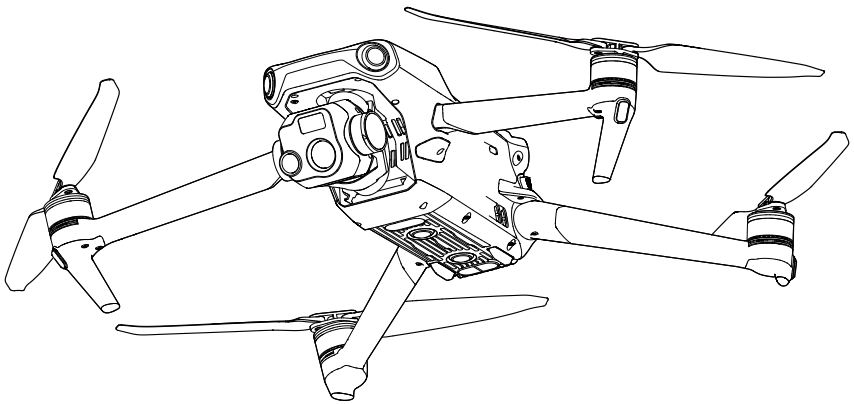
ANZU RAPTOR / ANZU RAPTOR T

User Manual



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.

Printing this Document

This document supports high resolution printing.

Using this Manual

Legend

⊘ Warning ⚠ Important Hints and Tips Reference

Read Before the First Flight

Anzu Robotics provides users with tutorial videos and the following documents.

1. In the Box
2. Safety Guidelines
3. Quick Start Guide
4. 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 meet the operating temperature range requirements of that grade.

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Product Profile

Introduction

Anzu Raptor/Anzu RaptorT features both an infrared sensing system and upward, downward, and horizontal omnidirectional vision systems, allowing for hovering and flying indoors as well as outdoors and for automatic Return to Home while avoiding obstacles in all directions. The aircraft has a maximum flight speed of 47 mph (75.6 kph) and a maximum flight time of 45 minutes.

The built-in Anzu Robotics software system detects nearby aircraft in the surrounding airspace, providing alerts in the Anzu Robotics software to ensure safety. Safety during flight is improved with the beacon that helps to identify the aircraft and the auxiliary bottom light allows the vision positioning system to achieve an even greater performance during takeoff and landing at night or when there is low light. The aircraft is also equipped with a PSDK port so users can broaden its applications.

The Anzu Robotics remote controller has a built-in 5.5-in high brightness screen with a resolution of 1920×1080 pixels. Users can connect to the internet via Wi-Fi, while the Android operating system includes Bluetooth and GNSS. The Anzu Robotics remote controller comes with a wide range of aircraft and gimbal controls as well as customizable buttons and has a maximum operating time of 3 hours.

Feature Highlights

Gimbal and Camera: Anzu Raptor's wide-angle 4/3 CMOS, 20MP sensor has a mechanical shutter to prevent motion blur and supports rapid 0.7-second interval shooting, improving the efficiency of mapping missions. Large 3.3 µm pixels that, together with Smart Low-Light Photo, offer significantly improved performance in dim conditions.

Both Anzu Raptor and Anzu Raptor T are equipped with a 12MP tele camera, supporting up to 56× Max Hybrid Zoom to see essential details from afar.

Anzu Raptor T's thermal camera has 640×512 resolution and supports point and area temperature measurement, high-temperature alerts, color palettes, and isotherms to help you find your targets and make quick decisions. Anzu Raptor T's thermal and tele cameras support 28× continuous side-by-side zoom for easy comparisons.

Video Transmission: with four antennas and Anzu Robotics's long-range transmission technology, Anzu Raptor/Anzu RaptorT offers a maximum transmission range of 15 km and video quality at up to 1080p 30fps from the aircraft to Anzu Robotics software. The remote controller works at both 2.4 and 5.8 GHz, and is capable of selecting the best transmission channel automatically.

Flight Modes: the user can focus on operating the aircraft while the software helps the aircraft avoid obstacles in all directions.

- The major difference between the Anzu Raptor and Anzu Raptor T is the gimbal and camera. The general descriptions in this manual apply to both Anzu Raptor and Anzu Raptor T. The illustration takes Anzu Raptor T as an example.

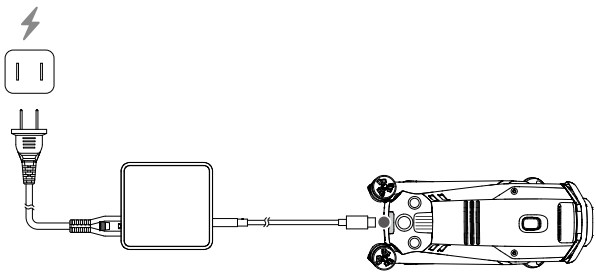
- The maximum flight time was tested in an environment without wind while flying at a consistent flight speed of 20.1 mph (32.4 kph). The maximum flight speed was tested at sea level altitude without wind. Note that the maximum flight speed is limited to 42 mph (68.4 kph) in the European Union (EU). These values are for reference only.
- The remote control devices reach their maximum transmission distance (FCC) in a wide-open area with no electromagnetic interference at an altitude of about 120 m (400 ft). The maximum transmission distance refers to the maximum distance that the aircraft can still send and receive transmissions. It does not refer to the maximum distance the aircraft can fly in a single flight. The maximum runtime was tested in a laboratory environment. This value is for reference only.
- 5.8 GHz is not supported in certain regions. Observe local laws and regulations.

Using for the First Time

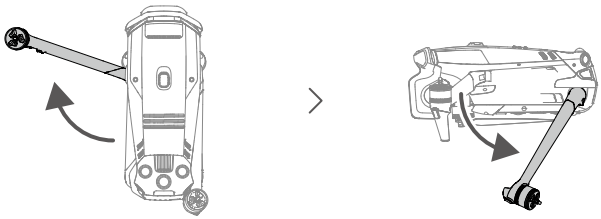
Anzu Raptor/Anzu RaptorT is folded before being packaged. Follow the steps below to unfold the aircraft and remote controller.

Preparing the Aircraft

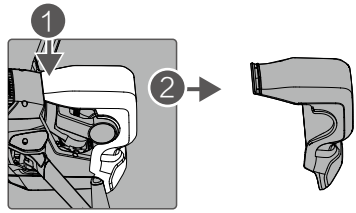
1. All batteries are in hibernation mode before shipment to ensure safety. Use the provided charger to charge and activate the batteries for the first time. It takes approximately 1 hour and 20 minutes to fully charge an Battery.



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

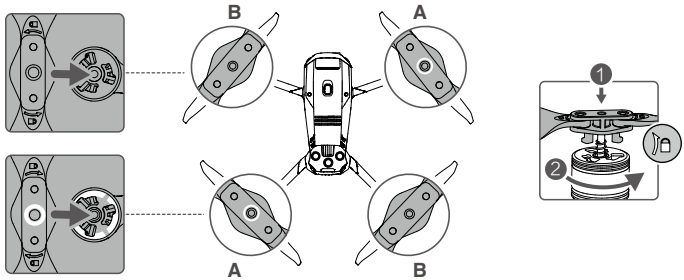


3. Remove the gimbal protector from the camera.

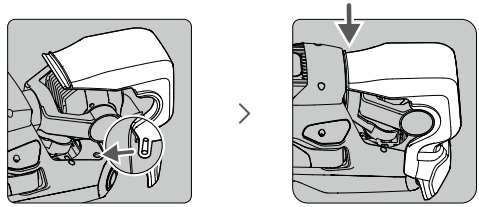


4. Attaching the propellers.

   Propellers with and without marks indicate different directions of rotation. Attach the propellers with marks to the motors with marks and the unmarked propellers to the motors without marks. Hold the motor, press the propeller down, and rotate in the direction marked on the propeller until it pops up and locks in place. Unfold the propeller blades.

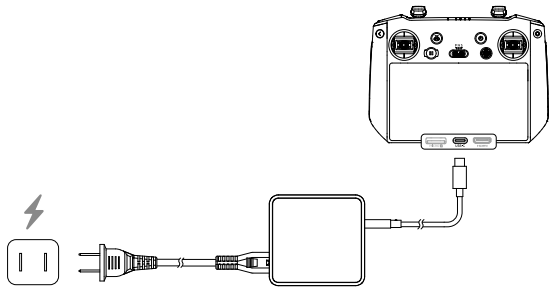


⚠
- Make sure to unfold the front arms before unfolding the rear arms.
- Make sure the gimbal protector is removed and all arms are unfolded before powering on the aircraft. Otherwise, it may affect the aircraft self-diagnostics.
- Attach the gimbal protector when the aircraft is not in use. Adjust the camera to the horizontal position, then cover the vision system with the gimbal protector. Note, align the positioning holes, and then press the buckle to complete the installation.

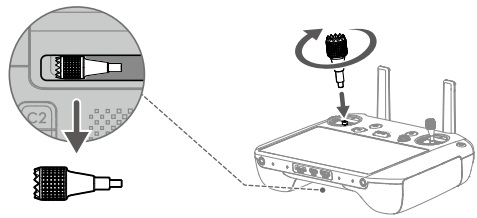


Preparing the Remote Controller

1. Use the provided charger to charge the remote controller via the USB-C port to activate the battery.

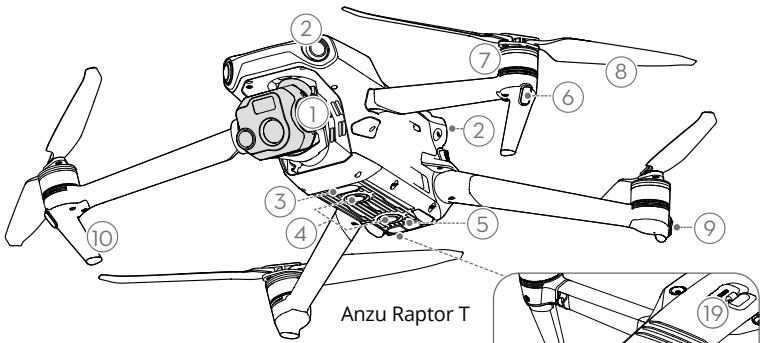


2. Remove the control sticks from the storage slots on the remote controller and screw them into place.
3. Unfold the antennas.



Overview

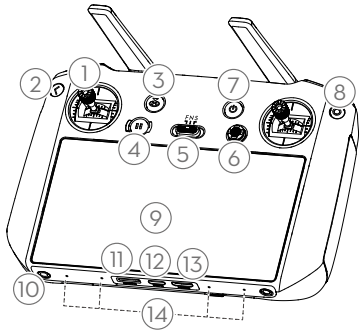
Aircraft

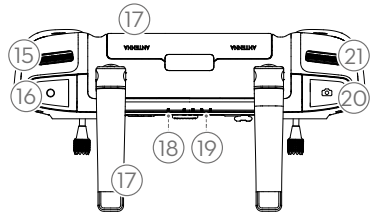


Anzu Raptor

1. Gimbal and Camera
2. Horizontal Omnidirectional Vision System
3. Auxiliary Bottom Light
4. Downward Vision System
5. Infrared Sensing System
6. Front LEDs
7. Motors
8. Propellers
9. Aircraft Status Indicators
10. Landing Gears (Built-in antennas)
11. Upward Vision System
12. USB-C Port
13. microSD Card Slot
14. Battery Level LEDs
15. Battery
16. Power Button
17. Battery Buckles
18. Beacon
19. PSDK Port

Remote Controller





1. **Control Sticks**

   Use the control sticks to control the aircraft movements. Set the flight control mode in Anzu Robotics software . The control sticks are removable and easy to store.

2. **Back/Function Button**

   Press once to return to the previous screen. Press twice to return to the homepage.

   Use the back button and another button to activate button combinations. Refer to the Remote Controller Button Combinations section for more information.

3. **RTH Button**

   Press and hold to initiate RTH. Press again to cancel RTH.

4. **Flight Pause Button**

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

5. **Flight Mode Switch**

   For switching between three flight modes: N-mode (Normal), S-mode (Sport), and F-mode (Function). F-mode can be set to A-mode (Attitude) or T-mode (Tripod) in Anzu Robotics software .

6. **5D Button**

   View the default 5D button functions in Anzu Robotics software . Refer to Guide on the homepage for more information.

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. **Confirm Button**

   Press once to confirm a selection. The button does not have a function when using Anzu Robotics software .

9. **Touchscreen**

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

10. **M4 Screw Hole**

11. **microSD Card Slot**

    For inserting a microSD card.

12. **USB-C Port**

    For charging.

13. **Mini HDMI Port**

    For outputting HDMI signal to an external monitor.

14. **Microphone**

15. **Gimbal Dial**

    Controls the tilt of the camera.

16. **Record Button**

    Press once to start or stop recording.

17. **Antennas**

    Transmit control and video wireless signals between the remote controller

and the aircraft. It includes external and built-in antennas. Do not block the antennas to avoid affecting the transmission performance.

18. Status LED

Indicates the status of the remote controller.

19. Battery Level LEDs

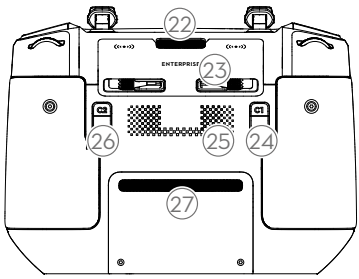
Display the current battery level of the remote controller.

20. Focus/Shutter Button

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

21. Camera Settings Dial

For zoom control.



22. Air Vent

For heat dissipation. Do not block the air vent during usage.

23. Control Sticks Storage Slot

For storing the control sticks.

24. Customizable C1 Button

Use to switch the wide and zoom screen by default. The functions can be customized in Anzu Robotics software.

25. Speaker

26. Customizable C2 Button

Use to switch the map and camera view by default. The functions can be customized in Anzu Robotics software.

27. Air Intake

For heat dissipation. Do not block the air intake during usage.

Flight Safety

Make sure to have training and practice before operating any actual flight. Practice with the simulator in Anzu Robotics software or fly under the guidance of experienced professionals. Pick a suitable area to fly in according to the following flight requirements and restrictions. Fly the aircraft below 120 m (400 ft). Any flight altitude higher than that may violate local laws and regulations. Make sure you understand and comply with the local laws and regulations before flying. Read the Safety Guidelines carefully to understand all safety precautions before flying.

Flight Environment Requirements

1. DO NOT operate the aircraft in severe weather conditions, including wind speeds exceeding 12 m/s, snow, rain, and fog.
2. Only fly in open areas. Tall buildings and large metal structures may affect the accuracy of the onboard compass and GNSS system. It is recommended to keep the aircraft at least 5 m away from structures.
3. Avoid obstacles, crowds, 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. GNSS cannot be used on the aircraft in polar regions. Use the vision system instead.
7. DO NOT take off from moving objects, such as cars and ships.
8. Make sure the beacon and the auxiliary bottom light are enabled at night for flight safety.
9. To avoid affecting the motor service life, DO NOT take off or land the aircraft on sandy or dusty areas.

Wireless Communication Requirements

1. Fly in wide open areas. Tall buildings, steel structures, mountains, rocks, or tall trees may affect the accuracy of the GNSS and block the video transmission signal.
2. Avoid interference between the remote controller and other wireless equipment. Make sure to power off nearby Wi-Fi and Bluetooth devices when controlling the aircraft by remote control.
3. Be extremely alert when flying near areas with magnetic or radio interference. Pay close attention to the image transmission quality and signal strength on Anzu Robotics software . Sources of electromagnetic interference include but are not limited to: high voltage lines, large-scale power transmission stations or mobile base stations, and

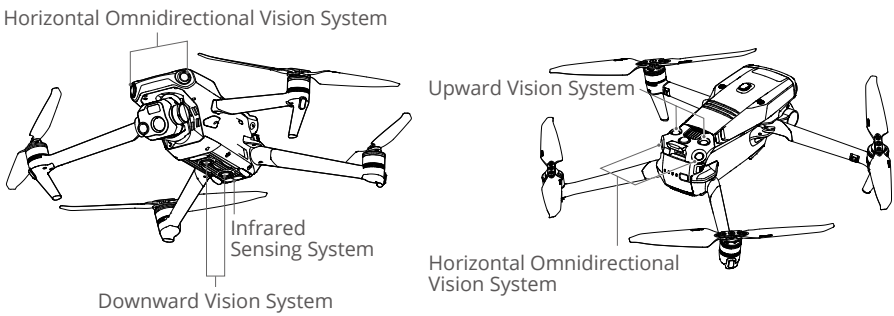
broadcasting towers. The aircraft may behave abnormally or lose control when flying in areas with too much interference. Return to the Home Point and land the aircraft if prompted to do so in Anzu Robotics software .

Vision Systems and Infrared Sensing System

Anzu Raptor/Anzu RaptorT is equipped with both an Infrared Sensing System and Horizontal Omnidirectional (Forward, Backward, Lateral), Upward, and Downward Vision Systems.

The Upward and Downward Vision Systems consist of two cameras each, and the Forward, Backward, and Lateral Vision Systems consist of four cameras in total.

The Infrared Sensing System consists of two 3D infrared modules. The Downward Vision System and Infrared Sensing System help the aircraft maintain its current position, hover more precisely, and fly indoors or in other environments where GNSS is unavailable.



Detection Range

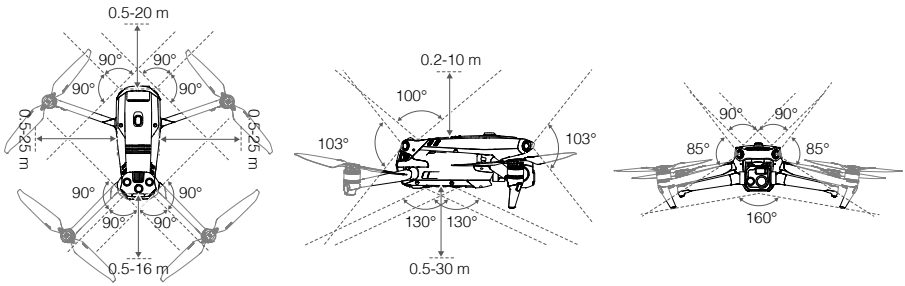
Forward Vision System
Precision Measurement Range: 0.5-20 m; FOV: 90° (horizontal), 103° (vertical)

Backward Vision System
Precision Measurement Range: 0.5-16 m; FOV: 90° (horizontal), 103° (vertical)

Lateral Vision System
Precision Measurement Range: 0.5-25 m; FOV: 90° (horizontal), 85° (vertical)

Upward Vision System
Precision Measurement Range: 0.2-10 m; FOV: 100° (front and back), 90° (left and right)

Downward Vision System
Precision Measurement Range: 0.3-18 m; FOV: 130° (front and back), 160° (left and right).
The Downward Vision System works best when the aircraft is at an altitude of 0.5 to 30 m.



Using the Vision System

The positioning function of the Downward Vision System is applicable when GNSS signals are unavailable or weak. It is automatically enabled in Normal mode.

The Horizontal Omnidirectional and Upward Vision Systems will activate automatically when the aircraft is powered on if the aircraft is in Normal mode and Obstacle Avoidance is set to Avoid or Brake in Anzu Robotics software . The aircraft can actively brake when detecting obstacles when using the Horizontal Omnidirectional, and Upward Vision Systems. The Horizontal Omnidirectional and Upward Vision Systems work 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.

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- Pay attention to the flight environment. The Vision Systems and 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 on Anzu Robotics software , 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.
- The Downward Vision System may not function properly when the aircraft is flying over water. Therefore, the aircraft may not be able to actively avoid the water below 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 system cannot work properly over surfaces without clear pattern variations or where the light is too weak or too strong. The vision system 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.

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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 texture.
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).

- 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.
- 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 Vision Systems and Infrared Sensing system.
  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.
  c. Contact Anzu Robotics Support if there is any damage to the glass of the Infrared Sensing and Vision Systems.
- DO NOT obstruct the Infrared Sensing System.

Return to Home

Return to Home (RTH) brings the aircraft back to the last recorded Home Point when the positioning system is functioning normally. There are three types of RTH: Smart RTH, Low Battery RTH, and Failsafe RTH. The aircraft automatically flies back to the Home Point and lands when Smart RTH is initiated, the aircraft enters Low Battery RTH, or the signal between the remote controller and the aircraft is lost during flight.

	GNSS	Description
Home Point	10	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. Anzu Robotics software will give a voice prompt when the Home Point is set.

Smart RTH

Press and hold the RTH button on the remote controller to initiate Smart RTH. Press the RTH button or flight pause button to exit Smart RTH and regain full control of the aircraft.

Advanced RTH

Advanced RTH is enabled if the lighting is sufficient and the environment is suitable for vision systems when Smart RTH is triggered. The aircraft will automatically plan the best RTH path, which will be displayed in Anzu Robotics software and will adjust according to the environment.

RTH Settings

RTH settings are available for Advanced RTH. Go to the camera view in Anzu Robotics software , tap • • • > , and then RTH.

1. Preset: if the aircraft is further than 50 m from the home point when RTH begins, the aircraft will plan the RTH path, fly to an open area while avoiding obstacles, ascend to the RTH Altitude, and return to home using the best path.
   If the aircraft is at a distance of 5 to 50 m from the home point when RTH begins, the aircraft will not ascend to the RTH Altitude and instead return to home using the best path at the current altitude.
   When the aircraft is near the home point, the aircraft will descend while flying forward if the current altitude is higher than the RTH Altitude.

2. Optimal: regardless of the RTH Altitude settings, the aircraft automatically plans the optimal RTH path and adjusts the altitude according to environmental factors such as obstacles and transmission signals. The optimal RTH path means the aircraft will travel the shortest distance possible, reducing the amount of battery power used and increasing flight time.

Advanced RTH Procedure

1. The Home Point is recorded automatically.
2. Advanced RTH is triggered.
3. The aircraft brakes and hover in place.
   a. The aircraft lands immediately if it is less than 5 m from the Home Point when RTH begins.
   b. If the aircraft is farther than 5 m from the home point when RTH begins, the aircraft will plan the best path according to the RTH settings and fly to the Home Point while avoiding obstacles and GEO zones. The aircraft front will always point in the same direction as the flight direction.
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.

Straight Line RTH

The aircraft will enter Straight Line RTH when the lighting is not sufficient and the environment is not suitable for the Advanced RTH.

Straight Line RTH Procedure:

1. The Home Point is recorded.
2. Straight Line RTH is triggered.
3. The aircraft brakes and hovers in place.
   a. If the aircraft is farther than 50 m from the Home Point when RTH begins, the aircraft first ascends to a height of 20 m (this step will be skipped if the current height is higher than 20 m), then the aircraft adjusts its orientation and ascends to the preset RTH altitude and flies to the Home Point. If the current altitude is higher than the RTH altitude, the aircraft will fly to the Home Point at the current altitude.
   b. If the aircraft is at a distance of 5 to 50 m from the Home Point when RTH begins, the aircraft adjusts its orientation and flies to the Home Point at the current altitude. If the current altitude is lower than 2 m when RTH begins, the aircraft will ascend to 2 m and flies back to the Home Point.
   c. The aircraft lands immediately if it is less than 5 m from the Home Point when RTH begins.
4. The aircraft lands and the motors stop after reaching the Home Point.

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- During Advanced RTH, the aircraft will adjust the flight speed automatically to 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 Smart RTH.
- Set Advanced RTH as Preset if there are power lines or towers that the aircraft cannot avoid 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.

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- If the max altitude is set below the current altitude during RTH, the aircraft will descend to the max altitude and return to home.
- The RTH Altitude cannot be changed during RTH.
- If there is a large difference in the current altitude and the RTH altitude, the amount of battery power used cannot be calculated accurately due to wind speeds at different altitudes. Pay extra attention to the battery power and warning prompts in Anzu Robotics software .
- Advanced RTH will not be available if the lighting condition and environment are not suitable for vision systems during takeoff or RTH.
- During Advanced RTH, the aircraft will enter Straight Line RTH if the lighting condition and environment are not suitable for vision systems and the aircraft cannot avoid 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 flown left or right. Acceleration uses more power. The aircraft cannot avoid obstacles if the flight speed exceeds the effective sensing speed. The aircraft will brake and hover in place and exit from RTH if the pitch stick is pulled all the way down. The aircraft can be controlled after the pitch stick is released.
- When the remote controller signal is normal during Straight Line RTH, the flight speed and altitude can be controlled using the remote controller, but the orientation of the aircraft cannot be controlled and the aircraft cannot be flown left or right. The aircraft cannot avoid obstacles if the pitch stick is used to accelerate and the flight speed exceeds the effective sensing speed. When the aircraft is ascending or flying forward, push the control stick completely in the opposite direction to exit RTH. Release the control stick to regain control of the aircraft.
- If the aircraft reaches the max altitude while it is ascending during RTH, the aircraft stops and returns to the Home Point at the current altitude.
- The aircraft will hover in place if it reaches the max altitude while it is ascending after detecting obstacles in front.

Low Battery RTH

When the 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 will automatically calculate if it has enough power to fly to the Home Point from its current location. A warning prompt will appear in Anzu Robotics software when the battery level is low and the aircraft can only support Low Battery RTH.

The aircraft will automatically fly to the Home Point if no action is taken after a 10-second countdown. Cancel RTH by pressing the RTH button or flight pause button on the remote controller.

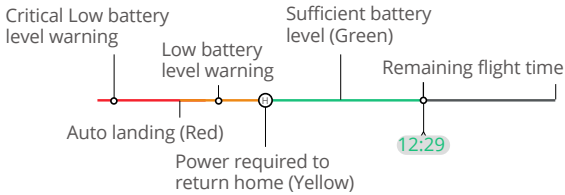
A low battery level warning will be prompted only once during a flight. If RTH is canceled following the warning, the Battery may not have enough power for the aircraft to land safely, which may lead to the aircraft crashing or being lost.

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 alter the horizontal movement and the speed of descent 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.

The illustration shown below is the Battery Level Indicator Bar located at the top bar of the Anzu Robotics software . Refer to the Top Bar section in the Anzu Robotics software chapter for more information.



Battery Level Warning	Implication	Flight
Low Battery RTH	The remaining battery level is only enough for the aircraft to fly to the Home Point safely.	If RTH is selected, the aircraft will fly to the Home Point automatically and landing protection will be enabled. Users can regain control of the aircraft and land it manually during RTH. ⚠ **The warning will not appear again after choosing not to use RTH. Decide carefully and ensure flight safety.**
Auto Landing	The remaining battery level is only enough for the aircraft to descend from its current altitude.	The aircraft will land automatically and landing protection will be enabled.
Estimated Remaining Flight Time	The estimated remaining flight time of the aircraft is based on its current battery level.	/
Low Battery Level Warning	Tap • • • > in camera view to set the low battery level threshold value.*	Long beeps will sound from the remote controller. The user can still control the aircraft.
Critical Low Battery Level Warning	Tap • • • > in camera view to set the critical low battery level threshold value.*	Short beeps will sound from the remote controller. The user can still control the aircraft. It is unsafe to continue flying the aircraft. Land immediately.

* The threshold value is different from that of Low Battery RTH or auto landing.

⚠ The colored zones and the estimated remaining flight time on the battery level indicator are automatically adjusted according to the aircraft's current location and status.

Failsafe RTH

The action of the aircraft when the remote controller signal is lost can be set to RTH, land, or hover in Anzu Robotics software . If 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 vision systems are working normally, Anzu Robotics software will display the RTH path that was generated by the aircraft before the remote controller signal was lost and return to home using Advanced RTH according to the RTH settings. The aircraft will remain in RTH even if the remote controller signal is restored. Anzu Robotics software will update the RTH path accordingly.

When the lighting is not sufficient and the vision systems are not available, the aircraft will enter Original Route RTH.

Original Route RTH Procedure:

1. The aircraft brakes and hover in place.
2. a. If the aircraft is farther than 50 m from the Home Point, the aircraft adjusts its orientation and flies backward for 50 m on its original flight route before entering Straight Line RTH.
   b. If the aircraft is farther than 5 m but less than 50 m from the Home Point, it enters Straight Line RTH.
   c. The aircraft lands immediately if it is less than 5 m from the Home Point when RTH begins.
3. The aircraft lands and the motors stop after reaching the Home Point.

The aircraft will enter or remain in Straight Line RTH if the remote controller signal is restored during RTH.

⚠
- The aircraft may not be able to return to the Home Point normally if the GNSS signal is weak or unavailable. The aircraft may enter ATTI mode if the GNSS signal becomes weak or unavailable after entering Failsafe RTH. The aircraft will hover in place for a while before landing.
- It is important to set a suitable RTH altitude before each flight. Launch Anzu Robotics software and set the RTH altitude. The default RTH altitude is 100 m.
- The aircraft cannot avoid 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.

⚠
- Be aware of 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 may not be available in some environments even if the vision systems are working. The aircraft will exit RTH in such cases.

Landing Protection

Landing Protection will activate during Smart 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, Anzu Robotics software 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.

⚠
- Landing protection will not work in the following circumstances:
  a. When the downward vision system is disabled.
  b. When the user is operating the pitch/roll/throttle stick (landing protection will be re-activated when the control stick is not in use).
  c. When the positioning system is not functioning properly (e.g., position drift errors).
  d. When the vision system needs calibrating. When the lighting is too dim for the vision system to operate.
  e. If no valid observation data is obtained and the ground conditions cannot be detected, the aircraft will descend to 0.5 m above the ground and hover pending confirmation by the user to 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 Anzu Robotics software 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 light or too dark.

- The following actions are available during Precision Landing:
  a. Press the throttle stick down to accelerate landing.
  b. Move the control sticks in any direction apart from the throttle direction to stop Precision Landing. The aircraft will descend vertically after the control sticks are released.

Flight Restrictions

GEO (Geospatial Environment Online) System

Anzu Robotics'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. Under exceptional circumstances, restricted areas can be unlocked to allow flight. Prior to that, the user must submit an unlocking request based on the current restriction level in the intended flight area. 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 before requesting to unlock a flight in a restricted area.

GEO Zones

Anzu Robotics'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 Anzu Robotics software . 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.

Flight Restrictions in GEO Zones

The following section describes in detail the flight restrictions for the above mentioned GEO Zones.

GEO Zone	Flight Restriction	Scenario
Restricted Zones (Red)	UAVs are prohibited from flying in Restricted Zones. If you have obtained permission to fly in a Restricted Zone.	Takeoff: the aircraft motors cannot be started in Restricted Zones.
		In Flight: when the aircraft flies inside a Restricted Zone, a 100-second countdown will commence in Anzu Robotics software . When the countdown is finished, the aircraft will land immediately in semi-automatic descent mode and turn off its motors after landing.
		In Flight: when the aircraft approaches the boundary of a Restricted Zone, the aircraft will automatically decelerate and hover.
Authorization Zones (Blue)	The aircraft will not be able to take off in an Authorization Zone unless it obtains a permission to fly in the area.	Takeoff: the aircraft motors cannot be started in Authorization Zones. To fly in an Authorization Zone, the user is required to submit an unlocking request registered with a Anzu Robotics-verified phone number.
		In Flight: when the aircraft flies inside an Authorization Zone, a100-second countdown will commence in Anzu Robotics software . When the countdown is finished, the aircraft will land immediately in semi-automatic descent mode and turn off its motors after landing.
Warning Zones (Yellow)	A warning will be displayed when the aircraft flies inside a Warning Zone.	The aircraft can fly in the zone but the user is required to understand the warning.
Enhanced Warning Zones (Orange)	When the aircraft flies in an Enhanced Warning Zone, a warning will be displayed prompting the user to confirm the flight path.	The aircraft can continue to fly once the warning is confirmed.

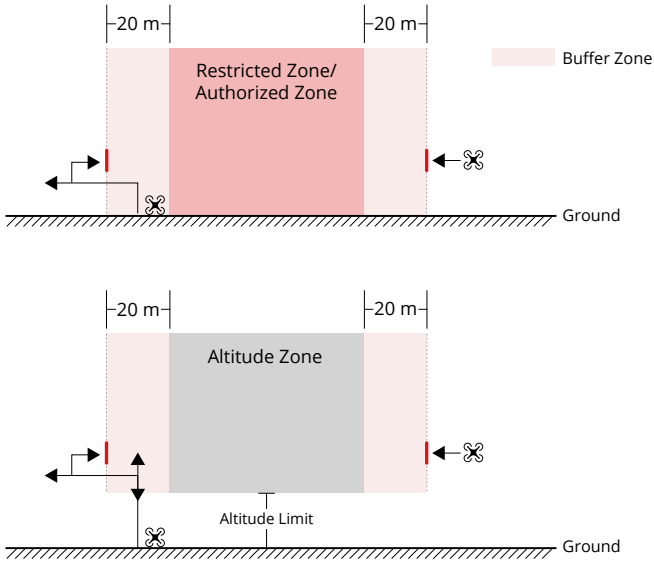
Altitude Zones (Gray)	The aircraft altitude is limited when flying inside an Altitude Zone.	When the GNSS signal is strong, the aircraft cannot fly above the altitude limit. In Flight: when the GNSS signal changes from weak to strong, a 100-second countdown will commence in Anzu Robotics software if the aircraft exceeds the altitude limit. When the countdown is finished, the aircraft will descend below the altitude limit and hover.
		When the aircraft approaches the boundary of an Altitude Zone and the GNSS signal is strong, the aircraft will decelerate automatically and hover if the aircraft is above the altitude limit.

Semi-Automatic Descent: All stick commands except the throttle stick command and the RTH button are available during descent and landing. The aircraft motors will turn off automatically after landing. It is recommended to fly the aircraft to a safe location before the semi-automatic descent.

Buffer Zone

Buffer Zones for Restricted Zones/Authorization Zones: to prevent the aircraft from accidentally flying into a Restricted or Authorization Zone, the GEO system creates a buffer zone of about 20 meters wide outside each Restricted and Authorization Zone. As shown in the illustration below, the aircraft can only take off and land away from the Restricted or Authorization Zone when inside the buffer zone. The aircraft cannot fly toward the Restricted or Authorization Zone unless an unlocking request has been approved. The aircraft cannot fly back into the buffer zone after leaving the buffer zone.

Buffer Zones for Altitude Zones: a buffer zone of about 20 meters wide is established outside each Altitude Zone. As shown in the illustration below, when approaching the buffer zone of an Altitude Zone in a horizontal direction, the aircraft will gradually reduce its flight speed and hover outside the buffer zone. When approaching the buffer zone from underneath in a vertical direction, the aircraft can ascend and descend in altitude or fly away from the Altitude Zone. The aircraft cannot fly toward the Altitude Zone. The aircraft cannot fly back into the buffer zone in a horizontal direction after leaving the buffer zone.



Unlocking GEO Zones

To satisfy the needs of different users, Anzu Robotics provides two unlocking modes: Self-Unlocking and Custom Unlocking. Users may request either on the Anzu Robotics Fly Safe website or via a mobile device.

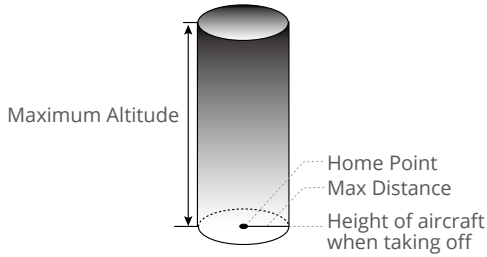
Self-Unlocking is intended for unlocking Authorization Zones. To complete Self-Unlocking, the user must submit an unlocking request via the Anzu Robotics Fly Safe website at https://www.Anzu Robotics.com/flysafe. Once the unlocking request is approved, the user may synchronize the unlocking license through the Anzu Robotics software app (Live Self-Unlocking). To unlock the zone, alternatively, the user may launch or fly the aircraft directly into the approved Authorization Zone and follow the prompts in Anzu Robotics software to unlock the zone (Scheduled Self-Unlocking). For Live Self-Unlocking, the user can designate an unlocked period during which multiple flights can be operated. Scheduled Self-Unlocking is only valid for one flight. If the aircraft is restarted, the user will need to unlock the zone again.

Custom Unlocking is tailored for users with special requirements. It designates user-defined custom flight areas and provides flight permission documents specific to the needs of different users. This unlocking option is available in all countries and regions and can be requested via the Anzu Robotics Fly Safe website at https://www.Anzu Robotics.com/flysafe.

Unlocking on Mobile Device: run the Anzu Robotics software app and tap GEO Zone Map on the home screen. View the list of the unlocking licenses and tap ⓘ to view details of the unlocking license. A link to the unlocking license and a QR code will be displayed. Use your mobile device to scan the QR code and apply to unlock directly from the mobile device.

Maximum Altitude & Distance Restrictions

Maximum flight altitude restricts the aircraft flight altitude, while maximum flight distance restricts the aircraft flight radius around the Home Point. These limits can be set using the Anzu Robotics software app for improved flight safety.



Home Point not manually updated during flight

Strong GNSS Signal		
	Flight Restrictions	Prompt in Anzu Robotics software
Max Altitude	The altitude of the aircraft cannot exceed the value set in Anzu Robotics software .	Aircraft approaching max flight altitude. Fly with caution.
Max Distance	The straight-line distance from the aircraft to the Home Point cannot exceed the max flight distance set in Anzu Robotics software .	Aircraft approaching max flight distance. Fly with caution.
Weak GNSS Signal		
	Flight Restrictions	Prompt in Anzu Robotics software
Max Altitude	When the GNSS signal is weak, namely, when the GNSS icon is yellow or red, and the ambient light is too dark, the max altitude is 3 m (9.84 ft). The max altitude is the relative altitude measured by the infrared sensor. When the GNSS signal is weak, but the ambient light is sufficient, the max altitude is 60 m (196.85 ft).	Aircraft approaching max flight altitude. Fly with caution.
Max Distance	No limit.	N/A

⚠
- If there is a strong GNSS signal every time powered on, the altitude limit becomes invalid automatically.
- If an aircraft exceeds a specified limit, the pilot can still control the aircraft but cannot fly any closer to the restricted area.
- For safety reasons, DO NOT fly the aircraft close to airports, highways, railway stations, railway lines, city centers, or other sensitive areas. Only fly the aircraft within a visual line of sight.

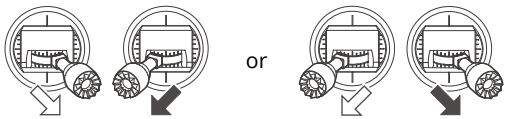
Pre-Flight Checklist

1. Make sure the remote controller and the aircraft batteries are fully charged and the Battery is installed firmly.
2. Make sure the propellers are securely mounted and not damaged or deformed, there are no foreign objects in or on the motors or propellers, and the propeller blades and arms are unfolded.
3. Make sure the lenses of the vision systems, cameras, the glass of the infrared sensors, and the auxiliary lights are clean, free of stickers, and not blocked in any way.
4. Make sure to remove the gimbal protector before powering on the aircraft.
5. Make sure the covers of the microSD card slot and the PSDK port have been closed properly.
6. Make sure the remote controller antennas are adjusted to the proper position.
7. Make sure Anzu Robotics software and the aircraft firmware have been updated to the latest version.
8. Power on the aircraft and the remote controller. Make sure the status LED on the remote controller and the battery level indicators on the aircraft are solid green. This indicates that the aircraft and the remote controller are linked, and the remote controller is in control of the aircraft.
9. Make sure your flight area is outside any GEO zones, and flight conditions are suitable for flying the aircraft. Place the aircraft on open and flat ground. Make sure there are no obstacles, buildings, or trees nearby and that the aircraft is 5 m away from the pilot. The pilot should be facing the rear of the aircraft.
10. To ensure flight safety, enter the camera view of Anzu Robotics software and check the parameters on the pre-flight checklist, such as the failsafe settings, control stick mode, RTH height, and obstacle distance. It is recommended to set the out-of-control action to RTH.
11. Make sure Anzu Robotics software is properly opened to assist your operation of the aircraft. WITHOUT THE FLIGHT DATA RECORDED BY THE ANZU ROBOTICS SOFTWARE, IN CERTAIN SITUATIONS (INCLUDING THE LOSS OF YOUR AIRCRAFT), ANZU ROBOTICS MAY NOT BE ABLE TO PROVIDE AFTERSALES SUPPORT TO YOU OR ASSUME LIABILITY.
12. Divide the airspace for flight when multiple aircraft are operating simultaneously in order to avoid collision mid-air.

Starting/Stopping the Motors

Starting the Motors

A Combination Stick Command (CSC) is used to start the motors. Push both sticks to the inner or outer bottom corners to start the motors. Once the motors start spinning, release both sticks simultaneously.

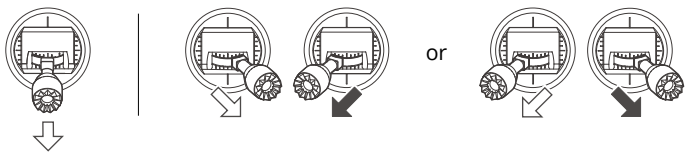


Stopping the Motors

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

Method 1: Push the throttle stick down and hold. The motors will stop after one second.

Method 2: Perform the same CSC used to start the motors and hold. The motors will stop after two seconds.



Method 1 Method 2

Stopping the Motors Mid-Flight

Stopping motors mid-flight will cause the aircraft to crash. The motors should only be stopped mid-flight in an emergency situation, such as if 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.

Flight Test

1. Place the aircraft in an open, flat area with the aircraft rear facing towards you.
2. Power on the remote controller and the aircraft.
3. Launch Anzu Robotics software and enter the camera view.
4. Wait for the aircraft self-diagnostics to complete. If Anzu Robotics software does not show any irregular warning, you can start the motors.
5. Push the throttle stick up slowly to take off.

6. To land, hover over a level surface and gently push the throttle stick down to descend.
7. After landing, push the throttle down and hold until the motors stop.
8. Power off the Battery before the remote controller.

⚠ 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.

Aircraft

Anzu Raptor/Anzu RaptorT contains a flight controller, video downlink system, vision systems, infrared sensing system, propulsion system, and an Battery.

Flight Modes

Anzu Raptor/Anzu RaptorT supports the following flight modes:

Normal Mode:
The aircraft utilizes GNSS, the Horizontal Omnidirectional, Upward, and Downward Vision Systems, and the Infrared Sensing System to locate itself and stabilize. 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, it uses the vision systems. When the vision systems are enabled, and lighting and other environmental conditions are sufficient, the maximum tilt angle is 30° and the maximum flight speed is 15 m/s.

Sport Mode:
In Sport mode, the aircraft uses GNSS for positioning and the aircraft responses are optimized for agility and speed, making it more responsive to control stick movements. Note: obstacle sensing is disabled and the maximum flight speed is 21 m/s (19 m/s when flying in the EU).

Function Mode:
Function mode can be set to T-mode (Tripod mode) or A-mode (Attitude mode) in Anzu Robotics software . T-mode is based on Normal mode. The flight speed is limited to allow easier control of the aircraft. Attitude mode must be used with caution.

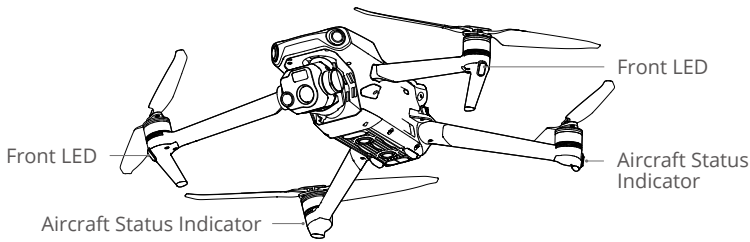
The aircraft automatically changes to A-mode when the vision systems are unavailable or disabled and when the GNSS signal is weak or the compass experiences interference. In A-mode, the aircraft may be more easily affected by its surroundings. Environmental factors such as wind can result in horizontal shifting, which may present hazards, especially when flying in confined spaces.

DO NOT switch from Normal mode to other modes unless you are sufficiently familiar with the aircraft behavior under each flight mode. You must turn on Multiple Flight Modes in Anzu Robotics software before switching from Normal mode to other modes.

- 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.
- When switching the GNSS to the BeiDou satellite positioning system in Anzu Robotics software , the aircraft only uses a single positioning system and the satellite search capability becomes poor. Fly with caution.

Aircraft Status Indicator

Anzu Raptor/Anzu RaptorT has front LEDs and aircraft status indicators.



When the aircraft is powered on, but the motors are not running, the front LEDs glow solid red to display the orientation of the aircraft.

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 Indicators Descriptions

Normal States		
●●●·····	Blinks red, yellow, and green alternately	Powering on and performing self-diagnostic tests
● ×4	Blinks yellow four times	Warming up
●·····	Blinks green slowly	GNSS enabled
● ×2·····	Blinks green twice repeatedly	Vision systems enabled
●·····	Blinks yellow slowly	GNSS and vision systems disabled (ATTI mode 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 takeoff while the status indicators are blinking red slowly, connect to the remote controller, run Anzu Robotics software , and view the details.

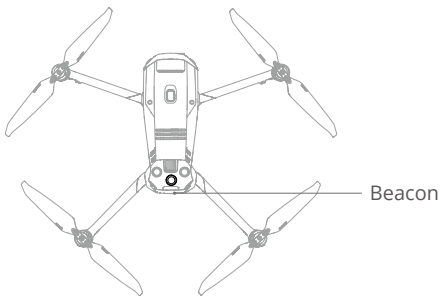
After the motor starts, the front LEDs blink red and green alternately, and the aircraft status indicators blink green.

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

Beacon and Auxiliary Light

Beacon

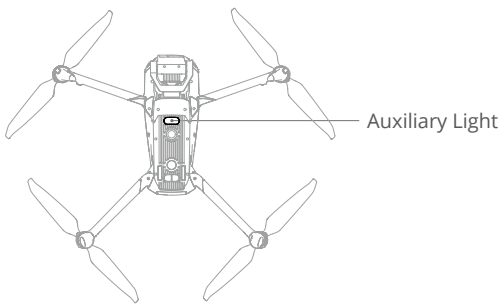
The beacon on the top of the aircraft enables you to find the aircraft when flying at night. The beacon can be manually turned on or off in Anzu Robotics software .



⚠ DO NOT look directly at the beacon when it is in use to avoid damaging your eyes.

Auxiliary Light

The auxiliary bottom 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 Anzu Robotics software app. Each time the aircraft is restarted, the auxiliary bottom light will revert back to the default setting Auto.



⚠ In low-light environments, the vision systems may not achieve optimal positioning performance even if the auxiliary bottom light is turned on. Fly with caution if the GNSS signal is weak in such environments.

Flight Recorder

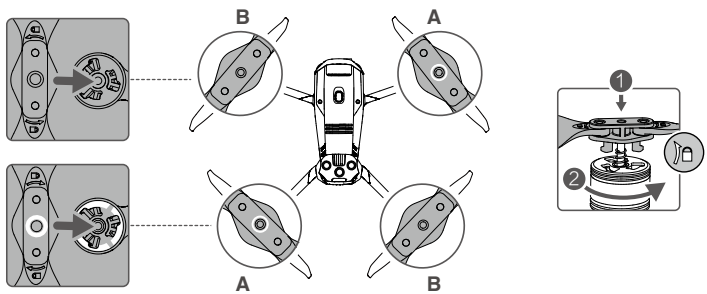
Flight data, including flight telemetry, aircraft status information, and other parameters, are automatically saved to the internal data recorder of the aircraft. The data can be accessed using Anzu Robotics software.

Propellers

There are two types of Anzu Raptor/Anzu RaptorT Quick-Release Propellers 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

Attach the propellers with marks to the motors with marks and the unmarked propellers to the motors without marks. Hold the motor, press the propeller down, and rotate in the direction marked on the propeller until it pops up and locks in place.



Detaching the Propellers

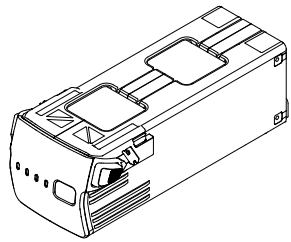
Hold the motor, press the propeller down, and rotate in the opposite direction to the one marked on the propeller until it pops out.

⚠
- The propeller blades are sharp. Handle with care.
- Only use official Anzu Robotics 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 in the direction shown in the carrying case during transportation or storage. DO NOT squeeze or bend the propellers. If propellers are damaged, the flight performance is 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.

Battery

The Anzu Raptor Battery is a 15.4V, 5000mAh 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: to prevent swelling, the battery automatically discharges to 96% battery level when idle for three days and automatically discharges to 60% battery level when idle for nine days (the default is nine days, but it can be set to 4-9 days in the app). 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.

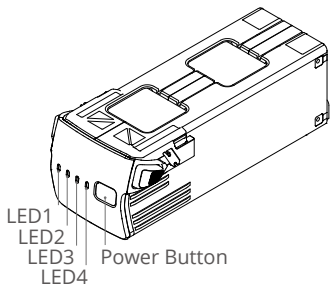
10. Hibernation Mode: the battery switches off after 20 minutes of inactivity to save power. If the battery level is less than 5%, the battery enters Hibernation mode to prevent over-discharge after being idle for six hours. In Hibernation mode, the battery level indicators do not illuminate. Charge the battery to wake it from hibernation.
11. Communication: information about the voltage, capacity, and current of the battery is transmitted to the aircraft.

⚠ Refer to the Safety Guidelines and the stickers on the battery before use. Users shall take full responsibility for all operations and usage.

Using the Battery

Checking the Battery Level

Press the power button once to check the battery level.



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

○ LED is on. ☼ LED is blinking. ○ LED is off.

LED1	LED2	LED3	LED4	Battery Level
○	○	○	○	89%-100%
○	○	○	☼	76%-88%
○	○	○	○	64%-75%
○	○	☼	○	51%-63%
○	○	○	○	39%-50%
○	☼	○	○	26%-38%
○	○	○	○	14%-25%
☼	○	○	○	1%-13%

Powering On/Off

Press the power button once, 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 aircraft is powered on.

Low-Temperature Notice

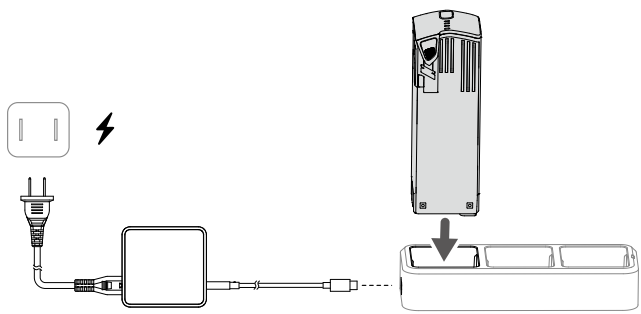
1. Battery capacity is significantly reduced when flying at low temperatures from -10° to 5° C (14° to 41° F). It is recommended to hover the aircraft in place for a while to heat the battery. Make sure to charge the battery fully before takeoff.
2. Batteries cannot be used in extremely low-temperature environments of lower than -10° C (14° F).
3. When in low-temperature environments, end the flight as soon as Anzu Robotics software 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. Fly with extra caution at high altitudes.

Charging the Battery

Fully charge the battery before each use. Only use a Anzu Robotics-approved charging device to charge the Battery.

Using the Charging Hub

Anzu Raptor Battery Charging Hub (100W) is designed for use with Raptor batteries. When used with the Anzu Robotics USB-C Power Adapter (100W), it can charge up to three batteries in sequence from high to low power levels. The charging time for one battery is approximately 1 hour and 10 minutes.



How to Charge

1. Insert the Battery into the battery port. Connect the charging hub to a power outlet (100-240 V, 50-60 Hz) using the Anzu Robotics USB-C Power Adapter (100W).
2. The Battery with the highest power level will be charged first, and then the rest will be charged in sequence according to their power levels. Refer to the Status LED Indicator Descriptions for more information about the blinking patterns of the status LED indicator.

3. The Battery can be disconnected from the charging hub when charging is complete.

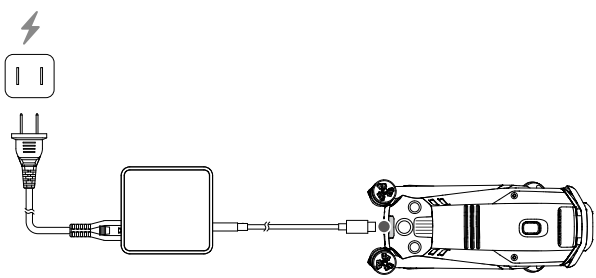
Status LED Indicator Descriptions

Blinking Pattern	Description
Solid yellow	No battery is inserted
Pulses green	Charging
Solid green	All batteries fully charged
Blinks yellow	Temperature of batteries too low or too high (no further operation needed)
Solid red	Power supply or battery error (remove and reinsert the batteries or unplug and plug in the charger)

⚠
- It is recommended to use a Anzu Robotics USB-C Power Adapter (100W) when using the Raptor Battery Charging Hub to charge Raptor batteries.
- The charging hub is only compatible with BWX260-5000-15.4 batteries. DO NOT attempt to use the charging hub with other battery models.
- Place the charging hub on a flat and stable surface when in use. Make sure the device is properly insulated to prevent fire hazards.
- DO NOT attempt to touch the metal terminals on the battery case.
- Clean the metal terminals with a clean, dry cloth if there is any noticeable buildup.

Using Anzu Robotics USB-C Power Adapter (100W)

1. Connect the charger to an AC power supply (100-240V, 50/60 Hz; use a power adapter if necessary).
2. Connect the aircraft to the charger 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 Battery immediately after flight as it may be too hot. Wait for the battery to cool down to the operating temperature before charging again.
- The charger stops charging the battery if the battery cell temperature is not within the operating range of 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.
- Anzu Robotics does not take any responsibility for damage caused by third-party chargers.

For safety purposes, keep the batteries at a low power level in transit. This can be done by flying the aircraft outdoors until there is less than 30% charge left.

The table below shows the battery level during charging.

LED1	LED2	LED3	LED4	Battery Level
☼	☼	○	○	1%-50%
☼	☼	☼	○	51%-75%
☼	☼	☼	☼	76%-99%
○	○	○	○	100%

Battery Protection Mechanisms

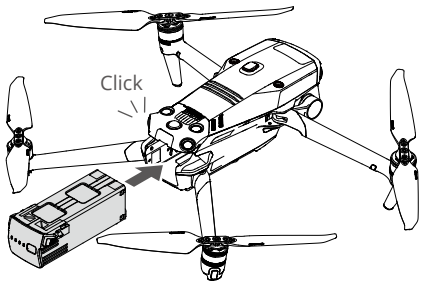
The battery level LEDs can display battery protection notifications triggered by abnormal charging conditions.

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.

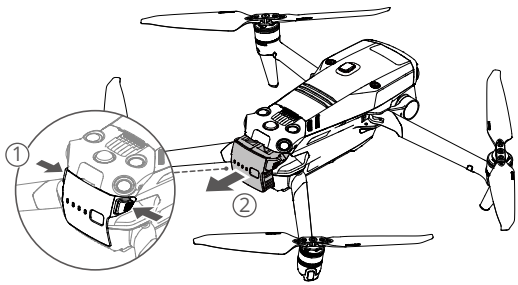
Inserting the Battery

Insert the Battery into the battery compartment of the aircraft. Make sure it is mounted securely and that the battery buckles are clicked into place.



Removing the Battery

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

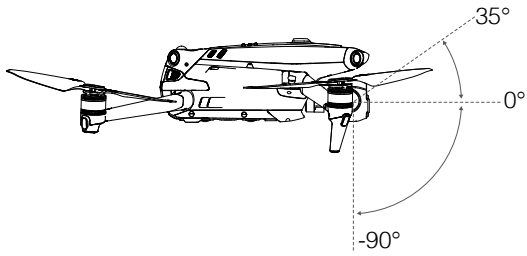


⚠
- DO NOT insert or remove the battery while the aircraft is powered on.
- Make sure the battery is mounted securely.

Gimbal

Gimbal Profile

The Anzu Raptor/Anzu RaptorT 3-axis gimbal stabilizes the camera, allowing you to capture clear and steady images and videos at high flight speed. The control tilt range is -90° to +35°.



Use the gimbal dial on the remote controller to control the tilt of the camera. Alternatively, enter the camera view in Anzu Robotics software . Press the screen until a circle appears and drag the circle up and down to control the tilt of the camera.

Gimbal Mode

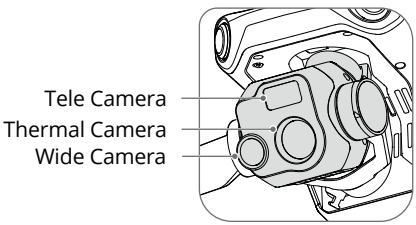
The gimbal operates in Follow mode: the tilt angle of the gimbal remains stable relative to the horizontal plane, which is suitable for shooting stable images. Users can adjust the gimbal tilt.

⚠
- 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 in the following situations: a. The aircraft is on uneven ground, and the gimbal is obstructed. b. The gimbal experiences an excessive external force, such as during a collision.
- DO NOT apply external force to the gimbal after the gimbal is powered on. DO NOT add any extra payload to the gimbal, as this may cause the gimbal to function abnormally or even lead to permanent motor damage.
- Make sure to remove the gimbal protector before powering on the aircraft. Also, make sure to mount 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.

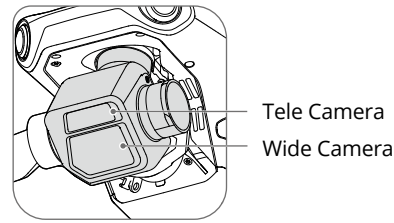
Camera

Camera Profile

Both Anzu Raptor and Anzu Raptor T integrate a tele camera and a wide camera, which enable users to quickly switch to a highly magnified zoom view for detailed observation after recognizing a target in the wide-angle camera view. Anzu Raptor T is also equipped with a long-wave infrared thermal imaging camera, which can shoot thermal images.



Anzu Raptor T



Anzu Raptor

Anzu Raptor

Anzu Raptor's wide-angle 4/3 CMOS, 20MP sensor has a mechanical shutter to prevent motion blur and supports rapid 0.7-second interval shooting. Large 3.3 μm pixels that, together with Smart Low-Light Photo, offer significantly improved performance in dim conditions. The tele camera boasts a 1/2-in CMOS sensor, capable of shooting 12MP photos with an aperture of f/4.4 and shooting at 3 m to infinity, supporting up to 56× Max Hybrid Zoom.

Anzu Raptor T

Anzu Raptor T's wide camera boasts a 1/2-in CMOS sensor, capable of shooting 48MP photos with an aperture of f/2.8 and shooting at 1 m to infinity.

The tele camera boasts a 1/2-in CMOS sensor, capable of shooting 12MP photos with an aperture of f/4.4 and shooting at 3 m to infinity, supporting up to 56× Max Hybrid Zoom.

The thermal camera has 640×512 resolution and, together with the tele camera, supports 28× continuous side-by-side zoom for easy comparisons.

⚠
- DO NOT expose the thermal camera lenses to strong sources of energy such as the sun, lava, or a laser beam. Otherwise, the camera sensor may be burned, leading to permanent damage.
- 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.

Storing Photos and Videos

A microSD card is in the microSD card slot when shipped. The aircraft supports microSD cards with a maximum capacity of up to 512 GB. To ensure that the camera can quickly read and write data for HD video recording, use a microSD card with UHS Speed Class 3 or above and a write speed greater than 30 MB/s. Refer to the Recommended microSD Cards in specifications.

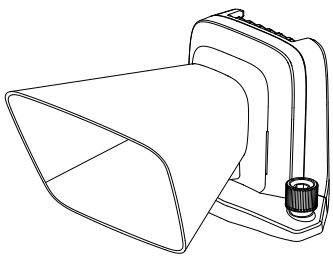
⚠
- DO NOT remove the microSD card from the aircraft when recording. Otherwise, the microSD card may be damaged.
- To ensure the stability of the camera system, single video recordings are limited to 30 minutes.
- Check camera settings before use to ensure they are configured correctly.
- Before shooting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

PSDK Port

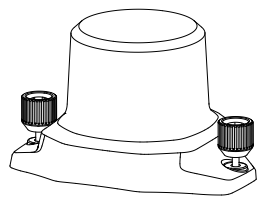
Anzu Raptor/Anzu RaptorT features a PSDK port for mounting additional compatible Anzu Robotics modular accessories that are listed below:

Speaker: used for long-range, real-time broadcasting or audio playback.

RTK module: tracks the dual-frequency multi-mode signals of visible satellites in complex environments, provides higher accuracy and more reliable data for positioning, and improves the anti-interference ability in strong magnetic environments, which ensures reliable operation and flight. When used with a High Precision GNSS Mobile Station or a custom Network RTK, more accurate positioning data can be obtained.



Speaker

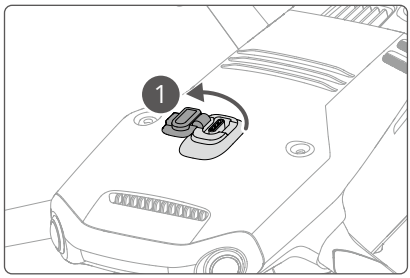


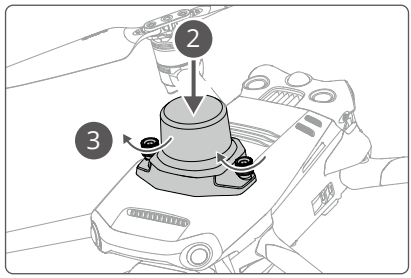
RTK Module

Usage

The following example illustrates how to install and use modular accessories. The RTK module is used as an example.

1. Remove the PSDK port cover on the top of the aircraft when the aircraft is powered off.
2. Mount the RTK module onto the PSDK port of the aircraft.
3. Tighten the knobs on both sides to ensure that the RTK module is firmly mounted onto the aircraft.





4. Power on the aircraft and launch Anzu Robotics software to use the accessory.

⚠
- Make sure that the accessories are correctly and securely mounted on the aircraft before use. Otherwise, they may fall from the aircraft during flight.
- DO NOT use the speaker near people or in an urban area where noise-sensitive structures are concentrated, as the loudness could lead to accidents or injuries.
- It is recommended to use the Anzu Robotics remote controller remote controller to play vocals or import a vocal source for the best playback effect. It is not recommended to play single-frequency sounds such as an alarm to avoid irreversible damage to the speaker.
- The RTK module does not support hot swapping. Please avoid blocking the RTK module to ensure positioning accuracy.

Using the RTK Module

Enabling/Disabling RTK

Ensure that the RTK function is enabled and the RTK service type is correctly set (D-RTK 2 Mobile Station or Network RTK) before each use. Otherwise, RTK cannot be used for positioning. Make sure to disable the RTK function if not in use. Otherwise, the aircraft will not be able to take off when there is no differential data.

- RTK positioning can be enabled and disabled during flight. Remember to select an RTK service type first.
- After RTK is enabled, Maintain Positioning Accuracy mode can be used.

Appendix

Specifications

Aircraft		
Weight (with propellers, without accessories)[1]	Anzu Raptor: 915 g Anzu Raptor T: 920 g	
Max Takeoff Weight	1050 g	
Dimensions	Folded (without propellers): 221×96.3×90.3 mm Unfolded (without propellers): 347.5×283×107.7 mm	
Diagonal Distance	380.1 mm	
Max Ascent Speed	6 m/s (Normal Mode) 8 m/s (Sport Mode)	
Max Descent Speed	6 m/s (Normal Mode) 6 m/s (Sport Mode)	
Max Flight Speed (at sea level, no wind)	15 m/s (Normal Mode) 21 m/s (Sport Mode), 19 m/s (Sport Mode, EU)	
Max Wind Speed Resistance	12 m/s	
Max Take-off Altitude Above Sea Level (without payload)	6000 m	
Max Flight Time (no wind)	45 mins	
Max Hover Time (no wind)	38 mins	
Max Flight Distance	32 km	
Max Tilt Angle	30° (Normal Mode) 35° (Sport Mode)	
Max Angular Velocity	200°/s	
GNSS	GPS + Galileo + BeiDou + GLONASS (GLONASS is supported only when RTK module is enabled)	
Hovering Accuracy	Vertical: ±0.1 m (with Vision System); ±0.5 m (with GNSS); ±0.1 m (with RTK) Horizontal: ±0.3 m (with Vision System); ±0.5 m (with High-Precision Positioning System); ±0.1 m (with RTK)	
Operating Temperature Range	-10° to 40° C (14° to 104° F)	
Internal Storage	N/A	
Motor Model	2008	
Propeller Model	9453F Propellers for Enterprise	
Beacon	Built into the aircraft	
Gimbal	**Anzu Raptor**	**Anzu Raptor T**
Stabilization	3-axis (tilt, roll, pan)	

Mechanical Range	Tilt: -135° to 100° Roll: -45° to 45° Pan: -27° to 27°	Tilt: -135° to 45° Roll: -45° to 45° Pan: -27° to 27°
Controllable Range	Tilt: -90° to 35° Pan: not controllable	
Max Control Speed (tilt)	100°/s	
Angular Vibration Range	±0.007°	
Wide Camera	**Anzu Raptor**	**Anzu Raptor T**
Sensor	4/3 CMOS, Effective pixels: 20 MP	1/2" CMOS, Effective pixels: 48 MP
Lens	FOV: 84° Format Equivalent: 24 mm Aperture: f/2.8-f/11 Focus: 1 m to ∞ (with autofocus)	FOV: 84° Format Equivalent: 24 mm Aperture: f/2.8 Focus: 1 m to ∞
ISO Range	100-6400	100-25600
Shutter Speed	Electronic Shutter: 8-1/8000 s Mechanical Shutter: 8-1/2000 s	Electronic Shutter: 8-1/8000 s
Max Image Size	5280×3956	8000×6000
Still Photography Modes	Single: 20 MP Timed: 20 MP JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s JPEG+RAW: 3/5/7/10/15/20/30/60 s Smart Low-light Shooting: 20 MP Panorama: 20 MP (raw image); 100 MP (stitched image)	Single: 12 MP/48 MP Timed: 12 MP/48 MP JPEG: 2/3/5/7/10/15/20/30/60 s* * Shooting 48MP photo does not support 2s interval Smart Low-light Shooting: 12 MP Panorama: 12 MP (raw image); 100 MP (stitched image)
Video Resolution	H.264 4K: 3840×2160@30fps FHD: 1920×1080@30fps	
Bitrate	4K: 130Mbps FHD: 70Mbps	4K: 85Mbps FHD: 30Mbps
Photo Format	JPEG/DNG (RAW)	JPEG
Video Format	MP4 (MPEG-4 AVC/H.264)	
Supported File Formats	exFAT	
Tele Camera	**Anzu Raptor**	**Anzu Raptor T**
Sensor	1/2" CMOS, Effective pixels: 12 MP	
Lens	FOV: 15° Format Equivalent: 162 mm Aperture: f/4.4 Focus: 3 m to ∞	
ISO Range	100-6400	100-25600
Shutter Speed	Electronic Shutter: 8-1/8000 s	
Max Image Size	4000×3000	
Photo Format	JPEG	
Video Format	MP4 (MPEG-4 AVC/H.264)	

Still Photography Modes	Single: 12 MP Timed: 12 MP JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s Smart Low-light Shooting: 12 MP	Single: 12 MP Timed: 12 MP JPEG: 2/3/5/7/10/15/20/30/60 s Smart Low-light Shooting: 12 MP
Video Resolution	H.264 4K: 3840×2160@30fps FHD: 1920×1080@30fps	
Bitrate	4K: 130Mbps FHD: 70Mbps	4K: 85Mbps FHD: 30Mbps
Digital Zoom	8× (56× hybrid zoom)	
Thermal Camera (Anzu Raptor T)		
Thermal Imager	Uncooled VOx Microbolometer	
Pixel Pitch	12 μm	
Frame Rate	30 Hz	
Lens	DFOV: 61° Format Equivalent: 40 mm Aperture: f/1.0 Focus: 5 m to ∞	
Sensitivity	≤50 mk@F1.1	
Temperature Measurement Method	Spot Meter, Area Measurement	
Temperature Measurement Range	-20° to 150° C (-4° to 302° F, High Gain Mode) 0° to 500° C (32° to 932° F, Low Gain Mode)	
Palette	White Hot/Black Hot/Tint/Iron Red/Hot Iron/Arctic/Medical/Fulgurite/Rainbow 1/Rainbow 2	
Photo Format	JPEG (8-bit), R-JPEG (16-bit)	
Video Resolution	640×512@30fps	
Bitrate	6Mbps	
Video Format	MP4 (MPEG-4 AVC/H.264)	
Still Photography Modes	Single: 640×512 Timed: 640×512 JPEG: 2/3/5/7/10/15/20/30/60 s	
Digital Zoom	28×	
Infrared Wavelength	8-14 μm	
Infrared Temperature Measurement Accuracy	±2° C or ±2% (using the larger value)	
Sensing		
Type	Omnidirectional binocular vision system, supplemented with an infrared sensor at the bottom of the aircraft.	
Forward	Measurement Range: 0.5-20 m Detection Range: 0.5-200 m Effective Sensing Speed: Flight Speed ≤15 m/s FOV: Horizontal 90°, Vertical 103°	

Backward	Measurement Range: 0.5-16 m Effective Sensing Speed: Flight Speed ≤12 m/s FOV: Horizontal 90°, Vertical 103°
Lateral	Measurement Range: 0.5-25 m Effective Sensing Speed: Flight Speed ≤15 m/s FOV: Horizontal 90°, Vertical 85°
Upward	Measurement Range: 0.2-10 m Effective Sensing Speed: Flight Speed ≤6 m/s FOV: Front and Back 100°, Left and Right 90°
Downward	Measurement Range: 0.3-18 m Effective Sensing Speed: Flight Speed ≤6 m/s FOV: Front and Back 130°, Left and Right 160°
Operating Environment	Forward, Backward, Lateral, and Upward: surface with a clear pattern and adequate lighting (lux >15) Downward: diffuse reflective surface with diffuse reflectivity>20% (e.g. walls, trees, people) and adequate lighting (lux >15)
Video Transmission	
Video Transmission System	Anzu Robotics O3 Enterprise Transmission
Live View Quality	Remote Controller: 1080p/30fps
Operating Frequency[2]	2.400-2.4835 GHz, 5.725-5.850 GHz
Transmitter Power (EIRP)	2.4 GHz: <33 dBm (FCC), <20 dBm (CE/SRRC/MIC) 5.8 GHz: <33 dBm (FCC), <14 dBm (CE), <30 dBm (SRRC)
Max Transmission Distance (unobstructed, free of interference)[3]	15 km (FCC), 8 km (CE/SRRC/MIC)
Max Transmission Distance (Obstructed)[4]	Strong Interference (dense buildings, residential areas, etc.): 1.5-3 km (FCC/CE/SRRC/MIC) Medium Interference (suburban areas, city parks, etc.): 3-9 km (FCC), 3-6 km (CE/SRRC/MIC) Low Interference (open spaces, remote areas, etc.): 9-15 km (FCC), 6-8 km (CE/SRRC/MIC)
Max Download Speed[5]	15 MB/s (with Anzu Robotics remote controller)
Latency (depending on environmental conditions and mobile device)	Approx. 200 ms
Antenna	4 Antennas, 2T4R
Remote Controller	
Screen Resolution	1920×1080
Screen Size	5.5 inch
Screen Frame Rate	60fps
Screen Brightness	1000 nit
Touchscreen Control	10-point multi-touch
Battery	Li-ion (5000 mAh @ 7.2 V)
Charging Type	Recommended to be charged with the included Anzu Robotics USB-C Power Adapter (100W) or USB charger at 12 V or 15 V

Charging Time	Approx. 1 hour 30 minutes (with the included Anzu Robotics USB-C Power Adapter (100W) only charging the remote controller or a USB charger at 15 V) Approx. 2 hours (with a USB charger at 12 V)
Operating Time	Approx. 3 hours
Rated Power	12 W
Storage Capacity	Internal Storage (ROM): 64 GB Support microSD card to expand capacity
Video Output Port	Mini HDMI port
Operating Temperature Range	-10° to 40° C (14° to 104° F)
Storage Temperature	-30° to 60° C (-22° to 140° F) (within one month) -30° to 45° C (-22° to 113° F) (one to three months) -30° to 35° C (-22° to 95° F) (three to six months) -30° to 25° C (-22° to 77° F) (more than six months)
Charging Temperature	5° to 40° C (41° to 104° F)
GNSS	GPS + Galileo + GLONASS
Dimensions	Antennas folded and controller sticks unmounted: 183.27×137.41×47.6 mm Antennas unfolded and controller sticks mounted: 183.27×203.35×59.84 mm
Weight	Approx. 680 g
Video Transmission System	Anzu Robotics O3 Enterprise Transmission
Max Transmission Distance (unobstructed, free of interference)[3]	15 km (FCC), 8 km (CE/SRRC/MIC)
Operating Frequency[2]	2.400-2.4835 GHz, 5.725-5.850 GHz
Transmitter Power (EIRP)	2.4 GHz: <33 dBm (FCC), <20 dBm (CE/SRRC/MIC) 5.8 GHz: <33 dBm (FCC), <14 dBm (CE), <23 dBm (SRRC)
Antenna	4 Antennas, 2T4R
Wi-Fi	
Protocol	802.11 a/b/g/n/ac/ax Support 2×2 MIMO Wi-Fi
Operating Frequency[2]	2.400-2.4835 GHz, 5.150-5.250 GHz, 5.725-5.850 GHz
Transmitter Power (EIRP)	2.4 GHz: <26 dBm (FCC), <20 dBm (CE/SRRC/MIC) 5.1 GHz: <26 dBm (FCC), <23 dBm (CE/SRRC/MIC) 5.8 GHz: <26 dBm (FCC/SRRC), <14 dBm (CE)
Bluetooth	
Protocol	Bluetooth 5.1
Operating Frequency	2.400-2.4835 GHz
Transmitter Power (EIRP)	<10 dBm
Storage	
Supported Memory Cards	Aircraft: U3/Class10/V30 or above is required. A list of recommended microSD cards can be found below.

Recommended microSD Cards	Remote Controller: SanDisk Extreme PRO 64GB V30 A2 microSDXC SanDisk High Endurance 64GB V30 microSDXC SanDisk Extreme 128GB V30 A2 microSDXC SanDisk Extreme 256GB V30 A2 microSDXC SanDisk Extreme 512GB V30 A2 microSDXC Lexar 667x 64GB V30 A2 microSDXC Lexar High-Endurance 64GB V30 microSDXC Lexar High-Endurance 128GB V30 microSDXC Lexar 667x 256GB V30 A2 microSDXC Lexar 512GB V30 A2 microSDXC Samsung EVO Plus 64GB V30 microSDXC Samsung EVO Plus 128GB V30 microSDXC Samsung EVO Plus 256GB V30 microSDXC Samsung EVO Plus 512GB V30 microSDXC Kingston Canvas Go! Plus 128GB V30 A2 microSDXC Kingston Canvas React Plus 128GB V90 A1 microSDXC Aircraft: Sandisk Extreme 32GB V30 A1 microSDHC Sandisk Extreme PRO 32GB V30 A1 microSDHC SanDisk Extreme 512GB V30 A2 microSDXC Lexar 1066x 64GB V30 A2 microSDXC Kingston Canvas Go! Plus 64GB V30 A2 microSDXC Kingston Canvas React Plus 64GB V90 A1 microSDXC Kingston Canvas Go! Plus 128GB V30 A2 microSDXC Kingston Canvas React Plus 128GB V90 A1 microSDXC Kingston Canvas React Plus 256GB V90 A2 microSDXC Samsung PRO Plus 256GB V30 A2 microSDXC
Battery	
Capacity	5000 mAh
Standard Voltage	15.4 V
Max Charging Voltage	17.6 V
Type	LiPo 4S
Chemical System	LiCoO2
Energy	77 Wh
Weight	335.5 g
Charging Temperature	5° to 40° C (41° to 104° F)
Charger	
Input	100-240 V AC, 50-60 Hz, 2.5 A
Output Power	100 W
Output	Max. 100 W (total) When both ports are used, the maximum output of one of the ports is 82 W. The charger will dynamically allocate the output power of the two ports according to the load power.

[1] The standard weight of the aircraft (including the battery, propellers, and a microSD card). The actual product weight may vary due to differences in batch materials and external factors.

[2] In some countries and regions, the 5.8 and 5.1GHz frequencies are prohibited, or the 5.1GHz frequency is only allowed for indoor use. Check local laws and regulations for more information.

[3] Measured in an unobstructed environment free of interference. The above data shows the farthest communication range for one-way, non-return flights (with no payload) under each standard. During your flight, please pay attention to RTH reminders in the Anzu Robotics software app.

[4] Data tested under different standards in unobstructed environments with typical interference. Uses for reference purposes only and provides no guarantee as to the actual flight distance.

[5] Measured in a laboratory environment with little interference in countries/regions that support both 2.4 GHz and 5.8 GHz. With footage saved on the officially recommended microSD cards. Download speeds may vary depending on actual conditions.

