3.3 Propeller

Propellers are consumable parts that require regular maintenance and replacement to ensure the safe flight of the aircraft. The aircraft uses a quick-release propeller design, making it easy for you to replace them.

- Keep body parts away from the rotating propellers to avoid injury.

3.3.1 Replacing Propellers

The propellers are installed in the aircraft by default at the factory, and users are not required to install them usually. If the propellers are damaged (e.g., broken or damaged blades), please replace them with new ones before flight.

Tip

- Aircraft propellers are consumable parts. If needed, please purchase them from Autel Robotics.
- The propeller model is marked on the blade. You can check the model of a propeller at the edge of the blade near the propeller center shaft.
- Propellers cannot be installed on the wrong propeller mounts. Please carefully distinguish between propellers and mounts.
- Autel Robotics provides two spare propellers for each aircraft (with models 1158CW and 1158CCW respectively). Please refer to the “Packing List” and packaging for details.

Important

- EVO Max series multi-rotor drone is currently compatible with two types of propellers: 1136 and 1158. 1136 propellers have been already out of service. Users (excluded EU users) who have bought this type of propellers can use 1158 propellers for replacement if they need to replace propellers.
- Compared with 1136 propellers, 1158 propellers have larger ratio of lift/gravity at high altitude and low voltage, and are much better in keeping flight silence, improving endurance time slightly. Please use accordingly.
- An aircraft must use propellers with same model. Do not use different types of propellers in one aircraft.
- After long use, the blades of propellers might deform, leading to tightness issue. In this case, please replace them in time.

■ Detaching the Propellers

1. Press and hold the smart battery power button for 3 seconds to power off the aircraft.

2. First hold the rotor of the motor on the arm below the propeller to prevent it from rotating, press down on the propeller center shaft firmly, and then turn it in the unlocking direction marked on the propeller center shaft to detach the propeller.

■ Installing the Propellers

When installing the propellers, strictly follow the following instructions:

1. Make sure that the aircraft is powered off before installing the propellers.
2. The aircraft needs to be installed with two models of propellers, that is, CW and CCW, with two of each model. The CCW propellers have a white circle mark at the center shaft, while the CW propellers do not have this mark at the center shaft.
3. There are two types of propeller mounts on the power motors of the aircraft. The mounts with a white circle mark at the center shaft are for CCW propellers, while the mounts without this mark are for CW propellers.
4. Place a propeller on the corresponding propeller mount. Make sure that the buckle at the center shaft of the propeller aligns with the slot on the mount. Hold the rotor of the motor below the propeller to prevent it from rotating, press down on the propeller center shaft firmly, and then turn it in the locking direction marked on the center shaft to secure the propeller in place.

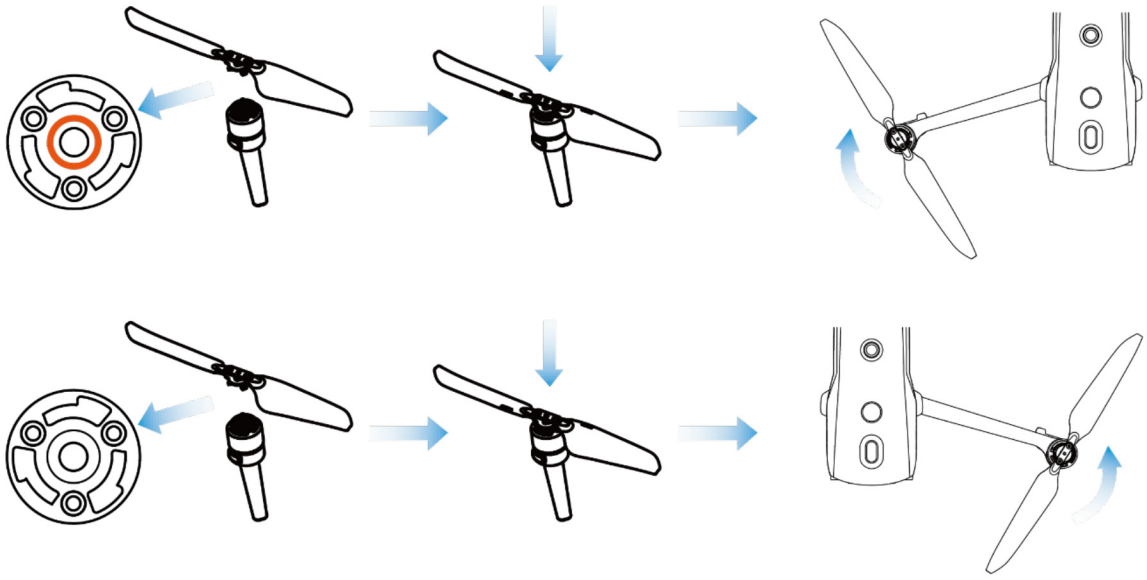

Fig 3-5 Install the Propellers

Table 3-5 Propeller Installation Details

Propeller Model	CCW (White circle on the center shaft)	CW (No white circle on the center shaft)
Installation Area	Mounts with a white circle mark	Mounts without white circle mark
Lock/Unlock	Lock orientation: Turn the propeller this way: to tighten it into the mount. Unlock orientation: Turn the propeller this way: to remove it from the mount.	

⚠ Warning

- The propellers can rotate at a maximum speed of 8000 RPM (1136) or 7500 RPM (1158). Please operate with caution.
- Before each flight, make sure that all propellers are in good condition. If there are aged, damaged, or deformed propellers, please replace them before the flight.
- Before each flight, make sure that all propellers are mounted correctly and securely.
- Please use the propellers provided by Autel Robotics. Do not mix propellers of different models.
- Before replacing propellers, make sure that the aircraft is powered off.
- Propeller edges are sharp. When replacing propellers, it is recommended to wear protective gloves.
- Stay away from rotating propellers or motors to avoid injuries.
- Before testing the aircraft on the ground, make sure that the propellers are removed.

3.3.2 Storing Propellers

After using the aircraft, fold the arms as shown below and store the propellers in the rugged case.

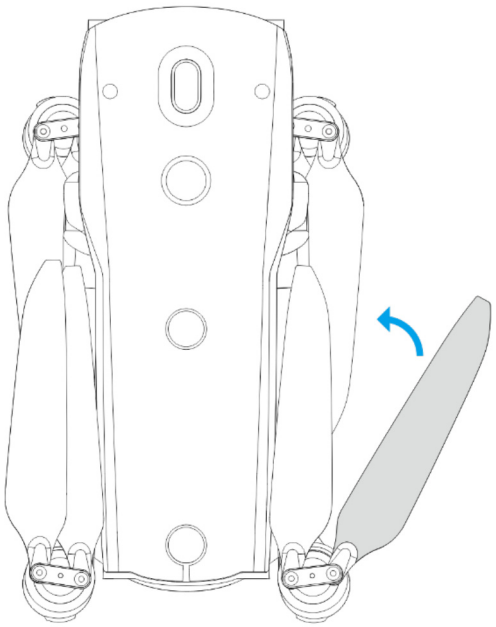

Fig 3-6 Store the Propellers

3.4 Arm Light

There is an LED indicator at the end of each arm of the aircraft. The front arm light is the heading light, and the rear arm light is the status light. After the aircraft takes off, the front arm lights will blink periodically, which can help you identify the direction of the aircraft nose; the rear arm lights will display the current flight status of the aircraft.
The front arm light is green when it lights up, and the rear arm light can display green, yellow, and red depending on the scene.

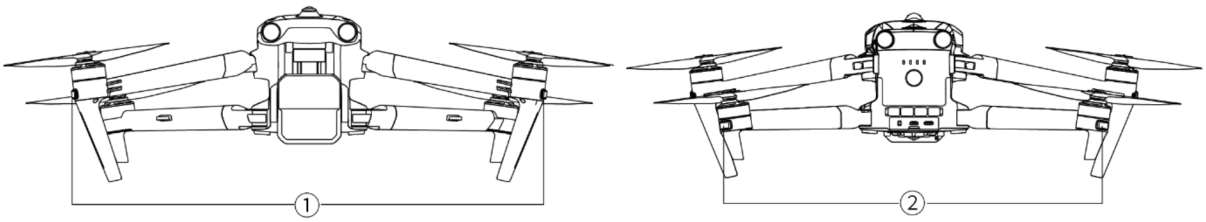

Fig 3-7 Arm Light

Table 3-6 Arm Light Status Details

Scence	①: Front Arm Light (Periodic state)	②: Rear Arm Light (Periodic state)
Remote Controller Not Connected to Aircraft	Green: 1s on/1s off	Yellow: 0.25s on/0.25s off
Start Compass Calibration	Green: 1s on/1s off	Yellow: 0.25s on/0.25s off
Current Step Calibration Successful	Green: 1s on/1s off	Green: 0.25s on/0.25s off
Compass Calibration Successful	Green: 1s on/1s off	Green: always on
Compass Calibration Failed	Green: 1s on/1s off	Red: always on
IMU Calibration	Green: always on	Red: 0.5s on/0.5s off
Low Battery Warning	Green: 1s on/1s off	Red: 0.5s on/1.5s off
Critical Low Battery Warning	Green: 1s on/1s off	Red: 0.25s on/0.25s off
IMU Abnormal	Green: 1s on/1s off	Red: always on
Illegal Battery	Green: 1s on/1s off	Red: 0.5s on/1.5s off
Magnetometer Abnormal	Green: 1s on/1s off	Red: 0.5s on/1.5s off → Yellow: 0.5s on/1.5s off
GNSS Mode	Green: 1s on/1s off	Green: 1s on → Red: 1s on* ** When the front arm light turn off, the rear arm light turns red.*
Attitude Mode	Green: 1s on/1s off	Green: 1s on → Red: 1s on* ** When the front arm light turn off, the rear arm light turns red.*
Take Off	Green: always on	Green: 0.5s on/1.5s off

Take off with Caution	Green: 1s on/1s off	Yellow: 0.25s on/0.25s off
Single Link	Green: 0.05s on/0.05s off	Green: 0.05s on/0.05s off
A-Mesh Link	Green: 0.05s on/0.05s off	Yellow: 0.05s on/0.05s off
Link Successful	Green: 0.05s on/0.05s off	Green: always on
Link Failed	Green: 0.05s on/0.05s off	Red: always on
Firmware Updating	Green: 0.1s on/0.1s off	Green: 0.1s on/0.1s off
Firmware Update Successful	Green: always on	Green: always on
Firmware Update Failed	Green: always on	Red: 0.5s on/0.5s off
Getting Logs	Green: always on	Green: 0.25s on/0.25s off→ Yellow: 0.25s on/0.25s off
Aircraft Search	Green: 1s on/1s off	Red: 0.5s on/1.5s off
Initializing Flight Mission	Green: always on	Red: 0.2s on → Yellow: 0.2s on → Green: 0.2s on → All: 0.4s off

3.5 Strobe

The aircraft is equipped with a strobe at the top of the fuselage to help identify the aircraft when flying at night. You can manually turn the strobe on or off in the flight application.

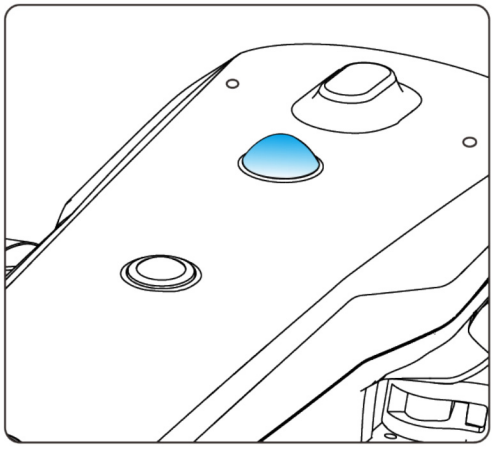

Fig 3-8 Strobe

Tip
● For how to turn the strobe on or off, see “6.4 Toolbar” and “6.5 “Settings” Interface” in

Chapter 6.

⚠ Warning

- Do not look directly at the strobe while they are on to avoid vision damage caused by strong light.

3.6 Auxiliary Bottom Light

The aircraft is equipped with auxiliary bottom lights (LED auxiliary lights) at the bottom of the fuselage. The lights are used to assist the downward visual obstacle avoidance lens group when the aircraft is landing in weak light environments, so as to ensure better visual positioning performance and enhance the landing safety of the aircraft. You can manually turn the bottom LED auxiliary lights on or off in the flight application.

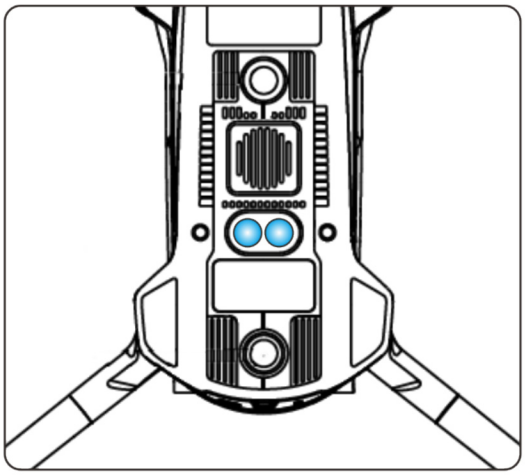

Fig 3-9 Auxiliary Light

Tip

- For how to turn the auxiliary bottom lights on or off, see "6.4 Toolbar" and "6.5 "Settings" Interface" in Chapter 6.

⚠ Warning

- When the auxiliary bottom lights are set to auto mode, they will turn on automatically at an altitude of around 5 meters above the ground when the aircraft is landing and the ambient light is insufficient, and they will turn off automatically after successful landing.

3.7 Gimbal Camera

- The EVO Max 4T aircraft is equipped with the Fusion 4T Gimbal, which integrates a high-magnification zoom camera, allowing you to clearly shoot vehicles and boats up to 2 kilometers away.
- The EVO Max 4T XE aircraft is equipped with the Fusion 4T XE Gimbal, which integrates a high-magnification zoom camera, allowing you to clearly shoot vehicles and boats up to 2 kilometers away.
- The EVO Max 4N aircraft is equipped with the Fusion 4N Gimbal, which integrates a super-starlight night vision camera and has outstanding shooting performance under low-illuminance environments.
- Both gimbal cameras integrate a wide angle camera, a laser rangefinder, and an infrared thermal imaging camera and provide capabilities such as target thermal imaging, positioning, and ranging for flight operations, enhancing the flying experience in all-day operations.

3.7.1 Camera Structure

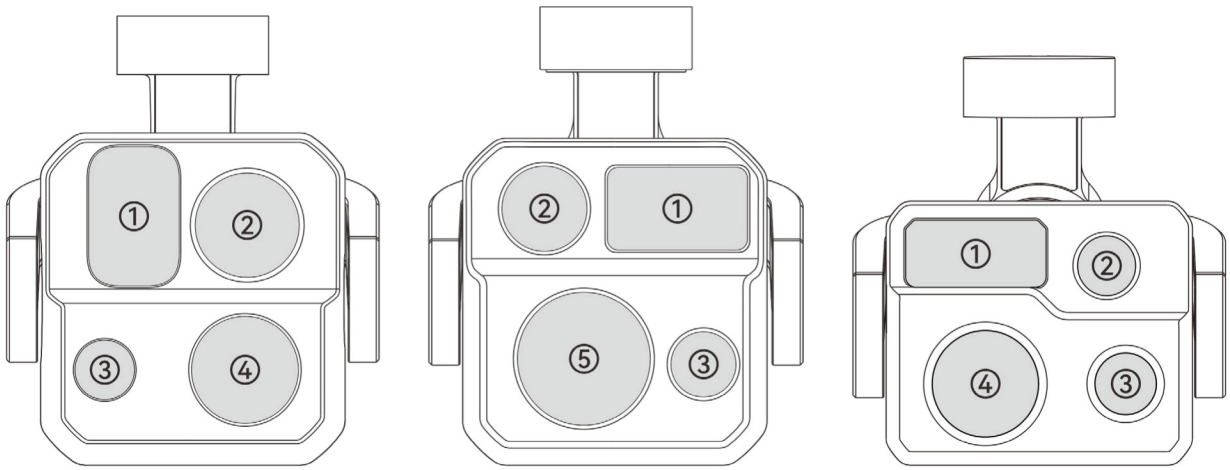

Fig 3-10 Aircraft Gimbal Camera Layout

Table 3-7 Aircraft Gimbal Camera Layout Details

No.	Name	Description
1	Laser Rangefinder	The laser ranger finder accurately determines the distance by measuring the time from the beginning of the laser emission to the time when the laser is reflected from the target. Measuring range: 5-1200 meters.
2	Infrared Thermal Imaging Camera	The infrared thermal imaging camera is used for radiometric measurement and night vision, which can monitor the temperature distribution of the measured target in real time, so as to judge the state of the target. Radiometric temperature range: -20°C ~ +150°C (high gain

		mode) and 0°C ~ + 550°C (low gain mode).
3	Wide Angle Camera	The wide angle camera is used to capture images with a larger field of view within a shorter shooting distance. Fusion 4T Gimbal/Fusion 4N Gimbal: 1/1.28" CMOS, 50 million effective pixels, and 85° field of view. Fusion 4T XE Gimbal: 1/2" CMOS, 48 million effective pixels, and 83.4° field of view.
4	Zoom Camera	The zoom camera is used to shoot distant scenes, making the distant scenes clearer. 1/2" CMOS, 48 million effective pixels, 10x continuous optical zoom, 20x hybrid zoom and 160x digital zoom.
5	Night Vision Camera	The night vision camera is used for clear imaging in low-illuminance environments (such as nighttime). 0.0001 Lux ambient illumination recognition and 1920×1200 resolution.

⚠ Warning

- Do not point the infrared thermal imaging camera at intensive energy sources such as the sun, lava, laser beams, and molten iron, to avoid damage to the infrared detector.
- The temperature of the observation target should be less than 600 °C. Observing objects with temperatures above this limit may result in damage to the infrared detector.
- The laser rangefinder is a Class 3R laser product that emits laser radiation. Avoid direct exposure to the eyes when in use.

3.7.2 Camera Operations

■ Control Camera by RC Functional Buttons

- Right dial wheel: Used to adjust the zoom factor of the selected camera. Turn left to reduce the zoom factor, and turn right to increase the zoom factor.
- Video recording button: Press the button to start video recording and press again to end video recording.
- Shooting button: Press the button to take photos.

Tip

- For the control operations of the remote controller, see "4.1.1 Remote Controller Components" in Chapter 4.

■ Control Camera in the Flight Application

For details about how to control the camera in the flight application, see "6.8 Camera Interfaces" in Chapter 6.

3.8 Aircraft Gimbal

The aircraft is equipped with a three-axis stabilized gimbal with a high-precision motor structure, which can ensure stable camera shooting when the aircraft is flying.

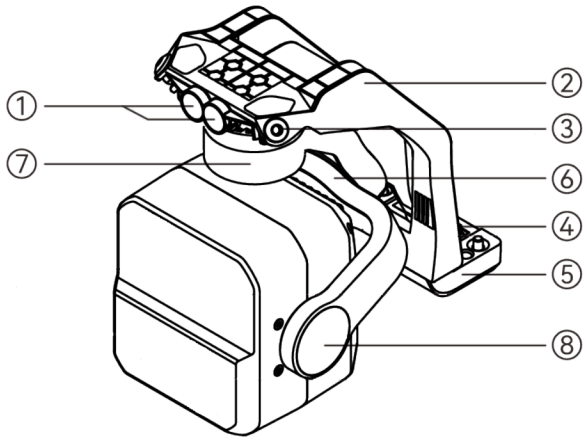

Fig 3-11 Gimbal Structure

Tip

- Please be aware that, except for differences in lens layout, the structure of the Fusion 4T Gimbal, that of the Fusion 4T XE Gimbal and that of the Fusion 4N Gimbal are the same or similar.

Table 3-8 Gimbal Structure Details

No.	Name	Description
1	Cylindrical Holes	The two cylindrical holes at the front of the gimbal dampener mount are used to fix one side of the gimbal dampener mount to the two fixed pins in the aircraft nose gimbal compartment.
2	Dampener Mount	Used to support dampeners and gimbal cameras.
3	Dampener	Used to buffer the vibration of the gimbal.
4	Connector	The connector of the gimbal is connected to the connector slot at the bottom of the aircraft fuselage.
5	Connector Cover	The protective cover above the connector is used to fix the other side of the gimbal dampener mount to the bottom of the aircraft fuselage.
6	Roll Axis Motor	Used to control the moving range of the gimbal to roll left or right (mechanical range of Fusion 4T and Fusion 4T XE: -45° ~ +45°; mechanical range of Fusion 4N: -50° ~ +50°,).
7	Yaw Axis Motor	Used to control the moving range of the gimbal to rotate left or right with its own axis (mechanical range: -45° ~ +45°).

8	Pitch Axis Motor	Used to control the moving range of the gimbal to rotate up or down (mechanical range: -135° ~ +45°, controllable movement range: -90° ~ +30°).

3.8.1 Gimbal Mechanical Rotation Range

The mechanical rotation ranges of the pitch, yaw, and roll axes of the gimbal are shown below.

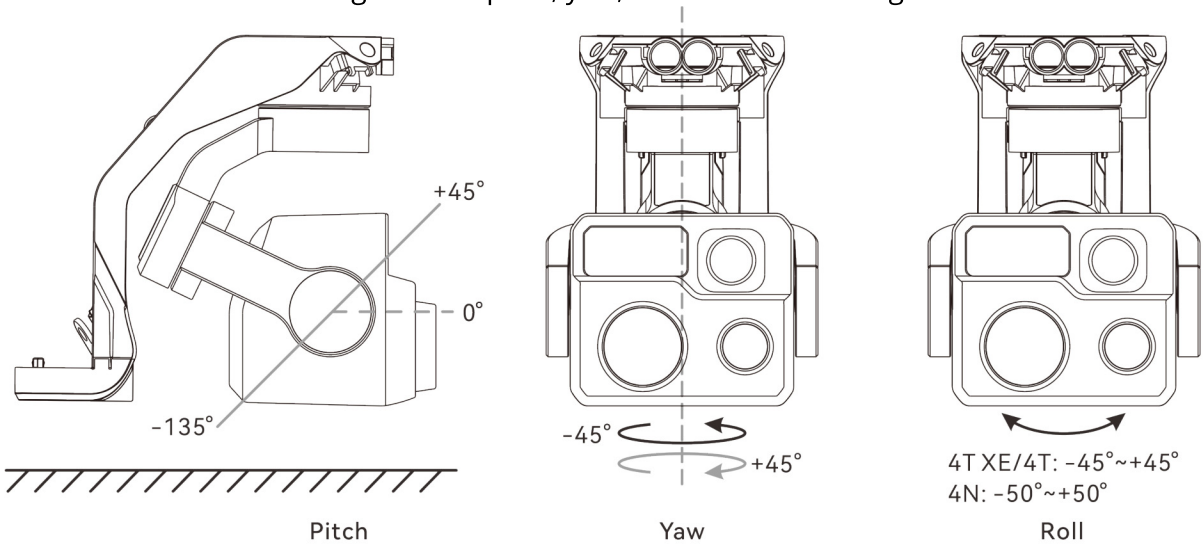

Fig 3-12 Mechanical Rotation Range of the Gimbal of the Aircraft

> **Note**
>
> - You can control the rotation range of the gimbal pitch, ranging from -90° to 30°. For more setting details, see "6.5 "Settings" Interface" in Chapter 6.

3.8.2 Gimbal Operations

■ Control Gimbal by RC Functional Buttons

- Left dial wheel: Used to adjust the gimbal pitch. Turn left to rotate the gimbal down, and turn right to rotate the gimbal up.
- Custom keys C1/C2: After setting the C1 or C2 key to "Gimbal Pitch Recenter/45°/Down", you can press the key to switch the gimbal angle.

> **Tip**
>
> - For the control operations of the remote controller, see "4.1.1 Remote Controller Components" and "4.11.1 Custom Keys C1 and C2" in Chapter 4.

■ Control Gimbal in the Flight Application

For the gimbal control operations in the flight application, see "6.8.1 Camera Function Access" in Chapter 6.

⚠ Warning

- When the aircraft is not in use, especially when the aircraft is being transferred or stored, be sure to use the protective cover of the gimbal to fix the gimbal, so as to avoid damage to the gimbal camera due to accidental rotation or bumping.
- Please remove the protective cover of the gimbal before turning on the aircraft, otherwise, it may cause damage to the gimbal motor and related circuit.
- When turning on the power switch of the aircraft, the gimbal will automatically rotate to perform self-check and calibration, please make sure there is no object near the gimbal to hinder its movement.

3.8.3 Replacing the Gimbal

The aircraft adopts removable gimbal design, allowing users to easily replace the gimbal with one of different model to meet your flight needs in various scenarios.

❗ Important

- Please follow the instructions below to replace the gimbal, as improper replacement may cause damage to the gimbal or poor contact with the gimbal interface.
- Do not replace the gimbal frequently. The gimbal connector is a precision element, and frequent plugging and unplugging may result in poor contact between the aircraft and the gimbal.
- Please use the gimbal model specified by Autel Robotics for replacement. Incompatible gimbals may cause damage to the aircraft.

⚠ Warning

- Do not attempt to remove or mount the gimbal when it is powered on. Wait for 15 seconds after powering off the aircraft (the internal capacitor is fully discharged) before removing or mounting the gimbal.
- When turning the aircraft upside down to remove or mount the gimbal, please protect the visual obstacle avoidance lens and strobe at the back of the aircraft fuselage to avoid scratches.
- If there is a function mount installed on the extension interface, please remove the mount before removing or installing the gimbal, so as to prevent the mount from being damaged.

■ Removing the Gimbal

1. Press and hold the power button of the smart battery for 3 seconds to turn it off and remove the smart battery.
2. Place the aircraft on a level surface with the bottom of the fuselage facing up.
3. Use a Phillips PH00 screwdriver to loosen the two anti-loosening screws securing the connector cover.
4. Slightly lift the connector cover and slide it back and up to take out the gimbal.

⚠ Warning

- When removing the gimbal, do not forcefully pull the gimbal out, as this may cause damage to the gimbal. You should hold the gimbal dampener mount to remove the gimbal.

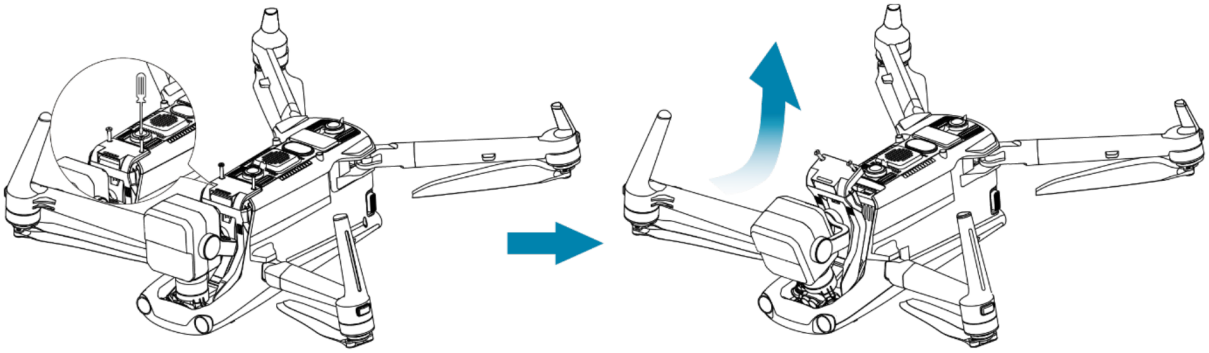

Fig 3-13 Removing the Gimbal

■ Mounting the Gimbal

1. Press and hold the smart battery power button for 3 seconds to turn the aircraft off and remove the smart battery.
2. After aligning the cylindrical hole on the front end of the gimbal dampener mount with the two fixed pins in the aircraft nose gimbal compartment, push and slide the gimbal forward until the connector cover is aligned with the connector slot in the aircraft.
3. Gently push down the connector cover to the bottom, so that the connector under the connector cover is inserted into the connector slot, and the connector cover needs to be flush with the bottom of the aircraft.
4. Use a Phillips PH00 screwdriver to partially tighten the two anti-loosening screws into the two fixing holes on the connector cover. After ensuring that the connector is perfectly aligned with the connector slot, fully tighten the two anti-loosening screws to secure the connector cover.
5. Press and hold the battery power button for 3 seconds to power on the aircraft. If the connector cable of the gimbal is connected correctly, the gimbal will automatically rotate the camera to perform a self-test.

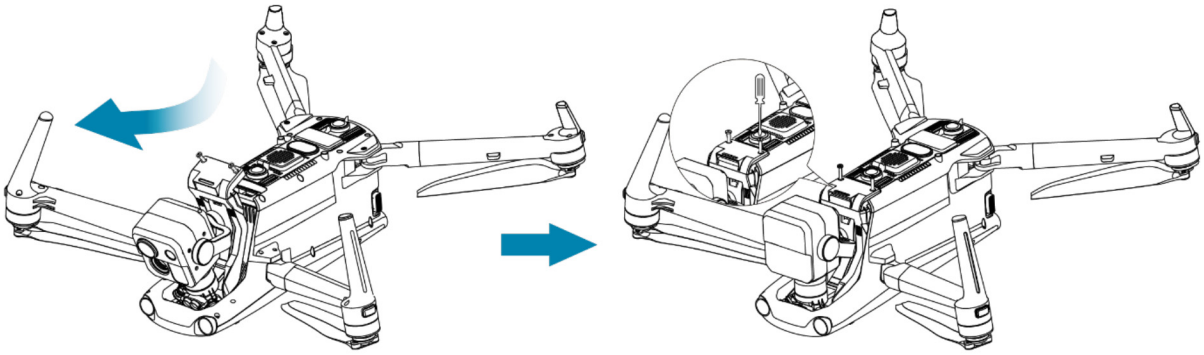

Fig 3-14 Mounting the Gimbal

Important

- Please make sure that the connector cover of the gimbal camera is aligned with the connector slot at the bottom of the fuselage, otherwise, it will affect the connection between the gimbal and the aircraft.

Warning

- After mounting the gimbal to the aircraft, please make sure that all parts are fully fixed to avoid loss due to functional failures caused by loose assembly of the gimbal during flight.

3.9 Flight Control System

The aircraft achieves stable and convenient flight control through its built-in intelligent flight control system. The system supports a number of advanced functions, including auto-return, failsafe, and visual positioning system.

Table 3-9 Flight Control System

Module	Description
IMU	A three-axis gyroscope and a three-axis accelerometer measure acceleration and angular velocity.
Compass (Magnetometer)	Measures the geomagnetic field and provides reference information on the aircraft heading.
GNSS Receiver	Receives global satellite navigation signals to measure longitude, latitude, and altitude.
Barometer	Measures atmospheric pressure and is used to determine the altitude of the aircraft.
Visual Obstacle Avoidance Sensing System	Provides the aircraft with 720° obstacle avoidance sensing capability around the aircraft.
Millimeter Wave Radar	Provides the aircraft with all-day and all-weather obstacle avoidance sensing capability.

3.9.1 Flight Status

Depending on the availability of GNSS signals and flight conditions, the aircraft can automatically switch between the following three modes. Users can check the flight status of the aircraft in the status notification bar in the flight application. For details, please refer to “6.3 Status Notification Bar” in chapter 6.

Table 3-10 Flight Status

Mode	Description
GNSS Mode	When the aircraft detects a qualified GNSS signal, it will enter the GNSS mode automatically. In GNSS mode, if the obstacle avoidance system is turned on, the system will provide auxiliary information to more accurately locate and avoid obstacles, provide stable and smooth flight control, and support auto-return, failsafe, geo-fencing and other safety functions.
Visual Positioning Mode	When the aircraft is in the visual positioning mode, and the GNSS signal detected is not strong enough to activate GNSS mode, and it meets certain environmental and altitude requirements (The ambient light intensity is greater than 15Lux, the ground texture is clear, the diffuse reflectance is greater than 20%, and the UAV flight altitude is within the observation range of the visual obstacle avoidance perception system), the aircraft will automatically enter the visual positioning mode.
Attitude Mode	When there is no GNSS signal and the environment and altitude cannot meet the minimum requirements of the visual obstacle avoidance sensing system, that is, when there is no GNSS signal and visual positioning failure at the same time, the attitude mode will be activated. In this mode, the obstacle avoidance system is disabled, and the aircraft only controls the altitude through the barometer, and users are supposed to make their own decisions to ensure flight safety.

⚠ Warning

- If you have not fully mastered the flight control of the aircraft and the aircraft is in attitude mode, please do not take off rashly.
- If the aircraft is in visual positioning mode or attitude mode, the no-fly zone function of the geofencing system will be unavailable and please be cautious that do not enter restricted airspace.

3.9.2 Flight Modes

The aircraft has varying flight power output performance in different flight modes. You can set the flight mode of the aircraft in the flight application. For more information, see "6.3 Status Notification Bar" and "6.5 "Settings" Interface" in Chapter 6.

Table 3-11 Flight Modes

Flight Modes	Description
Slow	Forward, backward, left, and right: 3 m/s; Ascend: 3 m/s; Descend: 3 m/s.

Smooth	Forward, backward, left, and right: 10 m/s; Ascend: 5 m/s; Descend: 5 m/s.
Standard	Forward and backward: 15 m/s; Left and right: 10 m/s; Ascend: 6 m/s; Descend: 6 m/s.
Ludicrous	Forward: 23 m/s; Backward: 18 m/s; Left and right: 20 m/s; Ascend: 8 m/s; Descend: 6 m/s.

⚠ Warning

- If you have not fully mastered the flight control of the aircraft, it is not recommended for you to switch to Ludicrous mode.
- When flying close to the ground, it is recommended to switch to Slow mode for safety.
- When switching to Ludicrous mode, the obstacle avoidance function of the aircraft will become unavailable, and the aircraft will not automatically avoid surrounding obstacles during flight. Please always pay attention to the surrounding environment when using it, and manually control the aircraft to avoid obstacles.
- When switching to Ludicrous mode, its flight speed is greatly improved compared with Standard mode, so the safety distance in this mode will be correspondingly extended. Users should maintain the safety distance of at least 50 meters when operating the aircraft manually in this mode to ensure personal and flight safety.

3.9.3 Intelligent Flight Function

■ Accurate Landing

The accurate landing function uses the downward binocular visual obstacle avoidance lens group of the aircraft to record the information at its take-off point. When the aircraft is returning to the home point or landing, vision algorithms are used to calculate the distance between the aircraft and the take-off point in real time so as to make sure that the aircraft successfully lands at the take-off point.

■ Landing Protection

The landing protection function uses the downward visual obstacle avoidance lens group and downward millimeter-wave radar of the aircraft to create a depth map, then calculate the flatness and angle of the depth map to detect whether the surface is flat enough for a safe landing.

■ Intelligent Obstacle Avoidance

The intelligent obstacle avoidance function uses the combined observation results of the visual obstacle avoidance sensing system and the forward millimeter-wave radar sensing system of the aircraft to calculate the optimal flight path, achieving obstacle avoidance in multiple directions.

Important

- If there is no home point set, the aircraft will record the takeoff point as the default home point. When the home point is not refreshed in flight, the precise landing will initiate.
- When the precise landing function is enabled, users should ensure the takeoff environment does not change.

3.9.4 Hot Swap Battery

The aircraft supports hot-swappable batteries, which allows you to replace smart batteries without powering off the aircraft, thus avoiding waiting for rebooting. When performing a hot swap, it is recommended to replace the battery within 8 seconds to ensure that the new battery can be properly activated when powering on the aircraft.

Important

- Before performing a hot swap, please enable the "Hot Swap Battery" function in the flight application. For more information, see “6.5 “Settings” Interface” in Chapter 6.
- After you remove the battery during a hot swap, the aircraft will enter low power mode. In this mode, the aircraft is powered by its internal supercapacitor. Therefore, you should complete the battery replacement quickly.
- The battery replacement time may vary under different temperatures. Please replace the battery within 8 seconds. If the replacement time exceeds 8 seconds, please reboot the aircraft. Hot swap operations in temperatures below -10°C may fail.

3.10 Installing the microSD Card

The aircraft comes with a 64 GB microSD card (pre-installed in the microSD card slot of the aircraft at the factory). If you want to replace it with a higher-capacity microSD card, please refer to the following operations.

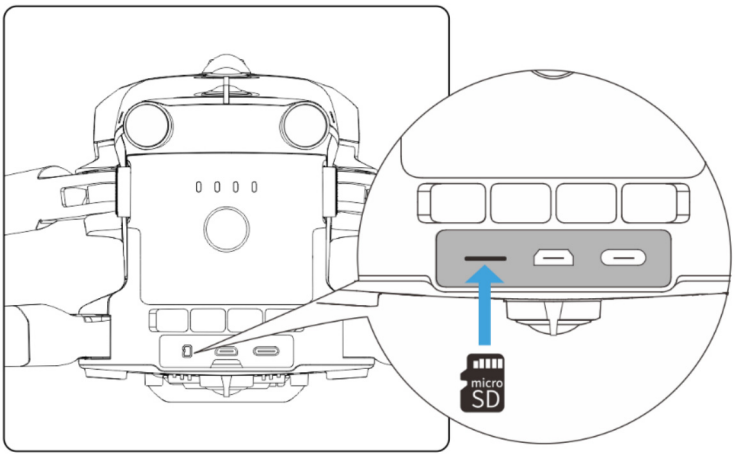

Fig 3-15 Installing the microSD Card

Tip

- The aircraft has built-in 128 GB storage space, with approximately 64 GB available due to storage of system firmware upgrade.
- It is recommended that you prioritize using an external microSD card for storing the image data collected during flight to avoid running out of internal storage space, which will affect the flight safety of the aircraft.
- If you plan to shoot high-definition videos, we recommend using a Class 10, UHS-3, or higher microSD card.

Warning

- To prevent data loss, please turn off the aircraft before removing the microSD card.
- After installing the microSD card, close the rubber protective cover over the interface area promptly to avoid affecting the protective performance of the product.

3.11 Connecting to PC/MAC

To transfer photos and videos to a PC, MAC, or other devices, please use a data cable to connect to the device through the USB-C interface of the aircraft.

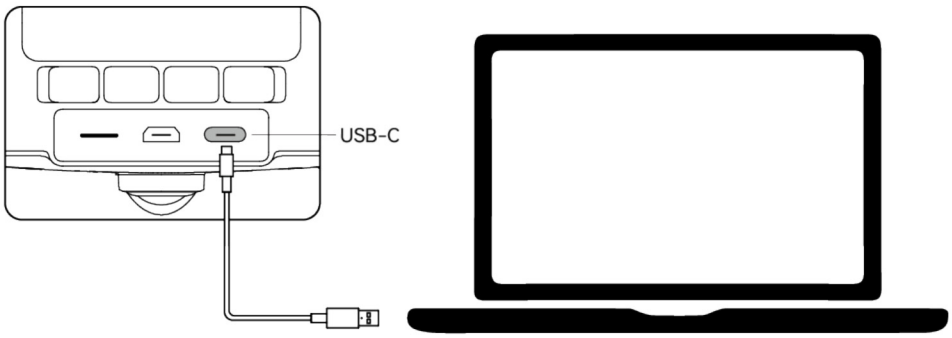

Fig 3-16 Connect to PC/MAC via Aircraft USB-C interface

3.12 Extension Interface

The aircraft has a PSDK extension interface at its top, which uses the USB-C interface standard. The interface allows for additional functional mounts such as the RTK module and speaker and spotlight system.

Important

- Mounts for the aircraft are sold separately. If you need a mount, contact Autel Robotics or third parties that have passed safety and compatibility certification test.
- Do not plug a device that uses other USB-C interface standards into the PSDK extension interface, as it may damage the aircraft.

- Before flight, make sure that the mount is securely connected to the aircraft and the fixing screws on both sides are tightened.
- Pay attention to the battery level of the aircraft during flight. Functional mount consumes the battery power of the aircraft, which will reduce the flight time of the aircraft.
- After removing a mount from the aircraft, be sure to close the rubber protective cover over the interface area. Otherwise, the protective performance of the aircraft will be affected.

Table 3-12 Compatible Mount List

Mount Information	XRT-2301X RTK Module	DU4 Speaker and Spotlight System
Part Number (EAN)	6924991127222	6924991124795
Part Number (UPC)	889520207225	889520204798
Manufacturer	Autel Robotics	JZ Technology
Maximum Mount Dimension	72×48×45 mm	145×117×83 mm
Maximum Mount Weight	29 g	195 g
Functional Compatibility Requirements	Aircraft firmware version: V1.5.0.75 Remote controller version: V1.4.0.55 Flight application version: V1.2.18	Aircraft firmware version: V1.8.2.237 Remote controller version: V1.8.2.237 Flight application version: V2.1.119

Tip

- Before using the above mount in the aircraft, make sure that the aircraft, the remote controller, and the flight application meet the functional compatibility requirements. If you use versions below those specified in the above requirements, the related functions cannot be enabled.
- When the aircraft is fully charged and is equipped with the RTK module, the hovering time will be extended to 37 minutes, and other aspects are not affected.

3.13 Protection Rating

Under controlled laboratory conditions, the aircraft (with smart batteries installed) can achieve an IP43 protection rating following IEC 60529 standards. The protection rating is not permanent and may degrade due to long-term wear and tear.

- It is not recommended to fly in rainy days or sandstorm days. In case of rain or sandstorm during the flight, abort the flight and return to a safe location promptly.

- Before flight, make sure that battery connector, battery compartment interface, battery surface, and battery compartment surface are dry and water-free before inserting the battery into the aircraft fuselage.
- After completing the flight, wipe off the rainwater on the aircraft fuselage before folding and storing the aircraft to prevent water from entering the aircraft and affecting its protective performance.
- Make sure that the battery connector and surface are dry and water-free before charging the battery.
- Damage caused by immersion in liquid is not covered by the warranty.

The aircraft does not have an IP43 protection rating in the following conditions:

- The aircraft is not installed with a battery or the battery is not properly installed.
- The gimbal is not installed on the aircraft.
- The rubber protective cover at the interface of the fuselage is not properly installed.
- There is other possible damage on the fuselage, such as shell cracks or waterproof adhesive failure.

Note

- Please strictly comply with the usage environment restrictions of the aircraft. Using the aircraft beyond specified conditions may lead to aircraft damage or safety incidents.
- The IP43 protection rating is not a universal feature of the aircraft and may require user customization.

3.14 Noise Description

The aircraft will generate a certain level of noise during operation. You should understand local noise pollution prevention regulations in advance and set an appropriate flight altitude or safe distance to ensure that it does not disturb other individuals, groups, or organizations.

■ A-weighted sound power level

The aircraft has passed sound power test conducted by relevant third-party testing organizations with qualification. The results comply with the regulations concerning unmanned aerial vehicles in the European Union.

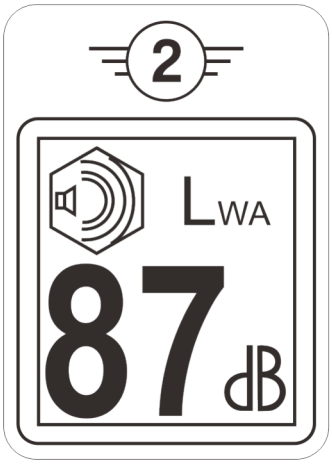

Fig 3-17 A-weighted sound power level of the aircraft

■ A-weighted sound pressure level

Measurement results for the aircraft, in accordance with the requirements of GB 42590-2023 in Chinese mainland, are provided below:

Table 3-13 Noise Measurements Results (normalized to 1 m from the aircraft)

Observation Points	Hover	Fly (1 m/s)
Ground Measure Point (Below)	71.5dB	75.8dB
Side Measure Point (Horizontal Plane)	73.7dB	71.7dB

Note: The measurement environment is an outdoor cement ground.

Tip

- Before flight, please make sure to verify the noise restrictions in the flying area in advance to avoid any violation of local regulations regarding aircraft noise.

3.15 Aircraft Communication Frequency Bands

The aircraft is equipped with Autel SkyLink 3.0 image transmission technology and has 4 image transmission antennas, with 2 channels of transmitting signals and 4 channels of receiving signals, so that the communication distance between the aircraft and the ground control station can reach up to 15 kilometers.

- It supports adaptive frequency hopping transmission of multiple frequency bands, selects the optimal channel according to the electromagnetic interference situation, and has strong anti-interference ability.
- The quality of real-time transmission reaches 1080p/30fps, and it has a high transmission bit rate of 64Mbps and low-latency transmission characteristics.
- Both data link path transmission and data storage adopt the AES-256 encryption method to ensure the communication data security between end-to-end.

Note

- The transmission data is based on the ground control station and comes from test data, and the test environment and conditions are different, and the data may be different.
- The transmission range is for reference only. During use, please pay close attention to the quality of the image transmission signal. When the image transmission signal is weak, reduce the flight radius in a timely manner. For more information, see "6.3 Status Notification Bar" in Chapter 6.

Tip

- In actual use, after the aircraft and the remote controller is turned on and matched in

frequency, the flight application in the remote controller will automatically determine and select the radio communication frequency band that complies with local regulations for the specific country or region based on the GNSS information received by the aircraft.
- Before flight, please ensure that the aircraft receives a strong GNSS signal after being powered on. This allows the flight application to receive the proper communication frequency band.
- When the aircraft does not obtain GNSS positioning information after being turned on (for example, the aircraft enters visual positioning mode or attitude mode right after being turned on), the radio communication frequency band between the RC and the aircraft adopts 2.4G frequency band by default; when the aircraft enters the visual positioning mode or attitude mode from GNSS mode, its communication frequency band remains the same.

■ Information of Image Transmission Frequency Bands for Aircraft

The image transmission frequency bands of the aircraft comply with regulatory requirements worldwide. The relevant used frequency bands are listed in the table below.

Tip

- Users can select legal image transmission frequency bands in the flight application. For details, please refer to "6.5 "Settings" Interface" in chapter 6.

Table 3-14 Aircraft Global Frequency Bands Used (Image Transmission)

Operating Frequency	Details	Countries and Regions
900M	902-928MHz	■ USA (FCC) ■ Canada (ISED)
2.4G	2400–2476MHz	■ Chinese Mainland (SRRC)
2.4G	2400–2483.5MHz	■ USA (FCC) ■ Canada (ISED) ■ EU (CE) ■ UK (UKCA)
5.2G	5150-5250MHz	■ USA (FCC) ■ EU (Except Germany, CE) ■ UK (UKCA)
5.2G	5170-5250MHz	■ Germany (CE)
5.8G	5725-5829MHz	■ Chinese Mainland (SRRC)
5.8G	5725-5850MHz	■ USA (FCC) ■ Canada (ISED) ■ EU (CE) ■ UK (UKCA)

■ Information of Wi-Fi Frequency Bands for Aircraft

The aircraft supports the Wi-Fi Super Download feature. After the aircraft lands, it will automatically activate Wi-Fi. Other mobile devices can quickly transfer and download photos and video files captured by the aircraft by connecting to the aircraft's Wi-Fi.

Note

- The aircraft is equipped with the hardware at the factory for the Wi-Fi Super Download feature. This feature will be available in future firmware upgrade. Please upgrade accordingly when the feature is available.

The Wi-Fi frequency bands of the aircraft comply with regulatory requirements worldwide. The relevant used frequency bands are listed in the table below.

Table 3-15 Global Frequency Bands Used (Wi-Fi)

Operating Frequency	Details	Countries & Regions
2.4G (2400–2476MHz)	802.11b/g/n/ax	■ Chinese Mainland (SRRC)
2.4G (2400–2483.5MHz)	802.11b/g/n/ax	■ USA (FCC) ■ Canada (ISED) ■ EU (CE) ■ UK (UKCA)
5.2G (5150–5250MHz)	802.11a/n/ac/ax	■ USA (FCC) ■ EU (Except Germany, CE) ■ UK (UKCA)
5.2G (5170-5250MHz)	802.11a/n/ax	■ Germany (CE)
5.8G (5725–5829MHz)	802.11a/n/ax	■ Chinese Mainland (SRRC)
5.8G (5725–5850MHz)	802.11a/n/ac/ax	■ USA (FCC) ■ Canada (ISED) ■ EU (CE) ■ UK (UKCA)

Note

- Some countries and regions have strict restrictions on the use of radio communication frequency bands. It is crucial to use them legally, and any modification of communication modules is strictly prohibited.
- In Germany there's specific requirements for the 5.2G frequency band. Unmanned aerial systems are only allowed to use the frequency within the range of 5170MHz to 5250MHz.
- If flying in any countries not listed in the above table, please consult the local

communication management authorities to ensure that the aircraft communication frequency bands comply with local regulatory requirements.
- The aircraft will automatically match the legal frequency band based on GNSS positioning, so users can use it with confidence.

■ RC Devices

In addition to the remote controller, the aircraft also supports matching with the EVO Nest for remote communication control over the aircraft.

Table 3-16 Remote Control Device Support List

Control Device Information	Autel Smart Controller V3	EVO Nest
Part Number (EAN)	6924991129011	6924991124474
Part Number (UPC)	889520209014	889520204477
Manufacturer	Autel Robotics	Autel Robotics
Control Software	Autel Enterprise	Autel Integrated Command System
Software Version Requirement	V1.0.0.0 or higher	V1.0.0.0 or higher
Supplementary Information	Standard configuration	Nest Kit

Tip

- The remote controller is a standard accessory in the aircraft package, and Autel Robotics also provide retail package to choose separately.
- When using the above devices to remotely control the aircraft, make sure that the software version meets the above requirements.

Chapter 4 Remote Controller

4.1 Introduction

The remote controller is installed with the flight application Autel Enterprise by default, allowing you to operate and set the aircraft and the gimbal camera and transmit high-definition videos from the gimbal camera in real time. It offers a maximum communication distance of 15 kilometers.

Note

- The maximum communication distance of the remote controller is measured under unblocked and interference-free conditions and is for references only.
- It supports adaptive frequency hopping transmission, selects the optimal channel according to the electromagnetic interference situation, and has strong anti-interference ability.
- Both data link path transmission and data storage between the aircraft and the remote controller adopt the AES-256 encryption method to ensure the communication data security between end-to-end.

4.1.1 Remote Controller Components

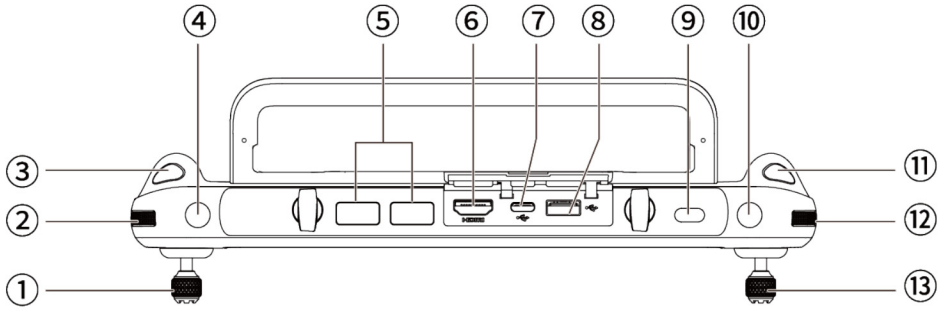

Fig 4-1 Remote Controller Top-Down View

Table 4-1 Remote Controller Top-Down View Details

No.	Name	Description
1	Left Command Stick	Controls the state of motion of the aircraft. The default stick mode is Mode 2. In this mode, you can use the stick to control the ascent, descent, and heading of the aircraft. You can set the stick mode in the flight application. For more information, see "6.5 "Settings" Interface" in Chapter 6.
2	Left Dial Wheel	Turn the dial wheel to adjust the gimbal pitch.