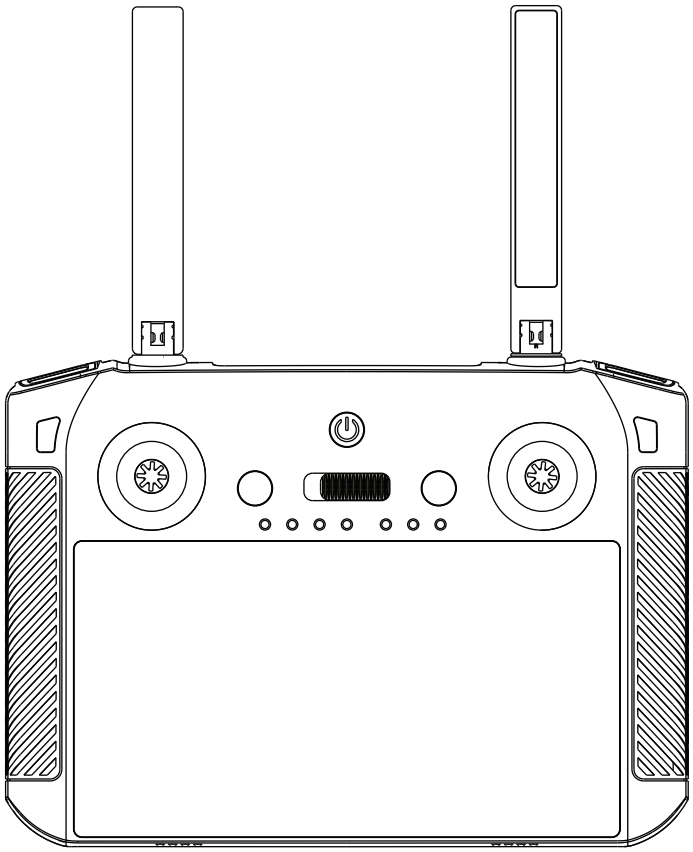
HEQUAV

SCEPTER 15 Remote Controller

Quick Start Guide and Disclaimer

V1.1 202605



Shenzhen Heq Intelligent Technology Co., Ltd.

1. Disclaimer

Thank you for purchasing our company's product, the SCEPTER 15 Remote Controller. Be sure to read this document carefully before using the product to understand your legal rights, responsibilities, and safety instructions ; otherwise, it may lead to property damage, safety accidents, and personal safety hazards.

Once this product is used, it is deemed that you have understood, acknowledged, and accepted all terms and content of this declaration. The user promises to be responsible for their own actions and all consequences arising therefrom. The user promises to use this product only for legitimate purposes and agrees to any relevant policies or guidelines that may be formulated by the company under these terms. The final right to interpret this document and all related documents belongs to the company.
Updates are subject to change without prior notice.

2. Product Usage Precautions

1.The input power for the SCEPTER 15 receiver supports 12V to 27V. Please strictly supply power to the module according to these power parameters.

2.Please ensure the antenna is installed before powering on to avoid circuit damage.

3.During use, please ensure that the antenna is not obstructed or bent, and keep it as far as possible from large metal structural parts to avoid affecting communication performance.

4.Do not disassemble or modify without authorization. If you encounter problems that cannot be solved during installation or use, please contact the company.

5.During installation, please ensure an appropriate distance is maintained between electronic devices to reduce electromagnetic interference.

6.Before use, please ensure all connections are secure and reliable, and all components are working normally.

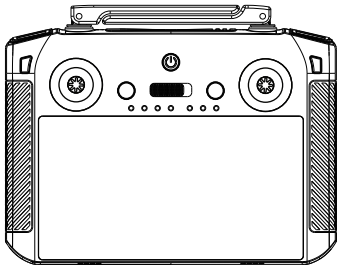
7.Before use, please check the surrounding environment to ensure there are no other devices operating on the same frequency band to avoid affecting data transmission.

8.If you encounter problems that cannot be solved during product installation or use, please contact the company.

3. Product Introduction

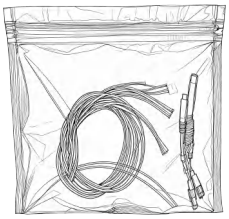
The SCEPTER 15 remote control system is a professional-grade control platform aimed at multi-scenario operations , designed specifically for smart devices such as drones, unmanned ground vehicles, and unmanned boats. The system uses dual-band RF technology (2.4G + 5.8G) to build a 32-channel redundant communication architecture , which can achieve stable, beyond visual line of sight (BVLOS) transmission up to 15 kilometers even in complex electromagnetic environments. It supports real-time high-definition video streaming, multi-protocol data transparent transmission, and remote command control. The remote controller is equipped with a 5.5-inch high-brightness touchscreen and an Android smart system , combining professional control with mobile terminal expandability. It can connect to external display devices via HDMI or deploy customized apps , meeting the interactive needs for scenarios like industrial inspection and emergency rescue. The built-in fast-charging battery ensures 4.5 hours of continuous operation. The IP53 protection rating and wide temperature range design adapt to harsh outdoor environments. Coupled with the receiver's multi-interface compatibility (SBus/UART/Network/USB) , it can quickly interface with various unmanned devices' control systems, forming a complete remote monitoring and control solution.

4. Packing List (Standard Version)



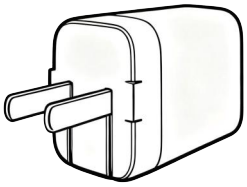
Remote Controller * 1 unit

Receiver * 1 unit



Air Unit Cable Kit * 1 pack

INCLUDING:
Antenna * 2,
Power cable * 1,
Network cable * 1,
Serial cable * 1



Charger * 1 piece

Data cable * 1 piece

5.Parameter List

Image Transmission
Antenna：Dual antenna
Max effective signal distance：15km
Operating frequency：7+7 (2.4G+5.8G)
Equivalent Isotropically Radiated Power (EIRP)：15dBm–27dBm
Communication Architecture: 32-channel

Screen
Resolution：1920x1080
Frame rate：60FPS
Size：5.5 inches
Max brightness：500cd/㎡
Touch：5-point touch

WIFI
WIFI Protocol：IEEE 802.11a/b/g/n/ac
Operating frequency：2.4G/5.8G
WIFI EIRP：17dBm (Max)

Bluetooth
Bluetooth Protocol ： 5.0
Bluetooth EIRP：8dBm (Max)
Operating frequency：2.4G

Battery
Battery capacity：5000mAh
Charging time ： 1.5 hours (when powered off)
Charging method：PD 30W fast charge
Operating endurance：4.5 hours (Power adaptive mode, 25℃room temp)

General Parameters
System：Android 11
Weight：700g
HDMI：1080p
Operating temp：-10℃ ~ 45℃
Protection rating：IP53

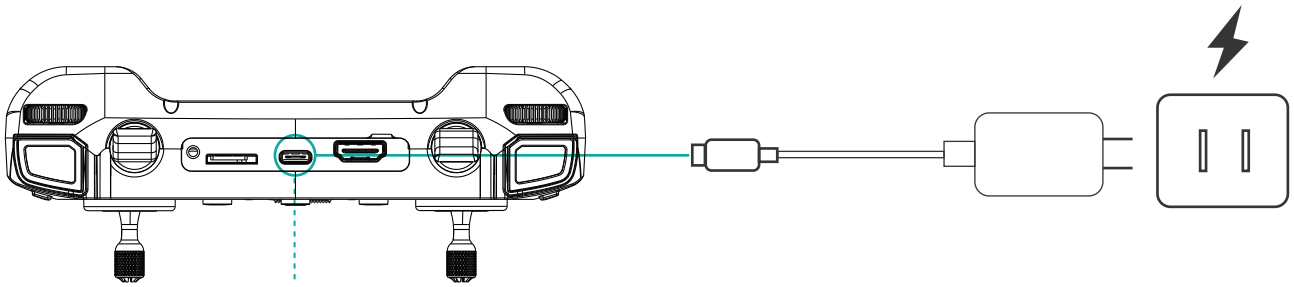
Hardware Interface：Charging: Type-C, External storage: TF card slot
Storage：4G memory, System storage 32G expandable (Micro SD storage card)
Dimensions：
Length 175mm, Width 137mm, Thickness 47.4mm (without sticks installed)
Length 175mm, Width 137mm, Thickness 64mm (with sticks installed)

Receiver Parameters
Hardware Interface：SBUS: 3-Pin
Data Transmission (Link to flight controller): UART 4-Pin
Network Interface: GH1.25-4P
USB Interface: GH1.25-4P/ Type-C

Remote control signal：16-channel SBUS
Antenna gain：3dBi
Weight (without antenna)：50g
Operating voltage：12V–27V
Operating temp：-10℃~45°C
Dimensions (without antenna)：57mm x 47mm x 18.1mm

6.Charging

Open the dust cover on the top of the body to find the Type-C port. Connect the charger to the Type-C port of the remote controller for charging. It takes about 1 hour and 30 minutes to fully charge at the fastest rate.

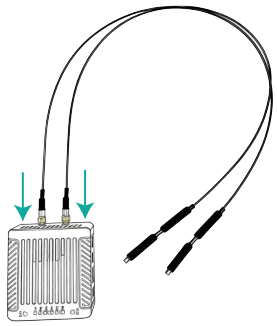


To maintain the best condition of the remote controller's battery, please ensure a complete charge once every 3 months.

7.Installation

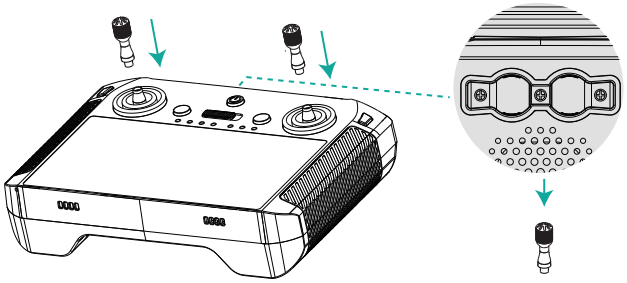
1.Antenna Installation

The RF antenna must be fully installed before the air unit is powered on.

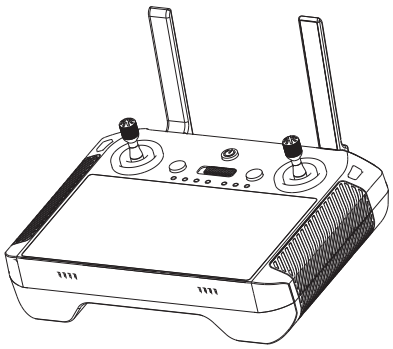


2.Stick Installation

Take out the sticks from the back of the remote controller and install them onto the remote controller.



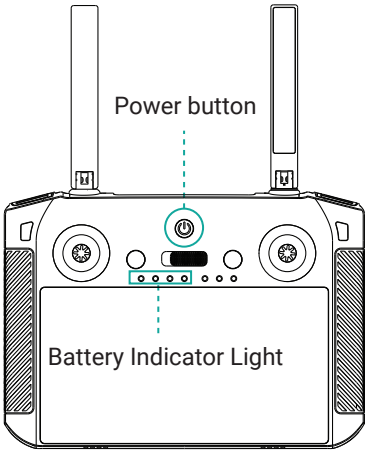
3.Deploy the Remote Controller Antennas



8.Basic Remote Controller Operations

1. Remote Controller Power On, Battery Check, and Power Off

① Short press the power button and wait for the battery indicator lights to illuminate to display the current remote controller battery level.
② After the battery indicator lights illuminate, long press the power button to turn on the remote controller.
③ Power Off: When the screen is lit (powered on), long press the power button to pop up the power options, then select Power Off.

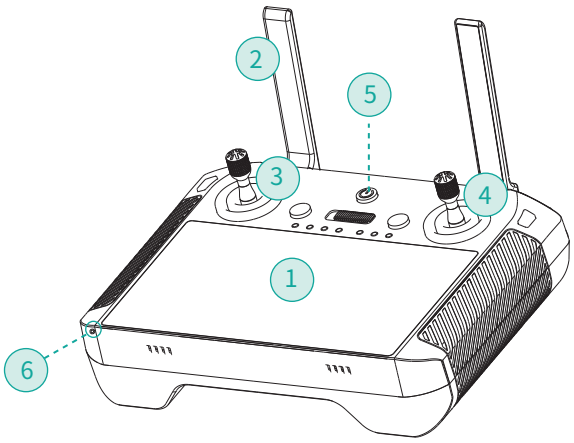


2. Frequency Pairing

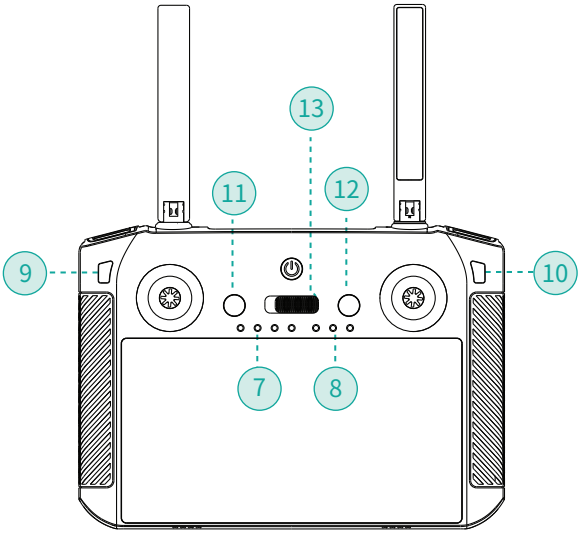
Pairing is completed by default upon power-on. To pair with other receivers, please refer to the following steps:

① Power on the remote controller.
② After installing the antenna on the air unit, connect a 12-27V battery to power it on.
③ Wait for the air unit's "link" light to flash slowly. Long press the "PAIR" button , then release the "PAIR" button after the link light flashes quickly.
④ Open the Scepter Tool on the remote controller.
⑤ On the App, select the Image Transmission page and select the Pairing button to start pairing (see the app operation section for details).

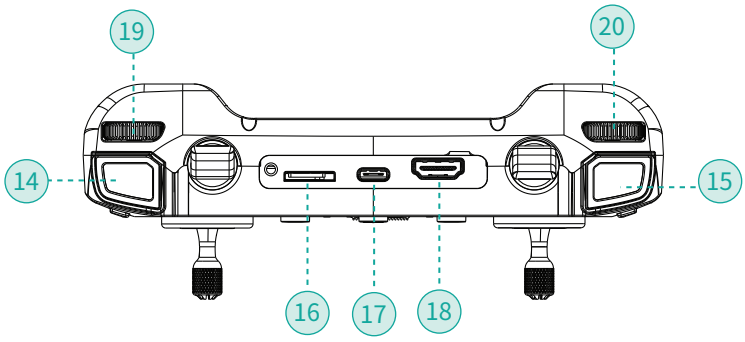
9.Hardware Introduction



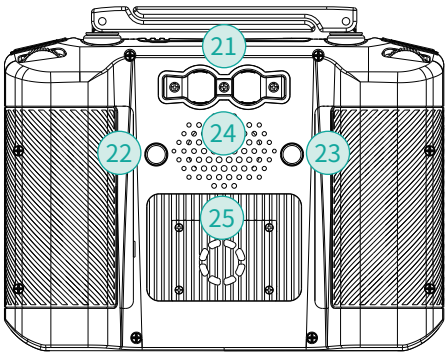
1、Screen
2、Antenna
3、Left Stick
4、Right Stick
5、Power Button
6、Microphone



7、Battery Indicator Light
8、Signal Quality Indicator Light
9、Custom Function Button L1
10、Custom Function Button R1
11、Custom Function Button C1
12、Custom Function Button C2
13、Custom Three-Stage Function Switch

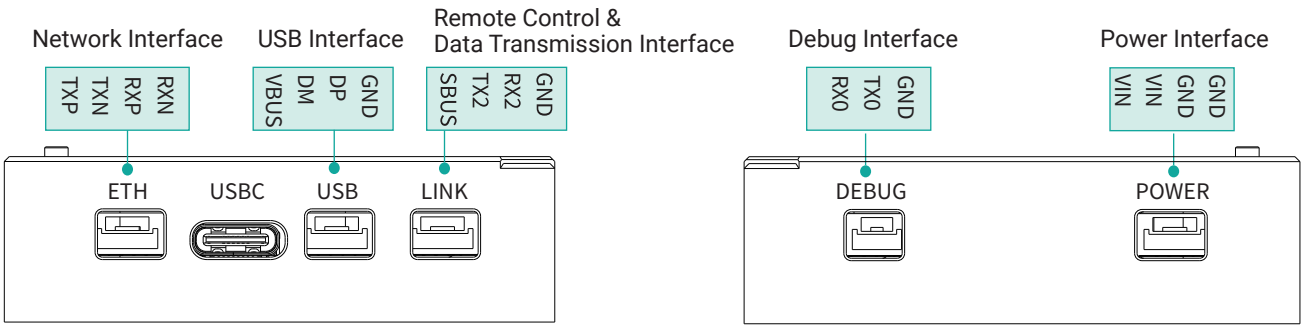


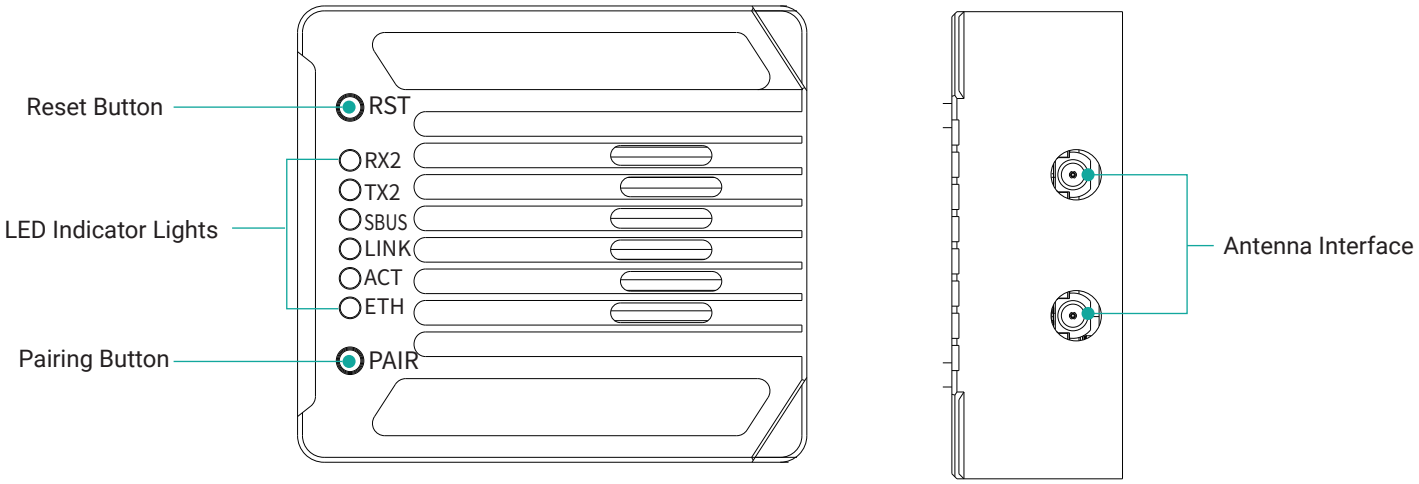
14、Custom Function Button L2
15、Custom Function Button R2
16、SD Card Slot
17、TYPE-C
18、HDMI
19、Left Wheel
20、Right Wheel



21、Stick Storage Slot
22、Custom Function Button L3
23、Custom Function Button R3
24、Speaker
25、Radiator

10.Receiver Interfaces and Button Description

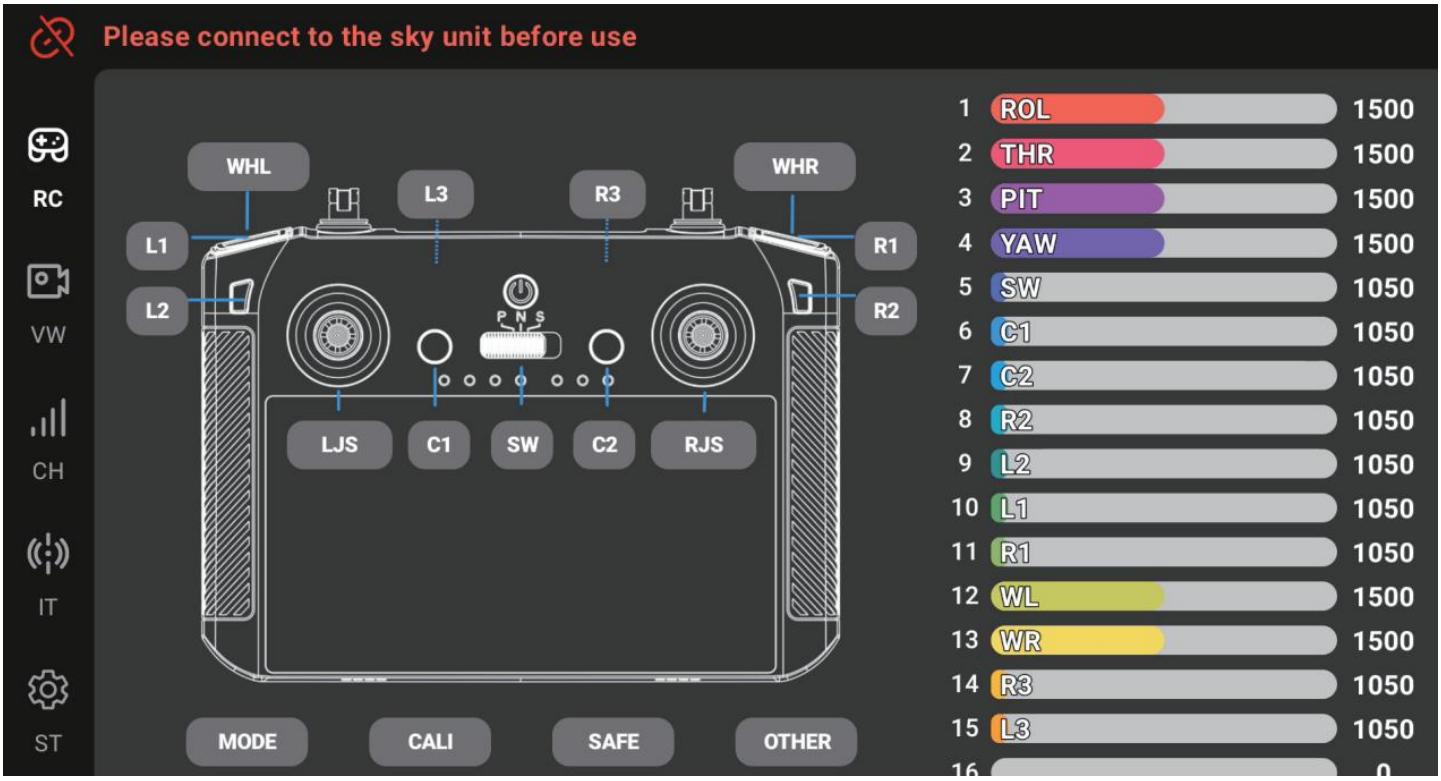




COMPONENT	DESCRIPTION
Network Interface	100M network interface. Typically used to connect external network devices such as computer cards, payloads, network cameras, LiDAR, etc.
USB Type-C Interface	Connect to a PC for receiver firmware upgrades.
USB Interface	Connect to the onboard computer for data communication. (This is the same interface as the USB Type-C; they cannot be used simultaneously.)
Remote Control / Data Telemetry Interface	· SBUS Output Interface: Default baud rate 100kbps, 1 start bit, 2 stop bits, even parity. SBUS is used to output signals from the remote control sticks, dials, buttons, etc. · UART Data Telemetry Interface: Default baud rate 115200bps, 1 start bit, 1 stop bit, no parity. Typically used for transmitting Mavlink data.
Power Interface	External power supply interface, 12V ~27V。
Debug Interface	Debug serial port, baud rate 115200bps.
Reset Button	Press to restart/reboot the module.
Pairing Button	Press and hold for 5 seconds to enter pairing mode. If pairing is unsuccessful, it will exit the mode after 60 seconds.
Antenna Interface	Connect a male pin MMCX connector antenna. A copper tube dual-frequency antenna is recommended.
LED Indicators Lights	· RX2: Data telemetry RX indicator. · TX2: Data telemetry TX indicator. · SBUS: SBUS transmission indicator. Flashes after successful pairing, indicating normal SBUS output. · LINK: Connection indicator. Slow blink: not paired; Rapid blink: pairing in progress; Steady on: wireless link connected. · ACT/ETH: Network/Ethernet indicator. Lights up when an Ethernet connection is established and blinks during data communication.

11.APP Operation

Click the Scepter Tool icon  on the system desktop.



Main Interface

The main interface is divided into the Status Bar at the top, the Function Bar on the left, and the Main Operation Area.

The Function Bar on the left contains:

Remote Control Function Option: Displays the remote control interface and the SBUS channel values corresponding to each stick, button, switch, and wheel component. Video Streaming Function Option, Displays the video stream screen, video frame rate, and other information.

Channel Function Option: Displays the current operating channel and the spectrum scan values for each 2.4G / 5.8G frequency point.Image Transmission Function Option,Allows control of the image transmission power, setting the video link, and re-pairing.

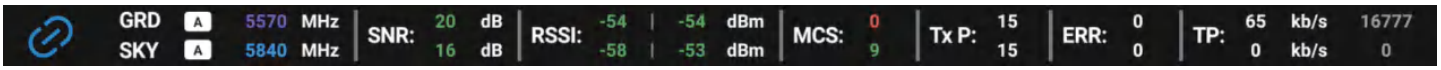
Settings Function Option: Displays the system and image transmission firmware version numbers.

Status Bar

The top Status Bar displays the wireless link connection status, communication frequency point, Signal-to-Noise Ratio (SNR), and antenna received signal strength.

Disconnected State:

Connected State:



It is divided into two rows, Ground End (GRD) and Sky End (SKY), to display their respective status information:

Communication Frequency Point (FREQ): Describes the specific frequency point currently used for wireless link transmission and reception.

Signal-to-Noise Ratio (SNR): Displays the current link's SNR. Used to evaluate the degree of signal interference and link status.

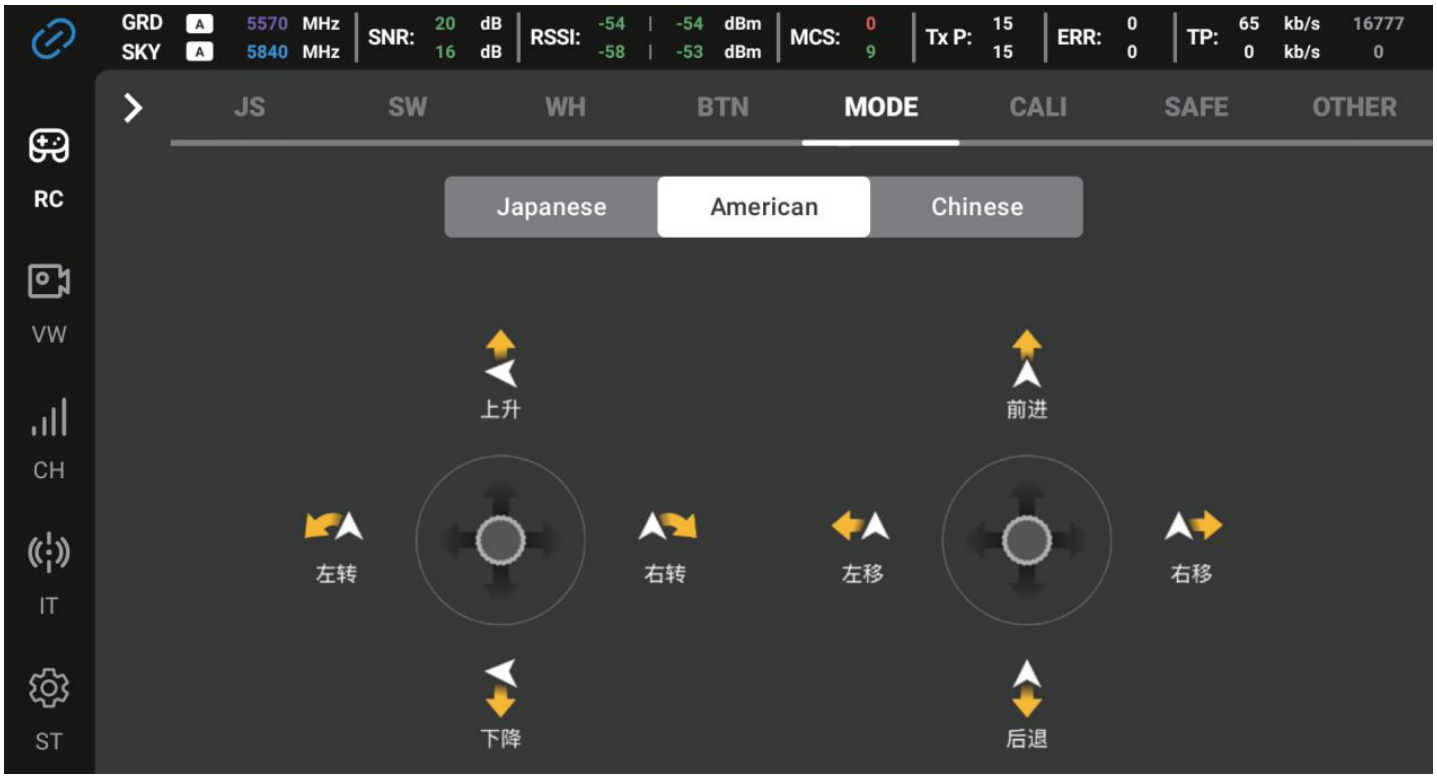
Signal Strength (RSSI): Refers to the energy of the received signal. Used together with SNR to evaluate current channel interference and link status.

Modulation and Coding Strategy (MCS): In general applications, the transmission (BR) data volume from the remote controller to the receiver is small, fixed at MCS=0. The transmission (Slot) data volume from the receiver to the remote controller is large, and the modulation and coding are adaptively adjusted according to the channel signal quality.

MCS Value	Coding Method
-2~2	BPSK
3~5	QPSK
6~8	QAM16
9~12	QAM64

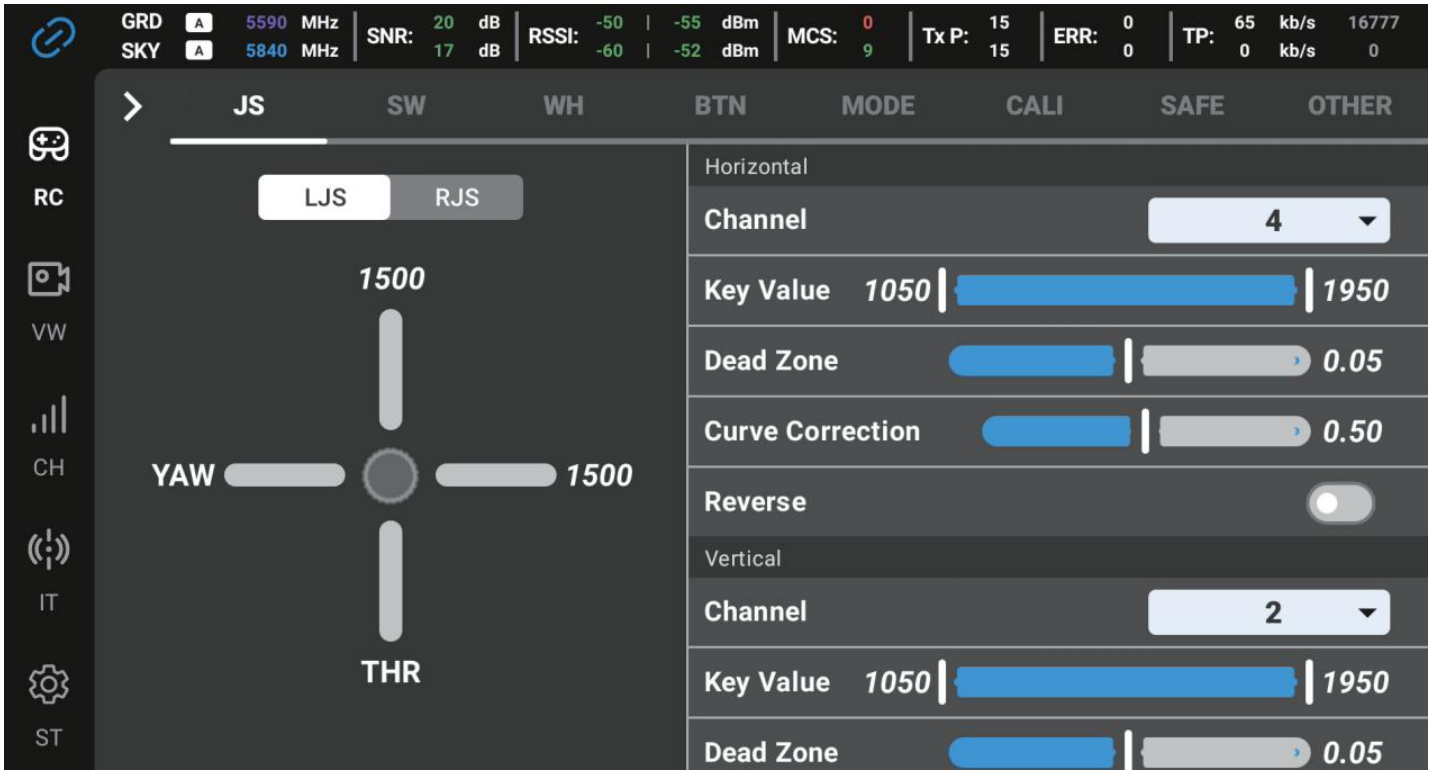
Mode Settings

On the Remote Control interface, click the Mode button at the bottom to enter the mode switch. You can switch between three stick modes: Japanese Hand, American Hand, and Chinese Hand. Click the corresponding mode option to enter that mode. The default factory configuration for the device is American Hand.



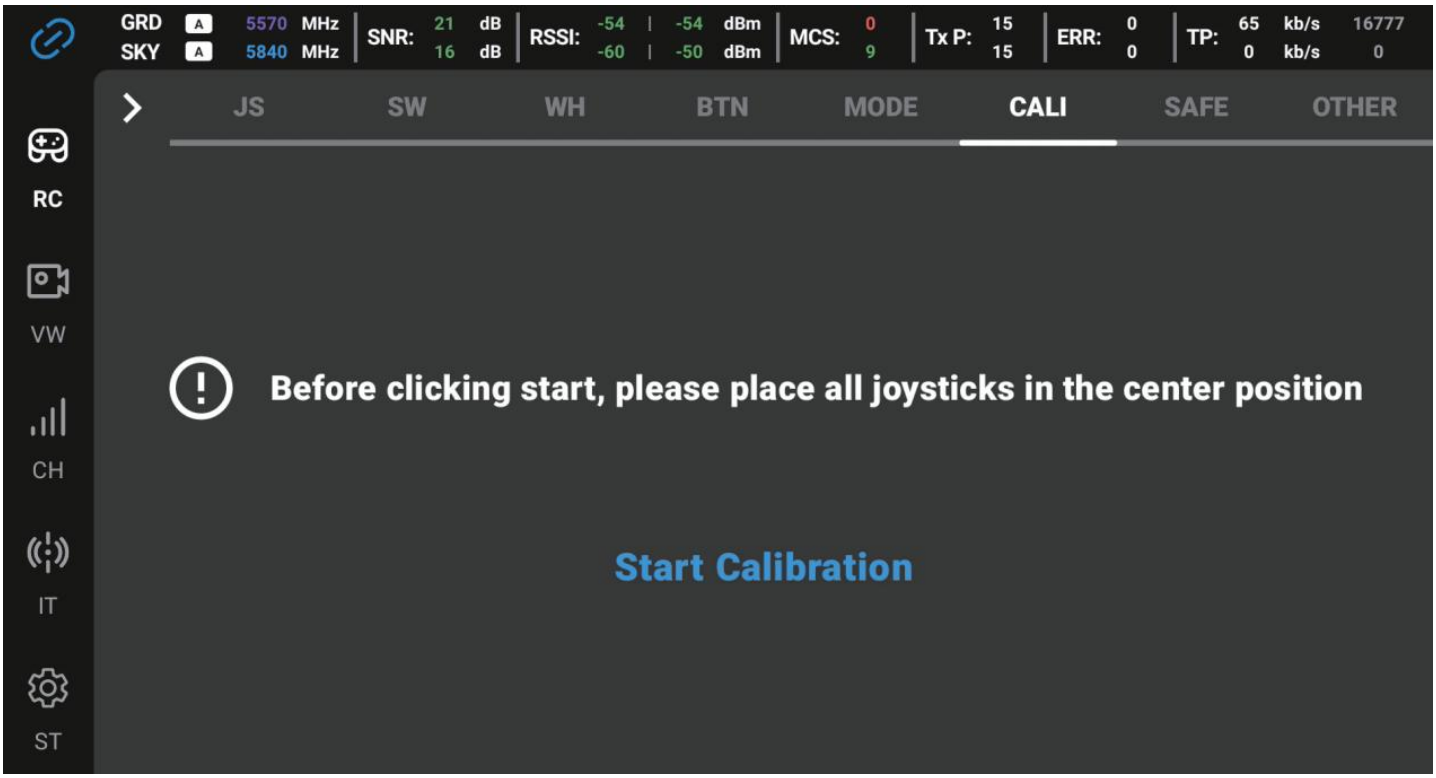
Stick Settings

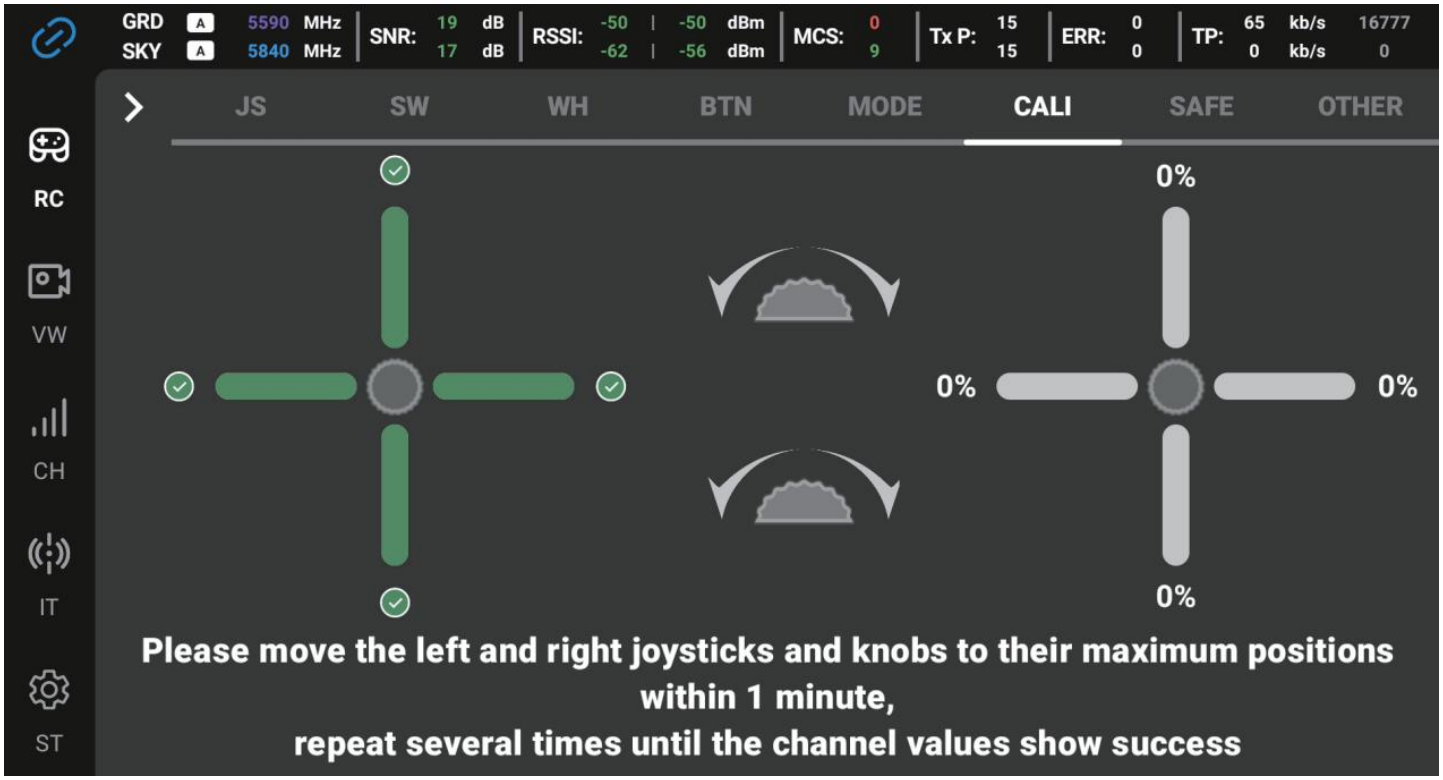
On the Remote Control interface, click the Left Stick or Right Stick button to enter the stick property settings. You can set the stick's maximum/minimum value, dead zone size, and more.



Stick Calibration

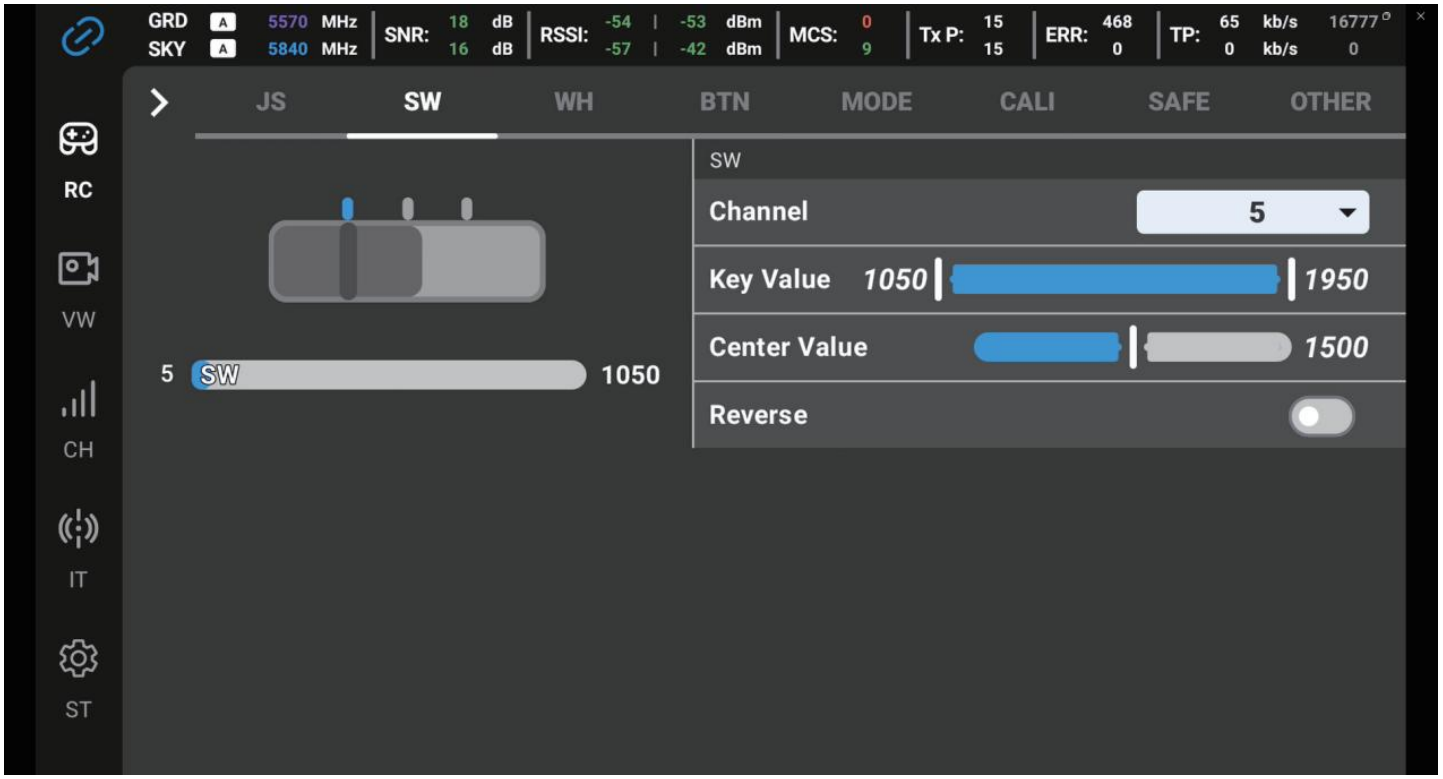
On the Remote Control interface, click the Calibration button to enter the stick calibration mode. Within 1 minute, push both sticks to their extreme positions in all four directions.





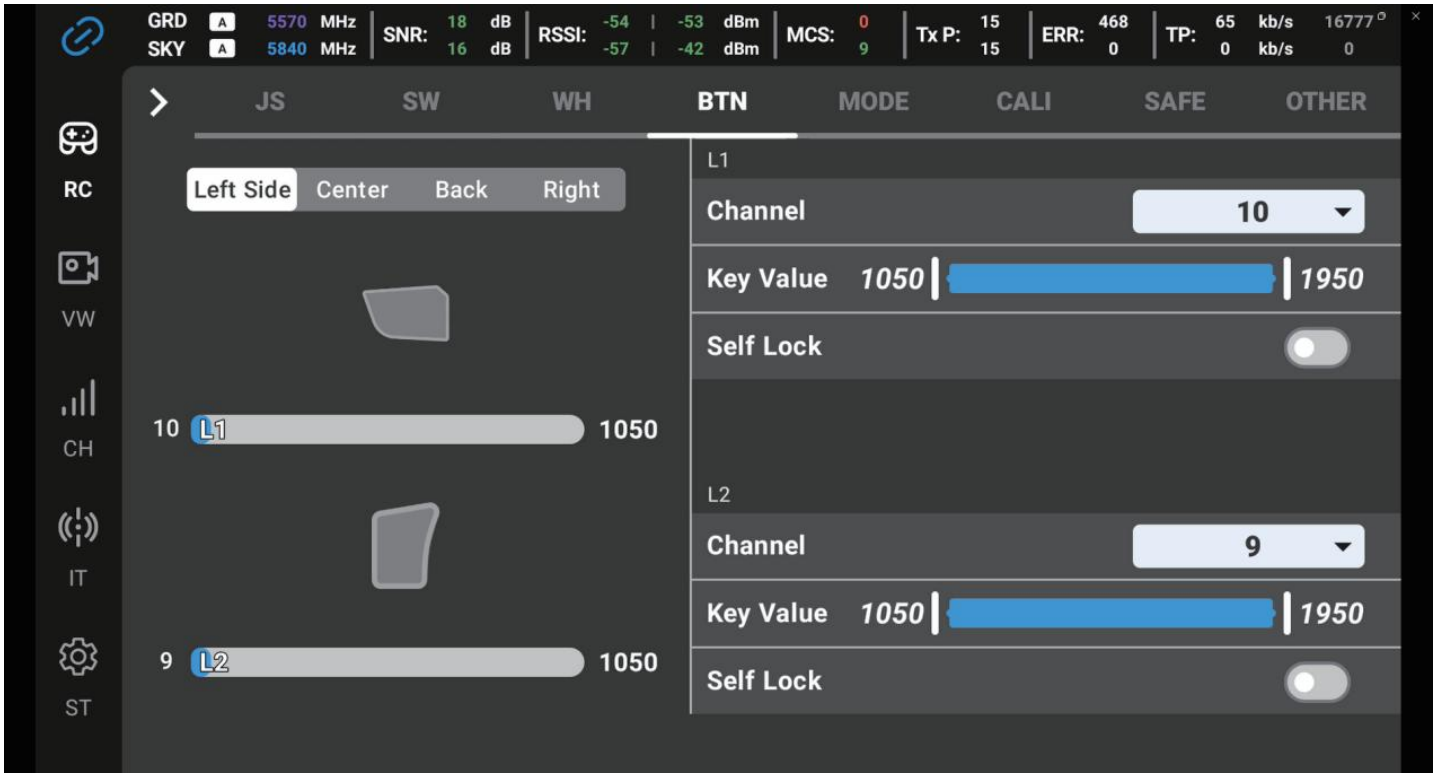
Switch Settings

On the Remote Control interface, click the SWL or SWR button to enter the switch settings. You can adjust the corresponding switch's channel, center value, and upper and lower limits.



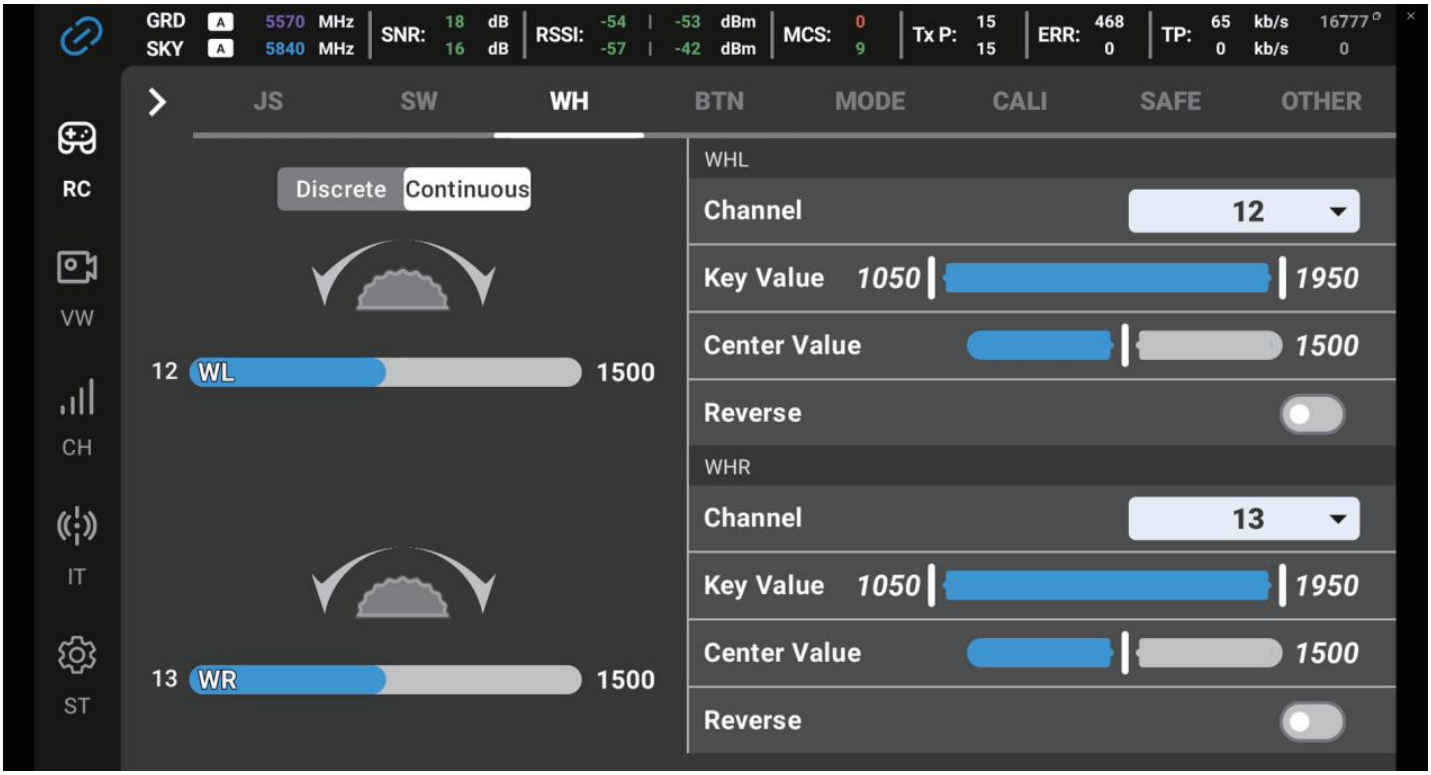
Button Settings

On the Remote Control interface, click any button (C1, C2, L1, L2, R1, R2) to enter the button settings. You can adjust the corresponding button's channel, upper/lower limits, and whether it is self-locking.



Wheel Settings

On the Remote Control interface, click the WL or WR button to enter the wheel property settings. You can adjust the corresponding wheel's channel, upper/lower limits, and whether it is reversed.



Channel Distribution

Displays channel-related information and parameter configurations. The line graph shows the frequency band currently used for remote-control communication and its corresponding noise energy scan results. Lower noise energy indicates better communication quality on that channel. In most cases, users do not need to configure these parameters manually, as the device automatically selects the optimal settings based on real-time interference conditions.

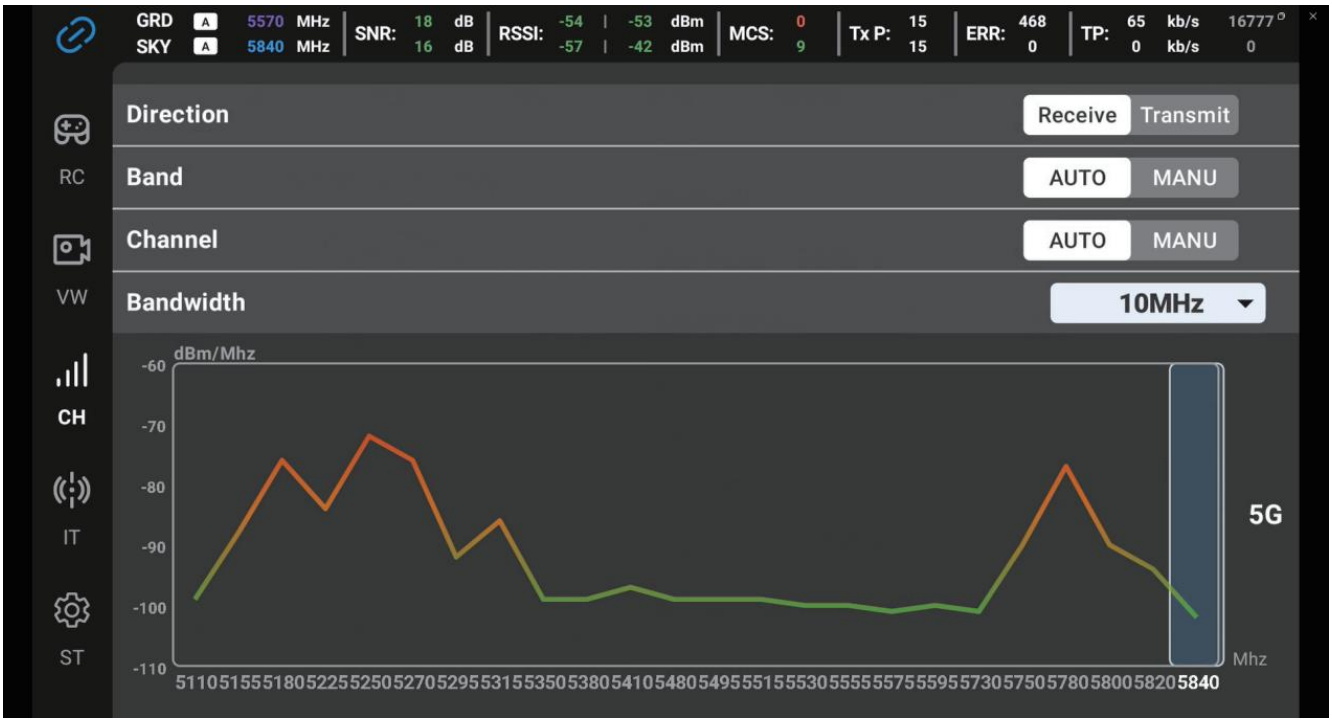
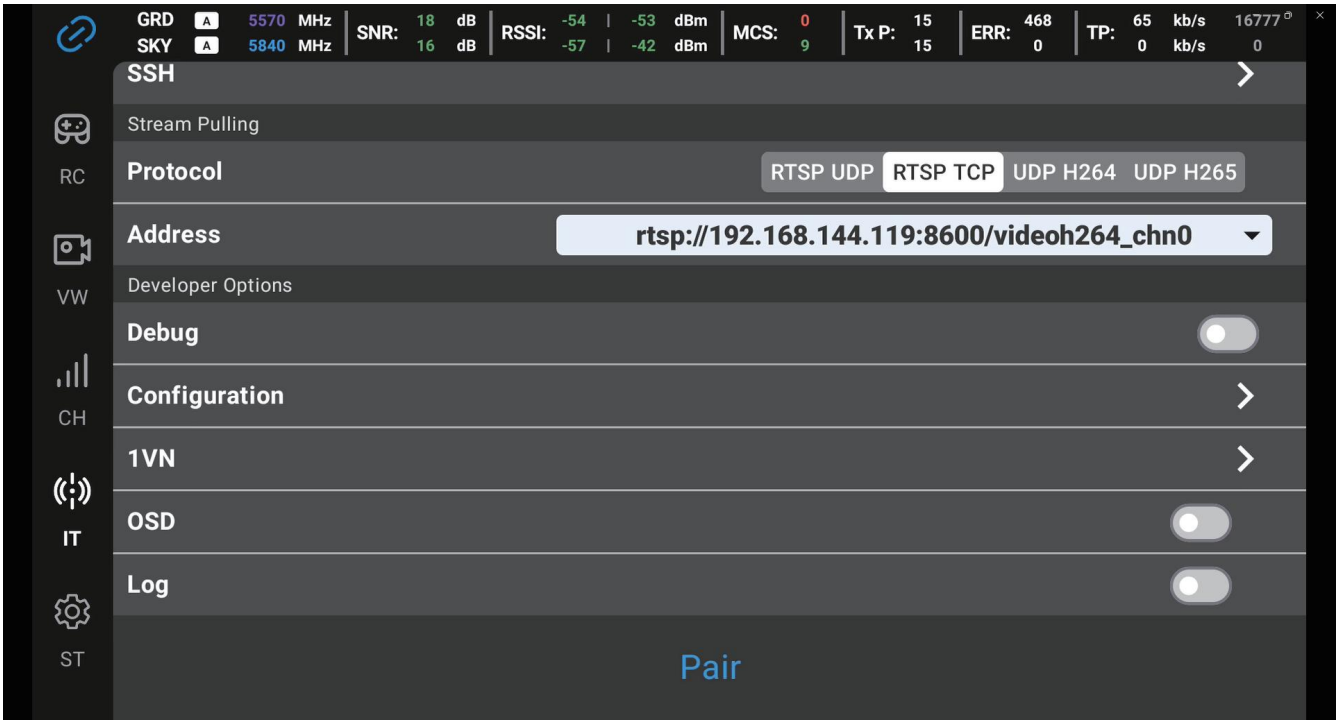


Image Transmission Settings and Pairing

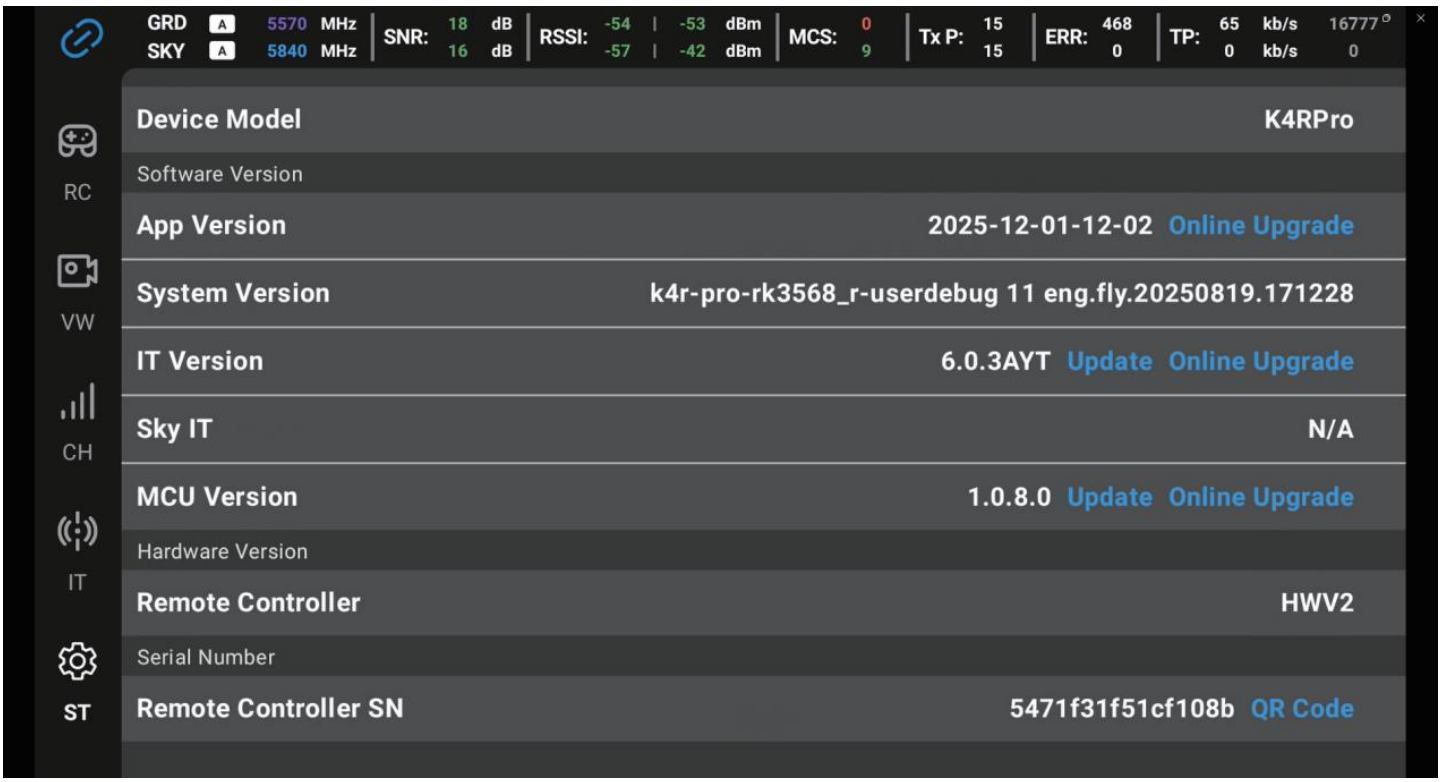
On the Image Transmission interface, you can control the power switch of the image transmission module and switch the communication status between image transmission and the system. You can input the video link connected to the receiver's network port in the Video Link field. There are four protocol options: RTSP UDP, RTSP TCP, UDP H264 Stream, and UDP H265 Stream.Click the Pairing button at the bottom of the Image Transmission interface. The image transmission enters the pairing state, and the connection status indicator light on the top of the remote controller flashes quickly.



The configuration sub-option on the Image Transmission interface is generally not required for users to set parameters; the default parameters can be used. It is only opened for special requirements.

System Settings

On the Settings page, you can check the device model, software version information, hardware version information (if supported), and other details. It supports image transmission firmware upgrade and remote control firmware upgrade.



In some special cases, an image transmission firmware upgrade may be required. You can place the image transmission firmware provided by our company on a microSD card and insert the microSD card into the slot.

1、Image Transmission Firmware Upgrade
Click the Update button corresponding to the Ground End Image Transmission field. A window will pop up allowing you to select the firmware file. After selecting the remote controller firmware file to be upgraded, wait for the upgrade process to complete automatically.

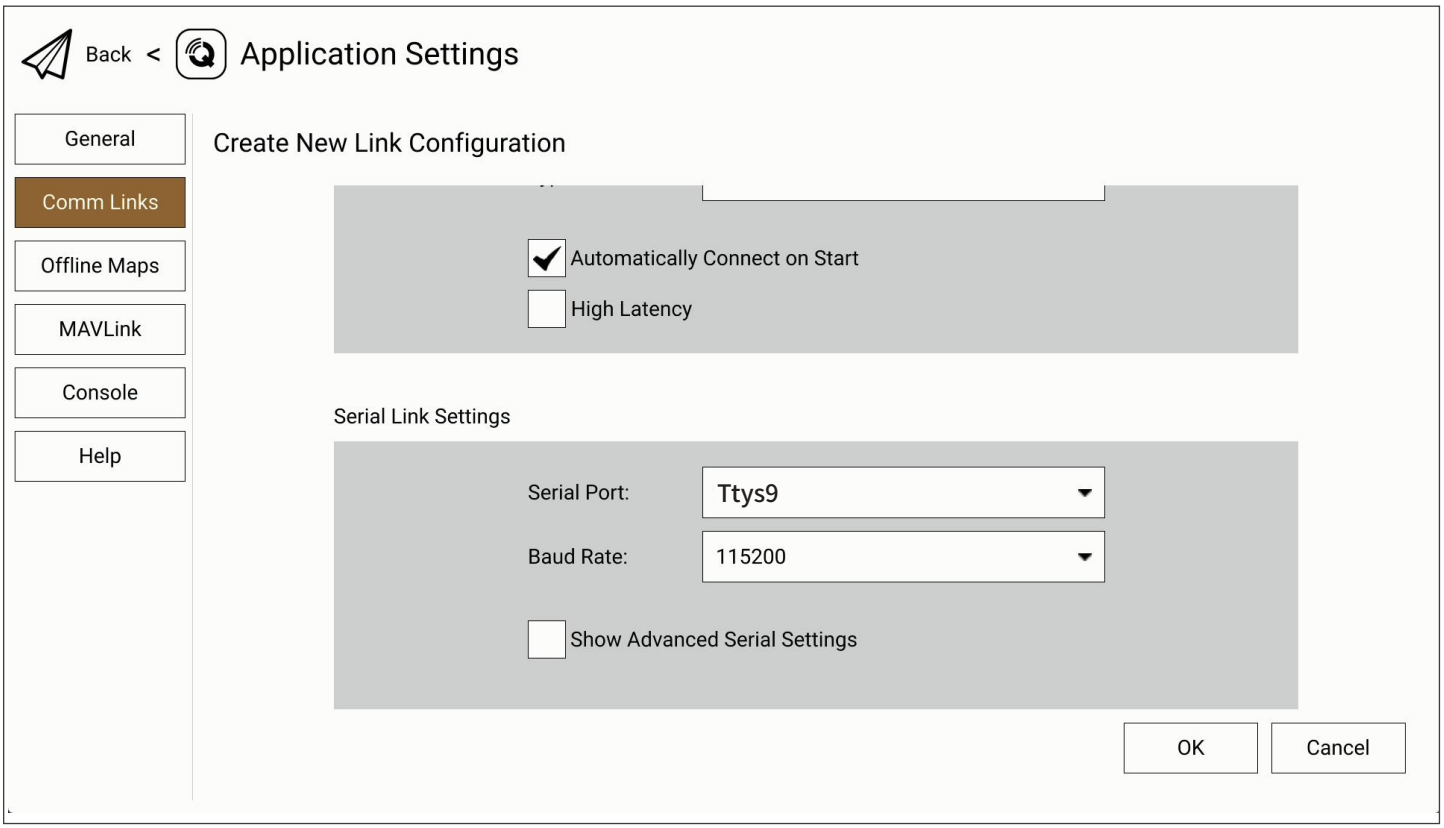
2、Remote Controller Firmware Upgrade
Click the Update button corresponding to the Remote Controller Firmware field. A window will pop up allowing you to select the firmware file. After selecting the remote controller firmware file to be upgraded, wait for the upgrade process to complete automatically.

Caution: Do not perform other operations during the firmware upgrade. Interruption during the upgrade process may prevent the remote controller from being used normally.

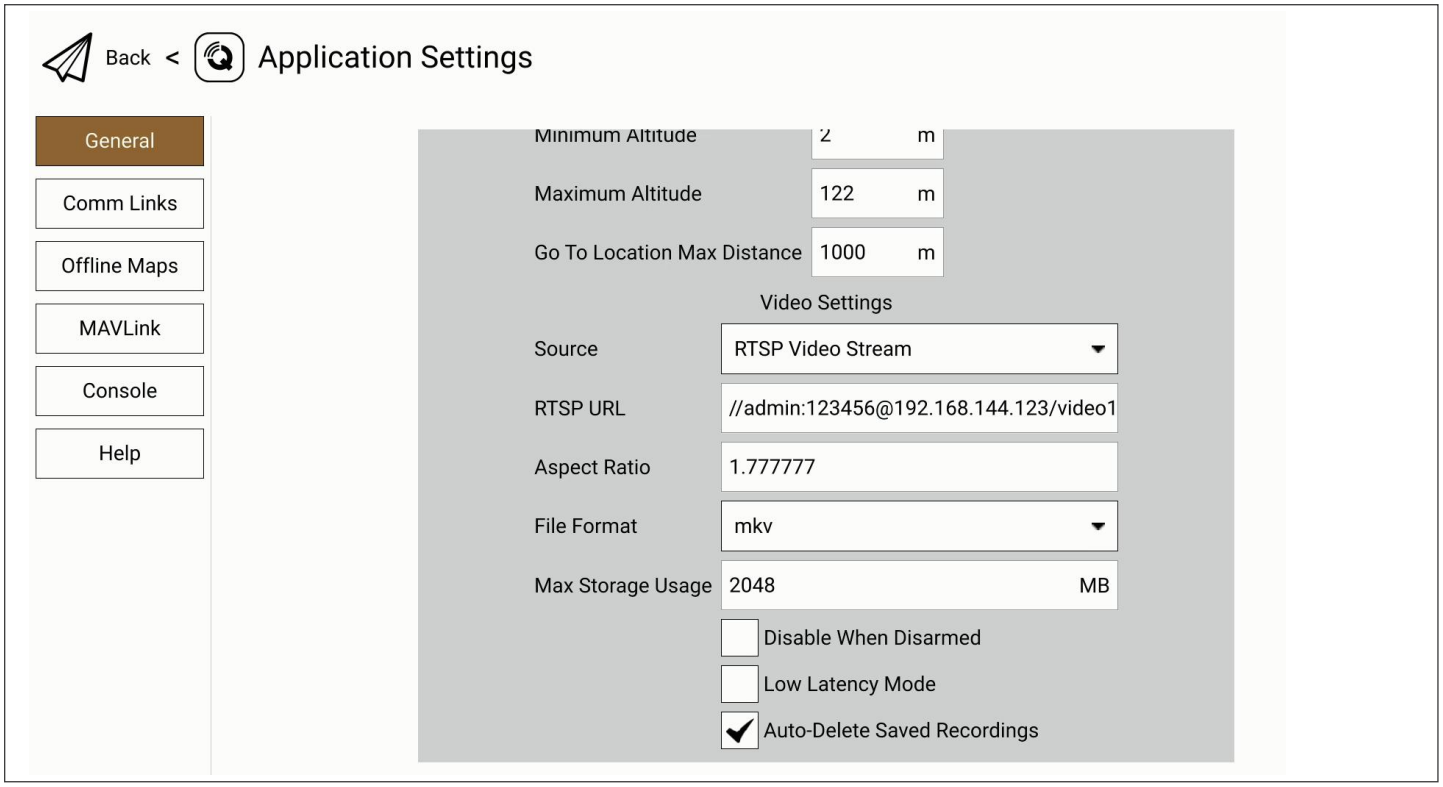
12.Other Settings

QGC Settings
The QGC ground station is pre-installed at the factory (Do not uninstall or remove it yourself; this version is specially customized for this remote controller).
If it has been removed, please contact the manufacturer to obtain the latest version.

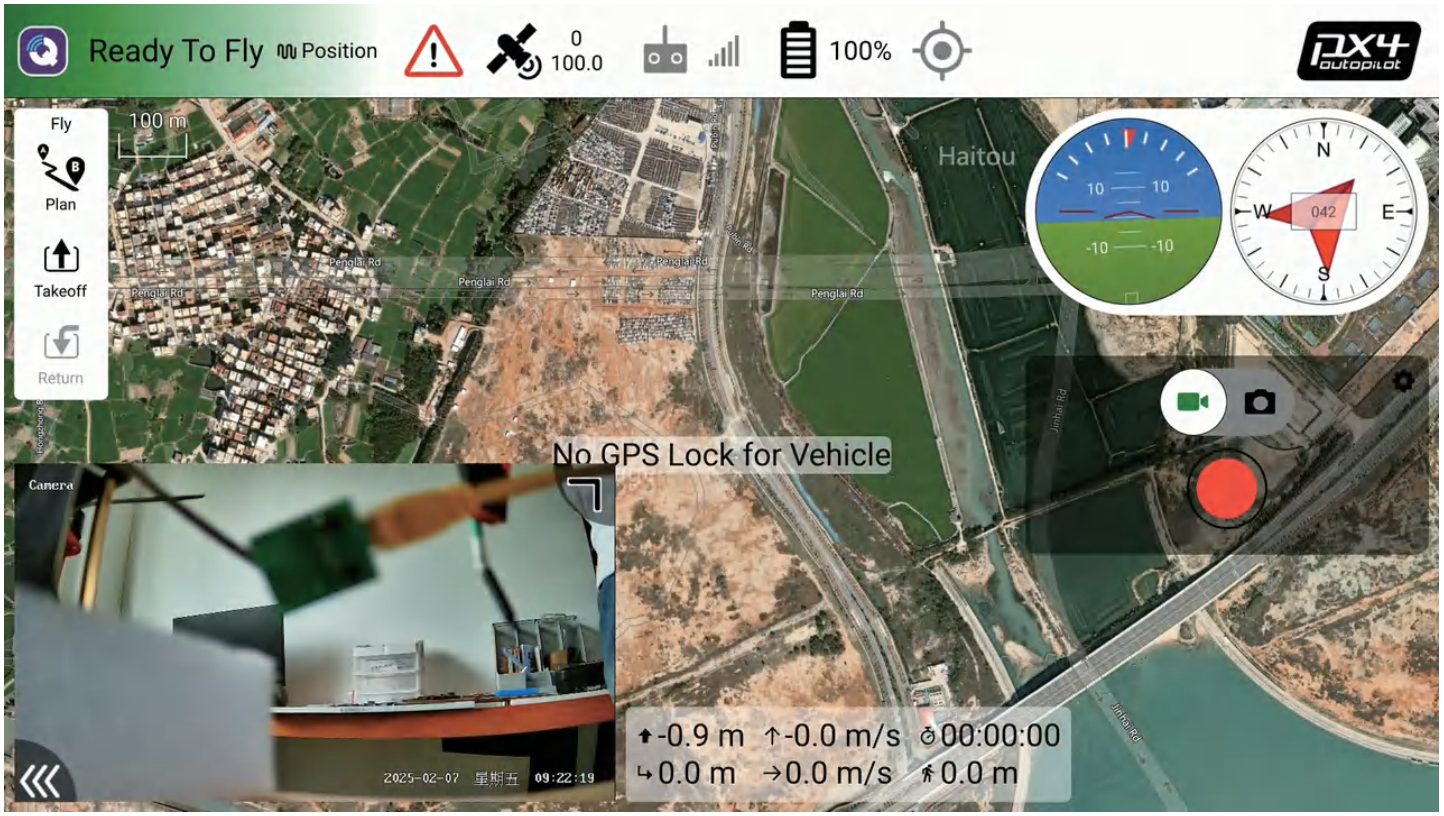
Mavlink Serial Port Settings
In the Application Settings --> Comm Links menu, configure the Mavlink data stream serial port by selecting ttyHS9 with a baud rate of 115200. It is recommended to check the Automatically Connect on Start option. After completing the frequency pairing, QGC will automatically connect to the flight controller upon subsequent launches.



RTSP Video Streaming Settings
In the Application Settings --> General menu, configure the video link. Using RTSP streaming as an example: Select “RTSP Video Stream” in the Source field. Enter the streaming address in the RTSP URL field. (Note: The address must begin with “//”)



After successful setup
return to the main interface. QGC will download the flight control information and display the flight status. The RTSP video stream should also be displayed normally in the video window on the lower left.



13.Maintenance and Repair

To ensure good maintenance and upkeep of the remote controller and modules during long-term storage, please follow these recommendations:

1、Storage Environment: Place the remote controller and modules in a dry, well-ventilated area, avoiding humid and high-temperature environments.

2、Avoid Direct Sunlight: Reduce direct sun exposure to prevent overheating or aging of the remote controller and module materials.

3、Temperature Control: The recommended storage temperature range is 22°C to 28°C. This helps maintain the performance of the remote control and modules while extending their service life.

Keep Away from Children: Since cables and small parts may pose a hazard to children, be sure to keep children away from the remote controller components.

Water Immersion: Never allow the module to be immersed in water. If it enters water, immediately wipe it with a soft, dry cloth, turn off the power immediately, and return it to the company for after-sales service.

Physical Damage: Static mechanical impact, crushing, or piercing of the battery is forbidden, and dropping the battery is prohibited.