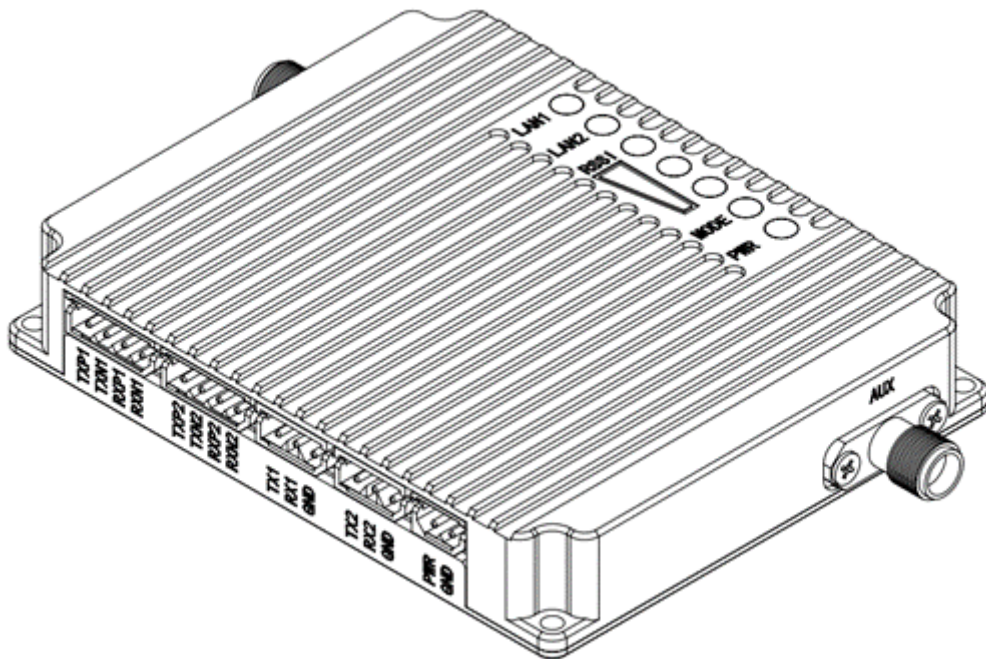# Product specification

TC69 series

point-to-multipoint bidirectional broadband IP transmission

Version V1.0

Catalogue

1. Product specification

1.1 Product introduction

TC69M series products are a point-to-multipoint broadband data transmission equipment. 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	Maximum transmission distance
TC69B-Z001-J25	2401.5-2481.5 MHz 1427.9-1447.9MHz 806-826 MHz	25dBm（0.3W）	5KM
TC69B-Z002-J25	2401.5-2481.5 MHz 1427.9-1447.9MHz 806-826 MHz	25dBm (0.3W)	20KM
TC69B-Z003-J25	2401.5-2481.5 MHz 1427.9-1447.9MHz 806-826 MHz	25dBm (0.3W)	50KM
TC69B-Z001-J25	1427~1447MHz	23dB（0.2W）	20KM
TC69B-Z02K-J23	1427~1447MHz	23dB（0.2W）	30KM
TC69B-Z03K-J23	1427~1447MHz	23dB（0.2W）	50KM

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 25dBm.

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

1.3 Dimensions
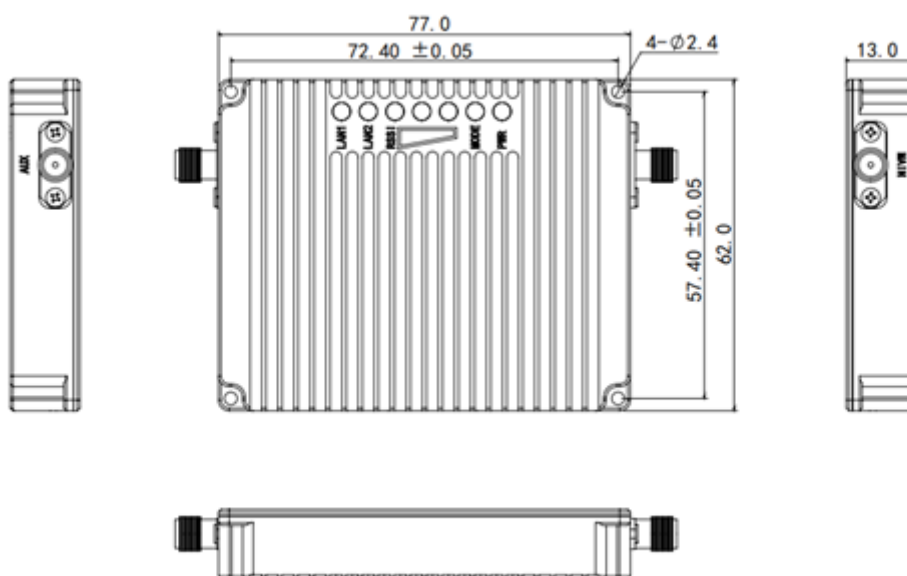
Unit mm

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.

After the POWER supply is powered on, the power indicator is steady on and the MODE indicator is steady in 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:
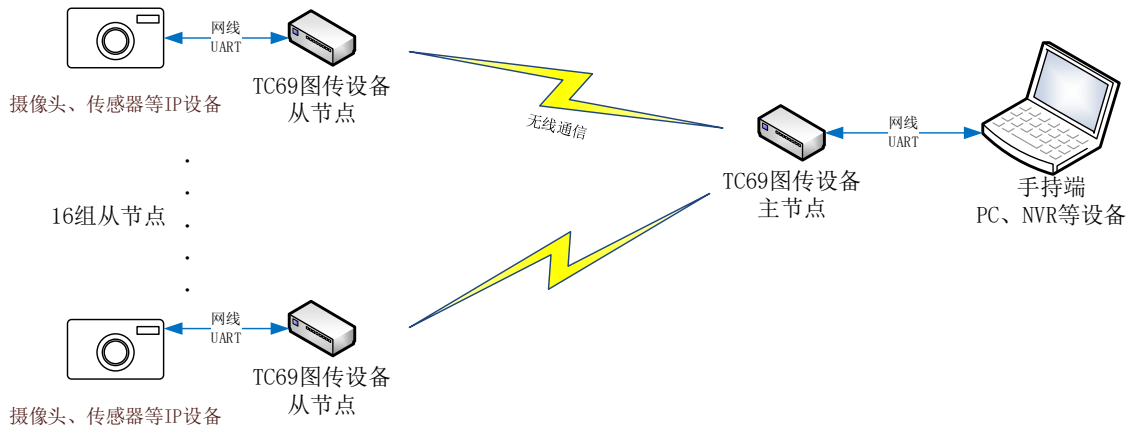
2.4 Indicator status definition

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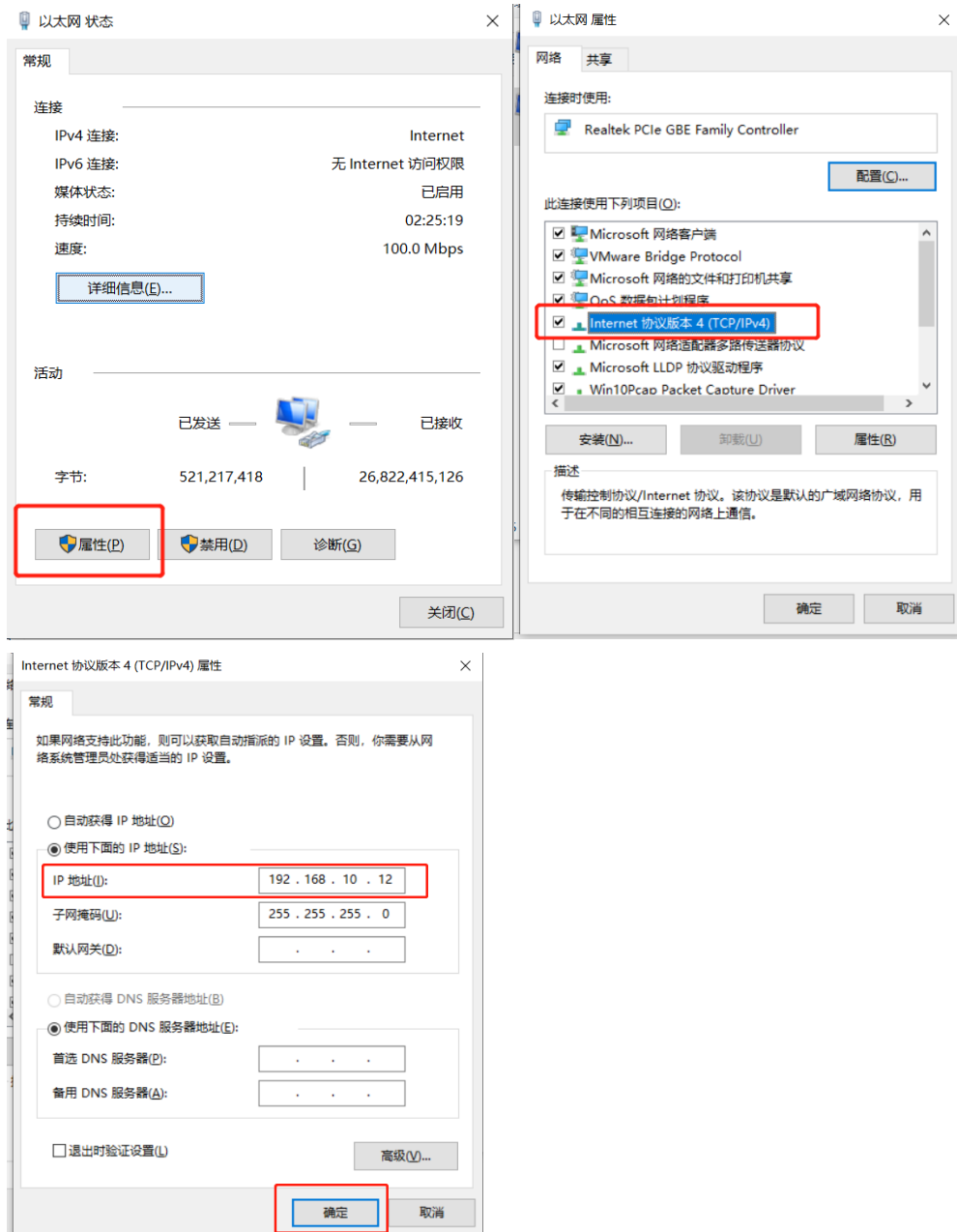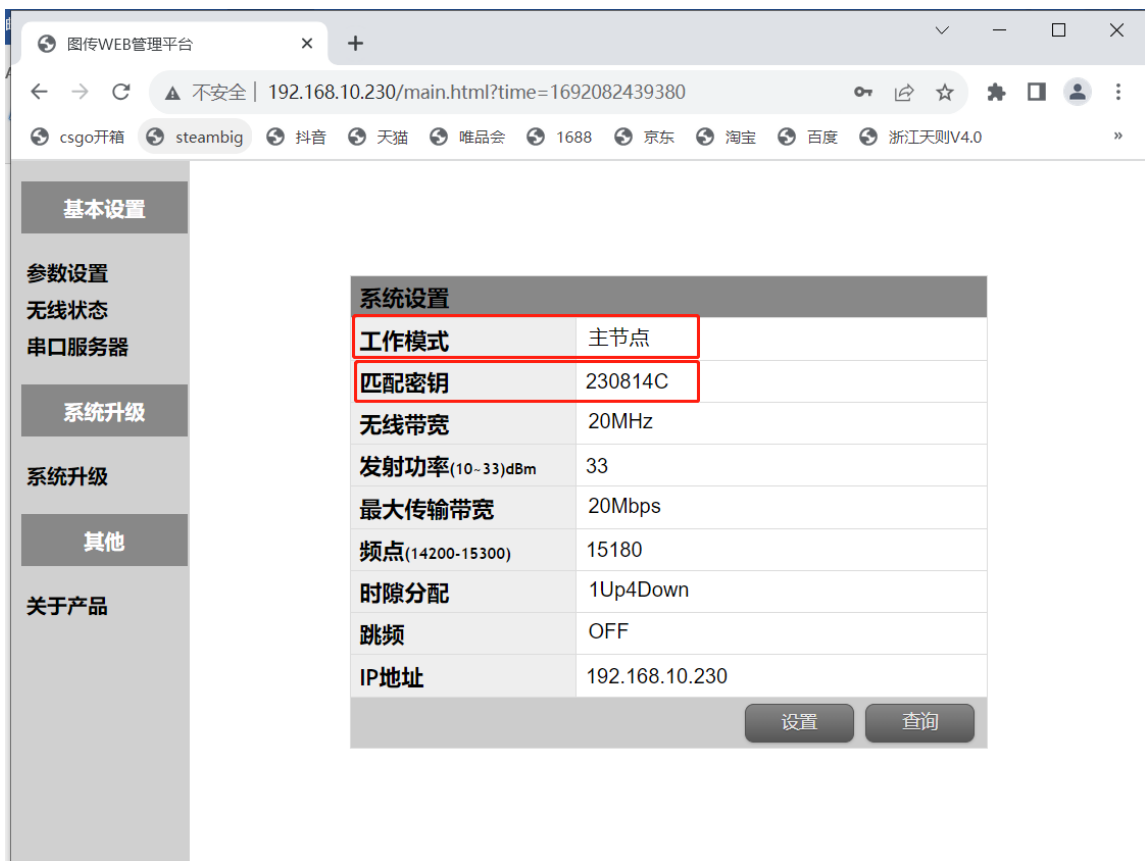
(3) Open the browser (Internet Explorer or Google Chrome is recommended), enter the IP address of the device, and open the web page embedded in the device.

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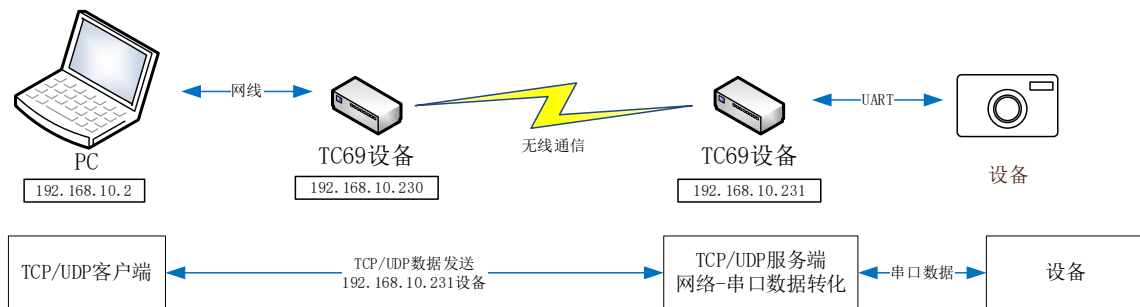
Step 2: set matching key to ensure that **the matching keys of devices in the same group are consistent**.

2.5.3 Status query

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).

串口服务器设置	
类型	TCP
串口1设置	
波特率	115200
TCP/UDP端口	3001
目标IP (UDP模式)	192.168.10.205
串口2设置	
波特率	115200
TCP/UDP端口	3002
目标IP (UDP模式)	192.168.10.205

重启系统　设置　查询

串口服务器设置	
类型	UDP
串口1设置	
波特率	115200
TCP/UDP端口	3001
目标IP (UDP模式)	192.168.10.205
串口2设置	
波特率	115200
TCP/UDP端口	3002
目标IP (UDP模式)	192.168.10.205

重启系统　设置　查询

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
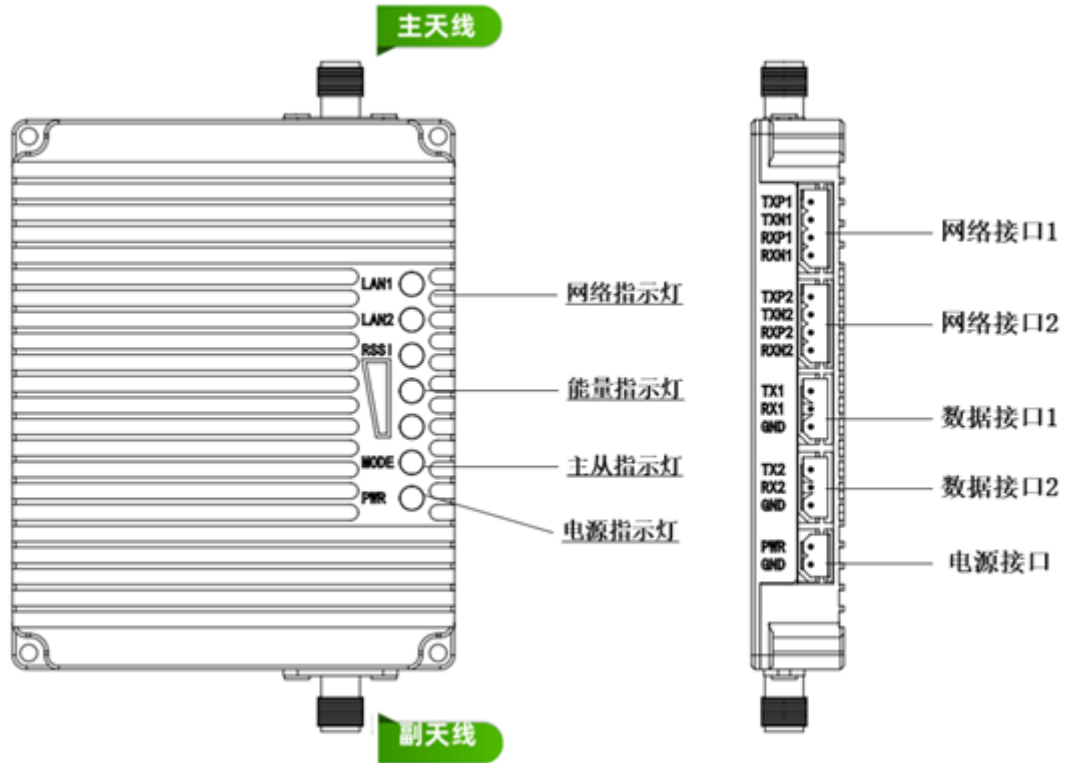
3.2 Interface description

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)				Molex2.5 3PIN
		Pin definition	1	2	3	
		TTL/RS232	TX	RX	GND	
		RS485	A	B	GND	

4	Data interface 2	RS232/TTL/RS485/CAN(specify on demand)	Molex2.5 3PIN

Pin definition	1	2	3
TTL/RS232	TX	RX	GND
RS485	A	B	GND
CAN	H	L	GND

5	Power interface	Supply voltage: 9~28V Typical value :above 12V 1.5A	Molex2.5 2PIN
6	MAIN	The main antenna port must be connected to an antenna.	SMA
10	AUX	Secondary antenna port, can be considered not connected but will affect the signal quality.	SMA
11	LED	Device status indicator. For details, see Indicator status.	

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	25±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: DC9~28V
Rated working current	≤0.5A @ DC12V
Rf connector impedance	50Ω
Audio and video impedance	75Ω

4.3 Structural parameter index

Parameter	Index requirement
Dimension(L*W*H)	77mm*62mm*13mm
Weight	95g
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

Copyright notice

This manual is copyrighted by Zhejiang Tianze Communication Technology Co., LTD., and the right to final interpretation and modification of this manual and this statement is reserved. No person may reproduce, extract, copy, modify, transmit, translate into other languages, or use in whole or in part any part of this manual in any way or form without the written permission of the Company.

Disclaimer

This manual is based on current information and is subject to change. Tianze Communications Technology Co., Ltd. has made its best efforts to ensure the accuracy and reliability of the contents of this manual, but Tianze Communications Technology Co., Ltd. will not be liable for direct or indirect losses and damages caused by omissions, and inaccuracies or typographical errors in this manual. The actual product prevails.

Technical support

Zhejiang Tianze Communication Technology Co., Ltd. has established a complete technical support services, to provide 7X24 hours hotline telephone support, customers in the use of products in the process of problems can contact us at any time.

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.