Max Pitch Angle	35°
Operating Temperatures	-10° to 40° C (14° to 104° F)
GNSS	GPS + Galileo + BeiDou
Hovering Accuracy Range	Vertical: ±0.1 m (with vision positioning) ±0.5 m (with GNSS positioning) Horizontal: ±0.3 m (with vision positioning) ±0.5 m (with high-precision positioning system)
Internal Storage	8 GB
Camera	
Image Sensor	Wide-Angle Camera: 1/1.3-inch CMOS, Effective Pixels: 48 MP Medium Tele Camera: 1/1.3-inch CMOS, Effective Pixels: 48 MP
Lens	Wide-Angle Camera FOV: 82° Format Equivalent: 24 mm Aperture: f/1.7 Focus: 1 m to ∞ Medium Tele Camera FOV: 35° Format Equivalent: 70 mm Aperture: f/2.8 Focus: 3 m to ∞

ISO	<p>Video Normal and Slow Motion: 100-6400 (Normal Color) 100-1600 (Log M) 100-1600 (HLG) Night: 100-12800 (Normal Color)</p> <p>Photo 100-6400 (12 MP) 100-3200 (48 MP)</p>
Electronic Shutter Speed	<p>Wide-Angle Camera 12MP Photo: 1/16000-2 s (2.5-8 s for simulated long exposure) 48MP Photo: 1/8000-2 s</p> <p>Medium Tele Camera 12MP Photo: 1/16000-2 s (2.5-8 s for simulated long exposure) 48MP Photo: 1/8000-2 s</p>
Max Image Size	<p>Wide-Angle Camera: 8064 × 6048 Medium Tele Camera: 8064 × 6048</p>
Still Photography Modes	<p>Wide-Angle Camera Single Shot: 12 MP and 48 MP Burst Shooting: 12 MP, 3/5/7 frames; 48 MP, 3 frames Automatic Exposure Bracketing (AEB): 12 MP, 3/5 frames; 48 MP, 3 frames at 0.7 EV step Timed: 12 MP, 2/3/5/7/10/15/20/30/60 s; 48 MP, 5/7/10/15/20/30/60 s</p> <p>Medium Tele Camera Single Shot: 12 MP and 48 MP Burst Shooting: 12 MP, 3/5/7 frames; 48 MP, 3 frames Automatic Exposure Bracketing (AEB): 12 MP, 3/5 frames; 48 MP, 3 frames at 0.7 EV step Timed: 12 MP, 2/3/5/7/10/15/20/30/60 s; 48 MP, 5/7/10/15/20/30/60 s</p>
Photo Format	JPEG/DNG (RAW)
Video Resolution ^[3]	<p>Wide-Angle Camera: H.264/H.265 4K: 3840 × 2160@24/25/30/48/50/60/100 fps FHD: 1920 × 1080@24/25/30/48/50/60/100/200 fps 2.7K Vertical Shooting: 1512 × 2688@24/25/30/48/50/60 fps FHD Vertical Shooting: 1080 × 1920@24/25/30/48/50/60 fps</p> <p>Medium Tele Camera: H.264/H.265 4K: 3840 × 2160@24/25/30/48/50/60/100 fps FHD: 1920 × 1080@24/25/30/48/50/60/100/200 fps 2.7K Vertical Shooting: 1512 × 2688@24/25/30/48/50/60 fps FHD Vertical Shooting: 1080 × 1920@24/25/30/48/50/60 fps</p>
Video Format	MP4 (MPEG-4 AVC/H.264, HEVC/H.265)

Max Video Bitrate	H.264/H.265: 150 Mbps
Supported File System	exFAT
Color Mode and Sampling Method	Wide-Angle Camera Normal: 8-bit 4:2:0 (H.264/H.265) HLG/Log M: 10-bit 4:2:0 (H.265) Medium Tele Camera Normal: 8-bit 4:2:0 (H.264/H.265) HLG/Log M: 10-bit 4:2:0 (H.265)
Digital Zoom	Wide-Angle Camera: 1-3x Medium Tele Camera: 3-9x

Gimbal

Stabilization	3-axis (tilt, roll, pan)
Mechanical Range	Tilt: -135° to 70° Roll: -50° to 50° Pan: -27° to 27°
Mechanical Range	Tilt: -90° to 60° Pan: -5° to 5°
Max Control Speed (tilt)	100° /s
Angular Vibration Range	±0.0037°

Sensing Systems

Sensing Type	Omnidirectional binocular vision system, supplemented with a three-dimensional infrared sensing system at the bottom of the aircraft
Forward	Measurement Range: 0.5-18 m Detection Range: 0.5-200 m Effective Sensing Speed: Flight Speed ≤ 12 m/s FOV: Horizontal 90°, Vertical 72°
Backward	Measurement Range: 0.5-18 m Effective Sensing Speed: Flight Speed ≤ 12 m/s FOV: Horizontal 90°, Vertical 72°
Lateral	Measurement Range: 0.5-30 m Effective Sensing Speed: Flight Speed ≤ 12 m/s FOV: Horizontal 90°, Vertical 72°
Upward	Measurement Range: 0.5-18 m Effective Sensing Speed: Flight Speed ≤ 6 m/s FOV: Front and Back 72°, Left and Right 90°
Downward	Measurement Range: 0.3-14 m Effective Sensing Speed: Flight Speed ≤ 6 m/s FOV: Front and Back 106°, Left and Right 90°
Operating Environment	Forward, Backward, Left, Right, and Upward: Surfaces with discernible patterns and adequate lighting (lux > 15) Downward: Surfaces with discernible patterns, diffuse reflectivity > 20% (e.g. walls, trees, people), and adequate lighting (lux > 15)
3D Infrared Sensor	Measurement Range: 0.1-8 m (reflectivity > 10%) FOV: Front and Back 60°, Left and Right 60°

Video Transmission

Live View Quality	Remote Controller: 1080p/30fps, 1080p/60fps
Operating Frequency	2.4000-2.4835 GHz, 5.725-5.850 GHz
Transmitter Power (EIRP)	2.4 GHz: < 33 dBm (FCC) 5.8 GHz: < 33 dBm (FCC)
Max Transmission Distance (unobstructed, free of interference) ^[4]	20 km (FCC)
Max Transmission Distance (unobstructed, with interference) ^[5]	Strong Interference: urban landscape, approx. 1.5-4 km Medium Interference: suburban landscape, approx. 4-10 km Low Interference: suburb/seaside, approx. 10-20 km
Max Transmission Distance (obstructed, with interference) ^[6]	Low Interference and Obstructed by Buildings: approx. 0-0.5 km Low Interference and Obstructed by Trees: approx. 0.5-3 km
Lowest Latency	Aircraft + Remote Controller: Approx. 120 ms
Antenna	6 antennas, 2T4R

Wi-Fi

Protocol	802.11 a/b/g/n/ac
Operating Frequency	2.4000-2.4835 GHz, 5.725-5.850 GHz
Transmitter Power (EIRP)	2.4 GHz: <20 dBm (FCC) 5.8 GHz: <20 dBm(FCC)

Bluetooth

Protocol	Bluetooth 5.2
Operating Frequency	2.4000-2.4835 GHz
Transmitter Power (EIRP)	<10 dBm

Intelligent Flight Battery (Model: BSPE-4241-4S)

Battery Capacity	4241 mAh
Weight	267 g
Nominal Voltage	14.76 V
Max Charging Voltage	17 V
Battery Type	Li-ion 4S
Chemical System	LiNiMnCoO2
Energy	62.6 Wh
Charging Temperature	5° to 40° C (41° to 104° F)

Storage

Recommended microSD Cards	SanDisk Extreme PRO 32GB V30 U3 A1 microSDHC Lexar 1066x 64GB V30 U3 A2 microSDXC Lexar 1066x 128GB V30 U3 A2 microSDXC Lexar 1066x 256GB V30 U3 A2 microSDXC Lexar 1066x 512GB V30 U3 A2 microSDXC Kingston Canvas GO! Plus 64GB V30 U3 A2 microSDXC Kingston Canvas GO! Plus 128GB V30 U3 A2 microSDXC Kingston Canvas React Plus 64GB V90 U3 A1 microSDXC Kingston Canvas React Plus 128GB V90 U3 A1 microSDXC Kingston Canvas React Plus 256GB V90 U3 A1 microSDXC Samsung EVO Plus 512GB V30 U3 A2 microSDXC
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Specta RC Remote Controller (Model: GL33)

Max Operating Time	3 hours
Operating Temperature	-10° to 40° C (14° to 104° F)
Storage Temperature	Within one month: -30° to 60° C (-22° to 140° F) One to three months: -30° to 45° C (-22° to 113° F) Three to six months: -30° to 35° C (-22° to 95° F) More than six months: -30° to 25° C (-22° to 77° F)
Charging Temperature	5° to 40° C (41° to 104° F)
Charging Time	1.5 hours
Charging Type	Supports up to 9V/3A charging
Battery Capacity	22.32 Wh (3.6 V, 3100 mAh × 2)
Battery Type	18650 Li-ion
Chemical System	LiNiMnCoO2
GNSS	GPS + Galileo + BeiDou
Internal Storage Capacity	32 GB + expandable storage (via microSD card)
Supported SD Cards	UHS-I Speed Grade 3 rating microSD card or above
Recommended microSD cards	SanDisk Extreme PRO 64GB V30 A2 microSDXC SanDisk High Endurance 64GB V30 microSDXC Lexar 256GB V30 A2 microSDXC Samsung EVO 64GB V30 microSDXC Samsung EVO Plus 128GB V30 microSDXC Samsung EVO Plus 256GB V30 microSDXC Kingston 256GB V30 microSDXC
Screen Brightness	700 nits
Screen Resolution	1920 × 1080
Screen Size	5.5-inch
Screen Frame Rate	60 fps
Touchscreen Control	10-point multi-touch
Dimensions	Without control sticks: 168.4 × 132.5 × 46.2 mm With control sticks: 168.4 × 132.5 × 62.7 mm
Weight	Approx. 420 g

Video Transmission

Antennas	4 antennas, 2T4R
Video Transmission Operating Frequency	2.4000-2.4835 GHz, 5.725-5.850 GHz

Transmitter Power (EIRP)	2.4 GHz: <33 dBm (FCC) 5.8 GHz: <33 dBm (FCC)
Wi-Fi	
Wi-Fi Protocol	802.11 a/b/g/n/ac/ax
Wi-Fi Operating Frequency	2.4000-2.4835 GHz, 5.150-5.250 GHz, 5.725-5.850 GHz
Wi-Fi Transmitter Power (EIRP)	2.4 GHz: <26 dBm (FCC) 5.1 GHz: <23 dBm (FCC) 5.8 GHz: <23 dBm (FCC)
Bluetooth	
Bluetooth protocol	BT 5.2
Bluetooth Operating Frequency	2.4000-2.4835 GHz
Bluetooth Transmitter Power (EIRP)	< 10 dBm

- [1] Measured by Specta Air flying at a constant speed of 28.8 kph in a windless environment at sea level, with APAS off, AirSense off, camera parameters set to 1080p/24fps, video mode off, and from 100% battery level until 0%. Data is for reference only. Always pay attention to reminders in the app during flight.
- [2] Measured by Specta Air hovering in a windless environment at sea level, with APAS off, AirSense off, camera parameters set to 1080p/24fps, video mode off, and from 100% battery level until 0%. Data is for reference only. Always pay attention to reminders in the app during flight.
- [3] The 100 fps and 200 fps are recording frame rates. The corresponding video plays as slow-motion video. 4K/100fps only supports H.265.
- [4] Measured in an unobstructed outdoor environment free of interference. The above data shows the farthest communication range for one-way, non-return flights under each standard. Always pay attention to RTH reminders in the app during your flight.
- [5] Data tested under FCC standard in unobstructed environments with typical interference. Used for reference purposes only and provides no guarantee for actual transmission distance.
- [6] Data tested under FCC standard in obstructed environments with typical low interference. Used for reference purposes only and provides no guarantee for actual transmission distance.

6.2. Camera Function Matrix

		Wide-angle Camera	Medium Tele Camera
Photo	Single Shot	√	√
	Burst Shooting	√	√
	AEB	√	√
	Timed	√	√
	Pano	√	x
	Hyperlapse	√	√
Video	Slow Motion	√	√
	Night Mode	√	√
	MasterShots	√	√
	QuickShots	√	√ ^[1]
	FocusTrack	√	√

[1] The medium tele camera does not support the Asteroid mode of QuickShots.

6.3. Firmware Update

Use the SPECTA app to update the aircraft and the remote controller firmware.

Connect the aircraft to the remote controller, and connect the remote controller to the internet. You will be prompted if a new firmware is available. Follow the on-screen instructions to download and update the firmware.



- The battery firmware is included in the aircraft firmware. Be sure to update all batteries.
 - Make sure to follow all the steps to update the firmware, otherwise the update may fail.
 - Before performing an update, make sure the Intelligent Flight Battery is at least 40% charged and the remote controller is at least 20% charged.
 - The firmware update will take approximately 10 minutes. It is normal for the gimbal to go limp, aircraft status indicators to blink, and the aircraft to reboot. Wait patiently until the update is complete.
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6.4. FAR Remote ID Compliance Information

The unmanned aircraft system is equipped with a Remote ID system that meets the requirements of 14 CFR Part 89:

- The aircraft automatically initiates a pre-flight self-test (PFST) of the Remote ID system before takeoff and cannot take off if it does not pass the PFST. The results of the PFST of the Remote ID system can be viewed on the SPECTA app. The pass criterion for PFST is that the hardware and software of the Remote ID required-data source and transmitter radio in the Remote ID system are functioning properly.
- The aircraft monitors the Remote ID system functionality from pre-flight to shut down. If the Remote ID system malfunctions or has a failure, a prompt indicating a RID exception will be displayed on the SPECTA app.

6.5. Aftersales Information

For aftersales service and support, contact COGITO TECH by sending emails to after-sales@cogito-techs.com.

This content is subject to change.

<https://cogito-techs.com>

If you have any questions about this document, please contact COGITO TECH by sending a message to **after-sales@cogito-techs.com**.

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