CADDXFPV PROTOS

User Guide

V1.4



Online Technical Support

This manual may be updated without prior notice.
Please visit the CADDXFPV official website to check the latest version.

https://caddxfpv.com

If you have any questions or suggestions regarding this manual, please contact us via email: Support@caddxfpv.com

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Reading Instructions

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Usage Recommendations

CADDXFPV provides training videos and the following documentation:
1.Safety Warnings
2.Quick Start Guide
3.User Manual
It is recommended to first watch the training videos and read the Safety Warnings, then review the Quick Start Guide to understand the usage process.
For detailed product information, please refer to the User Manual.

Obtain Training Videos

Click the link below or scan the QR code to watch the training video and ensure correct and safe use of this product.

Product Overview

Introduction

PROTOS is a digital HD FPV (First-Person View) Drone independently developed by CADDXFPV. Weighing just over 100 grams with powerful performance, it is currently the smallest and most highly integrated true HD digital FPV kit on the market. Whether flying indoors or outdoors, it delivers a smooth and immersive flight experience.

1.First Use

■ 1.1 Preparing PROTOS

1.1.1 Take the PROTOS Drone out of the packaging. Before flying, remove the front camera ens protective cover and the protective film of the bottom optical flow module lens.
1.1.2 Check whether the propellers are installed correctly (See 3. User Guide > 3.1 PROTOS > 3.1.1 Propeller Installation).
1.1.3 Tip: When the PROTOS Drone is not in use, do not insert the battery into the fuselage nose cover to avoid running out of power and shortening the battery life.

■ 1.2 Preparing CADDXFPV Alink

1.2.1 Charge via the USB Type-C port on the CADDXFPV Alink remote controller. All four indicator lights remain solid when fully charged.
1.2.2 Check whether the maximum operating range of the joysticks, knobs, and other switches is normal.
1.2.3 Calibrate the joysticks and knobs (see 3. User Guide > 3.2 CADDXFPV Alink Remote Controller > 3.2.2 Operating Instructions②).
1.2.4 Note: Do not bump or drop the remote controller, as the precision components inside the joysticks may be damaged, which could result in loss of control of the Drone.

■ 1.3 Preparing Ascent Goggles

1.3.1 Adjust the elastic headband of the flight goggles to a suitable size and wear them. Fine-tune the fit according to your comfort.
1.3.2 If your vision is poor, you can purchase a frame from the official website and fit it with prescription lenses, then install it inside the FPV goggles.
1.3.3 Note: When the flight goggles are not in use, disconnect the power cable to prevent battery over-discharge, which may reduce its lifespan or render it unusable.

■ 1.4 Preparing 2S Charger

1.4.1 The module battery must be fully charged before first use.
1.4.2 Use the included 2S charger to charge or discharge the module battery sequentially.
1.4.3 Please use the included power adapter and dual Type-C cable to perform charging and discharging operations (see 3.3 PROTOS 2S Charger/Module Battery > 3.3.1 2S Charger②).
1.4.4 Note: Charging must be supervised at all times. When charging is not required, disconnect the power once the battery is full to prevent overcharging hazards. Batteries can be stored in the charger with the power disconnected.

2.Pre-Flight Preparation

2.1 Flight Safety

2.1.1 Before officially flying, it is recommended to use the LIFTOFF simulator for flight training or train under the guidance of an experienced user. Minors should use this product accompanied by a guardian.
2.1.2 Before flying, select an appropriate flight location according to local laws and regulations, and ensure that weather and environmental conditions are suitable for flight.
2.1.3 During flight, strictly comply with local laws, regulations, and related rules. Do not exceed the safe flight altitude.
2.1.4 Always monitor the surrounding environment of the Drone's current position during flight to avoid harming others or damaging public property.

2.2 Flight Restrictions

2.2.1 This product is suitable for FPV beginners, FPV instruction,tiny drone lovers. It is defined as an entry-level FPVdrone and is not a drone in the legal sense. Therefore, no electronic fence or flight height limit is set.
2.2.2 Users should pay attention to the current flight altitude and signal strength during flight to avoid collisions with obstacles or losing control due to exceeding the remote control range (see 3. User Guide > 3.1 PROTOS > 3.1.6 Flight/Function Modes).
2.2.3 The ideal control distance for this Drone is 150m ± 50m. In environments with strong electromagnetic interference, determine the effective flight distance based on actual conditions. Always monitor the signal strength displayed in the flight goggles during flight to avoid unnecessary property damage.
2.2.4 Note: Do not fly in no-fly zones. CADDXFPV is not legally responsible for any consequences resulting from improper use of this product.
2.2.5 If multiple PROTOS Drone are flown simultaneously, ensure that operators maintain a distance of at least two meters from each other, and set the video transmission channels as far apart as possible to minimize interference from adjacent frequencies.

2.3 Inspection Items

2.3.1 Check whether the critical parts of the Drone are loose or deformed. The critical parts of the Drone are as follows:

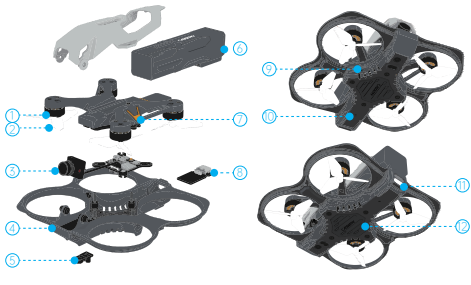
① Brushless Motors — check for loose screws or wobbling during rotation
② Propellers — check for deformation, worn or missing edges, or abnormal vibration during operation
③ Arms — check for obvious deformation or cracks
④ Protective Canopy — check for deformation or visible cracks
⑤ Lens and Camera — check for looseness or inability to fix the angle

If any of the above issues occur, try tightening the affected part or replacing it with the included spare components. If you cannot resolve the issue yourself, return the product for factory repair to avoid unknown risks during flight.
2.3.2 Check that the propellers are installed correctly to prevent flight malfunctions caused by reverse or incorrect installation (see 3. User Guide > 3.1 PROTOS > 3.1.1 Propeller Installation).
2.3.3 Ensure that the Drone is properly connected to the remote controller and flight goggles to prevent unexpected disconnections during takeoff, which could cause flight accidents.
2.3.4 Check the remaining battery levels of the module battery, flight goggles, and remote controller to avoid unexpected power loss during flight, which may lead to accidents.
2.3.5 Verify the angle of the front HD camera (see 3. User Guide > 3.1 PROTOS > 3.1.3 Camera Angle Adjustment) to prevent incorrect flight attitude judgments after takeoff.
2.3.6 If using a third-party remote controller to operate the PROTOS Drone, check that the Drone's maneuvering attitude and all functions correspond correctly to the channels and switches on your controller before takeoff to prevent misoperation during flight.
2.3.7 Note: CADDXFPV assumes no legal responsibility for accidents or consequences arising from improper use or issues not related to product quality.

3.Operating Instructions

3.1 PROTOS

3.1 Part Name



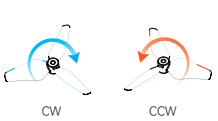
1. Motor
2. Propeller
3. Ascent Lite
4. Injection-Molded Frame
5. Optical Flow Sensor Module
6. 2S Battery
7. Indicator Light
8. Type-C
9. Linking Button
10. Boot Button
11. Switch Button
12. Aluminum Alloy Heat Sink

*This product is a visible-light camera.

3.1.1 Component Installation

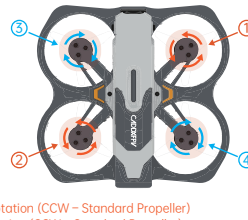
① Installing the Propellers

Before leaving the factory, PROTOS comes with propellers pre-installed. We do not recommend replacing them with other types of propellers, as this may cause the drone to malfunction or exhibit abnormal behavior during use. If a propeller is damaged and needs replacement, please use the spare propellers included in the package. Remove the damaged propeller, align the central mounting hole of the front side of the spare propeller (the curved convex side) with the motor's central shaft, and press it down until the top of the shaft is flush with the bottom of the propeller. If you are unsure how to identify the positions of the four propellers, place the Drone facing forward on a flat surface and view it from behind. The rotation directions of the four motors and their corresponding propellers are as follows:



CW
Reverse Propeller

CCW
Standard Propeller

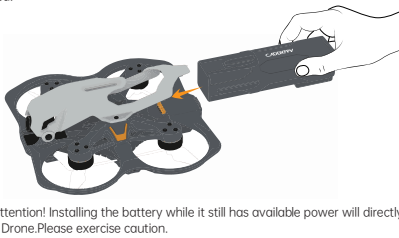


1) Front Right Motor: Counterclockwise Rotation (CCW – Standard Propeller)
2) Rear Left Motor: Counterclockwise Rotation (CCW – Standard Propeller)
3) Front Left Motor: Clockwise Rotation (CW – Reverse Propeller)
4) Rear Right Motor: Clockwise Rotation (CW – Reverse Propeller)

Attention! The propellers rotate with the front side facing up. When viewed from the side, the blades rotate around the central mounting hole toward the higher edge of the blade. Please install and check the propellers in the correct order. Incorrect installation may cause the Drone to lose control and could result in injury to the user or others, as well as unnecessary trouble.

② Installing the Battery

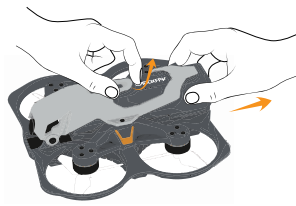
Align the module battery with the battery compartment and push it in. When you hear a "click" and the battery does not wobble or come out easily, the module battery is properly installed.



1) Attention! Installing the battery while it still has available power will directly power on the Drone.Please exercise caution.
2) Ensure that the remote controller and flight goggles are powered on before performing this operation (refer to the CADDXFPV Alink Remote Controller and Ascent Goggles User Guide).

③ Battery Removal

Lift the long slot on top of the canopy upward, and with your other hand, slightly raise the battery from the rear of the Drone and pull it out firmly. This is the proper way to remove the battery.



1) At this point, if the Drone is powered on, it will be immediately powered off.
2) Do not store a module battery that has entered power-off protection in the Drone's battery compartment. It should be promptly removed for charging and activation (refer to the 2S Charger user guide for module battery use).

3.1.2 Connect to a Computer

Insert the module battery and turn on the aircraft. The tail button and the indicators on both sides of the Drone will light up. Press the tail button and select the internal module you want to connect:

① Indicator light is green

At this time, the top Type-C port is connected to the flight controller module. Using a data cable to connect to a computer allows you to upgrade the flight controller firmware (see 3. User Guide > 3.1 PROTOS > 3.1.2 Connect to Computer). Do not remove the battery during the connection process, as this will disconnect the flight controller from the computer and may cause the firmware upgrade to fail or damage the flight controller.

Warning! We do not recommend replacing the aircraft's firmware with other flight controller firmware. If you attempt to do so, CADDXFPV assumes no legal responsibility for any consequences.

② Indicator light is orange

At this time, the top Type-C port is connected to the CADDXFPV Ascent digital video transmission module. By connecting to a computer with a data cable, you can use the dedicated tool to upgrade the video transmission firmware. Please note: do not remove the battery or forcibly disconnect during the firmware upgrade process, as this may cause the built-in video transmission module to fail or become damaged.

③DFU Mode

1) Ensure the drone's indicator light is green before powering off. Turn the drone over. There's a small hole in the center of the rear bottom that houses the Boot button.
2) First, plug the data cable into the Type-C port on the rear of the drone (note: do not connect the other end of the cable to a computer yet).
3) Now use a SIM card inserter or other insulated tool to insert the cable vertically while holding the Boot button pressed.
4) Plug the other end of the cable into a computer USB port. Once the power is on, release the Boot button. (It's recommended to insert a battery to provide additional power to the flight controller.)

The flight controller is now connected to the computer and enters DFU mode. Firmware upgrades can be performed in this mode. For warning information, refer to 3. Instructions > 3.1 PROTOS Drone > 3.1.2 Connecting to a Computer ①), as shown below.



3.1.3 Adjusting the Camera Angle

The PROTOS Drone does not come with a gimbal. The front HD camera on this product must be manually adjusted for its angle. The adjustment method is as follows:

① For beginners or non-professional users: We recommend tilting the camera downward so that the lens forms an elevation angle of approximately 10°~20° relative to the ground. This helps reduce perceived flight speed during operation and allows simultaneous observation of both the forward and ground environment.
② For experienced users: To experience higher flight speeds, you can tilt the camera upward so that the lens forms an elevation angle of approximately 20°~30° relative to the ground. This makes it easier to observe the forward environment during high-speed flight.



Adjust the camera according to your personal needs, and learn to observe the differences in the view inside the flight goggles at different camera angles. Mentally associate the current flight attitude with the camera's placement angle. This will help you learn how to properly operate the Drone in stunt mode (ACRO mode; see 3. User Guide > 3.1 PROTOS > 3.1.5 Status Indicator ④).

3.1.4 Onboard Integrated ELRS 2.4GHz Receiver

The PROTOS Drone has a built-in ELRS 2.4GHz receiver. The binding procedure is as follows:

① Activate the binding mode using the module battery:

1) Lift and hold the battery latch on top of the canopy.
2) Insert the module battery into the canopy to power on the Drone.
3) Two seconds after powering on, remove the module battery to turn off the Drone.
4) Repeat the above steps three times, and on the third insertion, keep the Drone powered on. At this point, the built-in ELRS receiver enters binding mode and awaits binding.

② Activate the binding mode using USB power:

1) Insert a USB Type-C data cable into the Type-C port at the rear of the Drone.
2) Connect the other end of the cable to a computer or power adapter to supply power to the Drone.
3) Two seconds after powering on, unplug the cable (from the power source) to turn off the Drone.
4) Repeat the above steps three times, and on the third power-on, keep the Drone powered. At this point, the built-in ELRS receiver enters binding mode and awaits binding.

③ Bind the Remote Controller:

1) Press the binding switch on the remote controller (for the CADDXFPV Alink remote controller binding method, see 3. User Guide > 3.2 CADDXFPV Alink Remote Controller > 3.2.3 Operating Instructions ②) and wait for the remote controller and PROTOS Drone to complete the binding process. Note: The binding process may take approximately 5–10 seconds, so please be patient.
2) After binding is completed, the status indicator lights on both sides of the PROTOS drone will change from flashing purple to the color corresponding to the current flight mode (orange, blue, red, cyan).

3.1.5 Status Indicator Lights

There are two status indicators on each side of the drone, indicating the drone's current status (based on the default PROTOS drone firmware). The indicators are as follows:

① Rapidly flashing purple: The drone is in an abnormal state or arming is prohibited. In this state, the drone cannot arm.
② Solid Orange: The drone is in Position mode. In this state, arming and flight are possible.
③ Solid Blue: The drone is in Angle mode. In this state, arming and flight are possible.
④ Solid Red: The drone is in Acro mode. In this state, arming and flight are possible.
⑤ Solid Cyan: The drone is in Anti-Turtle (FLIP) mode. While in this mode, you can arm and reverse the motors, but you cannot fly normally..
⑥ Short Red Flashing: Mode change or invalid arm.
⑦ Two quick green flashes: The gyroscope (IMU) has completed leveling calibration.
⑧ Slow Flashing Yellow: The battery is low. Please fly with caution.
⑨ Fast Flashing Yellow: The battery has reached the minimum safety threshold. Please land immediately to avoid a protective power outage due to low battery voltage. (Refer to the module battery and 2S Charger instructions.)

3.1.6 Flight/Function Modes

To cater to both novice and advanced users, the PROTOS drone's default firmware provides the following three flight and function modes for you to choose from:

① Poshold Mode

In this mode, the drone automatically maintains its altitude during flight, remaining in position even without any user input. If a minor collision or displacement occurs, the drone will detect the surface texture within its range and automatically return to its current hovering position. The maximum flight speed in this mode is 3 meters per second (3m/s), and the maximum ascent and descent speed is 1.5 meters per second (1.5m/s). The flight control indicator light will be orange, indicating that the downward optical flow and laser ranging modules are operating. When flying in this mode, please note the following points:

1) Altitude Limit: The effective altitude indoors is between 20 cm and 4 meters, and outdoors, between 20 cm and 2 meters.
2) When taking off in Hold Mode, push the remote controller's throttle stick approximately one notch above center. The drone will automatically ascend and hover above the ground. At this point, position the throttle stick slightly above center and wait for the drone to stabilize before proceeding.
3) If the drone is in Hold Mode (POSHOLD) and exceeds the above altitude limits, it will

automatically switch to Altitude Hold Mode (ALTHOLD). In this mode, the drone will only maintain its current altitude and will not be able to hover.
4) If the drone is in Altitude Hold Mode and descends to within the above effective altitude, it will automatically switch back to Hold Mode and can now hover normally. (Please note that any jitter caused by attitude correction when switching modes in mid-flight is normal.)
5) During flight, if the drone is in a dynamic environment or has no texture, a weak texture, or a reflective surface, fixed-point hovering may be impaired or impossible.
6) To switch to this mode, the throttle must be below 75%, the other joysticks must be centered, and the sensor below the optical flow module must be clear. Otherwise, the switch will fail.

② ANGLE Mode

In this mode, the drone automatically maintains a level attitude during flight, but does not automatically hover at its current position.
Unlike fixed-point mode, this mode requires some experience. The flight control indicator light turns blue.
This mode limits the drone's maximum throttle (80%) and the maximum roll and pitch angles (based on a level attitude, the maximum pitch angle in each direction is ±30°). When flying in this mode, please note the following.

1) Angle mode does not have an active braking function.
2) Angle mode does not have an altitude hold function, requires the operator to precisely control the throttle to maintain altitude and speed.
3) To switch to this mode, the throttle value must be below 75% and the other joysticks must be centered.

③ Aerobatic Mode (ACRO)

In this mode, the drone transfers all control authority to the user, unlocking the maximum throttle value (100%) and not automatically maintaining altitude and level attitude. This mode is the most difficult of all modes and is also a common way to play with a drone. It is recommended that operators have proficient drone flying experience or have learned acrobatic mode in a simulator before attempting this mode. The flight control indicator light turns red, and the flight control no longer limits the drone's maximum roll and pitch angles.
When flying in this mode, please note the following points:

1) Stunt Mode does not have an automatic return function. Unless the operator intervenes, the drone maintains its current attitude during flight. Please note: The joystick no longer simply controls flight direction; it fully controls the drone's attitude in the air. Joystick pressure only controls the drone's angular velocity during the corresponding maneuver (the drone rolls around its X, Y, and Z axes, with the speed of the roll being called angular velocity, measured in degrees per second).
   a. The drone's factory firmware has a preset angular rate (rate) switch, which you can think of as joystick sensitivity.
   b. Function channel CH8, the CADDXFPV Alink remote controller uses a three-position SC switch: high (500°/s), medium (400°/s), and low (300°/s).
   c. The lowest setting is recommended for beginners, the medium setting for advanced training, and the highest setting for acrobatic maneuvers.

Returning the joystick to center does not affect the drone's attitude.
2) Angle mode does not have an altitude hold function. During flight, the operator must precisely control the throttle to maintain the correct altitude and speed. The hovering throttle position for this mode is between 30% and 35%, depending on the battery voltage of the current module.
3) To switch to this mode, the throttle position must be below 45% and the other joysticks must be centered.
4) When switching to Acro mode during flight, please note that the hovering throttle position for Acrobatic mode is lower than that for Stabilized and POSHOLD modes. Therefore, the drone's altitude will fluctuate significantly when switching between these modes, requiring prompt refueling to maintain altitude. This operation carries certain risks, so proceed with caution.

④ Flip Mode (FLIP)

This mode is a standard flight mode for unusual situations, primarily used when the drone's attitude is incorrect after landing and correction is required.
The flight control indicator light turns cyan. In this mode, the throttle stick is disabled, the drone cannot fly directly, and the ESC switches to reverse mode. When using this mode to correct the drone's attitude, please note the following points:

1) This mode can only be activated before unlocking. After unlocking, the motor is in a disabled state and will not enter the idle state. Please pay attention to safety and be careful to avoid mis-operation after unlocking.
   a. If you accidentally touch the Flip Mode switch (SD rebound button on the CADDXFPV Alink remote controller, function channel CH9) after arming, the drone will be unable to switch to normal flight mode under any circumstances.
   b. If you accidentally turn off the Flip Mode switch, the flight mode will directly switch to the mode corresponding to the current mode switch (SB three-position switch on the CADDXFPV Alink remote controller, function channel CH7).
   c. If you accidentally touch the Flip Mode switch, you must immediately turn it off. Do not attempt to switch flight modes in this state. This may cause the drone to lose control and crash.
2) After entering this mode and arming the Ascent Goggles, only use the roll or pitch stick to adjust the drone's attitude (follow the Flip mode arrow on the center screen). Do not use the directional sticks, as this may damage the drone.
3) Quickly and decisively adjust the drone's attitude by moving the roll or pitch stick to its maximum position in one direction. The motors will automatically reach the appropriate speed to flip the drone. If a successful flip is not successful on the first try, try again. However, avoid prolonged use of the sticks, as prolonged reversal may damage the motors or ESCs.
4) After successfully adjusting the drone's attitude using this mode, immediately turn off the flip mode switch and re-arm the drone before resuming normal flight.

⑤ Buzzer Mode

This mode is not flight mode. When the function is activated, the motors emit a continuous beeping sound to indicate the current position of the drone, making it easier to find it.

1) For CADDXFPV Alink remote controllers, use the SA Rebound switch to enable/disable this function.
2) The function channel is CH6.

⑥ IMU Calibration Mode

This mode is not flight mode, but is used to calibrate the drone's horizontal deviation caused by multiple impacts or drops. The flight control indicator light flashes green twice. This mode operates automatically. After activation, the drone must remain horizontally still until calibration is complete. No stick movement is required during this process. Instructions for using this mode are as follows:

1) This mode can only be used in the locked state.
2) Place the drone on a level surface.
3) Stick Operation Methods
   a. Lower the left stick and move it right to its full range of travel and hold.
   b. Center the right stick and move it downward to its full range of travel and hold.
   c. After the sticks are correctly engaged, the calibration menu will appear on the headset screen.



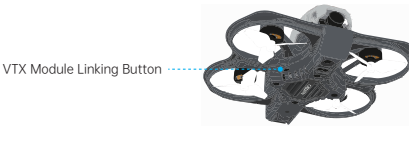


   d. Release both joysticks. The menu will remain displayed. Use the right joystick to select the desired option. The current option will flash rapidly.
      a) IMU CALIBRATION
      b) EXIT
   e. Use the left joystick to move right to select the desired option.
4) The first quick green flash indicates calibration has begun, the second quick green flash indicates calibration is complete, and the red light will flash if calibration fails.
5) We recommend waiting for approximately 10 seconds after calibration before attempting any flight operations for optimal calibration results.

The above describes all functions of the PROTOS drone's default firmware. Please read and understand them carefully to avoid accidental injury to yourself or others due to unfamiliarity with the product's functions.

3.1.7 Video Transmission Module

The PROTOS drone has a built-in Ascent digital image transmission module, which can be connected to the included goggles for FPV flight. To link the module, power on the drone and wait for the built-in image transmission module to start (the green light flashes). Insert a SIM card reader or other small insulating stick into the module's link hole. Press the link button on the module. the indicator light will turn solide red, indicating the module is in the linking state. Once successfully linked to the goggles, the indicator light will turn solid green.



3.1.8 Safety Mechanisms

This product is a professional, entry-level model drone, not a children's toy. To prevent user error, the PROTOS drone's factory default firmware incorporates the following safety mechanisms:

① Arming is prohibited when the throttle stick is not in the lowest position: This mechanism prevents the drone from suddenly accelerating and taking off after arming, resulting in loss of control. Therefore, arming cannot be performed when the throttle stick is not in the lowest position.

② Failsafe: If the drone is disconnected from the remote controller in any state, it will automatically enter a locked state and will not be able to automatically arm. If the drone is in flight, it will crash. Users should avoid flying in crowded areas to avoid accidental injury to others due to signal loss.

Mode Switching Conditions: To accommodate novice users, the factory default firmware of this product sets mode switching restrictions, which are described below.

1) When switching between all modes, all joysticks except the throttle must be centered to prevent accidental operation.
2) When switching between Poshold and Angle modes, the throttle stick must be kept below 75% of its travel and held for at least one second.
3) When switching between Acro mode, the throttle stick must be kept below 45% of its travel and held for at least one second.

3.1.9 Notes

To ensure a more pleasant flight experience, please be aware of the following points:

① The metal heat sink located on the bottom of the PROTOS drone will generate high temperatures if powered on for extended periods. If the drone is not in flight, heat dissipation will be lost and the drone will shut down as a protective measure if the temperature exceeds 100℃/212℉. Do not touch it during this time to prevent burns.

② The PROTOS drone has an auto-lock feature. To prevent misoperation, the drone will automatically lock and stop its motors if the following conditions are met:

1) After unlocked, the drone will remain stationary for 10 seconds without any operation or attitude change.
2) After landing, the drone will remain stationary for more than 4 seconds without any operation or attitude change.
3) A severe impact occurs during flight.

Please note: To prevent the sensor from misjudging the environment, causing the drone to automatically lock or lose its attitude when lowering the throttle, we recommend flying at least 30 cm above any obstacles below for a good flight experience.

③ Do not touch the motors and propellers while they are in operation! This may cause injury.

④ If you are a non-professional user or a beginner, do not attempt to take off the drone by placing it on your palm or using other specialized methods. CADDXFPV recommends that you only place the drone on a flat, clear surface for takeoff.

If you attempt to use specialized methods for takeoff, CADDXFPV assumes no legal responsibility for any consequences.

3.1.10 Declaration for Micro-power Short-range Devices

① Compliance with specific clauses and usage scenarios outlined in the "Catalog and Technical Requirements for Micro-power Short-range Radio Transmission Equipment," including the types and performance of antennas used, as well as methods for control, adjustment, and switching.

② Unauthorized changes to usage scenarios or conditions, expansion of transmission frequency ranges, increase of transmission power (including the addition of external RF power amplifiers), and modification of transmission antennas are prohibited.

③ The device must not cause harmful interference to other lawful wireless stations, nor shall it claim protection against such interference.

④ The device must tolerate interference from industrial, scientific, and medical (ISM) applications emitting radio frequency energy, as well as interference from other lawful wireless stations.

⑤ If harmful interference is caused to other lawful wireless stations, use of the device must cease immediately and may only resume after measures have been taken to eliminate the interference.

⑥ When using micro-power devices within electromagnetic protection areas, such as aircraft, radio astronomy observatories, meteorological radar stations, satellite earth stations (including tracking, telemetry, control, ranging, reception, and navigation stations), and military or civilian wireless stations delineated by laws, regulations, national standards, or related provisions, compliance with electromagnetic protection requirements and regulations of the relevant industry authorities is mandatory.

⑦ The use of all types of model remote controllers is prohibited within a 5,000-meter radius centered on the airport runway.

⑧ Environmental conditions, such as temperature and voltage, during the operation of micro-power devices must be adhered to.

3.1.11 Product Specification

PROTOS	Model	C0CA-FP027
	FCC ID	2BHG9-C0CA-FP027
	Flight Control	Caddx Protos Aio 1.0
	Video Transmission	Ascent Lite
	Motor Diagonal Distance	78mm
	Motor	1102 14000KV
	Propeller	HQprop U40mm×3GR-PC-1.5mm
	Weight	104.4g±1.5g
	Dimensions	110x102.8x41mm
	Flight Endurance	8.5min ±0.5min
	RC Receiver	ELRS 2.4GHz
FC	Main Control Chip	STM32-F405RGT6
	Gyroscope	BMI270
	Barometer	SPL06
	Onboard Receiver	ESP8285
	Receiver Protocol	ELRS 2.4GHz
	ESC Protocol Compatibility	Bluejay / BLHeli-S Optional
	ESC Maximum Current	12A (Single Channel)
VTX	VTX Model	Ascent Lite
	Image Sensor	1 / 2.8 inch Sensor
	FOV	147°
	Ratio	16:9
	Resolution	1080P 60FPS;720P 60FPS
	Power	25~100mW
	Max Transmission Range	Max 3km
	Latency	Average delay 35ms

FC FCC ID 2BHG9-C0CA-FP027

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

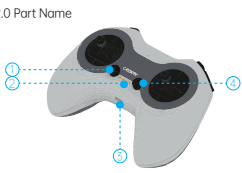
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipmen.

*RF warning for Mobile device:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

■ 3.2 CADDXFPV Alink

3.2.0 Part Name



1. Linking Button
2. Indicator Light
3. Type-C
4. Power Button
5. Control Joystick
6. SD Momentary Button
7. S1 Limit Roller
8. SC 3-position Switch
9. SB 3-position Switch
10. SE Latching Button
11. SA Momentary Button

3.2.1 This product is equipped with a built-in ELRS 2.4GHz RF module and a 10-channel RC model remote controller. It can be used to control any RC model equipped with an ELRS 2.4GHz receiver.

3.2.2 CADDXFPV Alink Remote Controller Operating Instructions

① Power Button
The round button on the right side of the front panel of the remote controller is the power button. The operation method is as follows:
1) When the remote controller is off, short press the power button to display the remaining battery level (refer to the indicator lights).
2) When the remote controller is off, long press the power button. When the four lights turn on in sequence and remain solid, and the "do-re-mi, do-mi" sound is heard, the controller is powered on.
3) When the remote controller is on, short press the power button to mute the receiver disconnect alert sound. When the remote controller is on, long press the power button. When the four lights turn off in sequence and the "mi-re-do" sound is heard, the controller is powered off.

② Linking, the operation method is as follows:

1) Press and hold the power button to turn on the remote controller;
2) Press and hold the binding button until the indicator light flashes twice;
3) Center all sticks and trim wheels (the trim wheels have a tactile "click" at the center);
4) Press the binding button once briefly; the indicator light will flash alternately twice;



5) Rotate each joystick to its maximum range in sequence (the two joysticks cannot be operated at the same time). After completion, all indicator lights will turn on.



6) Move the trim wheels through their maximum range from the center to both left and right sides twice.
7) Press and hold the binding button again; the buzzer will play "do re mi," and the indicator lights will return to the battery-level display, indicating that the calibration is complete.



③ Joystick Layout
The product is factory-set to Mode 2 (American style), with the first four channels in the order A, E, T, R, as shown below:



1) [CH1] — AIL: Controls roll, causing the Drone to move left or right during flight.
2) [CH2] — ELE: Controls pitch, causing the Drone to move forward or backward during flight.
3) [CH3] — THR:Controls the throttle, causing the Drone to ascend or descend during flight.
4) [CH4] — RUD: Controls yaw, causing the Drone to turn left or right during flight.
Note: In POSHOLD mode, the throttle is incremental—center for hover, push up to ascend, push down to descend. In Angle mode and Acro mode, the throttle is direct—how much you push determines motor speed. Precise throttle control is required to operate the Drone in these modes.

④ Function Switches
In addition to the four joystick channels, this product provides six extra channels for use: five buttons on the front panel of the remote controller and one rotary knob. The corresponding functions for these switches are pre-configured at the factory, as shown below:



1) SA — Spring-loaded Button (CH6): Used to activate the buzzer function.
2) SB — 3-Position Toggle Switch (CH7): Used to switch flight modes.
3) SC — 3-Position Toggle Switch (CH8): Used to adjust the rate in Acro (ACRO) mode.
4) SD — Spring-loaded Button (CH9): Used to toggle the Turtle (FLIP) mode.
5) SE — Latching Switch (CH5): Used to arm/disarm the Drone.
6) S1 — Limited Rotary Wheel (CH10)
Note: Mode switching and Turtle function (see 3. User Guide > 3.1 PROTOS > 3.1.6 Flight / Function Modes ④) should be tested only in a safe flying environment (see 2. Pre-flight Preparation > 2.1 Flight Safety / 2.2 Flight Restrictions). Please take note.

⑤ FPV Flight Simulator
This product can be directly connected to a computer using a Type-C data cable. The Type-C port is located at the center of the back of the remote controller. Once connected, you can use an FPV simulator for practice.

3.2.3 Battery Life and Charging Operations

① Battery Level Indicator
Located at the center of the front panel of the remote controller, there are four indicator lights. When powered on, they display the remaining battery level by default. From left to right, the four lights indicate:
(1)10-25% (2) 26-50% (3) 51-75% (4) 76-100%
A solid light indicates the current battery range, while a flashing light indicates the battery is approaching the threshold of that range.

② Battery Life
When fully charged, the remote controller can operate for approximately 3 hours. If left inactive for a long time, it will emit two short "beep-beep" sounds at intervals, and the indicator lights will flash. When the battery is low, it will beep intermittently. At this point, the remote should be charged promptly to avoid automatic shutdown during use, which could cause the Drone to lose control.

③ Charging
When the remote controller is powered off, it can be charged using the included power adapter and Type-C cable. During charging, the power status can be monitored via the battery level indicator lights.

3.2.4 Precautions / Important Notes

① Located at the center of the front panel of the remote controller is a small oval hole, which serves as the buzzer sound outlet. Do not insert sharp objects into this hole, as it may damage the buzzer.
② The gray elongated area at the center of the front panel is the cover for the extension antenna. Installing other high-gain antennas requires removing the back cover of the remote controller. If you are a beginner or not an experienced user, we do not recommend installing other antennas yourself. Any consequences resulting from such attempts are not the responsibility of CADDXFPV, please be aware.

3.2.5 Declaration for Micro-power Short-range Devices

① Compliance with specific clauses and usage scenarios outlined in the "Catalog and Technical Requirements for Micro-power Short-range Radio Transmission Equipment," including the types and performance of antennas used, as well as methods for control, adjustment, and switching.
② Unauthorized changes to usage scenarios or conditions, expansion of transmission frequency ranges, increase of transmission power (including the addition of external RF power amplifiers), and modification of transmission antennas are prohibited.
③ The device must not cause harmful interference to other lawful wireless stations, nor shall it claim protection against such interference.
④ The device must tolerate interference from industrial, scientific, and medical (ISM) applications emitting radio frequency energy, as well as interference from other lawful wireless stations.
⑤ If harmful interference is caused to other lawful wireless stations, use of the device must cease immediately and may only resume after measures have been taken to eliminate the interference.
⑥ When using micro-power devices within electromagnetic protection areas, such as aircraft, radio astronomy observatories, meteorological radar stations, satellite earth stations (including tracking, telemetry, control, ranging, reception, and navigation stations), and military or civilian wireless stations delineated by laws, regulations, national standards, or related provisions, compliance with electromagnetic protection requirements and regulations of the relevant industry authorities is mandatory.
⑦ The use of all types of model remote controllers is prohibited within a 5,000-meter radius centered on the airport runway.
⑧ Environmental conditions, such as temperature and voltage, during the operation of micro-power devices must be adhered to.

3.2.6 Product Specification

Model	C0PJ-YK020
FCC ID	2BHG9-C0PJ-YK020
Main Control Chip	AT32 F413RCT7
RF Module	ELRS 2.4GHZ
RF Protocol	CRSF
Max RF Power	100mW (20dB)
Number of Available Channels	10 Channels (including 4 joystick channels)
Joystick Type	Full-Bearing Hall-Sensor Joystick Assembly
Function Switch	1 x Latching Button / 2 x Momentary Buttons /
	2 x 3-Position Toggle Switches / 1 x Scroll Wheel
Status Indicator Module	4 x Status Indicator LEDs / Buzzer
Charging & Communication Interface	USB-Type C
Battery Specification	Lipo 1s 1000mAh
Max Charging Power	5V / 1A / 3.50W
Charging Time	≈90:00 min
Operating Voltage Range	DC 3.50V~4.20V
Dimensions	158mmx108mmx58mm
Weight	180g±5g

FC ID 2BHG9-C0PJ-YK020

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

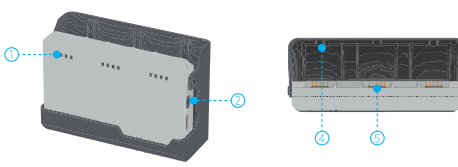
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipmen.

*RF warning for Mobile device:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

■ 3.3 PROTOS 2S Charger / Module Battery

3.3.0 Part Name



1. Status Indicator Lights (Each set has LEDs 1–4 from left to right, total of three sets)
2. Function Button (Mode Switch /Firmware Update)
3. Type-C
4. Battery Positioning Slot
5. Battery Plug

3.3.1 2S Charger

A charging tool for module batteries that comes with the PROTOS. When used with the power adapter and Type-C power cable in the kit, it can automatically charge or discharge the module battery for storage. The usage is as follows

① Notes

1) When charging, please do so under supervision. When not using the charging hub for charging, please unplug and turn off the power in time
2) It is recommended to use the CADDXFPV-30W power adapter included in the kit or other USB power adapter that supports the USB PD fast charging protocol to power the 2S charging hub.
3) The ambient temperature will affect the charging time. Charging in a ventilated environment at 25°C is the best option.
4) The PROTOS-2S charging hub is only suitable for the dedicated module battery of the PROTOS Drone. Do not use the charging hub to charge other types of batteries or use it for other purposes.
5) When using, please place it stably and away from fire, water and other hazardous chemicals. Pay attention to insulation and fire prevention.
6) Do not touch the metal terminals in the charging compartment with your hands or other objects. If foreign matter is attached to the metal terminals, wipe them clean with a dry cloth. Do not use a damp cloth, alcohol wipes, wet wipes, or other wet objects for cleaning.
7) Always charge low-battery modules promptly. It is recommended to store the batteries in the 2S Charging Hub or in the included carrying bag.

② Charging Steps

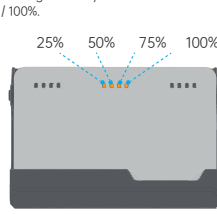
1) Use the included power adapter and Type-C data cable to supply power to the charger. When powered on, the status indicator lights will flash three times simultaneously, displaying the current firmware version in binary, then turn off (no battery inserted).
2) Align the positioning tab on the back of the module battery with the battery slot in the charger and insert it vertically until you hear a "click," indicating the battery is properly installed.
3) The charger will automatically charge the inserted batteries in sequence, from right to left on the side of the indicator lights. During charging, the status indicator lights display the current charging status (see "Status Indicator Description"). The factory default cutoff voltage is 4.25±0.03V per cell.
4) Charging time for a single battery is approximately 20 minutes, and fully charging all three batteries takes about 60 minutes.

③ Storage Steps

1) Refer to 3. User Guide > 3.3 PROTOS 2S Charger / Module Battery > 3.3.1 2S Charger③ 1/2 for instructions.
2) Press and hold the function button for 3 seconds. The three sets of status indicator lights will flash three times simultaneously, and the charger will enter charge/discharge storage mode. The storage sequence is from right to left on the side of the indicator lights. During the storage process, the status indicator lights display the current status (see "Status Indicator Description"). The factory default storage voltage is 3.85±0.03V per cell (long-term storage voltage).
3) Discharging a single battery from full charge to storage voltage takes approximately 50 minutes. Completing storage for all three batteries takes about 150 minutes.

④ Status Indicator Light Description

1) A set of lights changing from left to right from flashing to solid: the battery in the corresponding slot is charging.
2) A set of lights running like a marquee from left to right: the module battery in the corresponding slot is in storage mode.
3) A set of lights solidly on: the module battery in the corresponding slot is fully charged.
4) LEDs 1 and 2 in a set of lights solidly on: the module battery in the corresponding slot has completed storage.
5) A set of lights flashing continuously: the module battery in the corresponding slot has an abnormal status.
6) LEDs 1–4 in a set of lights solidly on: the current module battery charge in the slot is 25% / 50% / 75% / 100%.



3.3.2 PROTOS Module Battery

This module battery is a dedicated battery, designed exclusively for the CADDXFPV PROTOS Drone. Do not use it for any other purposes.

Protection Mechanism: This module battery has a built-in low-voltage protection circuit. When the module detects that the battery voltage is too low (2.80V per cell), it will activate power-off lock protection, preventing the battery from continuing to supply current.

1) Battery Lock

If the built-in low-voltage protection module of the module battery is triggered while the Drone is in any state, the Drone will immediately power off. The battery must be charged and activated immediately.

2) Lock Activation
When the low-voltage protection module of the module battery is triggered, insert the battery into a powered-on charger. The battery will automatically activate and start charging within approximately 3 seconds (the charger must be in charging mode and properly powered; see"Charging Steps").

3.3.3 Product Specification

Name	2S Charger
Model	C0PJ-CR001
FCC ID	2BHG9-C0PJ-CR001
Display	LEDx4
Channel	3 (Sequential Charging)
Function Selection	Charging, Storage
Battery Type	Li-ion 2S 840mAh Battery
Input Voltage	12~15V (PD Input, 5V Adapter Not Supported)
Output Voltage	8.7V
Input Current	Max.3A
Charging Current	Max.3A
Balancing Current	Max.0.21A
Charging Power	Max.25W
Discharging Power	Total Power: 5W (Max 1.6W per Channel)
Input Interface	Type-C
Operating Temperature	-10~45℃
Storage Temperature	-20℃~60℃
Dimensions	94x63x39.1mm
Weight	65±0.5g

Name	2S Battery
Model	C0PJ-DC016
FCC ID	2BHG9-C0PJ-DC016
Battery Type	Li-ion (Lithium-ion Battery)
Battery Capacity	840mAh
Battery Specification	2S1P (2 Cells in Series, 1 in Parallel)
Discharge Rate (C-Rate)	15C
Maximum Power	6.384Wh
Voltage Range	6.80V~8.70V
Max Charging Voltage	8.5V
Charging Method	2S Charger
Charging Time	⩽20min
Protection Mechanism	When the voltage of a single cell drops below 2.8V, battery lock protection is triggered and charging is required to reactivate.
Dimensions	77.5x24x21mm
Weight	41.9g±0.5g

FC FCC ID 2BHG9-C0PJ-CR001 & 2BHG9-C0PJ-DC016

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

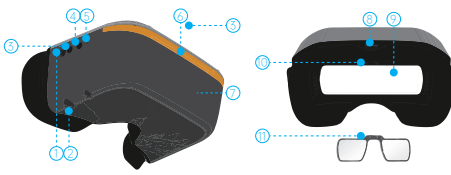
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipmen.

*RF warning for Mobile device:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

■ 3.4 Ascent Goggles

3.4.0 Part Name



1. 5D Button	4. REC Button	7. Built-in Antenna	10. Glasses Mounting Hole
2. Power Connector	5. Linking Button	8. Micro SD Card Slot	11. Eyeglasses Frames
3. Return Button	6. LED Light	9. 4.5 inch LCD Display	

3.4.1 Linking

① Connect the VTX and the power of the Goggles.
② Press the link button of the VTX and Goggles respectively (as shown in the picture), when the VTX enters the pairing state The indicator light turns red, and the Goggles end is a DI... DI... DI...
③ After the link is successful, the indicator light on the VTX turns solid green, the beeping sound on the Goggles stops and the screen is displayed.

3.4.2 Upgrade

Please go to the official website to download the upgrade firmware, Ascent_L_Gnd_X_X_X.img is the Goggles file, copy it to the SD card, be careful not to change the file name.

① Copy the upgrade file to the root directory of the SD card, connect to the power supply and wait for the device to initialize (delete the old firmware file first if there in one).
② Press and hold the link button on the Goggles for 8 seconds, and the Goggles automatically restart and emit a beep...beep...beeper sound. (Do not power off during the upgrade process, the upgrade time on the goggle is about 1 minutes)
③ After the upgrade is successful,and the beeping sound stops after the Goggles beeps for 5 seconds.

3.4.3 Status indication

Goggles Buzzer Status	
Link state	DI.... DI.... DI.... DI....
Upgrade frmware	DI..... DI..... DI..... DI——
Upgrade failed (No SD card or frmware detected)	DI.. DI.. DI.. DI..
Boot failure (Reboot or re-upgrade)	DI.. DI..... DI.. DI.....

3.4.4 Precautions

① This is a sophisticated product. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. It must be operated with caution and common sense and requires some basic mechanical knowledge.
② The transmit power of VTX and Goggles is only 10mW when the standby mode is on.
③ There are up to three channels for the goggles depending on the region. Bandwidth of 10MHz and 20MHz.
④ It is recommended to upgrade VTX and Goggles to the latest firmware before first use.

3.4.5 Operating channel

Central frequency(MHz)	Channel1	Channel2	Channel3
FCC	5740	5770	5805
CE/SRRC	5740	5770	5805

Make sure you fully understand and abide by local laws and regulations before using this product. Users who use the amateur frequency bands with a modified or cracked version or without a license may be punished for breaking local laws or regulations.

3.4.6 FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

-Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

Specific Absorption Rate (SAR) Information:

This Ascent Goggles complies with government requirements for exposure to radio waves. The guidelines are based on standards developed by independent scientific organizations through regular and thorough evaluation of scientific studies. These standards include a substantial safety margin designed to ensure the safety of all individuals, regardless of age and health.

FCC RF Exposure Information and Statement:

The SAR limit set by the FCC is 1.6 W/kg, averaged over one gram of body tissue, and 4.0 W/kg averaged over 10 grams for extremities.

Device type: WN02-FPL006 (FCC ID:) has also been tested for compliance with these SAR limits. During product certification, the highest reported SAR value was 0.612 W/kg for the body, and 0.138W/kg for extremities. This device has been tested for typical body-worn operations with the back of the Goggles kept at 0 mm separation from the body. To maintain compliance with FCC RF exposure requirements, accessories that maintain a 0 mm separation distance between the user's body and the back of the Goggles must be used. Belt clips, holsters, and similar accessories used with this device should not contain metallic components. Accessories not meeting these requirements may not comply with FCC RF exposure requirements and should be avoided.

Body-Worn Operation:

This device has been tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 0 mm must be maintained between the user's body and the Goggles (including the antenna). Third-party belt clips, holsters, and similar accessories used with this device must not contain any metallic components. Accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or approved antenna.

3.4.7 Software interface

① Main interface



1) VTX input voltage:

Detect VTX voltage, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, and alarm in red font when the voltage is too low.

2) Goggles input voltage:

Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

3) Real-time bit rate:

Display real-time transmission bitrate in Mbps, with 10.0M and 20.0M bandwidth modes.

4) Time delay:

Displays the total delay from the transmission of images captured by the VTX camera to the ground end.

5) Ranging mode:

The function of calculating the transmission distance from Goggles to VTX according to the wireless transmission delay, the signal is interfered will lead to error amplification.

6) Status prompt:

The text prompts information that needs attention in the current state.

7) Current channel:

Display the current setting channel, the signal grid has 5 states, 4 grids, 3 grids, 2 grids, 1 grid, and blank.

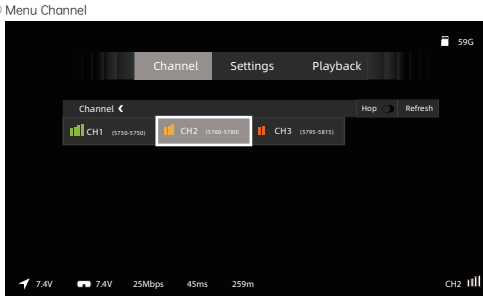
8) Goggles SD card status:

Display the status and remaining capacity of the Goggles SD card. When recording, the red circle flashes to prompt, the status of the SD card not detected is displayed as NO SD, and the status of the memory is full is displayed as -.

9) Remote Controller Signal Status:

There are five signal bar states: 4 bars, 3 bars, 2 bars, 1 bar, and no bar. When no remote controller signal is detected by the image transmission module, this icon will be hidden.

② Menu Channel

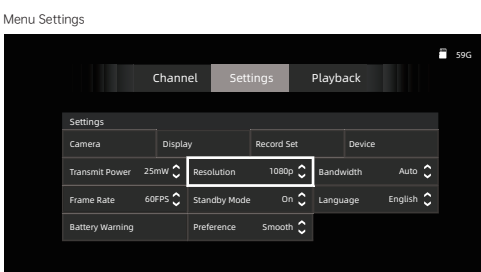


1) Channel: Displays the interference status of each channel. Signal strength is shown as 4 bars, 3 bars, 2 bars, 1 bar, or empty. An empty signal bar indicates the channel is occupied and cannot be selected. A white outline represents the selection box. Press the confirm button to highlight a channel, and the highlighted one is the current channel

2) Frequency Hopping: When frequency hopping is enabled, the goggles will automatically select thechannel with the least interference. Manual channel switching is not available in this mode

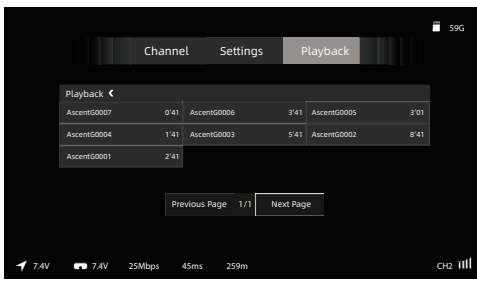
3) Refresh: Click Refresh to re-scan all channels and update their interference status.

③ Menu Settings



1) Camera: The adjustable contents of the camera are scene preset, EV value, saturation, sharpness, white balance, rotate, ratio, 3D DNR, Shutter, and Max ISO settings.
2) Display: Display adjustable content is Debug, brightness, focalization mode, custom OSD, OSD position, font upgrade, custom font, viewfinder, viewfinder edit settings.
3) Refresh set: The recording can be adjusted as VTX REC resolution, REC device, take off REC, REC loop, format SD card, format VTX, Built-in EIS, REC Time, REC Format, Color, Saturation, Sharpness.
4) Device: Adjustable settings include Buzzer Volume, Ranging Mode, Signal Loss Alert, Restore Factory Settings, Reset VTX Defaults, Device Information, User Guide, Mode Switching, DVR Bitrate (goggles), and Anti-Flicker.
5) Transmission Power: Default selectable transmission power: 25 mW, 100 mW.
6) Resolution: Selectable resolutions: 720P and 1080P.
7) Bandwidth: Selectable 10.0M and 20.0M options for different image quality. High bitrate is only supported when FCC mode is enabled.
8) Frame Rate: The standard frame rate is equal to 60fps.
9) Standby Mode: In standby mode, both the air unit and goggles transmit at 10 dBm. Transmission power will only return to the configured value after exiting standby mode or turning it off. This function requires the air unit to be properly connected to the flight controller via serial port—when the goggles detect an arming signal from the aircraft, standby mode exits automatically. If no flight controller is supported, this function can be disabled.
10) Language: Language switching English/中文.
11) Battery Alarm: Monitors the low battery status of the goggles. When voltage is too low, a red text warning and buzzer alert will be triggered. This feature can be enabled or disabled.
12) Preferences: Preset transmission modes: Smooth, High Quality, Long Range.

④ Menu Playback



1) The OSD switch can be turned on or off. When it is turned on, the flight control OSD information (if any) and the flight information of the main interface will be superimposed on the playing video interface. When the selection box stays in the video list, press and hold the Goggles confirmation key to open the multi-selection function, and the menu box will display function settings (delete, select all) , cancel), press the return key again to exit the multi-selection mode.
2) On the playback interface, click the middle button to pause/play, and the left and right arrow keys to adjust rewind/fast forward.

3.4.8 Product Specification

Model	WN02-FP006
FCC ID	2BHG9-WN02-FP006
Communication Frequency	5.725-5.850GHZ
Transmit Power (EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
I/O Interface	4Pin 3.5mm Plug, DC5.5*2.1mm, Micro SD Card Slot
Transmission Resolution	1080P60FPS, 720P60FPS
Code Rate	Max 50 Mbps
Minimum Latency	Average 32ms
Average Gain	4.9dBi
Polarization	LHCP
Transmission Distance	>4km
Channel	8
Screen Resolution	1920*1080 / 60Hz
Screen Material	LCD
Screen Size	4.5 Inch
Wide Voltage Input	6V~25.2V (2S~6S)
SD Card Slot	Support 256G
System	Ascent HD system

■ 3.5 Goggles Battery

3.5.0 Part Name



1. Function Buttons
2. Indicator Light
3. XT30 Output
4. Type-C Input/Output
5. XT30 Power Cable

3.5.1 Products Operation



① Powering the Avatar Goggles
Connect the included power cable to the battery and the goggles. Press and hold the battery Button for 3 seconds to power on. Power is output via the XT30 connector.
② Low battery warning
When the goggles display a battery voltage of ≤ 7V 6.9V, or when only one battery indicator LED is flashing, it indicates that the battery level is below 10%. Please replace the battery as soon as possible to avoid automatic shutdown due to power depletion.
③ Button Operations
Press the button once to check the battery level; the display will turn off automatically after 30s. Press and hold the button for 3 seconds to turn on the XT30 power output, and quickly double-click the button to turn off the XT30 power output.
④ Type-C Output
This product supports charging mobile phones and digital devices, is compatible with multiple fast-charging protocols, and provides a maximum output of up to 22.5 W.
⑤ Type-C Charging
It is recommended to use a Type-C charger rated at 22.5 W or higher to charge this product. It supports multiple fast-charging protocols, with a maximum charging power of up to 22.5W. When fast charging is detected, the indicator light flashes rapidly; during non-fast charging, the indicator light flashes slowly.

3.5.2 Indicator Lights

Battery Status	LED Status
Charge-discharge capacity ≈ 100%	● ● ● ●
Charge-discharge capacity ≈ 76%-99%	● ● ● ☼
Charge-discharge capacity ≈ 51%-75%	● ● ☼
Charge-discharge capacity ≈ 26%-50%	● ☼
Charge-discharge capacity ≈ 0%-25%	☼
Static charge ≥ 75%	● ● ● ●
Static charge ≥ 50%	● ● ●
Static charge ≥ 25%	● ●
Static charge ≥ 0%	●

● Steady On ☼ Flashing

3.5.3 WARNING!

1. The Type-C and XT30 ports cannot output simultaneously. To switchbetween ports, disconnect all devices and restart the product.
2. Do not charge the product while it is actively providing power output
3.Charging power may reduce automatically or cease entirely if the internal temperature exceeds safe limits.Resume charging onlyafter cooling.
4. The XT30 port is equipped with short-circuit protection.Ensure noforeign objects are present in the port before connecting cables.
5.Devices connected to the XT30 port must operate at 12V. Non-compliant devices may sustain permanent damage.
6. Do not place the product on carpets, heaters, textile materials, orexpose it to direct sunlight.
7.Do not drop,impact, crush, disassemble without authorization, orpuncture the product.
8. Do not expose the product to fire, water, or corrosive liquids.
9.Maintain ambient temperature between 0°C and 35°C duringcharging.
10.Continuous monitoring is mandatory during both operation andcharging.
11.Users with insufficient technical knowledge or limited experiencemust operate the product under professional supervision.12.f swelling,abnormalities, or malfunctions are observed, immediately stop using the product and contact your distributor.

3.5.4 Product Specification

Model	C0PJ-DC003-1
FCC ID	2BHG9-C0PJ-DC003-1
Weight	125g
Type-C Input	5V⩽3.3A / 9V⩽2.44A / 12V⩽1.84A; 15V⩽1.37A / 20V⩽1.04A
Type-C Output	5V / 3A,9V / 2.22A, 12V / 1.67A
XT30 Output	12V⩽1.66A
Nominal Voltage	7.2V
Cell Capacity	3200mAh
Li-ion Battery Energy	21.6Wh
Rated Capacity	1500mAh (12V1A)
Dimensions	71.3*41*27mm
Charging Time	≈1.5h
XT30 Compatibility	Avatar/ Ascent Goggles Products
XT30 Power Cable	XT30U-F to DC 5.5*2.1 (1.2meters)
Operating Time	Avatar/ Ascent Goggles: ≈2h; Avatar Goggles X: ≈1.8h
Charging Temperature	0℃~35℃
XT30 Short-Circuit Protection	Support
Input/Output Interfaces	Type-C, XT30

FC FCC ID 2BHG9-C0PJ-DC003-1

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipmen.

*RF warning for Mobile device:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

CADDXFPV PROTOS
用户手册
V1.4



本手册如有更新，恕不另行通知
在CADDXFPV官方网站查询最新版本

https://caddxfpv.com

如果你对说明书有任何疑问或建议，请通过电子邮箱联系我们:
Support@caddxfpv.com

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CADDXFPV提供了教学视频和以下文档资料:
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2.《快速入门指南》
3.《用户手册》
建议首先观看教学视频和《安全警示》，再阅读《快速入门指南》了解使用过程。
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点击以下链接或扫描二维码观看教学视频，确保正确、安全地使用本产品。

产品概述

简介介绍

PROTOS是由CADDXFPV自主研发的数字高清FPV（第一视角）飞行器，百克重量，动力强悍，是目前市面上尺寸最小，集成度最高的纯正高清数字FPV套装， 无论室内穿梭，还是室外飞行，都能畅快沉浸式飞行。

1.首次使用

■ 1.1 准备PROTOS飞行器
1.1.1 将PROTOS飞行器从包装中取出，飞行前需取下前置相机保护盖，并去除底部光流模块镜头的保护膜。
1.1.2 检查桨叶是否安装正确 （详见3.使用说明>3.1PROTOS飞行器>3.1.1安装桨叶） 。
1.1.3 提示: 不使用PROTOS飞行器时，请勿将电池插入机身头罩内，以免电量耗尽缩短电池使用寿命。

■ 1.2 准备CADDXFPV Alink遥控器
1.2.1 通过CADDXFPV Alink遥控器的USB-Type C接口进行充电，四灯常亮为充满。
1.2.2 检查摇杆和旋钮及其他开关的最大活动范围是否正常。
1.2.3 校准摇杆及旋钮（详见3.使用说明>3.2CADDXFPV Alink遥控器>3.2.2操作说明②）。
1.2.4 提示：请勿磕碰遥控器，以免摇杆内精密组件受损，导致飞行器失控。

■ 1.3 准备Ascent Goggles飞行眼镜
1.3.1 将飞行眼镜的弹力头带调整至合适大小并戴上，依据实际感受进行调整。
1.3.2 若您的视力不佳， 可在官网购买镜框， 并配置对应度数的镜片， 并将其安装至飞行眼镜内。
1.3.3 提示：不使用飞行眼镜时，请拔除电源线， 避免电池过放导致寿命衰减甚至报废。

■ 1.4 准备PROTOS专用模组电池
1.4.1 模组电池在首次使用时需充满电。
1.4.2 使用套装内附带的2S充电管家给模组电池依次充电或放电。
1.4.3 请使用套装内附带的电源适配器与双头Type-C接口线进行充放电操作（详见明3.使用说明>3.3 PROTOS-2S充电管家/模组电池>3.3.1 2S Charger充电管家②）。
1.4.4 提示：充电工作需在有人值守的情况下进行，且在无需进行充电时，充满请断开电源，以免过冲发生危险情况；电池可以储存在断开电源的充电管家内。

2.飞行前准备

■ 2.1 飞行安全
2.1.1 正式实操飞行前，请先使用模拟器进行飞行培训或在熟练使用者的指导下进行训练，未成年人请在监护人陪同下使用该产品。
2.1.2 飞行前请依据当地法律法规选择合适的飞行场所，并判断天气与环境是否符合飞行条件。
2.1.3 飞行时需严格遵守当地的法律法规以及相关规定，切勿超过安全飞行高度飞行。
2.1.4 飞行时请时刻关注飞行器当前位置的周边环境，以免误伤他人及公共财产。

■ 2.2 飞行限制
2.2.1 该产品适用于新手与进阶玩家，定义为入门级穿越机产品，并非法律意义上的无人机，故而未设置电子围栏与飞行限高。
2.2.2 请使用者在飞行过程中注意当前飞行高度，与信号强度，以免飞行器与障碍物产生碰撞、超出遥控距离导致失控坠毁或遗失（详见3.使用说明>3.1PROTOS飞行器>3.1.6飞行/功能模式）。
2.2.3 该飞行器的理想遥控距离为150m±50m，若使用场景内存在强电磁干扰，请根据实际情况判断有效飞行距离。且在飞行时，时刻关注飞行眼镜内的信号强度信息，以免造成不必要的财产损失。
2.2.4 提示：请勿在禁飞区内飞行，若使用者违规使用该产品，CADDXFPV对由此产生的任何后果不承担法律责任。

2.2.5 若多台PROTOS同时飞行，请确保使用者之间相距两米以上，且图传频道尽可能错开，以消除邻频干扰对信号的影响。

■ 2.3 检查事项

2.3.1 检查飞行器关键部位是否有松动或形变现象，飞行器关键部位如下所示：

① 无刷电机—螺丝松动或旋转中晃动
② 桨叶—形变或边缘磨损、缺失、运转中异常抖动
③ 机臂—明显形变或断裂
④ 固定头罩—形变或明显断裂
⑤ 镜头及相机—松动、无法固定角度

若出现上述现象，请尝试紧固该部件，或更换套装内附赠的配件。若您无法自行处理，请将产品返厂维修，以避免飞行中的未知风险。

2.3.2 检查飞行器的桨叶是否正确安装，避免因反装、倒装而产生飞行故障。（参考3.使用说明>3.1 PROTOS飞行器>3.1.1安装桨叶）

2.3.3 检查飞行器与遥控器、飞行眼镜是否正常连接，防止起飞后异常断连导致飞行事故。

2.3.4 检查飞行器所使用的模组电池、飞行眼镜电池、遥控器电池的剩余电量，以免在飞行过程中意外断电导致飞行事故。

2.3.5 检查前置高清相机的摆放角度（详见3.使用说明>3.1PROTOS飞行器>3.1.3 相机角度调整），以免起飞后对飞行姿态产生错误判断，导致飞行事故。

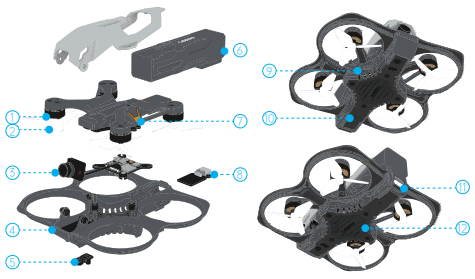
2.3.6 若您使用第三方遥控器控制PROTOS飞行器，请在起飞前检查飞行器的机动姿态与各项功能是否对应您所使用遥控器的通道及功能开关，以免在飞行过程中误操作导致飞行事故。

2.3.7 请注意：在使用过程中，非产品质量问题导致的事故及由此而产生的后果，CADDXFPV 不承担任何相关法律责任。

3.使用说明

■ 3.1 PROTOS飞行器

3.1.0 部件名称



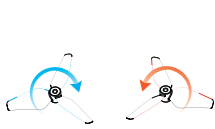
1. 电机
2. 螺旋桨
3. Ascent数字图传
4. 注塑机架圈
5. 光流传感模块
6. 飞行电池
7. 状态指示灯光
8. Type-C 接口
9. 对频按键孔位
10. Boot 按钮
11. 连接切换按钮
12. 散热铝片

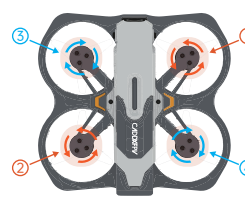
*此产品为可见光摄像头

3.1.1 零部件安装方式

① 安装桨叶

在出厂前，PROTOS 飞行器已经提前安装好桨叶，我们不推荐您更换其他型号的桨叶，因为这可能导致飞行器无法正常使用或使用中产生异常现象。 若因桨叶损坏需进行更换，请使用包装内附赠的备用桨叶。 取下损坏桨叶，将备用桨叶正面（桨叶弧形凸出面）中央的安装孔，对准电机中央的安装轴，按压至安装轴顶部与桨叶底部齐平即可。若您不清楚如何分辨四枚桨叶对应的位置，可将飞行器朝前平放，由后方俯视飞行器，四个电机与对应桨叶的旋转方向如下：





1) 右前电机: 逆时针旋转（CCW 正桨）
2) 左后电机: 逆时针旋转（CCW 正桨
3) 左前电机: 顺时针旋转（CW 反桨）
4) 右后电机: 顺时针旋转（CW 反桨

注意！ 桨叶的旋转方向为正面朝上， 由侧面观察，叶片朝边缘较高一侧围绕桨叶中心安装孔进行旋转运动，请依照正确顺序安装并检查桨叶，若错误安装，可能会导致飞行器失控，以及对使用者及周围人员造成损伤和不必要的麻烦。

② 安装电池

将模组电池电池对准电池舱， 向内推入， 听到“咔哒”一声，且电池不晃动并无法直接拔出，则模组电池电池正常安装。



1) 请注意！在电池尚有可用电量时，安装电池会直接将飞行器开机，请注意安全。
2) 保证在进行此操作前，已将遥控器与飞行眼镜开机（参考CADDXFPV Alink遥控器与Ascent Goggles飞行眼镜使用说明）。

③ 拆卸电池

将头罩上方的长条形卡槽向上掰动，并用另一只手将电池从飞行器后方轻微抬起并用力拔出为正常拆卸。



1) 此时若飞行器处于开机状态则会直接断电关机。
2) 请勿将已执行断电保护的模组电池存放于机身电池舱内，需及时取出进行充电激活。（参考2S Charger 充电管家于模组电池使用说明）

3.1.2 连接电脑

插入模组电池使飞行器开机， 此时尾部按钮与机身两侧会亮起指示灯， 请按动尾部按钮， 选择您需要连接的内部模块：

① 指示灯为绿色

此时上方Type-C接口连接飞控模块，使用数据线连接电脑后可进行飞控固件升级（参考3.使用说明>3.1PROTOS飞行器>3.1.2连接电脑）；连接过程中请勿拔除电池，这会使飞控与电脑断开连接，并导致固件升级失败或飞控损坏。（警告！我们不推荐您将飞行器的固件更换为其他飞控固件，若执意进行尝试，CADDXFPV官方对由此产生的任何后果不承担相关法律责任。）

② 指示灯为橙色

用专用工具升级图传固件。请注意，固件升级过程中请请勿拔除电池或强行断开连接，这可能使飞行器内置的图传模块升级失败或图传模块损坏。

③ DFU模式

1) 确保飞行器断电前指示灯为绿色, 翻转飞行器, 位于底部后方中央有一小孔, 孔内为Boot按钮。
2) 先将数据线插入飞行器尾部Type-C 接口 (请注意！数据线另一端暂时不要连接电脑)
3) 此时使用SIM卡针或其他绝缘小棒垂直插入并保持Boot按钮为按压状态。
4) 数据线另一端插入电脑USB接口， 正常通电后可松开Boot按钮（推荐连接时插入电池，为飞控进行额外供电）

此时飞控连接电脑并进入DFU模式。

该模式下可进行固件升级。警告信息请参考3.使用说明>3.1PROTOS飞行器>3.1.2连接电脑①），如下图所示—

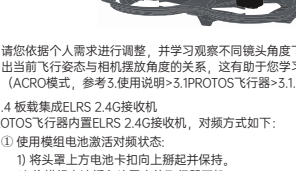


3.1.3 相机角度调整

PROTOS飞行器未安装云台，该产品的前置高清相机需要手动调整摆放角度。调整方式如下所示：

① 若您为初学者或非专业使用者， 我们推荐您将相机向下掰动，镜头与地面呈现 10°~20° 左右的仰角，以方便在飞行时可降低主观操作的飞行速度，且能够同时观察前方与地面环境。

② 若您是熟练使用者，想体验更快的飞行速度，可将相机向上掰动，镜头与地面呈现 20°~30° 左右的仰角，以方便在高速飞行时更易于观察到前方环境。



请您依据个人需求进行调整，并学习观察不同镜头角度下飞行眼镜内的画面差异，在内心中构建出当前飞行姿态与相机摆放角度的关系，这有助于您学习如何正确操作该飞行器的特技模式。（ACRO模式，参考3.使用说明>3.1PROTOS飞行器>3.1.5状态指示灯④）

3.1.4 板载集成ELRS 2.4G接收机

PROTOS飞行器内置ELRS 2.4G接收机，对频方式如下：

① 使用模组电池激活对频状态:

1) 将头罩上方电池卡扣向上掰起并保持。

2) 将模组电池插入头罩内使飞行器开机。

3) 开机两秒后拔除模组电池使飞行器断电。

4) 快速重复以上操作三次，并于第三次插入模组电池时保持开机状态。此时内置ELRS接收机进入对频状态，等待对频。

② 使用USB供电激活对频状态:

1) 使用USB Type-C数据线插入飞行器尾部的Type-C接口。

2) 将数据线另一头插入电脑或电源适配器使飞行器通电。

3) 通电两秒后拔出数据线（连接电源一头）使飞行器断电。

4) 重复以上操作三次，并于第三次通电时保持通电状态。此时内置ELRS接收机进入对频状态，等待对频。

③ 绑定遥控器:

1) 按下遥控器上的对频开关（CADDXFPV Alink 遥控器对频方法，详见3.使用说明>3.2 CADDXFPV Alink遥控器>3.2.3操作说明②）并等待遥控器与PROTOS飞行器完成对频绑定（注意，对频过程可能需要5~10秒左右的时间，请耐心等待）。

2) 完成对频后，PROTOS飞行器两侧状态指示灯由紫灯频闪转变为当前飞行模式对应颜色 (橙, 蓝, 红, 青)。

3.1.5 状态指示灯

位于飞行器两侧各有一颗状态指示灯，用于指示飞行器当前状态(基于PROTOS飞行器默认固件)，提示如下：

① 紫灯快闪: 飞行器状态异常或禁止解锁，处于该状态，飞行器无法解锁。

② 橙灯常亮: 当前位于定点模式(Poshold)，处于该状态，可正常解锁并飞行。

③ 蓝灯常亮: 当前位于运动模式(Angle)，处于该状态下，可正常解锁并飞行。

④ 红灯常亮: 当前位于特技模式(Acro)，处于该状态下，可正常解锁并飞行。

⑤ 绿灯常亮: 当前位于反乌龟模式(Flip)，处于该模式下，可解锁操作电机反转，但无法正常飞行。

⑥ 红灯短闪: 切换模式或无效解锁。

⑦ 绿灯二次快闪: 电子陀螺仪 (IMU) 完成水平校准。

⑧ 黄灯慢闪: 当前电量低，请谨慎飞行。

⑨ 黄灯快闪: 当前电量已达到最低安全阈值，请立即降落，以免电池电压过低导致保护性断电（参考模组电池及2S Charger充电管家使用说明）

3.1.6 飞行/功能模式

为兼顾新手玩家与进阶玩家的使用需求，PROTOS飞行器出厂默认固件设置了以下三个飞行模式与三个功能模式供玩家按需选择：

① 定点模式 (POSHOLD)

处于该模式下，飞行器在飞行过程中会自动保持飞行高度，即使玩家不进行任何操作，飞行器也能悬停于当前位置。若产生轻微碰撞并位移时，飞行器会识别所处范围内的地表纹理，自动回到当前悬停位置附近。此模式的最大飞行速度为3m每秒(3m/s)，最大升降速度为1.5m每秒 (1.5m/s)。飞控指示灯为 [橙色], 下视光流及激光测距模块处于工作状态。使用该模式飞行时，需注意以下几点—

1) 高度限制：室内环境有效高度为20厘米至4米范围内，室外环境为20厘米至2米以范围内。

2) 处于定点模式下起飞时，将遥控器的油门摇杆推至中位以上一格左右，飞行器会自动升空至离地悬停，此时将油门摇杆置于中位点略微偏上，待飞行器自行稳定当前位置后，方可进行操作。

3) 当飞行器处于定点模式(POSHOLD)，且超出以上高度限制飞行时，会自动转变为定高模式（ALTHOLD），位于该模式下，飞行器仅自动保持当前飞行高度，无法进行定点悬停。

4) 当飞行器处于定高模式，并下降至以上有效高度内飞行时，会自动转变回定点模式，此时可正常定点悬停。（空中切换模式时，姿态因矫正产生的抖动为正常现象，请知悉。）

5) 飞行过程中，飞行器下方若为动态环境或无纹理、弱纹理、反光表面，则定点悬停效果不佳或无法定点悬停。

6) 切换该模式， 油门值需低于75%， 其他摇杆居中， 且光流模块下方的传感器无物体遮挡，否则会导致切换失败。

② 运动模式 (ANGLE)

处于该模式下，飞行器在飞行过程中会自动保持水平姿态，但并不会自动悬停于当前位置，该模式不同于定点模式，需要使用者有一定的操作经验。飞控指示灯为 [蓝色]， 该模式会限制飞行器的最大油门值 (80%) 与横滚 (Roll)、俯仰 (Pitch) 的最大角度（基于水平姿态，朝各方向运动的最大俯仰角度为±0°）。使用该模式飞行时，需注意以下几点—

1) 运动模式不具备主动刹车功能。

2) 运动模式不具备高度保持功能，需要操作者精确操作油门量，以确保飞行高度与飞行速度。

3)切换该模式，需油门值低于75%，且其他摇杆居中，即可直接切入。

③ 特技模式 (ACRO)

处于该模式下，飞行器将所有控制权限交由使用者操控，解锁最大油门值(100%)，且不会自动保持高度与水平姿态。该模式为所有模式中操作难度最高的模式，也是穿越机的常规玩法之一。建议操作者有熟练的穿越机飞行经验或已通过模拟器学习过特技模式后，再尝试处于该模式的飞行。飞控指示灯为 [红色]， 飞控不再限制飞行器在横滚 (Roll) 与俯仰 (Pitch) 轴上的最大、倾角。使用该模式飞行时，需注意以下几点—

1) 特技模式不具备自动回正功能， 在操作者不进行干预的任何情况下，飞行器在飞行过程中仅保持当前姿态。 请注意！此时摇杆不再是单纯的控制飞行方向，而是完全操控飞行器在空中的飞行姿态，摇杆力度，仅控制飞行器在对应动作上的角速率（飞行器以中心为原点，以XYZ 为旋转轴做绕轴滚转运动，其中滚转的速度叫做角速率， 单位：度/每秒）

a. 飞行器出厂固件预设了角速率（Rate值）切换功能，您可以理解为摇杆操作灵敏度。

b. 功能通道CH8，CADDXFPV Alink遥控器为SC三段开关，开关由上至下分别为高(500°/s)、中(400°/s)、低(300°/s)。

c. 推荐最低档位用于新手入门练习，中等档位用于进阶训练，最高档位用于特技花式飞行。

摇杆回中的过程则不影响飞行器的姿态。

2) 运动模式不具备高度保持功能。飞行器在飞行过程中，需要操作者精确操作油门配合当前飞行姿态，以确保飞行高度与飞行速度。该模式的悬停油门位置为30%-35%，根据飞行器当前所使用的模组电池电压产生变化。

3) 切换该模式，需油门值低于45%，且其他摇杆居中，即可直接切入。

4) 于飞行过程中切换特技模式时请注意：由于特技模式的悬停油门位置低于自稳模式与定点模式， 故而在切换该模式时飞行器高度会产生较大变化，需及时进行补油保持飞行高度。该操作有一定风险， 请慎重操作。

④ 反乌龟模式 (FLIP)

该模式非常规情况下的飞行模式，主要用于飞行器落地后姿态不正，需进行修正的情况。飞控指示灯为青色， 处于该模式下，油门摇杆失效，飞行器无法直接飞行， 且电调控制器切换为反转模式。使用该模式修正飞行器姿态时，需注意以下几点—

1) 该模式仅能在解锁前启动，且解锁后电机为禁止状态，并不会进入怠速状态。请操作者注意安全，谨防解锁后误操作。

a.若解锁后误触反乌龟模式开关 (CADDXFPV Alink遥控器为SD回弹按钮，功能通道CH9)，会导致飞行器在任何状态下无法切换常规飞行模式。

b.在误触状态下关闭反乌龟开关后，飞行模式会直接切换为当前模式开关（CADDXFPV Alink遥控器为SB三段式开关，功能通道CH7）档位对应模式。

c.在误触后需及时关闭反乌龟模式开关，请勿在此状态下尝试切换飞行模式，这可能导致您的飞行器失控坠毁。

2)进入该模式并解锁后，请仅使用横滚或俯仰摇杆进行姿态调整 (可根据Ascent Goggles飞行眼镜内屏幕中央的反乌龟指示箭头方向进行打杆操作），请勿使用方向摇杆进行操作，这可能导致飞行器损坏。

3) 请千脆利落的将横滚或俯仰摇杆朝一个方向打到最大位置进行调整，电机会自动进入合适的转速将飞行器翻转。若一次未成功翻转，可多次尝试，但请勿长时间打杆操作，长时间反转可能导致电机或电调烧毁。

4) 使用该模式成功修正飞行器姿态后，请直接关闭反乌龟模式开关，并重新解锁后方可正常飞行。

⑤ 蜂鸣器模式

该模式非飞行模式，功能启动后电机持续发出鸣叫声，用于提示当前飞行器的位置，方便您寻找飞行器—

1) CADDXFPV Alink遥控器为SA回弹开关启动/关闭该功能

2) 功能通道为CH6

⑥ IMU校准模式

该模式非飞行模式，用于校准飞行器多次撞击、跌落导致的水平偏差。飞控指示灯为二次绿灯快闪，该模式为自动运行功能，启动后需水平静置直至校准完成，过程中无需打杆操作。 该模式使用方法如下—

1) 该模式只能在上锁状态下运行。

2) 将飞行器静置于水平表面

3) 操作打杆方式

a. 左摇杆置于低位，且向右打杆至最大行程并保持。

b. 右摇杆居中，并向下打杆至最大行程并保持。

c. 正确打杆后，眼镜内画面会出现校准菜单。



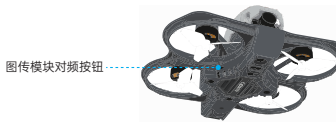


d. 放开所有摇杆，菜单会保持显示状态，使用右摇杆上下打杆选择对应选项，当前选项为文字快速闪烁状态。
   a) IMU CALIBRATION（校准飞行器水平状态）
   b) EXIT（退出菜单）
e. 使用左摇杆向右打杆，运行功能选项。
4)) 第一次绿灯快闪为开始校准，第二次绿灯快闪为校准完成，若校准失败则为红灯闪烁。
5) 我们推荐您校准完成后静置10秒左右再进行飞行操作，以达到更好的校准效果。

以上为PROTOS飞行器默认固件的所有功能，请您熟读并知悉，避免在使用过程中因不熟悉产品功能导致误伤自己或他人。

3.1.7 图传模块

PROTOS飞行器内置了Ascent数字图传模块，可连接套装内的飞行眼镜进行FPV视角飞行，对频方式如下：飞行器通电后，待内置图传模块启动（绿灯闪烁），请使用SIM卡针或其他绝缘小棒插入该孔， 按下图传模块的对频按钮，此时指示灯变为红色，且处于常亮状态，图传模块进入对频状态。成功与飞行眼镜对频后，指示灯则显示绿色并且常亮。



3.1.8 安全机制

该产品为专业入门级航模，并非儿童玩具，为防止使用者误操作，PROTOS飞行器出厂默认固件设立了以下安全机制：

① 油门摇杆非低位时，禁止解锁: 该机制为防止解锁后飞行器突然加速升空导致失控，故油门摇杆不在最低位置时，无法进行解锁操作。
② 失控保护： 飞行器在任何状态下，若与遥控器断开连接，则会自动进入上锁状态，无法自动解锁。若处于飞行中则会坠落。使用者需避开人群飞行，避免因信号断连产生误伤他人等情况。
③ 模式切换条件： 本产品为照顾初学者玩家，出厂默认固件设置了模式切换的限制条件，说明如下—
   1) 所有模式切换时，除油门摇杆外的所有摇杆均需居中，防止切换过程中误操作。
   2) 定点模式(Poshold)于运动模式(Angle) 切换时，油门摇杆行程需低于75%并保持1秒以上。
   3) 特技模式(ACRO) 切换时，油门摇杆行程需低于45%并保持1秒以上。

3.1.9 注意事项

为了能有更愉快的飞行体验，该产品有以下几点注意事项，请您悉知：

① 位于PROTOS飞行器底部的金属散热片，在长时间通电状态下会产生高温，若飞行器不处于飞行状态则无法进行散热，且超过100℃/212℉后会进行保护性关机。此时请勿触碰，防止造成烫伤。
② PROTOS飞行器具有自动上锁功能，为防止误操作，飞行器在满足以下条件时会执行自动上锁，停止电机运转:
   1) 飞行器解锁后处于静置状态持续目 10 秒内无任何操作、飞行器无姿态变化。
   2) 飞行并降落后处于静置状态且持续4秒以上无任何操作、姿态变化。
   3) 飞行过程中产生严重撞击。

请注意：为了防止传感器对环境的错误判断，导致飞行过程中自动上锁或收低油门时无法保持姿态，我们建议您在飞行时距离下方障碍物至少30cm的高度，以获得良好的飞行体验。
③ 请勿触碰运行中的电机与桨叶！这可能使您受伤。
④ 若您是非专业使用者或初学者，请不要将飞行器置于手掌上起飞，或使用其他特殊方 法起飞。CADDXFPV官方仅推荐使用者将飞行器置于平坦无杂物的地面完成起飞操作。
若您执意尝试使用特殊方法起飞，CADDXFPV官方对由此产生的后果不承担任何相关法律责任。

3.1.10 微功率短距离设备声明

① 符合"微功率短距离无线电发射设备目录和技术要求"的具体条款和使用场景，采用的天线类型和性能，控制、调整及开关等使用方法；
② 不得擅自改变使用场景或使用条件、扩大发射频率范围、加大发射功率（包括额外加装射频功率放大器），不得擅自更改发射天线；
③ 不得对其他合法的无线电台（站）产生有害干扰，也不得提出免受有害干扰保护；
④ 应当承受辐射射频能量的工业、科学及医疗（ISM）应用设备的干扰或其他合法的无线电台（站）干扰；
⑤ 如对其他合法的无线电台（站）产生有害干扰时，应立即停止使用，并采取措施消除干扰后方可继续使用；
⑥ 在航空器内和依据法律法规、国家有关规定、标准划设的射电天文台、气象雷达站、卫星地球站（含测控、测距、接收、导航站）等军民用无线电台（站）、机场等的电磁环境保护区域内使用微功率设备，应当遵守电磁环境保护及相关行业主管部门的规定；
⑦ 禁止在以机场跑道中心点为圆心、半径5000米的区域内使用各类模型遥控器；
⑧ 微功率设备使用时温度和电压的环境条件。

3.1.11 参数规格

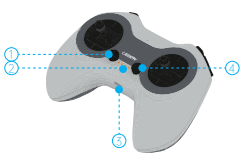
PROTOS	型号	C0CA-FP027
	FCC ID	2BHG9-C0CA-FP027
	飞控	Caddx Protos Aio 1.0
	图传	Ascent Lite
	电机对角距离	78mm
	电机	1102 14000KV
	螺旋桨	HQprop U40mm×3GR-PC-1.5mm
	重量	104.4g±1.5g
	尺寸	110x102.8x41mm
	飞行续航时间	8.5min ±0.5min
	遥控接收机	ELRS 2.4GHz
飞控参数	主控芯片	STM32-F405RGT6
	陀螺仪	BMI270
	气压计	SPL06
	板载接收机	ESP8285
	接收机协议	ELRS 2.4GHz
	电调协议兼容	Bluejoy / BLHeli-S可选
	电调最大电流	12A (单路)
图传参数	图传型号	Ascent Lite
	传感器	1 / 2.8 inch Sensor
	FOV	147°
	画面比例	16:9
	录制分辨率	1080P 60FPS;720P 60FPS
	功率	25~100mW
	最大传输距离	Max 3km
	平均延迟	平均延迟 35ms

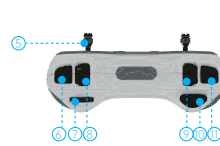
FC FCC ID 2BHG9-C0CA-FP027

本设备经过测试，符合 FCC 规则第 15 部分中针对 B 类数字设备的限制要求。这些限制旨在为住宅安装环境提供对有害干扰的合理防护。本设备会产生、使用并可能发射射频能量，如果未按照说明书安装和使用，可能会对无线电通信造成有害干扰。然而，无法保证在特定安装情况下不会发生干扰。
如果本设备确实对无线电或电视接收造成有害干扰（可通过开关设备来判断），建议用户尝试通过以下一种或多种方法消除干扰：
-- 重新调整或移动接收天线的位置；
-- 增加设备与接收器之间的距离；
-- 将设备连接到与接收器不同回路的电源插座；
-- 向经销商或有经验的无线电/电视技术人员咨询帮助。
本设备符合 FCC 规则第 15 部分的要求。设备的操作需满足以下两个条件:
(1) 本设备不得产生有害干扰;
(2) 本设备必须接受所接收到的任何干扰，包括可能导致设备异常操作的干扰。
未经负责合规方明确批准的更改或修改，可能导致用户操作本设备的授权失效。
射频（RF）警告 — 移动设备:
本设备符合 FCC 针对非受控环境设定的辐射暴露限制要求。本设备的安装与操作应保证辐射体与人体之间的最小距离为 20 厘米。

■ 3.2 CADDXFPV Alink遥控器

3.2.0 部位名称





1. 对频按键
2. 状态指示灯
3. Type-C 接口
4. 电源键
5. 飞行摇杆
6. SD 回弹按钮
7. S1 限位滚轮
8. SC 三段开关
9. SB 三段开关
10. SE 自锁按钮
11. SA 回弹按钮

3.2.1 该产品为内置ELRS 2.4GHz射频模块，10通道RC模型遥控器，可对频控制任何搭载了 ELRS 2.4GHz接收机的RC模型进行遥控操作。

3.2.2 CADDXFPV Alink遥控器操作说明

① 电源按钮

遥控器正面板上右侧圆形按钮为电源按钮，操作方式如下—

1) 关机状态下，短按电源按钮，显示遥控器当前剩余可用电量（参考灯显提示）。
2) 关机状态下，长按电源按钮，待四灯依次亮起并常亮，发出"do-re-mi，do-mi"时为开机。
3) 开机状态下，短按电源按钮，关闭接收机断连提示音。
开机状态下，长按电源按钮，待四灯依次熄灭并发出"mi-re-do"时为关机。

② 对频/校准按钮

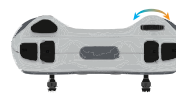
1) 长按开关按钮，开启遥控器；
2) 长按对频按钮直至指示灯闪烁两次；
3) 将所有摇杆和限位滚轮居中位 (限位滚轮归中位有顿感)；
4) 短按对频按钮一次，指示灯交替闪烁两次；



5) 依次最大活动旋转摇杆 (两个摇杆不可时进行)，完成后指示灯全部亮起；



6) 限位滚轮最大范围从中位往左右两侧旋钮活动两次；
7) 再次长按对频按钮，蜂鸣器发出
"do re mi"，指示灯恢复电量显示状态，即校准完成。



③ 摇杆组

产品出厂状态为美国手，即前四通道顺序为"A、E、T、R"，如下图所示—



1) [CH1] — AIL: 对应姿态动作横滚（Roll），体现为飞行中左/右横移。
2) [CH2] — ELE: 对应姿态动作俯仰（Pitch），体现为飞行中前进/后退。
3) [CH3] — THR: 对应油门值，体现为飞行过程中上升/下降。
4) [CH4] — RUD: 对应姿态动作偏航（Yaw），体现为飞行中左/右转向。
需注意，定点模式(POSHOLD)的油门为渐进式油门，即居中悬停、抬高上升、压低下降；运动模式(ANGLE)与特技模式(ACRO)则为直接式油门，即油门推多少，电机转多快，需要精确控制油门量操作飞行器，请悉知。

④ 功能开关

除摇杆组的四通道外，该产品还有额外六个通道可供使用，即遥控器前面板的五个按钮与一个旋钮。且在产品出厂时，默认已经设置了对应功能的开关，如下图所示—



1) SA — 回弹按钮，对应[CH6]，用于启动蜂鸣器功能
2) SB — 三段式船型开关，对应[CH7]，用于切换飞行模式
3) SC — 三段式船型开关，对应[CH8]，用于切换特技模式(ACRO)下的角速率(Rate)
4) SD — 回弹按钮，对应[CH9]，用于切换反乌龟(FLIP)模式
5) SE — 自锁开关，对应[CH5]，用于解锁/上锁
6) S1 — 限位滚轮，对应[CH10]
请注意，模式切换与反乌龟功能（参考3.使用说明>3.1PROTOS飞行器>3.1.6飞行/功能模式④说明），并在安全的飞行环境下进行尝试（参考2.飞行前准备>2.1飞行安全/2.2飞行限制说明），请您悉知。

⑤ FPV飞行模拟器

该产品可用Type-C数据线与电脑直连，Type-C接口位于遥控器后侧中央，连接后可直接使用FPV模拟器进行练习。

3.2.3 续航及充电操作

① 电量指示

位于遥控器正面板中央，有四颗指示灯，开机时默认为可用剩余电量显示，四灯从左至右依次指示电量为：

(1)10-25% (2) 26-50% (3) 51-75% (4) 76-100%

常亮为当前指示灯范围值，闪烁时代表接近该指示灯的临界电量。

② 续航时间

遥控器处于满电状态下， 续航时间约为3小时。 当遥控器长时间无操作时， 会间隔发出两声"滴滴" 短响进行提示， 且指示灯闪烁； 当遥控器电量不足时， 会间隔短响， 此时应及时进行充电，避免电量不足，在使用中自动关机，导致飞行器失控。

③ 充电

遥控器关机状态下，可使用套装内的电源适配器与Type-C电源线进行充电，充电时的电源指示可参考电量指示灯说明。

3.2.4 注意事项

① 位于遥控器正面板中央，有一椭圆形小孔，此孔为蜂鸣器出声孔。请勿使用尖锐物品戳入该孔！这可能导致蜂鸣器损坏。

② 位于遥控器前面板中央的灰色长条区域，为扩展天线盖板。安装其他增益天线需拆卸遥控器后盖，若您是初学者而非熟练使用者，我们不推荐自行安装其他增益天线。若您执意进行尝试，由此造成的一切后果，CADDXFPV官方对此不承担任何相关法律责任，请您悉知。

3.2.5 微功率短距离设备声明

① 符合"微功率短距离无线电发射设备目录和技术要求"的具体条款和使用场景，采用的天线类型和性能，控制、调整及开关等使用方法；
② 不得擅自改变使用场景或使用条件、扩大发射频率范围、加大发射功率（包括额外加装射频功率放大器），不得擅自更改发射天线；
③ 不得对其他合法的无线电台（站）产生有害干扰，也不得提出免受有害干扰保护；
④ 应当承受辐射射频能量的工业、科学及医疗（ISM）应用设备的干扰或其他合法的无线电台（站）干扰；
⑤ 如对其他合法的无线电台（站）产生有害干扰时，应立即停止使用，并采取措施消除干扰后方可继续使用；
⑥ 在航空器内和依据法律法规、国家有关规定、标准划设的射电天文台、气象雷达站、卫星地球站（含测控、测距、接收、导航站）等军民用无线电台（站）、机场等的电磁环境保护区域内使用微功率设备，应当遵守电磁环境保护及相关行业主管部门的规定；
⑦ 禁止在以机场跑道中心点为圆心、半径5000米的区域内使用各类模型遥控器；
⑧ 微功率设备使用时温度和电压的环境条件。

3.2.6 参数规格

型号	C0PJ-YK020
FCC ID	2BHG9-C0PJ-YK020
主控芯片	AT32 F413RCT7
射频模块	ELRS 2.4GHZ
射频协议	CRSF
最大射频功率	100mW (20dB)
可用通道数量	10CH (包括摇杆组4CH)
摇杆类型	全轴承霍尔感应式摇杆总成
功能开关	自锁按钮x1/回弹按钮x2/三段式船型按钮x2/滚轮x1
状态提示模组	状态指示灯x4/蜂鸣器
充电及通信接口	USB-Type C
电池规格	Lipo 1s 1000mAh
最大充电功率	5V / 1A / 3.50W
充电时长	大约 90:00 min
工作电压范围	DC 3.50V~4.20V
尺寸	158mmx108mmx58mm (手工测量存在误差)
重量	180g±5g

FC FCC ID 2BHG9-C0PJ-YK020

本设备经过测试，符合 FCC 规则第 15 部分中针对 B 类数字设备的限制要求。这些限制旨在为住宅安装环境提供对有害干扰的合理防护。本设备会产生、使用并可能发射射频能量，如果未按照说明书安装和使用，可能会对无线电通信造成有害干扰。然而，无法保证在特定安装情况下不会发生干扰。
如果本设备确实对无线电或电视接收造成有害干扰（可通过开关设备来判断），建议用户尝试通过以下一种或多种方法消除干扰：

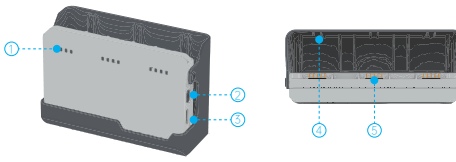
-- 重新调整或移动接收天线的位置；
-- 增加设备与接收器之间的距离；
-- 将设备连接到与接收器不同回路的电源插座；
-- 向经销商或有经验的无线电/电视技术人员咨询帮助。

本设备符合 FCC 规则第 15 部分的要求。设备的操作需满足以下两个条件：
(1) 本设备不得产生有害干扰；
(2) 本设备必须接受所接收到的任何干扰，包括可能导致设备异常操作的干扰。
未经负责合规方明确批准的更改或修改，可能导致用户操作本设备的授权失效。

射频（RF）警告 — 移动设备：
本设备符合 FCC 针对非受控环境设定的辐射暴露限制要求。本设备的安装与操作应保证辐射体与人体之间的最小距离为 20 厘米。

■ 3.3 PROTOS 2S Charger 充电管家/模组电池

3.3.0 部件名称



1. 状态指示灯(一组灯由左至右LED1-4, 共计三组指示灯)
2. 功能按键（模式切换 / 固件刷写）
3. Type-C 接口
4. 电池定位槽
5. 电池接口

3.3.1 2S Charger 充电管家

为PROTOS配套模组电池充电工具，配合套装内的电源适配器与Type-C电源线，可对模组电池自动进行快速充电或放电存储，使用方法如下：

① 注意事项

1) 充电时，请在有人值守的情况下进行，在不使用充电管家进行充电时，请及时拔除并关闭电源。
2) 推荐使用套装内附带的 CADDXFPV-30W 电源适配器或其他支持 USB PD 快充协议的USB电源适配器为2S充电管家供电。
3) 环境温度会影响充电时间，在25℃且通风的环境进行充电，效果最佳。
4) PROTOS-2S 充电管家仅适用于 PROTOS 飞行器的专用模组电池，请勿使用充电管家为其他型号电池进行充电，或将其用作其他用途。
5) 使用时请平稳放置，并远离火源，水源及其他危险化学物质，注意绝缘及防火。
6) 请勿用手或其他物体触碰充电仓位内的金属端子，金属端子若附着异物，请用干布擦拭干净，请勿使用湿布，酒精棉，湿巾或其他潮湿物体进行清洁。
7) 务必及时给低电量模组电池进行充电，推荐将电池存放于2S充电管家中进行保存或置于套装附带的手提包槽位内。

② 充电步骤

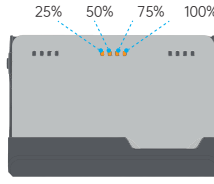
1) 使用套装内电源适配器与Type-C数据线给充电管家供电，通电后状态指示灯同时闪烁三次，以二进制显示当前固件版本号并熄灭（无电池插入状态）。
2) 将模组电池背部的定位凸榫对准仓位内的电池定位槽，并向下垂直插入，直至听到 “咔” 一声为电池安装到位。
3) 充电管家自动按顺序给插入的电池进行充电，顺序为指示灯一侧，从右至左进行充电。充电过程中，状态指示灯显示当前状态（详见“状态指示灯描述”）。出厂默认充电截止电压为单片电芯4.25±0.03V。
4) 单颗电池充电时间约为20分钟左右，三颗电池全部充满大约为60分钟。

③ 存储步骤

1) 参考3.使用说明 > 3.3PROTOS-2S 充电管家/模组电池>3.3.1 2S Charger充电管家>③1/2说明。
2) 长按功能按键3秒，此时三组状态指示灯同时闪烁三次，充电管家进入充/放电存储状态。顺序为指示灯一侧，从右至左进行存储，存储过程中，状态指示灯显示当前状态（详见 “状态指示灯描述”）。出厂默认存储电压为单片电芯3.85±0.03V（长期存放电压）。
3) 单颗电池从满电状态放电至存储电压，需50分钟左右，三颗电池完成存储时间大约为150分钟。

④ 状态指示灯描述

1) 一组灯由左至右依次从闪烁变为常亮：对应仓位内电池正在进行充电。
2) 一组灯由左至右进行跑马灯： 对应仓位内模组电池正在进行存储。
3) 一组灯常亮：对应仓位内模组电池已充电完成。
4) 一组灯内LED1、2常亮： 对应仓内模组电池已存储完成。
5) 一组灯同时持续闪烁： 对应仓位内模组电池状态异常
6) 一组灯由LED1-4常亮： 当前仓位模组电池电量为25% / 50% / 75% / 100%



3.3.2 PROTOS专用模组电池

该模组电池为专用电池，仅适用于CADDXFPV PROTOS飞行器，请勿用于其他用途。

保护机制: 该模组电池内置低压保护模块，当模块检测到电池电压过低时（单片电芯2.80V），会执行断电锁定保护，此时电池无法继续输出电流。

1) 电池锁定
飞行器处于任何状态下，所搭载的模组电池内置低压保护模块触发锁定，则飞行器立即断电，此时需立即为该电池进行充电激活
2) 锁定激活
模组电池内置低压保护模块触发锁定时，将该电池插入已通电的充电管家内，约3秒内会自动激活并进行充电（充电管家处于充电模式且正常供电，详见“充电步骤”）。

3.3.3 参数规格

产品名称	2S Charger
型号	C0PJ-CR001
FCC ID	2BHG9-C0PJ-CR001
显示	LED 4x3
通道	3 (排队充)
功能选择	充电、储存
电池类型	Li-ion 2S 840mAh 电池
输入电压	12~15V (PD输入，不支持5V适配器)
输出电压	8.7V
输入电流	Max.3A
充电电流	Max.3A
平衡电流	Max.0.21A
充电功率	Max.25W
放电功率	总功率5W (每通道Max1.6W)
输入接口	Type-C
工作温度	-10~45℃
储存温度	-20℃~60℃
尺寸	94x63x39.1mm
重量	65±0.5g

产品名称	2S Battery
型号	C0PJ-DC016
FCC ID	2BHG9-C0PJ-DC016
电池类型	Li-ion (锂离子电池)
电池容量	840mAh
电池规格	2S1P (二级串联)
放电倍率	15C
最大功率	6.384Wh
电压范围	6.80V~8.70V
充电限制电压	8.5V
充电方式	2S Charger 充电管家
充电时间	≤20min
保护机制	单片电芯电压低于2.8V时, 进行电池锁定保护, 需充电激活
尺寸	77.5x24x21mm
重量	41.9g±0.5g

FC FCC ID 2BHG9-C0PJ-CR001 & 2BHG9-C0PJ-DC016

本设备经过测试，符合 FCC 规则第 15 部分中针对 B 类数字设备的限制要求。这些限制旨在为住宅安装环境提供对有害干扰的合理防护。本设备会产生、使用并可能发射射频能量，如果未按照说明书安装和使用，可能会对无线电通信造成有害干扰。然而，无法保证在特定安装情况下不会发生干扰。
如果本设备确实对无线电或电视接收造成有害干扰（可通过开关设备来判断），建议用户尝试通过以下一种或多种方法消除干扰：

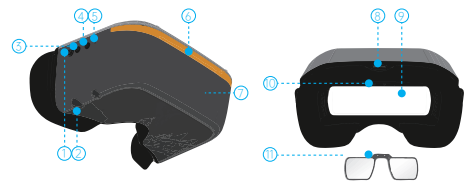
-- 重新调整或移动接收天线的位置；
-- 增加设备与接收器之间的距离；
-- 将设备连接到与接收器不同回路的电源插座；
-- 向经销商或有经验的无线电/电视技术人员咨询帮助。

本设备符合 FCC 规则第 15 部分的要求。设备的操作需满足以下两个条件：
(1) 本设备不得产生有害干扰；
(2) 本设备必须接受所接收到的任何干扰，包括可能导致设备异常操作的干扰。
未经负责合规方明确批准的更改或修改，可能导致用户操作本设备的授权失效。

射频（RF）警告 — 移动设备：
本设备符合 FCC 针对非受控环境设定的辐射暴露限制要求。本设备的安装与操作应保证辐射体与人体之间的最小距离为 20 厘米。

■ 3.4 Ascent Goggles

3.4.0 部件名称



1. 五维按键
2. 电源接口
3. 返回键
4. 录制键
5. 对频键
6. 灯光
7. 内置天线
8. Micro SD 卡槽
9. 4.5 inch LCD显示屏
10. 镜片安装孔
11. 镜框

3.4.1 对频

① 连接眼镜和 VTX 天空端电源。
② 等待设备启机后，分别按下眼镜和 VTX 天空端对频按钮，当进入配对状态时， VTX 指示灯变为红色，眼镜端发出滴... 滴... 滴...蜂鸣器提示。
③ 对频成功后，VTX 上的指示灯变为绿色常亮，眼镜蜂鸣器停止并显示图传画面。

3.4.2 升级

请到官网下载最新升级固件，Ascent_L_Gnd_X_X_X.img 对应眼镜端升级固件，拷贝到眼镜端SD卡中，注意请勿修改文件名

① 将升级文件复制到眼镜端SD 卡的根目录下，连接电源并等待设备启机（如果有，请先删除旧固件文件）。
② 长按眼镜端对频按钮 8 秒后蜂鸣器长响一秒后松开，等待设备自动重启后发出蜂鸣器提示音滴……滴……滴……(升级时间大约为1分钟，中途请勿断电)
③ 升级成功后，眼镜端蜂鸣器长响5秒后停止并自动重启。

3.4.3 状态指示

眼镜蜂鸣器状态	
对频状态	滴.... 滴.... 滴.... 滴....
升级固件	滴..... 滴..... 滴..... 滴——
升级失败（未检测到SD卡或固件）	滴.. 滴.. 滴.. 滴..
启机失败（重启或重刷固件）	滴.. 滴..... 滴.. 滴.....

3.4.4 注意事项

① 该产品使用较为复杂，使用者需具备基本的动手能力以及安全常识，并且需要小心使用。
② 待机模式开启且飞行器未解锁 VTX 和眼镜发射功率受限于10mW。
③ 眼镜最多支持3个带宽为10MHz 和 20Mhz 的频道。
④ 首次使用建议将 VTX 和眼镜升级到最新固件。

3.4.5 工作频道

Central frequency(MHz)	Channel1	Channel2	Channel3
FCC	5740	5770	5805
CE/SRRC	5740	5770	5805

使用本产品前，请确保您充分了解并遵守当地法律法规。使用修改或破解版本或未经许可使用业余频段的用户可能会因违反当地法律或法规而受到处罚。

3.4.6 FCC 警告

本设备符合 FCC 规则第 15 部分的规定。操作须遵守以下两个条件：(1) 本设备不得造成有害干扰，(2) 本设备必须接受任何收到的干扰，包括可能导致意外操作的干扰。任何未经合规负责方明确批准的更改或修改都可能导致用户操作本设备的权限失效。

注意：本设备已经过测试，符合 FCC 规则第 15 部分对 B 类数字设备的限制。这些限制旨在为住宅安装提供合理的保护，防止有害干扰。本设备会产生、使用并能辐射射频能量，如果未按照说明安装和使用，可能会对无线电通信造成有害干扰。但是，不能保证在特定安装中不会发生干扰。如果本设备确实对无线电或
电视接收造成有害干扰（可通过关闭和打开设备来确定），则建议用户尝试通过以下一种或多种措施来纠正干扰：
- 重新调整或重新定位接收天线。
- 增加设备与接收器之间的距离。
- 将设备连接到与接收器所连接电路不同的电路插座。
- 咨询经销商或经验丰富的无线电/电视技术人员寻求帮助。

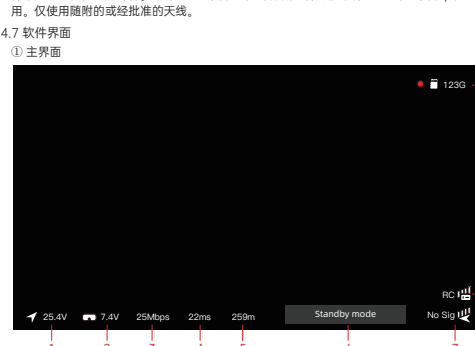
特定吸收率 (SAR) 信息：
这款 Ascent Goggles 符合政府对无线电波暴露的要求。这些准则基于独立科学组织通过定期和彻底评估科学研究制定的标准。这些标准包括相当大的安全裕度，旨在确保所有人的安全，无论年龄或健康状况如何。

FCC RF 暴露信息和声明:
美国 (FCC) 的 SAR 限值是 1.6 W/kg，每克人体组织平均 4.0W/kg。设备类型：WN02-FP0006 (FCC ID:) 也已针对此 SAR 限值进行了测试。在产品认证期间，根据此标准报告的最高 SAR 值为 0.612W/kg，用于心脏和肢体时为 0.138W/kg。此设备已针对典型的随身佩戴操作进行了测试，其中 Goggles 的背面与身体保持 0mm 的距离。为了保持符合 FCC 射频暴露要求，请使用在用户身体和 Goggles 背面之间保持 0mm 距离的配件。使用的皮带夹、皮套和类似配件的组装中不应包含金属部件。使用不满足这些要求的配件可能不符合 FCC 射频暴露要求，应避免使用。

佩戴在身上的操作:
本设备已针对典型的随身佩戴操作进行了测试。为了符合 RF 暴露要求，用户的身体与 Goggles（包括天线）之间必须保持至少 0 毫米的间隔距离。本设备使用的第三方皮带夹、皮套和类似配件不应包含任何金属部件。不符合这些要求的随身佩戴配件可能不符合 RF 暴露要求，应避免使用。仅使用随附的或经批准的天线。

3.4.7 软件界面

① 主界面



1) 天空端输入电压
显示天空端供电电压，智能识别2、3、4、6串LiPo电芯电压，单片电芯低于3.5V红色字体报警提示。
2) 地面端输入电压：显示眼镜供电电压，智能识别2、3、4、6串LiPo电芯电压，单片电芯低于3.5V红色字体和蜂鸣器报警提示。
3) 实时码率：显示实时传输码率单位Mbps，10.0M和20.0M两种宽带模式。
4) 图传延迟：显示从发射端相机采集图像传输至地面端的总延时。
5) 测距功能：依据无线传输延时计算接收端至发射端传输距离功能，信号被干扰会导致误差放大。
6) 状态提示：文字提示当前需注意的状态提示。
7) 当前频道：显示当前设置频道，信号格共5种状态，4格、3格、2格、1格、空格。
8) 地面端SD卡状态：显示眼镜内存卡状态及剩余容量，录像时红圈闪烁提示，不在录制状态不显示红圈，检测不到SD卡状态显示为NO SD，卡满状态显示为-。
9) 遥控器信号状态：信号格共5种状态，4格、3格、2格、1格、空格，当图传未检测到遥控器信号时，此图标会隐藏。

② 菜单频道



1) 频道：显示各频道的干扰情况，信号强度分为4格、3格、2格、1格、空格，信号显示空格为已被占用不可选，白色描边为选择框，按下确认键高亮显示，高亮显示为当前频道。
2) 跳频：开启跳频功能，眼镜将自动选择干扰较小的频道，此时不可手动切换频道。
3) 刷新：点击刷新可以重新搜索各个频道的干扰情况以及状态。

③ 菜单设置



1) 相机：相机可调整内容分别为场景预设、曝光、饱和度、锐度、白平衡、画面旋转、画面比例、3D降噪。
2) 显示：显示可调整内容为 Debug、屏幕亮度、聚焦模式、自定义OSD、OSD位置、升级字体、自定义字体、取景框、取景框设置、眼睛图标。
3) 录像：录像可调整内容为 VTX 发射端分辨率、录像设备、自动启停、循环录制、格式化SD卡、格式化发射端、录像时间。
4) 设备：设备可调整内容为蜂鸣器音量、测距模式、信号丢失提示、恢复出厂设置、重置发射端默认值、设备信息、操作说明、切换模式、眼镜端录像码率、抗频闪。
5) 发射功率：发射功率默认可选择25mW、100mW功率。
6) 分辨率：分辨率可以选择720P和1080P。
7) 带宽：可选择自动、10M、20M带宽工作模式，理论上带宽越小抗干扰越好但码率较低，带宽越大抗干扰越差但码率较高。
8) 帧率：标准帧率等于60fps。
9) 待机模式：当处于待机模式时天空端和眼镜端发射功率为10dbm，退出待机模式或关闭待机模式开关才会输出当前设置的发射功率，开启待机模式时此功能需要天空端串口正确连接飞控当眼镜收到飞行器解锁信号时自动退出待机模式，如无飞控支持可选择关闭此功能。
10) 语言/Language：语言切换English/中文。
11) 电池报警：检测眼镜端低电量警报，电压过低红色字体和蜂鸣器报警提示，可选择开启或关闭。
12) 偏好：图传工作模式预设功能，根据您的偏好可以选择流畅、高画质、远距离模式。

④ 菜单回放



1) 选择框移动到OSD选项可以选择打开或关闭，打开时在播放视频界面叠加飞控OSD信息(如有)和主界面飞行信息，当选择框停留在视频列表中，长按眼镜端确认键打开多选功能，菜单框显示功能设置（删除、全选、取消），再次按下返回键退出多选模式。
2) 播放界面单击中键暂停/播放，左右方向键调整快退/快进。

3.4.8 参数规格

型号	WN02-FP006
FCC ID	2BHG9-WN02-FP006
通信频率	5.725-5.850GHZ
发射功率 (EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
接口	4Pin 3.5mm Plug, DC5.5*2.1mm, Micro SD Card Slot
传输分辨率	1080P60FPS, 720P60FPS
平均延迟	平均32ms
天线增益	4.9dBi
天线极化	左旋圆极化 LHCP
传输距离	>4km
频道	8
屏幕分辨率	1920*1080 / 60Hz
屏幕材质	LCD
屏幕尺寸	4.5 Inch
宽电压输入	6V~25.2V (2S~6S)
SD卡槽	支持256G
系统	Ascent HD system

■ 3.4 Goggles Battery

3.4.0 部件名称



1. 功能按键
2.LED 指示灯
3. XT30 输出接口
4. Type-C 输入/输出
5. XT30 电源线

3.4.1 产品操作



① 为 Avatar 眼镜供电
将包装附带的电源线连接电池与眼镜，长按电池按键3秒开机，XT30输出电源。
② 低电量报警
当眼镜显示电池电量＜7V时 8.0V，或者电池指示灯只有一颗灯在闪烁，说明电量低于10%，需要尽快更换电池避免电量耗尽自动关机。

③ 按键
单击按键可查看电量，30秒后自动关闭显示;
长按3秒按键开启 XT30 电源输出，快速双击按键关闭 XT30 电源输出
④ Type-C 输出
本产品支持用于给手机或数码产品进行充电使用，适配多种快充协议，最大支持22.5W 输出。
⑤ Type-C 充电
建议使用 22.5W 以上的 Type-C 接口充电器为本产品充电，适配多种快充协议，最大支持 22.5W 充电。当检测为快充时指示灯为快闪，非快充时指示灯为慢闪。

3.4.2 指示灯状态

电池状态	LED 指示灯
充放电量≈100%	● ● ● ●
充放电量≈76%-99%	● ● ● ☼
充放电量≈51%-75%	● ● ☼
充放电量≈26%-50%	● ☼
充放电量≈0%-25%	☼
静态电量＞75%	● ● ● ●
静态电量＞50%	● ● ●
静态电量＞25%	● ●
静态电量＞0%	●

● 表示常亮　☼ 表示闪烁

3.4.3 注意事项

1、Type-C 与 XT30 接口不可以同时输出，如需切换需要断开设备后重新开机;
2、本产品不支持电源输出时进行充电;
3、当充电温度过高时可能会降低充电功率或者停止充电，请冷却后再进行充电
4、XT30 接口支持短路保护，请检查XT30 接口无异物再接入电源线
5、请确保 XT30 输出口接入的设备符合 12V 工作电压，否则将损坏接入设备
6、请勿将本产品摆放在地毯、加热器、纺织材料或暴露在阳光直射下:
7、请勿摔碰、挤压、自行拆卸或穿刺本产品;
8、请勿将本产品投入火中、水中或含有腐蚀性的液体里
9、充电时温度请保持在 0℃~35℃ 之间:
10、使用和充电过程中需要有人看管
11、对此产品认知不足以及缺乏操作经验者需要在专业人士的监督与指导下使用
12、如发现产品有膨胀或其他不良现象和故障时，请立即停止使用本产品，并联系您的经销商。

3.4.4 参数规格

型号	C0PJ-DC003-1
FCC ID	2BHG9-C0PJ-DC003-1
重量	125g
Type-C 输入	5V≤3.3A / 9V≤2.44A / 12V≤1.84A; 15V≤1.37A / 20V≤1.04A
Type-C 输出	5V / 3A,9V / 2.22A, 12V / 1.67A
XT30 输出	12V≤1.66A
标称电压	7.2V
电芯容量	3200mAh
锂电池能量	21.6Wh
额定容量	1500mAh (12V1A)
尺寸	71.3*41*27mm
充电时间	≈1.5h
XT30 支持设备	Avatar/ Ascent 系列眼镜端
XT30 电源线	XT30U-F to DC 5.5*2.1 (1.2米)
续航时间	Avatar/ Ascent Goggles: ≈2h; Avatar Goggles X: ≈1.8h
充电环境温度	0℃~35℃
XT30 短路保护	支持
输入/输出接口	Type-C, XT30

FC FCC ID 2BHG9-C0PJ-DC003-1

本设备经过测试，符合 FCC 规则第 15 部分中针对 B 类数字设备的限制要求。这些限制旨在为住宅安装环境提供对有害干扰的合理防护。本设备会产生、使用并可能发射射频能量，如果未按照说明书安装和使用，可能会对无线电通信造成有害干扰。然而，无法保证在特定安装情况下不会发生干扰。如果本设备确实对无线电或电视接收造成有害干扰（可通过开关设备来判断），建议用户尝试通过以下一种或多种方法消除干扰:
-- 重新调整或移动接收天线的位置;
-- 增加设备与接收器之间的距离;
-- 将设备连接到与接收器不同回路的电源插座;
-- 向经销商或有经验的无线电/电视技术人员咨询帮助。
本设备符合 FCC 规则第 15 部分的要求。设备的操作需满足以下两个条件:
(1) 本设备不得产生有害干扰;
(2) 本设备必须接受所接收到的任何干扰，包括可能导致设备异常操作的干扰。
未经负责合规方明确批准的更改或修改，可能导致用户操作本设备的授权失效。
射频（RF）警告 — 移动设备:
本设备符合 FCC 针对非受控环境设定的辐射暴露限制要求。本设备的安装与操作应保证辐射体与人体之间的最小距离为 20 厘米。