VDC-48 User Guide

VDC-48: 1.4GHz
Version: 20231219V1.0

Version history

Date	Version	Modification description
20231219	V1.0	Initial version

Notes

1. 1、Ensure that the correct voltage is used to power the device. 24V@2A is recommended.

2. Install the antenna before powering on the device to avoid circuit damage. Place the two antennas of the device at a distance greater than 15cm away from large metal structures to avoid communication obstruction caused by the preceding reasons.

3. Make sure that other electronic devices are not placed too close to the antenna. To avoid affecting the ground noise of the device.

4. Pull distance as far as possible to make the ground end antenna without obstacles. The height of the ground antenna is greater than 3 meters.

5. Before use, please ensure that all the connections are tight and reliable, and all the components work normally.

6. Please do not disassemble or modify, otherwise there will be no warranty. If the failure occurs during installation or testing. To solve the problem, please contact the original technical support.

Catalogue

1.Product overview

VDC-48 is a self-developed, 5W power TDD bidirectional graph digital integrated wireless transmission equipment. The product has the functions of real-time interference detection, adaptive frequency selection, adaptive stream, automatic retransmission, and automatic power control, which greatly improves the ability of anti-multipath and anti-interference, and has the characteristics of high reliability, good stability, and low delay.

This product is suitable for fire prevention, inspection, and monitoring. In the case of good air-to-ground visibility, the transmission distance can reach 48KM.

2. Product accessories

VDC-48 Product list (2)			
No	**Product**	**Instructions**	**Num**
1	VDC-48	TDD wireless transmission radio	2
2	Little glue stick antenna	Gain: 2.5dBi	2
3	Small antenna extension cable	30cm cable	2
4	Fiberglass antenna	Gain: 6dBi/9dBi	2
5	Fiberglass antenna extension cable	1.5m cable	2
6	J30J-25pin	30cm cable	2
7	2.1G directional antenna (optional)	13dBi flat directional antenna	1
8	Extension cable for directional antenna (optional)	4m cable	1
9	Antenna stand (optional)	Antenna stand	2

VDC-48 module

J30J-25pin

2.5dBi Small fiberglass antenna

Small antenna extension cable

9dBi Fiberglass antenna

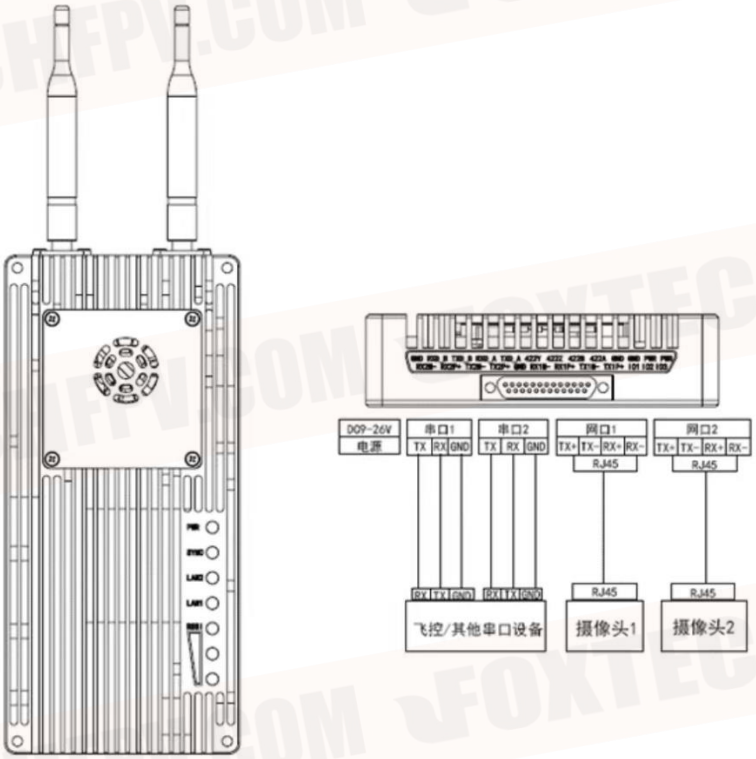
Fiberglass antenna extension cable

13dBi directional antenna & Antenna stand

Flat-panel directional antenna extension cable

3. Product connection

3.1 Connection diagram(Air)



3.2 Air Connection

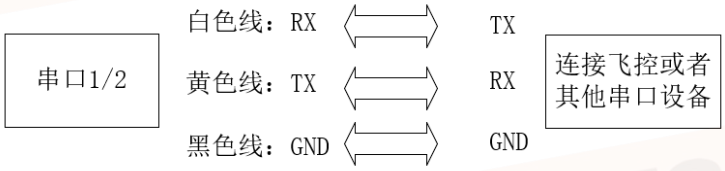
Step1: Connect antenna The distance between the two antennas must be greater than 15cm.The tail is connected to the J30J-25PIN.

Step2: Connect serial port It can be connected to flight control equipment or other serial devices. Note the serial port level.

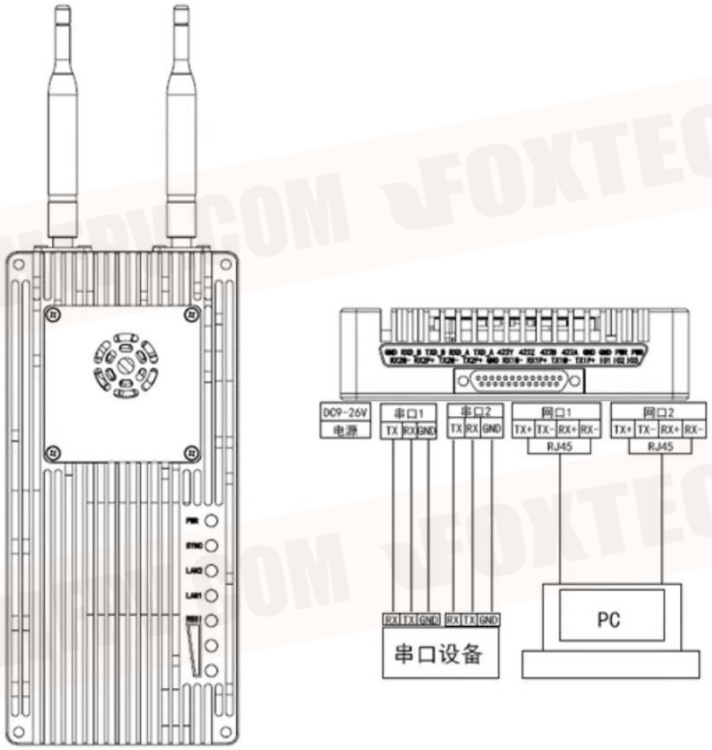
Step3: Connect network port A single or dual network port will be used to connect the camera.

Step4: Connect power Power the equipment DC22~30V, typical value: +24V.

Step5: SYNC light After both the master and slave devices are powered on, check whether the SYNC indicator is steady on (synchronous).



3.3 Connection diagram(Ground)



3.4 Ground Connection

Step1: Connect antenna — The distance between the two antennas must be greater than 15cm.The tail is connected to the J30J-25PIN.

Step2: Connect serial port — It can be connected to the computer serial port tool or other serial port devices.

Step3: Connect network port — Connect the network to the computer, configure the IP address of the computer to be in the same network segment as the IP address of the device. Then use the WEB or host computer for parameter configuration and status query.

Step4: Connect power　　Power the equipment DC22~30V, typical value: +24V.

Step5: SYNC light　　After both the master and slave devices are powered on, check whether the SYNC indicator is steady on (synchronous).

Step6: Play video　　Open the video player software. View live transmission video

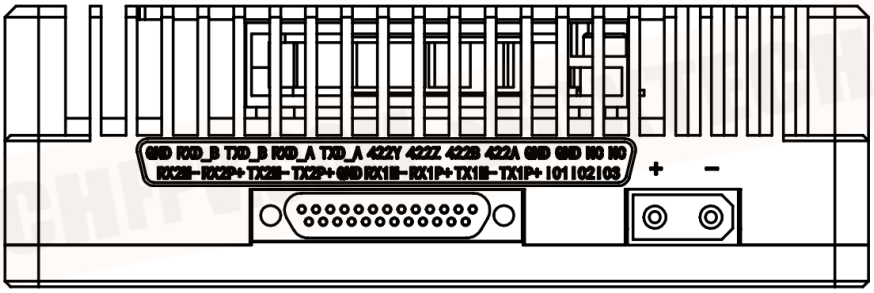
4 Product use

4.1 Power supply

The device uses DC 22~30V power supply. The typical value is +24V@2A. The average current of the primary and secondary terminals under different voltages is shown in the following table.

Supply voltage	Air(slave) Working current (A)	Ground(master) Working current (A)
22V	1.25A	1.15A
24V	1.20A	1.10A
30V	1.15A	1.05A
Note: It is recommended that customers use the 24V@2A power supply for power supply.		

4.2 Wiring definition



The device interfaces are divided into power interface and data interface. The power interface is powered separately. The model of the interface is XT30PW-M. The data interface uses the J30JZ-25pin2 connector, which has two 100 Mbit/s network ports and four serial ports. The serial ports are two RS232/TTL channels, one RS-422 channel, and one SBUS/TTL channel. When SBUS is not used, it can be configured as TTL.

Power interface: XT30PW-M Specific pin definition (VDC-48)				
Linear order	Pin name	Interface definition	Interface description	Signal direction
1	+	POWER +	Input power positive	I
2	-	POWER -	Input power negative	I

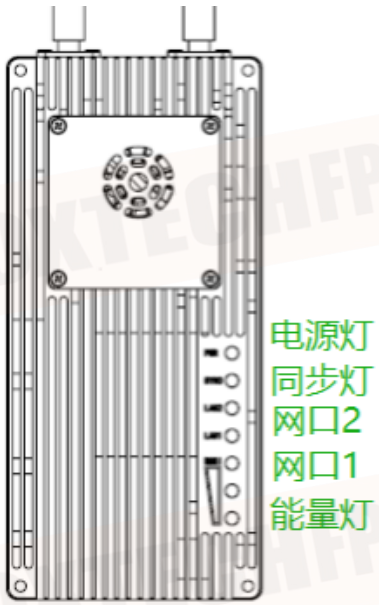
Data interface: J30J-25PIN Specific pin definition (VDC-48)				
Linear order	Pin name	Interface definition	Interface description	Signal direction
1&2	NC	Reserve	Reserve	
3&4	GND	Ground	Ground	O
5	422A	Serial port 3 RS-422	Receiving data RX+	I
6	422B		Receiving data RX-	I
7	422Z		Sending data TX-	O
8	422Y		Sending data TX+	O
9	TXD_A	Serial port 1 RS232/TTL	Sending data TX	O
10	RXD_A		Receiving data RX	I
11	TXD_B	Serial port 2 RS232/TTL	Sending data TX	O
12	RXD_B		Receiving data RX	I
13	GND	Ground	Serial port 2 ground	O
14	SBUS/TTL TX	Serial port 4 SBUS/TTL	SBUS/TTL 数据发送	O
15	SBUS/TTL RX		SBUS/TTL 数据接收	I
16	SBUS/TTL GND		SBUS/TTL ground	O
17	TX1P+	Ethernet 1	Sending data TX+	O
18	TX1M-		Sending data TX-	O
19	RX1P+		Receiving data RX+	I
20	RX1M-		Receiving data RX-	I
21	GND	GND	Serial port 1 ground	O
22	TX2P+	Ethernet 2	Sending data TX+	O
23	TX2M-		Sending data TX-	O
24	RX2P+		Receiving data RX+	I
25	RX2M-		Receiving data RX-	I

Note 1: Signal direction I indicates radio input and direction O indicates radio output

Note 2: When using the serial port 1/2 of the device, please check whether it is TTL level or

RS232 level.
Note 3: The serial port level TTL or RS232 is determined by the factory hardware and cannot be modified by software.
Note 4: The sky end of SBUS is connected to PIN14,16. SBUS ground remote control is connected to PIN15,16.

4.3 Product indicator meaning



Power light PWR（green)

When the PWR light is on, the device is powered on.

SYNC（green)

Out of sync state, light flashing.

After synchronization, the light is steady on.

Network port light : LAN1, LAN2 (green)

The network port light blinks when data is being sent or received.

Receiving signal energy light(RSSI 3 green lights)

The greater the number of energy lights, the greater the signal reception strength.

The RSSI light represents the strength of the received signal	
Number of RSSI energy lights on	Received energy dBm
3 RSSI lights on	about -55dBm
2 RSSI lights on	about -80dBm
1 RSSI light on	about -95dBm

Module type	Mode	VDC-48 light status			
		PWR	SYNC	LAN 1 LAN 2	RSSI 123
master	Un-sync	Powered on	Flashing	Data sending and receiving, flashing	Off
master	Sync	Powered on	Steady on	Data sending and receiving, flashing	Proportional to the strength of the received signal
slave	Un-sync	Powered on	Flashing	Data sending and receiving, flashing	Searching
slave	Sync	Powered on	Steady on	Data sending and receiving, flashing	Proportional to the strength of the received signal

When the primary and secondary devices are not paired, the PWR indicator of the primary and secondary devices is steady on, the SYNC indicator is blinking, and the RSSI indicator of the primary device is off. The RSSI of the slave device will always be in the search state. After the master/slave synchronization, the SYNC indicator of the master/slave is steady on. The master-slave RSSI lamp displays the received signal energy intensity. When the network port is sending or receiving data, the LAN1 and LAN2 indicators of the primary and secondary devices blink.

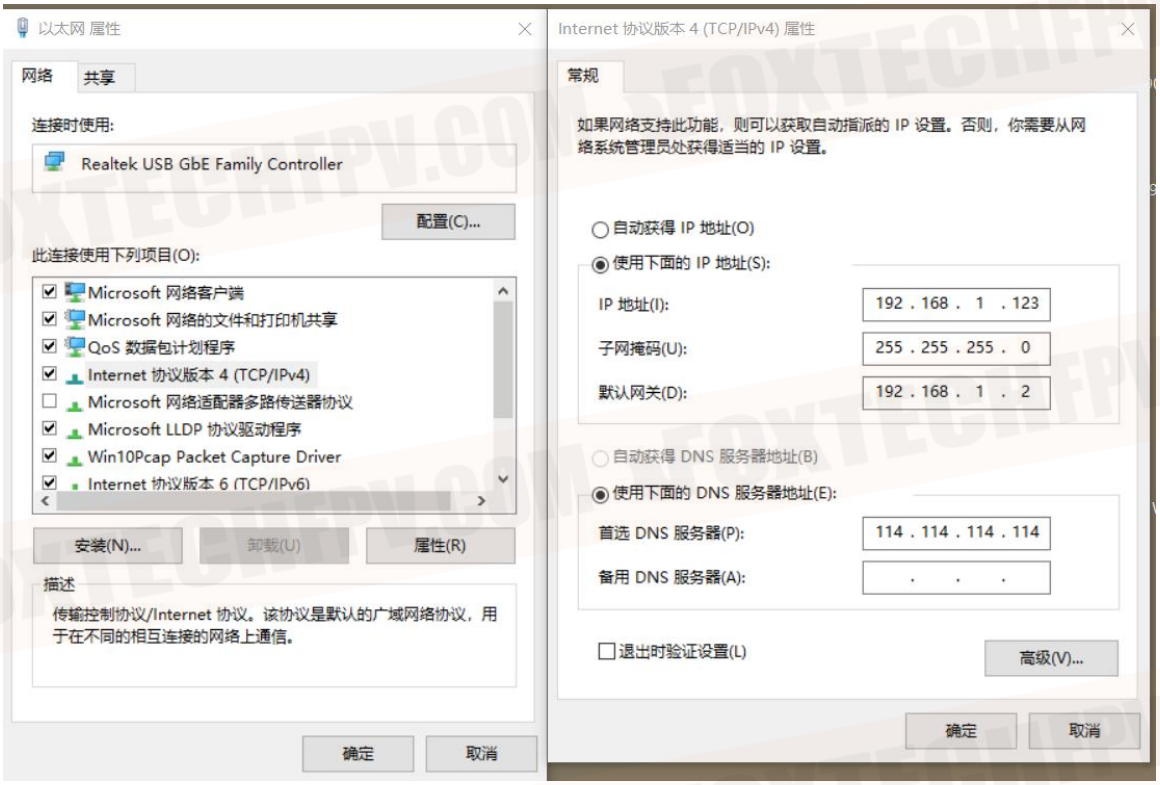
5. WEB Parameter configuration

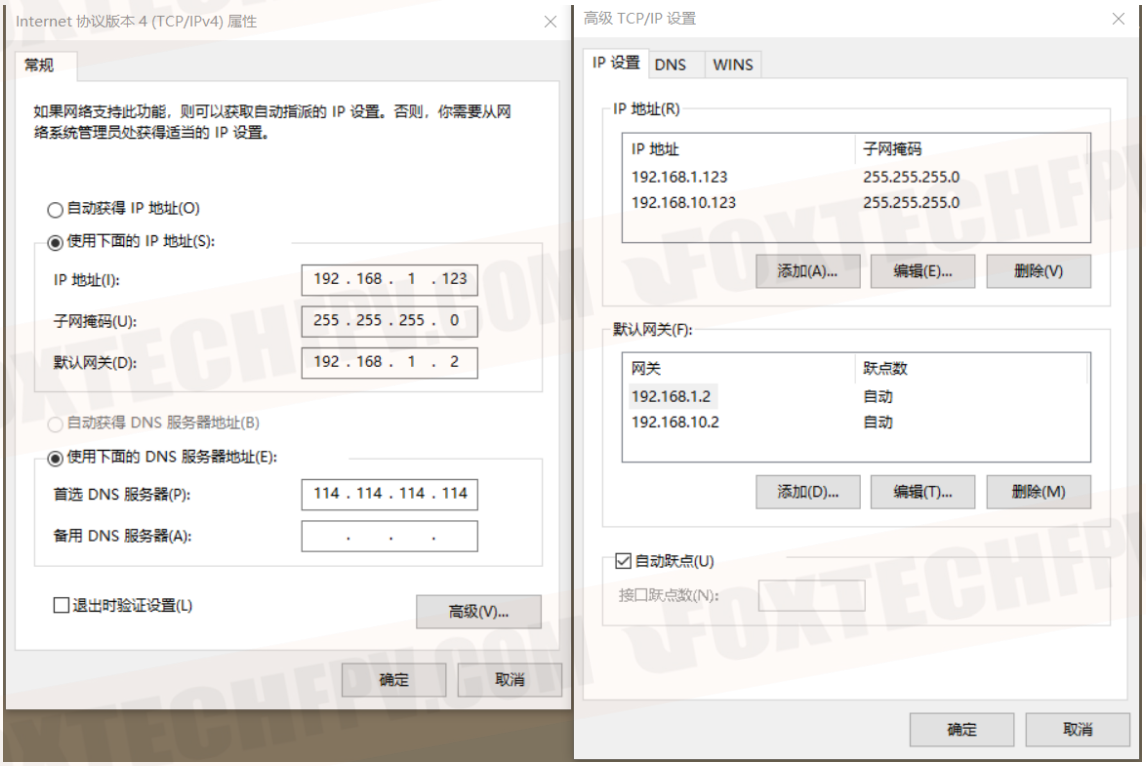
5.1 Device IP

The default IP address of the primary (ground) device is 192.168.10.250, the default IP address of the trunk device is 192.168.10.251, and the default IP address of the secondary (airborne) device is 192.168.10.252. The alternate IP addresses are 192.192.192.192. The default IP address is the one that can be used and modified by the user. The alternate IP, 192.192.192.192, cannot be modified. If you forget the IP address, you can use the standby IP address to log in to the WEB page for parameter query and configuration.

- Configure the network segment of the PC(192.168.10.xxx)

Open computer network connection and right-click properties. Open the TCP/IPv4 properties as shown in the following figure. Click Advanced, add IP, computer IP can add multiple IP at the same time. The same computer can work in different network segments. For example, add IP address 192.168.10.123 and IP address 192.168.1.123 at the same time. Complete the PC IP configuration and click OK to save the configuration.

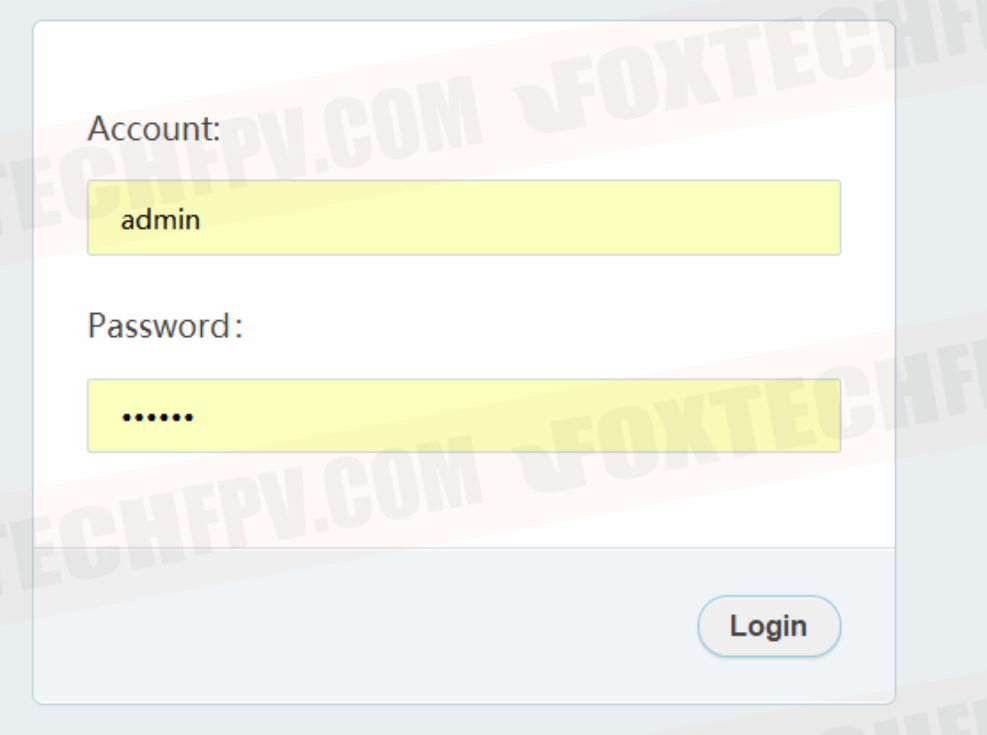




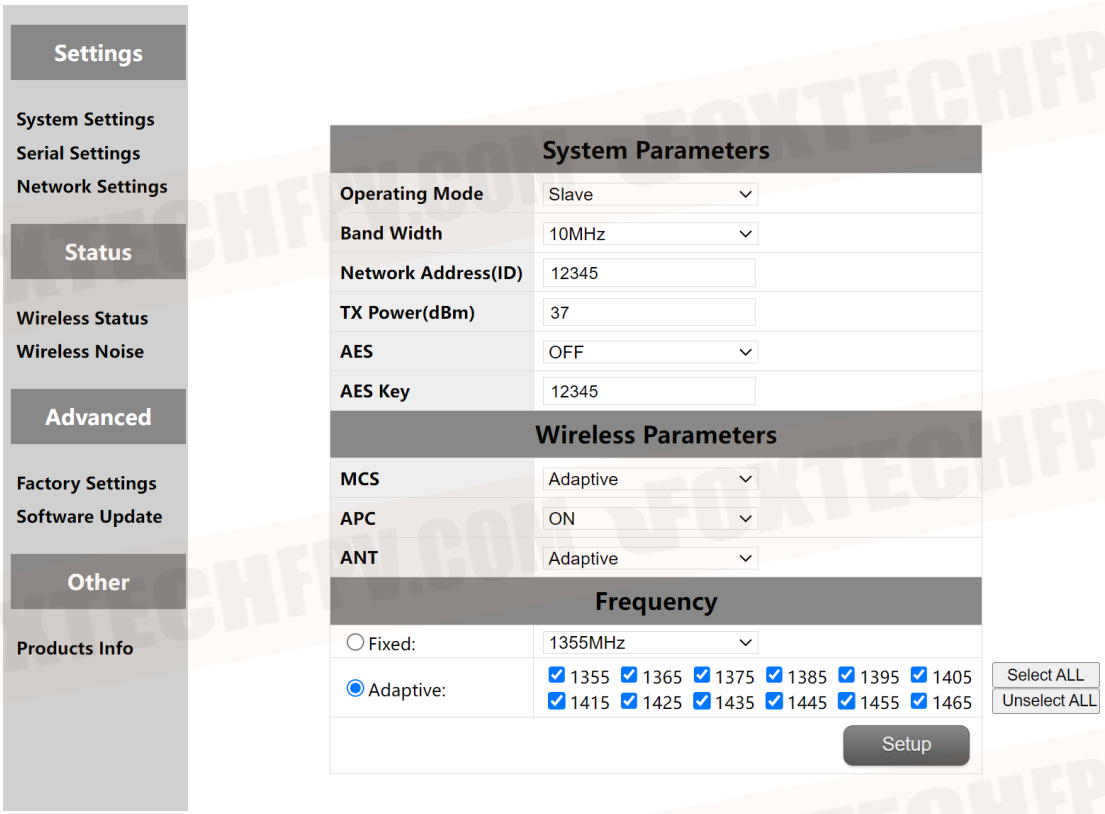
5.2 Web account and password

The default WEB address of the primary (terrestrial) device is 192.168.10.250. The default Web input is 192.168.10.251 on the trunk device and 192.168.10.252 on the secondary (airborne) device.

Account: admin; Password: 123456



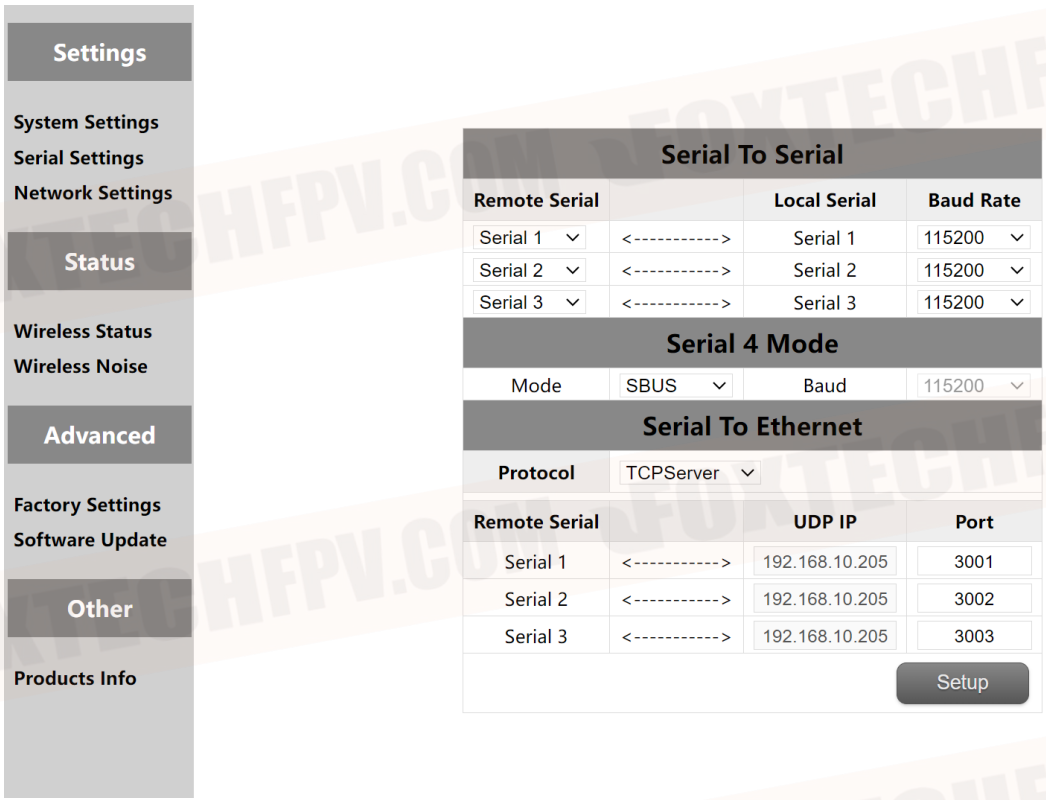
5.3 System Settings



No	Function	Instructions
1	Operation mode	Configure the device as the master or slave end
2	Band Width	Channel bandwidth: 10MHz
3	Network ID	Network ID number: The same ID number is used for the same group.
4	TX Power(dBm)	Up to 37dBm
5	AES	AES Encryption switch
6	AES Key	AES Secret key
7	MCS	Automatic stream control (optional adaptive mode or fixed mode)
8	APC	Automatic power control (optional on or off)
9	ANT	Automatic selection of two antennas (fixed antenna 1 or antenna 2)
10	Frequency	Automatic frequency selection (optional adaptive or fixed)

Frequency selection: Fixed frequency or adaptive frequency can be selected. The adaptive frequency points can be selected all, or you can select any of the frequency points to use.

5.4 Serial Settings



The device has four serial ports, among which serial port 1 and serial port 2 are RS232 or TTL level, and serial port 3 is RS-422 interface. Serial port 4 is SBUS/TTL. When serial port 4 is configured with TTL, you can change its baud rate. The device supports the function of serial port to serial port and serial port to network port.

5.4.1 Serial-to-Serial

The mapping between the remote serial port and the local serial port can be flexibly configured. By default, remote serial port 1 is paired with local serial port 1, remote serial port 2 is paired with local serial port 2, and remote serial port 3 is paired with local serial port 3. You can also configure different mapping relationships based on your requirements, so that the local serial port can communicate with any remote serial port.

5.4.2 Serial-to-Ethernet / Ethernet -to- Serial

This function mainly includes serial port input, network port output or network port input, serial port output and so on. For example, in the WEB configuration, the remote serial port 1 inputs data, and the local port receives data from the remote serial port 1 through TCP or UDP. For example, the TCP protocol of the local SSCOM or the TCP protocol of the network debugging assistant is used to obtain the input data of the remote serial port 1 through the network connection mode.

- **TCP mode**

Network debugging Assistant TCP mode parameter configuration: (Obtain remote serial port 1 data)

1: indicates TCP mode. The protocol type must be TCP client.

2: the server IP address to fill in for the equipment IP, 192.168.10.250/192.192.192.192.

3: Enter the server port number 3001. To obtain data from the remote serial port 2, write 3002.

This parameter is set using the SSCOM TCP mode: (Obtain data from remote serial port 1)

1: Port number: TCPClient

2: Remote IP: 192.168.10.250/192.192.192.192.

3: Remote port: 3001, Click to connect.

4: The TCP mode local field is not used.

- **UDP 模式**

Using SSCOM TCP mode parameter configuration: (Obtain remote serial port 1 data)

1: Port number: TCP Client.

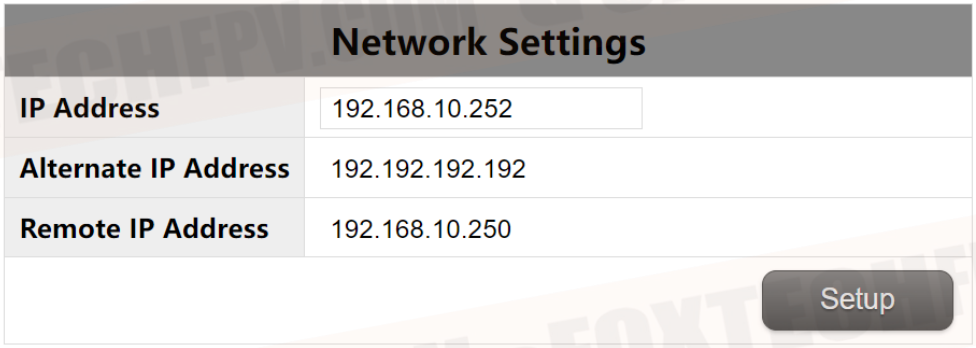
2: Remote IP: 192.168.10.250/192.192.192.192

3: Remote port number: 3001, Click to connect.

4: Local IP: IP address of the PC (in the same network segment as the device IP address).

5: Local port: must be the number of the remote port, also 3001.

5.5 Network Settings



The default local IP address of the primary end is 192.168.10.250. Users can modify the IP address.

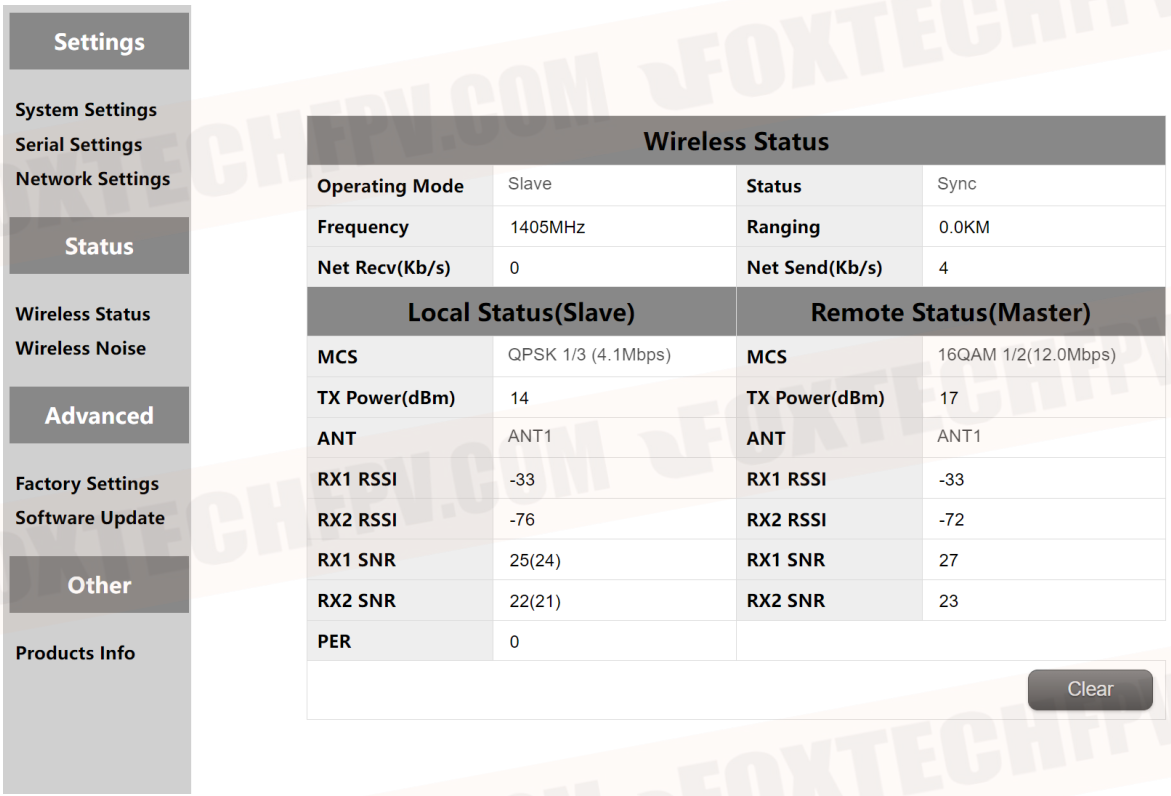
The default local IP address is 192.168.10.251. Users can modify the IP address.

The default local IP address of the secondary end is 192.168.10.252. Users can modify the IP address.

The secondary IP address is 192.192.192.192. The standby IP address cannot be changed.

If the IP addresses of the primary and secondary devices are the same, the web page can access only the local device. If the IP addresses of the primary and secondary devices are different and the devices are synchronized, the local web page can access and view the parameters and IP addresses of the local and remote devices at the same time.

5.6 Wireless Status

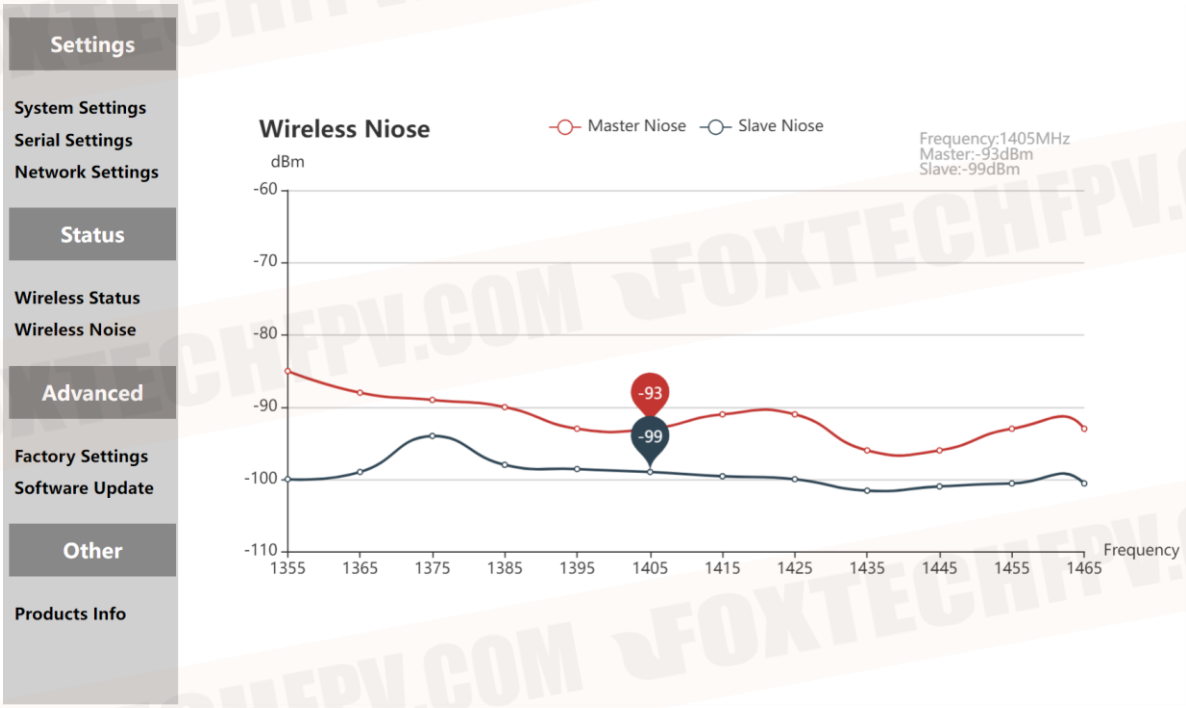


Wireless status is mainly to display channel information, such as master and slave nodes, whether to synchronize, working frequency points, distance display and network data volume statistics. It also displays the status of the local device and some information about the remote device. For example, MCS (stream mode), transmit power, two-channel received energy, two-channel received signal-to-noise ratio and error packet PER display.

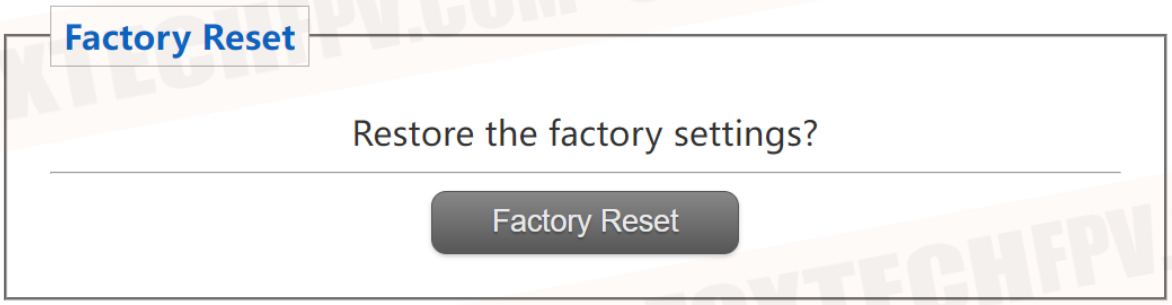
5.7 Wireless Noise

Background noise detection is mainly used to detect ambient interference of master and slave equipment. The red line represents the bottom noise at the primary end and the blue line represents the bottom noise at the secondary end. And the lower the absolute value, the cleaner the floor noise, that is, the smaller the interference source. For example, -100dBm is better than -90dBm. Conventional drawing distance requires the main and secondary ground noise to be normal at -100dBm.

Background noise detection can help users quickly eliminate interference sources around the device after power-on, when the absolute value is large, such as -70dBm. At this time, on behalf of serious interference around the equipment, you can pull the far antenna position or away from the electromagnetic wave equipment on the side of the equipment to see whether the bottom noise has become better.

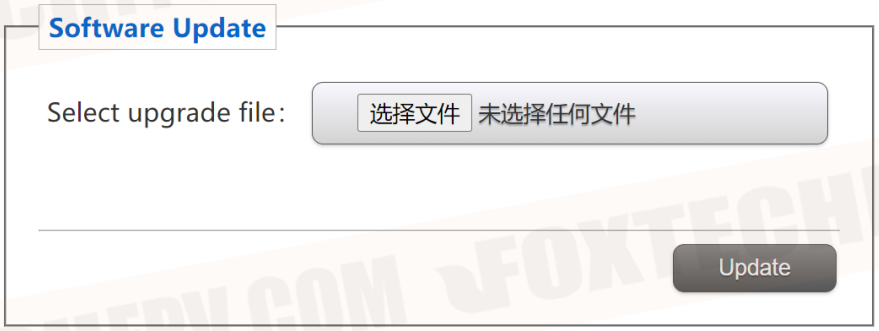


5.8 Factory Reset



After the device is factory set, the default IP address is 192.168.10.250, and the default IP address is 192.168.10.250. The customer needs to change the IP address again.

5.9 Software Upgrade



System update, for customers to update the firmware, click select file, select the corresponding burn file, after the successful upgrade, please power on again. Do not power off during the upgrade to avoid firmware loss.

5.10 Products Info

Products	
Product Type	S01A-B100-J37
Serial Number	202311200001
Hardware Version	170C-S01AB100J37S224
Software Version	P231122TT
Firmware Version	20231121v0100

This section describes the serial number, software and hardware version number of the device.