TAiSYNC

Taisync

User Manual

www.taisync.com

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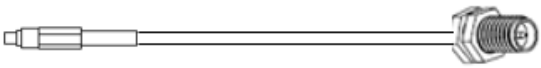
1. Package Contents

Air Unit & Ground Unit

Air unit antenna & feeder line × 2

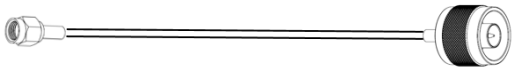
（antenna for air unit）



（feeder extension line for air unit）

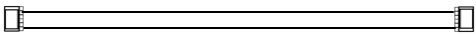
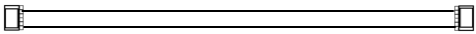
Ground unit antenna× 2

（antenna for ground unit）



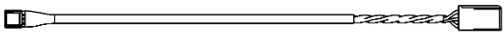
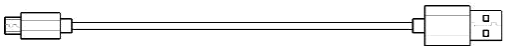
（feeder line for ground unit, applied for N connector antenna）

Air Unit Cables

Power cable x1	
This is used to connect the output of a battery to the power input of the air unit.	
HDMI cable (Micro to Micro) ×1	
This is used to connect the HDMI output of camera to the HDMI input of the air unit.	
RJ45 cable ×1	
This is used to connect the ETH output of camera to the ETH input of the air unit.	
RC cable x1	
This is used to connect the PPM/S.bus port of flight controller to the RC port of the air unit.	
Serial cable (UART) x1	
This is used to connect the telemetry port of flight controller to the serial port of the air unit.	

Ground Unit Cables

Power cable x1	
This is used to connect the output of a battery to the power input of the air unit.	
RJ45 cable ×1	
This is used to connect the Ethernet output of ground unit to PC.	
PPM RC cable x1	
This is used to connect the training port of a remote	

controller to the RC port of the ground unit.	
SBUS RC cable x1	
This is used to connect the SBUS receiver to the RC port of the ground unit.	
Serial cable (UART) x1	
This is used to connect the telemetry port of ground station to the serial port of the ground unit. (TTL to USB)	
USB cable (Micro to Type-A)×1	
This is used to connect the USB port of a PC or a cell phone, to the Micro USB port of the ground unit.	

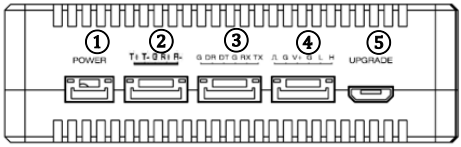
2. Product Description

2.1.Parameters

Frequency	1.4GHz, 2.4GHz, 5.8GHz, (Customizable)
Band width	2.5MHz (uplink), 10MHz(downlink)
Power	27dBm (FCC), 19dBm (CE)
Video format	720P30 720P60 1080P30 1080P60
Modulation	OFDM
Constellation	BPSK, QPSK, 16QAM
FEC	LDPC (1/2, 2/3, 3/4, 5/6)
Duplex	TDD
Downlink throughput	2.3Mbps ~ 8Mbps
Uplink throughput	400kbps
Encryption	AES 256
Interface	HDMI, ETH, USB, Serial, PPM/S.BUS
Video compression	H.264/H.265
Glass to glass latency	<300ms (Camera dependent)
Dimension	77.8X47.3X23.5mm (Air unit)
	77.8X47.3X23.5mm (Ground unit)

Weight	106g(Air unit)
	97g(Ground unit)
Rated voltage/current	DC12V/1.2A (or 3S lithium battery)
Working temperature	-20°C ~55°C

2.2.Air Unit Interfaces



① Power Input Port

Connect a 12V power source to this port. The power source can be from a battery, or can be from a power adaptor when the ground unit is upgraded on the ground. The power supply recommended 3s battery.

② RJ45 Port

Connect the ethernet output of camera to the ethrnet input of the air unit.

③ Serial Port (UART)

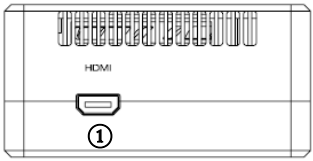
Connect this port to the telemetry port of a flight controller for telemetry communication with the ground unit. UART singal: LVCMOS-3.3V.

④ Remote Control Port (RC)

Connect this port to the PPM/S.bus port of a flight controller for remote control communication with the ground unit. Pin V + can provide 5V power supply.

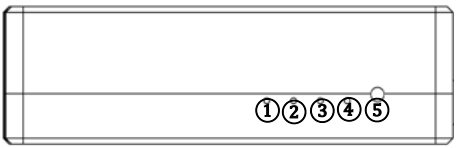
⑤ Micro USB Port

Connect this port to the USB port of a PC or Laptop, and use the Taisync PC program to upgrade firmware on the air unit.



① HDMI Port

Connect the HDMI output of a camera to the HDMI input of the air unit.



① LED 1

When this LED is on, it means that the air unit is connected to the camera of HDMI video interface; when this LED is off, it means that the air unit is not connected to the camera of HDMI video interface.

② LED 2

When this LED is on, it means that the air unit is connected to the camera of AV video interface; when this LED is off, it means that the air unit is not connected to the camera of AV video interface.

③ LED 3

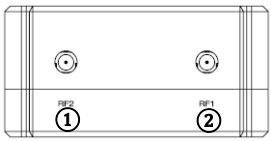
When this LED is on, it means the ground-to-air link is connected; when this LED is off, it means the ground-to-air link is disconnected. (Not availbale for air unit)

④ LED 4

When this LED is on, it means the air-to-ground link is connected; when this LED is off, it means the air-to-ground link is disconnected. (Not available for air unit)

⑤ Bind Button

Press this button to perform the binding operation.

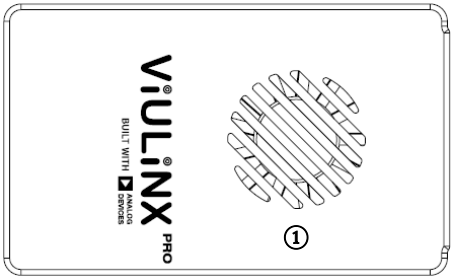


① RF2 Port

Connect the 2nd air unit antenna to this port.

② RF1 Port

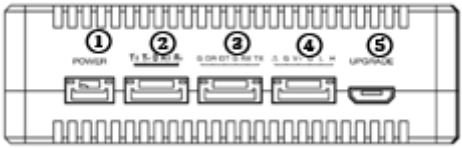
Connect the 1st air unit antenna to this port.



① Fan Ventilation Outlet

Don’t block this fan ventilation outlet to ensure effective cooling.

2.3.Ground Unit Interfaces



① Power Input Port

Connect a 12V power source to this port. The power source can be from a battery, or can be from a power adaptor when the ground unit is upgraded on the ground. The power supply recommended 3s battery.

② RJ45 Port

Connect the ethernet output of camera to the ethrnet input of the air unit.

③ Serial Port (UART)

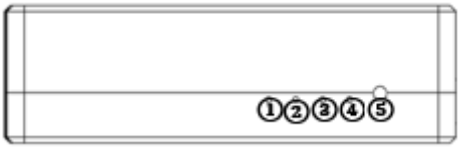
Connect this port to the telemetry port of a flight controller for telemetry communication with the ground unit. UART singal: LVCMOS-3.3V.

④ Remote Control Port (RC)

Connect this port to the PPM/S.bus port of a flight controller for remote control communication with the ground unit. Pin V + can provide 5V power supply.

⑤ Micro USB Port

Connect this port to the USB port of a PC or Laptop, and use the Taisync PC program to upgrade firmware on the air unit.



① LED 1

When this LED is on, it means that the air unit is connected to the camera of HDMI video interface; when this LED is off, it means that the air unit is not connected to the camera of HDMI video interface.

② LED 2

When this LED is on, it means that the air unit is connected to the camera of AV video interface; when this LED is off, it means that the air unit is not connected to the camera of AV video interface.

③ LED 3

When this LED is on, it means the ground-to-air link is connected; when this LED is off, it means the ground-to-air link is disconnected.

④ LED 4

When this LED is on, it means the air-to-ground link is connected; when this LED is off, it means the air-to-ground link is disconnected.

⑤ Bind Button

Press this button to perform the binding operation.

① RF2 Port

Connect the 2nd ground unit antenna to this port.

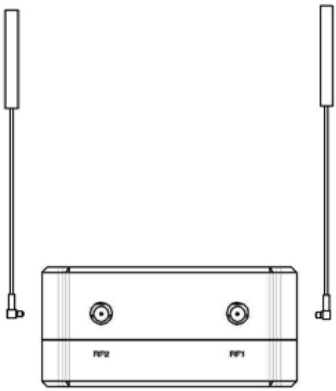
② RF1 Port

Connect the 1st ground unit antenna to this port.

3. Installation

3.1.Air Unit Installation

3.1.1. Antenna installation



Insert the air unit antennas into the RF ports with RF cables. RF cables clicks in when properly installed.

Note:

(1) To avoid equipment damage, install antennas before powering on the units.

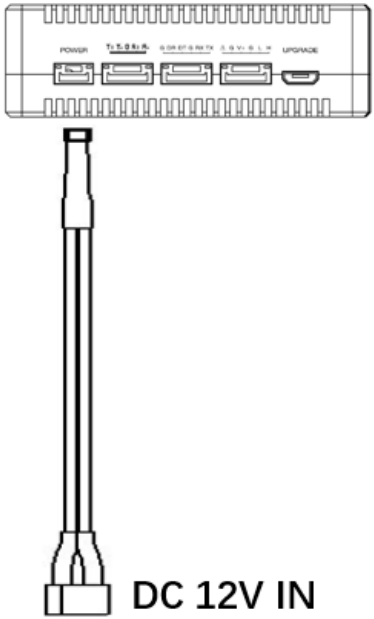
(2) When install air unit to drone, avoid the antennas being blocked by parts of the drone.

(3) Both antennas need to be installed.

(4) Ensure the antenna connector is vertical to the module when it is pushed into the RF port.

(5) When uninstall the antenna, hold the connector and pull it out of the RF port. Do not pull the cable.

3.1.2. Power supply



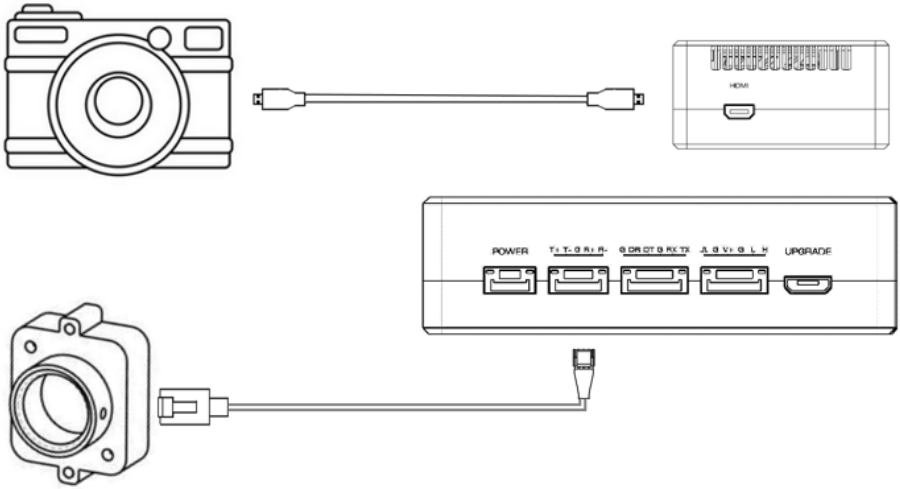
Pin-out: - - + +. Insert the four-pin connector of supplied power cable to the power port of the air unit and connect the supplied power cable to a battery output, or the power supply port of a drone. Recommended voltage is 12V.

Note:

(1) To avoid equipment damage, install antennas before powering on the units.

(2) Recommended rated voltage/current is DC12V/1.2A (or 3S lithium battery).

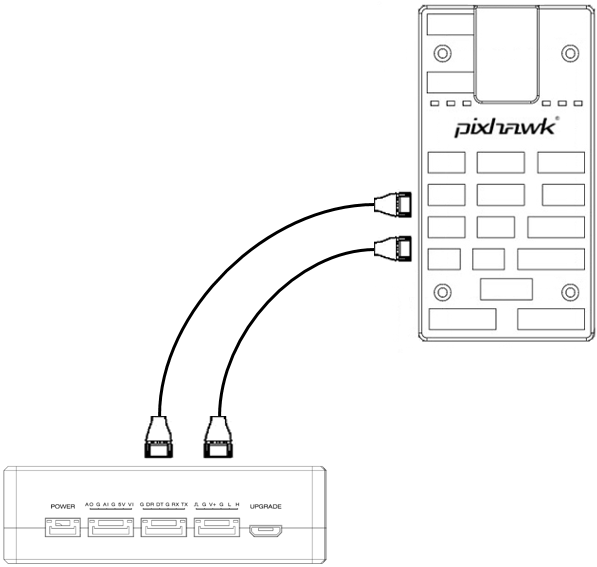
3.1.3. Connection to camera



Connect the HDMI video output port to the HDMI video input port of the air unit.

Connect the ethernet video output port to the ethernet video input port of the air unit.

3.1.4. Connection to flight controller (RC & telemetry)

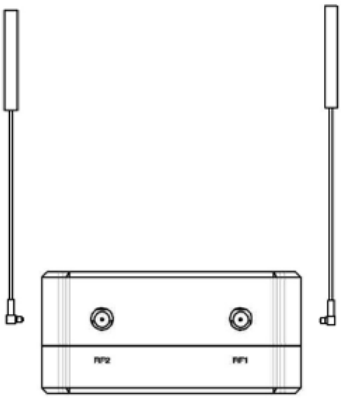


Insert the six-pin connector of supplied serial cable to the serial port of the air unit and connect the other end of the serial cable to the telemetry port of a flight controller.

Insert the supplied RC cable to the RC port of the air unit and connect the other end of the RC cable to the PPM/S.BUS port of a flight controller.

3.2.Ground Unit Installation

3.2.1. Antenna installation



Insert the ground unit antennas into the RF ports with RF cables. RF cables clicks in when properly installed.

Note:

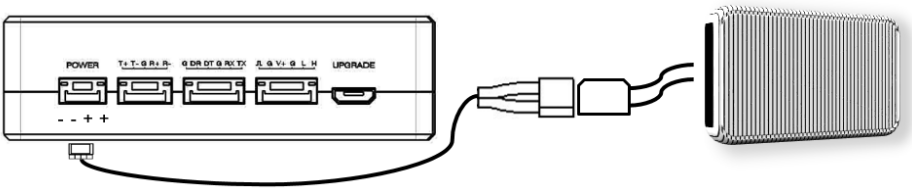
(1) To avoid equipment damage, install antennas before powering on the units.

(2) Both antennas need to be installed.

(3) Ensure the antenna connector is vertical to the module when it is pushed into the RF port.

(4) When uninstall the antenna, hold the connector and pull it out of the RF port. Do not pull the cable.

3.2.2. Power supply



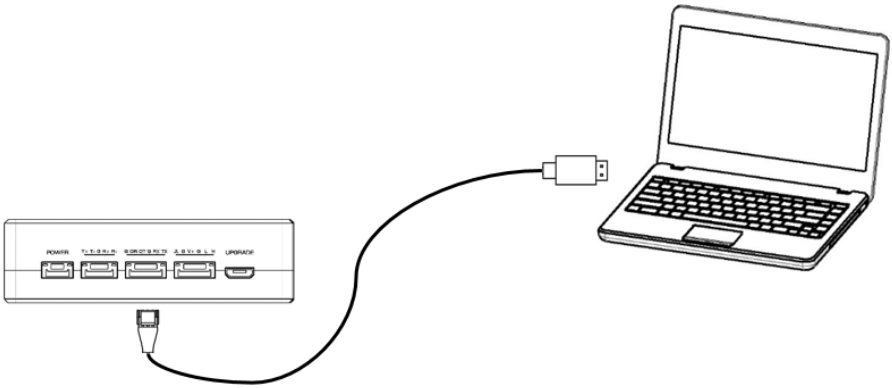
Pin-out: - - + +. Insert the four-pin connector of supplied power cable to the power port of the air unit and connect the orange power connect of supplied power cable to a battery output, or the power supply port of DC. Recommended voltage is 12V.

Note:

(1) Recommended rated voltage/current is DC12V/1.2A (or 3S lithium battery).

(2) To avoid equipment damage, install antennas before powering on the units.

3.2.3. Telemetry connection



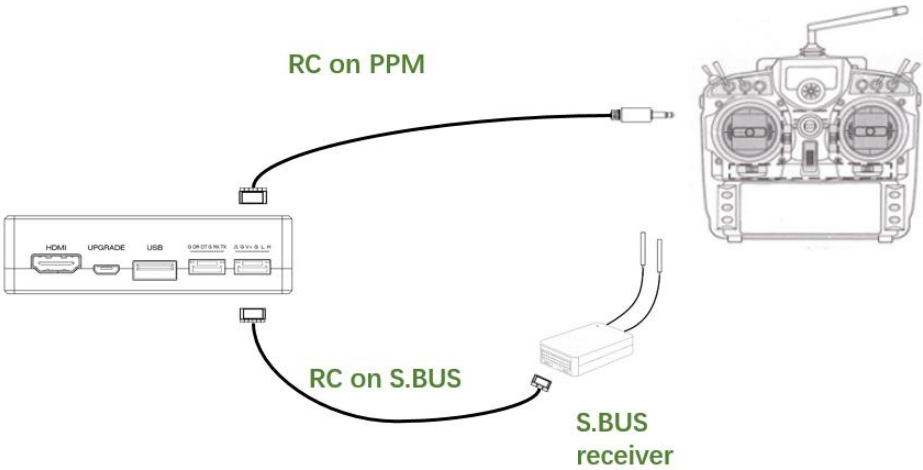
Insert the six-pin connector of supplied serial cable to the serial port of the ground unit and connect the other end of supplied serial cable to the telemetry port of the ground control station.

Note:

(1) Ensure the baud rate of ground station and the baud rate of Taisync module are configured correctly.

(2) Ensure the serial cable sequence matches the interface definition of Taisync module.

3.2.4. Connection to remote controller



Using PPM mode: Insert the training connector of the supplied RC cable to the training port of a remote controller and connect the six-pin connector of the RC cable to the RC port of the ground unit.

Using S.BUS mode: Insert the six-pin connector of the RC cable to the RC port of the ground unit, the other end connect the S.BUS receiver, and the S.BUS receiver communicates with the remote controller in wireless communication.

Note:

(1) Ensure the remote controller is in training mode, it is configured to the PPM or S. BUS working mode.

(2) Ensure the RC cable sequence matches the interface definition of Taisync module.

(3) If the S.BUS receiver is used, the working frequency of the receiver and the Taisync module should be guaranteed with a certain degree of isolation, for instance, 2.4GHz receiver and 2.4GHz Taisync module could not use at the same time.

3.2.5. Setup video output

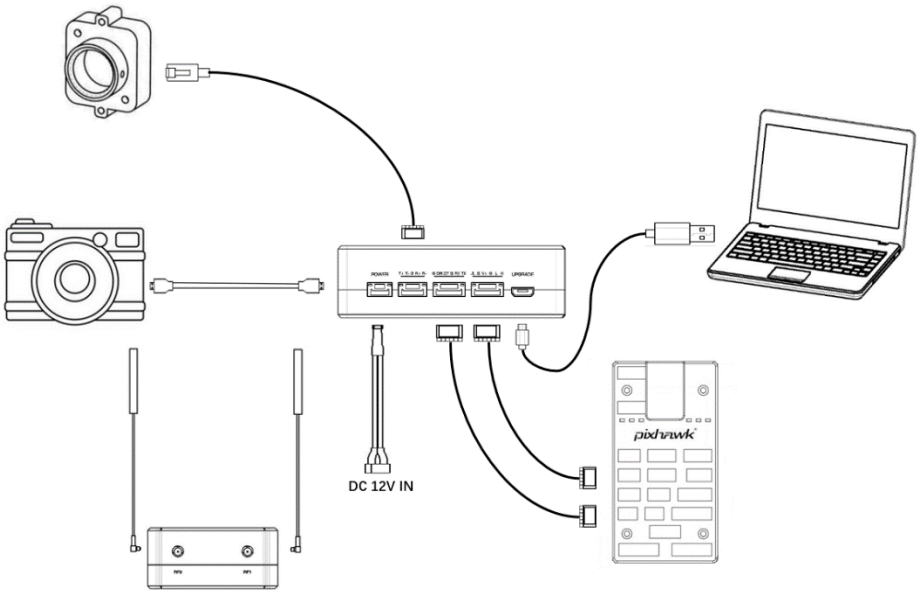
Ground unit has one way of outputting received video, to a PC or laptop.

Note:

(1) To view the video on PC or Laptop, connect the Ethernet port of the ground unit to the Ethernet port of a PC or a Laptop, the IP address of the PC is configured correctly.

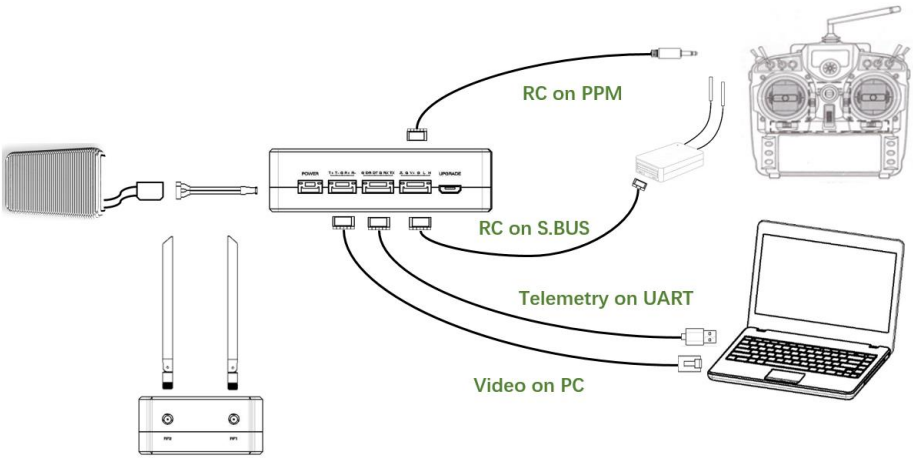
(2) Get HDMI camera stream from IP address of 192.168.0.2.

3.2.6. Use Taisync System



1. Connect antennas to RF ports of the air unit.

2. Connect camera HDMI output to HDMI port of the air unit, connect camera AV output to AV port of the air unit.
3. Connect the PPM/S.bus port of the flight controller to the RC port of the air unit.
4. Connect the flight controller telemetry port to the serial port of the air unit.
5. Turn on the camera and set the video format to 720p or 1080p.
6. Connect a 12V DC power to the power port of the air unit and turn on the power.
7. If latest firmware is desired, connect the air unit to a PC or a Laptop using USB cable and run Taisync PC program to upgrade the firmware of the air unit to the latest one.



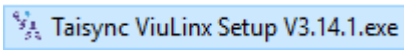
1. Connect antennas to RF ports of the ground unit.
2. Adjust the remote controller to the training mode, if PPM mode is used, the remote controller interface at the ground end is connected to the training port of the remote control. If S.BUS mode is used, the cable connection between the S.BUS receiver and the ground end need to be established, and the connection between the receiver and the remote control need to be established.
3. Connect the USB port of ground control station to the serial port of the ground unit with TTL-USB cable if you want to use Taisync's telemetry link.
4. If video view on a PC or a laptop is desired, connect a PC or a laptop to the Ethernet port of the ground unit.
5. Connect a 12V DC power to the power port of the ground unit and turn on the power.

6. If latest firmware is desired, connect the ground unit to a PC or a laptop using USB cable and run Taisync PC program to upgrade the firmware of the ground unit to the latest one.

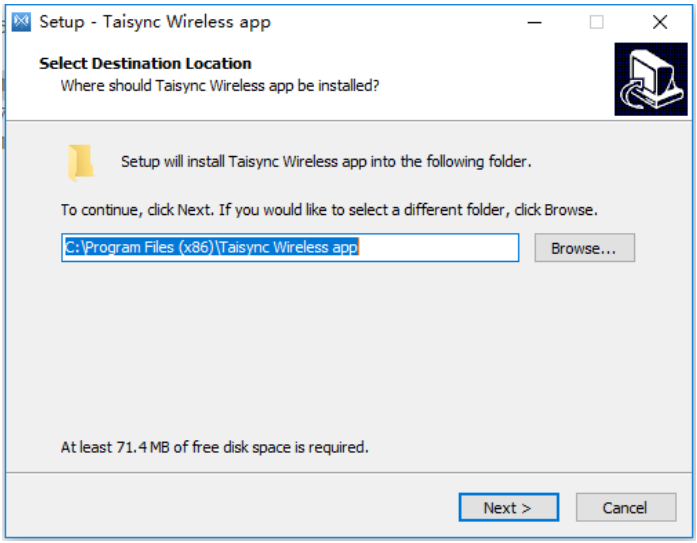
4. Software

4.1.Installation

We provide program installation files, program file name: Taisync Wireless App Setup.exe. The installer icon is as follows:

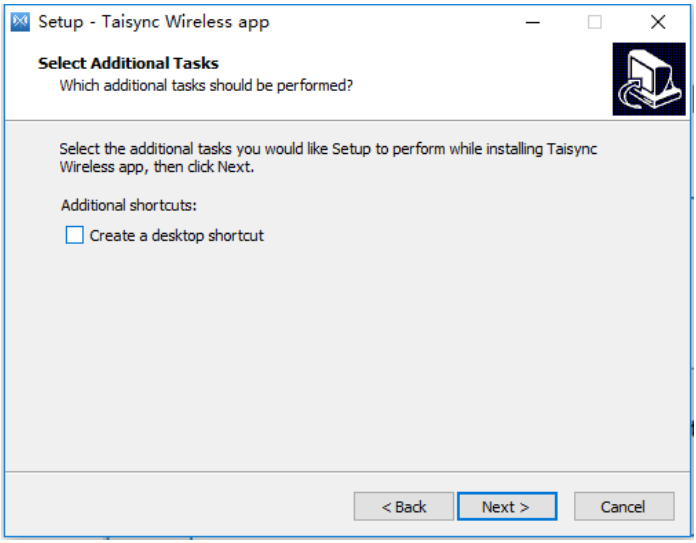


Double-click the installer to install and customize the program installation directory. After configuration, click the “Next” button to jump to the next step. To cancel the installation, click the “Cancel” button.

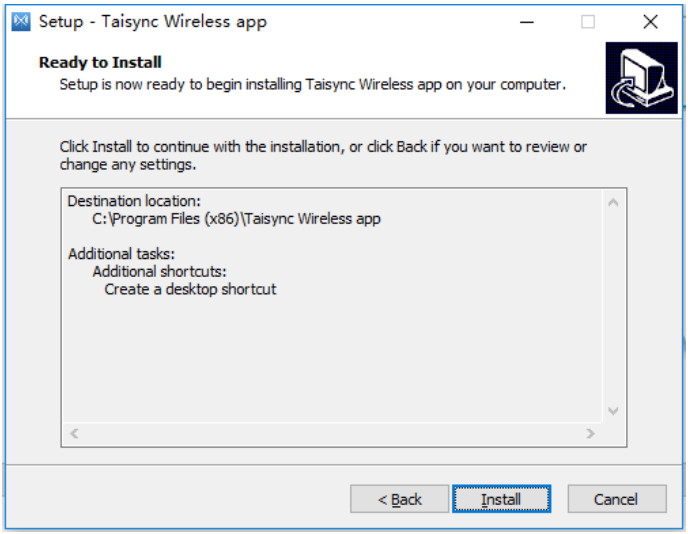


Check the Generate desktop shortcut. If it is not checked, the desktop shortcut will not be generated. After configuration, click the “Next” button to jump to the next step. To rewind

the previous step, click the “Back” button. To cancel the installation, click the Cancel button.



Click “Install” to proceed with the installation. To rewind the previous step, click the “Back” button. To cancel the installation, click the “Cancel” button.



Note: Please turn off the firewall software, otherwise the firewall may prevent the driver from being installed when the driver is installed.

At this point, the software installation is successful and the driver installation is complete.

4.2.Software Language

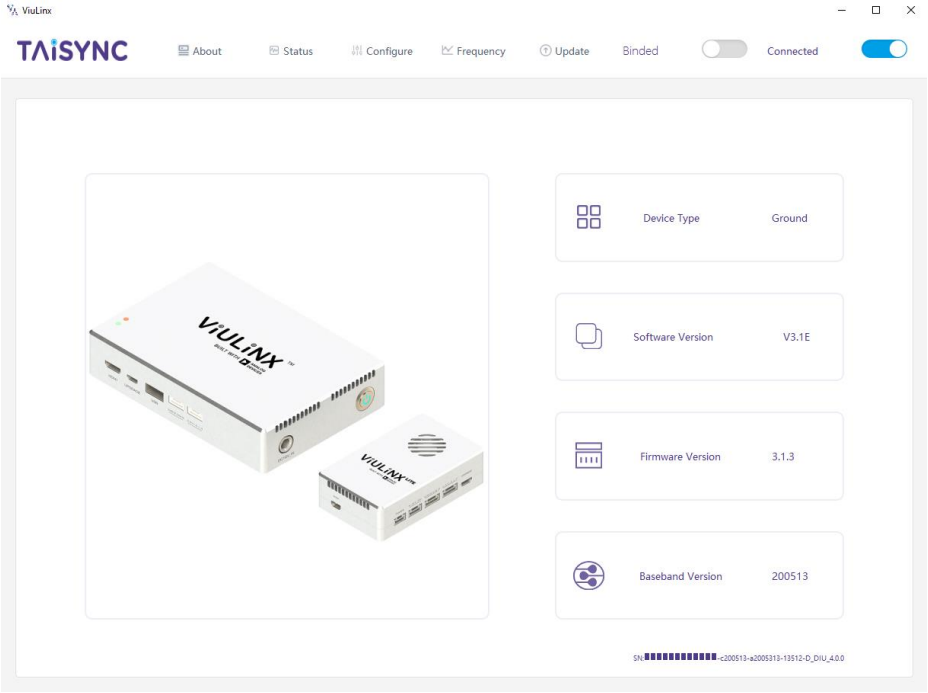
Taisync PC software supports Chinese and English display, and the software is selected according to the operating system.

If the Chinese operating system will display the software in Chinese, the other operating systems will display in English.

If the device does not connect to the computer properly, Taisync PC software shows as the following:

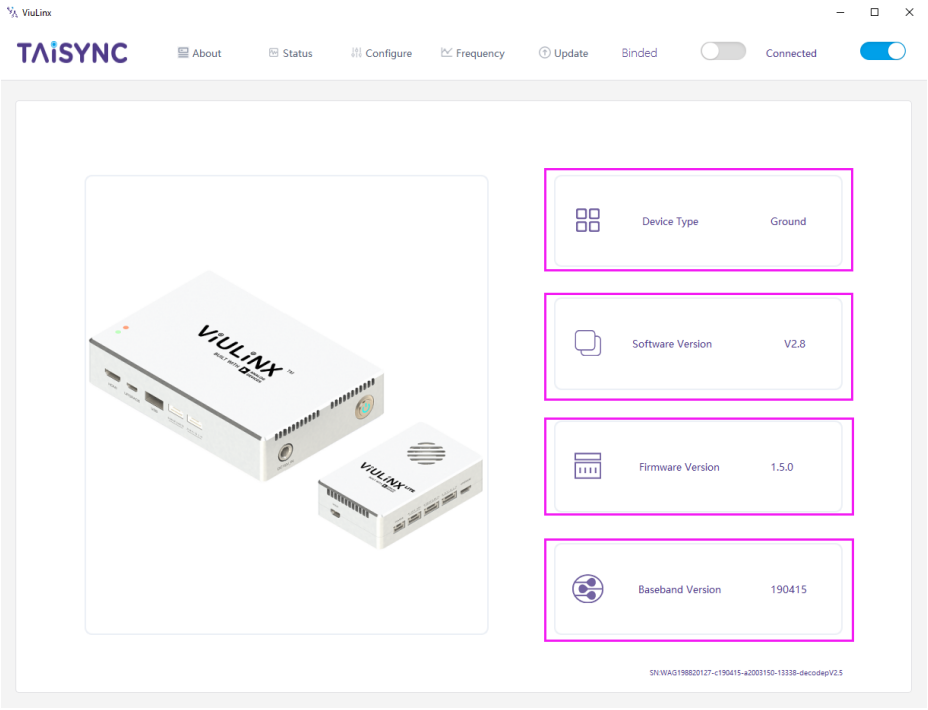
Please connect device

If the device connect to the computer properly, Taisync PC software shows as the following:



4.3.Device Info

Readable device status information: device type, software version, firmware version, and baseband version.

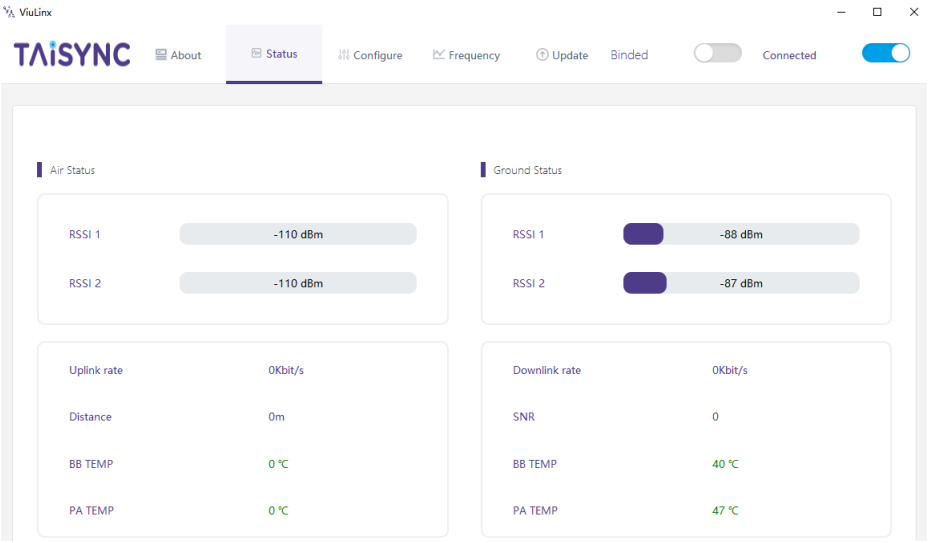


4.4.Status

Read the air and ground status information, can read the status information of air unit and ground unit.

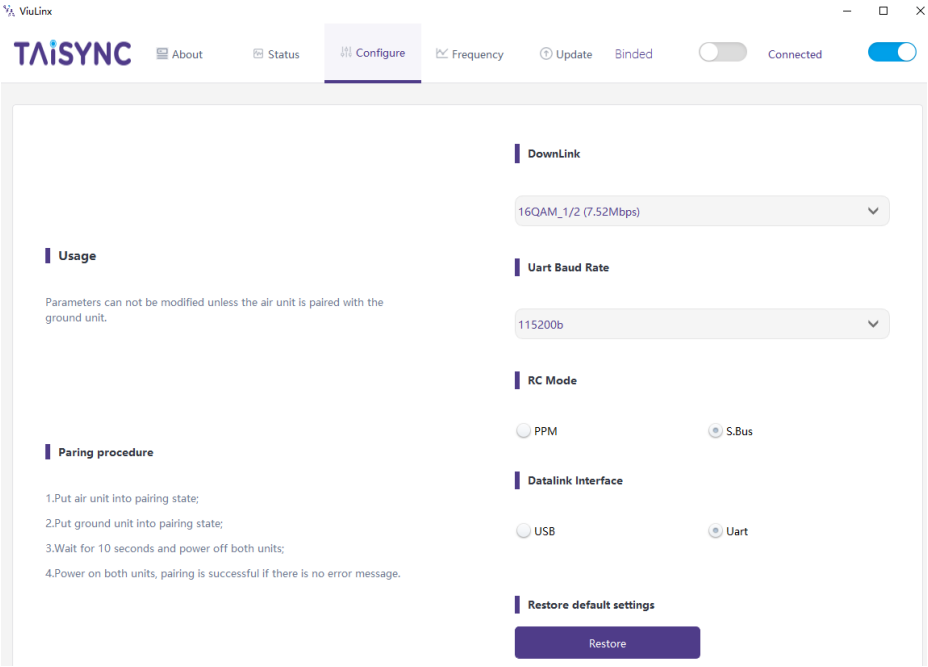
Air status: RSSI 1 & RSSI 2, Uplink rate, Distance, BB TEMP, PA TEMP.

Ground status: RSSI 1 & RSSI 2, Downlink rate, SNR, BB TEMP, PA TEMP.



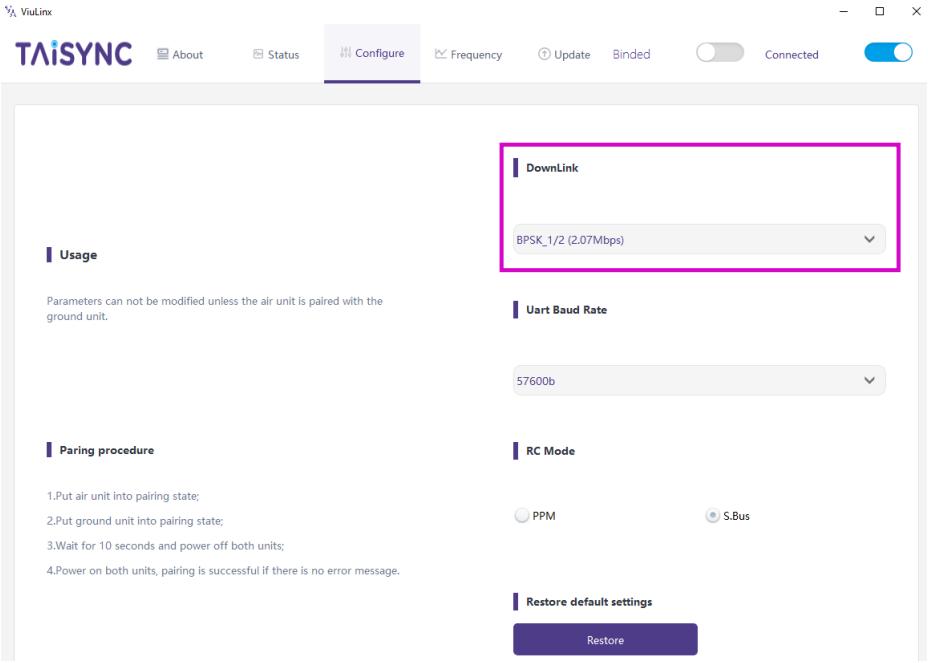
4.5.Configuration

For parameter configuration, device bind and wireless connection is required.

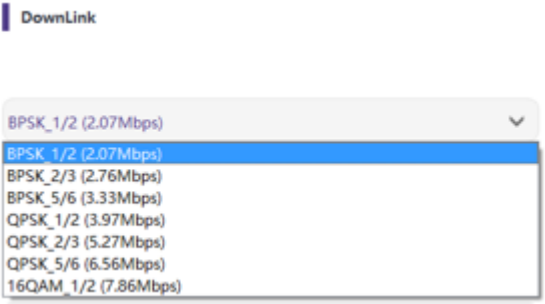


4.5.1. Downlink Mode configuration

For parameter configuration, device bind is required.

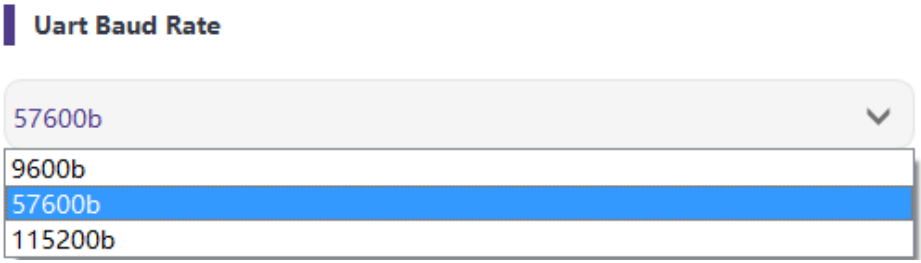


The downlink mode adjustment interface is as follows:



4.5.2. Baud rate configuration

Supported baud rate configuration: 9600, 57600, 115200.

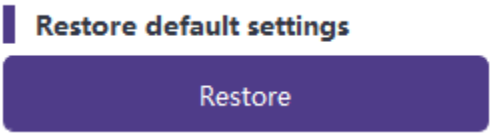


4.5.3. Remote control mode configuration

Supported remote control mode: PPM, S.BUS.

4.5.4. Restore default settings

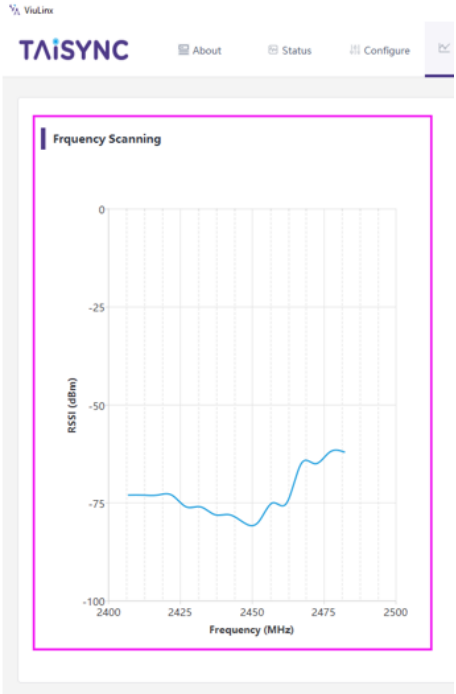
Click “Restore” to restore default settings.



4.6.Frequency Scan

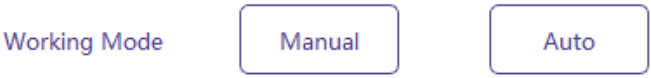
4.6.1. Frequency scanning

The left side is the frequency scan curve after the module starts.



4.6.2. Frequency working mode

Working Mode：Manual, Auto.

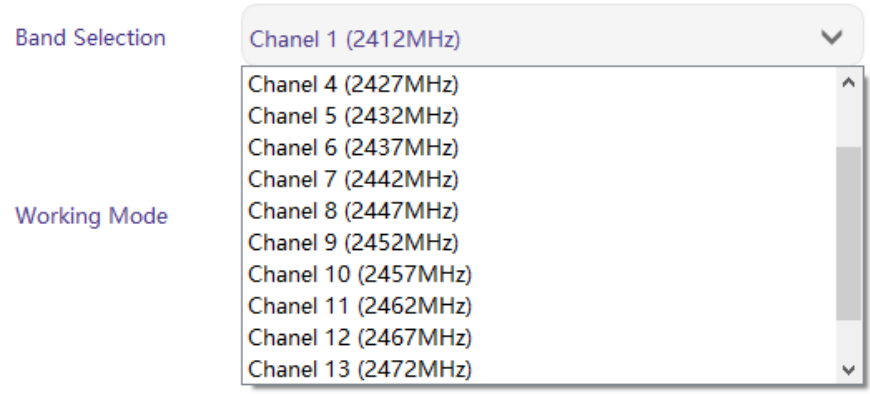


Manual mode: The module administrator or user manually configures the working frequency.

Auto mode: The system configures the working frequency according to the frequency scan curve.

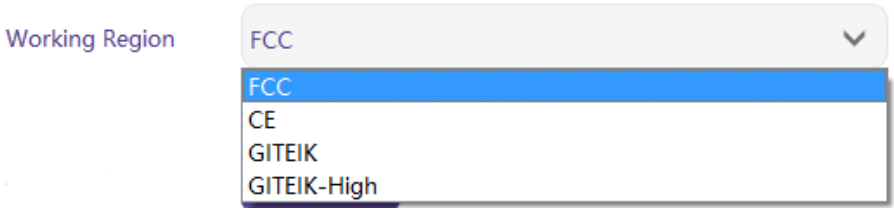
4.6.3. Frequency band selection

Under the manual mode we can configure “Band selection”.



4.6.4. Working region

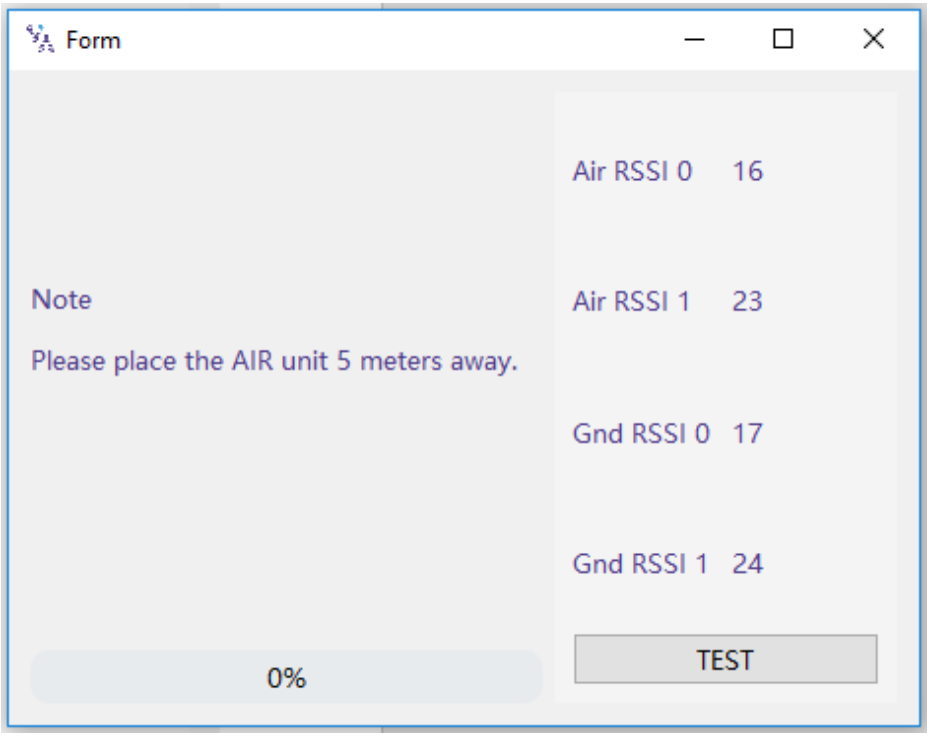
Supported working region: FCC, CE, GITEIK, GITEIK-High.



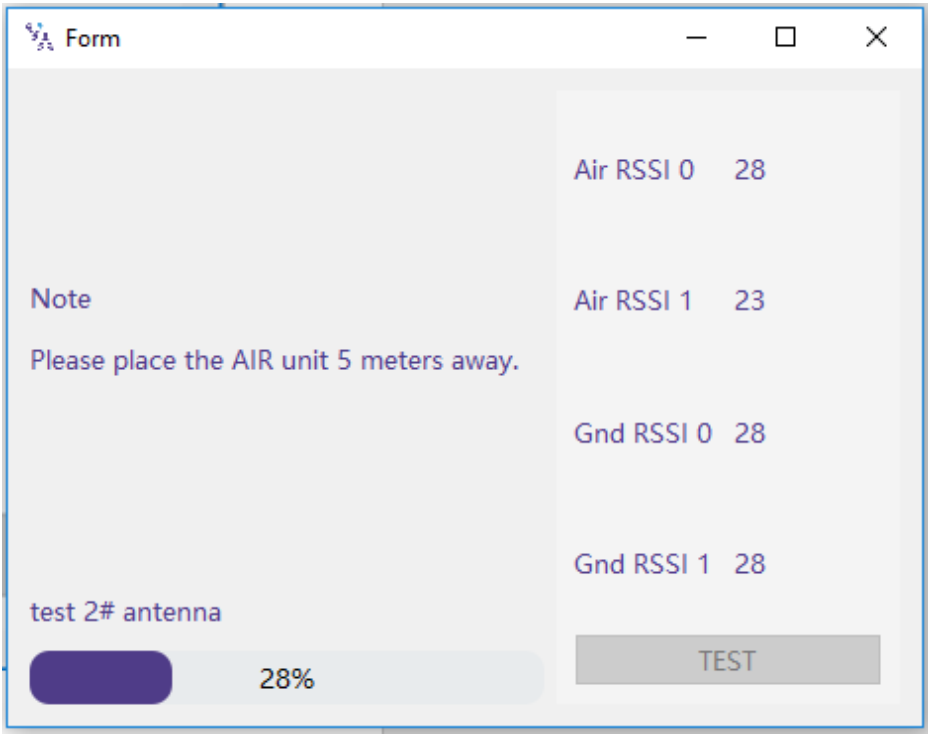
4.6.5. Antenna test

This is to check whether antenna/feeder cables are correctly installed/applied.

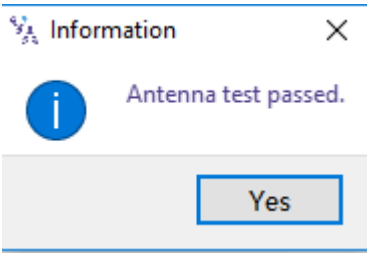
Click TEST, there'll be a Form popup window display as below:



Place the air unit 5 meters away, then click TEST, antenna check will be in progress.



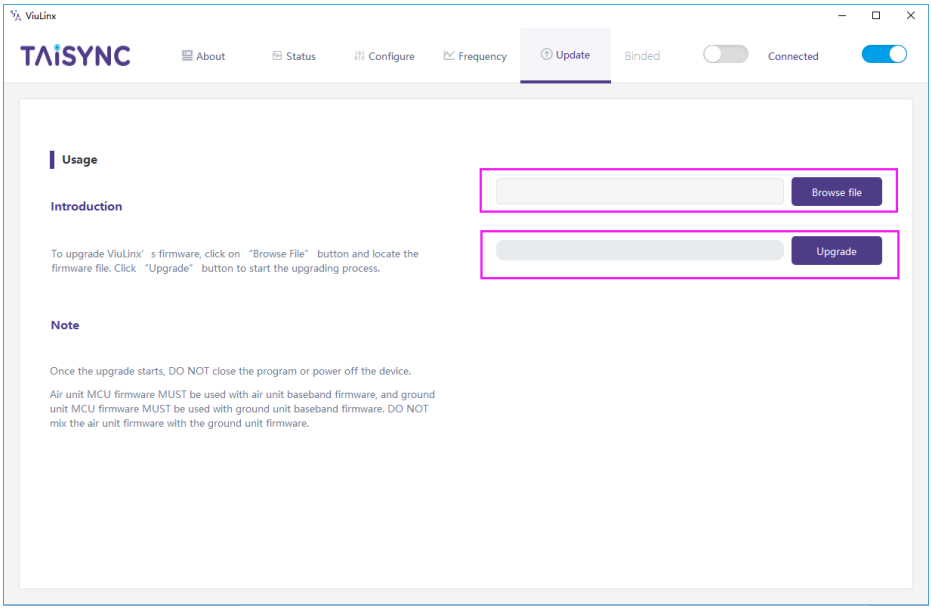
Finally, there'll be an Information window to show anttnea test passed or not. If failed, please check hardware installation first, if problem persists, please replace antenna or/and feeder cables.



4.7.Upgrade

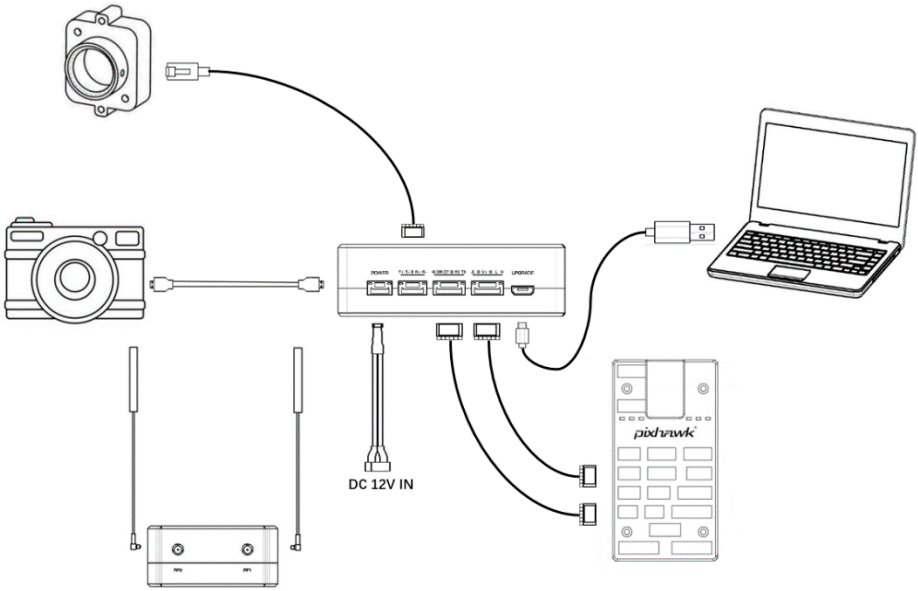
Note: air and ground upgrades need to be upgraded separately using the USB cable to connect Taisync PC software.

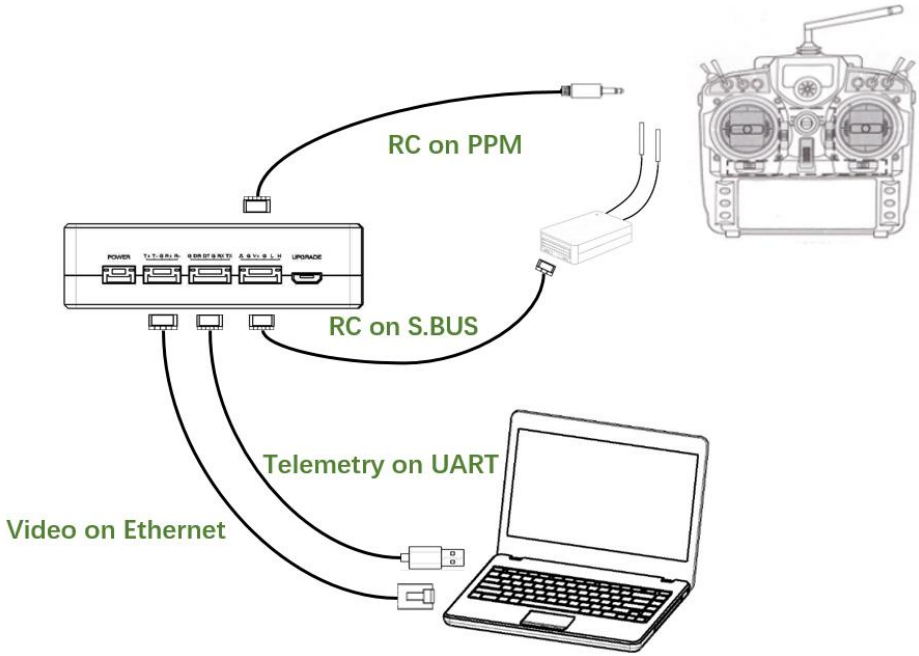
Select the upgrade file, click the Upgrade button to upgrade.



5. Applications

5.1.Applications of system in detail





5.2.Applications of RC

The remote control function can support PPM and S. BUS protocol.

If PPM mode is used, please use Taisync standard PPM cable to connect the ground unit and the remote controller's training port.

If S. BUS mode is used, additional receiver supporting S. BUS is needed. The ground unit is connected with the receiver. The S. BUS receiver establishes wireless communication with the remote controller.

Both modes require the remote controller to configure the corresponding mode.

If using S. BUS receiver, please use a receiver which working frequency is different from Taisync module.

When using PPM mode, the air unit needs to connect the PPM RC port of Pixhawk4.

When using S. BUS mode, the air unit needs to connect the DSM/S. BUS RC port of Pixhawk4.

5.2.1. FRSKY remote controller

- PPM mode

Model setup - Trainer - mode, if mode is configured to Slave/Jack, then the remote controller is in PPM mode.

Model setup - Internal RF, it is needed to be configured to off, S. bus mode will be closed.

- S.BUS mode

Model setup - Internal RF: LR12, D8, D16, OFF. Configuration of different parameters is according to the receiver. If configured as off, S. bus mode will be closed.

5.2.2. Futaba remote controller

- S.BUS mode

Linkage menu - system: FASSTest-14CH, FASSTest 12CH, FASST MULTI, FASST 7CH, S-FHSS. Configuration of different parameters is according to the receiver.

- PPM mode

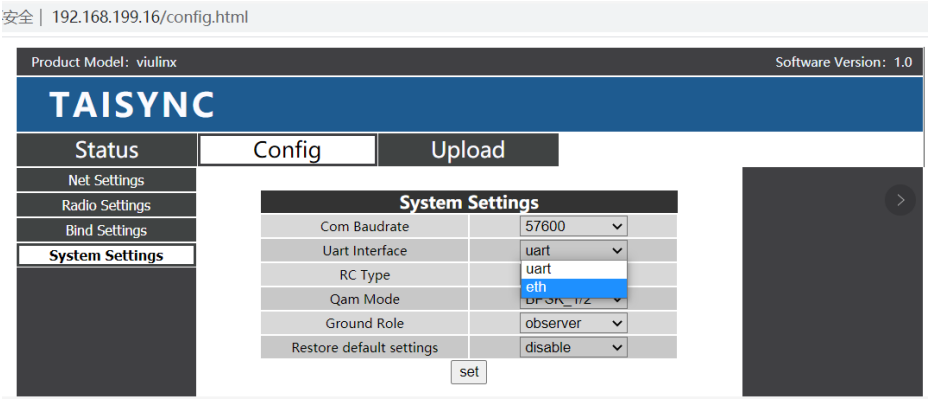
Taisync standard PPM cable is used to connect with Futaba trainer cable (one end is connected to the trainer port of futaba, the other end is 3.5mm connector). PPM mode can be used directly without additional configuration.

5.3.Telemetry connection

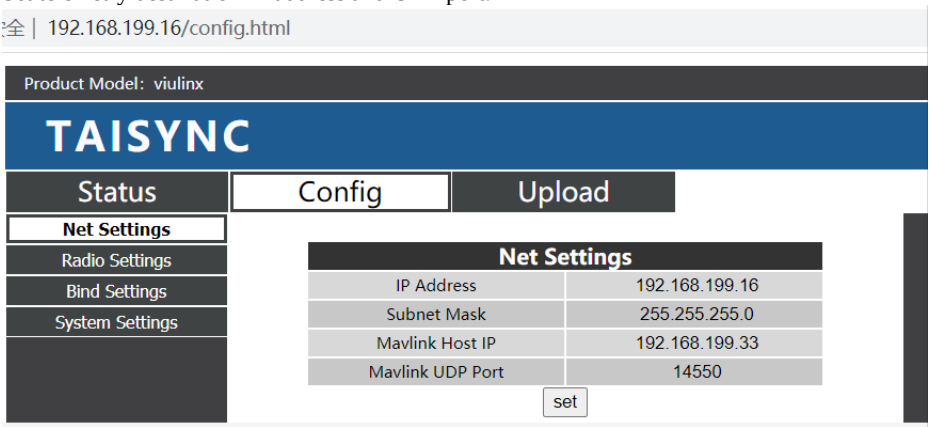
The telemetry Port of air unit connects “TELEM1” Port of flight control (Pixhawk4).

5.4.Telemetry over ETH (optional)

Telemetry can be transmitted over Ethernet interface by UDP, login ground unit (IP address: 192.168.199.16 by default) via webpage, select UART interface as ETH.



Set telemetry destination IP address and UDP port.



6. Notes

6.1.Link performance

- Interference by 2.4GHz WiFi

WiFi operates at 2.4GHz band with bandwidths of 20MHz and 40MHz. WiFI can generate both co-channel interference and adjacent channel interference to the 2.4GHz wireless link of a drone. Even if there is not a WiFi router is available for a WiFi device (for example, WiFi of a phone) to connect with, a WiFi device periodically transmits beacon/probe signals. So,

when you operate a drone in the field with 2.4GHz wireless link, it is important to turn off WiFi modem/hotspot of a phone, or a laptop. If WiFi relay of the video from the ground station is desired, it is recommended to use a 5.8GHz WiFi modem.

- Interference by Bluetooth device

Bluetooth operates on 2.4GHz in frequency hopping mode. So a Bluetooth mouse, Bluetooth joystick, car key or any Bluetooth device that is actively working and next to ground station will interfere the reception of downlink video. Please avoid using Bluetooth device when operate a drone with 2.4GHz wireless link.

- Interference by wireless device in co-existence

Another wireless device that operates on bands close to 2.4GHz and the device is placed close to the drone's 2.4GHz wireless module can interfere the drone's wireless link. For example, some drones have both LTE link and point-2-point wireless link. Particularly, the LTE operating on 2.3GHz band can be a problem. If the antenna of the LTE module is placed close to the antenna of the 2.4GHz point-2-point wireless module, the receiver of 2.4GHz module can be saturated by the LTE signal when it is transmitting. Thus, the range/performance of the 2.4GHz module will be significantly degraded.

- Interference by HDMI

When HDMI source/cable is close the antenna of 2.4GHz wireless modem, the HDMI source/video will interfere the 2.4GHz wireless signal (including WiFi).

https://h30434.www3.hp.com/t5/Notebooks-Archive-Read-Only/HDMI-interfering-with-WiFi-connectivity/td-p/4535026

http://www.dslreports.com/forum/r27141612-HDMI-connect-interferes-with-wifi

It is recommended that install the antenna at least 25cm away from the HDMI source/cable. A good shield HDMI cable can be a resolution too. The following shield HDMI cable uses 360-degree shield termination, which is recommended practice.

https://interferencetechnology.com/hdmi-cables-emi/

http://www.l-com.com/content/Article.aspx?Type=P&ID=10699

http://www.l-com.com/audio-video-micro-hdmi-to-hdmi-cables

http://www.l-com.com/audio-video-hdmi-female-to-micro-hdmi-male-adapter

- Interference by USB3.0 divider/hub

USB3.0 dividers or hubs may cause EMI to wireless device. When using USB3.0 dividers or hubs, please check if EMI is existing.

- RF cable connector/Antenna connector check

Before flight, check if the antennas are connected to the modules. Running module without antenna connected results in very short range and potentially can damage the module. It is recommended to check the connection of all RF connectors. Loose connection can degrade the range significantly.

- Antenna placement

Place the two air antennas so that no matter what position the drone is, at lease one antenna is not blocked by the payload from the ground station.

If the drone will fly in full throttle, it will lean forward. Install the air antenna so that it is close to be vertical to the ground when the drone moves forward in full throttle.

- Battery level

The performance will degrade if the battery runs low, even though it might still power the units up.

6.2.RC link & remote controller

The RC link of Taisync module supports the PPM and S.BUS protocols. If the PPM protocol is used, you need to configure the remote controller to PPM mode and turn off the wireless

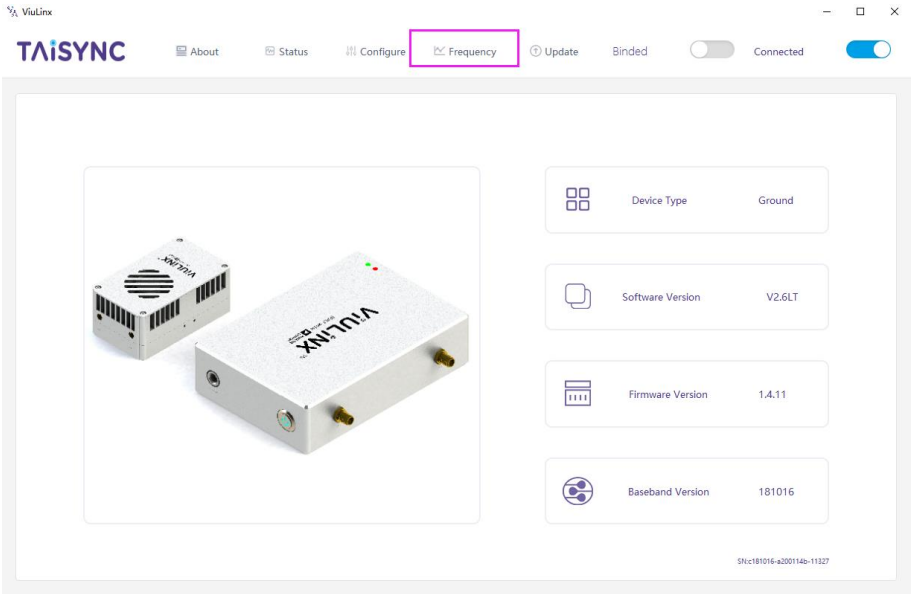
transmission of the remote controller. If the S.BUS protocol is used, the wireless working frequency of the receiver connected to the remote controller must work in different frequency bands with the working frequency of Taisync module and have a certain isolation guarantee.

If you do not use the RC link of Taisync module, you should pay attention to the remote link working frequency of the remote controller when using the RC link of the remote controller. If it is in the same frequency band as the working frequency of Taisync module, it will cause interference with each other.

Avoid interference with Taisync module by the wireless link of the remote controller or receiver when using Taisync system.

6.3.How to select Frequency

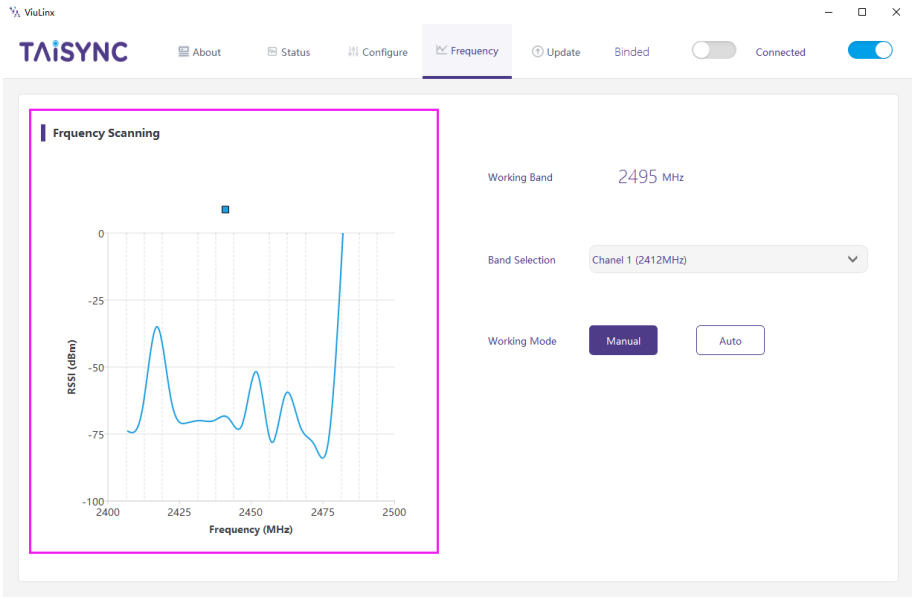
Click “Frequency” buttion using Viulinx PC program.



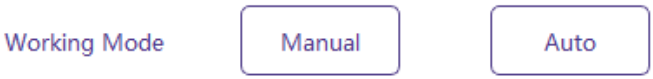
On the left, you can see the RSSI curve of frequency scan.

Scan range: 2.4G WIFI bands.

The lower the RSSI value of the corresponding frequency points, the lower interference. Please select the lowest interference frequency.



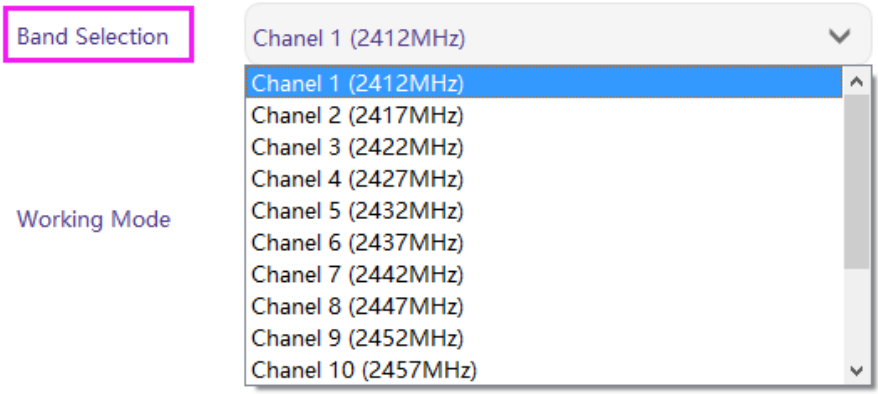
Working Mode：Manual, Auto.



Manual mode: The module administrator or user manually configures the operating frequency.

Auto mode: The management software configures the optimal working frequency according to the frequency scan information.

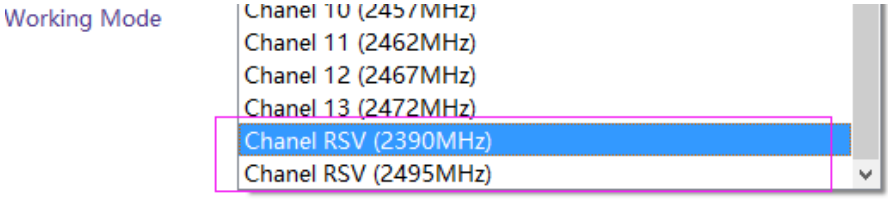
Please make sure working mode is on manual mode.



We can select working frequency by band selection function.

We provide 2390MHz and 2495MHz reserved frequency.

If WiFi interference is too high, you can consider using reserved frequency.



6.4.Firmware update

Upgrade files: FPGA upgrade file for air unit, FPGA upgrade file for ground unit, MCU1 upgrade file for air unit, MCU1 upgrade file for ground unit, MCU2 upgrade file for air unit, MCU2 upgrade file for ground unit.

Upgrade files are upgraded using Taisync PC software. During the upgrade, the power can not be powered off and the normal connection of USB cable should be ensured at the same time. If the upgrade fails, the power can not be powered off, please try to upgrade again directly. Otherwise, it will be necessary to return to us to use special burning tools for firmware burning.

6.5.Bind operation

"Bind" is used to pair an air unit with ground unit.

To pair an air unit and a ground unit:

1. Both air unit and ground unit are powered on.
2. Connect the air and ground unit.
3. Press the physical bind button of the air unit, last 5s+. The LED light next to the bind button flashes green, indicating that it is in the binding state.
4. Press the physical bind button of the ground unit, last 5s+. The LED light next to the bind button flashes green, indicating that it is in the binding state.
5. When the link indicator LEDs of ground unit are always on, it indicates that the air and ground unit is binded.

Note:

(1) If modules binding with different firmware version, the binding operation may fail.

(2) If the program of the air unit or the ground unit is burned incorrectly, such as burning the air unit to the ground unit, and performing the binding operation between the wrong air unit and the ground unit, the binding operation will fail.

(3) Units are bound already before factory delivery, customer do not need to bind again after unboxing.

(4) If unit is restored to factory setting, bind again is needed.

6.6.Telemetry & RC

●Telemetry
UART singal: LVCMOS-3.3V.

Pin-out: G DR DT G RX TX.

Debug-DR/DT, Telemetry-RX/TX.

●RC
PPM/S.BUS singal: LVCMOS-3.3V.

Pin-out: II G V+ G L H.

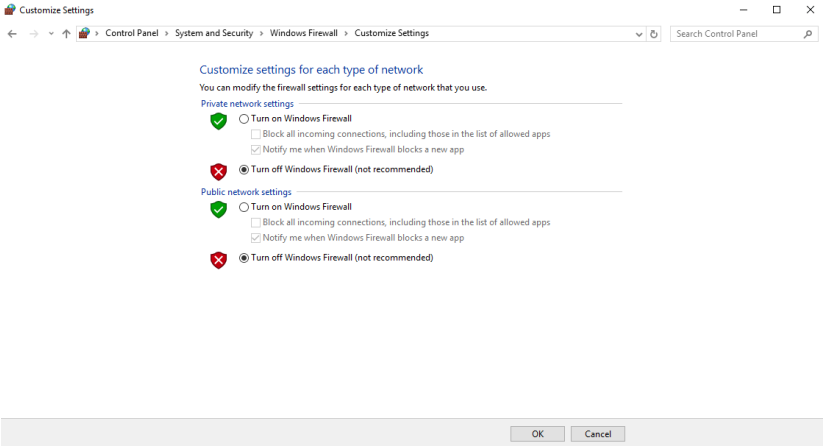
II: PPM/SBUS G: GND V+: Power (5V) G: GND L: CAN-bus-L

H: CAN-bus-H (CAN-bus is not supported yet).

The RC port can provide 5V power supply for S. BUS mode.

6.7.PC Windows firewall

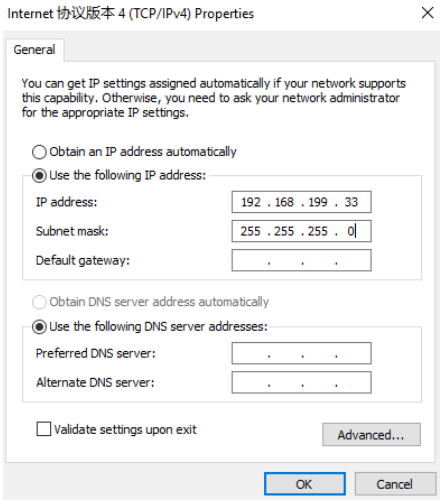
Make sure PC firewall is disabled in case video and/or telemetry is blocked. Here take Windows10 operation system for reference. Path: Control Panel\System and Security\Windows Firewall\Customize Settings.
Set Private/Public network settings as 'Turn off Windows Firewall' as below, click 'OK'.



6.8.Set PC IP address

PC IP address should be set correctly when watch video in PC, take scenario of HDMI ground unit as an example, IP address can be set following below steps:
Double click ‘Ethernet’ at Control Panel\Network and Internet\Network Connections,

Double click ‘Internet protocol version 4(TCP/IPv4)’, set PC IP address like below, click 'OK' finish.



7. FAQ

Q1: How does the Taisync module supply power?
Old hardware version Ethernet port unit: DC, power supply range: 9-15V, recommended to use 12V, Taiysnc provides power supply cables.
New hardware version Ethernet port unit: DC, power supply range: 9-26V, recommended to use 12V, Taiysnc provides power supply cables.
HDMI port Ground unit: DC, power supply range: 9-15V, recommended to use 12V, Taiysnc provides power supply cables.
HDMI+AV/SDI+AV Air unit: DC, power supply range: 9-26V, recommended to use 12V, Taiysnc provides power supply cables.
Q2: Can the Taisync module be powered on before antennas installation?
The antennas must be installed before power on.
Q3: How many antennas do Taisync's air unit need to be installed?
Two antennas need to be installed.
Q4: How many antennas do Taisync's ground unit need to be installed?
Two antennas need to be installed.
Q5: Can different types of remote controllers be used to control drone?
Yes, just output standard PPM signals through the coach port, or use S. BUS receiver.

Q6: Can two air units be installed on a drone?

No, a drone can only integrate one air unit.

Q7: Can two ground units be installed at the receiving end?

The ptp system can only install one ground unit; the ptmp system supports more than one ground units.

Q8: There are some devices nearby, such as WIFI, Bluetooth and so on. Can they be opened when flying?

If 2.4GHz Taisync modules used, make sure to turn off WIFI, Bluetooth and other functions of other devices like mobile phone, car key, because these devices are working in 2.4 GHz band, it can cause interference.

Q9: There are USB3.0 hub and/or HDMI cable used, will they affect the SprintLink wireless system?

If 2.4GHz Taisync modules used, make sure to keep USB3.0 hub and/or HDMI cable away from antenna.

Q10: After integrating the Taisync air unit, GPS is not good at searching for stars. What should we do?

Please check whether the antennas of air unit is far away from GPS to avoid blocking interference to GPS. The frequency band of 1.4G module is close to working frequency of GPS, so it is necessary to ensure a certain degree of antenna isolation.

Q11: What do the four LED lights of the ground unit stand for?

LED 1 (downlink Indicator): The LED is on indicates that the air-to-ground link is connected; the LED is not on indicates that the air-to-ground link is disconnected. LED1 locates at the same side of bind button and next to bind button.

LED 2(uplink Indicator): The LED is on indicates that the ground-to-air link is connected; LED is not on indicates that the ground-to-air link is disconnected. LED2 locates at the same side of bind button and next to LED1.

LED 3 (Network Data Link Indicator): The LED is flickering indicates that the data link is connected; not flickering indicates that the data link is disconnected. Seen from fan up-ward view, LED3 locates at the left side of LED4.

LED 4 (Network Physical Link Indicator): The LED is on indicates that the data link is connected; otherwise it indicates that the data link is disconnected. Seen from fan up-ward view, LED4 locates at the right side of LED3.

Q12: What do the two LED lights of the HDMI ground unit stand for?

LED 1 (downlink Indicator): The LED is on indicates that the air-to-ground link is connected; the LED is not on indicates that the air-to-ground link is disconnected.

LED 2(uplink Indicator): The LED is on indicates that the ground-to-air link is connected; the LED is not on indicates that the ground-to-air link is disconnected.

Q13: What if the uplink LED indicator of ground unit is not on?

Please follow the following steps:

1) Please check the power supply of the air and ground unit is normal.
2) Please check if air unit and ground unit is bound successfully.
3) Please check the antennas installation of the air and ground units is normal: whether the antennas is blocked; whether the antennas connection is loose; whether the rf cable and port is not tightened;
4) Check whether the TX frequency of the ground unit is consistent with the RX frequency of the air unit with Taiysnc PC management software.
5) If the above steps can not solve the problem, please contact Taisync technical support staff.
Q14: What if the downlink LED indicator of ground unit is not on?
Please follow the following steps:
1) Please check the power supply of the air and ground unit is normal.
2) Please check if air unit and ground unit is bound successfully.
3) Please check the antennas installation of the air and ground units is normal: whether the antennas is blocked; whether the antennas connection is loose; whether the rf cable and port is not tightened;
4) Check whether the TX frequency of the ground unit is consistent with the RX frequency of the air unit with Taiysnc PC management software.
5) If the above steps can not solve the problem, please contact Taisync technical support staff.
Q15: What if the Ethernet physical link LED indicator of ETH ground unit is not on?
Please follow the following steps:
1) Please check whether the power supply of the air and ground unit is normal.
2) Please check whether the RJ45 cable is normal.
3) Please check power supply of camera.
4) If the above steps can not solve the problem, please contact Taisync technical support staff.
Q16: What if the Ethernet datel link LED indicator of ETH ground unit is not flashing?
Please follow the following steps:
1) Please check whether the Ethernet physical link LED indicator is on.
2) Please check whether there's stream coming out from camera.
3) If the above steps can not solve the problem, please contact Taisync technical support staff.
Q17: After connecting Taisync module, telemetry can not be connected properly?
Please follow the following steps:

1) Please check whether the link state is normal, please refer to Question 13 and Question 14 if it is abnormal.
2) Please check whether the RC port both the air and the ground units is correct.
3) Please check whether the RC connecting between flight controller and air unit is correct and that between ground unit and remote controller is correct.
4) If using PPM mode, check the mode configuration of the remote controller; if using S. BUS mode, check the configuration of the receiver and remote controller.
5) Please check whether the RC connection of the air and ground unit is correct. We provides standard cables. If you make it by yourself, please check the pin.
6) Please check whether the RC mode is configured correctly with Taiysnc PC management software.
7) If above steps cannot solve the problem, please contact Taisync technical support staff.
Q18: After connecting Taisync module, RC can not be connected properly?
Please follow the following steps:
1) Please check whether the link state is normal, please refer to Question 12 and Question 13 if it is abnormal.
2) Please check whether the RC port both the air and the ground units is correct.
3) Please check whether the RC connecting between flight controller and air unit is correct and that between ground unit and remote contriller is correct.
4) If using PPM mode, check the mode configuration of the remote controller; if using S. BUS mode, check the configuration of the receiver and remote controller;
5) Please check whether the RC connection of the air and ground unit is correct. We provides standard cables. If you make it by yourself, please check the pin.
6) Please check whether the RC mode is configured correctly with Taiysnc PC management software.
7) If the above steps can not solve the problem, please contact Taisync technical support staff.
Q19: After connecting Taisync module, video can not be output properly?
Please follow the following steps:
1) Please check whether the link state is normal, please refer to Question 13 and Question 14 if it is abnormal.
2) Please confirm whether the Ethernet physical link and the Ethernet data link indicators are normal, if not, please refer to Question 15 and Question 16(only applicable for ETH ground unit).
3) Please confirm the IP address, login username and password of the used IP camera.

4) Please check whether the IP address configuration of the ground station and the network camera is in the same network segment (only applicable for ETH-ETH scenario).
5) Please confirm PC IP address set as 192.168.0.X, 192.168.0.2 excluded (only applicable for ETH/HDMI-ETH scenario).
6) Please check whether the RTSP video stream configuration for playing RTSP is correct (only applicable for HDMI-ETH scenario).
7) Please check HDMI cable connection or USB to ETH cable connection of ground unit (only applicable for ETH/HDMI-HDMI scenario).
8) If watch video on PC through USB to ETH convertor, make sure PC IP address set as 192.168.199.33 (only applicable for ETH/HDMI-HDMI scenario).
9) If watch video on PC through USB to ETH convertor, make sure video source choose UDP H.264 (only applicable for ETH/HDMI-HDMI scenario).
10) Please check HDMI cable connection of air unit and HDMI camera working properly (only applicable for HDMI-ETH/HDMI scenario).
11) Please try to power on Taisync system first, after Taisync system startup, connecting HDMI camera (only applicable for HDMI-ETH/HDMI scenario).
12) Make sure PC windows firewall is disabled.
13) If above steps cannot solve the problem, please contact Taisync technical support staff.
Q20: After connecting Taisync module, what if the video carton or mosaic?
Please follow the following steps:
1) Please confirm whether the downlink mode configuration is reasonable.
2) Please check whether the connection of HDMI cable/Ethernet cable is normal.
3) Please check if there is interference exists, we can consider changing the working frequency.
4) If there is no interference, whether the limit distance of communication link has been reached.
5) Please check if peak rate of camera is approaching or exceeding the downlink mode setting.
6) Please check real-time downlink rate via Taisync app if there're bi-stream coming out from camera.
7) If above steps cannot solve the problem, please contact Taisync technical support staff.
Q21: After connecting Taisync module, what if the transmission distance of the module is short, which is not up to expectation?
Please follow the following steps:
1) Please verify whether the antenna and RF cable are installed correctly, check whether they are Taisync standard materials.

2) Please launch antenna test function through Taisync PC app. If air unit is about 5 meters away from ground unit, RSSI should be -35dBm above.
3) Please ensure that the antennas installation of air unit is not blocked by the payload, and there is no obvious blocking at the ground unit near the antennas, and no contacting with electrical material like carbon fiber and the antennas of the air and ground units are perpendicular to the ground.
4) Please do sanity check of Taisync units to confirm if hardware like PA is damaged .
5) Please check whether the downlink mode configuration is reasonable or not, the high-speed downlink mode will significantly reduce the transmission distance.
6) Please check whether the working frequency is obviously interfered or not, select working frequency properly.
7) Please check whether there is serious obstruction between the air and the ground unit during flight, and the complex geographical environment will affect the transmission distance.
8) If above steps cannot solve the problem, please contact Taisync technical support staff.