



Potomac Wireless Video/Data Transmission System User Manual



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1.Product description

Potomac Two-way Wireless Transmission System is a wireless image transmission transceiver specially developed by Potomac for automobiles and robots.

Aiming at the complex ground environment, it adopts leading multi-carrier modulation technology, has strong anti-interference and penetration ability, and realizes the transmission of high-definition, stable, low-latency real-time video image signals on the move.

Potomac Two-way Wireless Transmission System is suitable for complex ground environments and can be placed on cars, firefighting robots, public security robots and other facilities.

Currently, three types of image transmission equipment are introduced according to the power amplifier transmission power. They are 0.3W video transmission equipment, 2W video transmission equipment and 10W video transmission equipment.

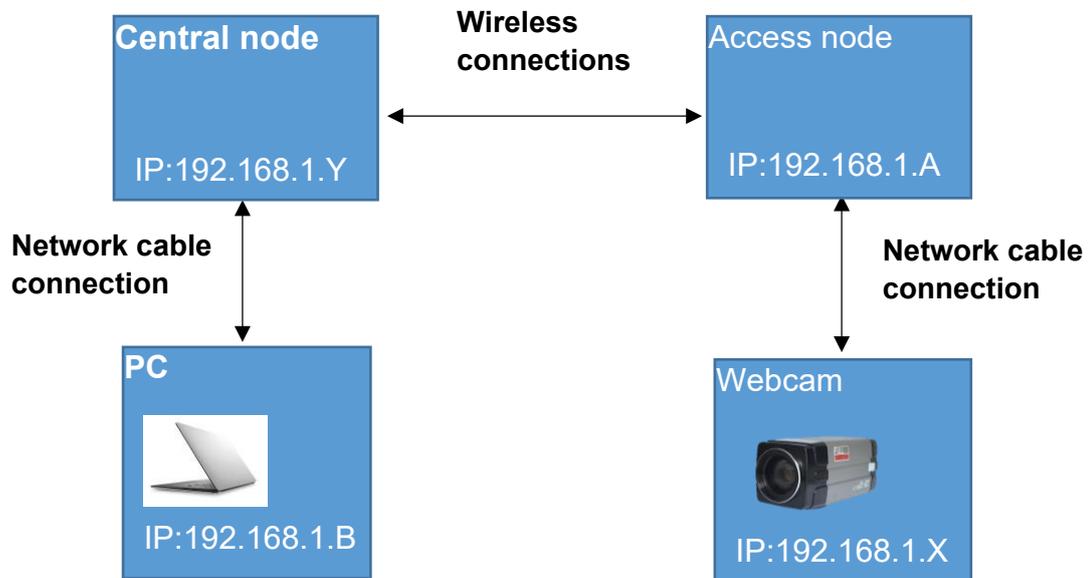
2.Network introduction

There are currently two networking modes: one-to-one and one-to-many. One-to-one network mode is generally used to connect the main device to the computer, and the slave device to the camera. After the system is connected, the video playback software can be used on the computer to watch the picture taken by the camera.

One-to-many networking mode uses the master device to connect to the computer, and the slave device to connect to the camera. After the system is connected, the computer can use the video playback software to watch all the pictures taken by the slave device connected to the camera.

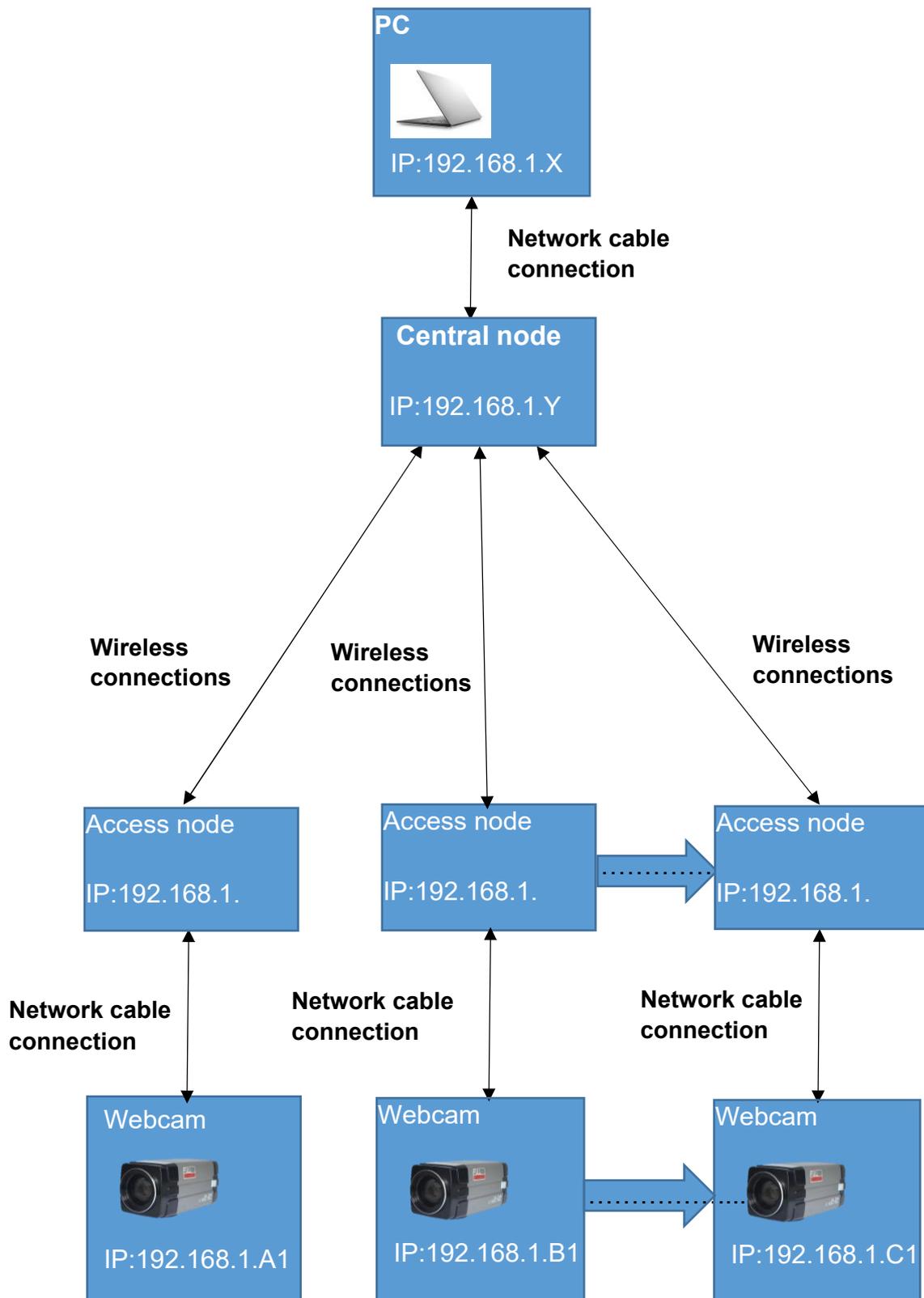
At present, in the one-to-many networking mode, a maximum of 1 master device can be connected to 16 slave devices.

2.1 One-to-one system diagram



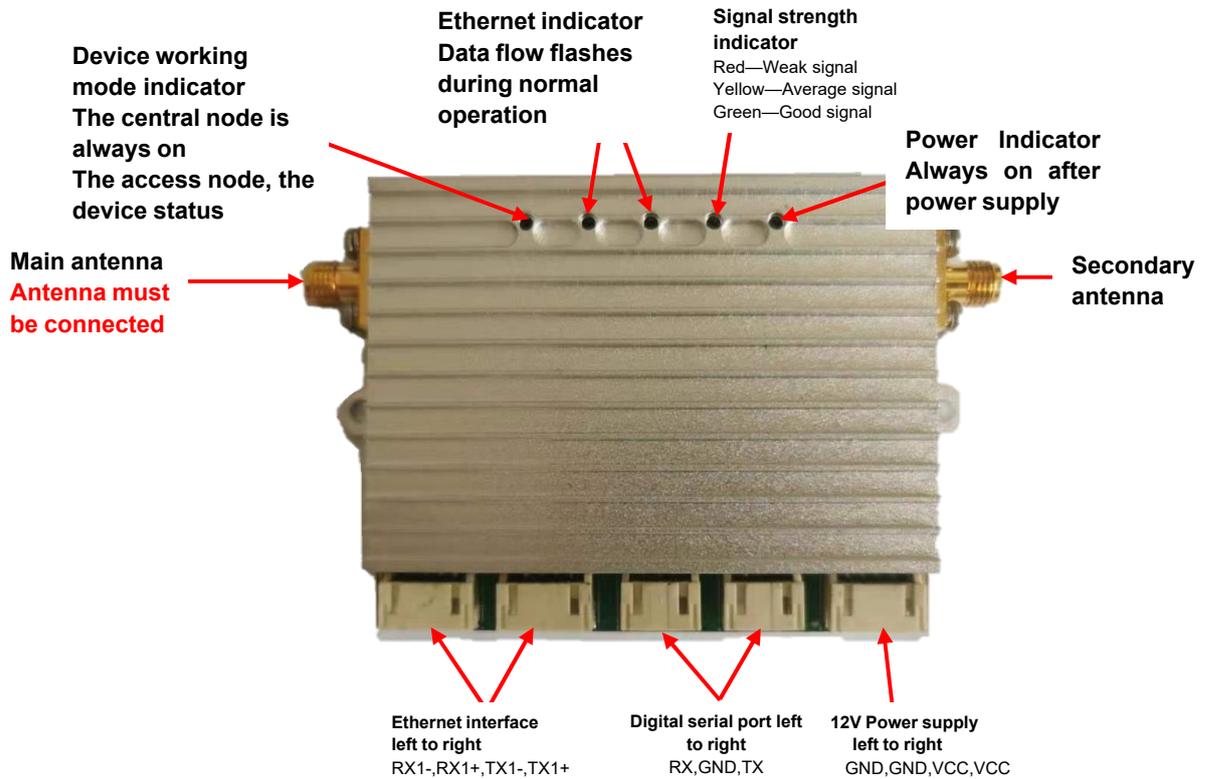
One-to-one System Diagram

2.2 Schematic diagram of one-to-many system

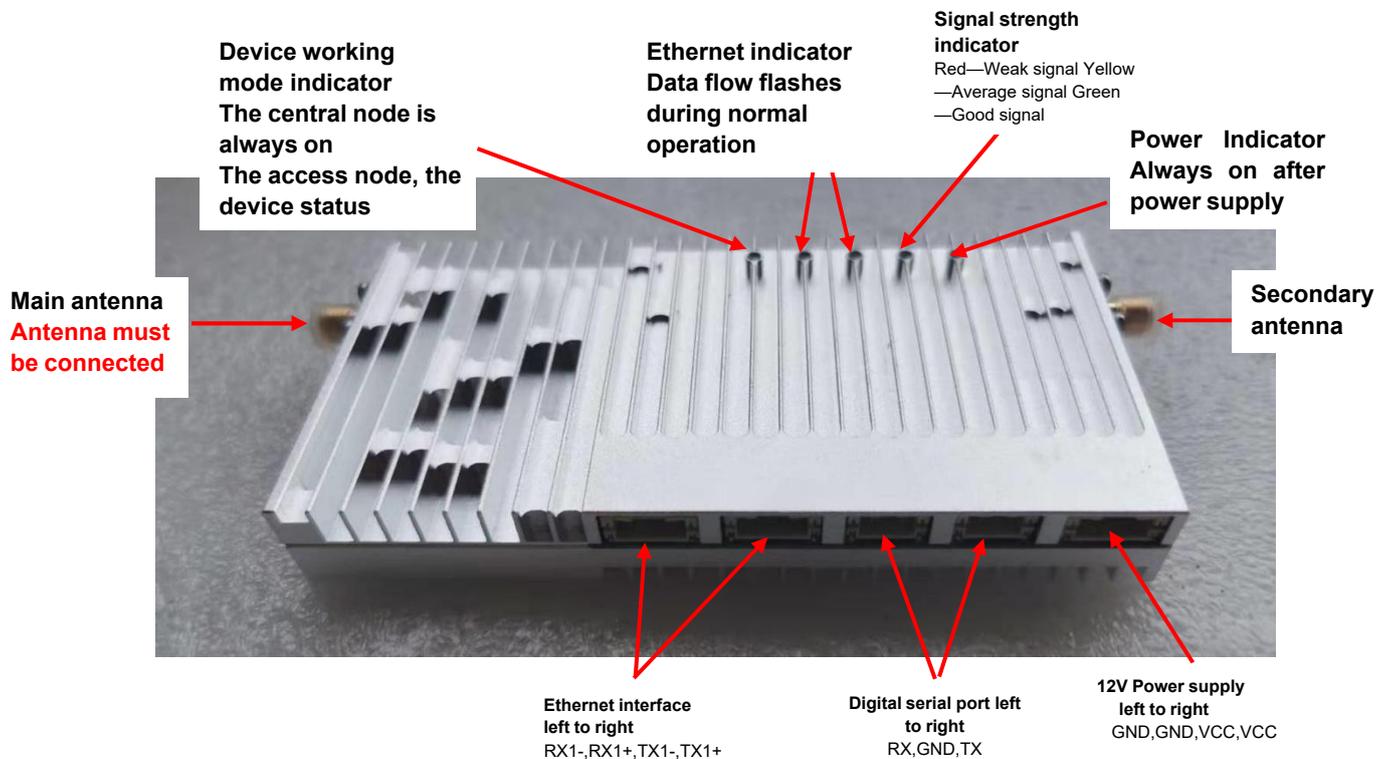


Schematic diagram of one-to-many system

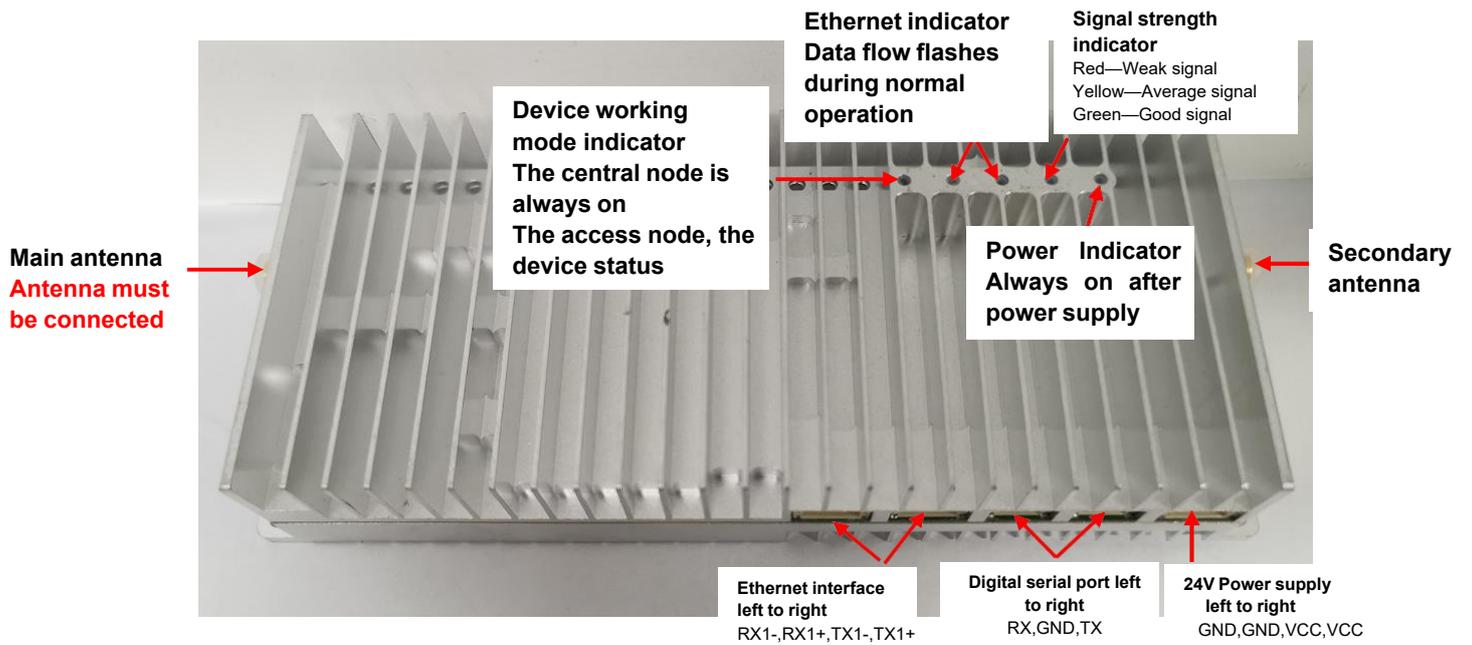
3.Hardware interface description



RF power: 0.3W



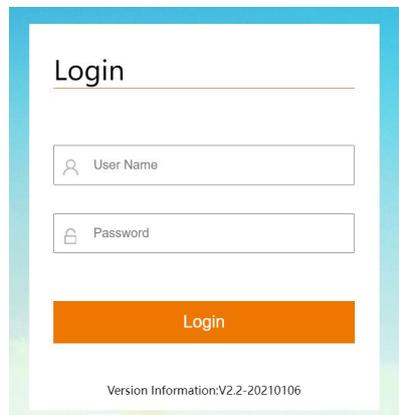
RF power: 2W



RF power: 10W

4. Software use

4.1 Web instructions



Web login interface

Default username and password: admin

Menu

Wireless parameters

Frequency band	800M	Save
Frequency point(8060~8259)	8160	Save
Bandwidth	20MHZ	Save
Frequency Hopping	Open	Save
Master power(-40~+25)	25	Save

Mode parameter

Master-Slave mode	Access Node	Save
TDD mode	1D4U	Save

Signal strength: ● Green

Other parameter

Key Setting	FFFFFFEE	Save
IP Setting	192.168.1.20	Save

AT Debug Interface choose:

Wireless parameter configuration interface

×

Parameter configuration

Bandwidth test

Serial port configuration

Help

Menu

Network Speed Test Server
Network Speed Test Client

Client parameter setting

Server IP	192.168.1.10
Transmission bandwidth(1-40Mbps)	20
Test time	10
Server output	<input checked="" type="checkbox"/>

Network speed test client interface

×

Parameter configuration

Bandwidth test

Serial port configuration

Help

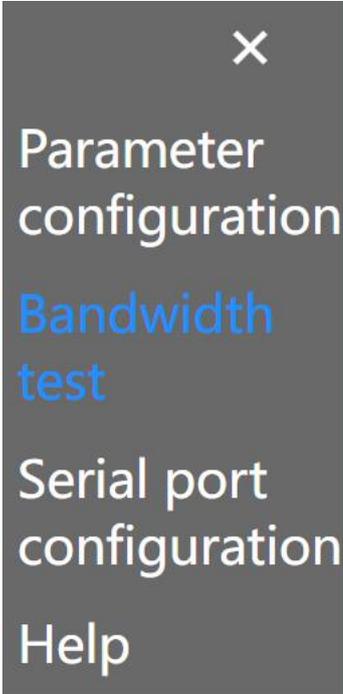
Menu

UART	Baud rate	Data bit	Stop bit	Check digit	Virtual serial port	Debug
UART1	115200	8	1	N	<input checked="" type="checkbox"/>	
UART2	115200	8	1	N	<input checked="" type="checkbox"/>	

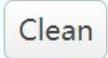
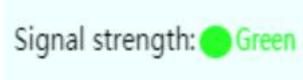
Network flow control

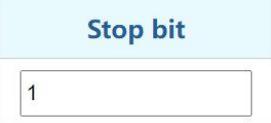
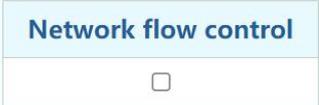
Serial port configuration interface

Operating instructions: some parameters only support Central node settings

Parameter name	Illustrate
	Click to open the main menu
	The content classification of the menu bar, select the corresponding option according to the situation
<p>Wireless parameters</p>	Descriptions
Equipment internal parameters	
<p>Frequency band <input type="text" value="800M"/> <input type="button" value="Save"/></p>	800M、1.4G、2.4G。 Changing the frequency band requires changing the corresponding antenna
<p>Frequency point(8060~8259) <input type="text" value="8160"/> <input type="button" value="Save"/></p>	The specific center frequency under the working frequency band
<p>Bandwidth <input type="text" value="20MHZ"/> <input type="button" value="Save"/></p>	The working bandwidth of the wireless device, the default is 20MHZ
<p>Frequency Hopping <input type="text" value="Open"/> <input type="button" value="Save"/></p>	Frequency hopping function
<p>Master power(-40~+25) <input type="text" value="25"/> <input type="button" value="Save"/></p>	The transmission power of the Central node, the greater the power, the longer the transmission distance

Master-Slave mode	Access Node	Save	<p>Equipment working status selection</p> <p>When set as the master node, the device status indicator is always on, and when set as the access node, the device status indicator flashes</p> <p>Only one Central node can exist in a group of networks</p>
TDD mode	1D4U	Save	<p>Set TDD time slot allocation</p> <p>Upstream refers to the Access node to the Central node, and downstream refers to the Central node to the Access node</p>
Key Setting	FFFFFFEE	Save	<p>The Central node and the Access node can always be connected with the paired key</p>
IP Setting	192.168.1.20	Save	<p>The IP address of the device, the device supports pure transparent transmission</p>
AT Debug Interface	choose: <input type="text"/>		<p>Enter the at command in the input box and press Enter to send, the return information is below show.</p>
<div data-bbox="483 1581 715 1653" style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block;">Open message</div>			<p>After the networking is successful, if it is the Central node, it will display the IP address, SNR, distance and other information of the connected sub-device; if it is a Access node, it will display the SNR, distance and other information from the Central node.</p> <p>Real-time information is displayed on the extended information interface. See</p>

		appendix 2 for the content of the returned information.
		Stop real-time information output
		Clear the real-time information and the data returned by the at command.
		Click to open the real-time information and display it, and change the color according to the SNR value. Red—Weak signal Yellow—Average signal Green—Good signal
		Below is the description of the internal content of the network bandwidth test interface, using iperf as a testing tool internally
Network bandwidth test tool iperf server parameters		
		Turn on the internal server of the device.
		Shut down the internal server of the device
		Clear server output data
Network bandwidth test tool iperf client parameters		
Server IP	<input type="text" value="192.168.1.10"/>	Device ip address
Transmission bandwidth(1-40Mbps)	<input type="text" value="20"/>	The amount of bandwidth that needs to be transmitted
Test time	<input type="text" value="10"/>	The duration of the client test, the default is 10 seconds
Server output	<input checked="" type="checkbox"/>	After the client's transmission is over, the data received by the server is output.
		Open the internal client of the device

	Close the internal client of the device
	Clear client output data
Serial Port Configuration	
	Set the baud rate
	Set the serial port data bit
	Set the serial port stop bit
	Set the serial port check bit
	After the service is checked, you can use the virtual serial port of the network port to receive serial data through the network port.
	After checking, the data transmission port 1 will become the debugging serial port. You can read and set the module parameters.
	According to the strength of the signal, the bandwidth is automatically limited to realize the priority of data transmission.
	save Changes

5. Appendix

5.1 Wire picture



Device power cord



Network port connection line

5.2 Appendix 2 : Open real-time information to return information

Menu

Wireless parameters

Frequency band	800M	Save
Frequency point(8060~8259)	8160	Save
Bandwidth	20MHZ	Save
Frequency Hopping	Open	Save
Master power(-40~+25)	25	Save

Mode parameter

Master-Slave mode	Central Node	Save
TDD mode	1D4U	Save

Other parameter

Key Setting	FFFFFFEE	Save
IP Setting	192.168.1.20	Save

Signal strength: ● Green

AT Debug Interface choose:

```

[2021-10-27 10:33:33]IP:192.168.1.10Port:Slave, RSSI:-57dBm, RSRP:-87dBm, Transmission power:--dBm, SNR:+22[+21~+25]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:33]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-135dBm, Transmission power:25dBm, SNR:-8[-11~-7]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:32]IP:192.168.1.10Port:Slave, RSSI:-57dBm, RSRP:-86dBm, Transmission power:--dBm, SNR:+22[+21~+25]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:32]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-135dBm, Transmission power:25dBm, SNR:-8[-11~-7]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:31]IP:192.168.1.10Port:Slave, RSSI:-56dBm, RSRP:-86dBm, Transmission power:--dBm, SNR:+23[+22~+25]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:31]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-8[-11~-7]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:30]IP:192.168.1.10Port:Slave, RSSI:-57dBm, RSRP:-86dBm, Transmission power:--dBm, SNR:+23[+21~+25]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:30]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-8[-11~-7]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:29]IP:192.168.1.10Port:Slave, RSSI:-57dBm, RSRP:-87dBm, Transmission power:--dBm, SNR:+22[+21~+24]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:29]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-8[-11~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:28]IP:192.168.1.10Port:Slave, RSSI:-57dBm, RSRP:-87dBm, Transmission power:--dBm, SNR:+22[+21~+25]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-27 10:33:28]IP:192.168.1.10Port:Master, RSSI:-95dBm, RSRP:-133dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
```

Central node reports real-time information

Menu

Wireless parameters

Frequency band	800M	Save
Frequency point(8060~8259)	8160	Save
Bandwidth	20MHZ	Save
Frequency Hopping	Open	Save
Master power(-40~+25)	25	Save

Mode parameter

Master-Slave mode	Access Node	Save
TDD mode	1D4U	Save

Other parameter

Key Setting	FFFFFFEE	Save
IP Setting	192.168.1.20	Save

AT Debug Interface choose:

Open message Close message Clean

```
[2021-10-26 10:18:59]Port:Slave, RSSI:-48dBm, RSRP:-78dBm, Transmission power:--dBm, SNR:+24[+23~+28]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:59]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-9[-11~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:58]Port:Slave, RSSI:-48dBm, RSRP:-78dBm, Transmission power:--dBm, SNR:+25[+24~+28]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:58]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:57]Port:Slave, RSSI:-48dBm, RSRP:-78dBm, Transmission power:--dBm, SNR:+24[+24~+27]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:57]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:56]Port:Slave, RSSI:-49dBm, RSRP:-78dBm, Transmission power:--dBm, SNR:+24[+24~+28]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:56]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:55]Port:Slave, RSSI:-49dBm, RSRP:-78dBm, Transmission power:--dBm, SNR:+24[+23~+27]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:55]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:54]Port:Slave, RSSI:-49dBm, RSRP:-79dBm, Transmission power:--dBm, SNR:+24[+23~+27]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:54]Port:Master, RSSI:-94dBm, RSRP:-133dBm, Transmission power:25dBm, SNR:-7[-9~-5]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:53]Port:Slave, RSSI:-49dBm, RSRP:-79dBm, Transmission power:--dBm, SNR:+24[+24~+27]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
[2021-10-26 10:18:53]Port:Master, RSSI:-94dBm, RSRP:-134dBm, Transmission power:25dBm, SNR:-7[-10~-6]dB, Distance:0m, Bit error rate per second:0%, Total bit error rate:0%
```

The Access node reports real-time information

5.3 Appendix 3. Bandwidth test screenshot

Menu

Network Speed Test Server | Network Speed Test Client

Close server Clean data

```
[ 13] 7.00-8.00 sec 983 KBytes 8.05 Mbits/sec 1.349 as 986/1661 (59%)
[ 13] 6.00-7.00 sec 888 KBytes 7.27 Mbits/sec 1.895 as 1299/1927 (67%)
[ 13] 5.00-6.00 sec 887 KBytes 7.26 Mbits/sec 1.949 as 702/1329 (53%)
[ 13] 4.00-5.00 sec 960 KBytes 7.87 Mbits/sec 1.403 as 389/1967 (30%)
[ 13] 3.00-4.00 sec 983 KBytes 8.05 Mbits/sec 2.066 as 1820/2515 (72%)
[ 13] 2.00-3.00 sec 1003 KBytes 8.21 Mbits/sec 1.356 as 694/1403 (49%)
[ 13] 1.00-2.00 sec 987 KBytes 8.09 Mbits/sec 1.685 as 469/1187 (41%)
[ 13] 0.00-1.00 sec 930 KBytes 7.62 Mbits/sec 1.834 as 0/658 (0%)
[ ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams
[ 13] local 192.168.1.20 port 5201 connected to 192.168.1.10 port 46427
Accepted connection from 192.168.1.10, port 36246
Server listening on 5201
Server open
```

激活 Windows
转到“设置”以激活 Windows。

Bandwidth test server side screenshot

×
 Parameter configuration
 Bandwidth test
 Serial port configuration
 Help

是否将当前网页翻译成中文 网页翻译 关闭

Network Speed Test Server
Network Speed Test Client

Client parameter setting

Server IP	192.168.1.10
Transmission bandwidth(1-40Mbps)	20
Test time	10
Server output	<input checked="" type="checkbox"/>

Close client
Clean data

iperf Done.

Server output:

```

Accepted connection from 192.168.1.20, port 55901
[ 13] local 192.168.1.10 port 5201 connected to 192.168.1.20 port 49951
[ ID] Interval      Transfer      Bitrate      Jitter      Lost/Total Datagrams
[ 13] 0.00-1.00 sec  2.24 MBytes  18.8 Mbits/sec  0.632 ns  0/1721 (0%)
[ 13] 1.00-2.00 sec  2.38 MBytes  20.0 Mbits/sec  0.678 ns  0/1723 (0%)
[ 13] 2.00-3.00 sec  2.39 MBytes  20.0 Mbits/sec  0.613 ns  0/1729 (0%)
[ 13] 3.00-4.00 sec  2.39 MBytes  20.0 Mbits/sec  0.500 ns  0/1730 (0%)
[ 13] 4.00-5.00 sec  2.38 MBytes  20.0 Mbits/sec  0.655 ns  0/1727 (0%)
[ 13] 5.00-6.00 sec  2.38 MBytes  19.9 Mbits/sec  0.666 ns  0/1720 (0%)
[ 13] 6.00-7.00 sec  2.39 MBytes  20.1 Mbits/sec  0.526 ns  0/1733 (0%)
[ 13] 7.00-8.00 sec  2.38 MBytes  19.9 Mbits/sec  0.718 ns  0/1720 (0%)
[ 13] 8.00-9.00 sec  2.39 MBytes  20.1 Mbits/sec  0.527 ns  0/1733 (0%)
[ 13] 9.00-10.00 sec  23.8 MBytes  19.9 Mbits/sec  0.618 ns  0/1719 (0%) [ 13] 0.00-10.06 sec  23.8 MBytes  19.9 Mbits/sec  0.549 ns  0/17261 (0%) receiver
[ 13] 0.00-10.00 sec  23.8 MBytes  20.0 Mbits/sec  0.600 ns  0/17264 (0%) sender
[ ID] Interval      Transfer      Bitrate      Jitter      Lost/Total Datagrams
[ 13] 9.00-10.00 sec  2.38 MBytes  20.0 Mbits/sec  1726
[ 13] 8.00-9.00 sec  2.38 MBytes  20.0 Mbits/sec  1727
[ 13] 7.00-8.00 sec  2.38 MBytes  20.0 Mbits/sec  1726
[ 13] 6.00-7.00 sec  2.38 MBytes  20.0 Mbits/sec  1727
[ 13] 5.00-6.00 sec  2.38 MBytes  20.0 Mbits/sec  1726
[ 13] 4.00-5.00 sec  2.38 MBytes  20.0 Mbits/sec  1727
[ 13] 3.00-4.00 sec  2.38 MBytes  20.0 Mbits/sec  1726

```

Bandwidth test client screenshot