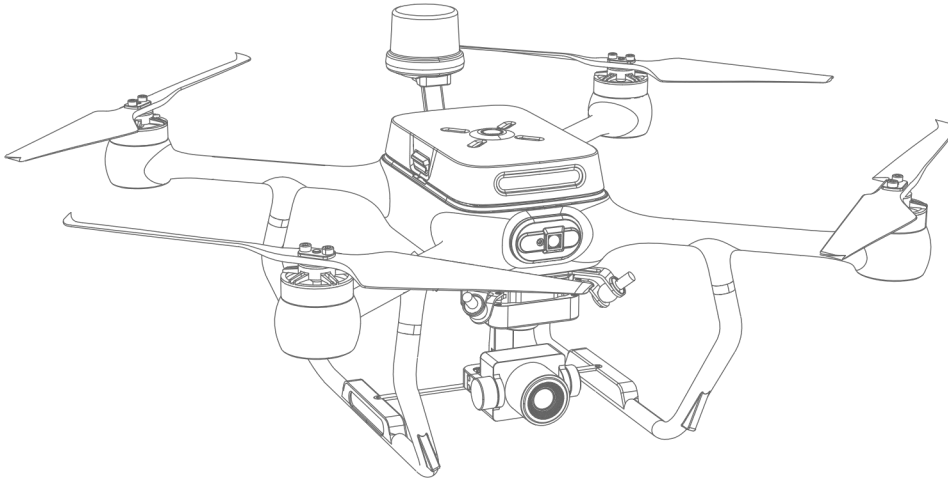
D313

AC50 Mini Automatic Airport Version
6K camera | H16 RC

QUICK START GUIDE V1.

January 6, 2025



DRONE MANUFACTURING + RESEARCH

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Understand the flight safety

Use of the product may pose certain safety risks. It is not suitable for people under the age of 14. The Safety Summary contains only a portion of the flight safety knowledge, so be sure to read the entire Quick Start Guide carefully to avoid property damage or even personal injury due to improper operation.

☆This product uses 2.4GHz high-definition map, should fly in an open without shielding and electromagnetic interference environment.

☆This product is suitable for people who have experience in operating models and who are not less than 14 years old.

☆Do not fly in bad weather, such as strong wind, snow, rain, fog weather, etc.

☆Choose an open space without tall buildings around it.A large use of reinforcement buildings will affect the work of the compass, and will block the GPS satellite positioning signal, resulting in the positioning effect of the aircraft is worse or even impossible.

☆When flight, stay away from high speed rotating components (eg. propeller, brushless motor).

☆When flying, keep in line of sight, away from obstacles, people, water, etc.

☆Do not fly in areas such as high-voltage line, communication base station or transmission tower to avoid interference with the remote control.

☆Do not fly in no-fly areas restricted by relevant laws or regulations.

☆Do not use the throw to fly method to take-off the aircraft in a crowded place.

☆Flying at an altitude of about 4,500 meters, due to environmental factors, the aircraft battery and power system performance will decline, and the flight performance will be affected.

Disclaimer&Warnings

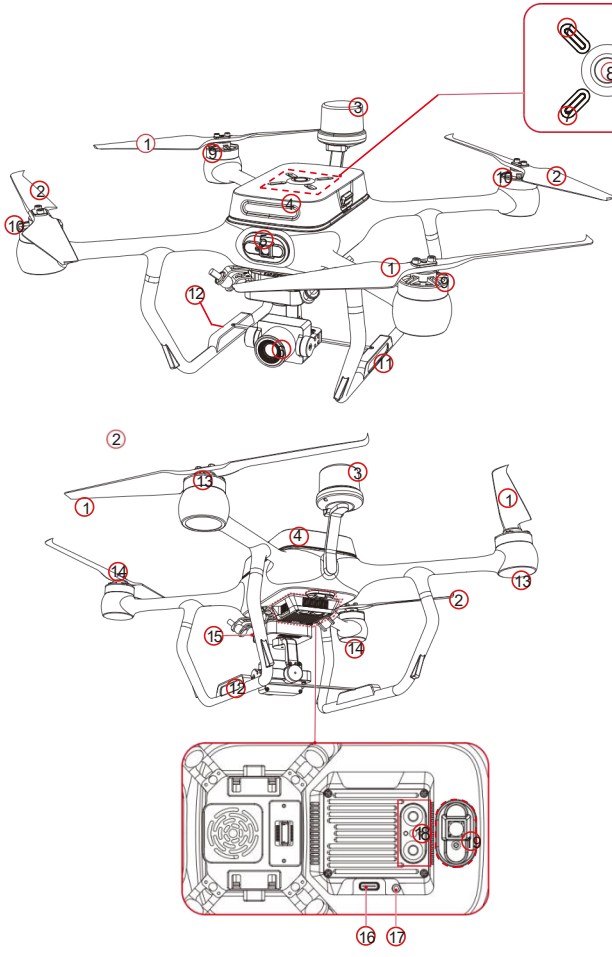
There are safety risks associated with the use of the R1000 UAV. It is not suitable for use by persons under the age of 18. Keep children away from the aircraft, and special care must be taken when operating it in scenes where children are present. Please read this document carefully before using this product. This statement is of great importance for the safe use of this product and for your legal rights.

The product is a multi-rotor aircraft and will provide an effortless flying experience when the power supply is working normally and all components are undamaged. DMR reserves the right to update this disclaimer at any time. It is important that you read this document carefully to understand your legal rights, responsibilities and safety instructions before using this product; failure to do so may result in property damage, accidents and personal safety hazards. Once you use this product, you are deemed to have understood, approved and accepted the terms and conditions of this statement in its entirety. The user undertakes to be responsible for his or her own actions and for all consequences arising therefrom. The user undertakes to use this product only for legitimate purposes and agrees to these terms and conditions and to any related policies or guidelines that DMR may establish. To the fullest extent permitted by law, in no event will DMR be liable for any indirect, consequential, punitive, incidental, special or criminal damages, including damages resulting from your purchase of, use of, or inability to use this product (even if DMR has been advised of the possibility of such damages).

The laws of some countries may prohibit the exemption of warranties, so your rights may vary from country to country. DMR reserves the right of final interpretation of these terms and conditions, subject to the laws and regulations of the country in which you reside. DMR reserves the right to update, revise or discontinue these terms and conditions at any time without prior notice.

1.0 Get to Know Your Aircraft

- Equipped with a high-precision navigation and positioning system, with network RTK services, the positioning accuracy can reach centimeter level.
- Equipped with a LIDAR ranging and obstacle avoidance system, it can realize the functions of precise determination of the height below and automatic obstacle avoidance in the front, reducing accidents caused by operating errors.
- Using advanced SDR technology and super protocol stack, the image is clearer, the delay is lower, the distance is longer, and the anti-interference is stronger.
- Equipped with a 6K camera, it can shoot 6K high-definition video stably, and can also achieve 25x zoom preview.



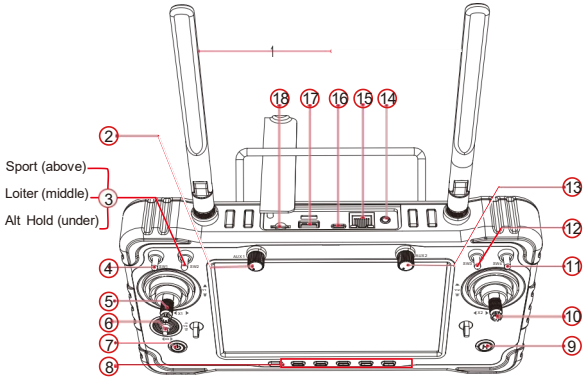
1) CW Propeller ( )
2) CCW Propeller ( )
3) GPS Satellite Positioning Module
4) Battery
5) Forward Obstacle Avoidance LIDAR
6) Dual-lens cameras and gimbal
7) Battery level indicator
8) Power Button
9) CW Motor ( )
10) CCW Motor ( )
11) Unattended automatic charging interface (positive)
12) Unattended automatic charging interface (negative pole)
12) Nose heading light
13) Tail heading light
14) Nose heading light
15) MicroSD card slot
16) Type-C upgrade port
17) Linking button
18) Downward-looking fill light
19) Forward-altimetry LIDAR

* 1) Before using the D313, please watch the tutorial video to upgrade the relevant firmware and calibration related items and read the "Quick Operation Guide" carefully to avoid property damage or even personal injury due to improper operation.

2) Rotating propellers can be dangerous. Do not start the motors when there are people nearby.

2.0 Get to Know Your Remote Controller

The remote control adopts a new surging processor, equipped with Android embedded system, using advanced SDR technology, super protocol stack, so that the image is clearer, the delay is lower, the distance is farther, and the interference resistance is stronger.

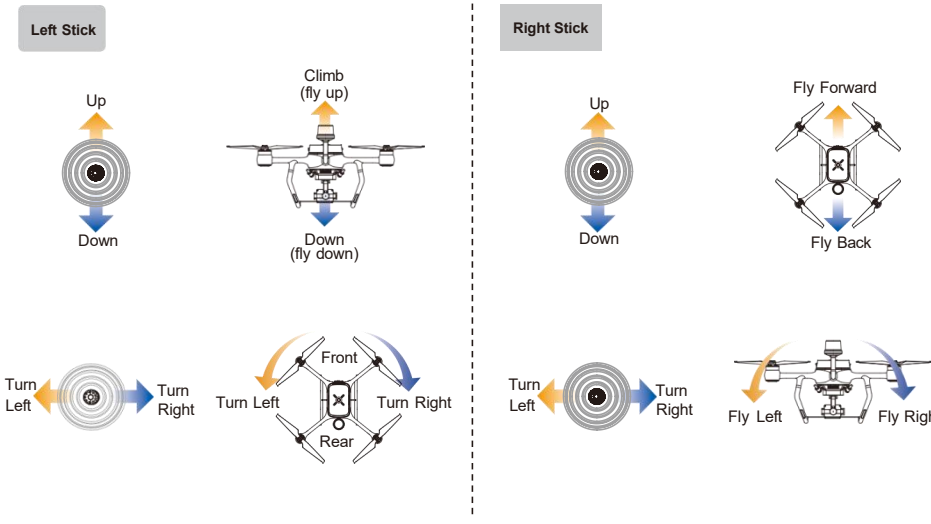


1, 2.4G Antenna
2, Knob AUX1(idle)
3, The 3-position switch SW2(Switching the flight mode)
4, The 3-position switch SW1(Start/stop recording video)
5, Left Stick X_1,Y_1
6, Small Stick X_3, Y_3(Control the gimbal)
7, Power Button
8, Six-position switch A/B/C/D/E/F (idle)
9, RTL mode button(Return To Home)
10, Right Stick X_1,Y_1
11) The 3-position switch SW1(take a photo)
12) The 3-position switch SW3(idle)
13) Knob AUX2(idle)
14) PPM Interface (Coach Function Interface)
15) WAN network port
16) Type-C charging port
17) USB interface
18) Micro SD card port

The remote control stick control method is divided into Japanese hands and American hands. The default stick control method for ex-factory is "American hand" (left hand throttle), which can be switched in the APP settings. It is recommended that beginners use American hands as a control method. Please fly in an open, uncovered, electromagnetic-interfering environment. The maximum communication distance of the remote control is about 10 kilometers. It is measured in an experimental environment for reference only.

Japanese hand is right-handed throttle:
Left rocker (ELEV/RUDD) controls the aircraft forward/backward and left/right turn; right rocker (THRO/AILE) controls the aircraft to rise/decline and fly left/right;

American hand is left-handed throttle:
Left rocker (THRO/RUDD) controls aircraft rise/decline and left/right turn; right rocker (ELEV/AILE) controls aircraft forward/back and fly left/right);



3.0 Specifications

• Aircraft

Symmetrical Motor Wheelbase	460mm
Dimensions(L x W x H)	367×367×228mm
Motor	KV value 650rpm/V
ESC	Continuous current 45A
Propeller Specifications	Diameter×pitch: 11×4.5 inch
Standard Take-off Weight	1.38kg
Maximum Takeoff Weight	2kg
Max Climb(ascent) Speed	Factory default 5.0m/s, (3~8m/s adjustable)
Max Down(descent) Speed	Factory default 3 m/s, (3~8m/s adjustable)
Max Horizontal Flight Speed	Loiter Mode,Sport Mode: 3~20m/s adjustable); Cruise mode: Factory default 10m/s (3~20m/s adjustable); Al tHold Mode: 15m/s (windless environment)
Max Angle Of Inclination	35°
Max Speed Of Rotation Angle	150°/s
Max Service Ceiling Above Sea Level	4500m
Max Wind Resistance	17m/s
Positioning Accuracy	Loiter Mode: Vertical ±1.5 m, horizontal ±0.4 m (GPS satellite positioning module module works normally) With network RTK: horizontal 1cm+1ppm, vertical 2cm+1ppm (GPS satellite positioning module works normally, network RTK connection is normal)
Battery	22.2V , 7000mAh,LiPo 6S, 155.4Wh
Flight Time	45 minutes (camera gimbal attached, no camera gimbal attached)
Working Temperature	-10℃~ +40℃

• Network RTK (mobile data network service card must be purchased by yourself)

Use frequency band	GPS: L1 /L2/L5 GLONASS:F1/F2 BeiDou: B1/B2/B3 Galileo:E1/E5
Positioning Accuracy	Horizontal: 1cm+1ppm; Vertical: 2cm+1ppm 1ppm: For every 1km increase, the accuracy becomes 1mm worse
Positioning update rate	1000Hz
Cold start	< 45s
Hot Start	< 10s
Recapture	< 1s
Initialization reliability	> 99.9%
Differential data transmission format	RTCM 2.X/3.X
Communication distance	Unlimited distance (with network signal)
Working temperature	0°C to 45°C

· Downward Altimetry LIDAR

Velocity Range	Flight speed <18km / h (height 2 m, sufficient light)
Height Measurement Range	≤ 12m
Hover Accuracy Range	±0.1m
Frequency	100Hz

• Forward Obstacle Avoidance LIDAR

Obstacle detecting range	12m
FOV	Horizontal 30°; vertical ±2.4°
Frequency	100Hz

• Gimbal

Input Voltage	12V
Stabilization System	3 axis (Pitch, Yaw, Roll)
Controllable Range	Pitch: -90° to +30°
Max Controllable Speed	Pitch: 30 °/s; Roll: Direct angle control
Controllable Accuracy	Static: ±0.01°; Motion: ±0.02°; Shake-proof: ±0.01°

• Camera

Sensor	SONY: 1 inch SONY back-illuminated CMOS
Lens	FOV85°; 9mm equivalent focal length; f/3.5 aperture
Photographing	21 million pixels
Video recording	6K(5480*3648)@25fps 4K(3860*2160)@25fps/30fps/60fps
Zoom	25X digital zoom
Video encoding	H.264, H.265
Support filesystem format	exFat
Video format	MP4
Picture format	JPG
Support Memory Card Type	Support memory card type: Micro SD card, maximum support 512G, Micro SD card with transmission speed of Class10 or above or UHS-1 rating

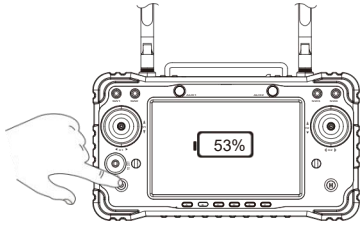
• Remote Controller

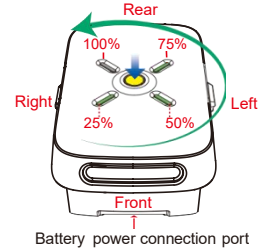
Model No.	H16
Working voltage	4.2V
Frequency	2.400-2.483GHz
Size	272*183*94mm
Endurance	6-20 Hrs
Channels	16
RF Power	20DB@CE/23DB@FCC
Frequency hopping	Newest FHSS
Weight	1034g
Battery	20000mAh
Charging port	Type-C
Update way	APP Update online

4.0 Check Battery Level

Remote control battery:
Shortly press the power button once under the condition of the remote control shutdown, the display screen will display the power of the remote control battery.

Aircraft battery :
Short press the power button once and the power indicator is always on (showing power). Repeat this operation to turn off the flight battery power indicator.



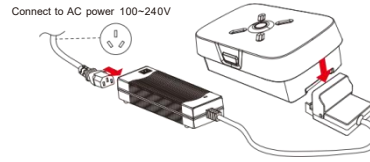


Battery power connection port

5.0 Charging

5.1 Charging the aircraft battery

Connect the charger power cable, charger, and aircraft battery as shown in the figure.



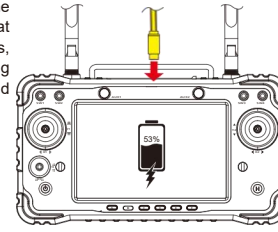
Charging operation steps:

1) After connecting the battery and the charger, the red light of the charger indicator lights up, and the battery starts to charge.

2) After the charger is fully charged and the green light of the charger is on, please remove the battery from the charger.

5.2 Charge the remote control battery

Tip: This controller uses a built-in integrated rechargeable lithium battery, compatible with the market standard Type-c interface, please use the original charger or use a USB charger that meets the QC3.0 protocol (such as a USB charger for digital products such as mobilephones, cameras and other digital products) for charging. If there is smoke, odor, or leakage during the charging of the remote control, please do not continue to charge the remote control, and please transfer it to our company for repair.

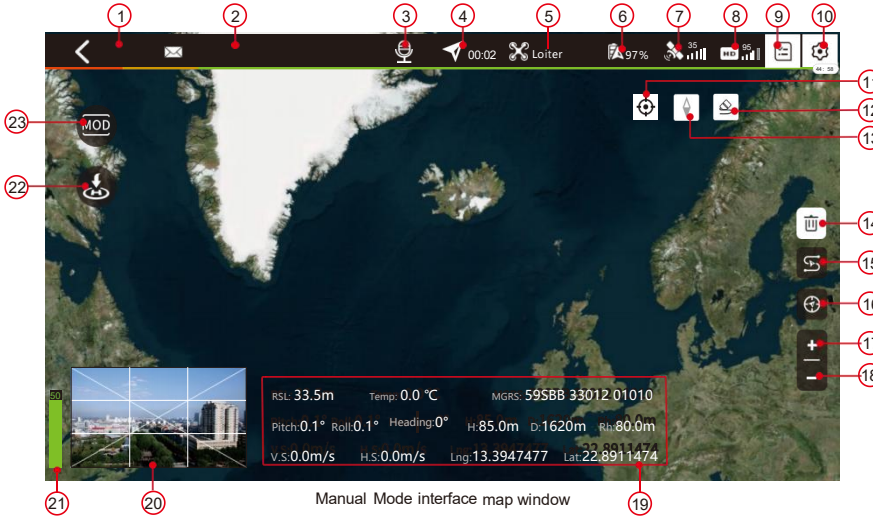


⚠Warnings

- **Do not charge the product in the area where babies touch, to avoid the risk of electric shock.**
- **Do not charge this product in an environment exceeding 60°C.**

6.0 DMRGCS App Interface Introduction

In this interface, you can preview the real-time high-definition video and photos taken by D313, as well as dynamically set up parameters such as aircraft, remote control, gimbal and batteries.



Manual Mode interface map window

1) Return: Return to the main interface.

2) Notification information: click the icon to view the notification list.

3) Megapone Status: Audio broadcast function settings (must be installed with audio broadcast module) click the icon to display the status of the megapone(audio broadcasting device), and after enabling the audio broadcasting function, you can choose

to play the audio file in mp3 format; you can also select the voice broadcast text. The voice broadcast text can choose the text broadcast mode of different languages, enter the corresponding language text for broadcast, and you can also choose to broadcast in different dialects in Chinese mode.

4) **Flight time:** Display the current flight time of the aircraft.

5) **Flight mode:** Show the current flight mode of the aircraft.

6) **Aircraft battery information:** Displays the current voltage and percentage of the aircraft battery. click the icon to see more battery information.

7) **GPS (Satellite Positioning Signal) Status:** Shows the strength of the GPS satellite positioning signal. Click on the icon to view a more specific GPS status.

8) **HD image transmission signal strength:** Display the strength of the video signal transmitted between the aircraft and the remote control.

9) **Task list:** Click on the icon to expand the route flight mission list, which can be used for task management.

10) **Setings:** Click on the icon to open the menu: there are general setting, fly safe setting, battery informaation, sensor setting, RC setting, Network RTK setting,Beacon RTK setting, live Url setting, Drone serial, advanced settings.

11) **Location switching:** Click on the icon to select the location of the aircraft or the location of the remote control or Home point.
Click the icon "", which will show the location of the aircraft at the map interface (previous condition: the aircraft GPS is normal and the connection with the remote control is normal);
Click the icon"", at the map interface will show the location of the remote control or return point (Previous condition: Normal aircraft GPS, Normal connection with the remote control, the remote control is connected to the network).

12) **Erase the flight trajectory:** Erase the flight trajectory in the map interface.

13) **Map lock:** click on the icon lock or Unlock the North (North on the above, South on the below, West on the left , East on the right); " " to lock the north-south state); " " to unlock the map state;

14) **Clear Waypoints:** clear waypoints that have been raised to the aircraft.

15) **Display or concealment of trajectories:** Click on the icon to display or hide the trajectory of flight on the map window.

16) **Map follows the aircraft:** Lights up the icon map to follow the movement of the aircraft, and the aircraft is always in the center of the map.

17) **Zoom in:** Click on the icon to enlarge the map.

18) **Narrowing:** Click on the icon to narrow the map.

19) **Flight status parameters**:
RSL is Altitude: show the current real-time aircraft altitude.
Temp is Temperature Display: Real-time display of aircraft battery temperature.
MGRS is Military Geographic Coordinate System: displays the military geographic coordinates of the current location of the aircraft.
Pitch is dive angle: the angle of the front and rear tilt of the aircraft.
Roll is roll angle: The aircraft left and right tilt angle.
Heading is heading angle: The aircraft turns left and right.
H is relative altitude: The distance between the aircraft and the vertical direction of the HOME point.
D is distance: The distance between the current position of the aircraft and the horizontal direction of the HOME point.
R.H is the downward LIDAR measurement value: shows the real-time distance value (Height) of the object closest to the aircraft below the aircraft(Downward-facing LiDAR required).
V.S Vertical speed: The speed at which the aircraft moves (climbs) vertically.
H.S Horizontal speed: The speed at which the aircraft moves horizontally.
Lng is longitude: The longitude value of the aircraft's current position.
Lat is latitude: The latitude value of the aircraft's current position.

20) **Camera window thumbnail window:** Click this thumbnail window to expand the camera window to full screen, and the map interface window to shrink to the thumbnail window.

21) **Throttle value:** shows the current percentage value of throttle rudder.

22) **RTL Mode:** Click on this icon ,The aircraft will suspend all missions and automatically return to the return point landing.

23) **Intelligent Flight Function Icon:** Click the icon to expand the Intelligent Flight Mode selection interface, which has intelligent flight functions such as panoramic shooting and Guided(follow) mode.

24) **Map lock:** click on the icon lock or Unlock the North (North on the above, South on the below, West on the left , East on the right); " " to lock the north-south state); " " to unlock the map state.

25) **Erase the flight trajectory:** Erase the flight trajectory in the map interface.

26) **Map follows the aircraft:** Lights up the icon map to follow the movement of the aircraft, and the aircraft is always in the center of the map.

27) **Remote control stick mode:** Display the currently set remote control stick mode.

28) **Mission setting:** Click on the icon to expand the mission setting menu, which contains the mission altitude setting, flight speed setting and margin setting.

29) **Camera settings:** light up the icon to expand the (mapping) camera settings menu, you can set camera parameters, heading overlap rate, side overlap rate, etc.

30) **Safety setting:** Click on the icon to start the flight safety setting menu, which contains the loose safe method settings,finish action settings, climb behavior and the RTL altitude settings.

31) **History:** Light the icon to expand the task history list.

32) **Unfinished tasks:** Light the icon to expand the list ofc unfinished tasks.

33) **Task Plan:** Click on the icon to expand the list of saved mission plans.
Light the icon to expand the list of saved task plans.
Click the icon "移" to display all task plans;

Click the icon " " to select and display all polygon route task plans;

Click the icon " " to select and display all airstrip scanning task plans;

Click the icon " " to select and display all waypoint flight mission plans;

Click the icon " " to delete all scheduled tasks displayed in the schedule table;

Click on any plan name in the plan list to load the plan line to the map window interface.

34) Start mission route flight: Click on the icon to start mission route flight.

35) Save Mission Route: Click the icon to save the current mission route to the schedule list.

36) Parameters of mission route: Displays the specific parameters of the currently selected mission route.

37) Camera window icon: Click the icon to expand the camera window thumbnail window, click the camera window thumbnail window to expand the camera window to the full screen, and the map interface window to shrink to the thumbnail window.

38) Import routes: Click on the icon " " to open the KML format route file to save the location.

39) Route editing: Route editing: Click on the icon to expand or put away the route editing function icon.

Add waypoint: Lit the icon and then click on the map to add waypoints.

Route type selection: Click the icon to expand the route type icon.

The icon " " is type-polygon routes. type-polygon routes are subdivided into Two types:

The icon " " is square type-polygon route;

The icon " " is circular type-polygon route;

The icon " " is type-corridor route;

The icon " " is type-line route.

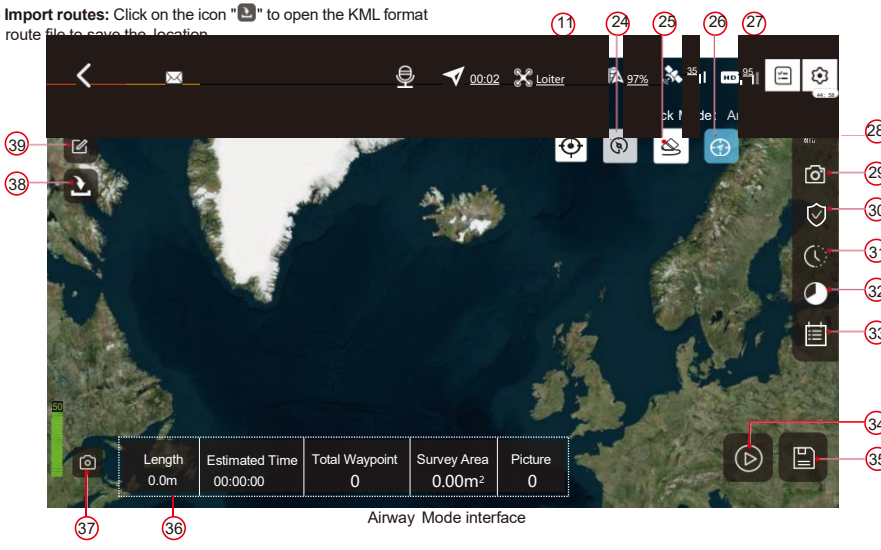
Gesture operation (adjusted route): Click on the icon to activate the gesture operation, and click on the icon again to exit the gesture operation route modification:

Two fingers doing rotating gesture action at the map interface can modify the angle of the type-polygon route;

Two fingers doing a gesture reduction action at the map interface can modify the width of the type-corridor route;

Single finger makes a downward gesture move at the map interface to exit the gesture operation.

Click on this icon " " to open the gesture operation reminder.



Airway Mode interface

40) Preview resolution: Display the resolution of the current preview image.(ie image transmission).

41) Exposure Value: Displays the current exposure value of the aircraft camera.

42) Camera MicroSD card information: Real-time display of the current aircraft camera MicroSD card capacity information.

43) Remote control stick mode: Display the currently set remote control stick mode.

44) Camera working mode switching: Every time you click on the icon, the camera working mode will be switched between the photo and the video.

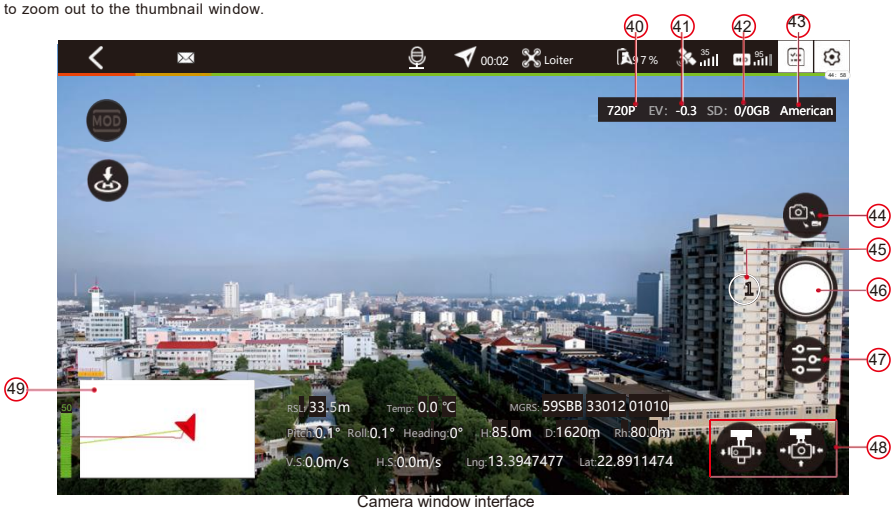
45) Camera screen preview magnification: Click the icon to expand the digital zoom magnification adjustment slider, the maximum preview magnification is 25 times.

46) Photographing/Video: Every time this icon is clicked in the photo mode, a camera will be taken; click on this icon in the video mode, The camera will start recording and click on this icon again, The camera will stop and save the video.

47) Camera settings: Click on this icon to expand the camera setting interface, which includes professional settings, photo settings, video settings and other settings.

48) Gimbal quick operation icon: clickon the icon ,the camera will back to horizontal forward. click on the icon ,the camera will be adjusted for Straight down.

49) Map Thumbnail Window: Click this thumbnail window to expand the map interface window to full screen, and the camera window to zoom out to the thumbnail window.



Camera window interface

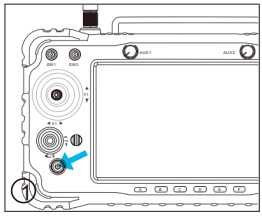
7.0 Prepare the Remote Control

- **Be sure to check whether the remote control has sufficient power before use.**
- **Before use, please check whether the antenna is placed as required, and the best effect has been obtained.**
- **For the first use, please make sure that the firmware has been upgraded to the latest version.**

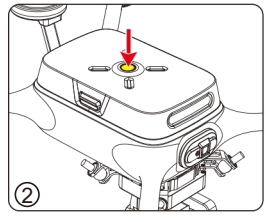
Position the antennas so that the two antennas are parallel to each other and vertically upward; the antenna cannot be parallel to the remote control.

8.0 Prepare for Flight

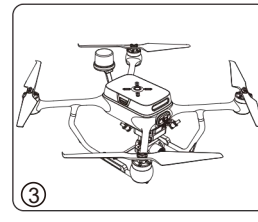
8.1 Startup and connection of aircraft and remote control



1) Press and hold the power button to turn on the remote control.



2) Press the power button once, and then press and hold the power on button for 3~5 seconds to turn on the aircraft.



3) Put the aircraft at a horizontal position at a stationary position, when all the aircraft's heading lights change from flash to slow flash and the buzzer stops to make a sound that the aircraft is connected to the remote control.

Tip: When connecting to the frequency, if all the direction lights of the aircraft keep flashing rapidly, it means the aircraft is abnormal, please check the notification message on the remote control APP.

8.2 Remote control connection network

The remote control can be networked in four ways:

1) Connect to 5GHz wifi networking (this remote control only supports WiFi in the 5GHz band).

2) Network cable is used through the WAN port of the remote control.

3) Connect the wireless card tray through the OTG port of the remote control to access the Internet.

4) Share the network through the phone Bluetooth.

Tips: When the remote controller is used with AC50 Mini automatic airport, the remote controller can access the network through AC50 Mini automatic airport.

1) The remote control is connected to the network by connecting the AC50 Mini automatic airport wifi hotspot.

2) The remote control is connected to the AC50 Mini automatic airport access network via network cable. (One end of the network cable is connected to the WAN network port of the remote controller, and the other end is connected to the network interface LAN1 or network interface LAN2 of the AC50 Mini automatic airport)

8.3 Run DMRGCS App and download map

1) Click the DMRGCS icon on the main page of the remote control system.

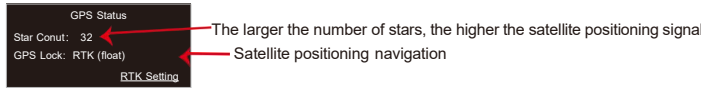
2) Click the icon " " in the upper right corner of the main interface of the App to enter the offline map management interface → drag and zoom the map with two fingers on the screen, place the map area to be downloaded in the yellow box, and then click "Download" to download the map of this area. offline map;

3) After the download is complete, click the icon < in the upper left corner of the APP to return to the main interface → select the flight mode: For ordinary flights, aerial photography, etc., please click " Manual Mode" on the left to enter the ordinary flight interface; For waypoint flight, route flight, and surveying and mapping operations, please click "Airway Mode" route flight interface on the right.

The following diagram takes Manual Mode (ordinary flight) as an example.

8.4 GPS(Satellite Positioning Signal) Status Description

Click the GPS (Satellite Positioning Signal) status icon on the status bar at the top of the remote control APP to expand the GPS (Satellite Positioning Signal) status pop-up window to view the GPS (Satellite Positioning Signal) status parameters. the larger the number of satellites, the stronger the signal of the current satellite positioning and navigation system.



8.5 Motor Unlock/Lock

Unlock the motor

After the aircraft is successfully connected to the remote controller, put the left and right joysticks at the lowest position simultaneously and hold until the motor rotates. Once unlocked, the motor will rotate. then , quickly release the stickers.

Motor locking

After the aircraft lands on the ground, pull the throttle stick to the lowest position and keep it still for 2s, the motor stops operating.

Throttle stick

9.0 Flight control

1) Confirm the receipt of GPS satellite positioning signal (check the status in combination with the APP interface).
2) Please switch the flight mode before takeoff (combine the APP interface to view the current flight mode).
3) Please unlock the motor before takeoff.
4) When used with AC50 Mini automatic airport, confirm that the automatic airport covers are open and the Correction mechanisms are open.

9.1 Takeoff

Perform a combination stick as shown in the figure below to start the motor, and then slowly push the throttle stick upward to take off the aircraft.

Throttle stick

9.2 Landing

Slowly pull down the throttle stick until the aircraft lands on the ground. After the aircraft lands on the ground, pull the throttle stick to the lowest position and hold it for more than 2 seconds, and the motor will stop rotating.

Throttle stick

9.3 Loiter Mode(GPS Mode)

After GPS positioning ,turn the 3-position switch SW2 of the remote controller at the midpoint position, and return the throttle stick to the center, and the aircraft will enter the Loiter mode.

Attentions:

1) In Loiter mode(GPS mode), altitude holding, location fixing and braking functions are available, and the flight speed is lower.
2) If the satellite positioning signal is poor or there is no satellite positioning signal, the aircraft will automatically switch to the attitude mode (Alt Hold Mode).
3) After switching to Alt Hold Mode(manual mode), location fixing is invalid.

Throttle stick

9.4 Sport Mode

When the GPS positioning status of the aircraft is normal, turn the 3-position switch SW2 of the remote control to the upper end, and the aircraft will enter the Sport mode.

Attentions:

1) In the Sport Mode, there are Altitude hold, fixed point, brake function, the flight speed is faster.
2) If the satellite positioning signal is poor or there is no satellite positioning signal, the aircraft wil automatically switch to the attitude mode (AltHold Mode).
3) After switching to Alt Hold Mode(manual mode), location fixing is invalid.

9.5 Alt Hold Mode(Manual Mode)

Turn the 3-position switch SW2 of the remote controller to the lower end, and the aircraft will enter the Alt Hold Mode(Manual Mode) to fly.

Attentions:
In the attitude mode, the flight attitude is completely controlled by manually, there is no height,fixed point function, the flight speed is fast, please use caution.

9.6 Auto mode (automatic cruise)

The aircraft can only enter the automatic cruise in the Loiter mode (The 3-position switch SW2 of the remote control turned at the midpoint position).

1) Route editing

First lit the icon " " at the map window of the APP Airway Mode interface; then lit the icon " " to select the route to be added; and then lit the icon" ",click on the map window to add the route; The last click the icon" " to save the route to the plan list or click the icon " " to start this directly Flight missions on the route.

2) Route flight

(1) Setting up the route parameters

Light the icon " " at the map window of the APP Airway Mode interface to list of the mission plan. → Click on the name of the mission plan route that requires operation on the plan list to load the plan route to the map window (such as Figure 10.6-1); → Lit the icon " " progress open mission settings, Set the mission altitude, the speed, the margin; Lit the icon " " to expand the camera settings, set the parameters of the surveying and mapping cameras; Lit the icon " " to expand the safety settings, set the disconnected protection method, complete the action, climb behavior, return height, etc.

(2)Execution route flight task

Click the icon " " in the lower right corner of the map window. → Click "Confirm" in the confirmation take-off point window. → Click the icon " " on the right side of the recommended scheme in the selection scheme bullet window or choose another option and click the icon " " on the right. → Click "Confirm" in the bullet window to confirm the selected plan → Click "Start Self-inspection" in the preparation of the flight bomb window → Click "Confirm" in the reminder window after confirming the safety of the surrounding environment. After the upload of the mission route is completed, the aircraft will begin to perform the flight mission of the route (such as Figure 10.6-2); after the mission is completed, the aircraft will automatically perform the set completion action.

Tip: On the execution route flight In the process, the remote control Rocker Unable to control the aircraft.

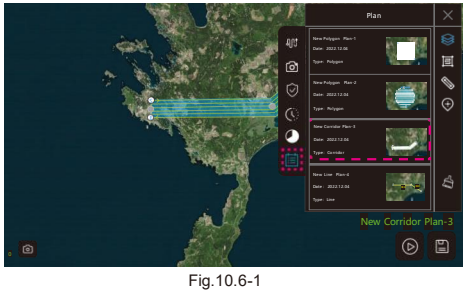


Fig.10.6-1

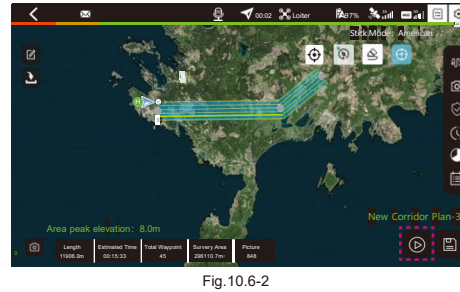


Fig.10.6-2

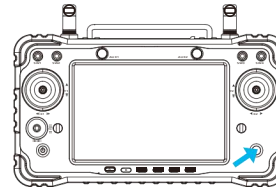
Note:

During the automatic cruise, please maintain the monitoring and control of the aircraft throughout the whole process, please grasp the flight attitude of the aircraft according to the information and data displayed on the screen of the remote control combined with the naked eye, and if the attitude of the aircraft is found to be abnormal, please stop the cruise operation in time and control the aircraft to land or return.

Suspension of automatic cruise operation steps:

First dial the 3-position switch SW2 of the remote controller to the upper end or lower end, then dial back to the midpoint position to make the aircraft hover. After stable hover, short press the RTL mode button in the lower right corner of the remote controller to make the aircraft enter the RTL mode or slowly pull down on the throttle stick to land the aircraft on the spot , During the landing, the stick was used to control the aircraft to avoid obstacles and make it land safely.

10.7 RTL Mode(Auto Return)



The aircraft is equipped with auto return function, and the auto return function triggering methods are mainly categorized into user -initiated triggering, aircraft low battery triggering, and uncontrolled triggering (loss of communication signals between the remote control and the aircraft). The aircraft has successfully recorded the Home point and in the case of good positioning service, when the auto return function is triggered, the aircraft will automatically fly back to the Home point and land.

Active Trigger: During the flight, short press the return(RTL mode)button in the lower right corner of the remote controller (as shown on the right) or click the return icon " " in the manual flight interface of the APP, and the aircraft will automatically enter the automatic RTL(return to home) mode;
After the return is completed, it will automatically exit the return mode.

Horizontal distance between aircraft and Home point >20m

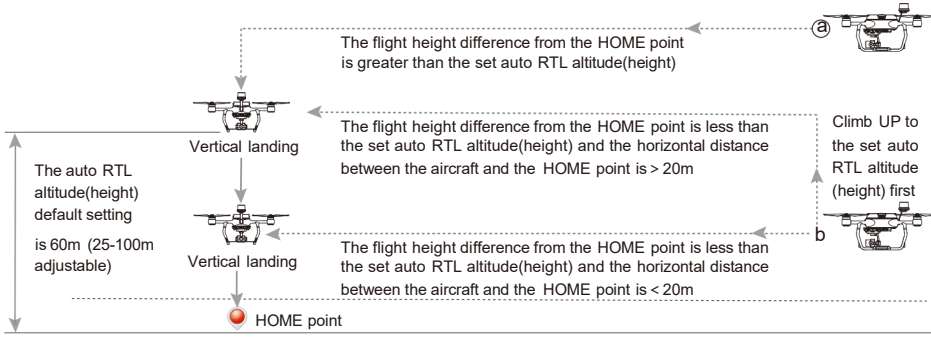
a. When the aircraft flight height is higher than the set RTL Height, the aircraft will maintain the current altitude and fly back horizontally to the top of the Home point , then landing vertically.

b. When the aircraft flight height is lower than the set RTL Height, he aircraft will climb vertically to the set RTL hight and fly back horizontally to the top of the Home point , and then landing vertically.

Horizontal distance between aircraft and Home point <20m

a. When the aircraft flight height is higher than the set RTL Height, the aircraft will maintain the current altitude and fly back horizontally to the top of the Home point , then landing vertically.

b. When the aircraft flight height is lower than the set RTL Height, the aircraft will maintain its current altitude and fly back horizontally to the top of the Home point , then landing vertically.



⚠ Notes:

1) The default setting of the RTL Height is 60m (25-100m isadjustable), pleaseset it according to the actual flight environment.

2) When using WK-AC50 Mini automatic airport, make sure that the automatic airport covers are open and the correction mechanisms are open before returning.

3) When the aircraft enters RTL mode(auto return home) flight, please do not perform any other operations.

4) When the aircraft loses the signal of the remote controller, it will automatically enter the runaway return.

5) When the GPS(satellite positioning) signal is abnormal or the GPS(satellite positioning) module is not working, the RTL mode(auto return home) flight cannot be realized, please manually control the landing.

6) During the the actively-triggered RTL mode(auto return home) flight process, you can press the RTL mode button again or or click the return icon " " which in the manual flight interface of the APP again to exit the RTL mode flight.

7) During the out-of-control return to home process,after the remote control communication signal returns to normal, the return flight process will continue, but it can be canceled by switching the 3-position switch SW2 to switch the flight mode.

8) If the aircraft is landing speed too fast when the height is lower than 15 meters during the return landing process, you must manually push up the throttle stick slightly to slow down the aircraft's descent speed to ensure the aircraft's safe landing.

11.0 End Flight

1) Manual landing, RTL mode landing or low voltage landing, lock the motor after landing on the ground.

2) Turn off the power of the aircraft first, and then turn off the power of the remote controller.

3) Take the flight battery out of the aircraft.

12.0 Gimbal Control

The three-axis stabilization gimbal provides a stable platform for the camera, so that the camera can capture stable images even when the aircraft is flying at high speed.

You can control the gimbal quickly back to horizontal forward or Straight down quickly through the App, or you can control the Pitch angle of the gimbal through the remote control small joystick X_3 , Y_3.

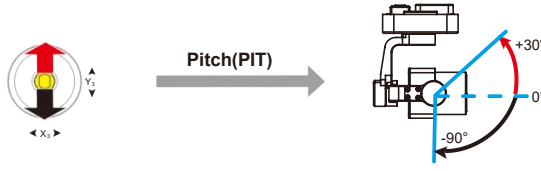
12.1 Back to horizontal forward/Straight down

Click the icon in the lower right corner of the camera view of the DMRGCS App Manual Mode interface to realize the camera gimbal to quickly back to horizontal forward (the camera lens viewing angle is facing the front of the aircraft);

Click the icon in the lower right corner of the camera view of the DMRGCS App Manual Mode interface to quickly adjusted for straight down (the camera lens viewing angle facing the aircraft directly below).

12.2 Adjustment of pitch angle

Adjust the tilt angle of the gimbal by toagling the small joystick X_3,Y_3 of the remote controller up or down.



Tips:
The radiance of the small joystick X_3,Y_3 pluck determines the speed of the gimbal rotation: the greater the irradiance of the pluck, the faster the gimbal rotation speed; The smaller the radiance of the dial, the slower the rotation speed of the gimbal; Back to the midpoint, the gimbal rotation speed is 0.

13.0 Camera Control

Video recording and taking photos can be controlled by the three-position switch SW1/SW4 of the remote control or operated in the interface camera window.

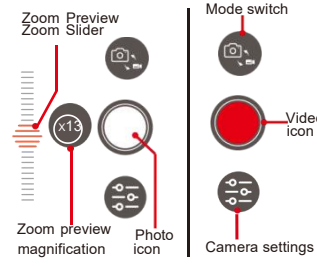
13.1 Take photos or videos in the camera window of the APP interface

Tips: The APP camera view has an aircraft return screen display, and it can be controlled by the touch screen.

(1) Select the working mode: click the camera working mode switch icon " " to switch between taking pictures or videos.

(2) Take a photo: click the photo icon " " to take a photo.

(3) Recording: click the recording icon " " to start recording. After recording, click the recording icon " " again to stop recording and save the recording to the aircraft microSD card.



13.2 The 3-position switch SW1/SW4 of remote control controls to take pictures or videos

(1) Recording: Toggle the 3-position switch SW1 in the upper left corner of the remote control once, the camera starts recording,toggle the 3-position switch SW1 again, the camera will stop recording and save the video.

(2) Take a photo: Toggle the 3-position switch SW4 in the upper left corner of the remote control once, and the camera will take a photo.

13.3 Zoom preview zoom adjustment

(1) Click the icon (x1) to expand the digital zoom magnification preview magnification adjustment slider ;

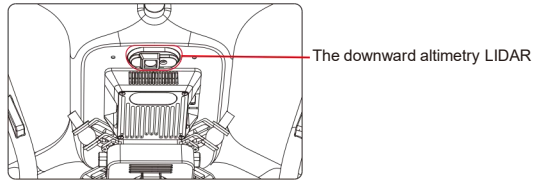
(2) Swipe up or down the icon , You can adjust the zoom preview magnification, and the preview magnification is up to 25x.

The camera zoom can only be previewed on the remote control monitor screen, and the zoomed image cannot be stored. If necessary, you can take a screenshot on the remote control and save it.

14.0 Additional Remarks

14.1 Downward Altimetry System

The downward altimetry system uses the downward altimetry LIDAR to transmit light pulses to detect the distance between the aircraft and the ground below to obtain the current altitude of the aircraft (the altitude can only be determined when the flight altitude is less than 3 meters).

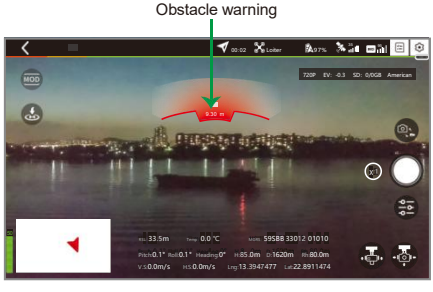


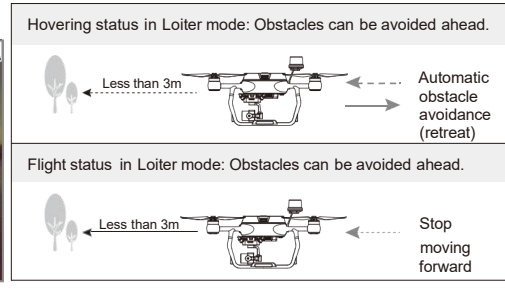
14.2 Forward Obstacle Avoidance System

Note: The automatic obstacle avoidance function is only available in Loiter mode(GPS mode).

Turn on automatic obstacle avoidance operation

First turn the 3-position switch SW2 of the remote control to the midpoint position, then click the icon " " in the upper right corner of the flight interface of the DMRGCS APP to expand the settings → click the icon " " to expand the flight safety settings menu → scroll down to find " Obstacle Avoidance Enable " , click the switch icon " " on the right to switch to the on state " " ; → click " " or " " under " Obstacle Avoidance Distance " to adjust the automatic obstacle avoidance trigger distance(adjustable range is 3 ~ 20m) → Click the icon " " on the right of the " Avoidance distance " to save the automatic obstacle avoidance trigger distance.





14.3 Compass calibration

NOTES

1) If there is a circle when hovering, or if there is a deviation from the course when flying in a straight line, please land in time to calibrate the compass.

2) Please perform calibration in an open place outdoors and away from strong electromagnetic field interference.(The motors must be locked when do calibration)

3) It is recommended to remove the propellers, camera gimba and other mounts before calibration, and then put them back on after calibration.

Enter compass calibration:

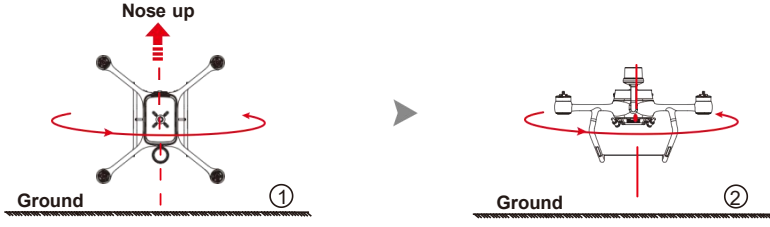
Method1: When the aircraft and the remote controller are connected, click the icon in the upper right corner of the flight interface of the DMRGCS APP to expand the setting pop-up window → light up the icon to expand the sensor setting menu → click " Calibrate Compass " on the right side of " Compass " → and thenclick the " Calibration " ,the aircraft status indicator flashes quickly to indicate that it has entered the compass calibration state.

Method2: Directly hold the nose of the aircraft vertically upwards for more than 6 seconds when the motor is locked, and the aircraft status indicator flashes quickly to indicate that it has entered the compass calibration state.

The compass calibration method is as follows:

1) Hold the aircraft nose vertically upward for more than 6 seconds, the aircraft indicator will flash rapidly, and then rotate the aircraft 720° in the horizontal direction, the aircraft indicator will turn off.

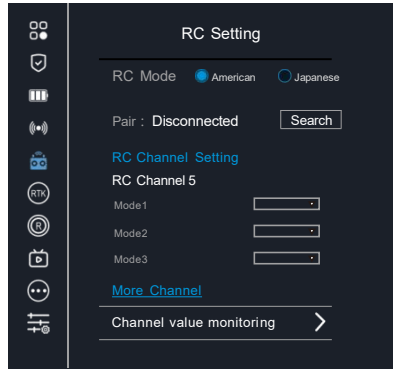
2) Lay the aircraft flat, then rotate the aircraft 720 degrees horizontally, the aircraft indicator will light up, then place the aircraft still in a horizontal position.



If the calibration is unsuccessful, please re-calibrate according to the above method.

14.4 Remote Control Joystick Mode Settings

First click the icon " " in the upper right corner of the flight interface of the DMRGCS APP to expand the setting pop-up window → then light the icon " " to expand the remote control setting menu → light the icon " " in front of the remote control mode option "American Hand" or "Japanese Hand" →Click "OK" in the pop-up window for confirming the change of hand shape →Click "Ok" in the pop-up window for the successful setting.

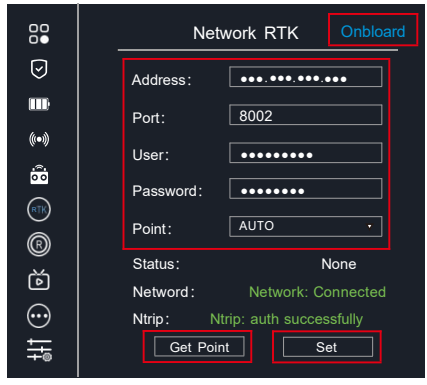


14.5 Network RTK Settings

Notice:
Purchase a network RTK service account from a local network RTK operator efore setting up.

1) Onboard Network RTK Setings (the factory default setting of network RTK mode is airborne mode)

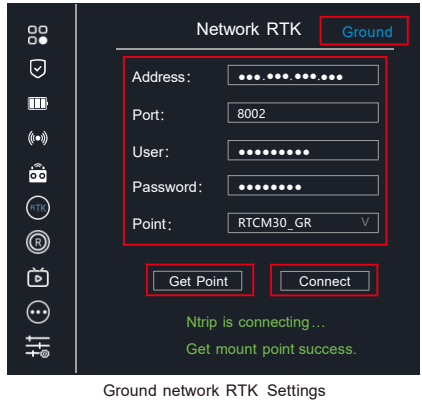
Install a valid mobile data card on the aircraft, click the icon " " in the upper right corner of the DMRGCS APP Manual Mode interface or Airway Mode interface to expand the setting pop-up window → light the icon " " to expand the RTK setting menu, and check the network RTK title on the right RTK mode Whether it has been set to " Onbord ", if it is displayed as " Ground ",please click " Ground " to switch it to " Onboard " → Then enter the server address, port (input 8001 or 8002), user name, password → then click " Get Point " to get the mount point → Click " Set " after the mount point is obtained successfully.



Onboard network RTK Settings

2) Ground Network RTK Setings:

When the remote controller is connected to the Internet, click the icon " " in the upper right corner of the manual flight interface or Airway Mode interface of the DMRGCS APP to expand the setting pop-up window → light the icon " " to expand the RTK setting menu, and check whether the RTK mode on the right side of the RTK title has been set to " Ground " , if the display is " Onboard ", please click " Onboard " to switch it to " Ground " → Check to make sure that the user name and password are correct → Then click Get Mount Click → Click " Connect " to connect the etwork RTK service after the mount point is obtained successfully.



Ground network RTK Settings

15.0 Instructions for safe use of battery

Improper use, charging or storage of the battery may result in fire or property damage and personal injury. Always use the battery in accordance with the following safety guidelines.

15.1 Battery use

1) DO NOT allow the batteries to come into any kind of liquid. DO NOT leave batteries out in the rain or near a source of moisture. DO NOT drop the battery into water. If the inside of the battery comes into water, chemical decomposition may occur, potentially resulting in the battery catching on fire, and may even lead to an explosion.

2) It is strictly forbidden to use a battery that is not officially supplied by DMR. If you need to replace the battery, please go to our official website for purchasing information. We are not responsible for battery accidents or flight failures caused by the use of batteries that are not officially provided by DMR.

3) Never use or charge swollen, leaky, or damaged batteries. If your batteries are abnormal,contact DMR or a DMR authorized dealer for further assistance.

4) Never install or remove the battery from the aircraft when it is turned on. DO NOT insert or remove batteries if the plastic cover has been torn or compromised in any way.

5) The battery should be used in temperatures from 0℃ to 40℃. Use of the battery in environments above 50℃ can lead to a fire or explosion. Use of battery below 0℃ the lifecycle of battery will be damaged.

6) DO NOT use the battery in strong electrostatic or electromagnetic environments. Otherwise,the battery control board may malfunction and cause a serious accident during flight.

7) Never disassemble or pierce the battery in any way or the battery may leak, catch fire, or explode.

8) Electrolytes in the battery is highly corrosive. If any electrolytes contacts with your skin or eyes, wash the affected area with fresh running water at least 15 minutes, and then see a doctor immediately.

9) DO NOT use the battery if it was involved in a crash or heavy impact.

10) If the battery falls into water with the aircraft during flight, take it out immediately and put it in a safe and open area. Maintain a safe distance from the battery until it is completely dry. Never use the battery again and dispose it properly.

11) DO NOT put batteries in a microwave oven or in a pressurized container.

12) DO NOT place loose battery cells on any conductive surface, such as a metal table.

13) DO NOT put the loose cells in a pocket, bag or drawer where they may short-circuit against other items or where the battery terminals could be pressed against each other.

14) DO NOT drop or strike batteries. DO NOT place heavy objects on the batteries or charger. Avoid dropping batteries.

15) Clean battery terminals with a clean, dry cloth.

15.2 Battery Storage

1) Do not expose the battery to sources such as open flames or heaters.

2) Keep the battery out of the reach of children.

3) Make sure the battery is stored at room temperature: around 25 degrees Celsius.

4) For batteries that are not used for a long time, please save the voltage between 22.2V and 22.8V.

5) When not in use for a long time, the battery storage state should be checked for abnormalities every two weeks, and the charge and discharge activation should be carried out every two months to maintain the activity of the battery.

Common fault diagnosis methods

Fault Description	Reasons	Solutions
Unable to take off normally	1. Disconnect the battery	Check the battery connections and reconnect
	2. Low voltage of battery	Check voltage, recharge
	3. Battery is damaged	Replace power battery
	4. Incorrect installation of propeller	Check the direction of propeller rotation and reinstall correctly
Unstable flight attitude	1. Propellers are damaged	Replace propeller
	2. Motor collision or damage	Replace motor
	3. Poor Satellite positioning(GPS) signal	Observe the surrounding environment to confirm if there is any interference source, choose an open and interference free place to fly
	4. Satellite positioning(GPS) module is damaged	Replace Satellite positioning(GPS) module
	5. Sensors Calibration errors	Recalibration of sensors (such as gyroscopes, accelerometers, compasses, etc.)
	6. Sensors damaged (such as gyroscopes, accelerometers, compasses, etc.)	Replace sensors or replace main controller
Image not connected	1. Transmission signal continuity abnormality	Restart the remote control and aircraft power
	2. The camera&gimbal is not installed in place, and the contact between the power strips and plugs is poor	Take out the camera&gimbal and reattach it properly in place
The camera cannot capture clear images or videos	Camera or lens malfunction	Repair or replacement camera

This device 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 device 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 device does cause harmful interference to radio or television reception, which can be determined by turning the device 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 device and receiver.

--Connect the device 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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

FCC Radiation Exposure Statement

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located for operating in conjunction with any other antenna or transmitter.

DRONE

mANUFACTURING +
RESEARCH

The schematic diagram in this manual is for reference only, and the actual product shall prevail.