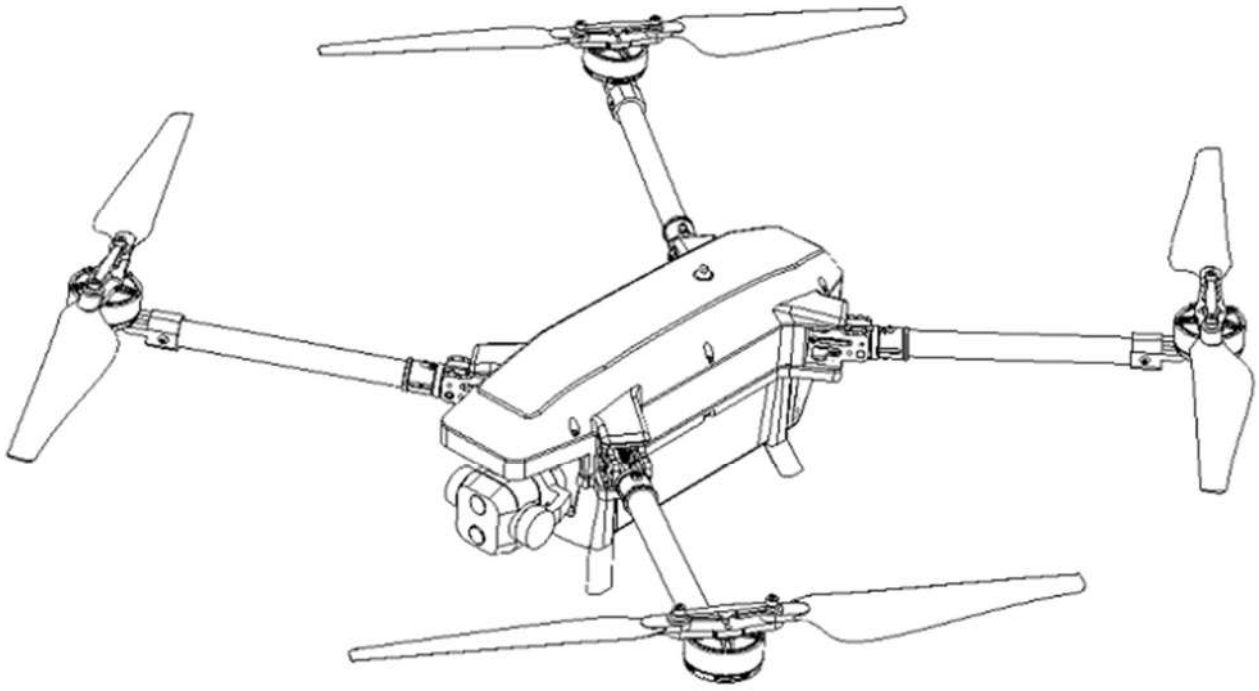
axldrone
your world from above

axl Peregrine

User Manual V1.0 | 2025.03



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Product Profile

This section provides an overview of the Peregrine system and outlines the key components, including the aircraft, the axl OneView remote controller, and axl Companion Computer.

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Introduction

Overview

Peregrine is a high-performance, Made-in-India aircraft developed by axldrone India Pvt Ltd, engineered for professional-grade surveillance, reconnaissance, and mapping applications. With advanced flight modes, intelligent vision systems, dual-light gimbal camera, and robust endurance, Peregrine delivers precision, reliability, and ease of operation.

Designed with modularity and endurance in mind, Peregrine suits both tactical field deployments and commercial utility with features such as real-time video transmission, RTK GNSS navigation, and failsafe systems for safe autonomous missions.

Control and situational awareness are further elevated by the axl OneView remote controller—an indigenous, WPC-approved, and fully integrated smart controller, purpose-built for demanding field operations. axl OneView is the latest and most advanced remote controller available in the market, delivering up to 15 km of high-definition, real-time video transmission and control with ultra-low latency. Its powerful processor, in tandem with axldrone's custom Drone Operating System (axl DOS), ensures smooth performance, crystal-clear visuals, and resilient connectivity even in harsh and complex environments.

Highlighted Features

Flight Endurance: Capable of up to 50 minutes of continuous flight on a single charge, the system is optimized for extended missions.

It supports a real-time control and HD video transmission range of up to 15 km, ensuring low-latency performance for high-precision operations.

High-precision GNSS Model: Indigenously developed high-precision GNSS module designed for advanced UAV and autonomous systems. axl Orbit, supports multi-band RTK (Real-Time Kinematic) positioning and delivers centimeter-level accuracy, even in challenging environments.

axl Orbit is engineered for robustness, low power consumption, and precise synchronization, making it ideal for surveying, mapping, and mission-critical drone applications.

Long-range Remote Controller: Most advanced and intelligent remote controller, engineered for professional UAV operations demanding real-time control, high-definition video transmission, and secure connectivity. With an impressive 15 km operational range, axl OneView ensures ultra-low latency video and command transmission, even in challenging environments.

Powered by an advanced processor and seamlessly integrated with axldrone's custom-developed Drone Operating System (axl DOS), it guarantees high-performance operation, stable connectivity, and crisp video output.

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Using for the First time

Peregrine is folded before being packaged. Follow the below to unfold Peregrine.

Unpack aircraft from carry case2

Unfold the front arms, followed by the rear arms, and then the propeller blades2

Insert fully charged 6200mAh 6S LiPo battery2

Power on remote controller → then Peregrine2

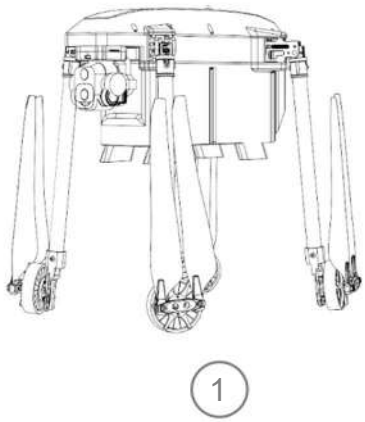
Preparing axl OneView

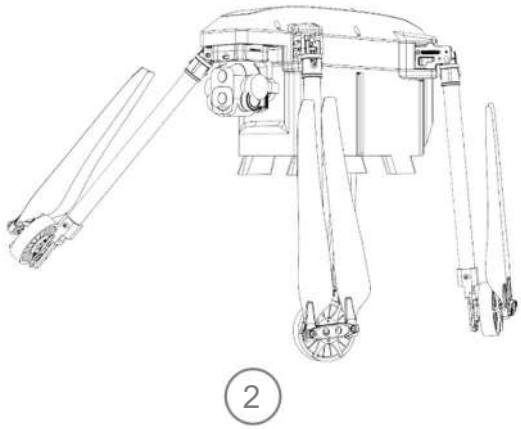
Follow the steps below to prepare to use the axl OneView remote controller with Peregrine

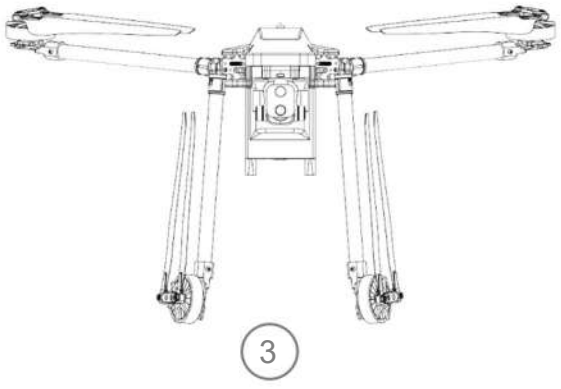
1. Use the provided charger to charge axl OneView via USB C
2. Unfold the antennas

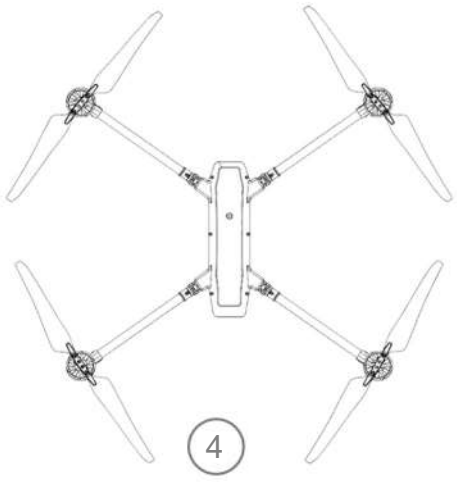
Note: Peregrine and axl OneView are already paired.

2





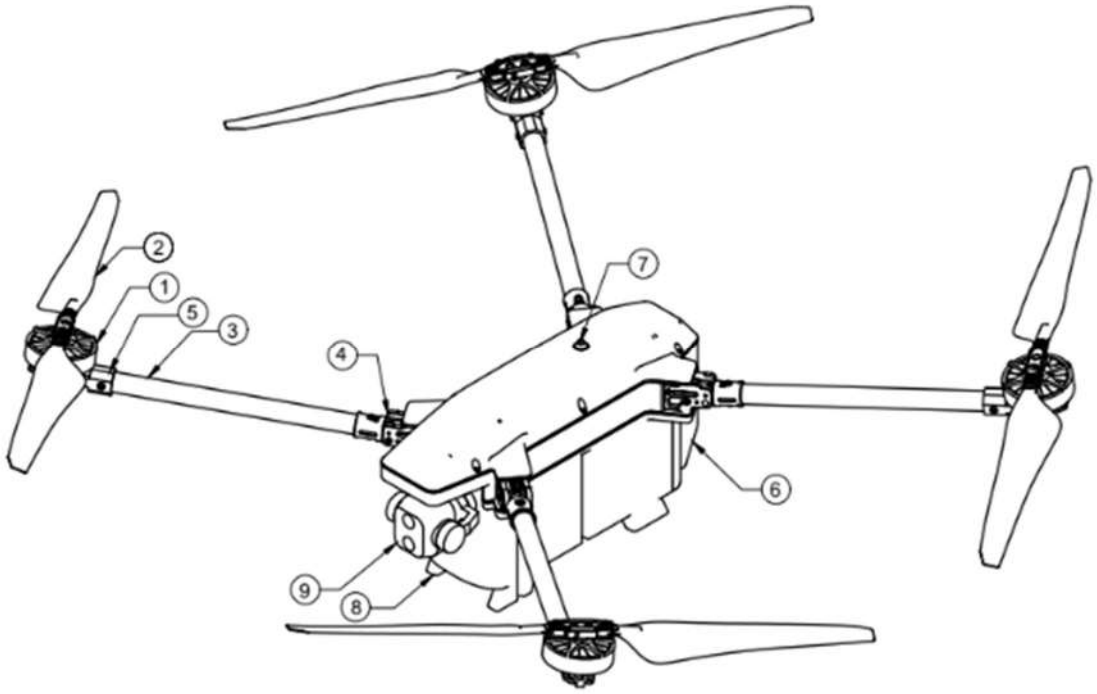




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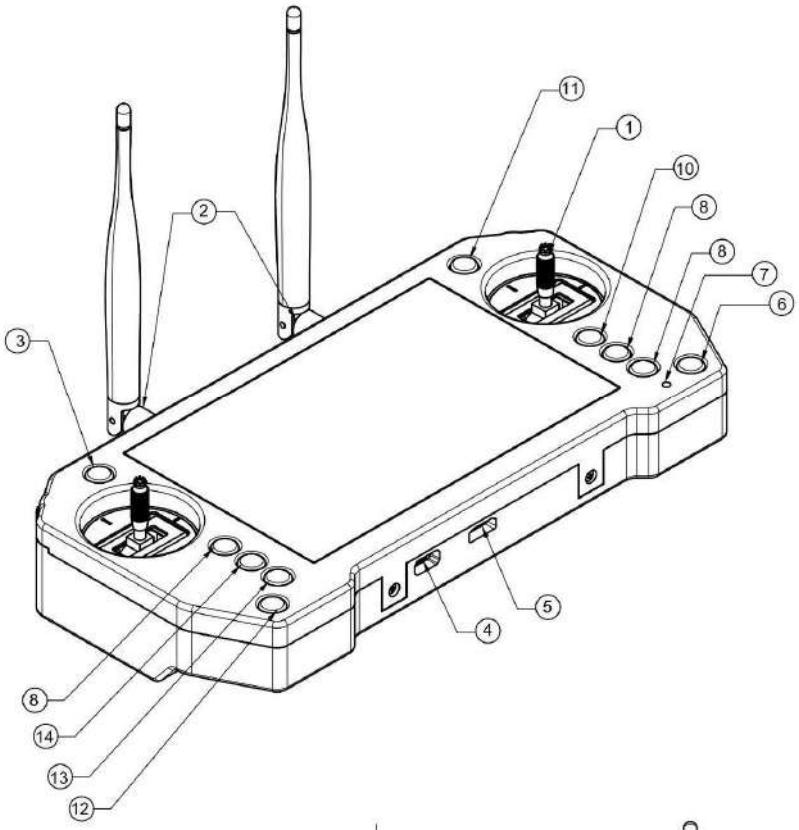
- Always ensure that all folding arms are fully extended and locked into position before powering on the aircraft.
- Do not attempt to fly with partially folded or loose arms, as this may cause instability or mid-air failure.
- Before every flight, visually inspect the arm joints and locking latches for any signs of wear, cracks, or damage.
- Confirm that the arms are rigid and do not move freely once locked in place.
- Power off the aircraft completely before folding the arms.
- Allow the aircraft to cool down, especially around motor mounts, to avoid burns or mechanical stress.

Aircraft

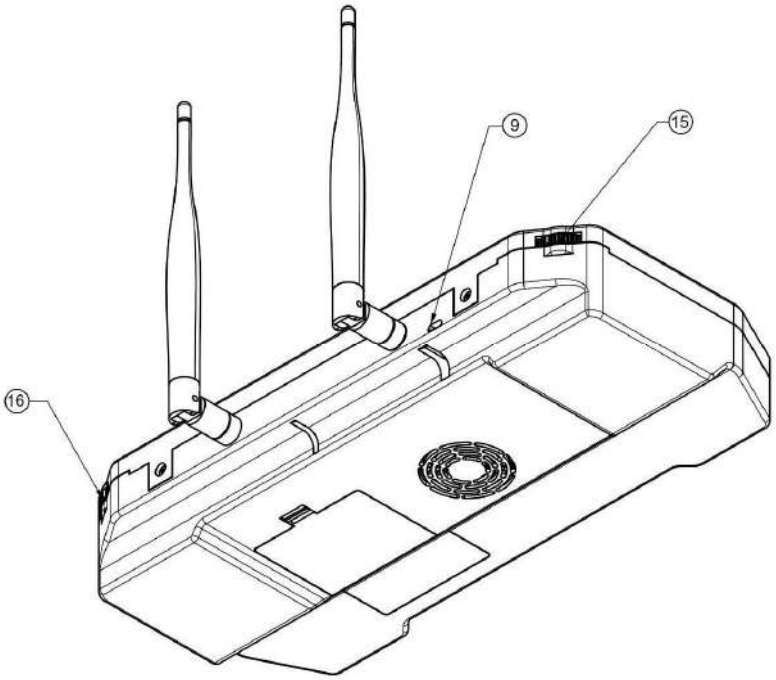


1. Motor
2. Propeller
3. Arm
4. Arm Folder
5. Motor Mount
6. Battery Lid
7. Safety Switch
8. Landing Gear
9. Camera

axl OneView

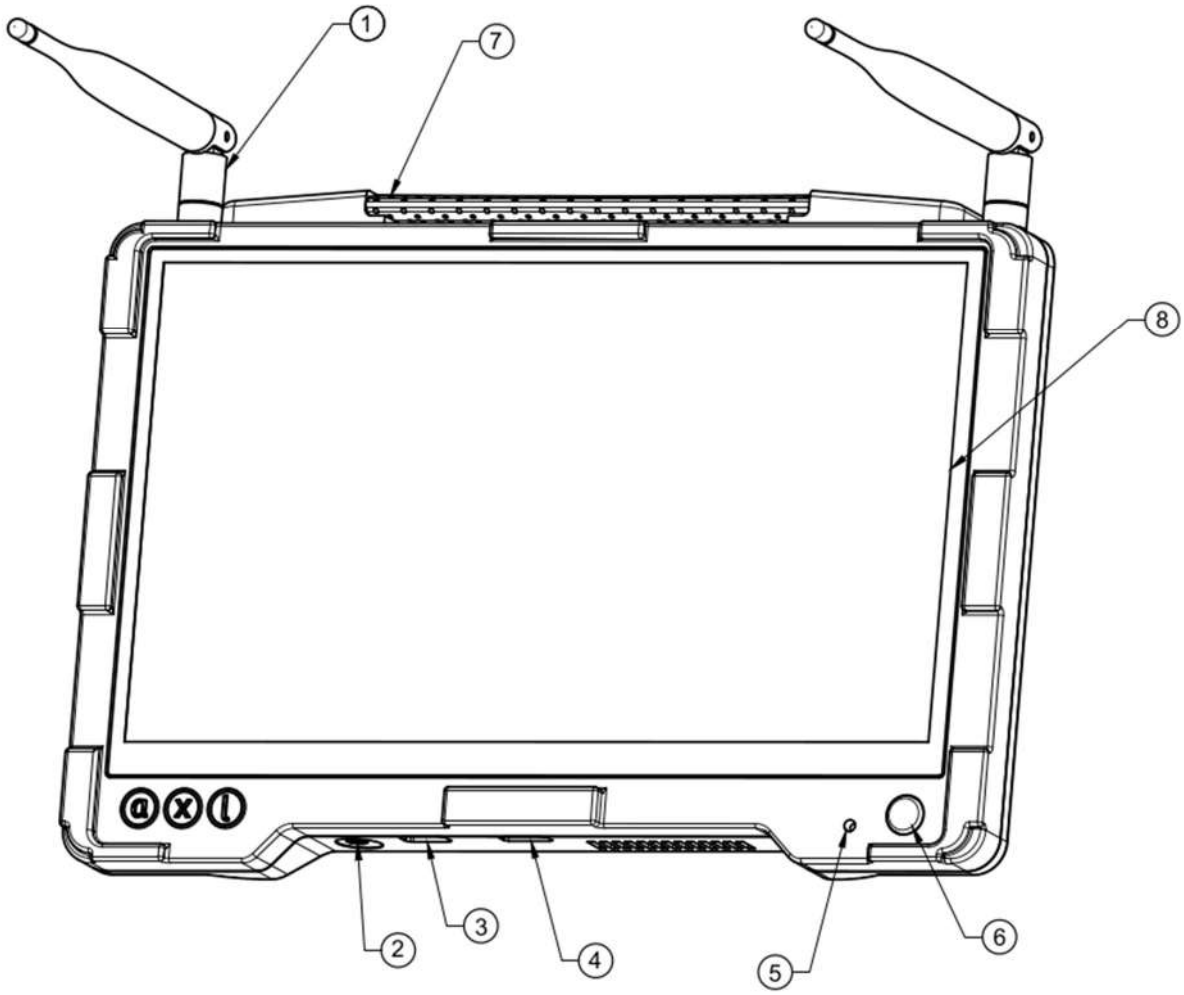


1. Control Sticks
2. Antenna
3. Motor Emergency
4. HDMI
5. USB
6. Power Button
7. Power Indicator
8. User Configurable Button



9. DC Connector
10. Land Button
11. Break Button
12. RTL
13. Video Capture
14. Image Capture
15. Right Thumb Wheel - Up & Down Motion
16. Left Thumb Wheel - Zoom IN & Zoom Out

axl Companion Computer



5. Antenna
6. DC Jack
7. USB
8. HDMI

1. Power Indicator
2. Power Button
3. Handle
4. Screen

Aircraft

Peregrine is equipped with an integrated flight controller, high-resolution video downlink system, a high-efficiency propulsion system, and a reliable 6S LiPo battery for extended and reliable flight performance.

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Aircraft Status Indicator States

Peregrine has 4 LEDs (2xgreen & 2xred) and aircraft status Indicators

- When the aircraft is powered on, the safety switch located on top will begin blinking in RED, accompanied by an audible sound indicating that the system is active.
- Press and hold the safety switch for 1–2 seconds; the red light will become steady, signaling that the aircraft is ready to arm.
- The red and green strobe LEDs will remain illuminated, indicating that the aircraft is active and Ready for flight.

Home Point Setting

Arming Location

By default, the Return-to-Launch (RTL) location is established when the aircraft is armed. This means that the GPS position at the time of arming—typically just prior to takeoff—is recorded as the "home" location.

Return to Launch

The Return-to-Launch (RTL) function automatically navigates the aircraft back to the designated Home Point, ensuring a safe return in various scenarios such as low battery, signal loss, or manual command.

When the RTL (🏠) button on the remote controller is pressed, Peregrine will return to the designated home point.

- If no RTL altitude is preset in QGroundControl (QGC), the aircraft will return at its current altitude.
- If an RTL altitude is configured in QGC, Peregrine will first ascend to the specified altitude before returning to the home point.

Failsafe Actions

a) Low Battery RTL

I. Upon detecting a low battery voltage, the aircraft automatically triggers the Return-to-Launch (RTL) procedure.
II. If the current altitude is below the configured RTL height, the aircraft ascends to the preset safe altitude.
III. It then navigates back to the pre-recorded home or take-off location using precise GPS guidance.
IV. Once above the home point, the aircraft executes a controlled and safe descent for landing.
V. This intelligent fail-safe ensures the aircraft conserves just enough battery to return safely before reaching critical levels.

b) Critical Battery Land

I. When the battery voltage drops below the defined critical threshold, the aircraft automatically initiates an emergency landing sequence.

II. It begins an immediate descent at its current position, prioritizing a safe touchdown.

III. This behavior is triggered to prevent power depletion mid-flight, as returning to the home point may not be feasible.

IV. The system is designed to minimize risk by ensuring a controlled landing wherever the aircraft is, helping avoid uncontrolled crashes.

c) Failsafe RTL (Signal Loss)

I. This failsafe is activated when the aircraft loses connection with the remote controller.

II. It is also triggered in the event of a telemetry link loss between the aircraft and the ground control station.

III. Upon activation, the aircraft automatically initiates a Return-to-Launch (RTL) procedure using the last recorded home point coordinates to ensure a safe recovery.

d) **Failsafe RTL (Fence breach**)

I. Geofence simply means a limit to which the aircraft will not fly beyond.

II. There are horizontal and vertical limits. If aircraft breaches the fence the RTL will be activated.

RTL Flight Sequence

1. Initiate RTL (manual or automatic)
2. Ascend to preset RTL altitude.
3. Navigate directly back to the recorded home point.
4. Descend vertically and land.
5. Pilots may regain control at any stage during the return unless the battery level is critically low.

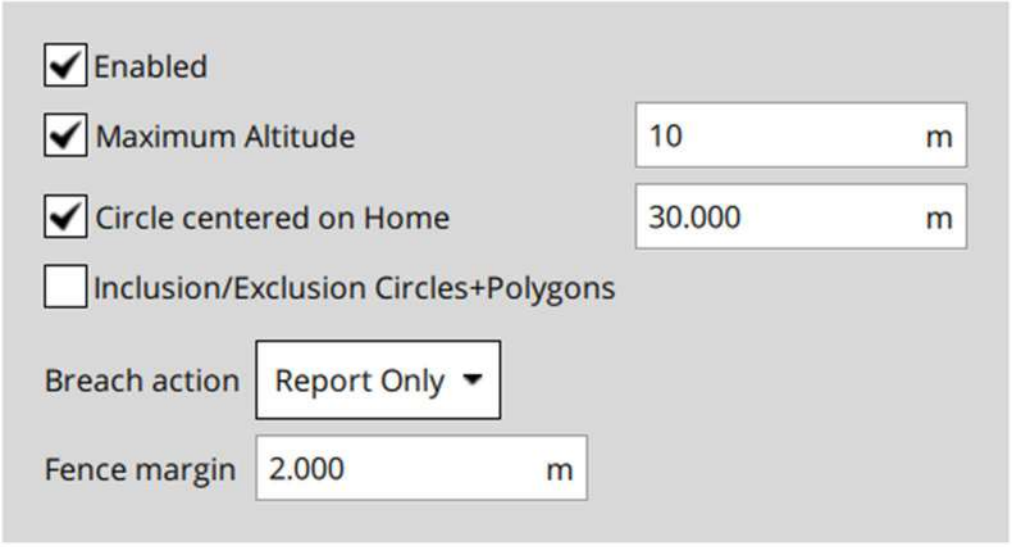
Note: The aircraft may not be able to return to Launch Point normally if the GNSS is weak or unavailable. It is Important to set a suitable RTL altitude before each flight.

Safety Tips

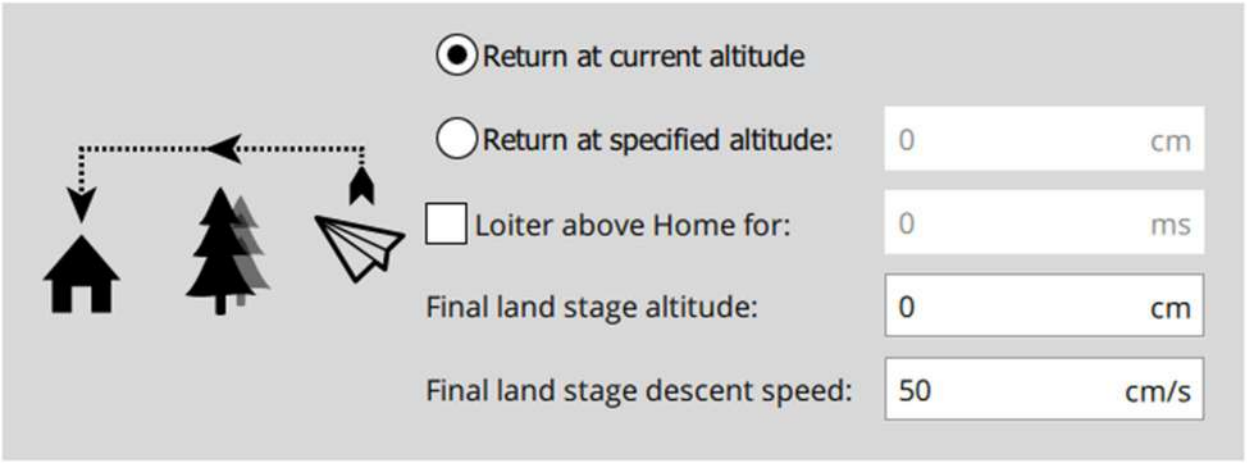
- Always check the GPS lock before takeoff.
- Do not fly indoors or under heavy cover (trees, bridges) when relying on RTH.
- Clear the takeoff/landing zone to avoid obstruction during auto-landing.
- If operating in high-wind areas, ensure extra battery margin for return.
- Update firmware regularly to benefit from improved RTL algorithms.

Safety Setup

GeoFence



Return to Launch



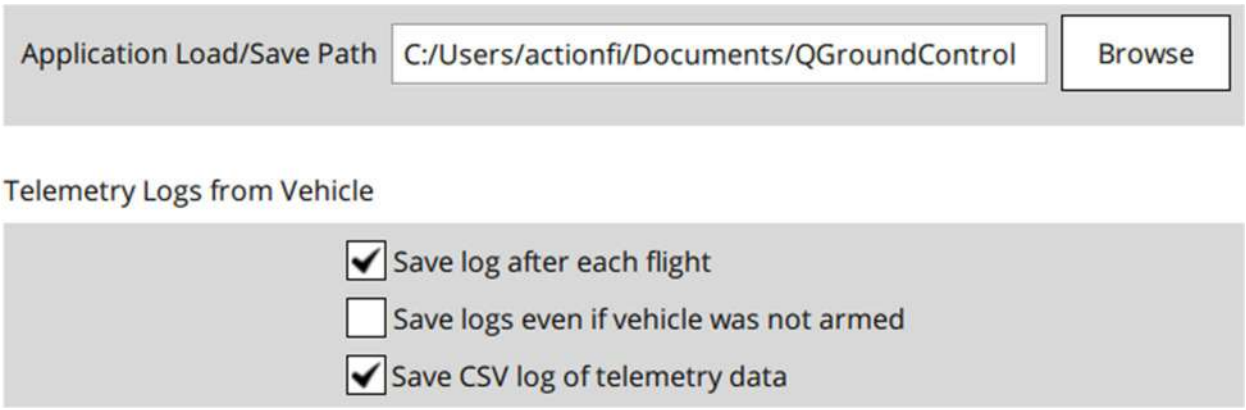
Flight Logging

Flight Data Logging

Flight data— GPS position and altitude, IMU (accelerometer, gyroscope) data, Barometer readings, Battery voltage/current, ESC telemetry (if available), Flight mode changes, Error messages, and failsafe's critical parameters are automatically stored in the aircraft's Flight Controller SD card after each flight.

In addition, .csv files and .tlog files are available in the predefined groundcontrol software's directory.

axl GC setup for saving the flight log



Note: Flight data is logged only for the duration between arming and disarming the aircraft.

Accessing the videos

- To retrieve the recorded videos, navigate to the “Gallery” in axl DOS where the recorded videos are displayed.
- Connect the axl OneView remote controller to a system and click “Download” to save the file.



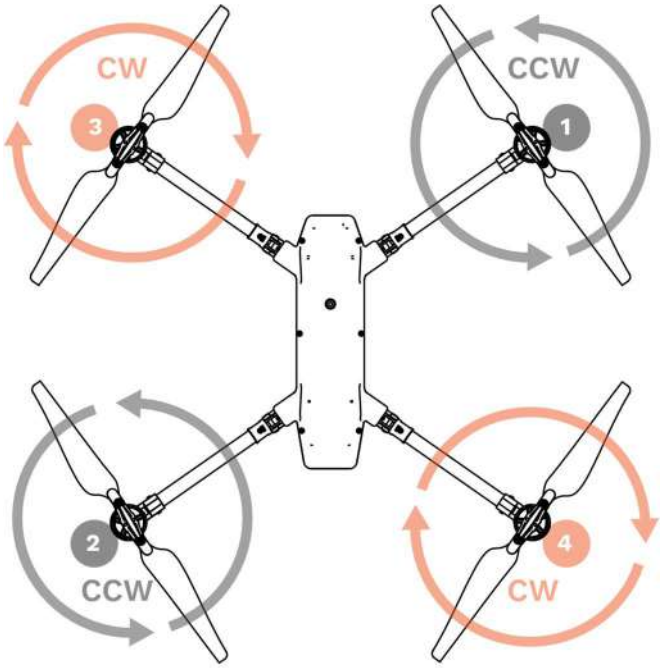
Note: Ensure the aircraft is powered off correctly after each flight to avoid any data corruption.

Propellers

Peregrine utilizes an efficient Folding Propeller set that includes both clockwise (CW) and counterclockwise (CCW) blades, designed for high-performance multirotor applications. The lightweight, aerodynamically optimized propellers offer excellent thrust efficiency, reduced vibration, and compact folding for easy transport. Ideal for extended flight endurance and smooth operation in demanding environments.

Attaching the Propeller

1. Ensure the propeller is placed in the correct direction (CW or CCW) for the motor.
2. Align the holes in the propeller with the motor's mount.
3. Secure the propeller using the proper bolts and tighten gently
4. Ensure the propellers are tight before every flight and match the motor’s rotation direction.
5. Ensure the propellers are in good condition before each flight. DO NOT use an aged, chipped, or broken propeller.
6. Stand clear of the motor and DO NOT touch the propeller when they are spinning.



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Detaching the Propeller

1. Remove the bolts from the propeller using the screw driver.
2. Lift the propeller of the mount gently.

⚠

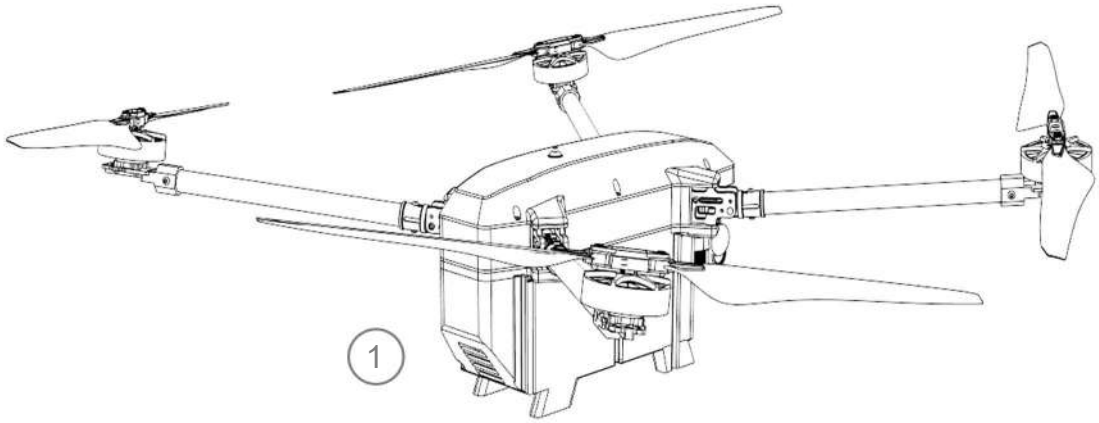
- Propeller blades are sharp —Handle with care to avoid injury.
- Ensure propellers are securely installed before each flight.
- Inspect all propellers prior to use. Do not fly with aged, chipped, or broken propellers.
- Keep clear of rotating propellers and motors to prevent accidents or injury.
- Avoid bending or squeezing propellers during transportation or storage to maintain integrity.
- Verify that all motors are securely mounted and rotate smoothly. If a motor appears stuck or unable to spin freely, land the aircraft immediately.
- Do not attempt to alter or modify the motor structure. Unauthorized modifications may cause failure or hazardous behavior.
- Listen for normal ESC startup tones when powering on. Abnormal sounds may indicate wiring or system issues requiring inspection.

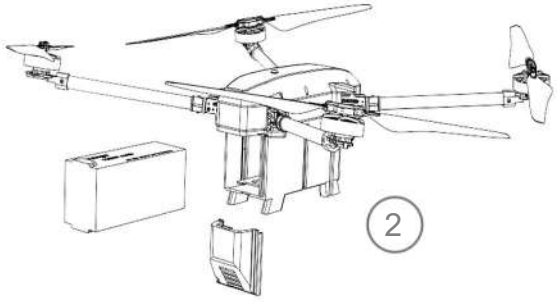
Flight Battery

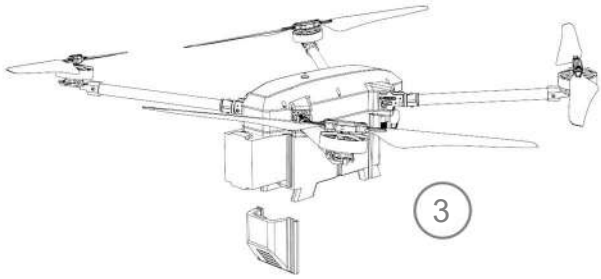
axl Peregrine has a 6S 6200mAh 25C LiPo Battery.

Inserting the Flight Battery

1. Insert the flight battery into the designated battery compartment of the aircraft.
2. Ensure the battery is aligned properly and slides in smoothly without force.
3. Secure the battery firmly in place using the provided locking mechanism or strap to prevent movement during flight.
4. Double-check that the battery is fully seated and cannot be dislodged easily.



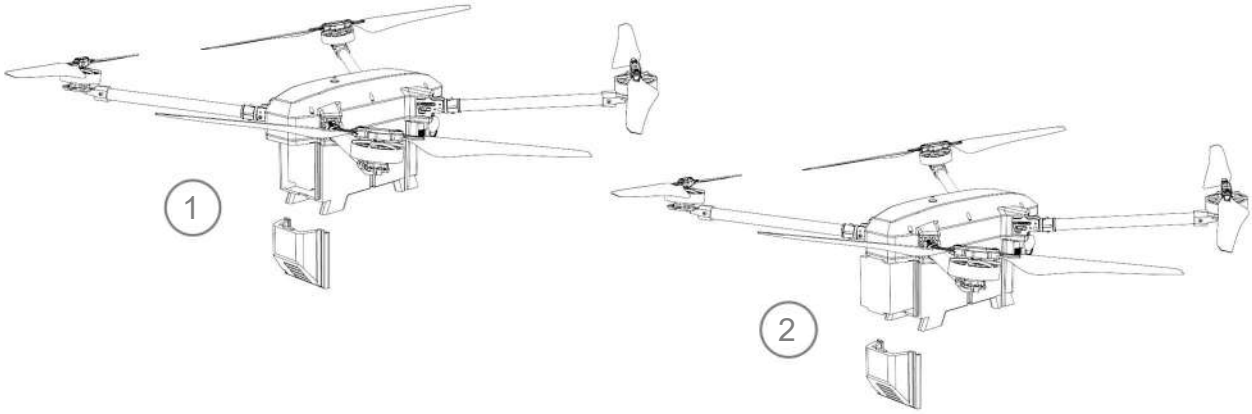






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Removing the Flight Battery



Charging the Flight Battery

For charging, the user is recommended to use the 6S dual-channel LiPo charger. Always charge LiPo batteries on surfaces that won't catch on fire such as cement, steel, ceramic or stone. Wooden tables and carpeted floors are not recommended charging surfaces. Do not charge batteries near flammable products or liquids. Never charge a LiPo battery while inside the aircraft or other electronic device or an automobile, especially while driving. LiPo batteries should be charged within a temperature range of 0℃ to 50℃. Batteries charged outside this temperature range may experience leakage, heat generation or cell damage.

1. Power on, connect to the power source and turn on the power switch. A beep sound will be heard, and the LCD screen will be displayed as below:
2. Make sure the battery balance lead and charging lead are connected correspondingly to the charger.
3. Select Battery Type (LiPo/LiHV), Charging Current (1.0-6.0A), Charging modes (fast charge, balance charge) Synchronous status (Off, Master, Slave). Press and the working mode will be blinking. Press or select FAST CHARGE. Press again, and the current option will start blinking; Press or set the charging current with the range of 1.0A－6.0A.
4. Press and hold for 2 seconds to start charging. Record the charging start time, mAh remaining, Voltage remaining details in the Battery Logbook.
5. In charging mode, when the charging process comes to an end, the screen will be displayed as “Finish”.
6. Press Finish button and disconnect the battery from the charger and update the Battery Logbook with charging end time and Consumed mAh.

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Discharging the Battery

Discharging LiPo batteries before storage or disposal is essential. Over time, if stored with a full charge, these batteries can self-discharge to a critical voltage, leading to irreversible damage.

1. To Power on a dual-channel LiPo charger, connect to the power source and turn on the power switch. A beep sound will be heard, and the LCD screen display will turn on
2. Make sure the battery balance lead and charging lead are connected correspondingly to the charger.
3. Select Battery Type (LiPo/LiHV), Charging Current (1.0-6.0A), Charging modes (fast charge, balance charge) Synchronous status (Off, Master, Slave). Press and the working mode will be blinking. Press or select FAST CHARGE. Press again, and the current option will start blinking; Press or set the charging current with the range of 1.0A－6.0A.
4. Record the discharging start time, mAh remaining, Voltage remaining details in the Battery Logbook.
5. In storage mode, when the discharging process comes to an end, the screen will be displayed as “Finish”.
6. Press the Finish button and disconnect the battery from the charger, and update the Battery Logbook with the discharging end time and Consumed mAh.

⚠ An improperly installed battery may lead to power loss during flight and cause the aircraft to crash.

- DO NOT detach the battery when the aircraft is powering ON.
- Make sure that the battery is mounted firmly.

Storage

If a Lithium battery is not used for a long time, it's highly recommended to charge or discharge the battery cell to 3.9V with STORAGE mode to extend the battery life. If the battery voltage is higher than 3.9V, the charger will discharge the battery.

- To Power on dual-channel LiPo charger, connect to the power source and turn on the power switch. A beep sound will be heard, and the LCD screen will be displayed as below:

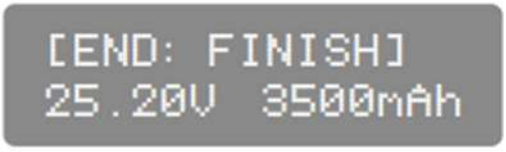


- Make sure the battery balance lead and charging lead are connected correspondingly to the charger.
- Select Battery Type (LiPo/LiHV), Charging Current (1.0-6.0A), Charging modes (fast charge balance charge & storage) Synchronous status (Off, Master, Slave).

  Press  and the working mode will be blinking. Press  or  select STORAGE. Press  again, and the current option will start blinking; Press  or  set the discharging current with the range of 1.0A－6.0A.



- Press and hold  for 2 seconds to start discharging.
- Record the discharging start time, mAh remaining, Voltage remaining details in the Battery Logbook.
- In storage mode, when the discharging process comes to an end, the screen will be displayed as “Finish”.



- Press Finish button and disconnect the battery from the charger and update the Battery Logbook with storage end time and Consumed mAh.

⚠ Do not put battery packs in pockets or bags where they can short-circuit.

- Do not store or transport batteries where they can come into contact with sharp or metallic objects.
- Do not store LiPo packs in extreme temperatures below 0C or above 50C. Always store your LiPo pack in a safe and non-flammable container away from flammable objects. A LiPo Storage Bag/Sack or metal / ceramic storage container is best. Always store your LiPo's partially charged. They will maintain their performance levels over time and there's no need to cycle them unless stored for periods longer than 3-6 months.
- When mailing or shipping LiPo batteries, always ship them at a 30% charged state for safety reasons.
- Battery packs in long-term storage should be inspected every three months and checked to ensure that cell voltages are still within the 3.8-3.9 v range, and do not show signs of swelling. Packs falling below this range shall be recharged to this range prior to re-storage, and packs showing signs of swelling must be disposed of.

The ideal temperature range for storage is 15-25°C (59-77°F). This range minimizes chemical aging and prevents thermal stress on the battery cells. Avoid extremes, as high temperatures (above 25°C) can accelerate degradation and even cause swelling, while freezing temperatures (below 0°C) can damage battery cells and reduce performance.

To maintain the correct humidity and temperature for LiPo battery storage, start by placing the batteries in a climate-controlled room, if possible, to keep the temperature steady within the ideal range of 15-25°C (59-77°F). If climate control isn't an option, use an insulated storage container to buffer temperature changes, and choose an area with minimal fluctuations, like an interior closet. Ensure the storage area is away from direct sunlight, heaters, or electronics that could cause overheating.

For humidity control, a small dehumidifier in the storage room or closet can help reduce moisture levels, especially in humid climates. Adding silica gel or desiccant packs inside the storage container will absorb excess moisture, which is useful for maintaining a low-humidity environment. Replace these packs periodically for continued effectiveness. Monitoring humidity levels with a hygrometer allows you to check that the relative humidity stays below 90% (ideally around 50-60%).

Combining these temperature and humidity control methods creates an optimal environment for LiPo battery storage, helping to maintain battery health and extend their lifespan.

Disposal of the Battery

When operating aircraft with LiPo batteries, it is imperative to properly dispose of them once they display signs of damage, wear and tear, or an inability to hold a charge. This is essential to avoid potential safety hazards and environmental damage. Additionally, it is highly suggested to continuously inspect and monitor the batteries for any indications of swelling, punctures, or leaks.

1. Once the battery comes to the recommended battery life cycle, we need to dispose of it. When disposing of LiPo batteries, it's important to discharge them completely to reduce the risk of fire. This means bringing the voltage down to 0 volts. Use a LiPo charger for the discharging process as mentioned in the previous section. ("SOP for discharge").
2. If any physical damages found, Place the LiPo battery in a fireproof container, a bucket of sand, or outside on a non-flammable surface. ensuring that there is no leakage. In case of any leakage, place the battery in a plastic bag/container.
3. Use a website like Call2Recycle to locate a dropoff location for LiPo batteries near you. Place your discharged LiPo battery in a LiPo battery bag and take it to the collection box at the dropoff site.

Gimbal and Camera

Gimbal Profile

The gimbal of Peregrine provides stabilization for the camera, allowing it to capture clear and stable images and video.

The control tile range is 130°.

Use the gimbal dial on the remote control to control the tilt of the Camera. Alternatively, enter the camera view on axl Companion Computer. Press the adjustment button and adjust the view based on the tilt of the camera.

Camera Profile

Peregrine Camera features a compact dual-sensor gimbal system, equipped with a high-definition 2K visible camera and a 256×192 thermal imaging module. The visible camera supports 2K (2560×1440) video recording at 30fps with H.264/H.265 compression formats. It offers a wide 85° field of view and up to 3× digital zoom for capturing detailed visuals in real-time.

The integrated thermal sensor captures temperature signatures with ±2°C accuracy and operates at 25Hz, offering multiple color palettes such as White Hot, Black Hot, and Iron Red. The thermal camera can detect heat sources up to 150 meters away and supports side-by-side or blended image fusion with the visible camera feed.2

- To maintain system stability, individual video recordings are limited to a maximum duration of 30 minutes.2
- Before capturing critical footage or images, it is recommended to take a few test shots to ensure the camera is functioning correctly.2
- Recorded photos and videos cannot be accessed, transmitted, or copied if the aircraft is powered off.2
- Always shut down the aircraft properly. Improper shutdown may result in unsaved camera settings and potential data corruption of recorded files.
  2

Note: axl Systems is not responsible for any loss, corruption, or unreadable format of recorded images or videos due to improper handling, power interruption, or device malfunction.

Remote Controller

This section describes the features of the remote controller and includes instructions for controlling the aircraft and the camera

Overview

axl OneView is axldrone's advanced and intelligent **remote controller**, engineered for professional UAV operations demanding real-time control, high-definition video transmission, and secure connectivity. With an impressive **15 km operational range**, axl OneView ensures **ultra-low latency** video and command transmission, even in challenging environments.

Powered by an **advanced processor** and seamlessly integrated with axldrone's custom-developed **Drone Operating System (axl DOS)**, it guarantees high-performance operation, stable connectivity, and crisp video output. The system supports multiple encrypted communication interfaces including **HDMI, WLAN, and USB**, ensuring flexibility in deployment across various mission profiles.

The controller also supports **mesh networking**, enabling multiple units to interconnect securely, forming an **extended, dynamic network**. This allows real-time video streaming over the internet and significantly enhances coverage and reliability—making it ideal for **large-scale and collaborative drone missions**.

Preparing the axl OneView Remote Controller

Charging

The Battery charging for the axl OneView remote controller is managed externally using a compatible charging solution. Batteries must be charged separately using an external compatible charger. Please ensure only certified charging equipment is used to maintain battery health and ensure safety.

- It is recommended to use certified compatible chargers to avoid overcharging, overheating, or damage to the battery.
- Ensure the remote controller has enough power before each flight.

⚠ Failure to follow proper charging procedures may result in reduced battery performance, fire, or injury. Always follow proper safety guidelines.

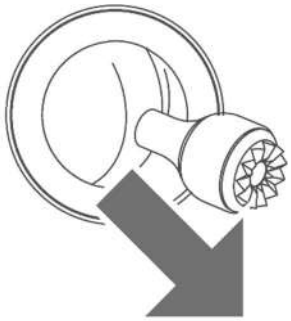
Power On/Off

- Press and Hold the Power Button to switch the remote controller on or off.
- Ensure the aircraft and remote controller are both powered on before initiating flight.

Operating the Remote Controller

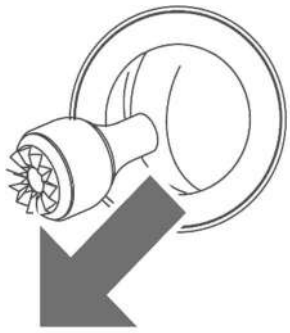
Basic Flight Operations

Arming the Aircraft



To **ARM** the aircraft and prepare for takeoff, push the **Left Stick** right bottom. This will initialize the motors and set the aircraft into a ready-to-fly state.

Disarming the Aircraft



To **DISARM** the aircraft and shut down the motors safely, push the **Left stick** left bottom. Always disarm after landing or during extended pauses in operation.

Motor Emergency

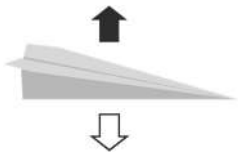
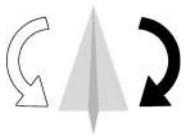
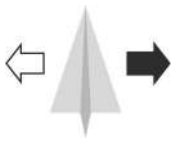
In the event of a critical situation, press the **Motor Emergency** button. This will immediately halt all motors, overriding flight controls. Use it only when necessary to prevent damage or injury.

⚠ Stopping the motors mid-flight will result in an immediate crash and potential damage to the aircraft. Operate with extreme caution and ensure all flight commands are executed intentionally.

Controlling the Aircraft

The Control Sticks of the remote controller can be used to control the aircraft movements.

The below is how to use the control sticks in Manual Mode.

Control Stick	Aircraft	Remarks
		**Throttle Stick** ● Push the stick up to ascend and down to descend. ● The further the stick is moved from the center, the faster the aircraft ascends or descends. ● Apply gentle input during take-off to avoid sudden altitude changes.
		**Yaw Stick** ● Push the stick left or right to rotate the aircraft. ● The rotation speed increases the further the stick is moved from the center.
		**Pitch Stick** ● Push the stick forward to move the aircraft ahead and backward to reverse. ● Movement speed increases with greater displacement from the center.
		**Roll Stick** ● Push the stick right or left to move the aircraft horizontally move right or left. ● Movement speed increases with greater displacement from the center.

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Additional Control Buttons

Break Button

- Press the Break Button to make the aircraft immediately pause and hover in its current position.
- This is useful for quick stops during autonomous or manual flights.

Land Button

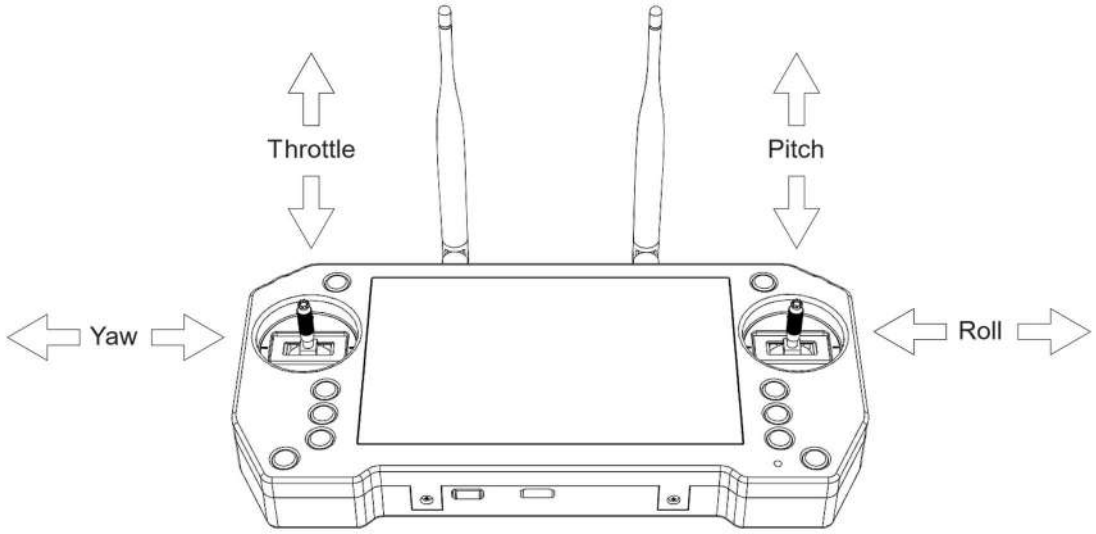
- Activating the Land Button will command the aircraft to descend and land at its current position, regardless of takeoff location.
- Ideal for controlled emergency landings or quick mission termination.

RTL (Return-to-Launch) Button

- The RTL Button commands the aircraft to return to its takeoff location and land safely.
- Useful in low battery, lost signal, or automated mission completion scenarios.

Note: The features and functions described above are designed exclusively for use with axldrone components, systems, and compatible firmware. Full functionality may not be available or supported when used with third-party hardware or software. For optimal performance and safety, always operate within the axldrone ecosystem.

Channel Mapping



Channel No.	Physical Channel Type	Default Mapping
1	Roll	1000 - 2000 PWM
2	Pitch	1000 - 2000 PWM
3	Throttle	1000 - 2000 PWM
4	Yaw	1000 - 2000 PWM
5	C2	1000 - 2000 PWM (Push high and push Low)
6	Video record	1000 - 2000 PWM (Push high and push Low)
7	RTL	1000 - 2000 PWM (Push high and push Low)
8	Right Thumbwheel	1000 - 2000 PWM
9	Left Thumbwheel	1000 - 2000 PWM
10	Camera Click	1000 - 2000 PWM (Push high, Release Low)
11	Break	1000 - 2000 PWM (Push high and push Low)
12	Nil	-
13	Nil	-
14	Land	1000 - 2000 PWM (Push high and push Low)
15	C1	1000 - 2000 PWM (Push high and push Low)
16	Pause	1000 - 2000 PWM (Push high and push Low)

Customizable Buttons

User Configurable Button

- This button is unassigned by default.
- Users can log into the QGroundControl (QGC) interface and assign a custom function such as camera control, flight mode switching, or payload activation based on mission needs.

Calibrating the Remote Controller

The axl OneView remote controller supports joystick calibration to ensure accurate and responsive flight control.

To calibrate the remote controller:

1. Press and hold the C1 button.
2. Power on the remote controller.
3. Hold the C1 Button until the display is turned on.
4. This will initiate the joystick calibration process automatically.

axl DOS Operations

Home: The right-hand side of the touchscreen displays the volume, battery level of the remote controller, Wi-Fi signal and Date & Time. Some of the apps are already installed by default such as Logs, axl GC, Gallery and Settings. Settings include Network & Internet, Date & Time and about. Users can get an overview of the options below.



Logs: Stores detailed flight data, including Total Distance, Total Flight Time, Total Flights, Total Flights, date, distance, altitude, duration, and battery consumed. These records help users review flight performance and analyze any data necessary to review.

axl GC: Primary interface for real-time drone monitoring and mission planning. It supports live telemetry, waypoint navigation, flight mode switching, and provides visual feedback on aircraft health and positioning via a map-based interface.

Gallery: Displays all captured media—photos and videos. Users can quickly preview, manage, or export files to external storage for post-processing or analysis.

Settings: Module allows users to configure Network and Internet, Time & Date Settings of the remote controller.

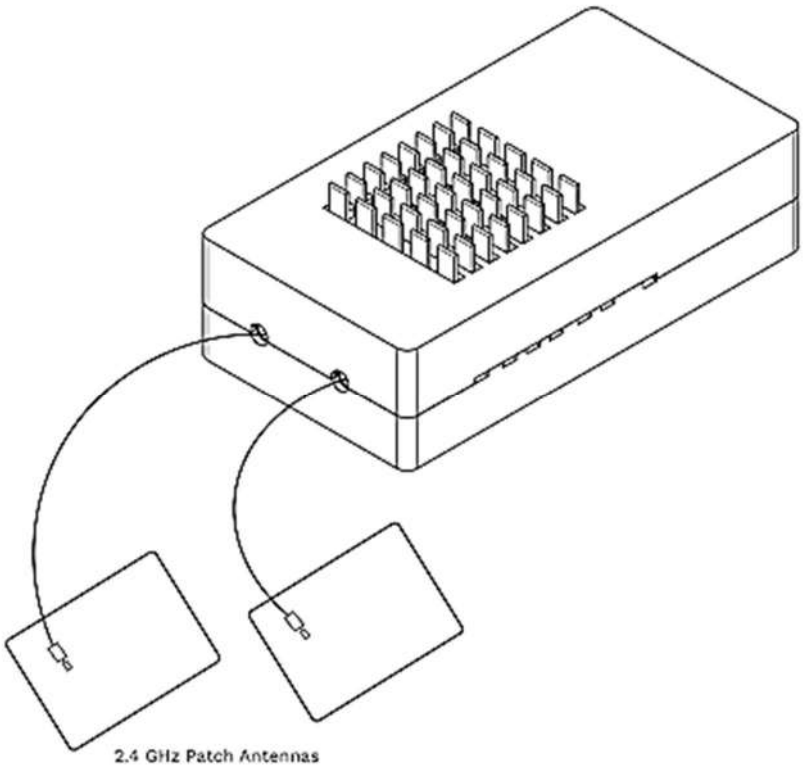
Note: HDMI settings - The touch screen can be shared to a display after connecting the HDMI port of the remote controller.

axl Air Unit

The axl Air Unit is a compact, high-performance onboard module developed by axldrone India Pvt. Ltd., serving as the central hub for flight control, video transmission, telemetry, and data processing in axldrone UAV systems.

Engineered for reliability and modularity, it ensures seamless communication between the aircraft, ground control station, and payload systems.

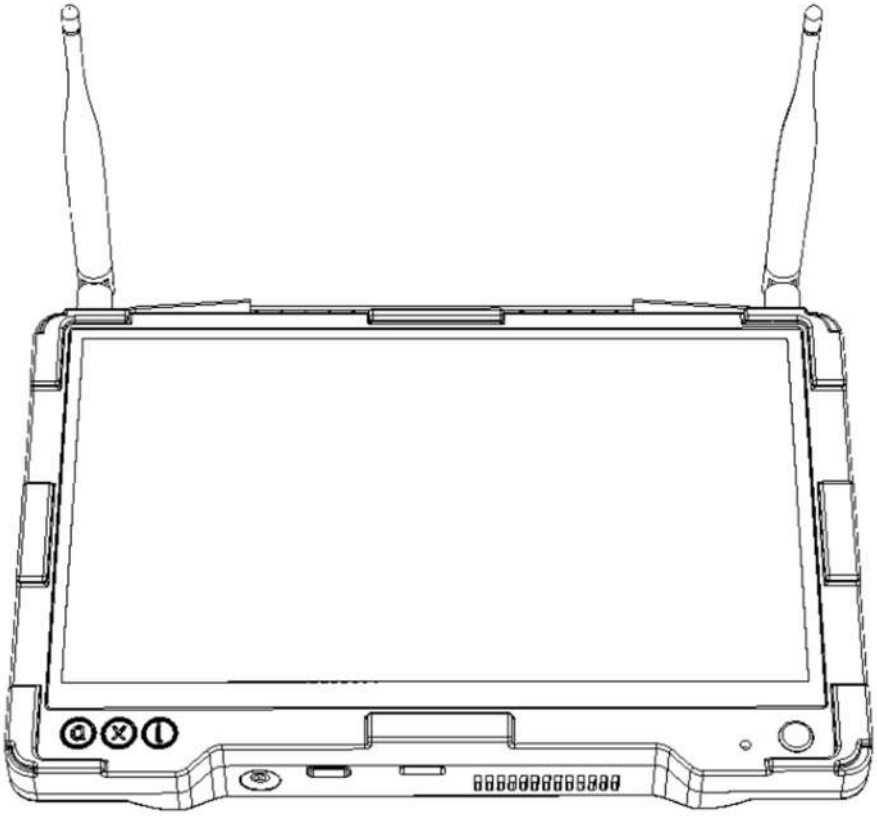
1. Video input: LAN
2. Working voltage: 12V
3. Power consumption: 2W
4. Video file format: H.265
5. Working Temperature: -10 to 50deg cel
6. RTSP link: rtsp://192.168.144.25:8554/main.264



axl Companion Computer

The axl Companion Computer is a custom-built solution designed to display live video feeds from multiple aircrafts simultaneously. It allows users to easily switch between different camera perspectives, ensuring seamless access to the best vantage point for any situation.

Whether you're monitoring aerial footage from multiple angles or choosing the most relevant perspective, this device offers dynamic control over the live streaming experience.



Flight

The section describes safe flight practices and flight restrictions.

1. **Standard Operating Process**

Before conducting a test flight after storing the aircraft, pilots must follow these essential guidelines to ensure safety and optimal performance

2. **Battery Check**
    a. Use only fully charged LiPo batteries approved by the manufacturer.
    b. Do not use damaged, swollen, or third-party batteries.
3. **Visual Inspection**
    a. Perform a complete visual check of the aircraft and remote control.
    b. Ensure there are no visible signs of wear, cracks, or loose components.
4. **Power-Up Sequence**
    a. Connect the battery to the aircraft but do not activate the safety switch.
    b. Power on the integrated remote controller (RC) device.
5. **System Check via QGroundControl (QGC)**
    a. Wait for the RC to establish connection with the aircraft.
    b. Access the Vehicle Setup in QGC and review each configuration section.
    c. Under the Safety tab, ensure horizontal and vertical geofences are enabled.
    d. Check satellite count and GPS error rate under the GPS status section.
6. **Flight Readiness**
    a. Switch on the safety switch.
    b. Confirm “Ready to Fly” status in QGC. Address and wait for any system warnings to clear.

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7. **Motor Verification**

    a. Select Loiter mode and arm the aircraft.

    b. Verify motor spin direction and responsiveness, then disarm the aircraft.

8. **Test Flight**

    a. Maintain a minimum safety distance of 25 meters from the aircraft before initiating takeoff.

    b. Begin flight operations, ensuring continuous monitoring of both QGC telemetry and aircraft behavior.

⚠ Always operate in a safe environment and be prepared to take manual control if necessary.

Pre-Flight Checklist

1. Ensure flight and RC batteries are fully charged and securely mounted.
2. Check for cracks, damage, or looseness. Replace if necessary.
3. Inspect airframe, landing gear, and gimbal for damage or loose parts.
4. Confirm satellite lock and correct orientation.
5. Verify firmware is up to date and SD cards have sufficient space.
6. Ensure the area is clear of obstacles, people, and no-fly zones.
7. Confirm stable connection, telemetry, and system status on QGC.
8. Confirm correct flight mode is selected (e.g., Loiter, Stabilized).
9. Check Return-To-Home altitude and failsafe triggers are configured.

Flight Test

Takeoff Procedures

1. Complete pre-flight checks and ensure all systems (GPS, telemetry, sensors) are functioning correctly.
2. Start the motors and prepare for immediate shutdown in case of unexpected behavior.
3. Perform manual takeoff by slowly raising the throttle. Ascend to a few feet and hover for 15 seconds to verify positional stability.
4. Test responsiveness by gently moving joysticks in all directions to validate control and sensor accuracy.
5. Once validated, initiate the autopilot flight plan, if applicable.

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In-Flight Procedures

Observation

1. Maintain visual line of sight (VLOS) at all times; binoculars may be used if necessary.
2. Continuously monitor aircraft behavior and weather conditions. Abort flight in case of rain, strong wind, or visibility loss.

Collision Hazards

1. Watch for birds, low-flying aircraft, or other airborne hazards.
2. The pilot focuses on controlling the aircraft, while the visual observer monitors the surrounding airspace.
3. In case of nearby hazards:
4. Take manual control immediately.
5. Consider an RTL (Return to Home) if required.
6. Resume autonomous flight once hazards clear.
7. Monitor battery usage during evasive maneuvers to ensure sufficient charge for mission continuation or return.

Landing Procedures

1. Monitor for anomalies like wrong landing zone, off-angle descent, or high-speed drop.
2. Be ready to override manually if behavior seems erratic.
3. Carefully descend toward the landing zone.
4. Avoid overcorrecting as ground effect turbulence can cause instability near touchdown.
5. Once over the target, cut the throttle sharply to ensure safe and immediate stop.
6. Inspect the landing gear for any cracks, dents, or wear.
7. Disconnect power and log flight data if necessary.

Post-Flight Checklist

1. Safely disarm motors and power down systems.
2. Disconnect and inspect batteries for swelling or overheating.
3. Check for debris, damage, or abnormal wear.
4. Download or review telemetry for anomalies or alerts.
5. Transfer photos, videos, and logs from SD cards to storage.
6. Log any irregular behavior or required maintenance.

Hardware Replacement

SOP for Hardware change

The following steps are to be followed before any hardware change in the aircraft.

1. Primarily conclude the hardware issues and confirm which component is to be replaced
2. Make a record of hardware changes in the maintenance logbook.
3. Make sure the availability of identical components of the damaged part.ie model and version should be the same.
4. Remove hologram stickers
5. Replace the module with proper tools and complete the wiring and soldering if it is required.
6. Make sure the connection, port number, and joints are fine
7. Check the result and fix it.
8. Again, put a new hologram sticker on the component and ensure tamper avoidance.
9. A functional check of the component is done to ensure smooth working of the aircraft.
10. Once the aircraft is tested functionally, the Hardware change is recorded in the service book of the aircraft as well as in the Service book of the manufacturer.
11. After replacing each hardware item, it is necessary to update the record of serial numbers with the new item's serial number. Additionally, the date and name of the person involved should be noted.
12. Except propeller replacement, all hardware changes, adjustments, or upgrades must be performed exclusively through axldrone authorized service centers. This policy is in place for the following reasons:

13. Safety: Modifications by unauthorized individuals may compromise the safety and integrity of the aircraft. Our authorized service centers have trained technicians who can make changes safely.
14. Performance: Unauthorized modifications can negatively impact on the performance and reliability of the aircraft. We want to ensure that your aircraft consistently delivers optimal performance.
15. Warranty: Unauthorized modifications can void your warranty, leaving you without coverage for repairs or replacement
16. After replacing each hardware item, it is necessary to update the record of serial numbers with the new item's serial number. Additionally, the date and name of the person involved should be noted.
17. Our authorized service centers use genuine parts and follow manufacturer guidelines to maintain your AIRCRAFT in optimal condition. Please adhere to this policy to ensure your safety, satisfaction, and warranty protection. If you have any questions or need assistance in locating the nearest authorized service center, please don't hesitate to contact our customer support team.
18. Component failure and RC error, aircraft Functionality errors and any other problems will be reported to the manufacturer via email and phone support. Technical support will be provided promptly.

Visit Our website

Feel free to connect

Kakkanad, Ernakulam,
Kerala, India – 682030
P : +91 484 299 3399,
+91 949 771 7654
E : info@axldrone.com

C5 UL Cyber Park,
Special Economic Zone
Calicut, India – 673016
P : +91 9645 426 414
E : info@axldrone.com

1441 Broadway,
#5, New York, NY 10018
P : +(646) 260-6311
E : info@axldrone.com