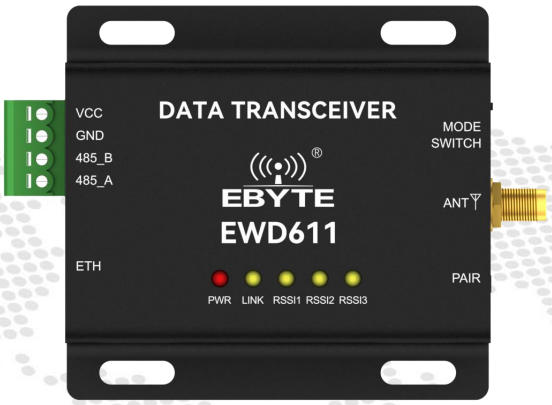
Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



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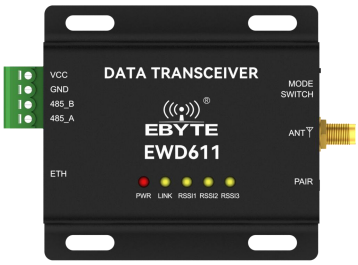
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1. Introduction

1.1 Brief Introduction



EWD611-900NW20 (485) is a long-distance image transmission + data transmission radio developed by Chengdu Yibite Electronic Technology Co., Ltd. It has a transmission rate of 16Mbps , can realize 4-channel 1080p video transmission, and can also achieve transparent transmission of network port + serial port at the same time, working in the 863 MHz ~ 928 MHz frequency band, and the maximum RF transmission power is 20 dBm.

EWD611-900NW20(485) radio uses universal AT commands, which is simple and fast to operate. The radio can be widely used in smart wearables, home automation, home security, personal health care, smart home appliances, accessories and remote controls, automobiles, lighting, industrial Internet, smart data collection, smart control and other fields.

1.2 Features

- Support star networking, with a maximum of 8 sub- nodes;
- Max transmission rate can reach 16Mbps , which can realize the transmission of 4-channel 1080p video ;
- The module supports transparent transmission of network port + serial port at the same time ;
- Support image transmission + data transmission in one ;
- The master-slave mode switch is simple, and one-touch pairing is possible, making it easy to use;
- Ideally, the maximum transmission distance can reach 1km;
- Support relay networking function;
- Equipped with AT commands to facilitate radio parameter settings ;
- The operating frequency band is: 863MHz~928MHz, and the default frequency band is 915MHz.

1.3 Application

- Smart home and industrial sensors, etc.
- Smart Wear
- Home Security
- Smart Home Appliances
- Accessories and Remote Controls
- Wireless Sensing
- Intelligent Control

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2 Specification and parameter

2.1 Basic parameters

Main parameters		Performance Description			Remark
		Minimum	Typical Value	Maximum	
Operating voltage (V)		5	5/12	15	Power supply can be selected 5V or 12V
Supply voltage (V)		-	-	12	-
Communication level (V)		-	3.3	-	Using 5V level may cause burnout
Operating temperature (℃)		- 40	-	85	Industrial-grade design
Operating frequency band (MHz)		863	-	928	The default frequency band is 915MHz
Transmit power (dBm)		19.5	20	20.5	-
Power consumption	Emission current (mA)	-	500	-	Operating voltage is 5V, peak transient current @ 20 dBm
	Receive current (mA)	-	100	-	The operating voltage is 5V
Receiving sensitivity (dBm)		-	- 107	-	1M MCS10
Communication distance (m)		-	500	1000	Clear and open environment, height 1 meter, @ 20 dBm, transmission rate 16 Mbps .

2.2 Hardware Parameters

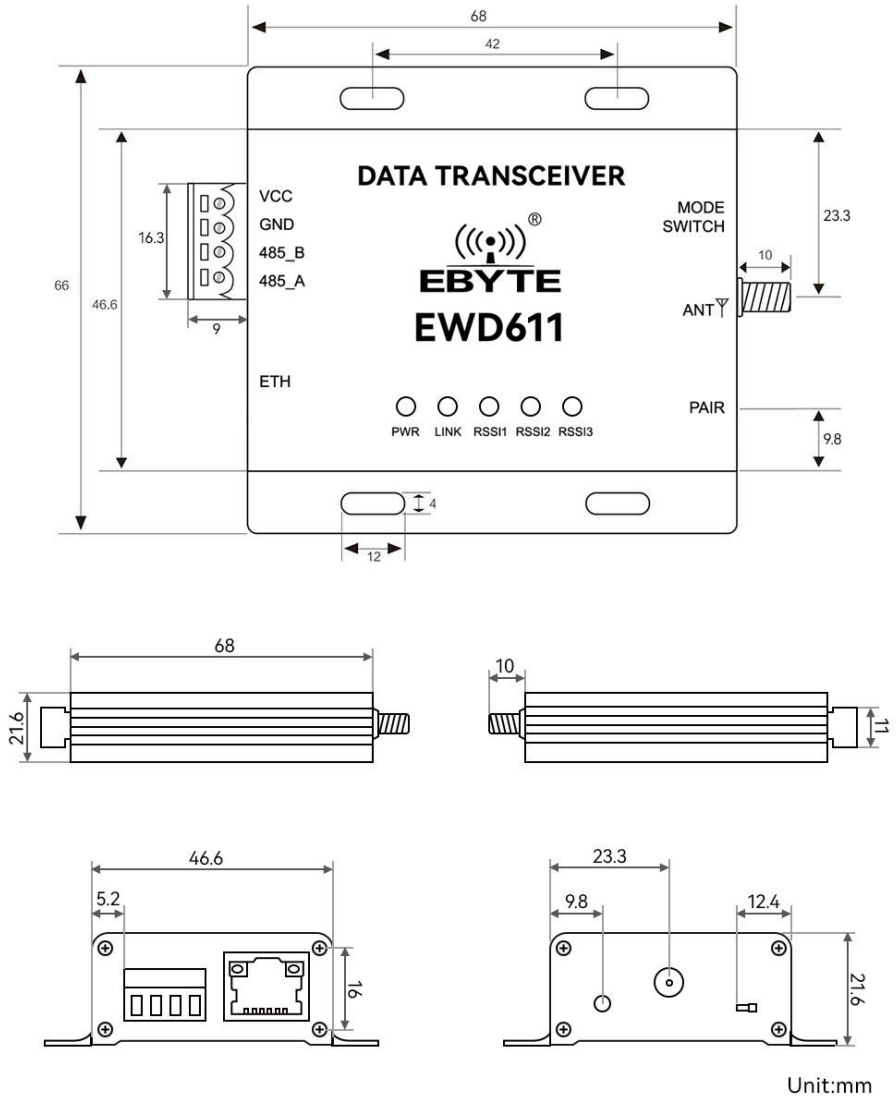
Main parameters	Describe	Remark
Communication interface	RS485/Ethernet port	Serial port parameters (non-modifiable): baud rate 115200, frame format 8N1
FLASH	8MB	-
S RAM	704 KB	-
Dimensions	66 * 68 * 21.6 mm	Tolerance range ±0.2mm
Antenna interface	SMA-K interface	External thread inner hole, length 10mm, characteristic impedance 50Ω
Product Net Weight	68g	Tolerance range ±1g

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3 Size and pin definition

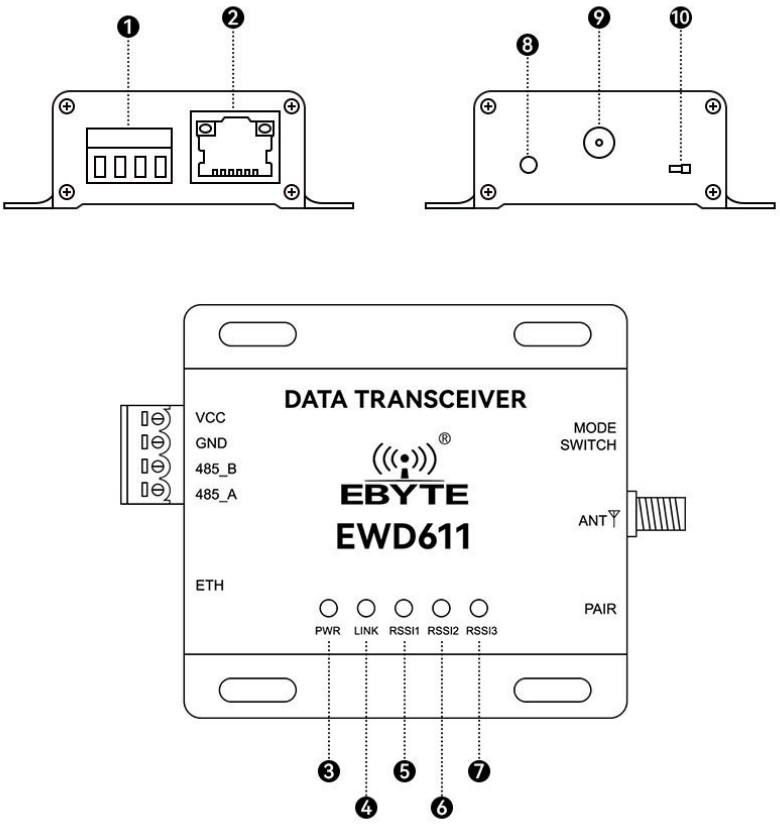
3.1 Product size



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3. 2 Functional definition of each component



Pin number	Name	Function	Remark
1	3.81mm terminal block	Serial port, power port	Standard RS-485 interface and pressure-wire power interface
2	ETH	Ethernet interface	Standard RJ45 interface, 100M
3	PWR-LED	Power indicator	Red, always on when power is on
4	LINK-LED	Link indicator	a) Off: The network cable is not connected or is not connected to the server; b) Flashing: Flashing when the network cable is connected; c) Steady on: The network link is connected successfully;
5	RSSI1-LED	Signal strength indicator	-
6	RSSI2-LED	Signal strength indicator	-
7	RSSI3-LED	Signal strength indicator	-
8	Pairing button	Pairing Control	Master and slave pairing button

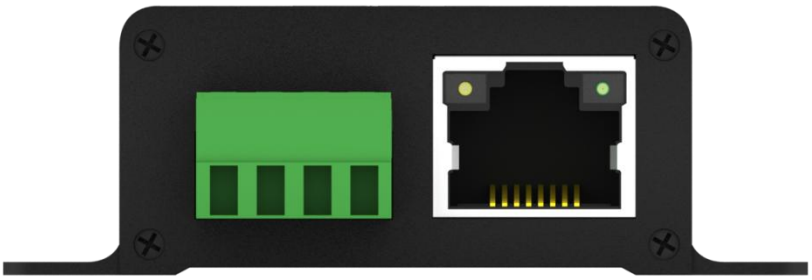
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9	Antenna interface	SMA-K interface	External thread inner hole, length 10mm, characteristic impedance 50Ω
10	Mode switch	Tactile switch	Master-slave mode switch

3. 3 Interface Definition

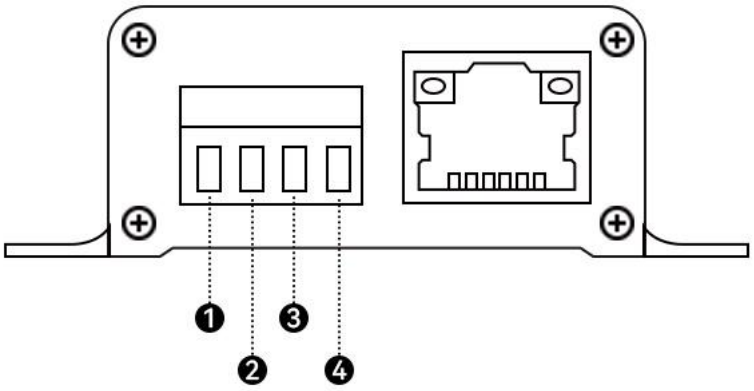
3.3.1 Power Interface Description



Users need to use the VCC terminal and GND terminal of the radio's green port to power the EWD611. The EWD611 can be powered by a 5~12V DC power supply. It is recommended to use a 12V or 5V DC power supply.

3.3.2 RS485 interface definition

The EWD611 digital radio communication connection can be connected by selecting the corresponding interface in the 3.81mm terminal block and pressing the wire. See below for details :



PIN number	Standard Definition	Function	Illustrate
1	VCC	Press-wire power interface, positive	DC 5 ~ 12 V, 12V or 5 V is recommended
2	GND	Crimping power interface, negative pole	The negative pole of the power supply is connected to the system ground and the shell
3	485_B	Serial port terminal	B terminal for connecting other RS485 devices

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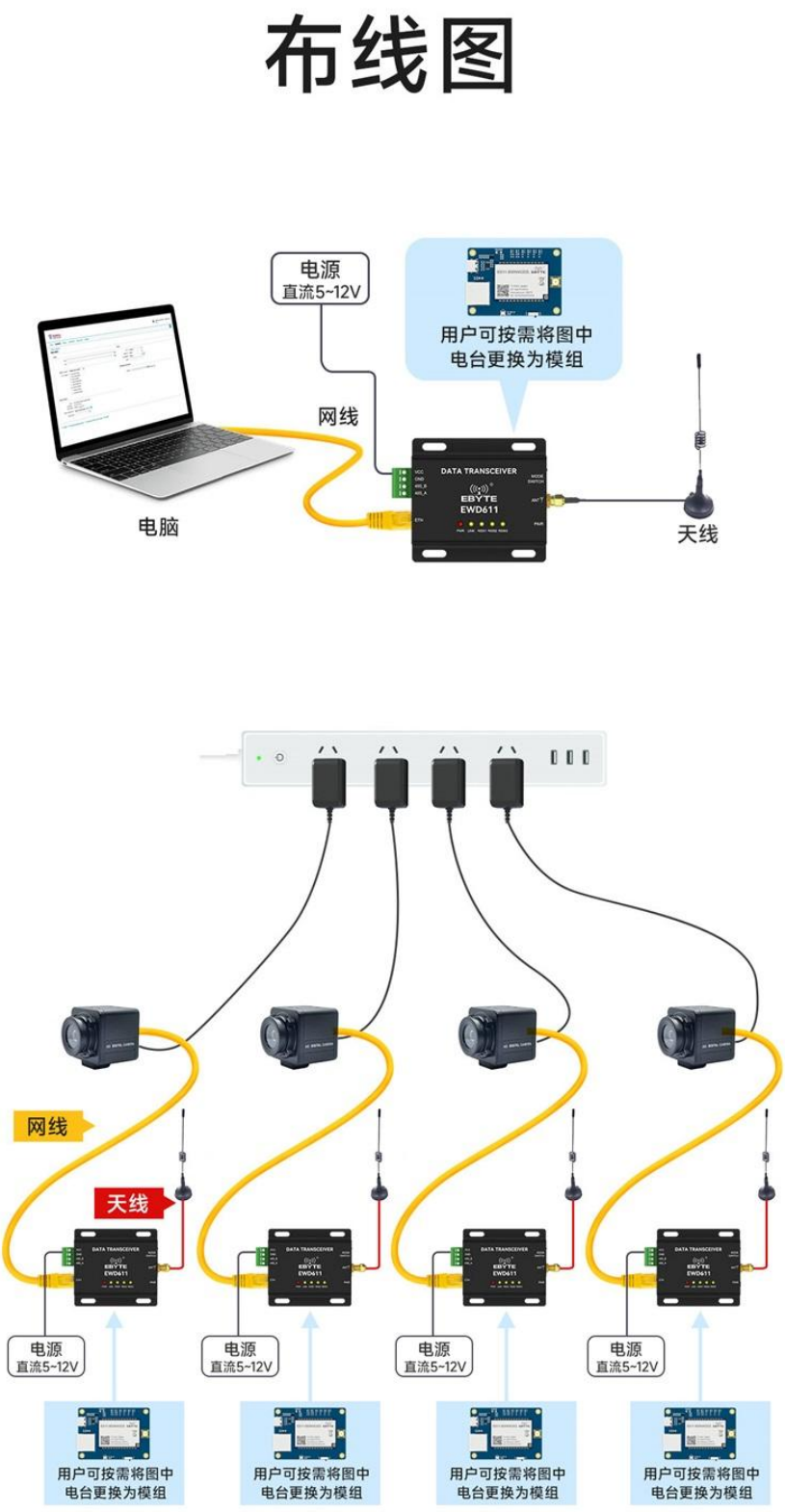
4	485_A	Serial port terminal	A terminal for connecting to other RS485 devices

★ Note: If communication is poor when the radio is connected to multiple devices, but not when connected to a single device, try connecting a 120Ω resistor in parallel between the 485_A terminal and the 485_B terminal.

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3.3.3 Details of camera wiring usage



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4 Parameter Description

4.1 Role Description

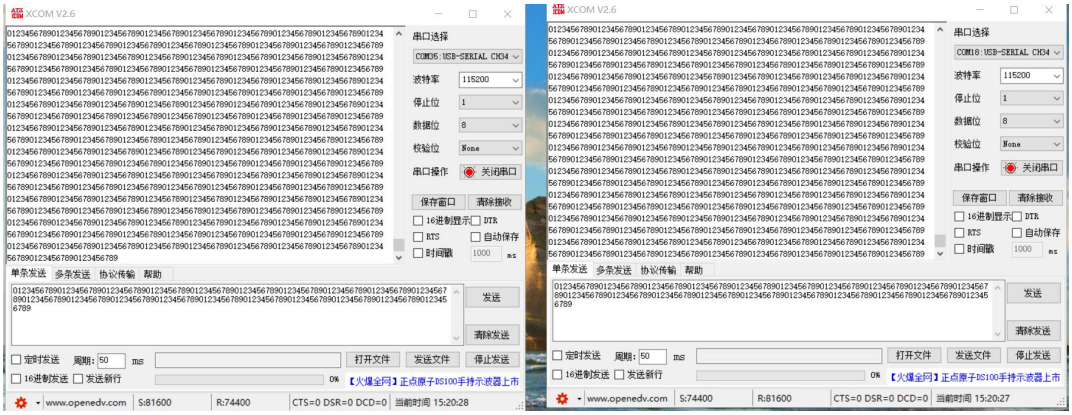
Supports the following 4 working modes:

Serial number	Working Mode	Mode Details
1	Host mode ap	The central role of star networking
2	Slave mode sta	Slave Role
3	Multicast mode group	Multicast, see multicast command for details
4	Relay mode apsta	The device in relay mode acts as a slave to connect to the upper-level host, and also acts as a host to provide connection services to other slaves.

5 Usage Examples

5.1 One to one serial port transparent transmission

1. Prepare two EWD611-900NW20(485) and install the antennas
2. TypeC connects to PC.
3. Press and hold the PAIA button on both radios at the same time , wait for 2 seconds and then release it. You can see that the connection light and RSSI signal indicator light are always on.
4. Open the XCOM serial port assistant and open the serial port accordingly (note the serial port parameters 115200 , 8N1)
5. The serial port can send data directly . As shown in the figure below :



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5.2 One to one connection to connect two PCs as a bridge

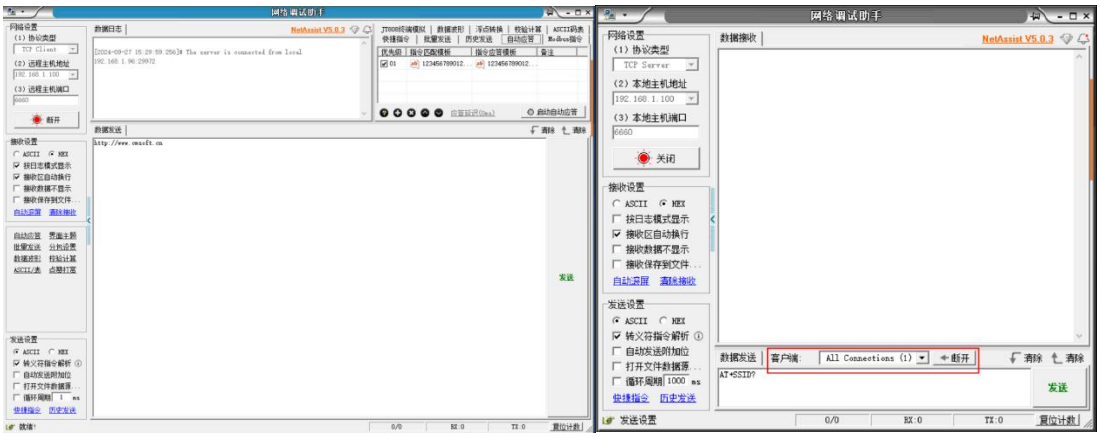
1. Prepare two EWD611-900NW20(485) and install the antennas
2. Ethernet connection to PC
3. After the radio is correctly connected and powered on, you can see that the network port light is always on and an unknown network appears on the computer network interface.



4. Manually modify the corresponding static IP addresses of the PCs on both sides. Note that the IP addresses of the devices on both sides need to be in the same network segment, and disable firewall and other software to avoid communication failure.
5. With the help of the network debugging assistant, start the TCP server on a PC, as shown in the figure below. Note that the IP address is the IP address of the modified Ethernet.



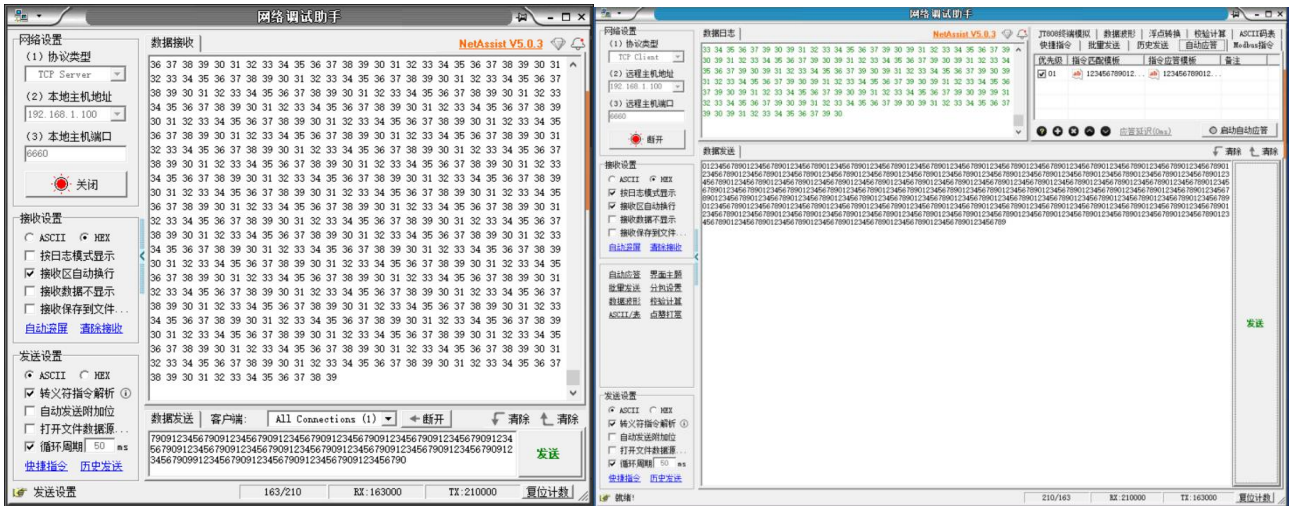
6. Connect another device to the corresponding IP port, and you can see that the connection is successful.



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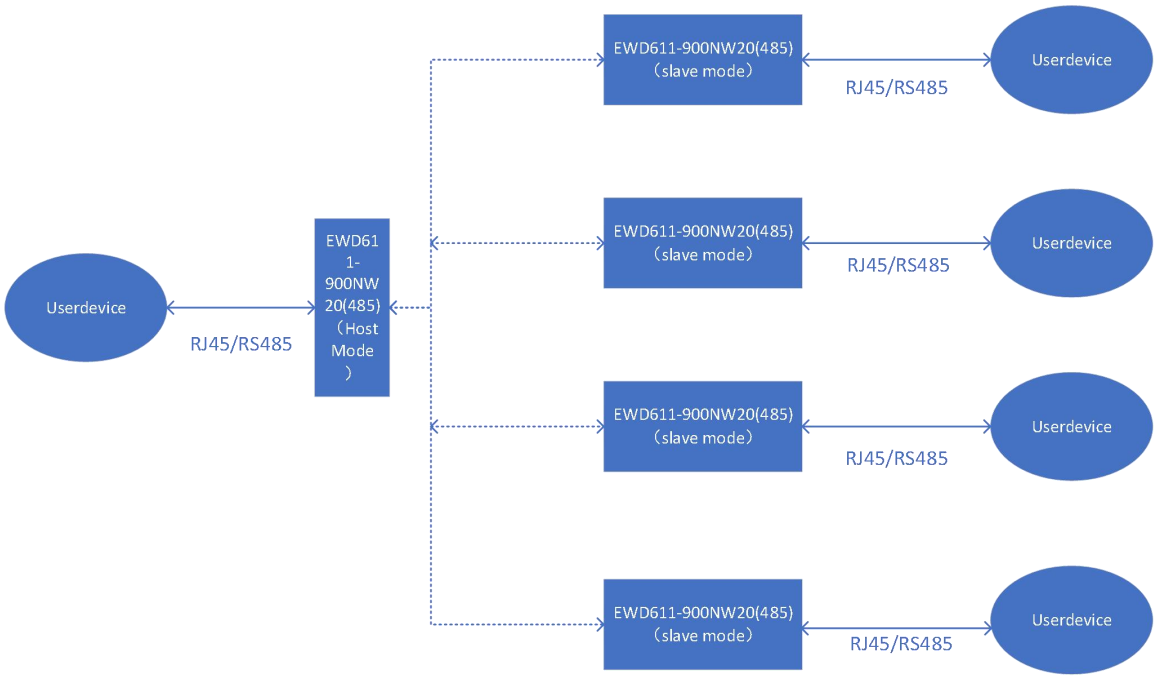
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7. Data test , 50ms packet interval, each packet is 1000 bytes. The following figure shows the data of both server and client



5.3 One-to-many star networking

The network topology is as follows :



The actual networking type of this product is star networking, which consists of a host device and several slave nodes. A single host node can support 8 slave devices. For specific networking demonstration examples, please refer to the official website video.

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5.4 AT command usage examples

5.4.1 Basic instructions for establishing a radio connection

Use the AT command to initialize the EWD611 radio , mainly including frequency setting, bandwidth setting, SSID and password setting.

Host radio configuration:

1) AT+CHAN_LIST=9080,9160,9240 to set 3 frequencies

2) AT+BSS_BW=8 sets the bandwidth to 8M

3) AT+SSID=hgic_ah_test Set SSID

4) AT+KEYMGMT=WPA-PSK to enable encryption

5) AT+PSK=baa58569a9edd7c3a55e446bc658ef76a7173d023d256786832474d737756a82 to set the encryption password

6) AT+MODE=ap sets the radio to host mode

Slave radio configuration:

Except AT+MODE=sta, the rest of the configuration is consistent with the host.

5.4.2 Configuring relay network instructions

Host Radio :

1) Configure the ssid of the AP. Each AP should have a different configuration. You can consider increasing it by ssid1 and ssid2. For example:

at+ssid=ssid1

2) Configure without encryption (To simplify the configuration, we will take the example of without encryption for the time being)

at+keymgmt=none

Relay Radio :

1) at+mode=apsta

2) Configure non-encrypted

at+keymgmt=none

3) Configure the relay's r_ssid , which is used to connect the relay to the host. It should be the same as the host you want to connect to. The ssid is consistent with that of the

at+r_ssid=ssid1

4) Configure the relay's ssid , which is used to connect the relay to the slave. For ease of management, you can consider the previous

The ssid is the same, with a suffix added to the end, such as ssid1_r1 , ssid1_r2 , ssid2_r1 , etc. For example : at+ssid=ssid1_r1

Slave radio :

1） Configure the ssid of sta to connect the slave and the relay. It should be consistent with the ssid of the connected relay, for example: at+ssid=ssid1_r1

2) Configure no encryption at+keymgmt=none

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6 AT Commands

Note: Before sending operation instructions, first ensure that the radio is in wake-up mode, otherwise it will not be able to receive configuration instructions!

6.1 Instruction Description

Instruction Type	Instruction Format	Describe
Query command	AT+[X]?	This command is used to query the parameters of the setting command.
Setting Instructions	AT+[X]=<…>	This command is used to set user-defined parameters.
Execute Instructions	AT+[X]	Used for commands without parameters, such as radio reset.

6.2 Use the network port to configure the radio

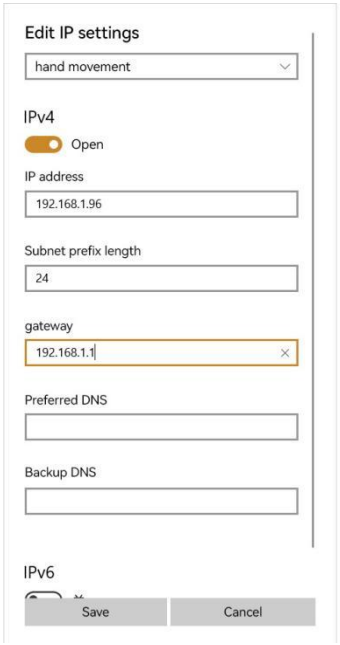
6.2.1 Connect the radio to the PC via Ethernet cable



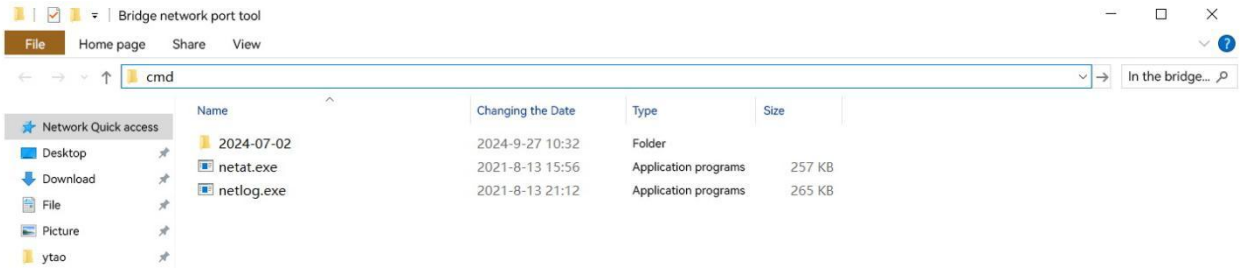
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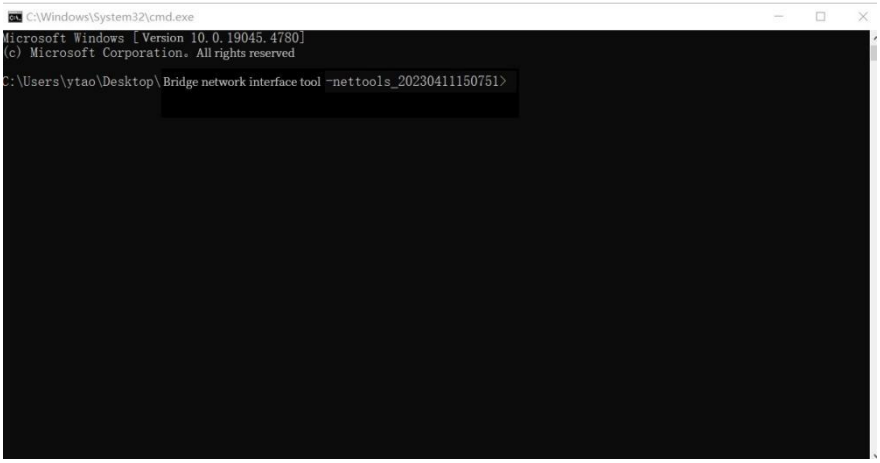
6.2.2 Manually modify the corresponding network IP to a static IP



6.2.3 Open the network port tool folder and enter cmd in the search bar



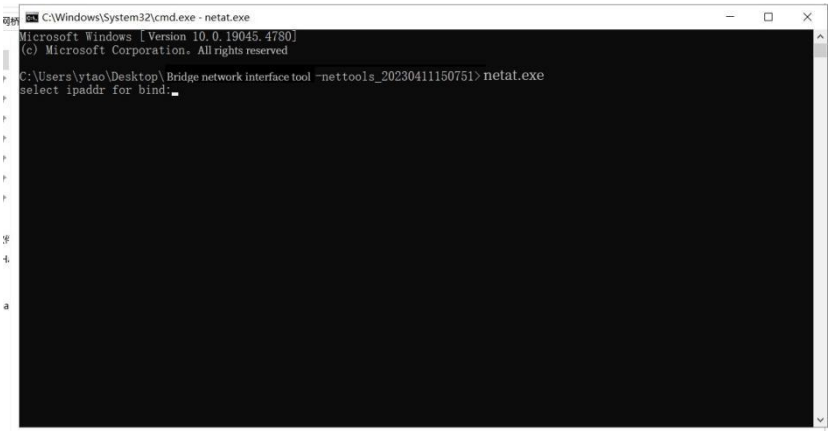
6.2.4 Press Enter to enter the command line interface



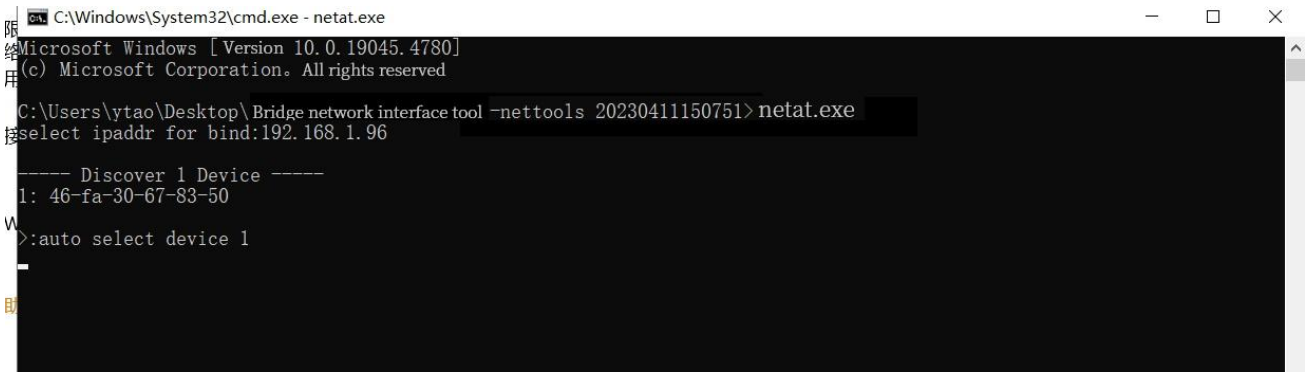
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6.2.5 Enter netat.exe and press Enter



6.2.6 Enter the IP address you just modified , and then you can send the corresponding command configuration normally.



6.3 Instruction table

6.3.1 Working mode

Instruction	**AT+MODE?**	**Response**	**+MODE:<mode> OK**
Describe	Read the radio working mode		
Parameter	<mode>: ap/sta/group/apsta 4 modes		
Instruction	**AT+MODE=<mode>**	**Response**	**Success: OK Failed: ERROR**
Describe	Configurate the radio working mode		
Parameter	<MODE>: ap/sta/group/apsta 4 modes		
Example	AT+MODE=AP sets the radio to work in AP mode		
Explain	AT+MODE=<mode>The command only saves power-off settings for AT+MODE=APSTA.		

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6.3.2 Setting SSID

Instruction	**AT+SSID?**	**Response**	**+SSID:<ssid> OK**
Describe	Read the SSID of the radio in host mode		
Parameter	<ssid>: ssid name of the host		
Instruction	**AT+SSID=<ssid>**	Response	**Success: OK Failed: ERROR**
Describe	Set the SSID name in radio host mode		
Parameter	<ssid>: character type, length is less than 32 characters		
Example	AT+SSID=ebyte_test		

6.3.3 Setting the encryption method

Instruction	**AT+KEYMGMT?**	**Response**	**+KEYMGMT:<enc> OK**
Describe	Read radio encryption method		
Parameter	<enc>:WPA-PSK to enable encryption/NONE to disable encryption		
Instruction	**AT+KEYMGMT=<enc>**	**Response**	**Success: OK Failed: ERROR**
Describe	Set the radio encryption mode		
Parameter	<MODE>: WPA-PSK turns on encryption/NONE turns off encryption		
Example	AT+KEYMGMT=WPA-PSK		

6.3.4 Setting the encryption password

Instruction	**AT+PSK?**	**Response**	**+PSK:<psk> OK**
Describe	Read the radio encryption password		
Parameter	<psk>: 64 hex characters		
Instruction	**AT+PSK=<psk>**	**Response**	**Success: OK Failed: ERROR**
Describe	Set the radio encryption password		
parameter	<MODE>: 64 hex characters		
Example	AT+PSK =baa58569a9edd7c3a55e446bc6 58ef76a7173d023d256786832474d7377 56a82		

6.3.5 Pairing Control

Instruction	**AT+PAIR=<pair>**	**Response**	**OK**
Describe	When the SSID is not set, the command can realize fast pairing and networking. When starting pairing: 1. The AP is configured with SSID and password, but the STA is not configured: During the pairing process, the STA will obtain The SSID and password of the AP.		

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	2. Neither the AP nor the STA is configured with an SSID and password: During the pairing process, the AP will Generate a random password. After pairing is successful, a PAIR SUCCESS message will be generated, but pairing will not be automatically terminated. Run AT+PAIR=0 to stop pairing. The connection will be automatically established after pairing stops. If both AP and STA have set SSID and other parameters, there is no need to start PAIR. Parameters are automatically connected.
Parameter	<psk>:0/1
Example	AT+PAIR=1 // Start pairing AT+PAIR=0 // Stop pairing

6.3.6 Setting BSS bandwidth

Instruction	**AT+BSS_BW?**	**Response**	**+BSS_BW:<bw> OK**
Describe	Read the radio station bss bandwidth		
Parameter	<bw>: 1:1MHz 2:2MHz 4:4MHz 8:8MHz		
Instruction	**AT+BSS_BW=<bw>**	**Response**	**Success: OK Failed: ERROR**
Describe	Set the radio bss bandwidth		
Parameter	<bw>: 1:1MHz 2:2MHz 4:4MHz 8:8MHz		
Example	AT+BSS_BW=4 Set the bandwidth to 4MHz		

6.3.7 Setting the operating frequency range

Instruction	**AT+ FREQ_RANGE ?**	**Response**	**+ FREQ_RANGE:<start>-<end> OK**
Describe	Read the working frequency range		
Parameter	<start>: starting frequency <end>: End frequency		
Instruction	**AT+FREQ_RANGE=<start>,<end>**	Response	**Success: OK Failed: ERROR**
Describe	Set the operating frequency range		
Parameter	1. This command is used to set the frequency range for continuous use, specify the starting center frequency and the ending center frequency, and the AH module will automatically calculate the frequency list.		

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	2. Start and end are the center frequency *10.
Example	AT + FREQ_RANGE = 9080,9240 Set up Start freq=908MHz End freq=924MHz The generated channel list is 908M. 916M,924M Note that if AT+CHAN_LIST is set at the same time, The parameters set in CHAN_LIST take precedence.

6.3.8 Set the working frequency list

Instruction	**AT+CHAN_LIST?**	**Response**	**+AT+CHAN_LIST:<freq1>,<freq2>, … <freq16> OK**
Describe	Read the operating frequency		
Parameter	1. The specified frequency value is the center frequency *10. 2. Supports up to 16 frequency points, separated by commas		
Instruction	**AT+CHAN_LIST=<freq1>,<freq2>, … ,<freq16>**	Response	**Success: OK Failed: ERROR**
Describe	Set the operating frequency		
Parameter	1. This command is used to set a non-continuous frequency list. 2. The specified frequency value is the center frequency *10 . 3. 16 frequency points are supported , separated by commas.		
Example	AT + CHAN_LIST =9080,9240 sets 2 frequencies: 908MHz, 924MHz		

6.3.9 Check the device signal quality

Instruction	**AT+RSSI?**	**Response**	**+RSSI:<rssi> OK**
Describe	Query the device rssi value		
Parameter	AT+RSSI=index/mac_addr index: specifies the device index to be queried, starting from 1. mac_addr: specifies the mac address of the device to be queried.		
Example	AT+RSSI // If no parameters are specified, query the RSSI of the first device AT+RSSI=1 // Specify the RSSI of the first device to query AT+RSSI=f4:de:09:68:6c:20 // Specify RSSI query based on MAC address		

6.3.10 Check the connection status

Instruction	**AT+CONN_STATE**	**Response**	**+CONNECTED //Connected +DISCONNECT //Not connected**
Describe	View connection status		
Parameter			
Example	AT+CONN_STATE		

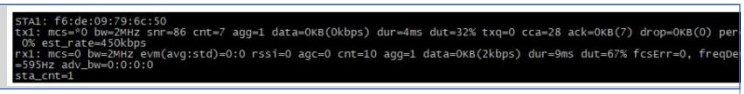
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6.3.11 View device parameter information

Instruction	AT+WNBCFG	Response	
Describe	View device parameter information		
Parameter			
Example	AT+WNBCFG		

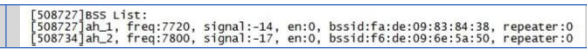
6.3.12 View sta information

Instruction	AT+STA_INFO=<id>	Response	
Describe	View the sta information of the corresponding id		
Parameter			
Example	View the LMAC statistics of the STA with the corresponding ID, including RSSI, EVM and other information; AP can use this command, but STA does not need this command; ID is the serial number of the STA, starting from 1; When using this command, you can first turn off the default LMAC printing: AT+SYSDBG=LMAC		

6.3.13 Scan surrounding AP information

Instruction	AT+SCAN_AP=2	Response	OK
Describe	Scan surrounding AP information		
Parameter			
Example	Execute this command in STA mode to scan surrounding AP information. After scanning, use the following BSSLIST command to query the results .		

6.3.14 Get the scanned AP list

Instruction	AT+BSSLIST=2	Response	
Describe	Get surrounding AP information		
Parameter			
Example	After executing the scan_ap command, you can use this command to get the scanned AP list (the AP must have SSID set to be scanned)		

6.3.15 Setting the maximum transmit power

Instruction	AT+TXPOWER?	Response	+TXPOWER:<pwr>dbm OK
Describe	Query the maximum transmit power		
Parameter	<pwr>: Maximum transmit power		
Instruction	AT+TXPOWER=<pwr>	Response	Success: OK Failed: ERROR
Describe	Set the maximum transmit power		
Parameter	<pwr>: Maximum transmit power, range 6~20		
Example	AT+TXPOWER=20		

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6.3.16 Setting the ACK TIMEOUT

Instruction	**AT+ACKTMO?**	**Response**	**+ACKTMO:<time> OK**
Describe	Query the ACK timeout time of the WiFi protocol		
Parameter	<time>: timeout period		
Instruction	**AT+ACKTMO=<time>**	Response	**Success: OK Failed: ERROR**
Describe	Set the ACK timeout time of the WiFi protocol		
Parameter	<time>: timeout period Set to increase the AH radio WiFi protocol parameter acktimeout value, in microseconds, the default is 0 . This parameter needs to be set only when the communication distance exceeds 1km . The calculation formula is 10* (distance in kilometers - 1), for example, if the distance is 2km, set acktmo=10. Modified value is saved after power off;		
Example	AT+ACKTMO=100 increases the ACK packet timeout by 100us		

6.3.17 Setting tx mcs

Instruction	**AT+TX_MCS?**	**Response**	**+TX_MCS:<mcs> OK**
Describe	Query the radio station's MCS value		
Parameter	<mcs>: mcs index value		
Instruction	**AT+TX_MCS=<mcs>**	**Response**	**Success: OK Failed: ERROR**
Describe	Set the radio station mcs index value		
Parameter	Set tx mcs , the range is 0~7 or 10 in 1M mode means fixed to a certain mcs , other values mean mcs automatically adjusted; this command will be saved when power is off;		
Example	AT+TX_MCS=2		

6.3.18 Setting the heartbeat packet interval

Instruction	**AT+HEART_INT?**	**Response**	**+HEART_INT:<time> OK**
Describe	Query the heartbeat packet interval		
Parameter	<time>: heartbeat packet interval, in ms		
Instruction	**AT+HEART_INT=<time>**	Response	**Success: OK Failed: ERROR**
Describe	Set the heartbeat packet interval		
Parameter	Set the heartbeat packet interval in mS , with a minimum setting of 500. The more STAs there are, the longer the heartbeat packet interval is recommended to be. The appropriate length of the heartbeat packet is STA_count*50 0. Earlier software versions require the AP and STA to be set to the same heartbeat packet interval, otherwise there will be connection problems. This command will be saved when the power is turned off. Starting from V1.6.2 , you only need to set the AP 's heartbeat packet interval, and the AP will automatically synchronize it to the STA . This command is invalid for STA .		

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Example	AT+HEART_INT=2000 Set the heartbeat packet interval to 2s

6.3.19 Set to unpair the specified STA

Instruction	**AT+UNPAIR ?**	**Response**	**No response**
Describe			
Parameter			
Instruction	**AT+UNPAIR=<mac_addr>**	**Response**	**Success: unpair sta:mac_addr** **Failed: sta:mac_addr is not exist**
Describe	Set to unpair the specified STA		
Parameter	<mac_addr>: The other party's mac address		
Example	at+unpair=f6:de:09:75:a3:61		

6.3.20 Restore factory settings

Instruction	**AT+LOADDEF=1**	**Response**	
Describe	Restore factory settings		
Parameter			
Example	AT+LOADDEF=1		

6.3.21 Setting Print Information

Instruction	**AT+SYSDBG=<type>,<vale>**	**Response**	**Success: OK**
Describe	Set to print debug information		
Parameter	<type>: LMAC/WNB <vale>: 0 closed/1 open LMAC statistics are turned on by default, and there are a lot of them. You can turn them off if necessary; WNB statistics are not turned on by default.		
Example	AT+SYSDBG=LMAC,0 Turn off printing of LMAC		

6.3.22 Setting the serial port baud rate

Instruction	**AT+BAUDRATE?** **(Not supported temporarily)**	**Response**	**<value>**
Describe	Query the baud rate of the serial port		
Parameter	<value> : baud rate value		
Instruction	**AT+BAUDRATE=<value>** **(Not supported temporarily)**	**Response**	**Success: OK**
Describe	Set the serial port baud rate		
Parameter	<value>: serial port baud rate range 9600-400k		
Example	AT+BAUDRATE=115200		
Explain	This product does not support port rate modification. The port rate is fixed at 115200, Frame format 8N1		

6.3.23 Joining a multicast network

Instruction	**AT+JOINGROUP=<group_addr>,<aid>**	**Response**	**Success: OK**

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			Failed: ERROR
Describe	Set the radio station to join the multicast . After setting the working mode of the WiFi radio to group , you can use this command to set the WiFi radio to join a multicast network. After joining a multicast network, the WiFi radio will only receive data in the multicast network. All data communications are communicated using the multicast address. If the working mode is set to group but the multicast network is not joined, all data communications are sent and received in the form of broadcast. Note that the JOINGROUP command can only be set after the GROUP mode is set .		
Parameter	AT+JOINGROUP=group_addr,AIDgroup_addr: The address of the multicast network to be joined . AID : The AID of the device in the multicast network . AID valid values: 1~N (N is the maximum number of STAs supported by the firmware). The AID of each device in the network should be unique. Set effective AID : The WiFi radio will periodically send heartbeats in the multicast network to announce its presence to other WiFi radios . Set invalid AID : The WiFi radio will not send heartbeats and will not notify other WiFi radios . If all devices set AID to 0 , the maximum STA may not be supported by the firmware .		
Example	AT+JOINGROUP=11:22:33:44:55:66,3 Join multicast address:11:22:33:44:55:66 AID is set to 3		

6.3.24 Setting the intermediate ssid

Instruction	**AT+R_SSID?**	**Response**	**+R_SSID:<repeater_ssid> OK**
Describe	Query the ssid of the AP connected to the upper level in relay mode		
Parameter	<value> : ssid of the upper level AP		
Instruction	**AT+R_SSID=<repeater_ssid>**	Response	**Success: OK Failed: ERROR**
Describe	Set the SSID of the intermediate connection to the upper level AP		
Parameter	<repeater_ssid>:ssid		
Example	AT+R_SSID=ebyte_test		

6.3.25 Set the encryption password for the relay

Instruction	**AT+R_PSK?**	**Response**	**+R_PSK:<psk> OK**
Describe	Query the encryption password of the AP connected to the upper level in relay mode		
Parameter	<psk>: encryption password of the previous AP		
Instruction	**AT+R_PSK=<psk>**	Response	**Success: OK Failed: ERROR**
Describe	Set the intermediate connection psk of the upper level ap		
Parameter	<psk>: Encryption password, must be 64 hex characters		
Example	AT+R_PSK= baa58569a9edd7c3a55e446bc658ef76a7173d023d256786832474d737756a82		

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7 FAQ

7.1 Communication range is too short

- The communication distance will be affected when obstacle exists;
- Data lose rate will be affected by temperature, humidity and co-channel interference;
- The ground will absorb and reflect wireless radio wave, so the performance will be poor when testing near ground;
- Sea water has great ability in absorbing wireless radio wave, so performance will be poor when testing near the sea;
- The signal will be affected when the antenna is near metal object or put in a metal case;
- Power register was set incorrectly, air data rate is set as too high (the higher the air data rate, the shorter the distance);
- The power supply low voltage under room temperature is low, the lower the voltage, the lower the transmitting power;
- Due to antenna quality or poor matching between antenna and module.

7.2 Module is easy to damage

- Please check the power supply source;
- Please check the stability of power source, the voltage cannot fluctuate too much;
- Please make sure antistatic measure are taken when installing and using, high frequency devices have electrostatic susceptibility;
- Please ensure the humidity is within limited range, some parts are sensitive to humidity;
- Please avoid using modules under too high or too low temperature.

7.3 BER(Bit Error Rate) is high

- There are co-channel signal interference nearby, please be away from interference sources or modify frequency and channel to avoid interference;
- Poor power supply may cause messy code. Make sure that the power supply is reliable;
- The extension line and feeder quality are poor or too long, so the bit error rate is high.

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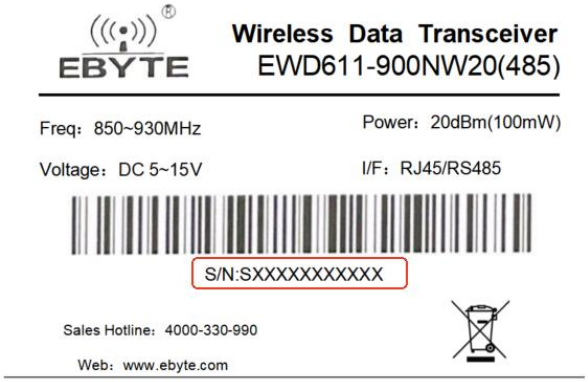
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8 Firmware Update

- How to distinguish between firmware versions on the product:

The E611-900NW20D module comes in two firmware versions: one supporting up to 8 sub-nodes and another supporting up to 31 sub-nodes. Users can distinguish between them based on the production batch number in the module's SN code. Modules with a production batch number greater than 5202782 run the firmware version supporting up to 31 sub-nodes; conversely, those with a production batch number less than 5202782 run the firmware version supporting up to 8 sub-nodes.

SN Code Explanation: S5202782S00001, where 5202782 is the production batch number and 00001 is the serial number.



Example:

1. The user's module production batches are 5202783 > 5202782; modules with production batch 5202783 support up to 31 sub-node firmware versions;

2. If the user's module production batch is 5202781 ≤ 5202782, the module with production batch 5202781 supports a maximum of 8 child node firmware versions.

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9 Related Models

Product Model	Carrier frequency Hz	Transmit power dBm	Test distance (km)	Air speed bps	Packaging	Product dimensions (mm)	Antenna type
E70-DTU(433NW30)	433M	30	6.5	2.5k～168k	RS232/RS485	82*62*25	SMA-K

Important Notice

- EBYTE reserves the right to make final interpretations and modifications to all content in this manual.
- Due to ongoing improvements in the product's hardware and software, this manual is subject to change without prior notice; the latest version of the manual shall prevail.
- Users of this product are advised to visit the official website to stay updated on product developments and receive the latest information in a timely manner.

Revision History

Version	Revision Date	Revision Notes	Maintainer
1.0	2024-11-13	Initial release	Hao
1.1	2025-4-18	Add the wiring diagram	Hao
1.2	2025-8-6	Content modified	Hao
1.3	2025-9-24	Content modified	Hao
1.4	2025-12-3	Content modified	Hao
1.5	2026-4-22	Content modified and addition of Chapter 8: Firmware Upgrade and Important Notes	Lan
1.6	2026-6-18	Modified the description of the configuration mode instructions	Lan

About us

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Thank you for using Ebyte products! Please contact us with any questions or suggestions: info@cdebyte.com

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