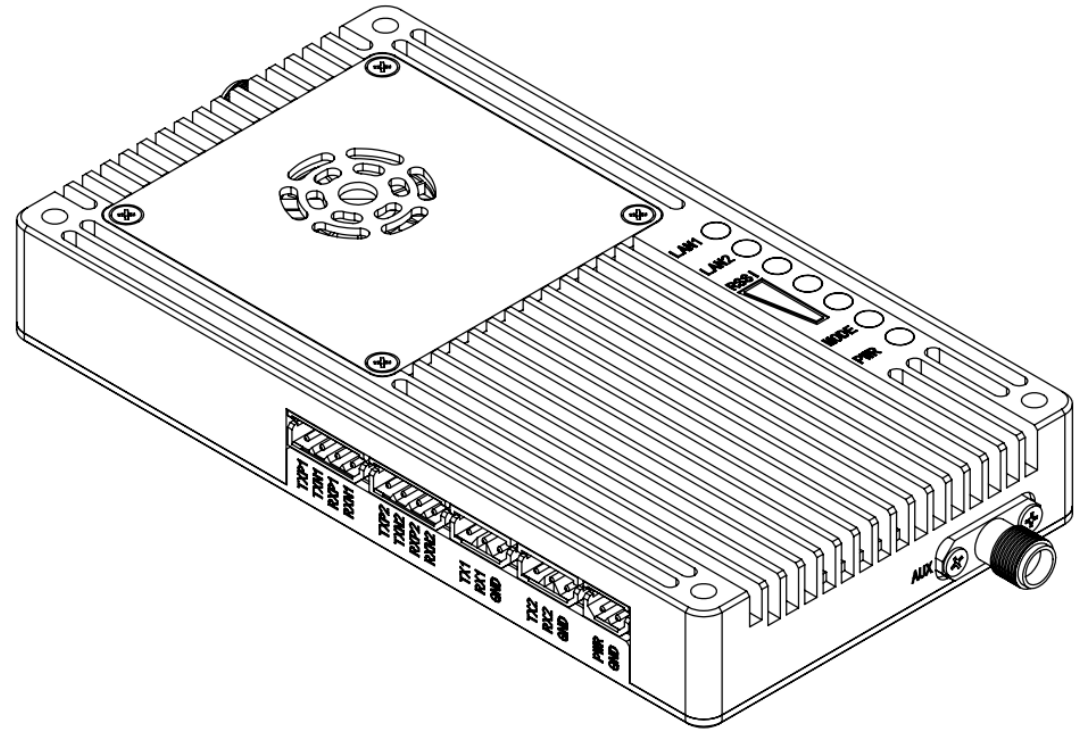
Product specification

TC69 series

point-to-multipoint bidirectional broadband IP transmission



Version V1.0

Catalogue

1. Product specification

1.1 Product introduction

TC69 series product is a point to multipoint broadband data transmission. It supports multiple bandwidth allocations and star networking. Using advanced TDD wireless communication technology, OFDM and MIMO and other key technologies, with strong anti-interference and penetration ability, to achieve stable wireless data transmission.

Product model:

Model	Working frequency	Transmitting power	Transmission distance
TC69-A1-33	806~826MHz	2W	5km
TC69-A2-33	806~826MHz	2W	20 km
TC69-A3-33	806~826MHz	2W	50 km
TC69-B1-33	1427~1447MHz	2W	5 km
TC69-B2-33	1427~1447MHz	2W	20 km
TC69-B3-33	1427~1447MHz	2W	50 km
TC69-C2-33	1420~1530MHz	2W	20 km
TC69-C3-33	1420~1530MHz	2W	50 km

1.2 Features

1 Supports point-to-point and point-to-multipoint broadband transmission and supports up to 16 slave nodes.

2 Supports TTL, RS232, RS485, CAN.

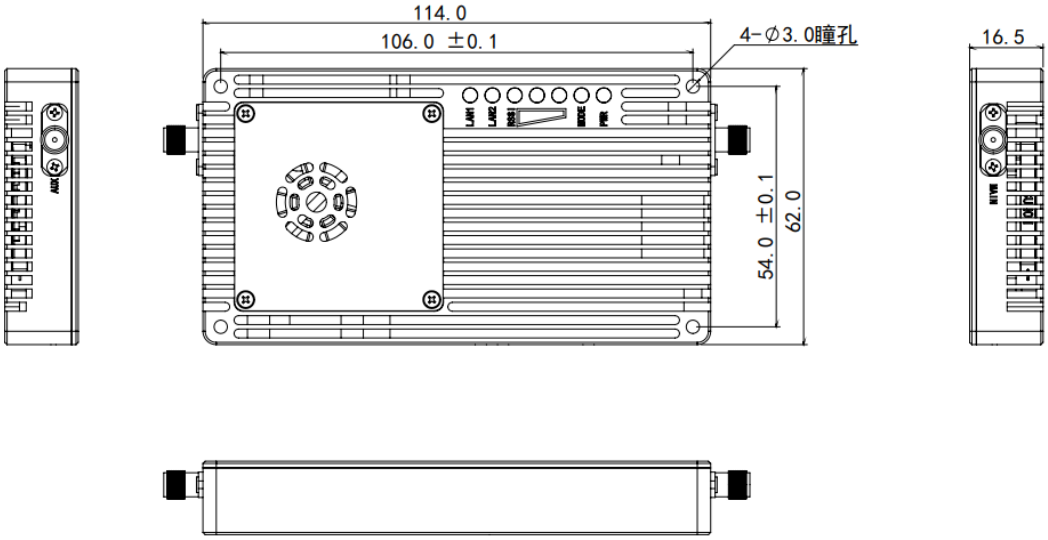
3 Supports large bandwidth, maximum payload support 30Mbps.

4 Supports automatic frequency hopping function, can automatically find the best frequency in the current wireless environment.

5 Transmitting power: up to 33dBm.

6 Supports 3MHz, 5MHz, 10MHz, and 20MHz.

1.3 Dimensions



Unit mm

2. Instructions for use

2.1 Notes

（1）Ensure that the power supply voltage is within the specified voltage range; otherwise, the circuit may be damaged.

（2）Be sure to use the specified type of antenna to ensure that the frequency band, impedance and other parameters match.

（3）The antenna provided by our company is an omnidirectional antenna, and

the antenna must be kept perpendicular to the ground during use, otherwise the transmission distance will be affected. When the antenna is used, keep a certain distance from the ground. The higher the distance from the antenna to the ground, the farther the transmission distance. Try to choose the highest point in the open, there is no obvious shelter between the transmission and reception, otherwise it will affect the transmission distance.

（4）This device needs to be used by at least two, and a single device cannot work properly.

（5）First connect the antenna and then power on, no antenna power will damage the equipment.

（6）使 When using, the distance between each device should be more than 2m; Too close to the module receives too much energy, which will affect the use effect, and even damage the module.

2.2 Instructions for use

Check whether the antenna and cable are connected before starting. The MAIN antenna (antenna identifier MAIN) must be connected to an antenna, and the secondary antenna (antenna identifier AUX) is not required. If no antenna is connected, transmission stability will be affected.

The POWER supply must be greater than 12V 1.5 A. After power-on, the power indicator and MODE indicator are steady purple; Wait 20 seconds for the MODE indicator to turn green or red and the RSSI indicator to blink, indicating that the

device starts working.

Ensure that multiple devices are configured as one master node and multiple slave nodes.

The handheld (ground) device is configured as the "master node" and the **device (sky)** device is configured as the **"slave node".**

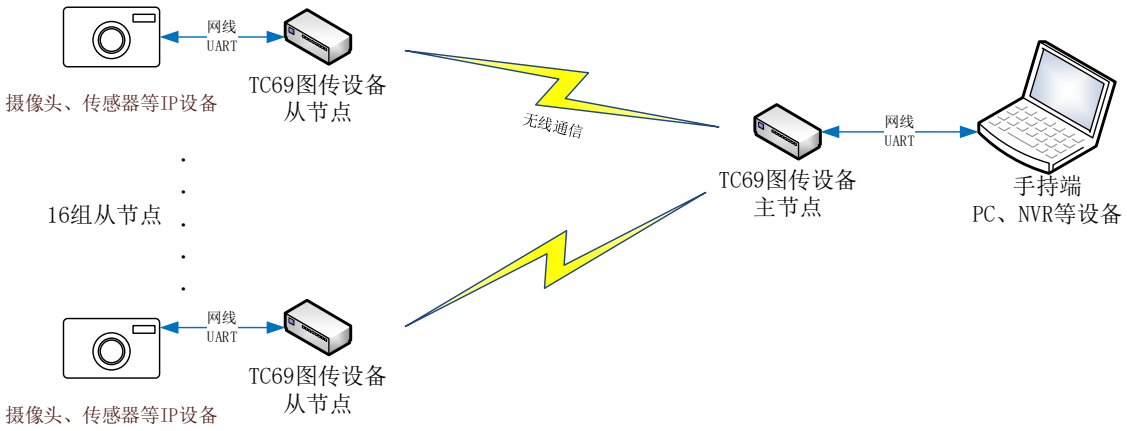
Ensure that the IP addresses of all IP devices, such as PCS, NVRS, and IPcamers, belong to the same network segment and cannot be the same.

Ensure that the matching keys of devices in the group are the same. If the keys are inconsistent, the connection fails.

The RSSI lamp changes from cyclic flashing to lit after normal connection.

When there is a bad signal at either end, you can try to improve it by raising the antenna height and choosing the unobstructed terrain.

2.3 Typical application:



2.4 Indicator status definition

Indicator	Indicative meaning
LAN1	Indicates whether the network cable is connected
LAN2	Indicates whether the network cable is connected
RSSI	Indicates the energy intensity of the signal received by the device. When connected, the LED will light up, and the greater the signal energy intensity, the more the LED lights up. When there is no connection, the 3 LED lights flash cyclically.
MODE	Red: Device working in "master mode"
	Green: Device working in "slave mode"
PWR	Steady on after the device is powered on

2.5 Built-in WEB page

The device provides embedded WEB mode to query, set, and upgrade parameters.

If you have forgotten the device IP address, log in to standby IP address 192.192.192.192 to change the settings. Before logging in, configure an IP address in the same network segment for your PC (192.192.192.1-192.192.192.254; 192.192.192.192 not included).

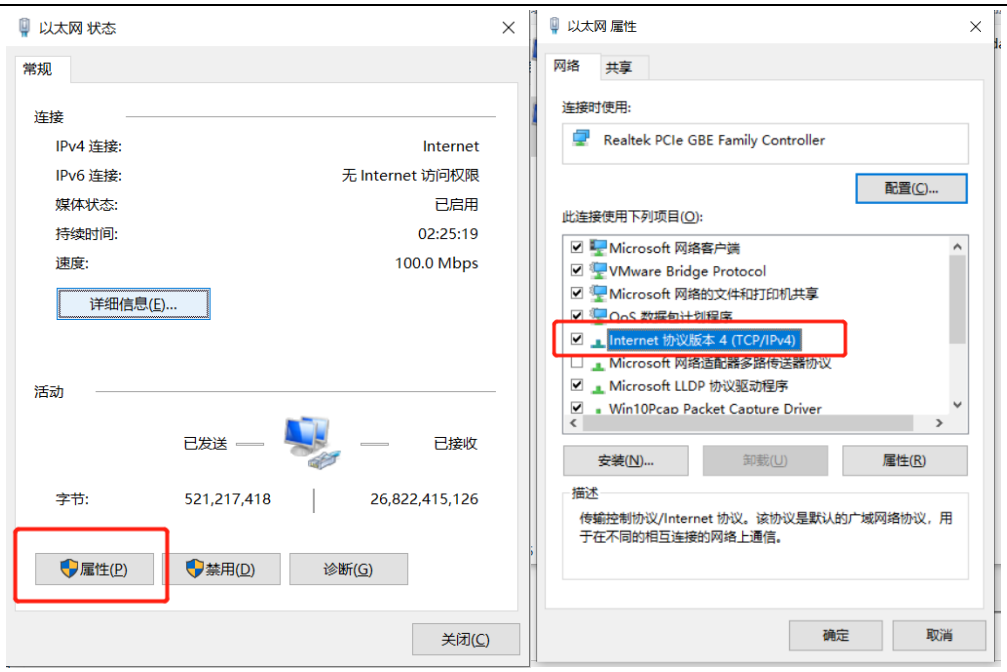
The default WEB login information of the device is as follows:

Item	Device information
IP address	192.168.10.230
Alternate IP	192.192.192.192
Username	admin
Password	123456

2.5.1 WEB UI login

(1) The PC uses a network cable to connect the device.

(2) Change the PC to an IP address in the same network segment as the IP address of the device. If you forget the IP address of the device, use the standby IP address to log in.

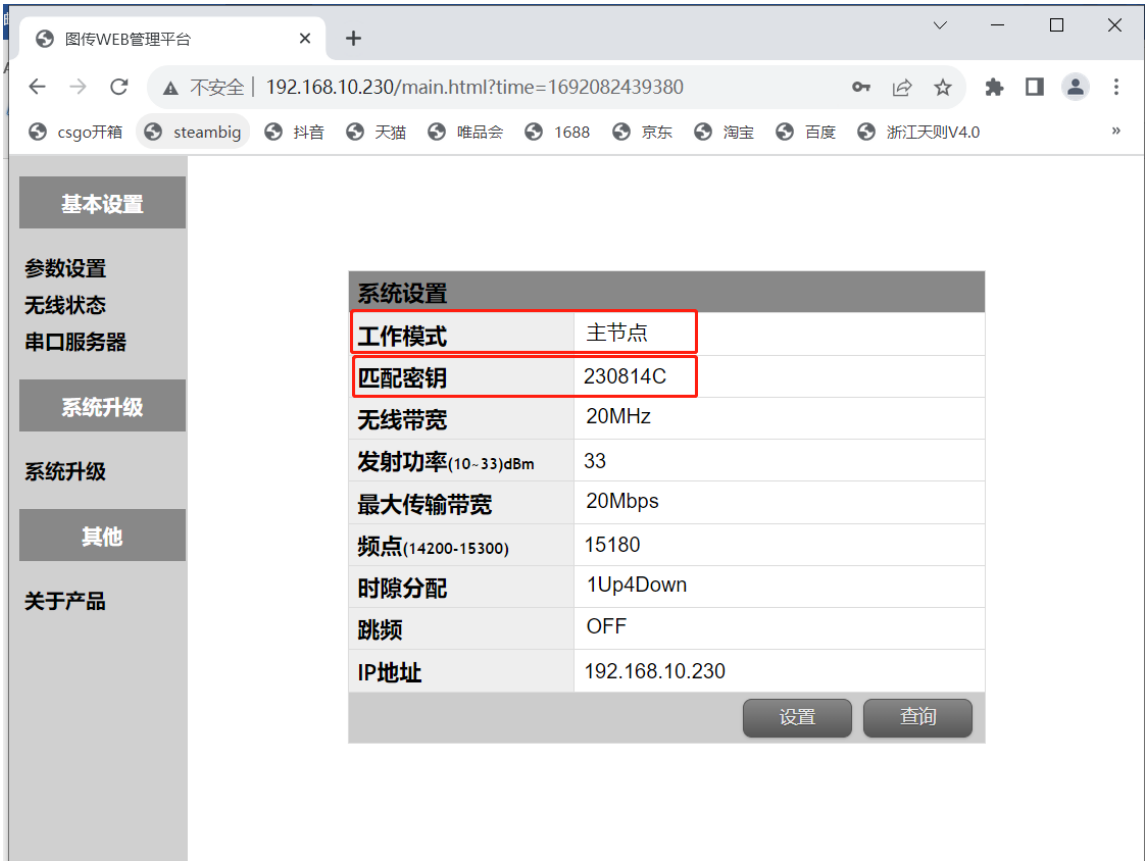


(3) Open the browser (Internet Explorer or Google Chrome is recommended), enter the IP address of the device, and open the web page embedded in the device.

Account：admin

Password：123456

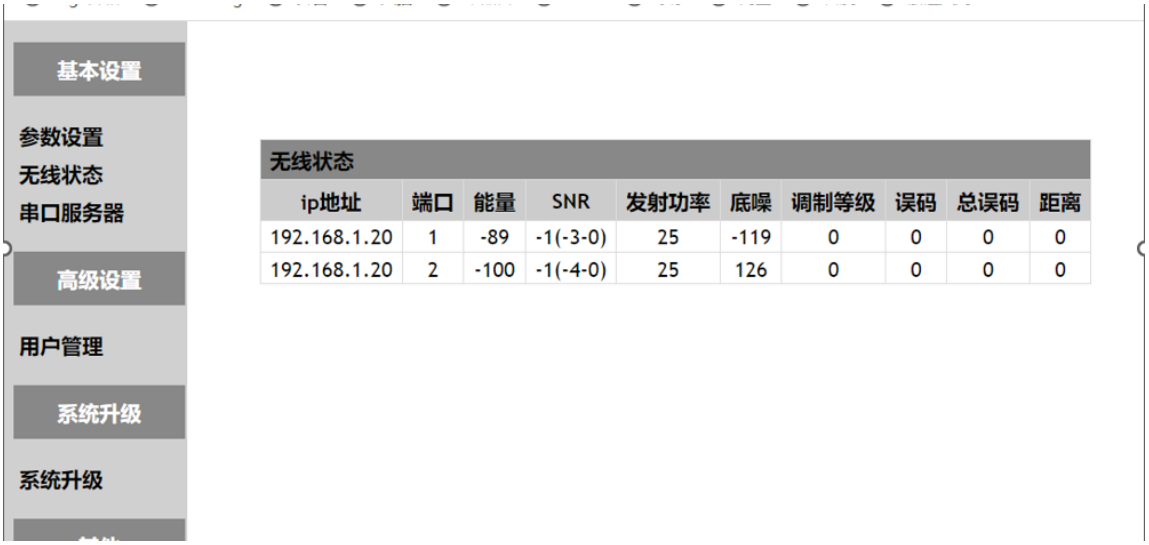
2.5.2 Parameter setting



To set Working mode, **the devices in the same group must have one master node and multiple slave nodes.** The master node device is the handheld end (ground), and the slave node device is the device end (air).

Step 2: set matching key to ensure that **the matching keys of devices in the same group are consistent**.

2.5.3 Status query

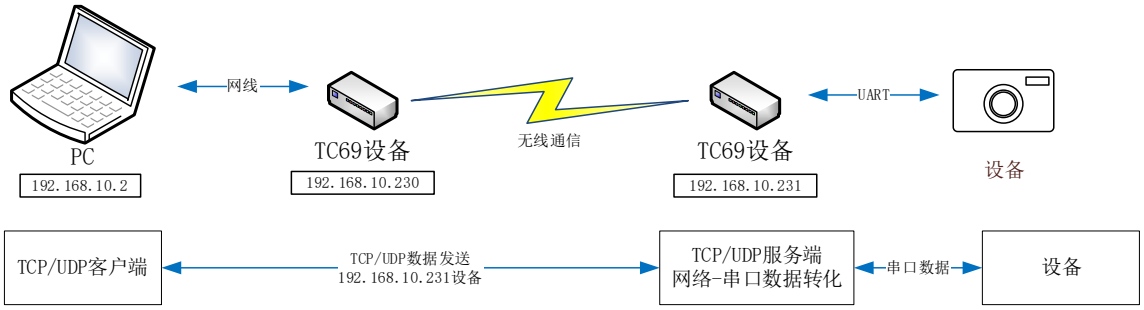


无线状态

ip地址	端口	能量	SNR	发射功率	底噪	调制等级	误码	总误码	距离
192.168.1.20	1	-89	-1(-3-0)	25	-119	0	0	0	0
192.168.1.20	2	-100	-1(-4-0)	25	126	0	0	0	0

2.5.4 Serial port server setting

Using this function can realize the conversion of network to serial data.



Supports TCP protocol and UDP protocol, the two serial ports on the device are distinguished by port number.

Using the TCP protocol, the external device (PC) needs to create a TCP client, which can be used after connecting to the target TC69 device. The external device (PC) sends TCP data to the target TC69 device, and the target TC69 device converts the data into serial data and sends the data to the TCP client after receiving the serial data.

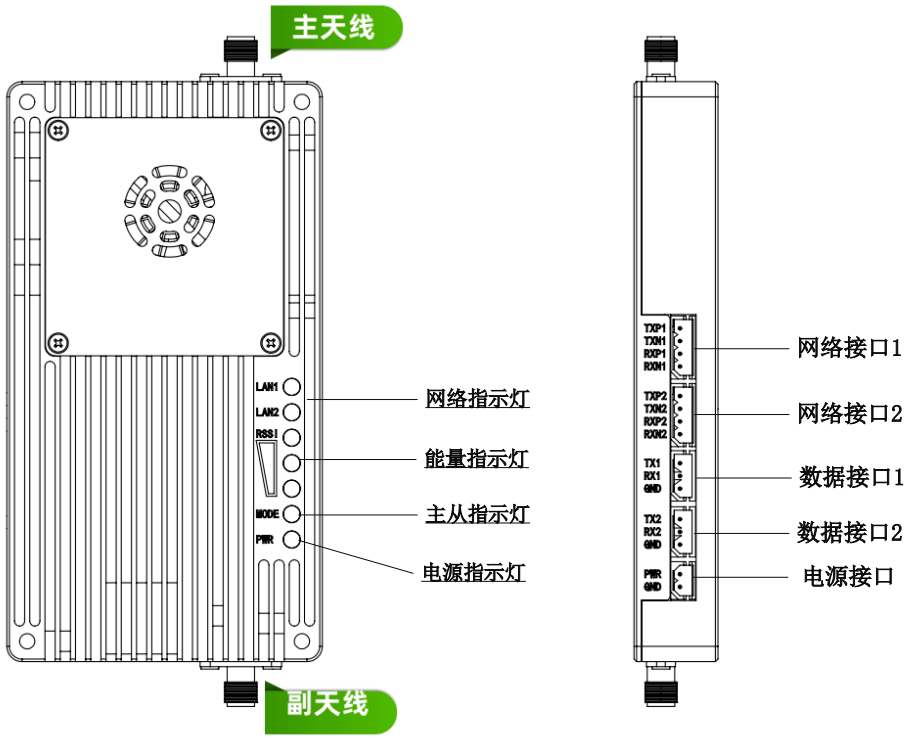
When using UDP protocol, the external device (PC) needs to create a UDP service, and the local port number and remote port number of the UDP service need to be consistent with the "TCP/UDP port" in the TC69 device. The TC69 device will actively send the serial data to the "target IP" after receiving the serial data. Target IP must be the IP address of the external device (PC).

2.5.5 Upgrade

You can upgrade the system firmware on this page. During the upgrade, do not power off and restart the system to avoid system damage.

3. Device interface

3.1 Interface Diagram



3.2 Interface description

No	Interface meaning	Interface description	Physical interface
1	Network interface 1	100 MBPS network interface	Molex2.5 4PIN
2	Network interface 2	100 MBPS network interface	Molex2.5 4PIN
3	Data interface 1	RS232/TTL/RS485(specify on demand) Pin definition: 1 / 2 / 3 TTL/RS232: TX / RX / GND RS485: A / B / GND	Molex2.5 3PIN

<table>
<tr><td>4</td><td>Data interface 2</td><td>RS232/TTL/RS485/CAN(specify on demand)<table><tr><td>Pin definition</td><td>1</td><td>2</td><td>3</td></tr><tr><td>TTL/RS232</td><td>TX</td><td>RX</td><td>GND</td></tr><tr><td>RS485</td><td>A</td><td>B</td><td>GND</td></tr><tr><td>CAN</td><td>H</td><td>L</td><td>GND</td></tr></table></td><td>Molex2.5 3PIN</td></tr>
<tr><td>5</td><td>Power interface</td><td>Supply voltage: 9~28V
Typical value :above 12V 1.5A</td><td>Molex2.5 2PIN</td></tr>
<tr><td>6</td><td>MAIN</td><td>The main antenna port must be connected to an antenna.</td><td>SMA</td></tr>
<tr><td>10</td><td>AUX</td><td>Secondary antenna port, can be considered not connected but will affect the signal quality.</td><td>SMA</td></tr>
<tr><td>11</td><td>LED</td><td>Device status indicator. For details, see Indicator status.</td><td></td></tr>
</table>

4. Technical index

4.1 System technical index

Parameter	Index requirement
Working frequency	806MHz~826MHz 1427MHz ~ 1450MHz 1420MHz~1530MHz
Carrier bandwidth	3M,5M,10M,20M
Wired receiving sensitivity	20MHz -94dBm(10Mbps) 20MHz -97dBm(5Mbps) 10MHz -91dBm(10Mbps) 10MHz -96dBm(5Mbps) 5MHz -84dBm(10Mbps) 5MHz -93dBm(5Mbps) 3MHz -87dBm(5Mbps) 3MHz -98dBm(2Mbps)
Transmitting power	33 ± 1dBm
Slave node number	Up to 16
Rate	Maximum single-node support 30Mbps Multi-node adaptive average distribution system rate
Encryption mode	AES128
Maximum port input level	≤10dBm
Input voltage standing wave ratio	≤2.0

4.2 Electrical index

Parameter	Index requirement
Rated operating voltage	Typical value: DC+12V Limiting value: DC9~28V
Rated working current	≤1A @ DC12V
Rf connector impedance	50Ω
Audio and video impedance	75Ω

4.3 Structural parameter index

Parameter	Index requirement
Dimension(L*W*H)	114mm*62mm*16.5mm
Weight	≤160g
Structural material	Aluminum alloy 6061
Structure surface treatment	Internal anodized color

4.4 Environmental index

Parameter	Index requirement
Working temperature	-20℃ ~ +55℃
Storage temperature	-40℃ ~ +85℃
Relative humidity	95%（40℃）
Class of protection	IP31

5. Simple problem solving

No	Problem description	Possible solutions
1	Equipment is not working	1.Check whether the other power supply is powered on. 2. Check whether the parameter Settings are correct. A. Ensure that a central node, multiple access nodes. B. Consistent access ID C. IP address correct 3.Check whether the connected antenna is correct.

2	Data packet loss	1.Check whether the RSSI LED indicator is too small. 2.The cable is connected incorrectly and is in poor contact.
4	Weak reception	1. Check whether the antenna cable is in poor contact. 2. Check whether the transmit power is changed. The setting is too small. 3.Whether the distance between devices is very far? It is normal that the received signal is weak.
5	Distance is not far	1.Check whether interference sources, such as power supplies, exist in the system and take shielding or isolation measures. 2. Check whether the antenna cable is in poor contact. 3. Try raising the antenna or replacing the high-gain antenna. 4.Too much occlusion of the test site will affect the test distance. Change the test location

If there is any problem with the equipment, please contact our technical personnel in time. Please do not disassemble the machine without authorization. Thank you.

6. Declaration

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Safety tips

Dear customers, when you use our products, please pay attention to the following:

Do not use our wireless communication products in places where the use of wireless transmitters is prohibited.

Please pay attention to the safety of lithium batteries, large capacity lead batteries and other power supplies used in the company's wireless communication products.

Care and maintenance

This equipment is a specific fine design and process of precision electronic products, should be used carefully, do not try to disassemble the equipment, non-professional treatment may damage the equipment, or lead to further expansion of the problem, if there is a problem, please contact our after-sales service.