SIYI

UniRC 7 Series Handheld Ground Station User Manual

SIYI Technology (Shenzhen) Co., Ltd.

siyi.biz/en

SIYI

Thank you for purchasing the products of SIYI Technology.

UniRC 7 is the high-performance professional handheld ground station built for unmanned aerial vehicles, vehicles, ships, etc. It integrates high-performance points and innovative designs such as 2.4G/5G dual frequency, 40KM remote control distance, 4K 30FPS decoding performance, transmission code rate as high as 65Mbps, AES encryption, 1600 nit 1080P HD highlight 7-inch screen, unique design of small rocker, six-gear flight mode key and quick-release belly support, with excellent performance and innovative design, it provides the ultimate experience for UAV control and promotes the industry control technology to a new height.

Considering flight safety and in order to bring you a good product experience, please consult the user manual carefully before installing the machine. This manual can help you solve most of your usage questions. You can also visit the product-related pages of SIYI Technology's official website (www.siyi.biz), call SIYI Technology's official after-sales service center (400-838-2918) or send an email to the support@siyi.biz to directly consult SIYI Technology Engineers about product-related knowledge and feedback product problems.

SIYI

Contact Us: **SIYI Official Website** *(https://siyi.biz/en)*

SIYI User Group - Facebook	
Facebook	
Linkedln	
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Manual Version Update Record

Version Number	Update Date	Update Content
1.0	2024.11	Initial version
1. 1	2024.11	Added some parameters and corrected some text errors
1. 2	2025.03	Modify certain known issues.
1. 3	2025.04	Delete the incorrect information

SIYI

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Reading Tips

Logo, icon

When reading the user manual, please pay special attention to the relevant contents marked as follows.

Hazards Dangerous operations likely to cause personal injury

Warning Operation warning that may cause personal injury

Be careful not to cause unnecessary property damage due to illegal operations.

Prohibitions **must implement** **precautions**

Security

UniRC 7 handheld ground station is designed and manufactured for professional application scenarios. Necessary debugging has been completed before leaving the factory. Please do not disassemble or change its structure. UniRC 7 handheld ground station has a precise structure. Operators need to have certain basic skills. Please use it

carefully. Any unnecessary product damage caused by the irregular and irresponsible operation of this product, causing economic losses or even personal injury to users or others, SIYI Technology does not assume any responsibility. Minors use this product must have a professional presence supervision and guidance. The products of SIYI Technology are designed for commercial scenarios and the use of SIYI products for military purposes is prohibited. Disassembly or modification of this product is prohibited without the permission of SIYI Technology.

In order to jointly maintain flight safety and allow you to better play the characteristics of this product, please pay special attention to the following matters:

 It is prohibited to use SIYI products to control aircraft, vehicles or models in crowded places (squares, parks, etc.), places with many obstacles (streets, parking lots, etc.), places with strong magnetic fields or signal interference sources (high-voltage lines, railway lines, radar stations, etc.) or other areas that may cause unnecessary economic losses or even personal injuries.

 When operating, never cover the GCS antenna or block signal transmission in other forms.

The top of the standard omnidirectional antenna on the  ground side is

the weakest part of the signal transmission. When working, avoid pointing it at your aircraft, vehicle, or model.

It is prohibited to use the product to control aircraft, vehicles or models when tired, drunk or unwell.

Without a special work permit, it is forbidden to use the product to control aircraft, vehicles or models in rainy, night or strong wind conditions.

When the engine and motor on your aircraft, vehicle or model are still running, you must not cut off the power supply on the ground in advance.

For flight safety, please keep the aircraft in view when operating the aircraft.

When you a job, be sure to return to the main page from the system parameter setting page.

Before starting the operation, please be sure to check the power supply voltage at the GCS and the air unit.

When the ends the operation, the air unit is powered off first, and then the GCS is powered off.

Before setting the GCS parameters, be sure to power off the engine and motor to prevent accidental start.

Before starting work, be sure to pre-set the runaway protection function on the ground side or in the ground station software.

Before starting operation, turn on the GCS and keep the throttle at the lowest position before supplying power to the air unit.

When the is installed, please avoid the air unit and the installation position of the GPS module too close to avoid interference. It is recommended that the distance between the air unit and the GPS module is greater than 20cm.

Battery

The UniRC 7 handheld ground station is equipped with a high-capacity rechargeable lithium-ion battery. Please pay special attention to the following items when using it:

Please do not charge the Ground Control Station without inserting the battery.

If you find that the battery is smoking, overheating or bulging, please stop using it immediately.

If you find smoke or odor on the ground, please stop using it

immediately and contact your agent or direct SIYI after-sales service center.

When the GCS is overheated (above 60 degrees Celsius), please stop using it immediately and power off.

Equipment idle, carrying, recycling

When the SIYI products you own are idle, or you want to carry SIYI products out of work, or the products have reached the end of their service life, please pay special attention to the following:

Danger

Swing products should be kept away from areas where children can easily touch when they are idle.

Please avoid placing SIYI products in an environment that is too hot (above 60 degrees Celsius) or too cold (below minus 20 degrees Celsius).

Attention

Please avoid placing SIYI products in wet or dusty environments.

Please avoid operations that may damage components such as vibration or impact when carrying and transporting SIYI products.

Chapter 1 Product Introduction

1.1 product characteristics

1. Intelligent dual-frequency image transmission, stable control of long-range horizon

UniRC 7 integrates a new generation of SIYI self-research graphics transmission technology, with 2.4/5G dual-frequency, dual-receiver and dual-transmitter design, and automatically selects the best channel according to environmental interference, making UniRC 7 have stronger anti-interference capability and the transmission distance can reach 40KM. The real-time transmission quality reaches 4K 30FPS in one channel and 1080P 60FPS in two channels, and has 65Mbps transmission rate and 170ms low delay transmission characteristics. The image data transmission may support AES encryption to ensure that communication data between endpoints is not intercepted.

2. gallop bravely, unbounded

Typical operation scene communication distance:

1）Plant protection flight altitude 3-6m communication distance: 3-6KM

2）Suburban flight altitude 120m, low occlusion, medium interference

communication distance: 10-15KM

3) Sea surface flying height 120m, no shelter, low interference communication distance: 30-40KM

3. "7" inch HD large screen, looking forward to shining every 1 frames

1) 7 inch large 1080P HD screen

2) 1600 nit highlighting

3) Adaptive screen brightness

UniRC 7 is equipped with a 7-inch high-definition large screen with an ultra-high screen ratio, providing 1600 nits high-brightness display, ensuring that the screen is still clearly visible in strong light or direct sunlight environment, and has the function of adaptive screen brightness according to link brightness, anti-glare for outdoor operations, and bringing ultra-clear visual experience.

4. Innovative small rocker design, the ultimate craftsmanship

1) Innovative new small rocker:

User-defined joystick control function, used to control the PTZ, etc., combined with the original 2 large joysticks, the control is more convenient and diverse

2) Innovative "quick release belly" design

It is convenient to hang the UniRC 7 back on the body, silicone material, soft fit, ergonomic design, improve the comfort of long-term operation, greatly reduce the burden of holding, and can focus more on control.

3) Unique antenna design

- GCS built-in dual antenna, external foldable detachable antenna (* built-in antenna is UniRC 7 PRO version configuration)
- UniRC 7 PRO air unit 4 antenna design, 2 can be quickly detached, 2 detachable, greatly improving the stability and convenience of image transmission in complex scenes

4) the ultimate process design, human interaction details

5 . Android 13 platform, high-end configuration

1) Qualcomm Snapdragon eight-core CPU
2) 4G operating memory +64G super capacity storage
3) 4K 30FPS decoding performance

UniRC 7 is equipped with Android 13 system, uses Qualcomm Xiaolong eight nuclear CPU, is equipped with 4GB of operating memory and 64GB of storage space, has 4K 30FPS video decoding capability, provides

smooth operation experience and powerful data processing capability, and meets multitasking requirements.

6 . Long battery life, longer flight

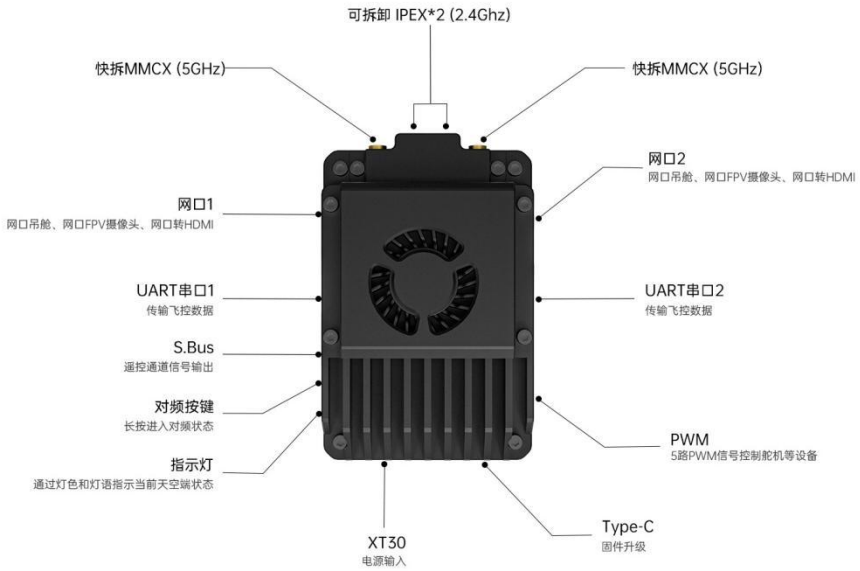
1) Endurance: UniRC 7 Endurance 11h(UniRC 7 Pro Endurance 8h)
2) Standard fast charge, support up to 30W PD fast charge
3) Start-up charging temperature control protection, over-temperature reduces charging power
4) Quick release battery design, easy to replace, especially suitable for continuous operation scene

7 . One machine dual control, flexible collaboration

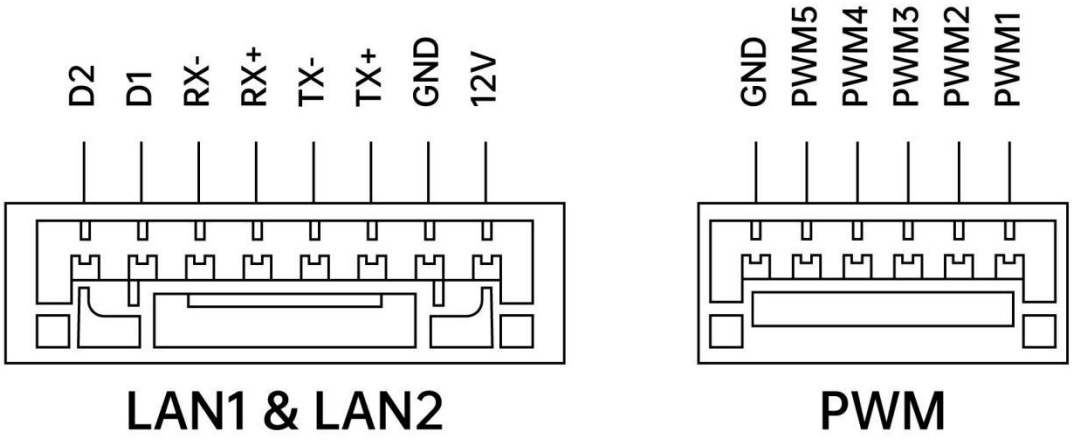
For multi-industry applications, relying on SIYI's self-developed wireless high-definition image transmission technology to give UniRC 7 links multi-channel interconnection characteristics, and according to the user's different operating scenarios, the introduction of a variety of solutions.

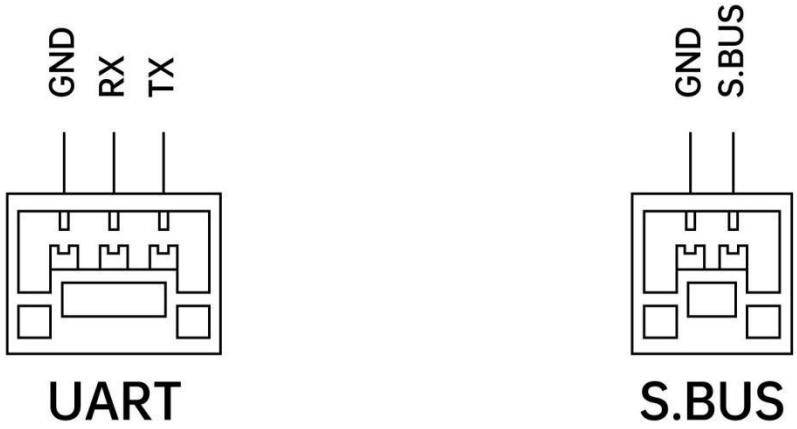
1.2 Component Description

1.2.1 Product Overview



1.2.2 Interface Definition





1.2.3 Key, switch type and channel definition

Channel Serial Number	Physical Channel Type	Default Physical Switch	Remarks
1	Aileron Rocker	J1	
2	Lift Joystick (US Hand)	J2	
3	Throttle Rocker (US Hand)	J3	

4	Directional Rocker	J4	
5	Left 3rd gear switch	SA	
6	Right 3rd gear switch	SB	
7	Left Top Button	S1	
8	Right top button	S2	
9	Left Back Button	S3	
10	Right Back Button	S4	PWM1
11	Mode button 1	M1	PWM2
12	Mode button 2	M2	PWM3
13	Mode button 3	M3	PWM4
14	Mode button 4	M4	PWM5
15	Mode button 5	M5	Searchlight PTZ pitch
16	Mode button 6	M6	Searchlight One key of PTZ to return to the middle
--	Small rocker left and right translation	J5	
--	Small remote sensing up and down	J6	

	translation		
--	Left function button 1	L1	
--	Left function button 2	L2	
--	Right function button 1	R1	
--	Right function button 2	R2	
--	Right function button 3	R3	
--	Left dial	LD	
--	Right dial	RD	
--		RSSI	

1.3 technical parameters

Overall Performance

Typical operation scenario Communication distance	Plant protection flight altitude 3-6m communication distance: 3-6KM Suburban flight altitude 120m, low occlusion, medium interference communication distance: 10-15KM Sea surface flying height 120m, no shelter, low interference communication distance: 30-40KM Parameters in this column are applicable to both UniRC 7 and UniRC 7 PRO

Working frequency of figure transmission	UniRC 7 Pro: 2.4015GHz - 2.4815 GHz 5.725GHz - 5.850 GHz UniRC 7: 2.4015GHz - 2.4815 GHz
Physical Channel	Key switch * 16, 3 gear switch * 2, large rocker * 2, small rocker * 1, pulsator * 2
Operating Temperature	-20℃ to 55℃

GCS

Display device	7-inch touch LCD display 1600 nits UniRC 7 Pro: 1920×1200 UniRC 7: 1280×800
Android system	Android 13
Storage	4GB RAM +64GB ROM * Expandable (via microSD memory card)
Wi-Fi	Wi-Fi 5
Bluetooth	BT 5.0
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS
Endurance	UniRC 7 Pro: 8 hours UniRC 7: 11 hours
Battery capacity	13400mAh
Charging mode	PD 30W

Digital transmission interface/SDK	UART/UDP, Bluetooth (data transmission), TYPE-C
Functional Interface	USB-A (default external U disk * only supports UniRC 7 Pro, can be set to serial port) Network port (GH1.25 4Pin * only supports UniRC 7 Pro) HDMI(* UniRC 7 Pro only) Type-C (charging, file transfer, upgrade) TF card slot SIM card slot
Antenna	UniRC 7 Pro : detachable foldable antenna * 2 + built-in antenna * 2 UniRC 7 : detachable foldable antenna * 2
Three-proofing characteristics	IP54
Overall size	274 (length) * 190 (width) * 100 (height) mm
Weight	UniRC 7 Pro : UniRC 7 : 1.46kg 1.44kg

air unit

Remote control signal output	16 channel S.Bus 5-channel PWM
Functional Interface	(GH1.25 6Pin) Digital transmission: UART * 2(GH1.25 3Pin) Image and data: network port * 2(GH1.25 8Pin) Power input: XT30 Firmware upgrade: Type-C data transmission: UART * 2(GH1.25 3Pin)
Antenna	UniRC 7 Pro: Quick release antenna (5G MMCX)* 2 + Detachable antenna (2.4G IPEX)* 2 UniRC 7:

	Removable antenna (2.4G IPEX)* 2
Supply voltage	7-76V
Dimensions (without antenna)	UniRC 7 Pro: 63 (length) * 40 (width) * 27 (height) mm UniRC 7: 57 (length) * 40 (width) * 28 (height) mm
Weight (without antenna)	UniRC 7 Pro : g 115 UniRC 7 : g 90
Average power consumption	UniRC 7 Pro : 8W UniRC 7 : 6W

1.4 List of items

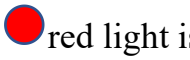
Standard Package

UniRC 7	**UniRC 7 PRO**
1 x UniRC 7 GCS 2 x 2.4G omnidirectional antenna	1 x UniRC 7 PRO GCS 2 x standard 2.4G omnidirectional antenna
1 x UniRC 7 air unit 2 x 2.4G omnidirectional antenna	1 x UniRC 7 PRO air unit 2 x 2.4G omnidirectional antenna 2 x 5G omnidirectional antenna
1 x PX4 / ArduPilot flight control digital transmission line 1 x S.Bus male connector 1 x PWM connection line	
1 x 30W PD fast charging head (Type-C, US gauge) 1 x PD fast charging data line (Type-C to Type-C) 1 x Type-C to USB-A adapter	
1 x storage box 2 x Quick-release belly rest	
1 x GCS strap	1 x GCS Strap

1.5 Status Indicator Definitions

The status indicator lights at the GCS and the air unit of the SIYI link flash with different colors and different flashes.
The frequency indicates different meanings.

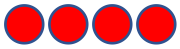
1.5.1 Definition of indicator light at GCS

 red light is always on: there is no communication between the GCS and the air unit

 Red light flash: on-frequency

 Red light slow flashing: firmware does not match

 red light three flashes: link initialization failed

 red light 4 flash: GCS rocker needs to be calibrated

 flashing red and green alternately: Android system shuts down unexpectedly

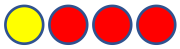
 Slow Flashing of Red, Green and Yellow Alternate: Image Transmission Starting

 yellow light flashes slowly: the ground terminal power supply voltage is abnormal.

 yellow light flashes: Bluetooth on the ground is not recognized

 yellow red: GCS temperature level 1 alarm

 yellow red: GCS temperature secondary alarm

 yellow red red: GCS temperature level 3 alarm

 The green light is always on and flashing: the faster the flashing speed, the worse the signal strength

 green light is always on: valid package 100%

 green light flashing (1Hz): effective package 99% ~ 95%

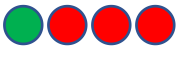
 green light flashing (interval 3/5 seconds): effective package 75% ~ 50%

 green light flashing (interval 3/10 seconds): effective package 50% ~ 25%

 green light flashing (1/25 second interval): valid packets less than 25%

 green red: air unit temperature level alarm

 green red: air unit temperature secondary alarm

 Green Red Red: air unit Temperature Level 3 Alarm

1.5.2 Sky-end Indicator Definition

 red light is always on: there is no communication between the GCS and the air unit

 Red light flash: on-frequency

 Red light slow flashing: firmware does not match

 red light three flashes: link initialization failed

 Slow Flashing of Red, Green and Yellow Alternate: Image Transmission Starting

 yellow light flashes: voltage alarm (input voltage is lower than 12V)

 The green light is always on and flashing: the faster the flashing speed, the worse the signal strength

 green light is always on: valid package 100%

 green light flashing (1Hz): effective package 99% ~ 95%

 green light flashing (interval 3/5 seconds): effective package 75% ~ 50%

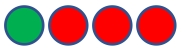
 green light flashing (interval 3/10 seconds): effective package 50% ~ 25%

 green light flashing (1/25 second interval): valid packets less than 25%

 green and red alternate flashing: start wireless frequency (power-on three times trigger)

 green red: air unit temperature level alarm

 green red: air unit temperature secondary alarm

 Green Red Red: air unit Temperature Level 3 Alarm

Chapter 2 Before Use

2.1 Ground Control Statioin (GCS)

2.1.1 Startup and shutdown

Boot:

In the shutdown state, short press the power button for about 1 second, the indicator light will be on, then long press the power button for about 2 seconds, and then the screen will be on to enter the working state.

Shutdown:

In the power-on state, press and hold the power button for about 2 seconds, and a pop-up window will appear on the system interface. Touch the shutdown icon to turn off the power of the ground station.

Attention

Forced shutdown: when the power is turned on, press the power button for about 8 seconds, and the power supply at the GCS will be forced to turn off.

Closed.

Note

Information screen: in the power-on state, press the power button for a short time, and the screen of the ground station will go out and enter the energy-saving state.

2.1.2 Charging

The UniRC 7 handheld ground station supports charging with the factory-standard 30W PD fast charger whether powered on or off. When charging while powered on, if the internal temperature becomes too high, the ground station will automatically reduce the charging power until the temperature decreases.

Use steps

1. Use Type-C fast charging line to connect the GCS with the standard 30W PD fast charging head of the original factory.
2. If the battery indicator is observed to flash in turn, it means that it is charging.
3. If the power indicator turns to the 4 light, it means that the charging is complete.

Attention

Please do not charge the Ground Control Station without inserting the battery.

2.1.3 Charging Indicator Definition

Note: ● indicates that it is always on; ○ indicates that it is off; ⊙ indicates that it is flashing

	The first light.	Second light	Third Light	Second fourth lamp
0-25%	⊙	○	○	○
26%-50%	●	⊙	○	○
51%-75%	●	●	⊙	○
76%-99%	●	●	●	⊙
100 percent	●	●	●	●

2.1.4 Switching System Language

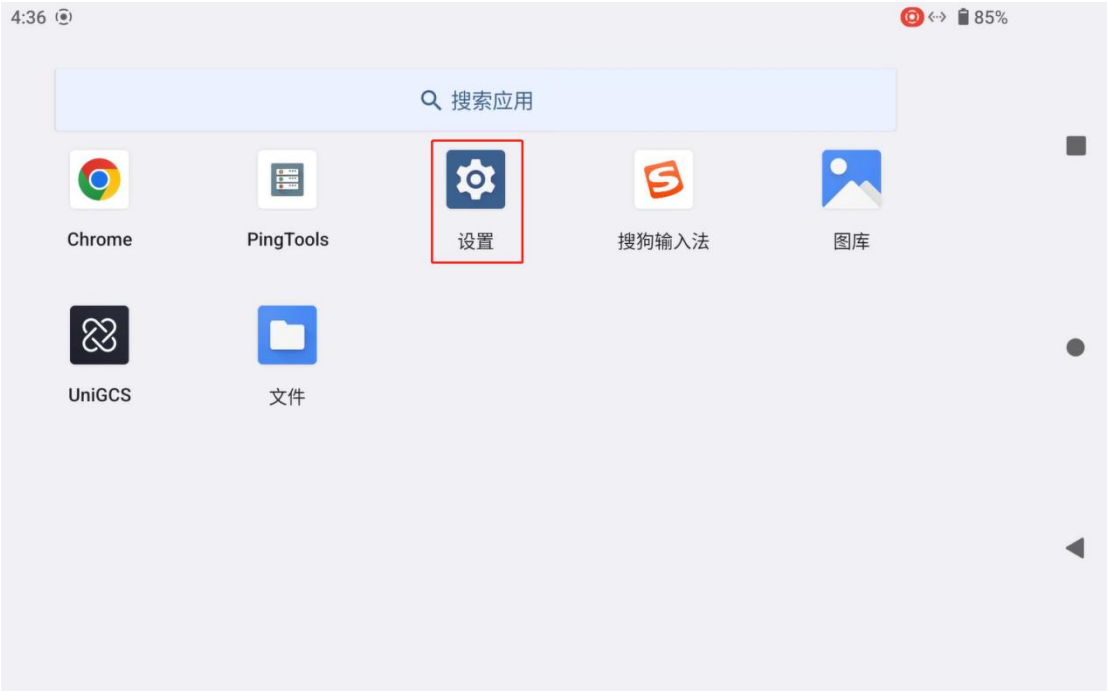
SIYI handheld ground station Android system supports almost all available languages and can be easily switched in the system settings menu.

Note

The default language for Android is Chinese (Simplified) ".

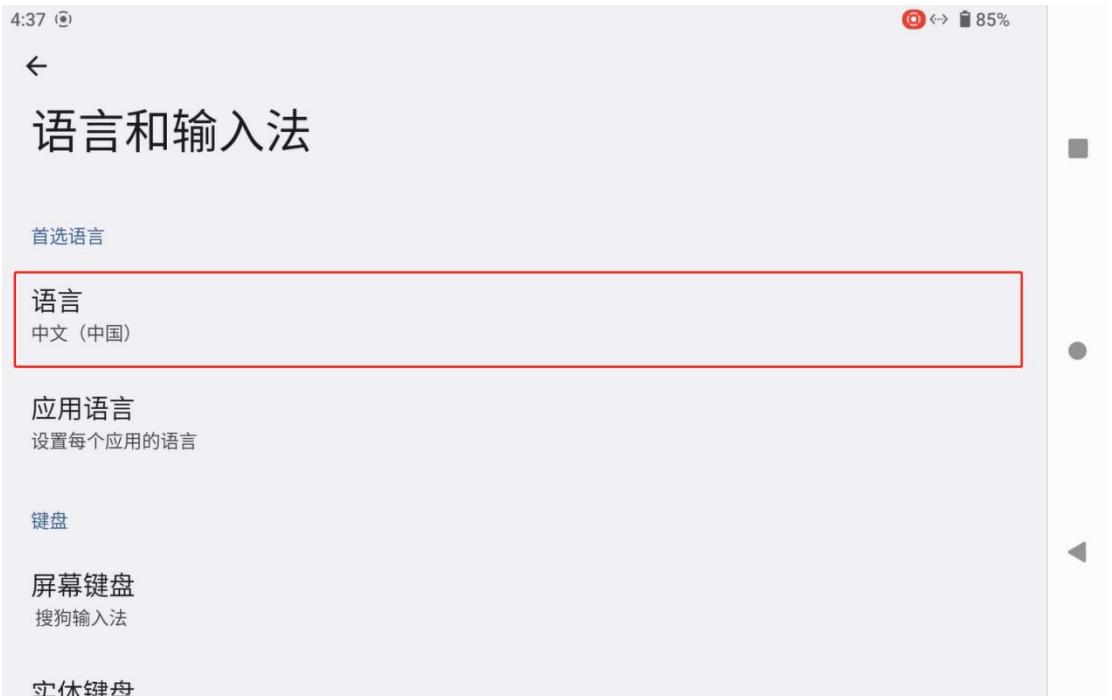
Steps

1. Enter the Android system settings menu.

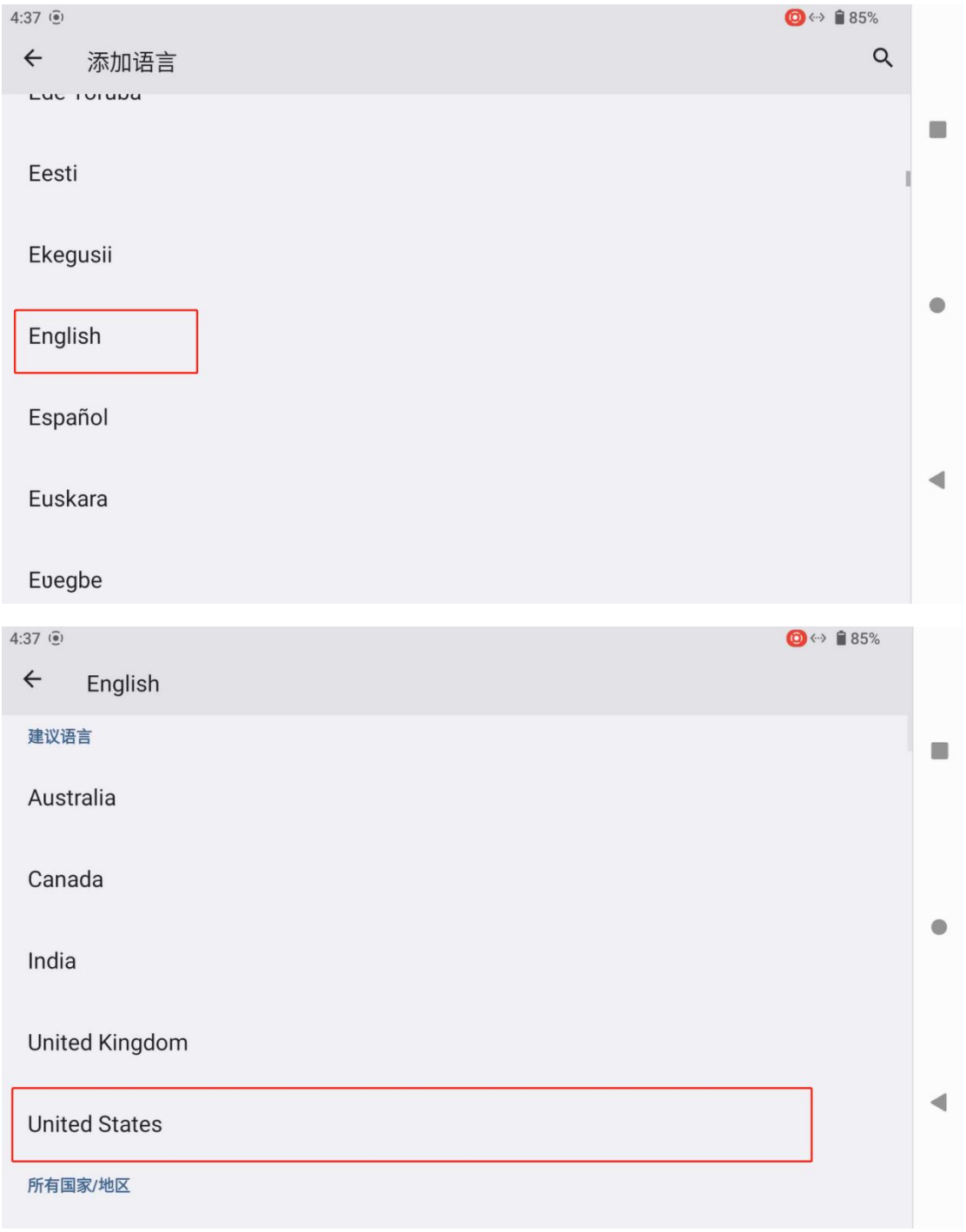


2. Go down the page to find the "System (Language, Time, Backup, Update)" menu and enter it.

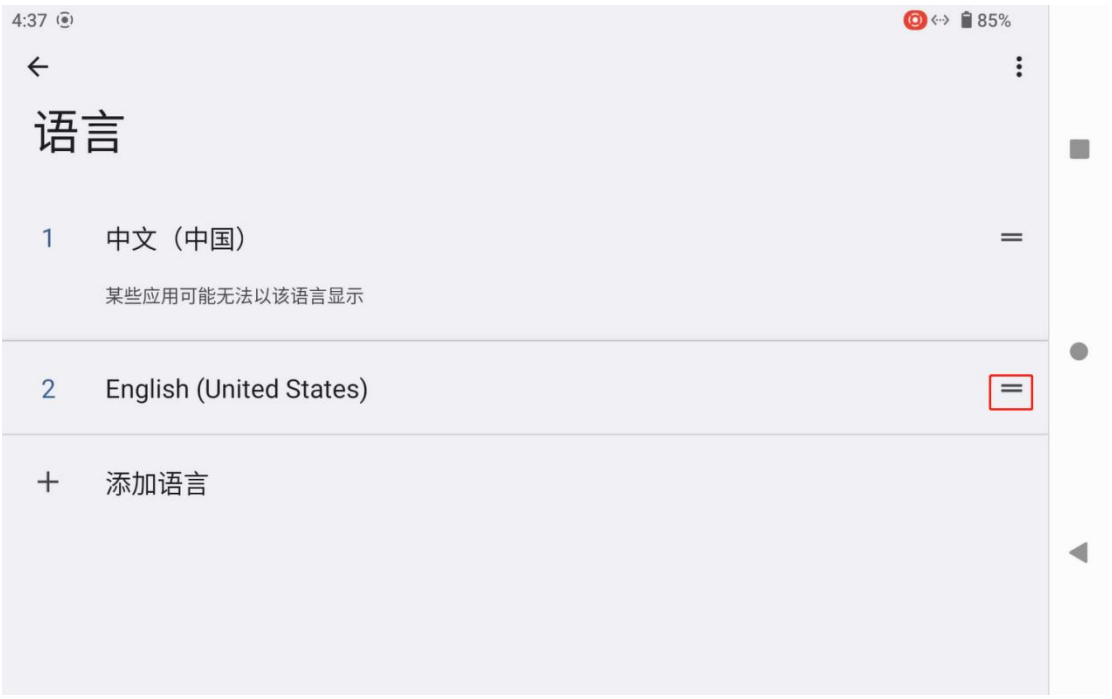
3. Then go to the "Language and Input Method" menu, select "Language" and then "Add Language".

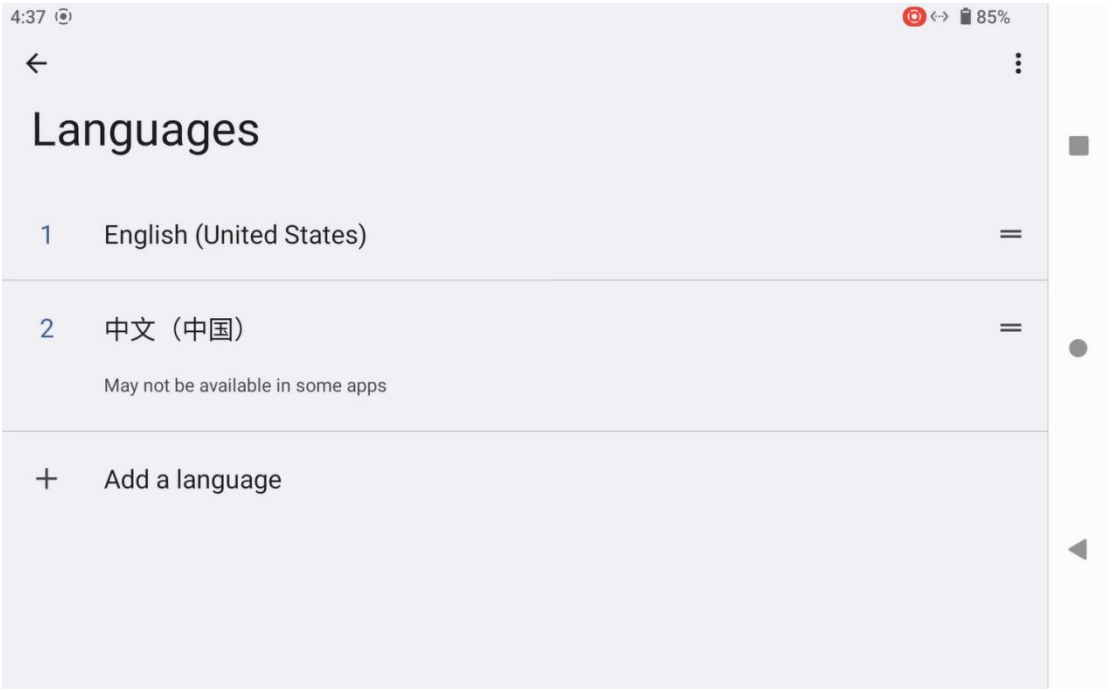


4. In American English, for example, slide down the page to find "English", then select "United States", the page will automatically jump back to "language and preferences".



5. Drag the newly added "English (United States)" language bar and draw the first sequence, the system language will automatically switch to American English.





2.2 to improve communication distance and video fluency important note

In order to achieve the maximum communication distance and video fluidity of the UniRC 7 link, please be sure to read this instruction

carefully and follow the instructions to install the antenna and set up the use of the link.

2.2.1 Precautions for use

1. UniGCS applications and RTSP streaming software such as QGroundControl should not be used to pull streams at the same time, and pulling streams running in the background will also occupy the bandwidth of image transmission and affect the distance;
2. Only the power battery is allowed to supply power to the interface at the air unit, because high-definition image transmission requires high current, instantaneous current response and ripple of the power supply. Do not modify the sky terminal without permission, otherwise the link stability and graph transmission distance may be affected.

2.2.2 Installation and placement of standard omnidirectional antenna at GCS

1. The SMA connector of the antenna must be tightened;
2. The antenna shall be placed upward perpendicular to the GCS operation panel, keeping the flat surface of the antenna always facing the aircraft, and the antenna shall not be stacked or crossed. Please refer to the following image transmission:

2.2.3 Installation and placement of standard omnidirectional antenna at air unit

1. The SMA connector of the antenna must be tightened;
2. The antenna MMCX and IPEX interface must be tightly inserted;
3. On a multi-rotor UAV, the standard omnidirectional antenna at the air unit should be installed vertically downward from the plane of the

fuselage; on a fixed-wing aircraft, the antenna can be installed vertically upward from the plane of the fuselage. Try to keep the flat surface of the antenna facing the ground in flight;

4. The antenna feeder wiring shall be far away from the equipment with large power current and serious electromagnetic interference, such as electrical adjustment and motor;
5. The standard feeder at the air unit shall not cross. The antenna body, feeder and SMA connector shall avoid direct contact with metal and carbon fiber structural parts and keep a distance of at least 10mm;
6. Try to avoid placing the 4 antennas at the air unit together, and the distance between each other shall be at least 50mm; In flight, the communication between the aircraft and the GCS shall be prevented from being blocked by obstacles;
7. The connection between the antenna feeder at the air unit and the connectors at both ends shall not be pulled or bent excessively, otherwise the antenna will be damaged; if the antenna angle or orientation needs to be adjusted, only the middle part of the feeder shall be bent as far as possible.

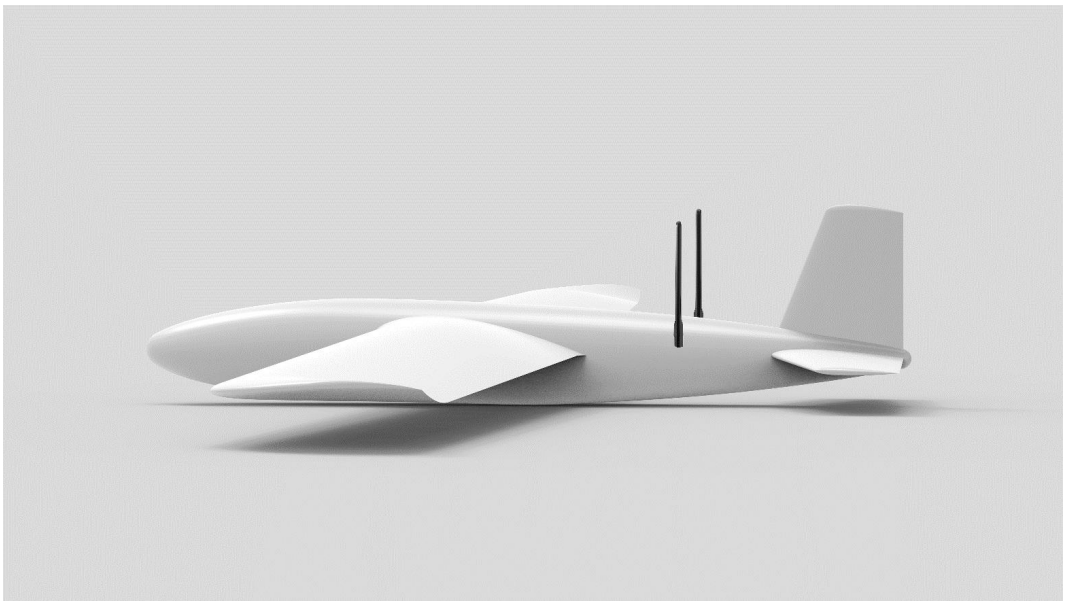
Attention

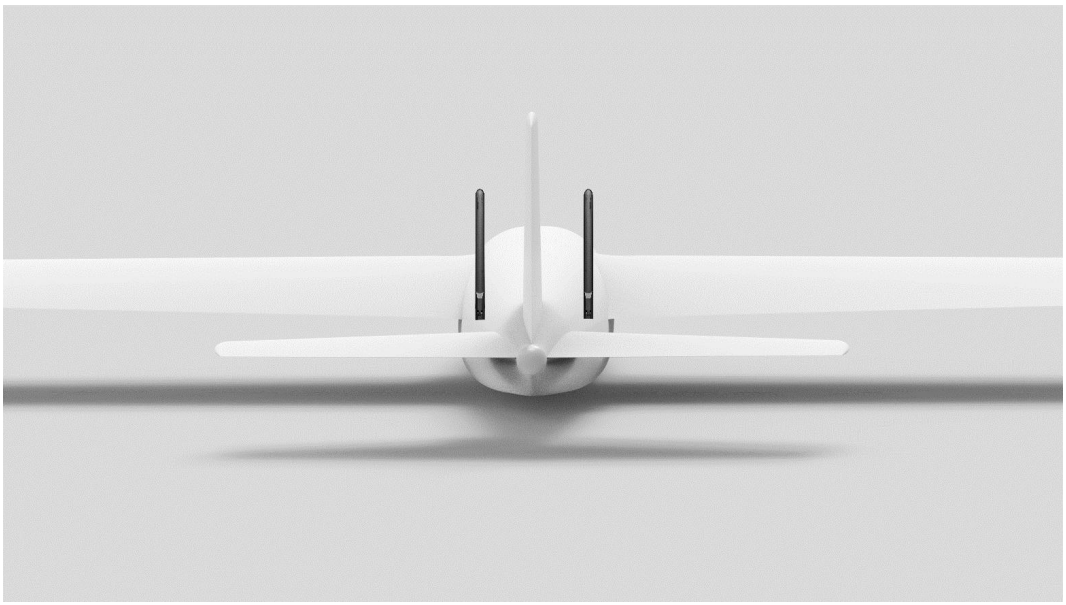
As shown in the figure below, for small and medium-sized multi-rotor UAVs, the air unit antenna should be placed vertically downward from

the arm to keep the flat surface of the antenna facing the direction of the GCS.

As shown in the figure below, for large multi-rotor UAVs, the air unit antenna should be placed perpendicular to the motor base to keep the flat surface of the antenna facing the direction of the GCS.

As shown in the figure below, for a fixed-wing aircraft, the antenna at the air unit can be placed perpendicular to the wing or vertical tail, and at the same time, try to keep the flat surface of the antenna facing the direction of the GCS.





2.2.4 Communication distance is not ideal, need the necessary information before the original technical support

1. The intuitive phenomenon that makes you think that distance is not enough.
   - Signal loss: image loss, GCS status indicator is red
   - Only image is missing (GCS status indicator is green)
2. The flight distance and flight height of the UAV when the above phenomena are observed
3. Flight test environment (provide photos or videos of the drone's flight direction)
4. Check the communication related software information:
   - Working Mode and Frequency Band of Image Transmission

   - GCS, air unit Firmware Version

- UniGCS application version

5. Check the hardware configuration related to communication

   - GCS antenna type, installation angle and service angle (photos provided)

- air unit antenna type, installation angle (photos provided)
- air unit power supply mode, power supply voltage? Is there a retrofit power module?

6. If the problem cannot be solved after checking the above information, please provide the flight test recording screen when the link information is opened in the UniGCS application when the distance is close to the limit.

Chapter 3 "UniGCS" Application

UniRC 7 supports "UniGCS" for display image transmission, data transmission, and parameter setting

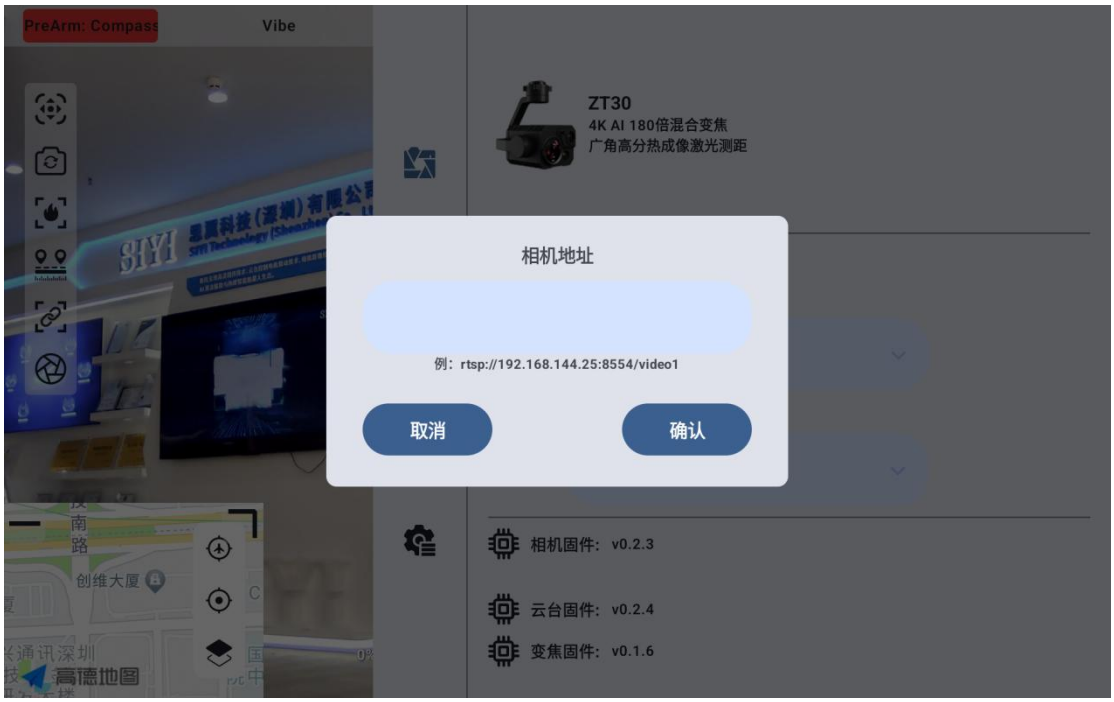
3.1 flight interface and map interface

3.2 gimbal settings

3.2.1 Connecting the gimbal

After connecting the cloud platform to the air unit network port, select the cloud platform used in Camera A or Camera B.

You can also choose to manually enter the rtsp address to connect



Note When two PTZ are connected at the same time, the IP address of one PTZ needs to be changed to the end of non -25. When connecting, choose to manually enter the rtsp address to connect

3.3 Remote Control Settings

3.3.1 Rocker Mode

UniRC 7 supports users to switch between "Japanese hand", "American hand" and "Chinese hand"

3.3.2 Remote Control Calibration

The remote control calibration function helps the user calibrate the neutral position and

the maximum limit of the hand-held ground station joystick and paddle wheel. Regularly calibrating the joystick helps maintain the accuracy of the joystick channel output.

3.3.2.1 Rocker calibration steps

1. Before carrying out the rocker calibration, please make sure that the left and right rockers of the hand-held ground station are naturally stationary and are not displaced due to external forces.
2. In the "Rocker Calibration" menu, click "Start Calibration" and enter the following interface:

3. According to the prompt, if the rocker has been naturally stationary but the output value of the rocker channel is not 0, it means that the neutral point of the rocker has been offset. Do not touch the joystick at this time and wait for the neutral point alignment to complete.
4. When the following prompt appears, it means that the neutral point calibration has been completed, and then the maximum limit is calibrated.

   According to the interface prompts, push each rocker to the maximum limit in each direction.

   On: 0,100

Next: 0,-100

Left:-100,0

Right: 100,0

Then click Finish Calibration ".

5. The "Stick Calibration" menu shows that the calibration was successful.

Note

When the joystick does not return to the midpoint when it is naturally stationary (the channel output value is not 0) or the maximum or minimum value (-100,100) cannot be output when it is pushed to the limit pole position, the joystick calibration should be carried out immediately.

3.3.2.2 Steps for calibration of the shift wheel

1. Before calibrating the dial wheel, please ensure that the left and right dial wheels of the hand-held ground station are naturally stationary and are not displaced due to external forces.
2. In the "Dial Wheel Calibration" menu, click "Start Calibration" and enter the following interface:

3. According to the prompt, if the dial wheel has been naturally stationary but the output value of the dial wheel channel is not 0, it means that the neutral point of the dial wheel has been offset. Do not touch the dial wheel at this time, and wait for the neutral point calibration to be completed.
4. When the following prompt appears, it means that the neutral point calibration has been completed, and then the maximum limit is calibrated.

   According to the interface prompts, push each wheel to the maximum limit in each direction.

Left:-100

Right: 100

5. "Dial Wheel Calibration" menu returns to the initial interface, and the calibration is completed.

3.3.3 Data transmission settings

The data transmission setting menu supports the user to identify the device number of the handheld ground station, set the data transmission connection mode and set the specific baud rate of the serial port.

3.3.3.1 About Data Transmission Settings

Equipment: Display the serial number of the Bluetooth module integrated in the handheld ground station, which will be identified as the corresponding Bluetooth name when the Bluetooth is matched, and the serial number is unique for each ground terminal.

Digital transmission 1: the data transmission connection mode of the equipment connected to the TELEM 1 port at the air unit.

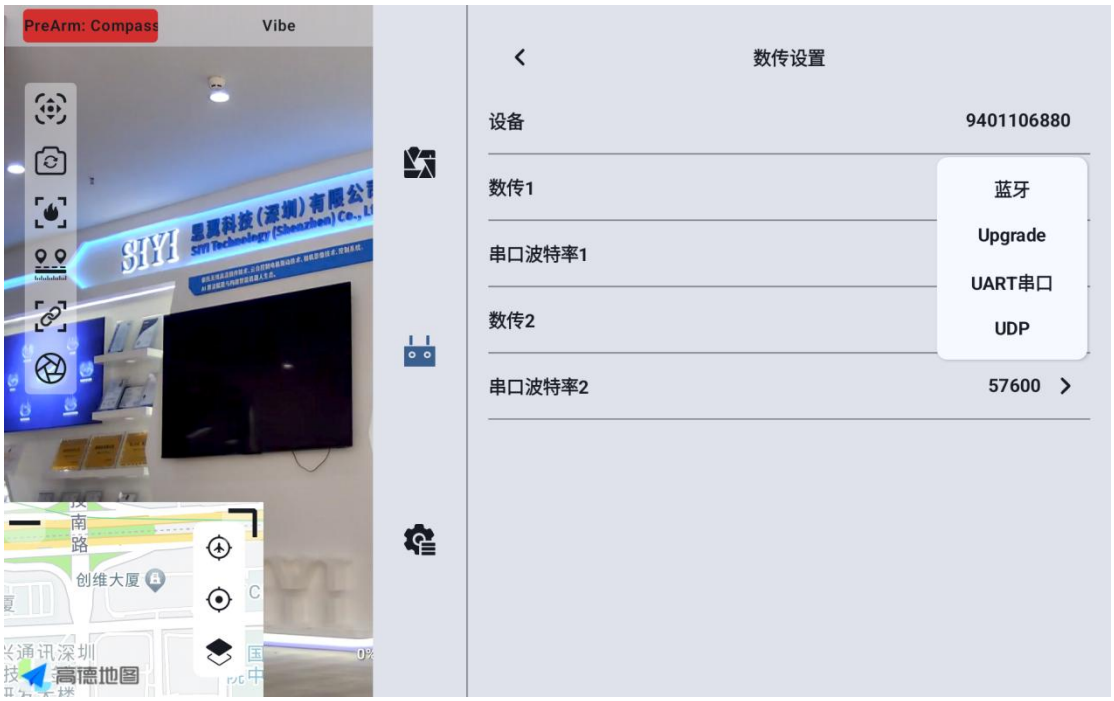
Serial port baud rate 1: The serial port baud rate corresponding to the device connected to the TELEM 1 port at the sky terminal shall be set.

Digital transmission 2: the data transmission connection mode of the equipment connected to the TELEM 1 port at the air unit.

Serial port baud rate 2: The serial port baud rate corresponding to the device connected to the TELEM 1 port at the sky terminal shall be set.

3.3.3.2 Connection

The optional data transmission connection modes of UniRC 7 handheld ground station are: Bluetooth, Upgrade, UART serial port and UDP.



UART serial port: data transmission communication is carried out through the UART serial port built into the ground terminal (developers refer to the data transmission SDK document in chapter 6 of this manual to develop and support this function for their own ground station).

Bluetooth: data transmission communication is carried out through the built-in Bluetooth wireless connection at the GCS (most ground station software is supported, and data transmission communication with external devices such as Windows ground station software is also supported.)

Upgrade: Establish data transmission communication with external

equipment such as Windows ground station software through the Type-C interface at the bottom of the handheld ground station.

UDP: Data transmission communication is carried out through UDP network protocol connection.

3.3.3.3 Serial Port Baud Rate

Please manually select the matching serial port baud rate setting.

Note

Before changing the baud rate of the serial port, please make sure that the ground terminal and the sky terminal have successfully used the frequency, otherwise the setting will not take effect.

3.3.4 Channel Settings

Through the channel setting function, users can set the stroke amount, neutral point, reverse direction of steering gear and channel mapping of

each channel of the hand-held ground station.

3.3.4.1 Steering gear stroke

The UniRC 7 handheld ground station has a default range of 1050 to 1950 strokes.

Select the target channel and enter the required stroke value to

successfully change it.

The median default channel stroke is 1500.

Select the target channel and enter the value of the desired neutral point change to successfully change it.

Note

The range of the median stroke amount is ± 500. If you want to set the neutral point to 1700, set the median stroke amount to +200. If you want to set the neutral point to 1300, set the median stroke amount to -200

3.3.4.2 Steering gear reverse

The servo reverse function is used to change the output direction of the channel stroke.

Select the target channel and click the corresponding steering gear

forward and reverse switch to successfully set the steering gear forward and reverse.

3.3.4.3 Channel Mapping

The UniRC 7 handheld ground station supports a total of 26 physical channels and 16 communication channels and allows users to freely define the mapping relationship between physical buttons, switches, joysticks and communication channels through the channel mapping function.

Select the target channel, click the channel mapping button, the pop-up switch list, select the required switch, you can successfully connect.

3.3.5 Link Information

Through real-time display link status information to visually display the

quality of wireless communication.

About Link Information

Packet loss rate: the number of packets per second that fail to return to the ground

Valid packets: Number of packets successfully delivered back to the

ground per second

Data transmission uplink: the amount of data uploaded to the sky terminal per second (bytes)

Data transmission downlink: the amount of data downloaded from the air unit per second (bytes)

Figure transmission uplink code rate: Figure transmission uplink per second data size

Figure transmission downlink code rate: Figure transmission uplink per second received data size

Figure transmission wireless channel: the working frequency point under the current working frequency of the link

Signal strength: the strength of radio waves communicated between the ground station and the air unit

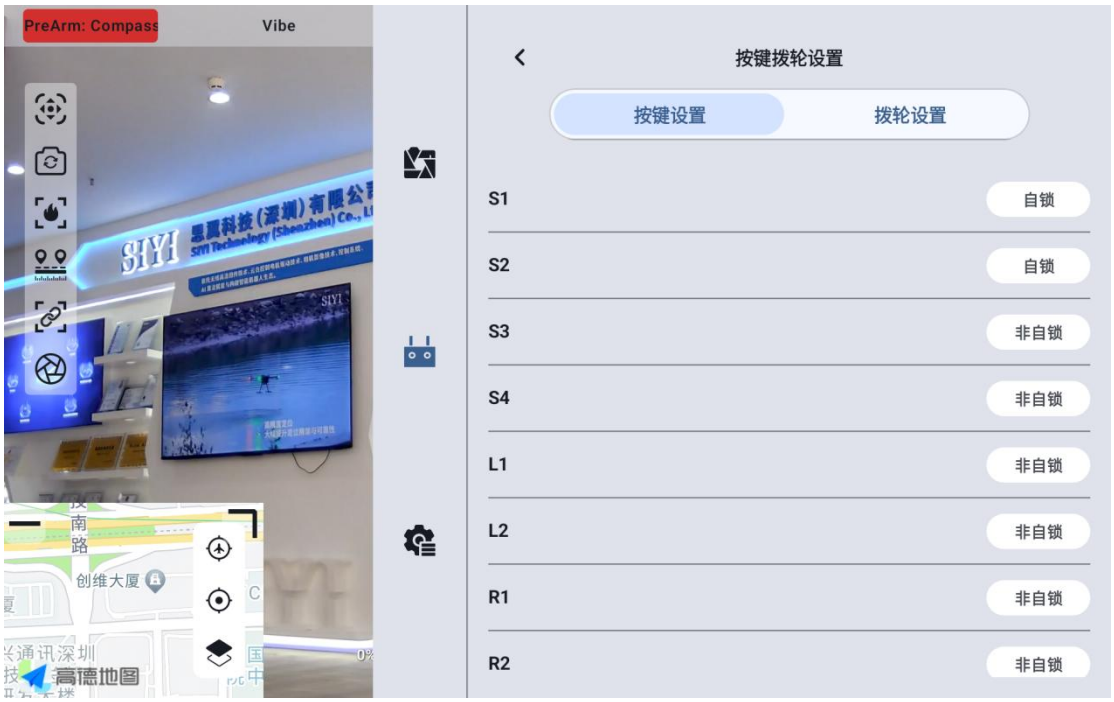
Signal quality: transmission signal reliability and stability between ground station and air unit

3.3.6 Button dial wheel setting

The UniRC 7 handheld ground station supports the working mode of setting keys and dial wheels.

3.3.6.1 Key Settings

This function allows you to set the way the keys work.



About the way keys work

Self-locking: After pressing the self-locking key, the key will rebound but the key channel will continue to output, the output value is 1950, and the channel output is 1050 when pressed again.

Three-gear switch: In this mode, the key will have 3 gears, similar to the three-gear switch. When the key is pressed for a short time, the channel output value will be switched between 1950 and 1050. When the key is pressed for a long time, the channel output value will be 1500.

Non-self-locking: When the self-locking button is pressed, the channel has an output, and when the channel is loose, the output is zero.

3.3.6.2 Setting of the shifting wheel

Through this function, the working mode of the left and right dial wheels of LD and RD can be set.

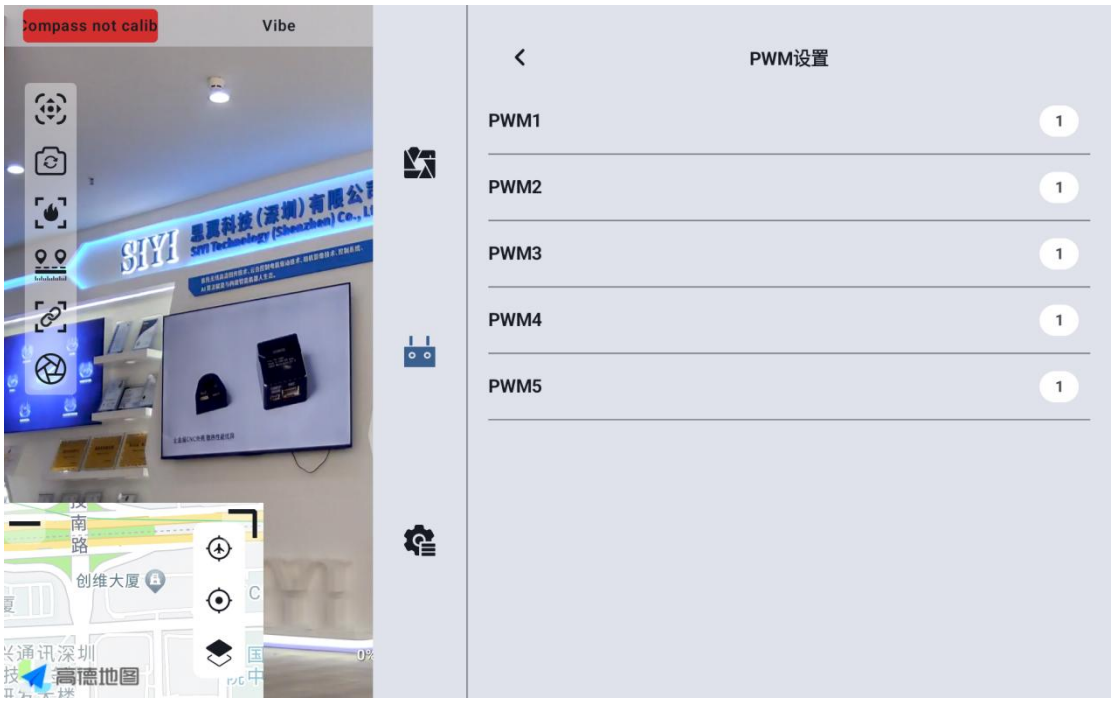
About the working mode of the dial wheel

Automatic return to center: in the "automatic return to center" mode, the dial wheel is loosened when pushed, and the output value of the dial wheel will return to the initial value (channel midpoint).

Non-automatic return to the middle: in the "non-automatic return to the middle" mode, the push wave wheel is released, and the output value of the dial will maintain the current channel output value and will not return.

3.3.7 Receiver Settings

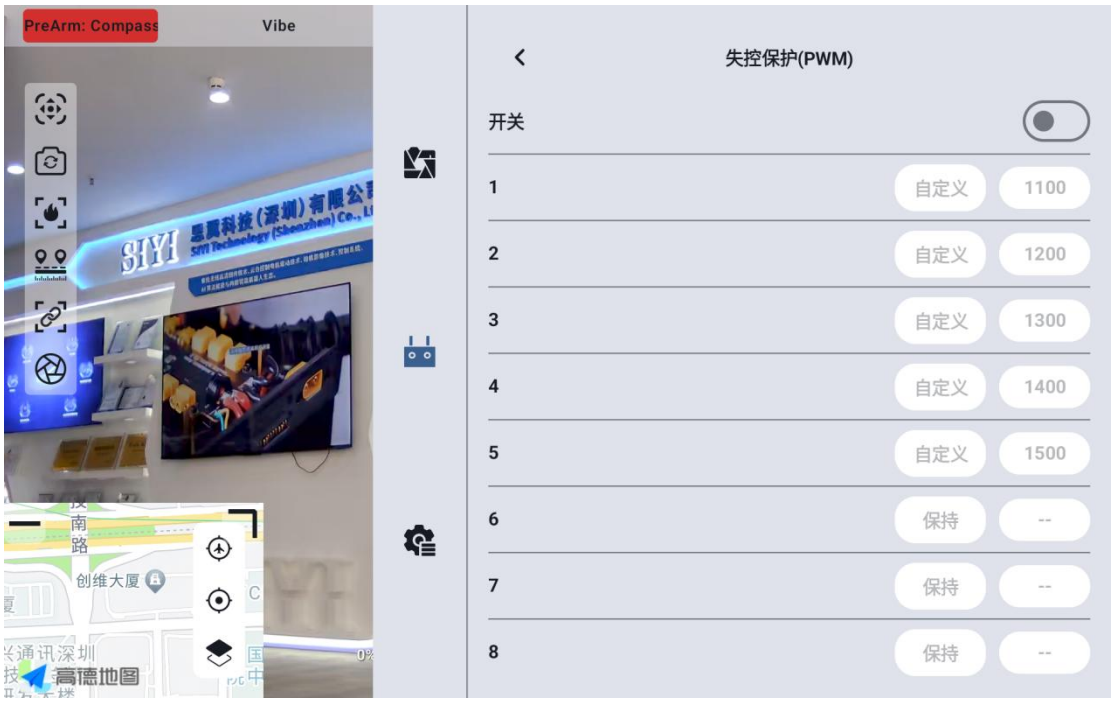
Match the corresponding link communication channel for the 5 channel of the sky-side PWM interface.



3.3.8 Out-of-control protection

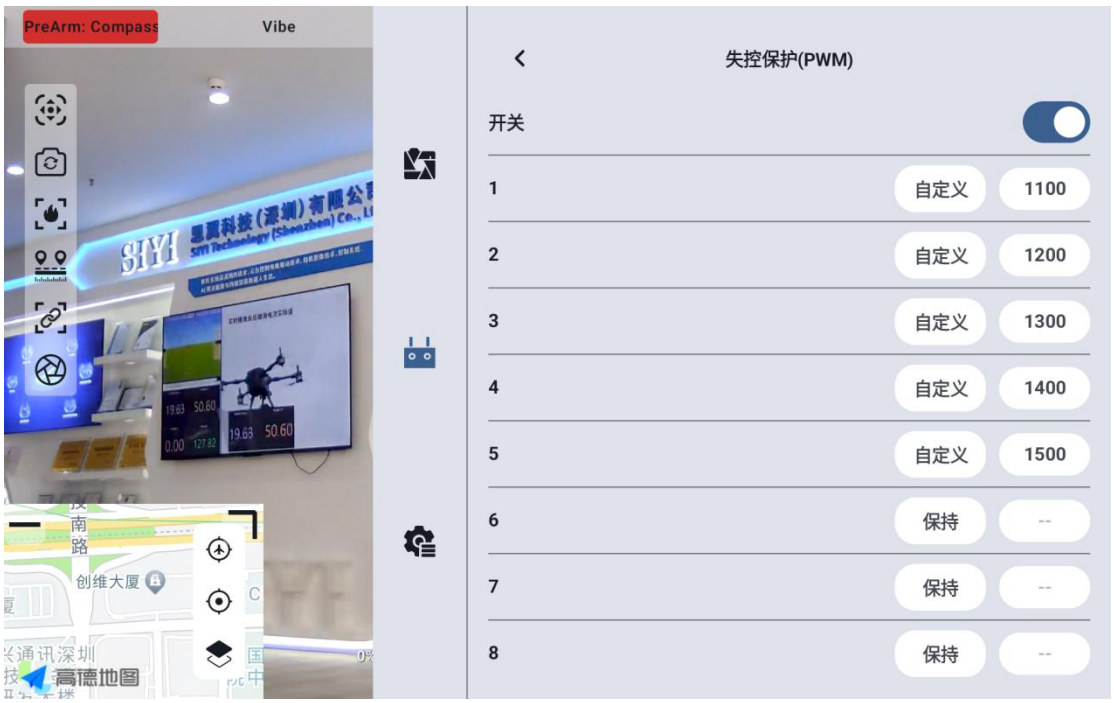
After the first frequency match between the GCS and the air unit, be sure to set up the runaway protection function.

Out-of-control protection means that when the connection between the GCS and the air unit is lost, the air unit PWM continues to output the preset channel value to avoid the machine falling to the greatest extent.



Follow these steps to set up runaway protection for your handheld ground station:

1. Make sure the GCS has been matched to the air unit.
2. Enter the runaway protection menu and display the following interface:



3. The out-of-control protection function is turned off by default, and the number on the left represents the communication channel. When the out-of-control protection output channel value is not set, the channel output value displays "Hold" by default ".
4. If you need a channel to output a specific value, please turn on the runaway protection switch first, then click the "hold" button after the corresponding channel to enter the "custom" state, and then enter the required stroke amount.
5. After the setting is completed, when the link loses connection, the channel will output the set amount of travel.

Note

If the flight control used with your hand-held ground station communicates through S.Bus protocol, you do not need to set up loss-of-control protection on the ground terminal (unless the flight control has special requirements to maintain a value through a certain channel when out of control to trigger the loss-of-control protection to enter the return flight), you only need to set corresponding protection measures in the flight control ground station software, there are out-of-control Peugeot bits in the S.Bus communication protocol to tell the flight control which situations belong to out-of-control situations.

3.3.9 System Settings

3.3.9.1 Multi-air unit

The multi-sky terminal function supports saving multiple sets of sky

terminal frequency information and corresponding channel setting data on the same ground terminal. In this way, after each air unit and GCS are matched for the first time, users no longer need to rematch the frequency to switch.

Danger

It is forbidden to switch the sky terminal in flight. Switching the sky terminal in flight will cause the link to lose control!

3.3.9.2 Channel 15

Switch the control right of the 15th communication channel to the searchlight switch of the three-proof camera or the pitch rotation of the A2 mini gimbal

Note: Channel 15 corresponds to the equipment connected to LAN 1 interface at the air unit, channel 16 corresponds to the equipment connected to LAN 2 interface at the air unit, and channel 16 is a searchlight by default

3.3.9.3 Rocker Deadband

Adjust the rocker deadband to accommodate a variety of handling feel.

3.3.9.4 Flight Mode

Flight mode can be set to 3-gear mode, 6-gear mode and off

Off: Turn off the Flight Mode feature

3-gear mode: the key M1-M3 is mapped to 1 channel, the channel output

is 1050 when M1 is pressed, the channel output is 1500 when M2 is pressed, and the channel output is 1950 when M3 is pressed.

6-gear mode: the key M1-M6 is mapped to 1 channel. When M1 is pressed, the channel output is 1000, when M2 is pressed, the channel output is 1250, when M3 is pressed, the channel output is 1425, when M4 is pressed, the channel output is 1575, when M5 is pressed, the channel output is 1700, and when M6 is pressed, the channel output is 2000,

3.3.9.5 Flight Channel

Flight Mode Mapping Communication Channel

3.3.9.6 Remote Control SDK Connection Mode

Users connect links to their own networks and ground stations through

the SDK

3.3.9.7 Use of remote control USB

The user can manually switch the working mode of the internal USB of the remote control

3.3.10 Multi-machine interconnection

Function development, please look forward.

3.3.11 Image Transmission Settings

3.3.11.1 Image transmission mode

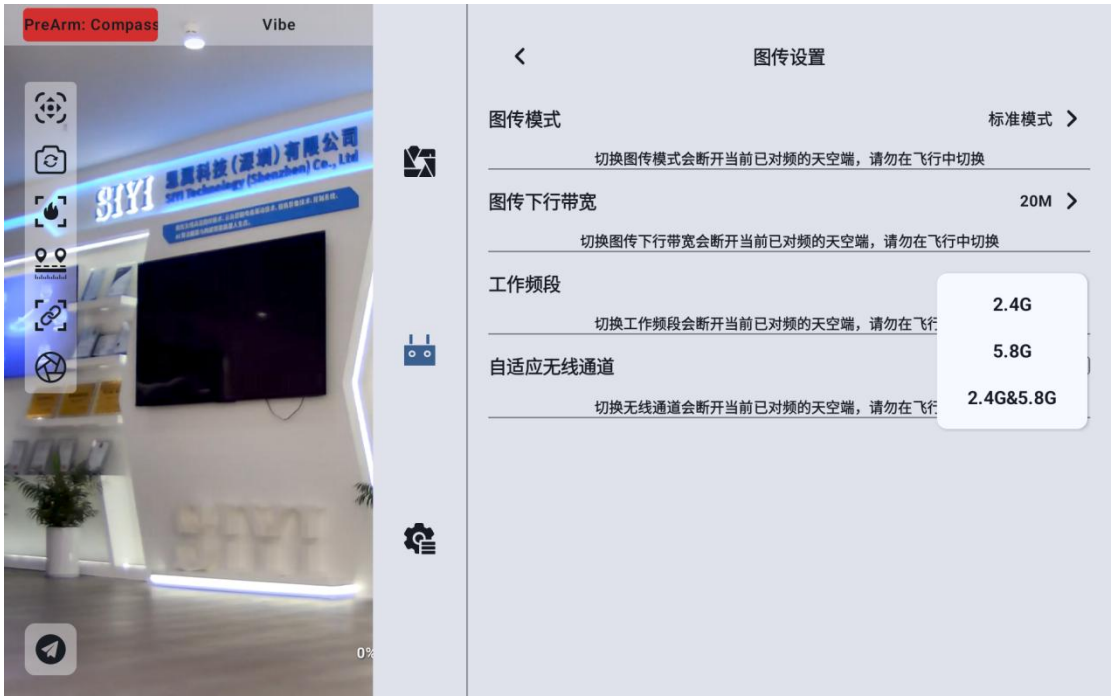
Change the code rate mode of image transmission

3.3.11.2 Figure transmission downlink bandwidth

The maximum bandwidth of the downlink that can be switched.

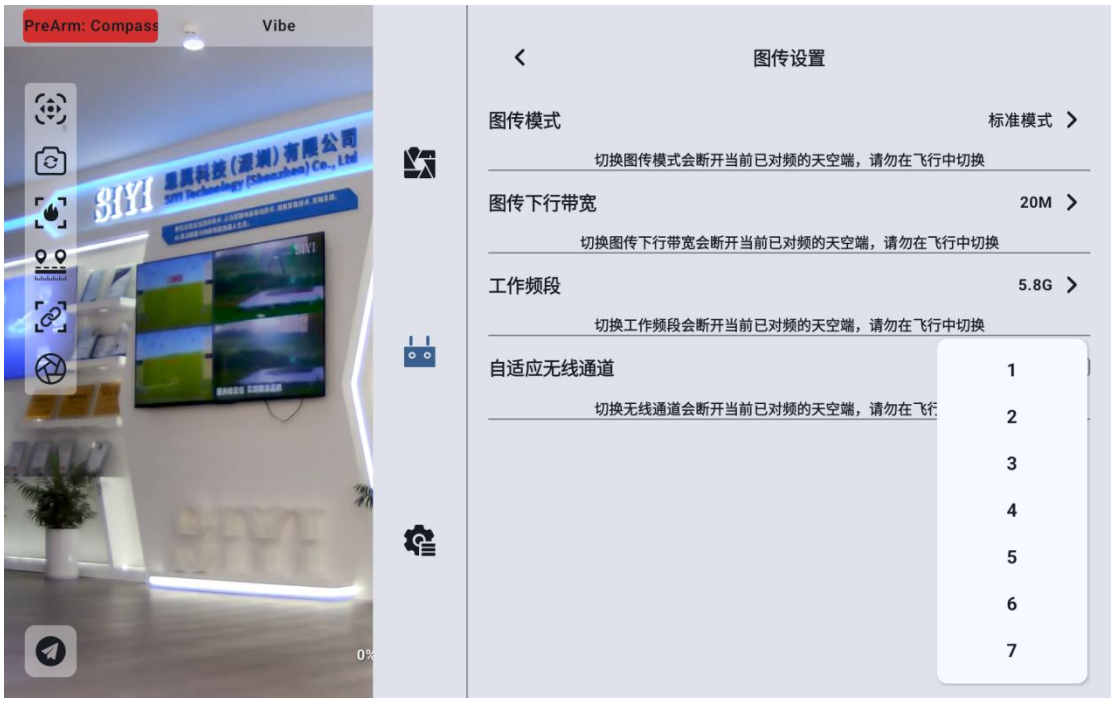
3.3.11.3 Operating frequency band

Manually switch the frequency band of the remote control



3.3.11.4 Adaptive Wireless Channel

In the environment of complex electromagnetic interference or noisy wireless signals, turn on this function, and the SIYI link will search for the wireless channel with the lowest interference when establishing the link to achieve the most favorable conditions for wireless communication. After turning off the adaptive wireless channel, the wireless channel can be manually selected between 1-32.



3.3.11.5 Equipment Information

Remote control firmware version: the current firmware version information of the remote control board

Skyside Firmware Version: The current firmware version of the Skyside

Skyside Image Transmission Firmware Version: the current firmware version of the Skyside Image Transmission Module

Image transmission firmware version: the current firmware version information of the remote control image transmission module

Click the graphic firmware version to manually select the local graphic firmware version to upgrade the graphic firmware version of the sky terminal and remote controller.

Note: The firmware of the graphic transmission module at the air unit and the GCS needs to be the same version before communication can be carried out.

3.3.11.6 Pair Frequency

Please follow the steps below for the GCS and the air unit:

1. Open the remote control setting menu in "UniGCS", and click "Remote Control Frequency";
2. The status indicator light at the ground terminal enters the red light flash state, the "Frequency" menu shows "In Frequency", and the hand-held ground station starts buzzing;
3. Then press the sky-end-to-frequency button for 2 seconds, and the sky-end status indicator will also enter the red flash state;
4. At this time, please wait for about 5 to 10 seconds, wait for the GCS and air unit status indicator lights to turn green and keep on, then the frequency is successful.

3.4 Device Information

Displays the version number of the UniGCS application and the commonly used SIYI Technology contact information. You can also switch the map type in this menu.

Chapter 4 Digital Transmission

The data transmission function is one of the core functions of most SIYI link products. The SIYI link and handheld ground station support communication with different ground station software through a variety of software and hardware interfaces.

Note UniRC 7 supports dual serial ports. Please ensure that the set data transmission interface is consistent with the data transmission interface connected to the actual air unit before normal use.

4.1 communicates with Android ground station through UART serial port

1. 1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UART" connection, and set the baud rate to be consistent with the flight control data transmission serial port.
2. Open the ground station software to connect

Note Developers refer to the Digital Transmission SDK documentation in Chapter 6 of this manual to develop and support this function for their own ground stations.

4.1.1 Boying "XUAV"

1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UART serial port" connection, and set the baud rate of the sky terminal to "57600".
2. Open the "XUAV" ground station, select the connection mode as serial port, set the serial port address to/dev/ttyHS3, baud rate: 115200. Click Connect.

3. Just wait patiently for the software connection between the handheld ground station and the flight control ground station.

Note

The SIYI link also supports the connection of "XUAV" ground stations via Bluetooth.

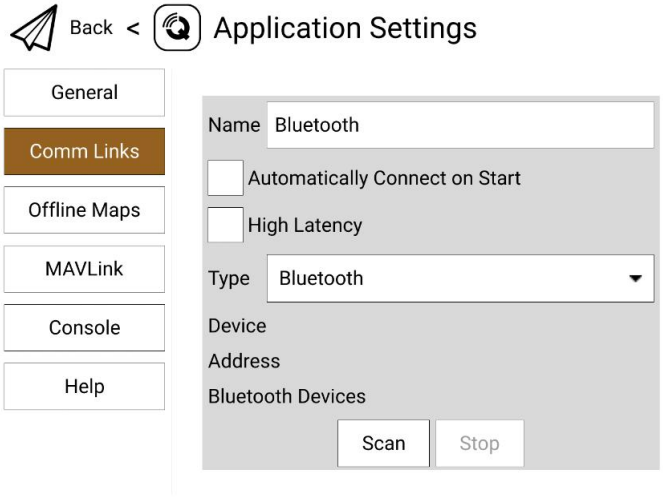
4.2 communicate with Android ground station via Bluetooth

4.2.1QGroundControl

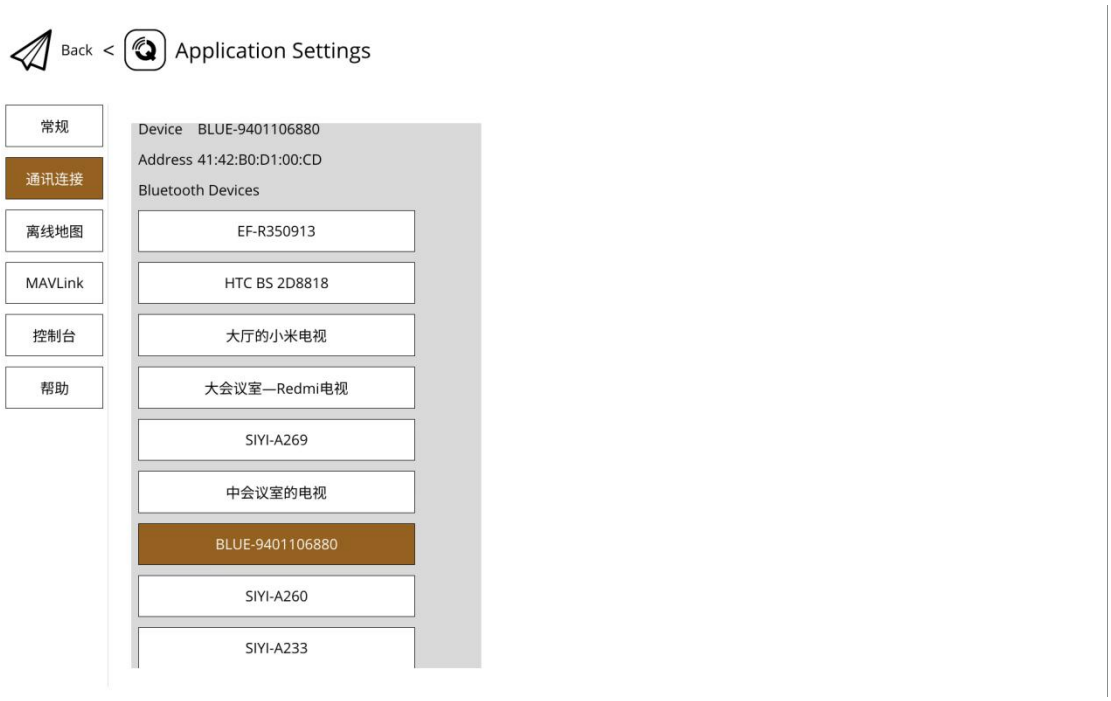
3. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "Bluetooth" connection, and set the baud

rate of the sky terminal to be consistent with the flight control data transmission serial port.

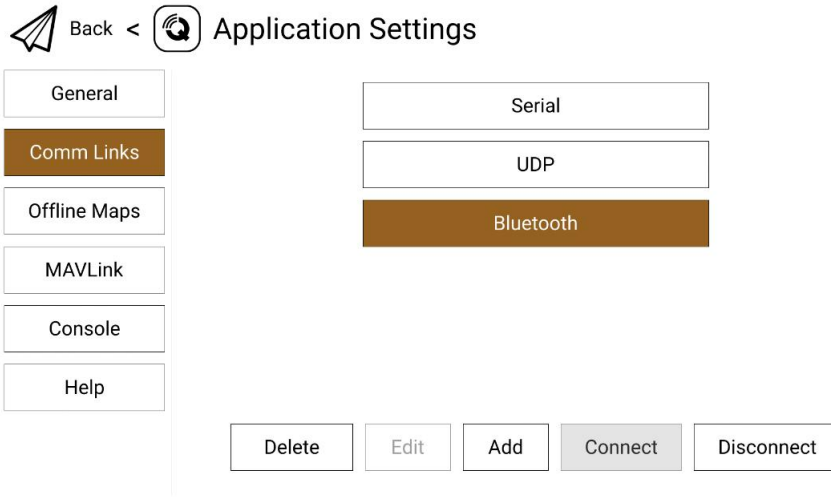
4. Enter the Android system settings menu, open the Bluetooth settings, search for the Bluetooth device with the name "BLUE 94 ********", and make a pairing connection.
5. Run the QGC ground station software, enter the "Application Settings" menu of QGC application settings, click "Comm Links" and add "Add" a new connection method, named "Bluetooth".



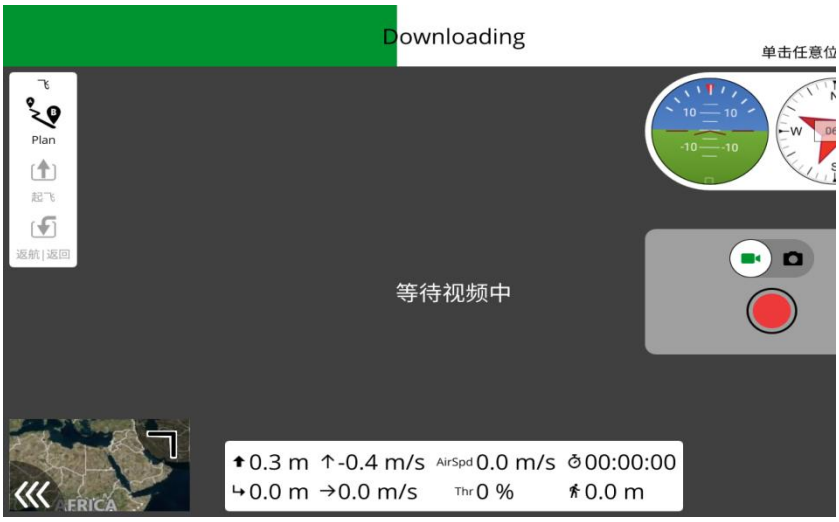
6. Select the connection type "Type" as "Bluetooth", and then click Search "Scan".



7. Select the Bluetooth device named "BLUE-xxxxxxxx" and click "OK" to return to the Comm Links menu.



1. Select the set "Bluetooth" connection mode and click "Connect". If the progress bar on the top of QGC ground station changes, it indicates that the data transmission communication between the hand-held ground station and the flight control ground station software has entered the process of automatic connection, and normal communication can be achieved after the connection is completed.



Note

Step 1-2 has been completed before the factory settings.

When adding and setting the connection mode for the first time in QGC, please do not check the "Automatically Connect on Start" option for automatic connection at startup. You can check it after confirming that the data transmission can be successfully connected.

4.2.2Mission Planner

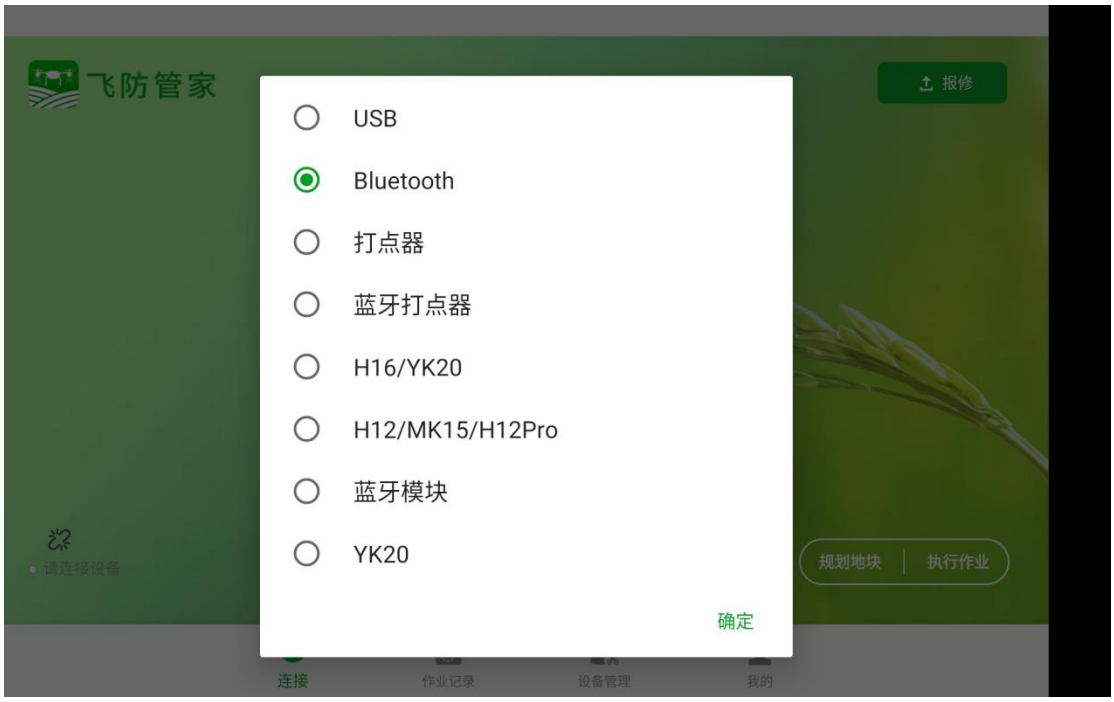
1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "Bluetooth" connection, and set the baud rate to be consistent with the flight control data transmission serial port.
2. Run the Mission Planner ground station, select the corresponding port (standard serial on the COM-xx Bluetooth link) and baud rate, and finally click Connect.

3. Wait patiently for the connection to be established.

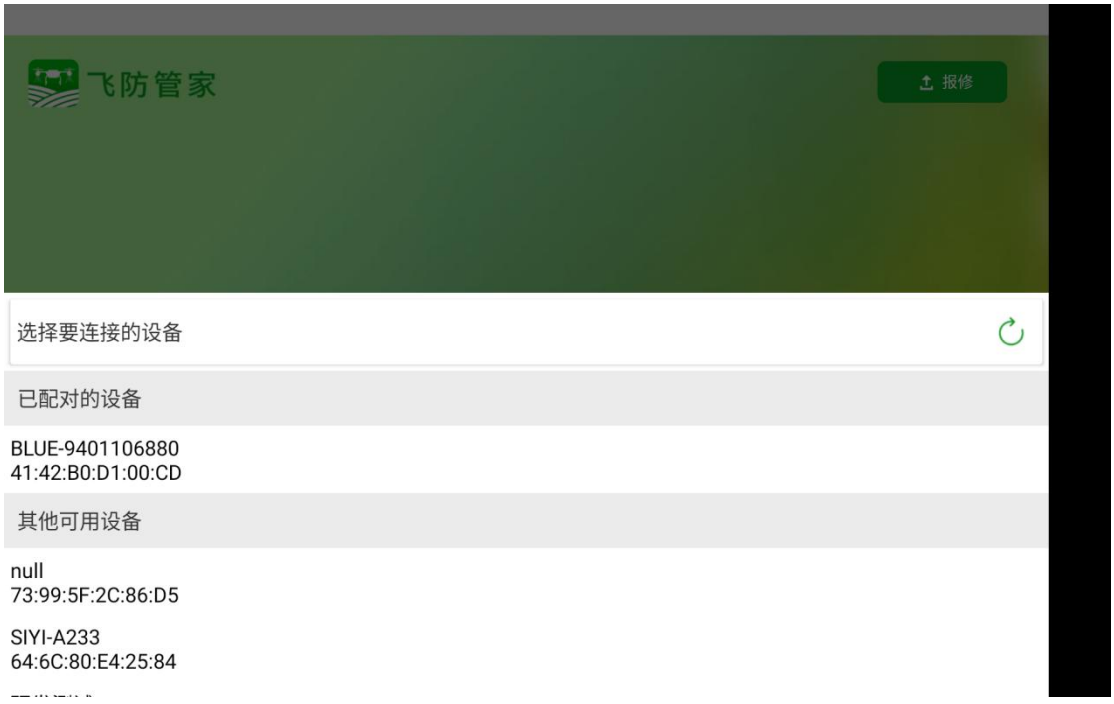
4.2.3 Pole Wing "Flight Defense Steward"

1. Enter the "UniGCS" application, open the data transmission settings, set the connection mode to "Bluetooth" connection, and set the baud rate to 57600.

2. Open the connection method selection bluetooth and click OK



3. Select Remote Bluetooth and click Connect

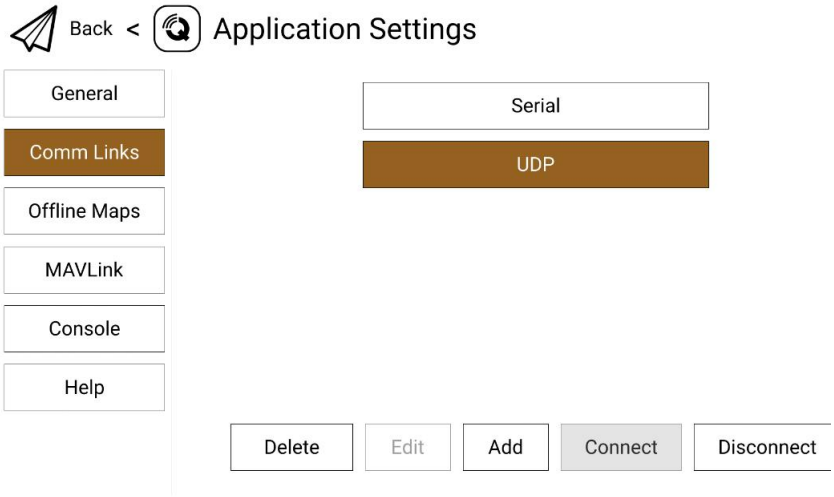


4. Wait patiently for the connection to be established.

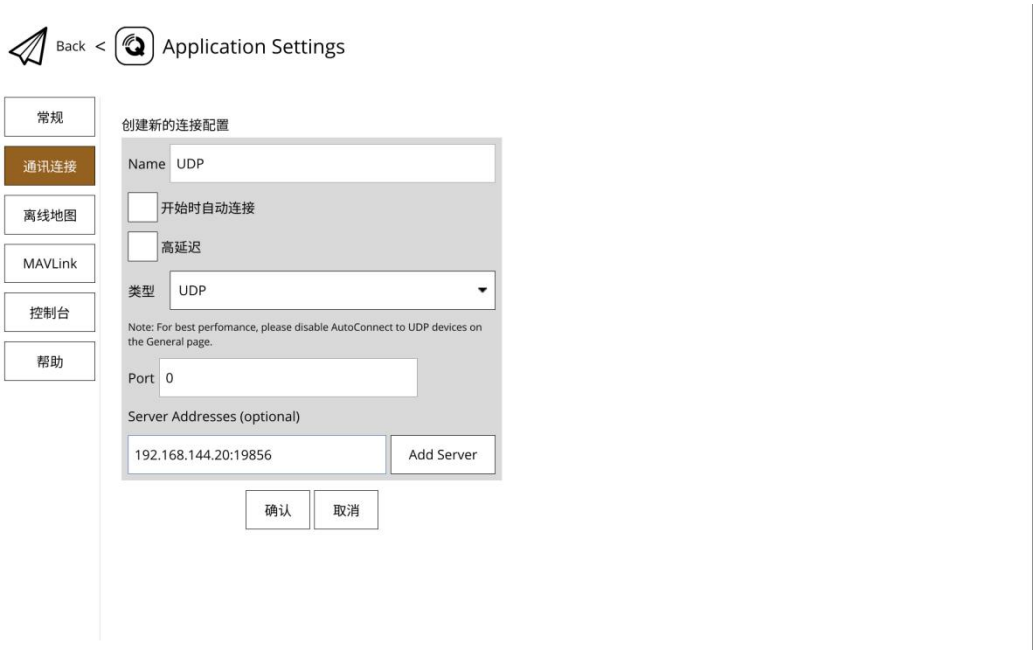
4.3 communicates with Android ground station via UDP

4.3.1QGroundControl

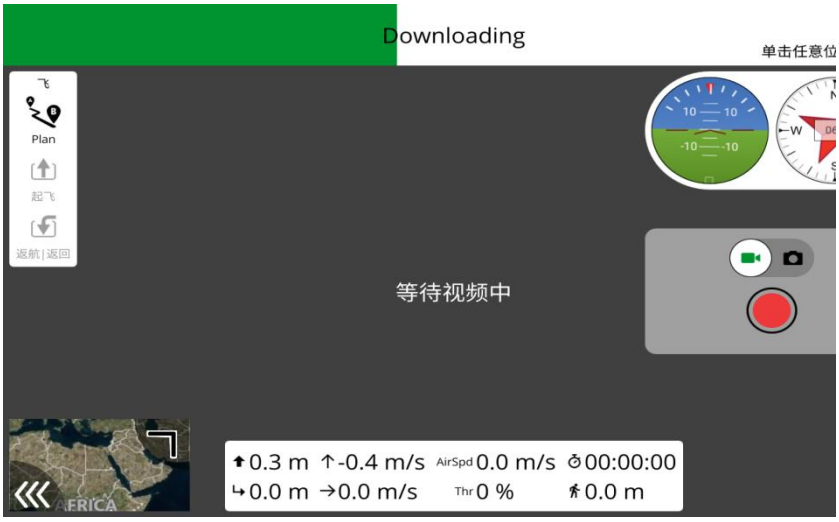
1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UDP" connection, and set the baud rate to be consistent with the data transmission flight control serial port.
2. Run the QGC ground station software, enter the "Application Settings" menu of QGC application settings, click "Comm Links" and add "Add" a new connection method, named "UDP".



3. Select the connection type "Type" to "UDP", the interface "Port" to "0", the server address "Server Addresses" to enter "192.168.144.20:19856" and add the server "Add Server", then click "OK" to return to the "Comm Links" menu.



4. Select the set "UDP" connection mode and click "Connect". If the progress bar on the top of QGC ground station changes, it indicates that the data transmission communication between the hand-held ground station and the flight control ground station software has entered the process of automatic connection, and normal communication can be achieved after the connection is completed.



Note

When adding and setting the connection mode for the first time in QGC, please do not check the "Automatically Connect on Start" option for automatic connection at startup. You can check it after confirming that the data transmission can be successfully connected.

4.3.2Mission Planner

1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UDP" connection, and set the baud rate to be consistent with the data transmission flight control serial port.

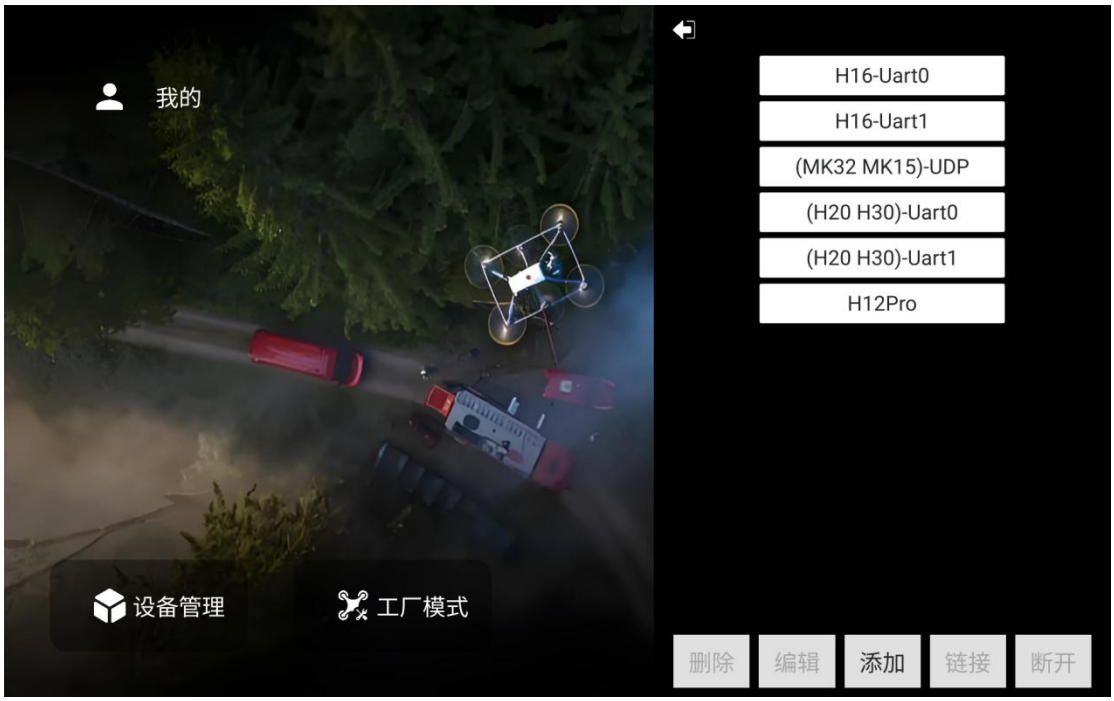
2. Run the Mission Planner ground station software, select the corresponding port (UDPCl) and baud rate, set the interface "Port" to "19856", enter "192.168.144.20" for the server address "Server Addresses", and finally click Connect.

3. Wait patiently for the connection.

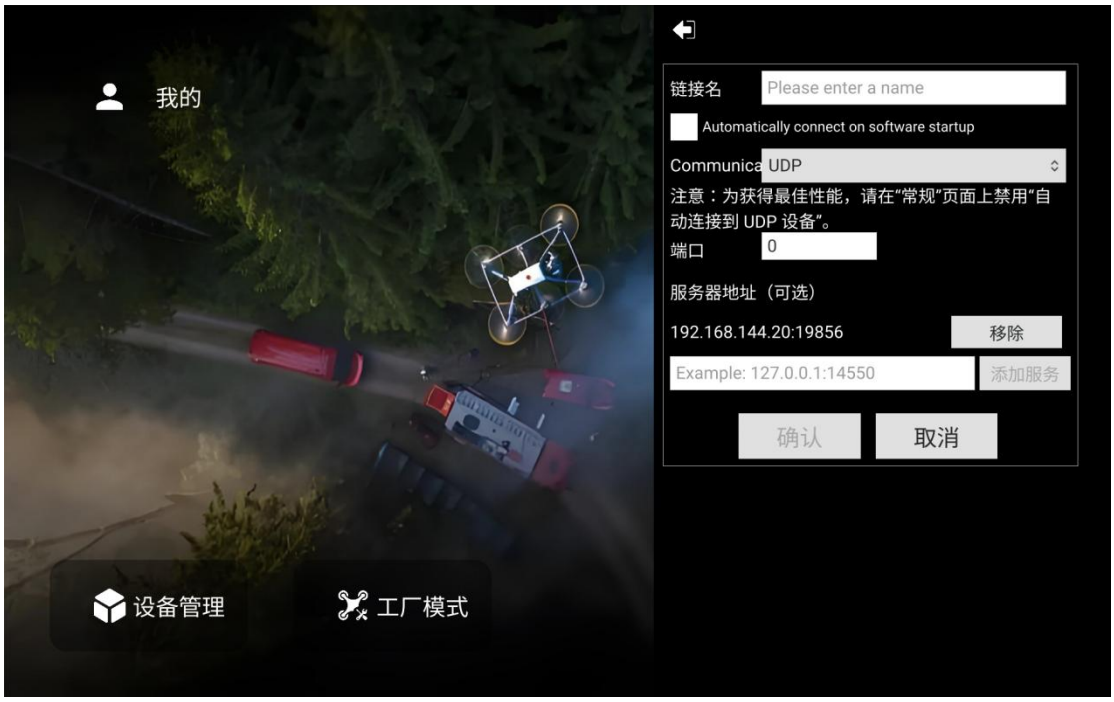
4.3.3 VK’S "VGCS" ground station

1. Enter the "SIYI Remote Control" application, open the data transmission settings, set the connection mode to "UDP" connection, and change the baud rate to "115200".

2. Open the connection method and add connection options



3. Select the connection method as UDP, fill in 192.168.144.20:19856 in the server address and add the service, and change the port to 0.



4. Save connection settings and connect

Note

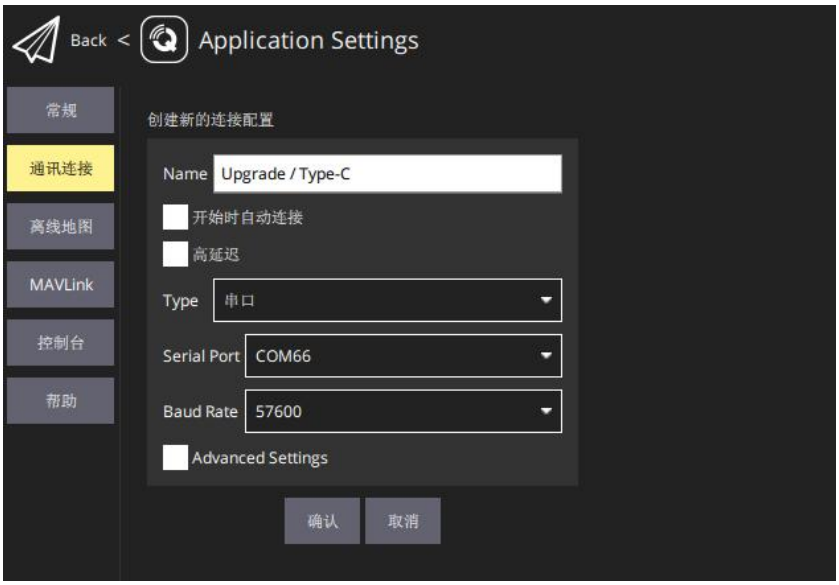
The SIYI link also supports the connection of "VGCS" ground stations via Bluetooth.

4.4 communicates with Windows ground stations through the ground-side Type-C upgrade interface

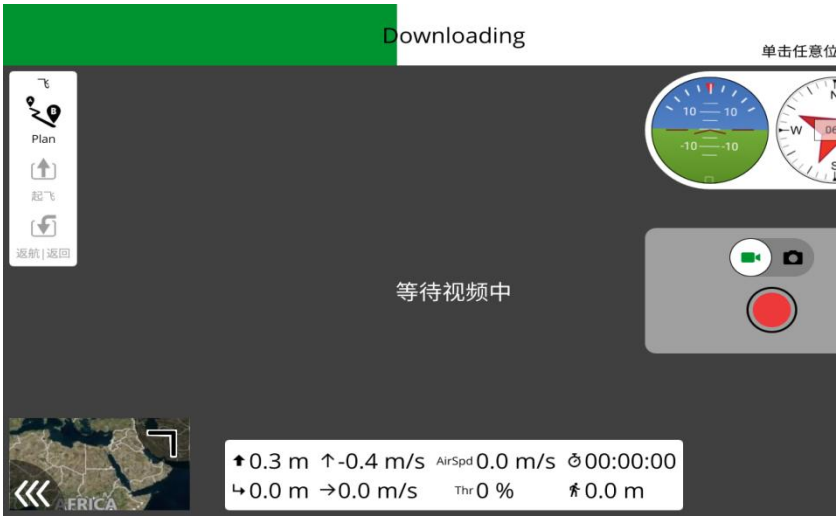
4.4.1QGroundControl

1. Using the original upgrade cable, connect the upgrade port Type-C the bottom of the GCS to the PC, and a communication port will be created on the PC for the GCS.
2. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "Upgrade", and set the baud rate to be consistent with the data transmission flight control serial port.

3. Open the QGC ground station software, enter the QGC application settings "Application Settings" menu, click "Comm Links" and add "Add" a new connection method, named "Upgrade / Type-C".



4. Select the connection type "Type" as "Serial", and select the corresponding port and baud rate.
5. Select the set "Upgrade / Type-C" connection mode and click "Connect". If the progress bar at the top of QGC ground station changes, it means that the data transmission communication between the GCS and the ground station has entered the process of automatic connection, and normal communication can be achieved after the connection is completed.



Note

When adding and setting the connection mode for the first time in QGC, please do not check the "Automatically Connect on Start" option for automatic connection at startup. You can check it after confirming that the data transmission can be successfully connected.

4.4.2Mission Planner

Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "Upgrade", and set the baud rate to be consistent with the data transmission flight control serial port.

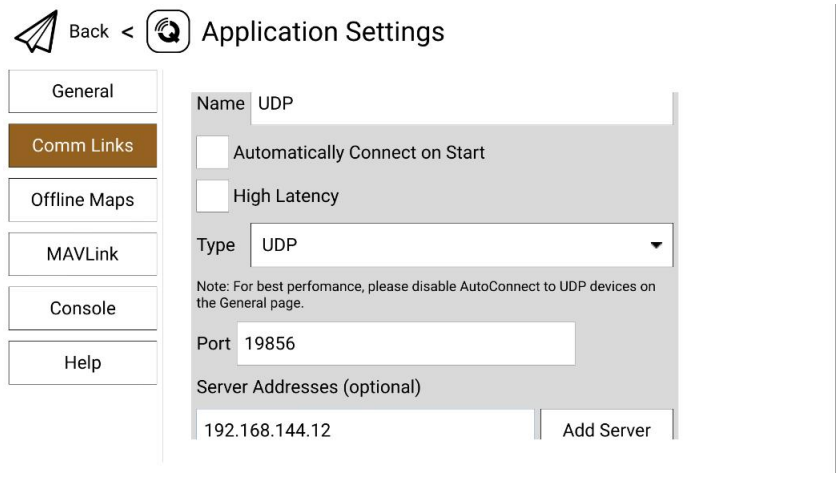
1. With the original Type-C upgrade line, the GCS at the bottom of the Type-C port connected to the PC, the PC will be the GCS to create a communication port.
2. Run the Mission Planner ground station software, select the corresponding port and baud rate, and finally click on the connection.

3. Wait patiently for the connection.

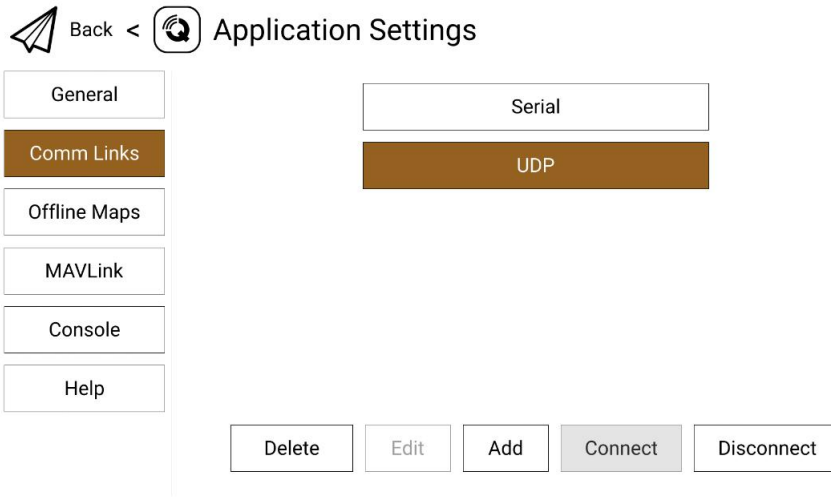
4.5 through the ground side WiFi hotspot and Windows ground station communication via UDP

4.5.1QGroundControl

1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UDP" connection, and set the baud rate to be consistent with the data transmission flight control serial port.
2. Open the WiFi hotspot of the Android system on the ground side and establish a link between the ground side and the Windows computer through WiFi.
3. Run the QGC ground station software, enter the "Application Settings" menu of QGC application settings, click "Comm Links" and add "Add" a new connection method.



4. Name it "UDP", select the connection type "Type" to "UDP", set the interface "Port" to "19856", enter "192.168.144.12" for the server address "Server Addresses" and add the server "Add Server", then click "OK" to return to the "Comm Links" menu.



5. Select the set "UDP" connection mode and click "Connect". The connection is successful.

Note

When adding and setting the connection mode for the first time in QGC, please do not check the "Automatically Connect on Start" option for automatic connection at startup. You can check it after confirming that the data transmission can be successfully connected.

4.5.2Mission Planner

1. Enter the "UniGCS" application, open the data transmission setting, set the connection mode to "UDP" connection, and set the baud rate to be consistent with the data transmission flight control serial port.
2. Open the WiFi hotspot of the Android system on the ground side and establish a link between the ground side and the Windows computer through WiFi.

3. Run the Mission Planner ground station software, select the corresponding port (UDPCl) and baud rate, set the interface "Port" to "19856", enter "192.168.144.20" for the server address "Server Addresses", and finally click Connect.

4. Wait patiently for the connection.

4.6 The Solution of Digital Transmission Unable to Connect

Under the normal communication state between the GCS and the air unit, if the data transmission connection with the ground station software cannot be successfully established, please follow the following steps to check:

1. First of all, make sure that the air unit has been connected to your flight control through the correct data transmission line.
2. If you use DIY data transmission line to connect the air unit and your flight control, please check
   - Is the line sequence correct?
   - Are the TX and RX pins in the flight control and sky data transmission serial ports cross-connected?
   - Whether digital transmission 1 and digital transmission 2 are set correctly
3. In the "UniGCS" application, enter the "Link Information" menu to check the values to determine whether the flight control and the air unit communicate normally. During normal communication, "data transmission downlink" will be greater than 0. If the value is 0, please return to steps 1 and 2 to check the connection line.

4. In the "UniGCS" application, enter the "Digital Settings" menu and check:
   - Is the data transmission connection method set correctly?
   - For PX4 / ArduPilot open source flight control or custom flight control, is the baud rate set correctly?
   - Enter the flight control ground station software to check whether the data transmission connection mode is set correctly.
5. For PX4 / ArduPilot open source flight control or custom flight control, try to switch the data transmission line to port TELEM 1 or TELEM 2.
6. Are both the GCS and the air unit the latest firmware?
7. If you use a wireless hotspot to connect via UDP data transmission mode, please disable the Ethernet on the computer and try to connect again.

Note

If you have checked yourself through the above steps and still have not located the problem, please contact your agent immediately or contact SIYI Technology directly to check and solve the problem.

Chapter 5 Image Transmission

The UniRC 7 link supports up to 1080p resolution and 60 fps low-delay

real-time image transmission. It is suitable for SIYI photoelectric pod and pan-tilt camera, and also supports the connection of third-party network port camera and photoelectric pod. The UniRC 7 air unit is equipped with dual network ports, which can support simultaneous access to two cloud platforms for image transmission. The external sky terminal HDMI input module can be extended to support cameras with HDMI input.

Note

When UniRC 7 sky terminal is connected to two SIYI photoelectric pods and Gimbal cameras at the same time, the IP address of one of the devices needs to be changed to non -192.168.144.25, and RTSP address needs to be manually entered for connection during connection.

5.1 SIYI Gimbal Camera (Photoelectric Pod) Realize AI Identification and Tracking by Connecting SIYI Link with SIYI AI Tracking Module

The SIYI photoelectric pod (PTZ camera) can be connected to the SIYI link through the SIYI AI tracking module, and realize AI identification and tracking function through UniGCS application or SIYI QGC application in the state of communication between the air unit and the ground station.

Setup Steps

1. Refer to the figure above to connect the SIYI AI tracking module to

the SIYI gimbal camera and link.

2. Verify that the gimbal camera firmware has been upgraded to a version that supports the SIYI AI tracking module.

3. Run the UniGCS application, enter "Address Settings" and select "SIYI AI Camera".

4. Return to the main screen, click the AI tracking recognition function button, and the function will be turned on.

5. Click the AI tracking recognition function button again, and the function is turned off.

5.2 SIYI Link with UniGCS or SIYI QGC Android Application Control SIYI Optoelectronic Pod (Gimbal Camera)

The SIYI photoelectric pod (pan-tilt camera) can directly connect the SIYI link, and control the pan-tilt attitude, function and display images through UniGCS or SIYI QGC application in the communication state between the air unit and the GCS.

5.2.1 Preparation

Before use, it is necessary to prepare the following tools, firmware, software.

- SIYI link products (UniRC7 standard suit, MK32 standard suit, HM30 and MK15 industry standard suit are recommend used with SIYI pan-tilt camera)
- SIYI photoelectric pod (pan-tilt camera)

Note

The above products can be purchased from SIYI Technology and its authorized agents.

- Connecting Line of Swing Gimbal Link

Note

The above tools are standard when the product is shipped.

- UniGCS Applications
- SIYI QGC Application

Note

The above software can be downloaded from the relevant product page of SIYI official website.

UniGCS application use steps

1. Power supply for the air unit, so that the air unit and the GCS are in communication.
2. Connect the net port at the air unit and the net port of the cloud platform with the connecting line of the cloud platform link.
3. Update the UniGCS application running on the ground station to the latest version.
4. Run the UniGCS application, enter the setting menu, and select the camera type and main and auxiliary code streams corresponding to the camera settings under the address setting menu to display the camera picture and control the attitude and function of the pan/tilt through the application software.

SIYI QGC application use steps

1. Power supply for the air unit, so that the air unit and the GCS are in communication.
2. Connect the net port at the air unit and the net port of the cloud platform with the connecting line of the cloud platform link.
3. Run SIYI QGC application, enter the "communication connection" setting, select "Source" as "RTSP Video Stream" under the "video setting" menu and enter the default RTSP address of the wig pod/pan-tilt camera to display the camera image transmission picture and control the pan-tilt attitude and function through the application software.

5.2.2 Pan/Tilt Pitch and Translation

When running a UniGCS app or a SIYI QGC app,

Long press on the touch screen of the ground station and then slide left and right to control the left and right translation movement of the pan/tilt.

Long press and then slide up and down to control the up and down pitch movement of the pan/tilt. The movement direction of the pan/tilt is consistent with the sliding direction of the fingers.

Double-tap the screen gimbal will automatically return to the center.

Note

After sliding, long press the ground station screen pan-tilt will continue to move until the maximum angle. The farther the long press position is from the center point of the screen, the faster the pan-tilt rotation speed will be.

5.2.3 Doubled

When running a UniGCS app or a SIYI QGC app,

The zoom control can be realized by pressing the "zoom in" or "zoom out" icon on the touch screen of the ground station.

5.2.4 Photography and video recording

When running a UniGCS app or a SIYI QGC app,

Press the "take picture" icon on the touch screen of the ground station to take a picture. Press the "Video" icon to start recording, and press the "Video" icon to stop recording.

Note

The SD / TF card needs to be loaded into the PTZ camera before using the photo and video functions.

5.3 SIYI Link Cooperating with SIYI QGC(Windows) Software to Control SIYI Pod (Gimbal Camera)

The pan-tilt can be directly connected to the air unit, and the attitude, function and image display of the pan-tilt can be controlled through the Windows QGC (SIYI QGC) application in the communication state between the air unit and the ground station.

5.3.1 Preparation

Before use, it is necessary to prepare the following tools, firmware, software.

- SIYI link products (UniRC7 standard suit, MK32 standard suit, HM30 and MK15 industry standard suit are recommend used with

SIYI pan-tilt camera)

- SIYI photoelectric pod (pan-tilt camera)

Note

The above products can be purchased from SIYI Technology and its authorized agents.

- Connecting line of wing pan-tilt link

Note

The above tools are standard when the product is shipped.

- SIYI QGC(Windows) Software

Note

The above software can be downloaded from the relevant product page of SIYI official website.

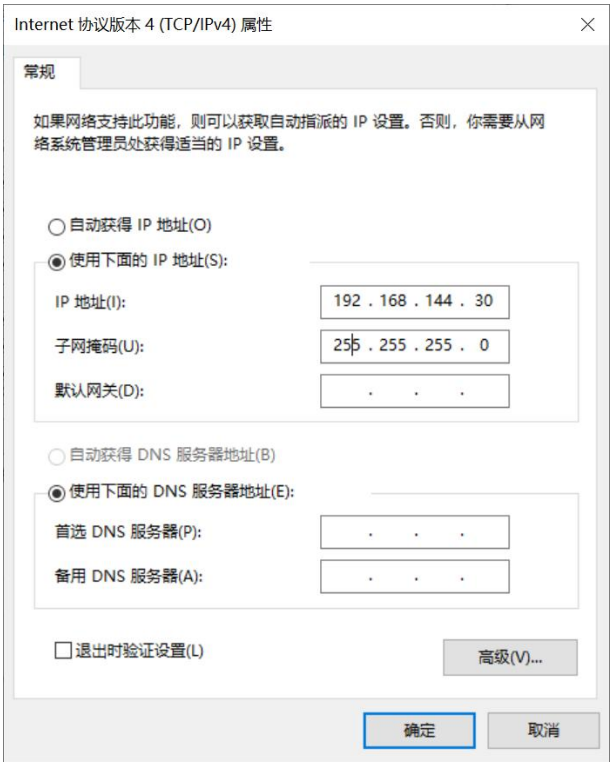
Steps to use SIYI QGC (Windows) software

1. Power supply for the air unit, so that the air unit and the GCS are in communication.
2. Connect the net port at the air unit and the net port of the gimbal quick release shock absorber plate with the connecting line of the

SIYI gimbal link.

3. Connect the Swing link GCS to the Windows computer.
4. Modify the computer's Ethernet settings to be consistent with the SIYI link and the IP address does not conflict.

   Such as IP address: 192.168.144.30



5. Run SIYI QGC software, enter the "communication connection" setting, select "Source" as "RTSP Video Stream" under the "video setting" menu and enter the default RTSP address of the wig pod/pan-tilt camera to display the camera image transmission picture and control the pan-tilt attitude and function with the mouse through the ground station.

5.3.2 Pan/Tilt Pitch and Translation

When running SIYI QGC software, drag the mouse cursor left and right after long pressing on the video screen of the ground station to control the left and right translation movement of the pan-tilt, and drag up and down after long pressing to control the up and down pitch movement of the pan-tilt, and the movement direction of the pan-tilt is consistent with the dragging direction of the mouse cursor. Double-click the pan/tilt will automatically return to the middle.

Note

After dragging the cursor, press and hold the mouse gimbal and it will continue to move until the maximum angle. The farther the long-pressed position is from the center of the screen, the faster the gimbal rotates.

5.3.3 zoom and focus

When running the SIYI QGC software,

On the ground station interface with the mouse click "zoom in" or "zoom out" icon to achieve zoom control.

Single screen, optical zoom camera will focus automatically.

5.3.4 Photography and video

When running the SIYI QGC software,

Click the "Take Photo" icon on the ground station interface to take a photo. Click the Recording icon to start recording, and click the Recording icon to stop recording.

Note

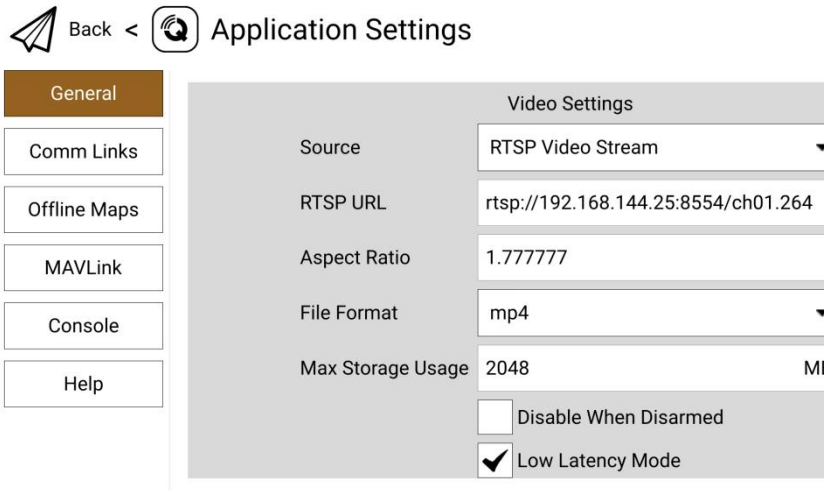
The SD / TF card needs to be loaded into the PTZ camera before using the photo and video functions.

5.4 SIYI Link Access Third Party Network Port Camera

Before connecting to a third-party network port camera or pod, please change its IP address to 192.168.144.X (cannot be changed to 192.168.144.11 and 192.168.144.12 and 192.168.144.20, these 3 network segments have been occupied by air unit, GCS and Android system), otherwise they cannot be used.

Use steps

1. Connect to the Camera Settings page to view and copy the RTSP address of your port camera or pod.
2. Take QGroundControl for example. Open the QGC ground station software, enter the General Settings menu (General) and slide down to Video Settings.



3. Select RTSP Video Stream as the video source, and then paste the copied RTSP address of the port camera or pod in the RTSP URL 1 column below.
4. Return to the home page of the ground station to view the map transmission display.

5.5 SIYI link access HDMI camera

Cameras that only support HDMI output must be connected to the SIYI sky terminal network port through the SIYI sky terminal HDMI input module. Please refer to the following steps:

1. Take QGroundControl for example. Open the QGC ground station software, enter the General Settings menu (General) and slide down to Video Settings.

2. Select the video source (Source) as "RTSP Video Stream", and then enter the RTSP address of the HDMI video conversion module in the "RTSP URL" 1 field below.
3. Return to the home page of the ground station to view the map transmission display.

5.6 SIYI Link Access Dual Video Streams

When the SIYI link is connected to a two-way video stream, the two cameras can be connected to the UniRC 7 sky terminal LAN1 interface and LAN2 interface at the same time. The SIYI link can realize a variety of two-way video connection methods.

5.6.1 Access to two SIYI cameras or two sky-end HDMI input modules

Please assign different IP addresses to the two SIYI cameras or sky HDMI input modules, such as "192.168.144.25" and "192.168.144.26". After connecting the two cameras to the UniRC 7 air unit and opening the UniGCS application, you only need to select "CamerA" and "CamerB" in the IP address column to display the two-way video.

5.6.2 Access to two third-party network port cameras or photoelectric pods

Make sure that the two cameras/pods use different IP addresses and are connected to UniRC 7. After opening the UniGCS, enter the corresponding RTSP address in the IP address column to display the two-way video.

Note

When the IP addresses of the two video streams are the same, the dual video function cannot work properly.

Please refer to the 5.8 section of this manual for more details on the IP address of each component of the wing link remote control and pan/tilt pod.

of common parameters of 5.7 equipment

IP address of air unit of SIYI link: 192.168.144.11

IP address of the GCS of SIYI link: 192.168.144.12

SIYI handheld ground station Android system IP address: 192.168.144.20

Default IP address of Si Yi AI tracking module: 192.168.144.60

Default IP address of SIYI photoelectric pod (pan-tilt camera): 192.168.144.25

(New) Swing Pod/PTZ Camera Default RTSP Address:

- SIYI AI camera: rtsp:// 192.168.144.60/video 0
- Main stream: rtsp:// 192.168.144.25:8554/video1
- Secondary code stream: rtsp:// 192.168.144.25:8554/video2

(New) "UniGCS" App Address Bar Private Protocol Address:

- Camera A:192.168.144.25:37256
- Camera B :192.168.144.25:37255

IP address of SIYI Sanfang Camera A: 192.168.144.25

IP address of SIYI three-proof camera B: 192.168.144.26

IP address of HDMI input module of SIYI sky terminal: 192.168.144.25

SIYI Sanfang Camera A RTSP Address:

rtsp://192.168.144.25:8554/main.264

SIYI Sanfang Camera B RTSP Address:

rtsp://192.168.144.26:8554/main.264

Think wing sky terminal HDMI input module RTSP address:

rtsp://192.168.144.25:8554/main.264

Common video playback software: UniGCS, SIYI FPV, SIYI QGroundControl, EasyPlayer

Network Diagnostics App: Ping Tools

Note

ZT30 and later released camera products will use the new address, including ZT30, ZT6, etc.

The camera products released before ZT30 still use the old address,

including ZR30, A2 mini, A8 mini, ZR10, R1M FPV camera, etc.

The video camera and the HDMI input module at the air unit will be labeled with RTSP address before leaving the factory. Please pay attention to the reference.

5.8 cannot display the video image solution

If you cannot view the image transmission display through the SIYI link, please follow the following steps to troubleshoot:

1. Check the connection:
   - Whether the GCS and the air unit have been matched (I. e. whether the GCS or the air unit status indicator is green)
   - The connection between the camera and the sky terminal is normal (can the link be connected to the camera through Ping Tools)
2. Check the software settings:
   - UniGCS app: Is the camera address bar set correctly
   - QGroundControl application: video settings are correct

If you cannot view the image transmission display through SIYI handheld ground station, please check the network status of Android system:

Ethernet switch: Whether there is an Ethernet logo on the Android main interface, if not, please enter the Android system settings to turn on the

Ethernet function.

Note

If you have checked yourself through the above steps and still have not located the problem, please contact your dealer immediately or directly contact SIYI Technology to check and solve the problem.

5.9 output images from the GCS to other devices

The UniRC 7 ground side supports multiple ways to output images to other display devices.

5.9.1 Output via HDMI interface at GCS

Take the example of outputting an image to an HDMI display:

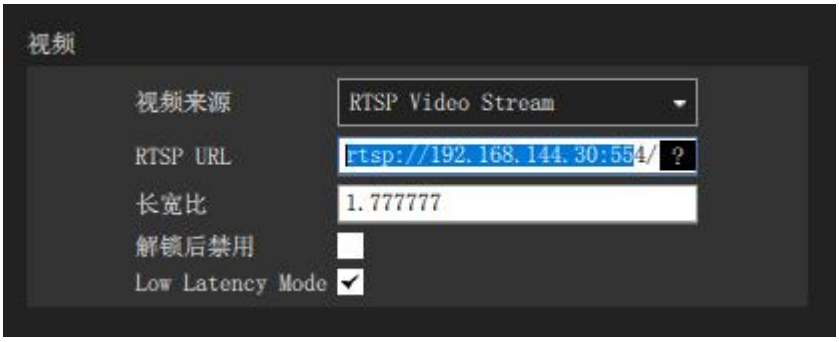
Use a standard HDMI patch cord to connect the UniRC 7 Pro ground-side standard HDMI interface to the HDMI interface of the monitor, and the screen mirror of the ground side can be displayed on the monitor in real time.

5.9.2 Share output via WiFi hotspot on the ground

Take sharing an image to a Windows laptop to display an image via QGC as an example:

1. Enter the Android system settings.
2. Go to Network and Internet-Hotspot and Tethering-WLAN Hotspot ".

3. Open the hotspot, set the hotspot name and connection password.
4. Use a Windows laptop to connect to the UniGCS ground-side shared hotspot.
5. Open the QGC ground station software on your laptop. Go to Application Settings-Video and switch the video source to RTSP Video Stream ".



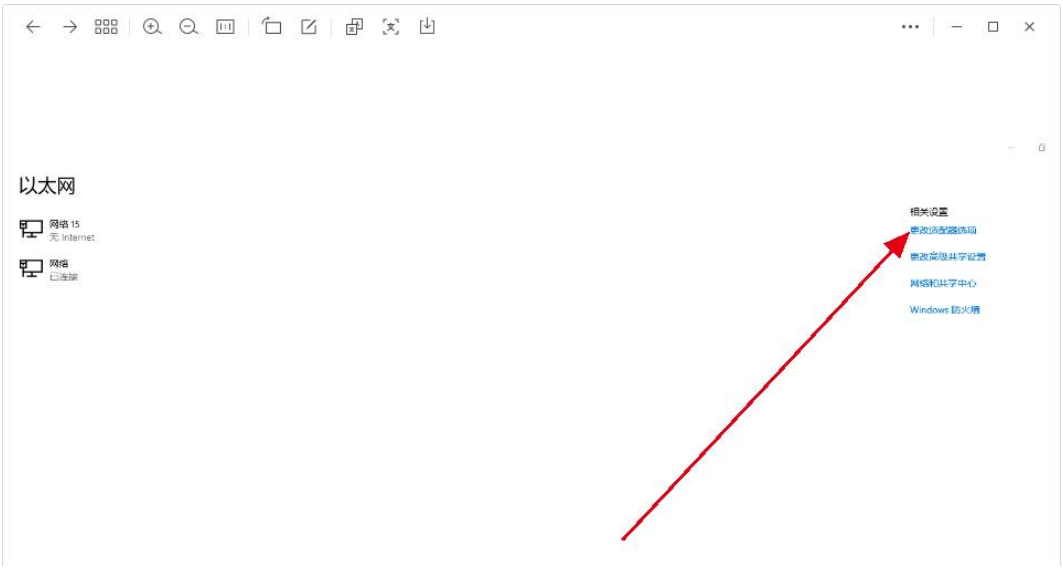
6. Enter the RTSP address of the camera device connected to the air unit in the RTSP URL field to display the image of the corresponding camera.

Note

If the external device sharing the image through the ground-side WiFi hotspot and the software running on the UniRC 7 ground-side display the same video stream, the image may be stuck due to bandwidth constraints. At this time, please disable one of the videos, or set one video stream to "SIYI Camera 1/2" while the other still uses RTSP address.

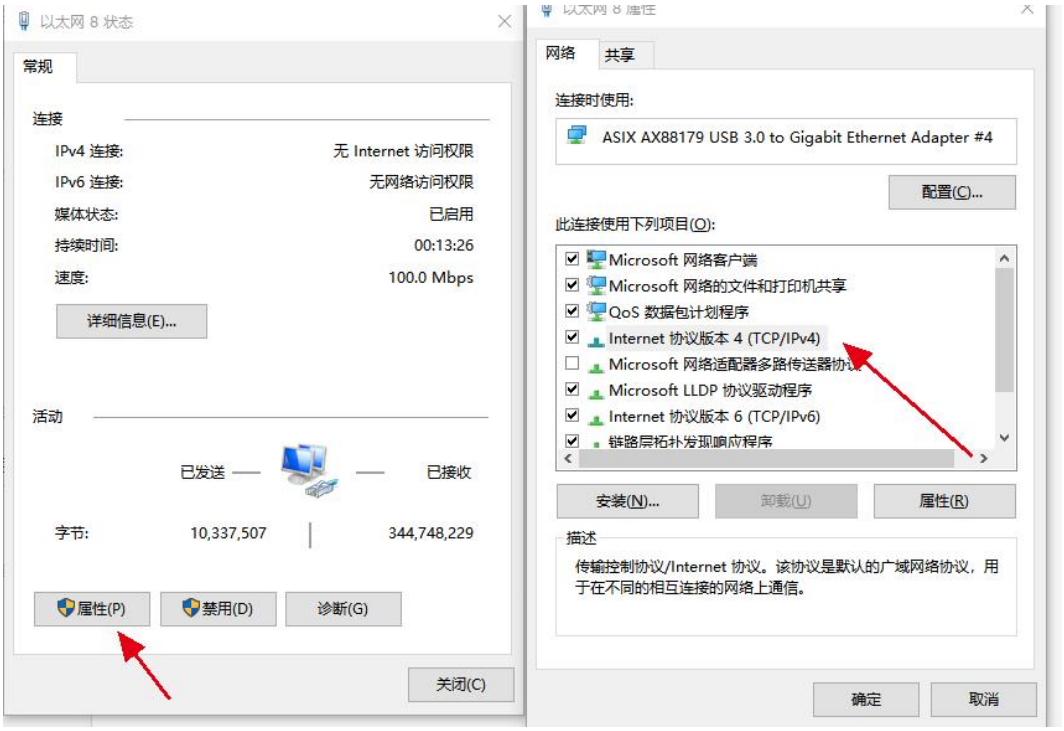
5.9.3 Output image through Ethernet port

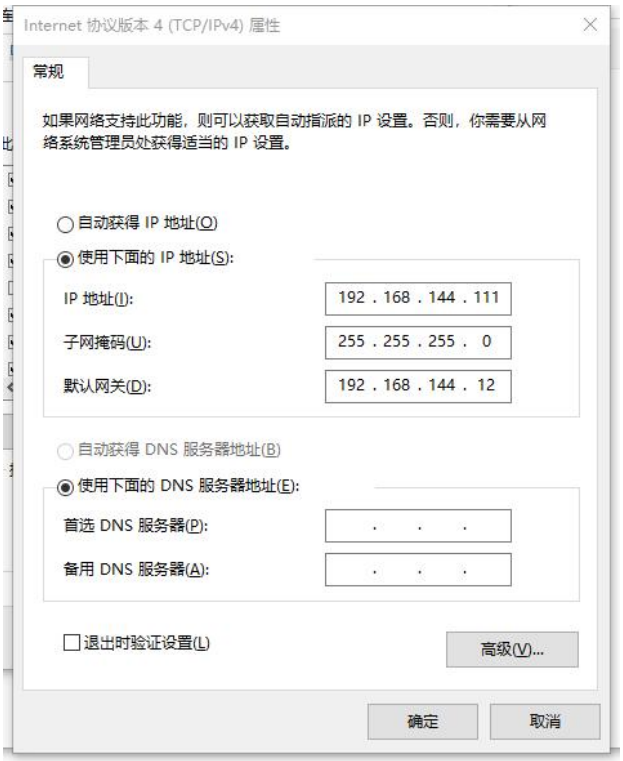
1. The UniRC 7 PRO link is in communication state, and the video input interface on the sky side is connected to the camera or the pan-tilt pod.
2. Connect the LAN port at the top of the UniRC 7 PRO GCS to the PC through the RJ45 to 4-pin cable.
3. Open the Ethernet settings on the PC, click "Change Adapter Options" and find the newly joined network.



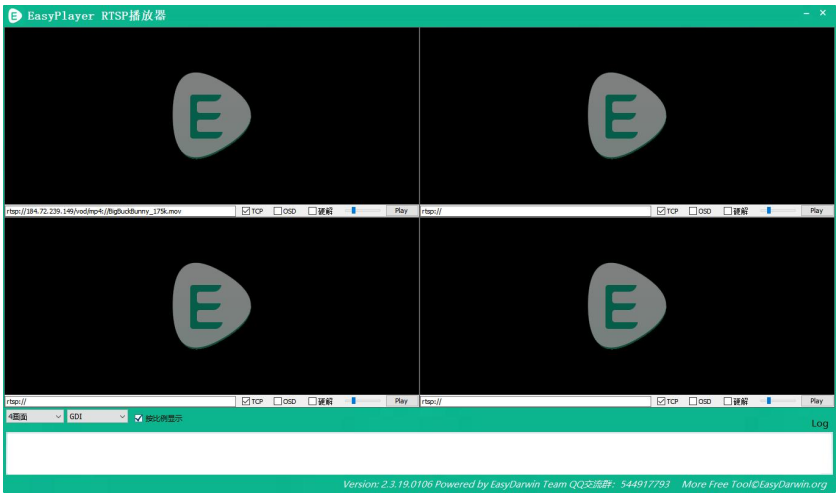
4. Find the new network and click Properties Internet Protocol Version

4(TCP/IPv4). Modify the IP address as follows:

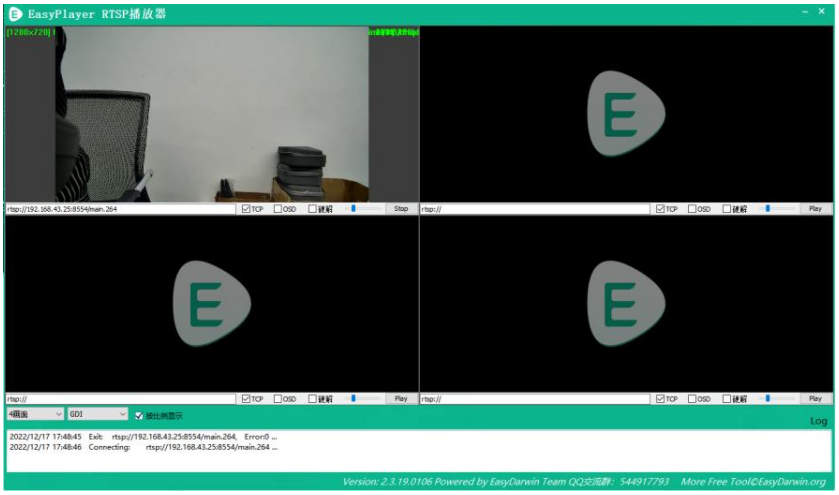




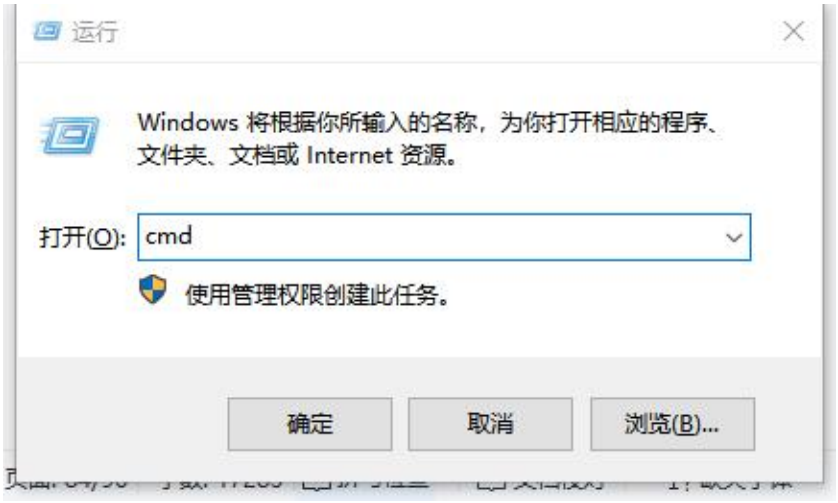
5. Run the RTSP plotting software EasyPlayer.



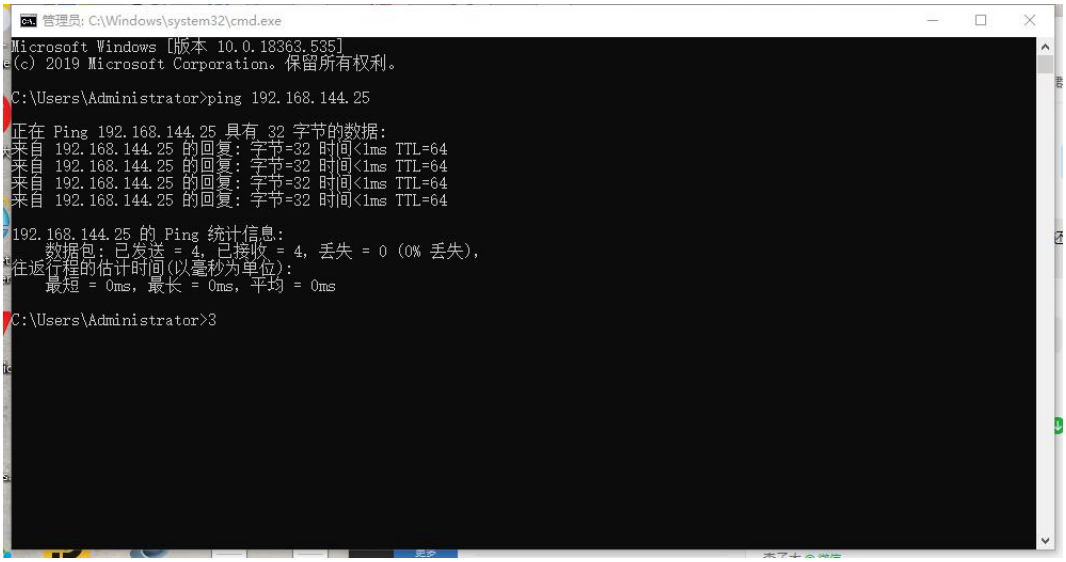
6. Enter the full RTSP address of the camera or gimbal pod in the IP address column of the EasyPlayer player to display the image.



7. If the image cannot be displayed normally, please enter the Ping application at the UniRC 7 GCS to check whether the network is communicating, and then run the key combination "Win + R" on the PC to enter the menu below.



8. Enter "cmd" and click Enter to enter the Ping program. Refer to the figure below to enter the IP address of the camera. If there is a reply, it indicates that the network communication is normal and the graph can be plotted normally. If there is no reply, the link is blocked, and the wiring or interface condition needs to be checked.



Chapter 6 SDK Communication Protocol

Protocol Format Description 6.1

Field	Index	Byte size	Content Description
STX	0	2	0x 5566 is the start flag
CTRL	2	1	0:need_ack whether the current packet requires ack 1:ack_pack whether this package is ack package 2-7: Reserved
Data_len	3	2	Data Field Byte Length Low Byte Preceded
SEQ	5	2	Sequence of frames, range (0~65535) low byte before
CMD_ID	7	1	Command ID
DATA	8	Data_len	Data
CRC16		2	CRC16 check low byte first for the entire packet

6.2 Communication Command

6.2.1 0x 40: Get Remote Hardware ID

CMD_ID:0x 40 ------ Hardware ID			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			

	Uint8_t	hardware_id[12]	Hardware ID string (10 digits)

eg:
Send (HEX):55 66 01 00 00 00 40 81 9c
Re (HEX):55 66 02 0C 00 09 00 40 36 38 30 31 31 33 30 31 31 00 7b 8b

6.2.2 0x 16: Get System Settings

CMD_ID:0x 16 ------ Get system settings			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			
	Uint8_t	match	Command value of frequency pair (0 start frequency pair; 1,2 medium frequency pair; 3 complete frequency pair)
	Uint8_t	Com1_baud _type	UART1 Baud Rate on Sky Side 1:BAUD_9600 3:BAUD_57600 5:BAUD_115200
	Uint8_t	Joy_type	Rocker type value (0-3 corresponds to Japanese hand-American hand-Chinese hand-custom)
	Uint8_t	Rc_bat	Remote control power * 10V
	Uint8_t	Com2_baud _type	UART2 Baud Rate on Sky Side 1:BAUD_9600 3:BAUD_57600 5:BAUD_115200

6.2.3 0x 17: System Settings

CMD_ID:0x 17 ------ System Settings			
send data format			
Serial Number	Data Type	Data Name	Data Description

	Uint8_t	match	Frequency command value (1 turns on frequency; 0 turns off frequency) This item is set to 1, but not set to 0
	Uint8_t	Com1_Baud_type	UART1 Baud Rate on Sky Side 1:BAUD_9600 3:BAUD_57600 5:BAUD_115200
	Uint8_t	Joy_type	Rocker type value (0-3 corresponds to Japanese hand-American hand-Chinese hand-custom)
	Uint8_t	reserved	
	Uint8_t	Com2_Baud_type	UART2 Baud Rate on Sky Side 1:BAUD_9600 3:BAUD_57600 5:BAUD_115200
ACK Data Format			
	int8_t	sta	1 OK Negative numbers represent setup errors

6.2.4 0x 42: Remote Channel Data

CMD_ID:0x 42 ------ remote control channel data			
send data format			
Serial Number	Data Type	Data Name	Data Description
	Uint8_t	freq	Output frequency: 0: Send off 1:2Hz 2:4Hz 3:5Hz 4:10Hz 5:20Hz 6:50Hz 7:100Hz
ACK Data Format			
1	int16_t	CH1	Two bytes per channel (default 1050~1950)

2	int16_t	CH2	
3	int16_t	CH3	
.....	int16_t	.....	
16	int16_t	CH16	

eg:
Send (HEX):55 66 01 00 00 00 42 02 B5 C0(4HZ) *needs to be sent three times* in a row
55 66 01 01 00 00 00 42 00 F7 E0 (closed) *needs to be sent three times*
Re (HEX)(2HZ):55 66 00 20 00 99 00 42 DC 05 DC 00 DC 05 DC 05 DC 05 DC 05 DC 05 DC 05 DC 05 DC 05 1A 04 DC 05 DC 05 1A 04 DC 05 1A 04 FF 88

6.2.5 0x 43: Get Remote Link Information

CMD_ID:0x 43 ------ Get remote control link information			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			
	uint16_t	freq	Frequency
	uint8_t	pack_loss_rate	packet loss rate
	uint16_t	real_pack	Valid package
	uint16_t	real_pack_rate	effective packet rate
	uint32_t	data_up	Data transmission uplink data per second byte/s
	uint32_t	data_down	Data transmission downlink data per second byte/s
	uint32_t	data_up_2	Data transmission 2 Uplink data volume per second byte/s
	Uint32_t	Data_down_2	Data transmission 2 Downlink data volume per second byte/s

eg:
Send (HEX):55 66 01 00 00 00 43 e2 ac
Reply (HEX):

6.2.6 0x 44: Obtain Image Transmission Link Information

CMD_ID:0x 44 ------ Obtain the link information of image transmission			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			
	uint16_t	video_up	Figure uplink code rate (video_up/10)Kbps
	uint16_t	video_down	Downlink code rate (video_down) Mbps
	uint8_t	channel	Figure transmission wireless channel (1-16)
	int16_t	signal_strength	Max.-44dBm
	uint8_t	signal_quality	0~100%(5 gears)

eg:
Send (HEX):55 66 01 00 00 00 44 05 dc
Reply (HEX):

6.2.7 0 x47: Get Firmware Version Number

CMD_ID:0x 47 ------ Get version number			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			

	uint32_t	rc_version	Remote control firmware version number
	uint32_t	rf_version	Receiver Firmware Version Number
	uint32_t	ground_version	Version number of GCS map transmission
	uint32_t	sky_version	Sky side graph version number

ps: The obtained version number is four bytes in hexadecimal, with the first byte in the low bit and the last byte in the high bit. The first byte is ignored, and the remaining 3 bytes are the version number, for example, 0x 00 0x 03 0x 05 0x 68, the version number is 5.3.0, and the same is used for other version numbers.

eg:

Send (HEX):55 66 01 00 00 00 47 66 ec

Re (HEX):55 66 02 10 00 02 00 47 00 03 05 68 07 02 05 69 02 02 00 56 02 00 56 6d 21

6.2.8 0 x48: Get All Channel Mapping

CMD_ID:0x 48 ------ Get all channel mappings			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			
1	Uint8_t	Ch1_type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
1	uint8_t	Ch1_ entity_id	ID of the physical channel
2	Uint8_t	Ch2_type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
2	uint8_t	Ch2_ entity_id	ID of the physical channel
3	Uint8_t	Ch3_type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
3	uint8_t	Ch3_ entity_id	ID of the physical channel

4	Uint8_t	Ch4_type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
4	uint8_t	Ch4_ entity_id	ID of the physical channel
.....	uint8_t	.....	

eg:
Send (HEX):55 66 01 00 00 00 48 89 1d
Re (HEX):55 66 02 20 00 16 00 48 00 00 00 00 01 00 02 00 03 05 00 05 01 01 02 01 00 01 01 01 01 02 01 03 00 04 00 05 02 01 02 00 03 00 C1 28

6.2.9 0x 48: Get Channel Mapping

CMD_ID:0x 49 ------ Get channel mapping			
send data format			
Serial Number	Data Type	Data Name	Data Description
	Uint8_t	rc_ch	RC channels (1-16)
ACK Data Format			
	Uint8_t	rc_ch	RC channels (1-16)
	uint8	Type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
	uint8_t	entity_id	ID of the physical channel

eg:
Send (HEX):55 66 01 00 00 00 49 02 4F 1C
Re (HEX):55 66 02 03 00 17 00 49 02 00 01 33 9F
Channel Mapping Type Definition

Category	Type	entity_id	Physical Switch Definition
Rocker	0	0	J1
	0	1	J2
	0	2	J3
	0	3	J4

	0	8	J5
	0	9	J6
Dial Wheel	0	4	LD1
	0	5	RD1
3 gear switch	5	0	SA
	5	1	SB
Key	1	0	S1
	1	1	S2
	1	2	S3
	1	3	S4
	1	4	L1
	1	5	L2
	1	6	R1
	1	7	R2
	1	8	R3
	1	9	M1
	1	10	M2
	1	11	M3
	1	12	M4
	1	13	M5
	1	14	M6
Virtual Channel	2	0	NULL
	2	1	RSSI
No entity channels are mapped	3	0	NULL

6.2.10 0 x49: Set the Channel Mapping

CMD_ID:0x4A ------ Set channel mapping			
send data format			
Serial Number	Data Type	Data Name	Data Description
	Uint8_t	rc_ch	RC channels (1-16)
	uint8	Type	Mapping Physical Channel Types 0-Rocker, pulsator and other channels 1-Key and other channels
	uint8_t	entity_id	ID of the physical channel

ACK Data Format			
	Uint8_t	rc_ch	RC channels (1-16)
	int8_t	sta	1 OK Negative numbers represent error codes

eg:
Send (HEX):55 66 01 03 00 00 00 4A 02 00 00 4F EB
Re (HEX):55 66 02 00 18 00 4A 02 01 4C C3

6.2.11 0x4B: Get all channel reverses

CMD_ID:0x4B ------ Get all channel reverses			
send data format			
Serial Number	Data Type	Data Name	Data Description
ACK Data Format			
1	int8_t	ch1_reverse	RC channel 1 reverse (1 forward,-1 reverse)
2	int8_t	Ch2_reverse	RC channel 2 reverse (1 forward,-1 reverse)
3	int8_t	Ch3_reverse	RC channel 3 reverse (1 forward,-1 reverse)
4	int8_t	Ch4_reverse	RC channel 4 reverse (1 forward,-1 reverse)
5	int8_t	Ch5_reverse	RC channel 5 reverse (1 forward,-1 reverse)
.....	int8_t	.....	

eg:
Send (HEX):55 66 01 00 00 00 00 4B EA 2D
Re (HEX):55 66 02 10 00 19 00 4B 01 FF 01 01 01 01 01 01 01 01 01 01 01 01 01 D1 F9

6.2.12 0x4C: Acquire Channel Reverse

CMD_ID:0x4C ------ Get channel reverse
send data format

Serial Number	Data Type	Data Name	Data Description
	Uint8_t	rc_ch	RC channels (1-16)
ACK Data Format			
	Uint8_t	rc_ch	RC channels (1-16)
	int8_t	reverse	Reverse (1 forward,-1 reverse)

eg:
Send (HEX):55 66 01 00 00 00 00 4C 02 BA E3
Re (HEX):55 66 02 00 1C 00 4C 02 FF 3B F6

6.2.13 0x4D: Set Channel Reversal

CMD_ID:0x4D ------ Set channel reversal			
send data format			
Serial Number	Data Type	Data Name	Data Description
	Uint8_t	rc_ch	RC channels (1-16)
	int8_t	reverse	Reverse (1 forward,-1 reverse)

eg:
Send (HEX):55 66 01 02 00 00 00 4D 02 FF 0F 86
Re (HEX):55 66 02 02 00 1D 00 4D 02 01 8B 65

6.3 communication interface

1. Serial port

Serial port name:/dev/ttyHS3

Baud rate: 115200

2. Bluetooth

3.Type-C(usb virtual serial port, external interface)

4.UDP interface (server IP:192.168.144.20, port number: 19856)

Note that the client port number avoids using 19856, otherwise it will conflict with the server.

Note:

When using the serial port interface, the ground station APP matches and product different remote controllers according to the Android system model name (ro..mo del)

Standard Version Name: Standard_94

Professional Version Name: Pro_94

Two data transmission interfaces are optional, and one SDK interface is optional. The optional combination is as follows:

(Switch between data transmission interface and SDK interface through UniGCS APP)

	Digital transmission 1	Digital transmission 2	SDK interface
Combination 1	Serial/Bluetooth	Bluetooth/Serial	Serial/Bluetooth/Type-C
Combination 2	Serial/Type-C	Type-C/Serial	Serial/Bluetooth/Type-C
Combination 3	UDP/Bluetooth	Bluetooth/UDP	UDP/Bluetooth/Type-C
Combination 4	UDP/Type-C	Type-C/UDP	UDP/Bluetooth/Type-C
Combination 5	Bluetooth/Type-C	Type-C/Bluetooth	UDP/Serial/Bluetooth/Type-C

6.4CRC16 check code

```
const uint16_t crc16_tab[256];
```

```
/very/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * *
CRC16 Coding & Decoding G(X) = X^16+X^12+X^5+1
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * */
uint16_t CRC16_cal(uint8_t *ptr, uint32_t len, uint16_t crc_init)
{
uint16_t crc, oldcrc16;
uint8_t temp;
crc = crc_init;
while (len--!=0)
{
temp=(crc>>8)&0xff;
oldcrc16=crc16_tab[*ptr^temp];
crc=(crc<<8)^oldcrc16;
ptr++;

}
//crc=~crc; //??
return(crc);
}

uint8_t crc_check_16bites(uint8_t* pbuf, uint32_t len,uint32_t* p_result)
{
uint16_t crc_result = 0;
crc_result= CRC16_cal(pbuf,len, 0);
* p_result = crc_result;

return 2;
}


const uint16_t crc16_tab[256]= {0x0,0x1021,0x2042,0x3063,0x4084,0x50a5,0x60c6,0x70e7
0x 8108,0x 9129,0xa14a,0xb16b,0xc18c,0xd1ad,0xe1ce,0xf1ef,
0x 1231,0x 210,0x 3273,0x 2252,0x52b5,0x 4294,0x72f7,0x62d6,
0x 9339,0x 8318,0xb37b,0xa35a,0xd3bd,0xc39c,0xf3ff,0xe3de,
0x 2462,0x 3443,0x 420,0x 1401,0x64e6,0x74c7,0x44a4,0x5485,
0xa56a,0xb54b,0x 8528,0x 9509,0xe5ee,0xf5cf,0xc5ac,0xd58d,
0x 3653,0x 2672,0x 1611,0x 630,0x76d7,0x66f6,0x 5695,0x46b4,
0xb75b,0xa77a,0x 9719,0x 8738,0xf7df,0xe7fe,0xd79d,0xc7bc,
0x48c4,0x58e5,0x 6886,0x78a7,0x 840,0x 1861,0x 2802,0x 3823,
0xc9cc,0xd9ed,0xe98e,0xf9af,0x 8948,0x 9969,0xa90a,0xb92b,
0x5af5,0x4ad4,0x7ab7,0x6a96,0x1a71,0xa50,0x3a33,0x2a12,
0xdbfd,0xcbdc,0xfbbf,0xeb9e,0x9b79,0x8b58,0xbb3b,0xab1a,
```

0x6ca6,0x7c87,0x4ce4,0x5cc5,0x2c22,0x3c03,0xc60,0x1c41,
0xedae,0xfd8f,0xcdec,0xddcd,0xad2a,0xbd0b,0x8d68,0x9d49,
0x7e97,0x6eb6,0x5ed5,0x4ef4,0x3e13,0x2e32,0x1e51,0xe70,
0xff9f,0xefbe,0xdfdd,0xcffc,0xbf1b,0xaf3a,0x9f59,0x8f78,
0x 9188,0x81a9,0xb1ca,0xa1eb,0xd10c,0xc12d,0xf14e,0xe16f,
0x 1080,0xa1,0x30c2,0x20e3,0x 5004,0x 4025,0x 7046,0x 6067,
0x83b9,0x 9398,0xa3fb,0xb3da,0xc33d,0xd31c,0xe37f,0xf35e,
0x2b1,0x 1290,0x22f3,0x32d2,0x 4235,0x 5214,0x 6277,0x 7256,
0xb5ea,0xa5cb,0x95a8,0x 8589,0xf56e,0xe54f,0xd52c,0xc50d,
0x34e2,0x24c3,0x14a0,0x 481,0x 7466,0x 6447,0x 5424,0x 4405,
0xa7db,0xb7fa,0x 8799,0x97b8,0xe75f,0xf77e,0xc71d,0xd73c,
0x26d3,0x36f2,0x 691,0x16b0,0x 6657,0x 7676,0x 4615,0x 5634,
0xd94c,0xc96d,0xf90e,0xe92f,0x99c8,0x89e9,0xb98a,0xa9ab,
0x 5844,0x 4865,0x 7806,0x 6827,0x18c0,0x8e1,0x 3882,0x28a3,
0xcb7d,0xdb5c,0xeb3f,0xfb1e,0x8bf9,0x9bd8,0xabbb,0xbb9a,
0x4a75,0x5a54,0x6a37,0x7a16,0xaf1,0x1ad0,0x2ab3,0x3a92,
0xfd2e,0xed0f,0xdd6c,0xcd4d,0xbdaa,0xad8b,0x9de8,0x8dc9,
0x7c26,0x6c07,0x5c64,0x4c45,0x3ca2,0x2c83,0x1ce0,0xcc1,
0xef1f,0xff3e,0xcf5d,0xdf7c,0xaf9b,0xbfba,0x8fd9,0x9ff8,
0x6e17,0x7e36,0x4e55,0x5e74,0x2e93,0x3eb2,0xed1,0x1ef0
};

Chapter 7 Android System

7.1 Download Apps

The following applications are installed by default at the factory of the handheld ground station:

- UniGCS
- SIYI QGroundControl
- Ping Tools

If you need to update or re-access the above applications, please visit the official website of SIYI Technology (www.siyi.biz) and product-related pages.

7.2 how to import and install apps

7.2.1 Import and install via TF card

Save the application installation file to the TF card, connect the TF card to the TF card slot at the bottom of the handheld ground station, copy the application installation file to the Android system file disk, and then find the copied file through the Android system file manager to select installation.

7.2.2 Import and install via USB flash drive

Save the application installation file to the U disk, connect the U disk to

the USB-A interface at the top of the handheld ground station, then copy the application installation file to the Android system file disk, and find the copied file through the Android system file manager to select installation.

Attention

Please try to streamline your handheld ground station Android system, avoid installing too many applications unrelated to the operation, so as not to affect the normal operation.

7.2.3 Import and install via Type-C file transfer

The GCS can be directly connected to the Windows computer through the Type-C interface to use the file transfer function.

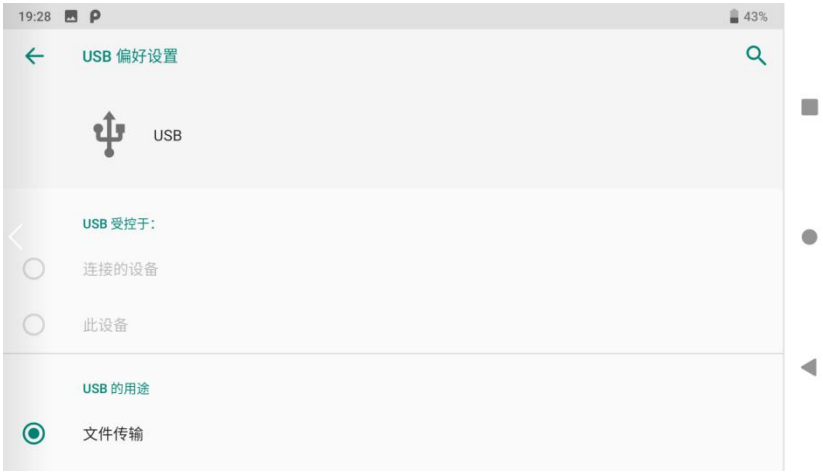
Steps

1. Connect to the Windows computer through the ground side Type-C interface.
2. Click OK to turn off video display and turn on Type-C file transfer ".

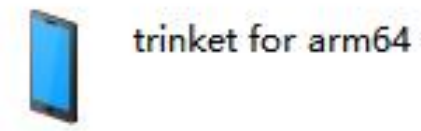
3. In the Android drop-down menu, click "Android System · Charging this device via USB".

4. Continue to tap "Charging this device via USB, tap to see more options".

5. Select File Transfer ".



6. At this time, the GCS will be recognized by the Windows computer as a storage device.

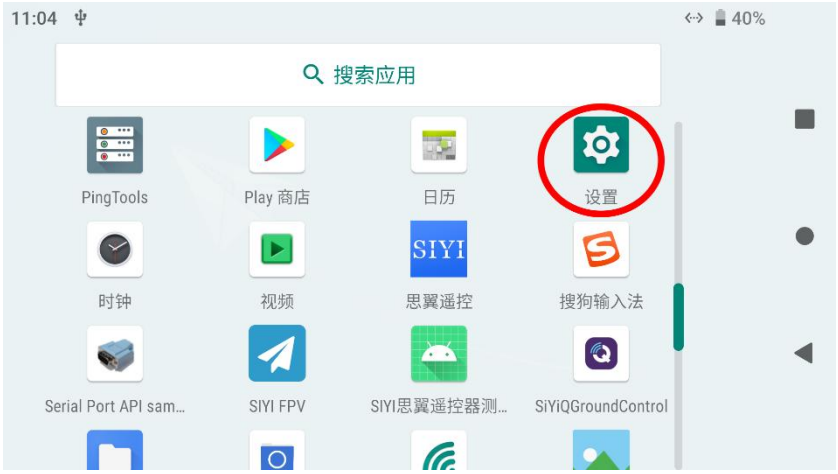


7.3 to view Android firmware version

The SIYI handheld ground station is equipped with a dedicated Android system.

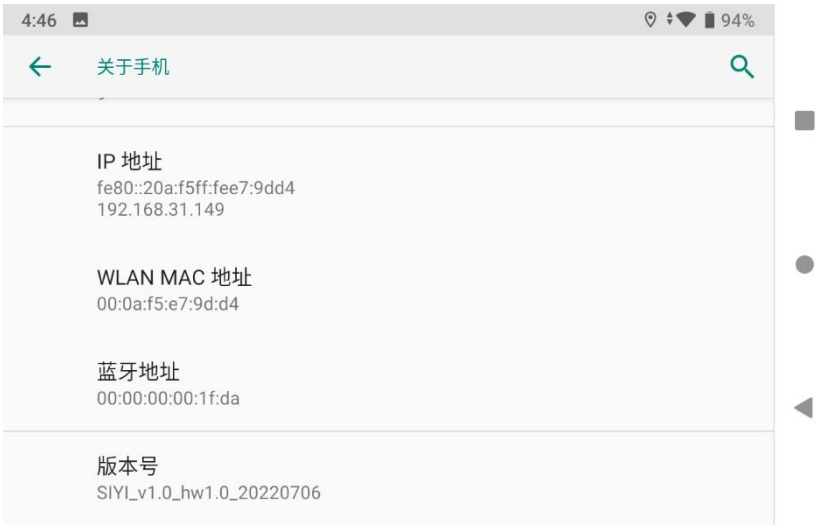
Steps

1. Enter the Android system settings menu.



2. Go down the page to find the "About Phone" menu and enter.

3. Slide down to the last item to view the Android firmware version number.



Chapter 8 SIYI Adjustment Assistant

"SIYI parameter adjustment assistant" is a Windows software independently developed by SIYI technology to support almost all SIYI products for channel setting, firmware upgrade, camera parameter adjustment, pan-tilt calibration and other functions.

Note

This manual is based on version v1.3.9 of "SIYI Adjustment Assistant.

Both the "SIYI Adjustment Assistant" and the firmware package can be obtained from the official website:

https://SIYI.biz/index.php?id=downloads1&asd=191

Upgrade 8.1 Firmware

The GCS and the air unit support the connection of "SIYI parameter adjustment assistant" for firmware upgrade.

Before the firmware upgrade, it is necessary to prepare the following tools, firmware and software:

- SIYI parameter adjustment assistant (v1.3.9 or later)
- GCS firmware
- air unit firmware

Note

The above tools and firmware can be obtained from the relevant product page of SIYI official website.

- Fast charging data line (Type-C to Type-C)
- Adapter (Type-C to USB)

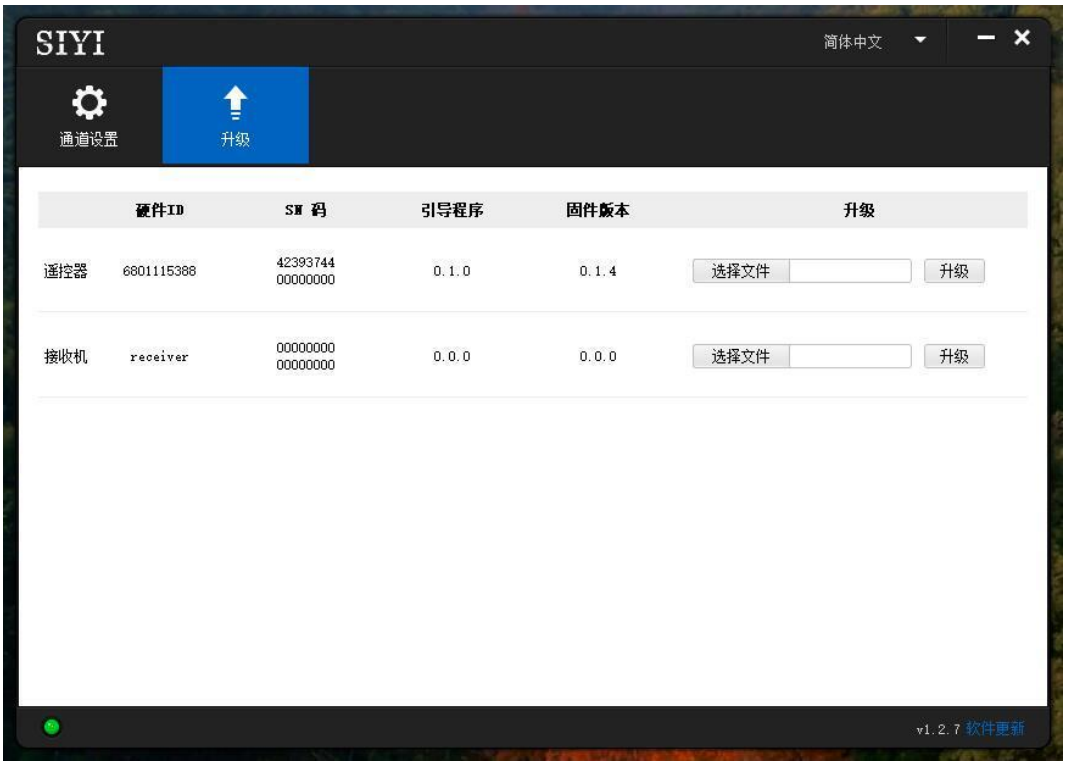
Note

The above tools are standard when the product is shipped.

The fast charging data line is connected to the conversion head and can be used for firmware upgrade at the air unit.

Firmware Upgrade Steps

1. Install the "Swing Adjustment Assistant" to your Windows equipment.
2. After the installation is complete, connect the USB port of the Windows device to the upgrade port at the bottom of the ground side.
3. Open the "SIYI parameter adjustment assistant" and switch to the "upgrade" menu to check the current firmware version and corresponding boot program version on the ground and sky.



4. If the firmware is not the latest, click "Select File" after "Remote Control" menu to import the latest ground terminal firmware and click "Upgrade". Then wait for the upgrade process to complete 100 percent.
5. Disconnect the GCS from the Windows device, and connect the air unit to the Windows device through the fast charging data line and the USB adapter. Then repeat the above steps to upgrade the firmware for the air unit.

Chapter 9 After Sales and Warranty

Please visit the SIYI Technology support page at Service and Support - SIYI Technology | Empowering and Building an Intelligent Robot Ecology for the latest after-sales and warranty information.