Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



E880-IR01

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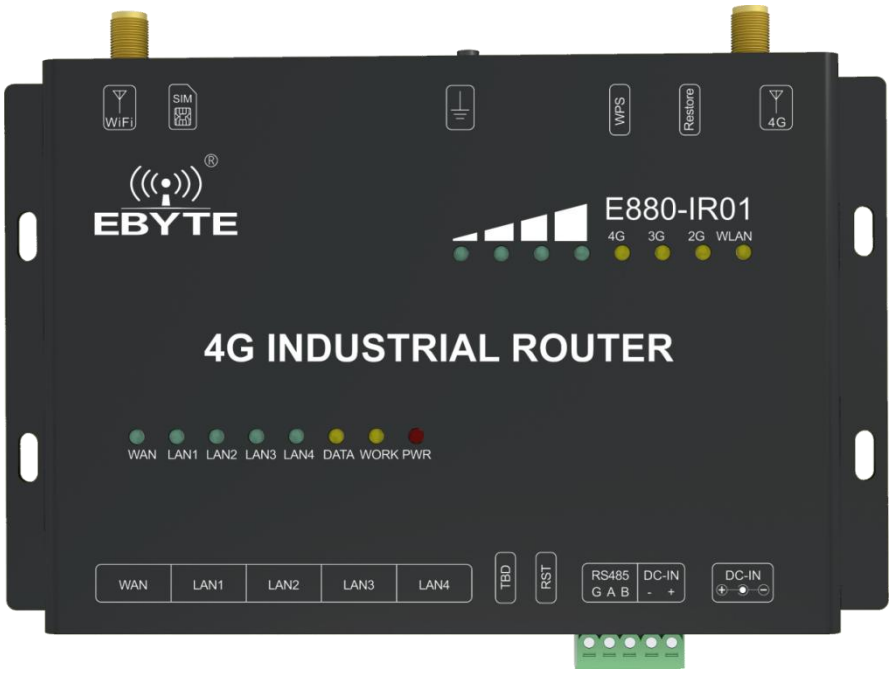
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Features

- Supports 4 wired LAN ports and 1 wired WAN port;
- Support 1 WLAN wireless local area network;
- Support LED status monitoring (display power, Work, WAN, LAN, WIFI, 4G network mode and signal strength status);
- Support ssh and Web multi-platform management and configuration methods;
- One-click factory reset;
- Wired network ports all support 10/100Mbps speed;
- Support APN private network access, SIM card self-check, 2/3/4G standard switching, and SIM information display;
- Support wired and wireless online at the same time, and multi-network intelligent switching;
- Support firmware upgrade and firmware configuration backup function;
- Firewall, NAT, DMZ host, blacklist and whitelist of access control, IP speed limit;
- QOS, traffic service, can limit the speed according to the interface;
- WPS one-key Internet access function;
- Support VPN private network access, VPN client, and VPN server working mode;
- Supports data conversion between serial port and Ethernet, and supports transparent transmission and MODBUS transmission modes;
- Supports load balancing multi-port flow control settings, with network port priority, enable, flow control ratio and other working modes;
- Support frp intranet penetration and remote management of routers (status display and parameter setting);

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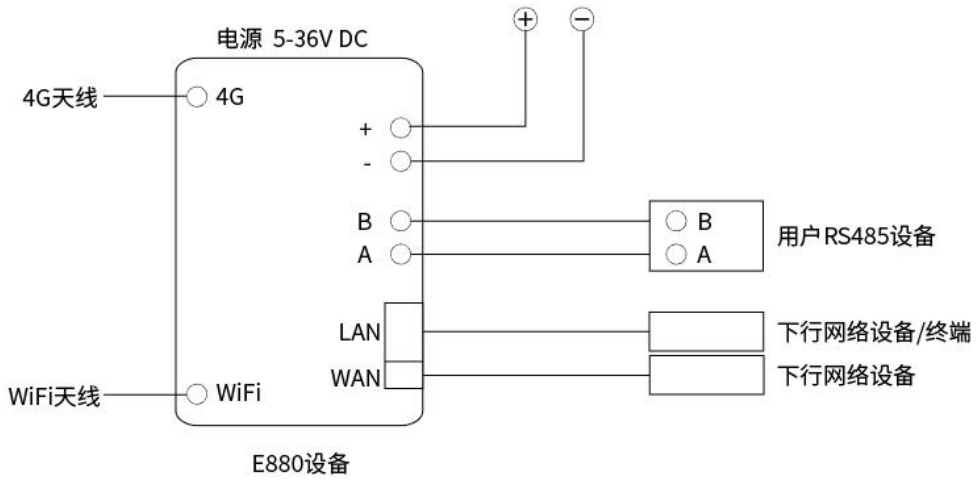
1 Quick Start

In order to ensure that the products users receive are qualified at the first time, we provide a simple testing process for users to refer to. During the whole process, it also allows customers to get started quickly.

1.1 Startup Preparation

Before the 4G router works, users need to prepare at least a PC, an Ethernet cable, product supporting components, and a 4G SIM card with data traffic.

1.2 Hardware Connection



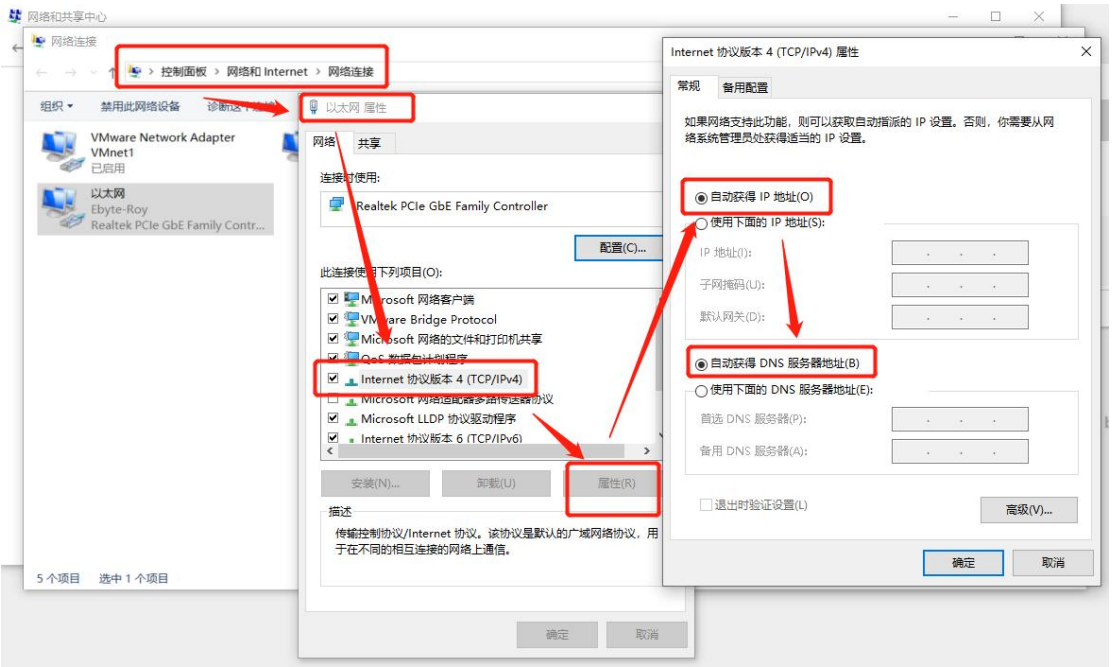
As shown in the figure above, before powering on the device (the power-on position is marked on the panel), customers must insert the 4G SIM card into the value card slot (chip side facing up), otherwise the 4G function will not be activated.

Connect the WIFI antenna and 4G antenna to the SMA interface under the device panel logo respectively, and connect the computer to the LAN port of the device (LAN1~LAN4). To detect the 4G function, the WAN port does not need to be connected to Ethernet.

To ensure that the computer can access the WEB management interface through the LAN, the customer needs to ensure that the computer network properties are set to automatically obtain an IP address and a DNS server address, as shown in the figure below.

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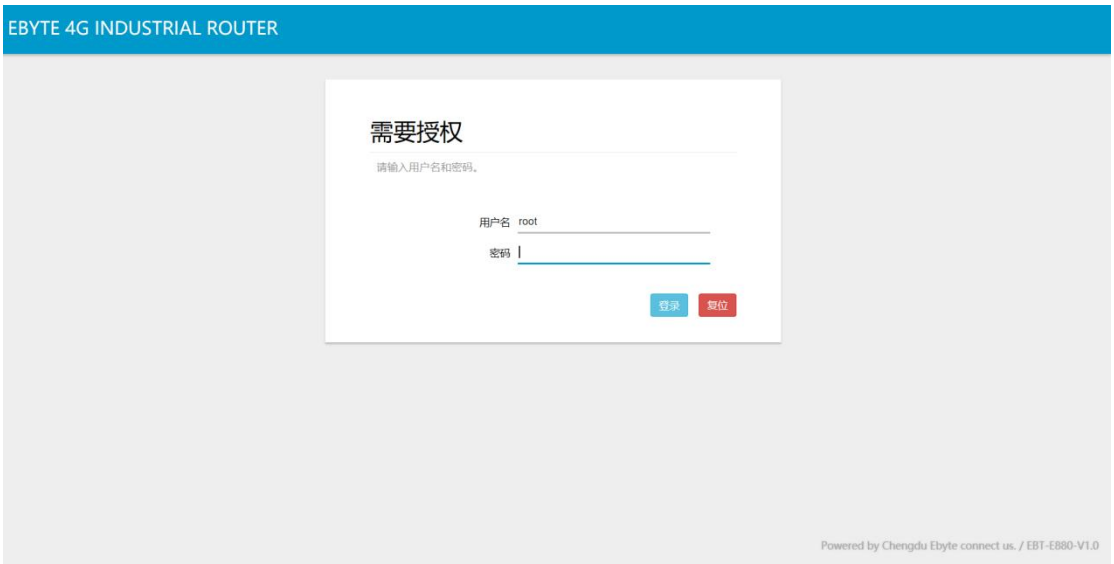


After completing the above steps, use the power supply that comes with the device and then power on the router.

After powering on, wait for about 1 minute, the WORK indicator on the panel starts flashing at a frequency of about 1S, which indicates that the boot is complete. In addition, the 4G signal indicator on the panel and the 4G indicator in the network properties also start working normally (the device is connected to the 4G network by default). The number of 4G signal indicators that light up depends on the current network signal quality.

1.3 Web Access

On the PC, open any browser and input: 192.168.10.1 to enter our router Web login interface, as shown below:



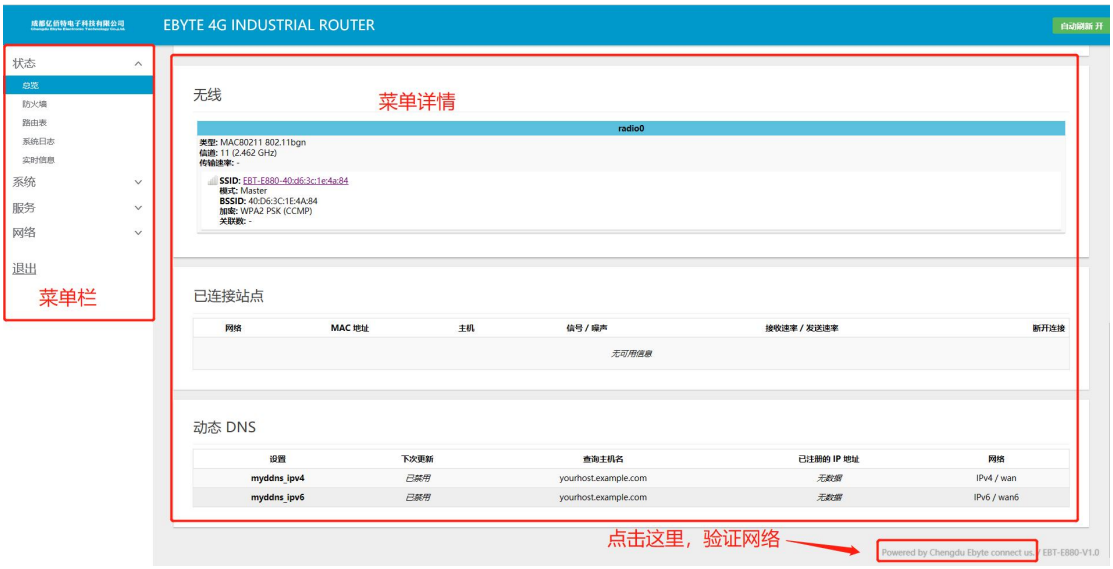
Here, our default password is: root

After entering the password, you can enter our web management interface.

In the lower right corner of the web page, you can click the following link to enter our company's official website, which verifies that the 4G router has successfully accessed the external network.

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Well, after the above steps, if no fault occurs, it means that the device can be used normally. In addition, if the customer wants to know the current network speed, he can use relevant software to perform network testing.

2 Product Introduction

E880-IR01 is a 4G wireless router, providing a fast networking and mobile network sharing solution for user devices. The device adopts the industry's commercial-grade high-performance embedded structure, and has high application advantages in data transmission fields such as industrial control networking, smart grid, industrial control data acquisition, smart home, etc. It supports wired WAN port, LAN port, WLAN network, and 4G network interface, and SMS AT command remote control 4G router.

2.1 Basic parameters

	project	index
Wireless parameters	TDD-LTE	Downlink rate 130Mbps, Uplink rate 35Mbps Band 38/39/40/41
	FDD-LTE	Downlink rate 150Mbps, Uplink rate 50Mbps Band 1/3/8
	WCDMA	Downlink rate 42Mbps, Uplink rate 5.76Mbps Band 1/8
	TD-SCDMA	Downlink rate 5.2Mbps, Uplink rate 2.2Mbps Band 34/39
	CDMA2000 1x/EVDO	Downlink rate 3.1Mbps, Uplink rate 1.8Mbps BC0
	GSM/GPRS/EDGE	Downlink rate 236.8kbps, Uplink rate 236.8kbps 900/1800
Hardware Parameters	Product size (H*W*D)	172*107*29mm
	Product Weight	419.5g
	Operating temperature	-20℃~+70℃

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	Storage temperature	-40℃~+85℃
	Operating humidity	5%~95%
	Storage humidity	1%~95%
	Operating voltage	5V~36V
	Current consumption	Under DC12V power supply, average 106mA, maximum 205mA (normal temperature)
	Accuracy	0.2%
	Data Interface	RS485: 1200~115200bps

The working mode and power consumption table are shown in the following table:

The power consumption of E880-IR01 is shown in the following table

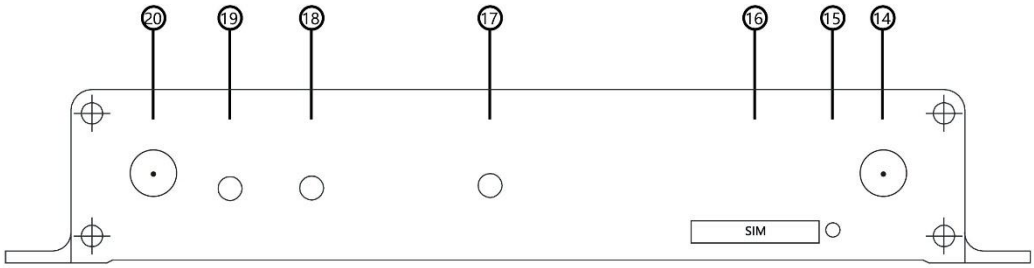
How it works	Supply voltage	Average current	Maximum current	Remark
4G+Ethernet	DC12V	106mA	205mA	Ethernet is preferred
Ethernet	DC12V	99mA	186mA	No SIM card
4G	DC12V	141mA	283mA	No WAN port input
None working	DC12V	88mA	163mA	

When E880-IR01 is powered by 12V and works with 4G and Ethernet at the same time, the statistics show that the average power consumption is 1.27W and the maximum power consumption is 2.46W. The average current is 106mA and the maximum current is 205mA.

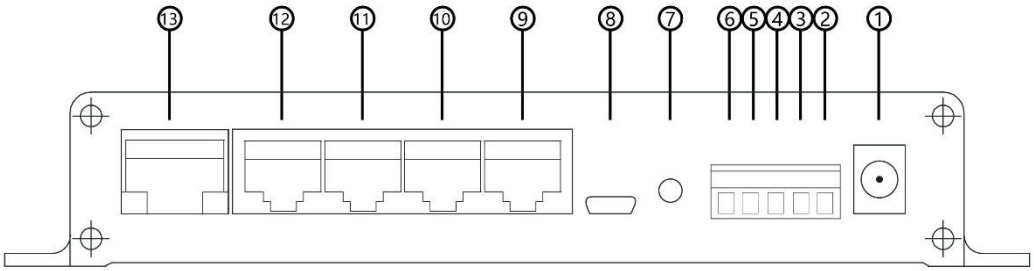
When E880-IR01 is powered by 12V and works alone in 4G, the statistics show that the average power consumption is 1.69W, the maximum power consumption is 3.40W, the average current is 141mA, and the maximum current is 283mA.

2.2 Dimensions, interface description

SIM card side



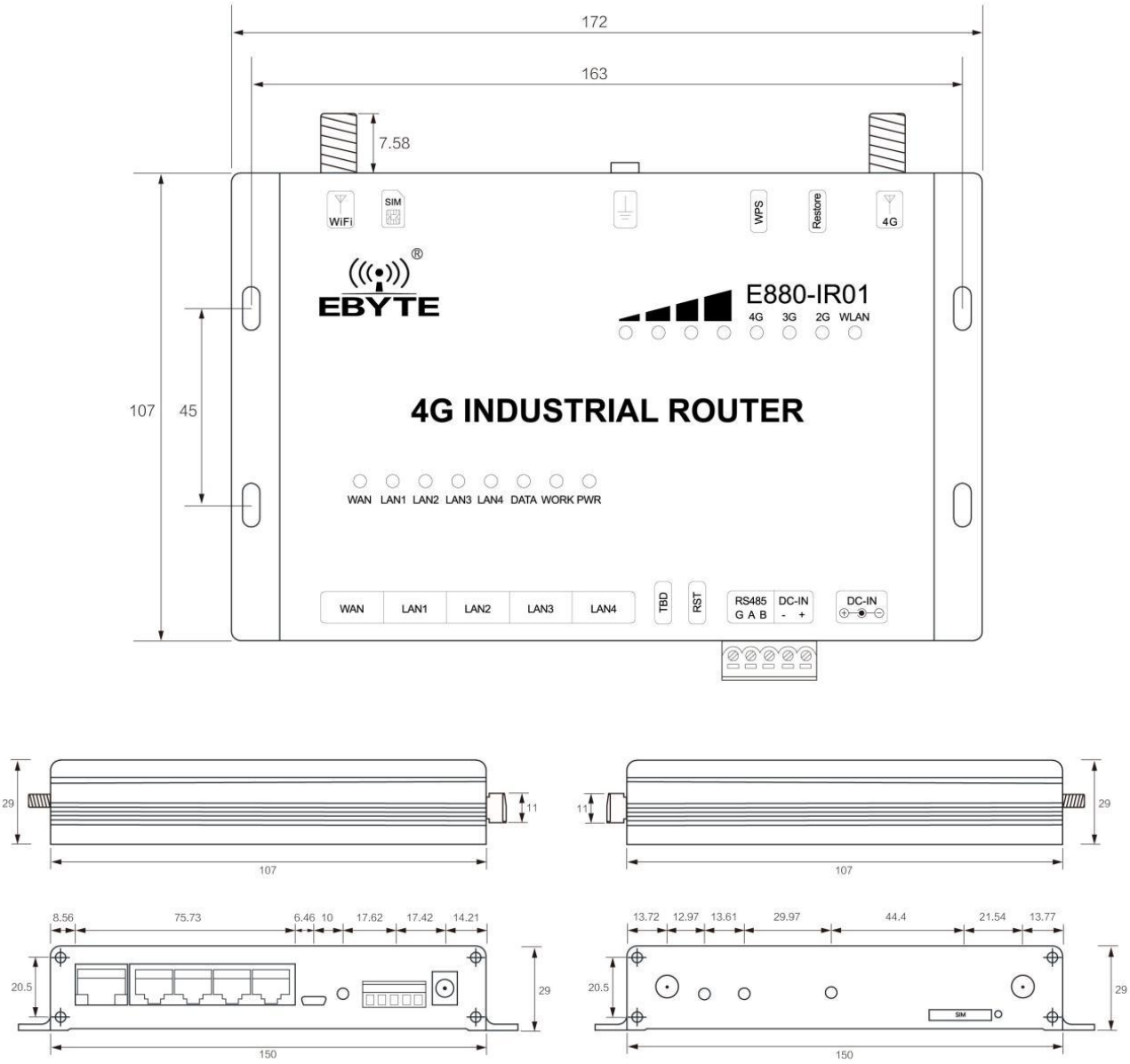
Network port side



Top view

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The hardware interface is described as follows:

Interface number	name	Remark
1	DC5~36V	Power supply range: DC 5~36V, standard 5.5*2.1 power socket
2	DC-IN+	Power supply range DC: 5~36V, power terminal positive
3	DC-IN-	Power supply range DC: 5~36V, power terminal negative
4	RS485 B-	RS485 interface B-end (spare)
5	RS485 A+	RS485 interface A+ terminal (spare)
6	RS485 G	RS485 interface common ground terminal
7	RTS	Short press to reset the hardware
8	TBD	USB debugging interface
9~12	LAN (1~4)	LAN port (1~4), LAN interface, 10/100Mbps, supports Auto

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		MDI/MDIX
13	WAN	WAN port, WAN interface, 10/100Mbps, supports Auto MDI/MDIX
14	4G	4G antenna SMA interface
15	Card Pickup Area	Use a sharp object to press down and the SIM card can be removed.
16	SIM card slot	SIM card installation location
17	GND grounding screw	Connecting with the Earth
18	WPS	Short press WPS to access the Internet without password
19	Restore	Press and hold for more than 5 seconds and then release to restore to factory settings
20	WIFI ANTENNA	WIFI antenna SMA interface

3 Function Settings

In this section, we will explain based on the function menu on the Web interface. Due to limited space, we will focus on some function options, and we will choose to outline some uncommon and unimportant functions. Throughout the process, we will also intersperse some related function menus in a certain function.

3.1 Menu Overview

In the web management interface, users can set the functions they need or view related status. Through the menu bar on the left side of the web page, they can set and query specific functions or information. Users can see the directory tree structure of the menu as shown in the following table.

Submenu\Menu	state	system	Serve	network
1	Overview	system	Dynamic DNS	interface
2	Firewall	Management rights	WIFI PLAN	wireless
3	Routing Table	Scheduled tasks	F rp intranet penetration	switch
4	System log	Time Synchronization	4 85 serial port	DHCP/DNS
5	Real-time information	Backup/upgrade	VPN Servers	Hostname
6		Restart	SIM card	Static Routing
7				Firewall
8				Network Diagnostics
9				QoS function
10				Load Balancing

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4 Function Overview

4.1 Status

In the "Status" menu column, users can view the current working status of the router, including the firewall, router, system internal work log, and real-time refreshed network related information, etc. Users cannot set anything in this column. Here, users can query the contents of related submenus according to relevant needs.

4.2 System

In the system bar, we can set the management parameters of the 4G router, including the login password of the web page, host name, upgrade and other functions.

4.2.1 Host name and time zone settings

In System -> System Properties -> Basic Settings, users can set the host name of the 4G module and modify the time zone. Here, our default host name is: EBYTE, and the time zone is UTC (if the product is used in China, it can be set to: Asia/Shanghai).

Set the host name as shown below.



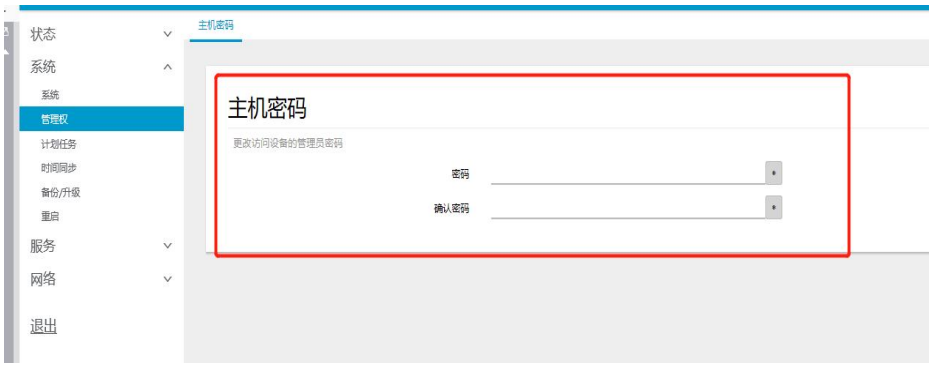
In addition, users can also set the language of the web interface (Chinese/English) and different style themes. Here, our default language is Chinese, and the style used is our company's technology blue theme.

4.2.2 Username login password settings

In System-->Administrative Rights-->Host Password option, set the Web login interface. The host password setting requires at least one character, and then click the Save button to set the login password. As shown in the figure below.

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4.2.3 Restoring factory settings and upgrading

In the System -> Backup/Upgrade option, you can restore the factory settings to ensure that the user can restore to the initial state after the wrong operation of setting the router, so that it can be used normally. At the same time, we have reserved the upgrade function. When we update the new version of the firmware, users can upgrade by themselves, so that they can experience more functions. Restoring factory settings and upgrading are shown in the figure below.



It should be noted here that when users upgrade the firmware, please do not turn off the power. After loading the firmware browsed to the page, it will take more than 10 seconds after clicking Flash Firmware before the next window pops up. After clicking

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Execute, wait for a few minutes and the webpage will automatically return to the login interface. At this time, the upgrade is successful.

4.2.4 Restart

In System -> Restart Options, you will enter the following interface. Click Execute to restart. Wait for about 40 seconds, and the WORK indicator on the device panel flashes normally. At this time, the restart is successful.



In addition, there is a RST physical button on the side of the panel (to the right of the network port). Short pressing this button can also restart the device.

4.3 Services

4.3.1 Dynamic DNS

In the Service-->Dynamic DNS option, users can add domain name resolution services to achieve remote settings of routers, as shown in the figure below.

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In the dynamic settings interface, some DDNS service providers are pre-configured in the drop-down menu of DDNS service providers. If the DDNS service provider selected by the customer is not in the drop-down box, you can choose to customize it.

Dynamic DNS is not enabled by default. Before using this function, please click to enable it.

After modification, please restart the router to ensure normal operation.

Customers must strictly fill in the parameters for setting up DDNS to ensure that the network matches normally.

DDNS is also available under multi-level routing.

If the network where the router is located is not assigned an independent public IP, this function cannot be used.

If you set up relevant port mapping on the firewall, you can access the router's intranet from a remote location.

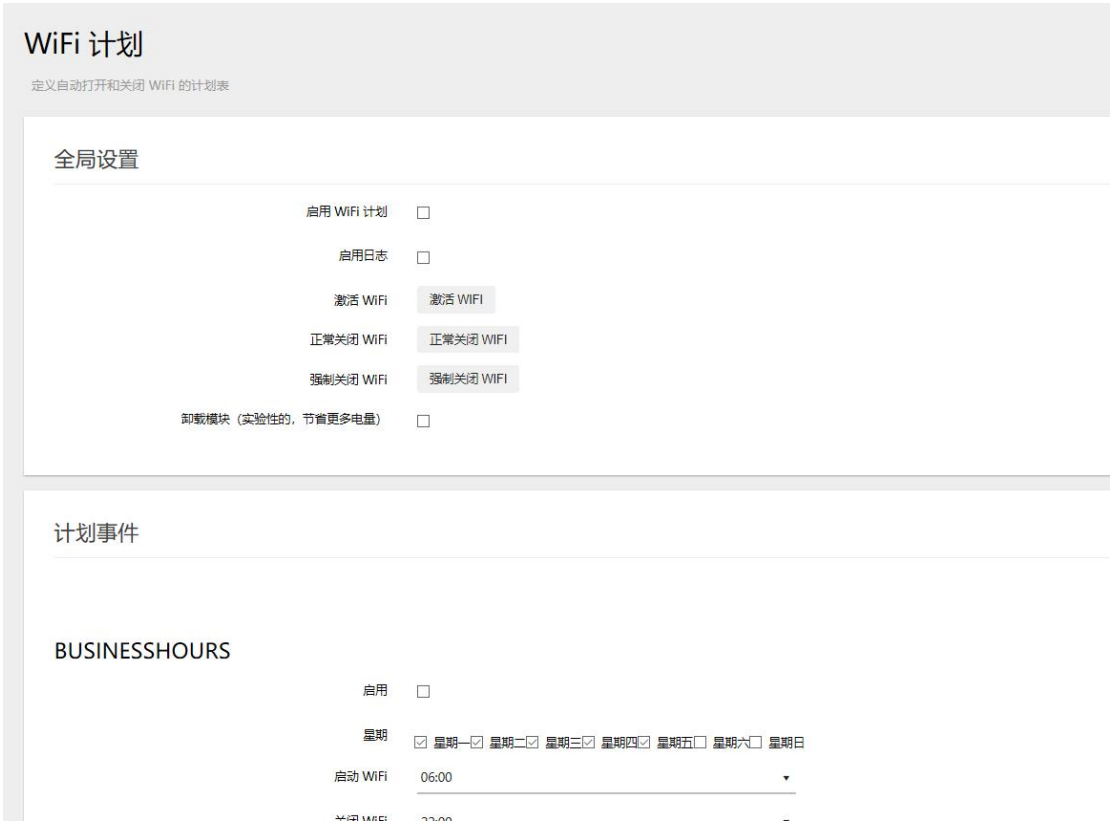
The router can add multiple dynamic domain names.

4.3.2 WIFI Plan

In the Service-->WIFI Plan option, users can set wireless WIFI related events, such as starting or shutting down wifi, as shown in the figure below.

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4.3.3 Frp intranet penetration

For intranet users without public IP, remote management of routers or other ports of routers under the intranet is an embarrassing problem. Intranet penetration can achieve access to devices under the intranet (such as the local machine) through the public network. There are many intranet penetration tools at present. FRP intranet penetration, with its high-performance reverse proxy application, can not only allow customers to easily penetrate the intranet and provide services to the external network, but also has stable and efficient performance and supports multiple protocol types.

Next, we will demonstrate how to use the intranet penetration tool.

Here, we log in to www.ngrok.cc and log in to the official website of a frp server provider, and then purchase a frp server. Of course, the platform also provides free servers (if the user has his own public IP, he can establish a frp server on his own public IP. Here we use a third-party provider).

After purchasing the frp server, create a server tunnel in your own account (the creation process is very simple, and the platform has a very detailed tutorial, so we will not go into details here). After the tunnel is created, you can see the following information as shown in the figure below.

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Here, we will get: 1. Tunnel domain name ; 2. Tunnel name ; 3. FRP authorization code ; 4. Server address ; 5. Server port ; 6. Tunnel protocol ; 7. Local port. These parameters will be used in the frp client setting parameters in our router later.

In Service-->Frp Intranet Penetration-->Basic Settings, we get the following settings interface.



In the basic settings, we turn on the frp function and make the following parameter correspondence:

Server parameter name	Client parameter name	illustrate
	Software Version	Client software version, select the default 0.16.1
	Download source address	Software download source, select the default source address-2
Server address	Server address	Fill in the obtained server address into this option
Server Port	port	7000
FRP Authorization Code	Privileged Tokens	Fill in the server's authorization code into this option

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Other options can be selected by default.

In the Service-->Frp Intranet Penetration-->Service List option (this option is at the bottom of the page), we click the Add button to go to the following setting interface.



In this setting interface, we need to change the enable status from disabled to enabled, and then set the relevant parameters to correspond to the server, as shown in the following table.

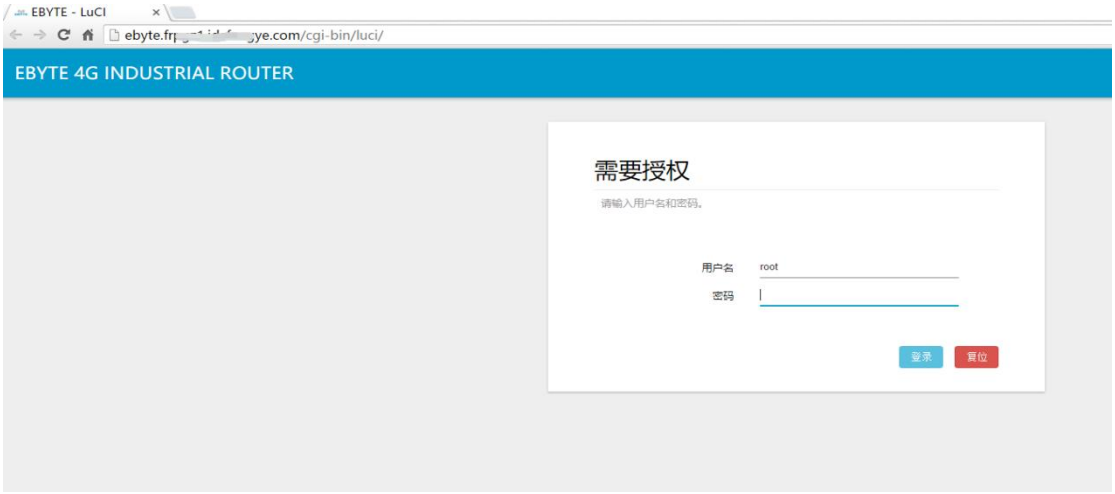
Server parameter name	Client parameter name	illustrate
Tunneling Protocol	Frp protocol type	http
	Domain Type	Select subdomain
Tunnel Domain Name	Subdomains	ebyte
Local Port	Intranet host address	192.168.10.1
	Intranet host port	80 (router web port)
Tunnel Name	Service Note Name	test-ebyte-324717

Select the default for other options, and then click the Save and Apply button in the lower right corner. Then restart the router.

When our intranet penetration function is successfully started, enter the Frp public network address in the browser, as shown below. At this time, our management interface appears on the web page, indicating that our intranet penetration is successfully started.

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4.3.4 485 Serial Port

The 485 serial port function has the function of data conversion between the local RS485 serial port and Ethernet. Users can send local serial port data to the remote data receiving port through the network protocol (TCP/IP). At the same time, users can also send remote data to the local serial port. The following will explain the RS485 function.

In Service-->485 Serial Port Options, you can configure related options for serial port services, as shown in the figure below.



As shown in the figure above, the general configuration options include enabling serial port services and enabling heartbeat package related services. They are not enabled by default here, but if the user enables the serial port service, in order to prevent link interruption, we recommend that the user also enable the heartbeat package function. In the registration package, you can choose the registration method. Here we provide the ICCID and IMEI of the SIM card as the registration package. Of course, users can also customize the registration package content or registration method. In addition, it should be noted that the registration package and heartbeat content.

In the serial port configuration options, as shown below.

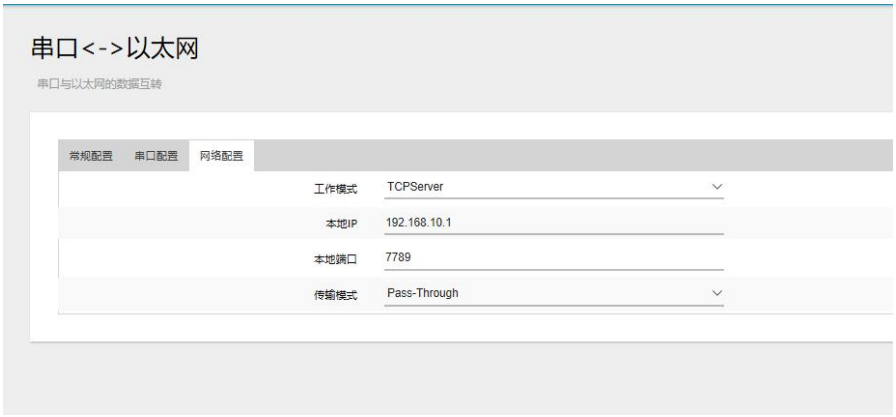
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Here, users can set serial port related parameters, which will not be described in detail here.

In the network configuration, configure the network related parameters, such as working mode, IP address and port, and related settings of transmission mode, as shown in the figure below.



Below, we will give an example demo for users' reference.

In the general configuration, we set the following parameters.



In the serial port configuration, we select the default parameters, namely:

Baud rate: 115200;

Data bits: 8;

Check digit: None;

Stop bits: 1;

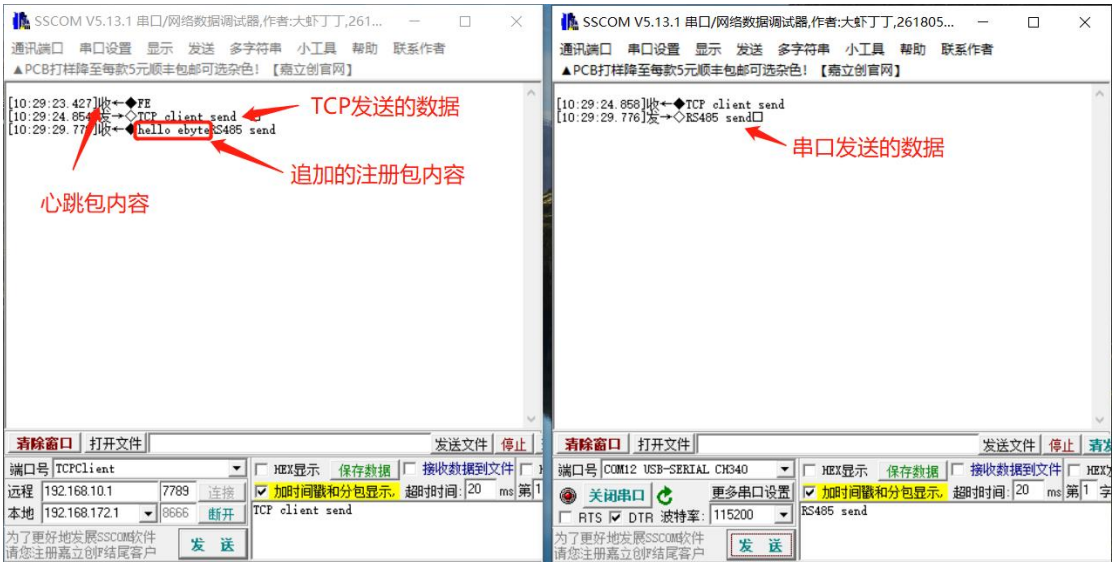
In the network configuration, we make the following configuration.

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Now we press the Save and Apply button (no need to restart the router here).



It should be noted here that: when the registration packet is enabled, the registration packet is only added when the serial port data is sent to the Ethernet direction. When the Ethernet sends data to the serial port, the registration packet is not added.

At the same time, the RS485 function not only supports transparent transmission mode, but also supports Modbus protocol (Modbus RTU and Modbus TCP protocol conversion).

In our demo, the router works in TCP Server mode and is accessed via LAN. Users can select the relevant network working mode, remote IP and port according to actual needs.

In addition, it should be noted that: after the user boots up in client mode, if there is no access to the server within 2 to 3 minutes, the user will be automatically disconnected and wait for the user to confirm that the server is ready. At this time, the user needs to restart the serial port to Ethernet service (that is, click the Save and Apply button again).

4.3.5 VPN Server

E880-IR01 router supports both VPN client and server modes. Here, we will explain the VPN server (based on PPTP protocol).

In order to help users understand and use the VPN function correctly, we first explain the relevant concepts of VPN.

VPN (Virual Private Network) is a remote access technology that uses the public network to build its own private network. The VPN gateway achieves remote access by encrypting data packets and converting the target address of data packets . Let's take an application scenario. Xiao Wang from a company is on a business trip in Beijing. He wants to access the company's intranet server in Chengdu. At this time, if he accesses the company's VPN server through VPN, Xiao Wang can be assigned a local IP by the server to obtain server resources, or form a "local area network" with other clients (colleagues' computers) under the server to achieve remote data interaction.

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In Service -> VPN Server Options, the following interface appears. In Basic Settings, set the VPN server's gateway IP and client IP (or IP range), as well as some VPN-related working methods.



In the user management settings, set the authentication password and user name of the VPN server, and select the online user column to view the access information of related clients.

Below we will demonstrate the creation of a VPN server and related precautions.

In the basic setup, we set the following:



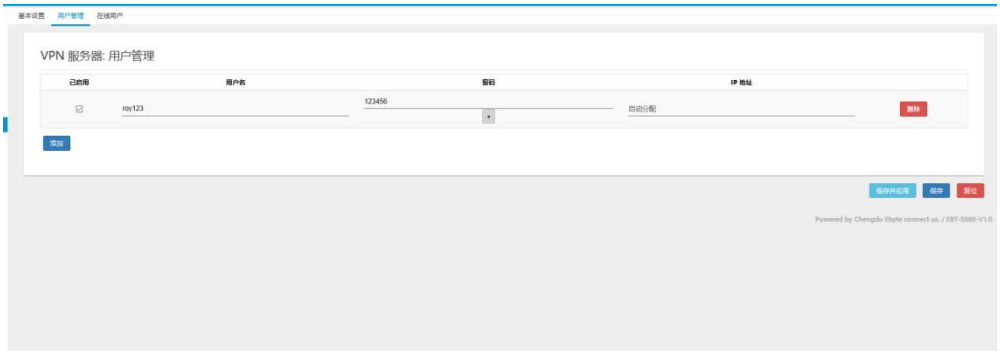
In user management, we set our own password and username as follows;

Password: 123456

Username: roy123

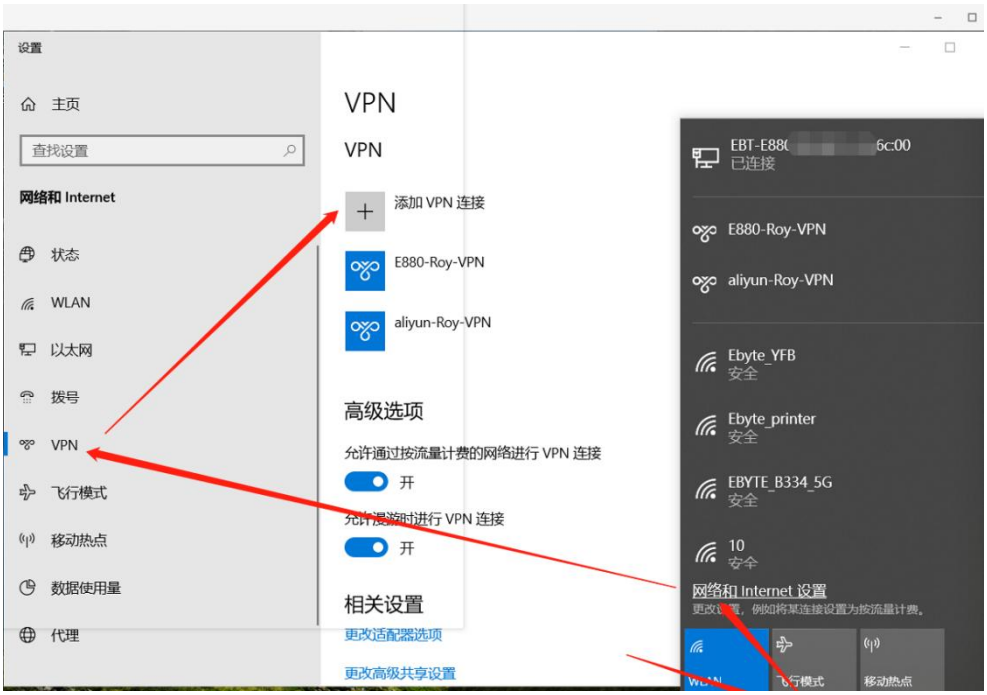
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After the settings are completed, we need to restart the router. After restarting, our VPN server function will start working.

At this point, we can create a VPN client on our computer and access our VPN server by authenticating the username and password we set previously.



As shown in the above picture (win10), we click Add VPN Client and get the following interface.

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Then click Save. At this point, we will see one more VPN client than before.



We clicked Connect, and then the VPN client connected to the routing VPN server.

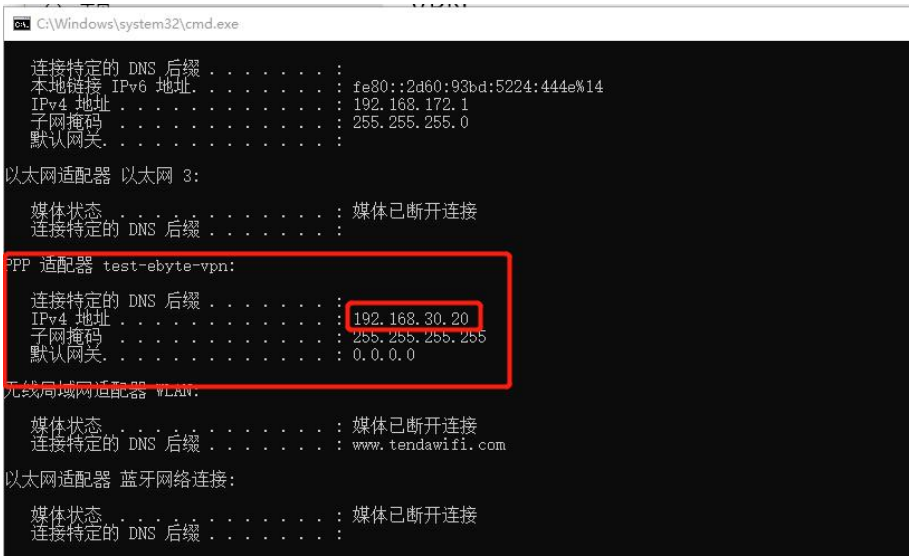


At this point, when the connection is successful, we open the windows console and enter ipconfig, we will see the following

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adapter.



At this point, our computer has been assigned a remote IP address by the VPN server. Let's check the current status of our router, as follows:



Similarly, the client of other operating systems is roughly the same as Windows. Here, users need to pay attention to the fact that the IP address of the VPN server is consistent with the address mapped to the WAN port. When users use the VPN client to connect to the server and fill in the server name, they should fill in the IP address connected to the WAN port, not the IP 192.168.30.1 in the figure above. In addition, users need to know that the VPN private network is established on the public network. If the public network is disconnected, the private network will also be disconnected.

4.3.6 SIM card

In Network-->SIM Card Options, you can configure the network access mode of the 4G SIM card and query the basic information of the current SIM, as shown in the figure below.



LTE mode is a network lock mode. Customers can switch the current network attributes (4G/3G/2G) through this option. Here, it

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should be noted that when customers switch networks, they must know in advance whether the current telecom provider has the set network segment. For example, customer A uses a mobile 4G card, and sets the LTE mode to 3G. The result is that there is no such service (the signal quality indicator lights are all off). The reason is that the mobile card has withdrawn the 3G network segment, and the router cannot search for the corresponding service.

LTE prority is the order of priority in searching networks. When LTE mode is automatic, LTE prority is effective.

If customers want to query relevant information about the SIM card, they can switch to the SIM Card option and view the following information.

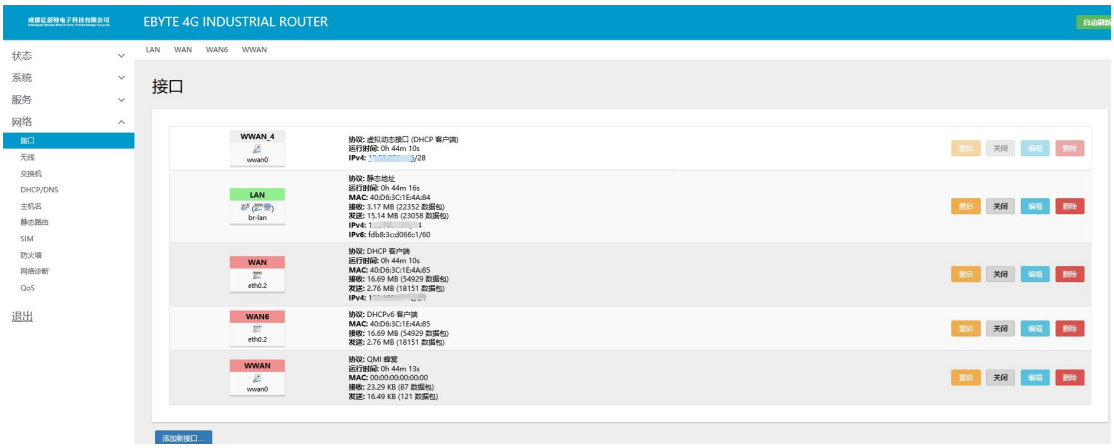


4.4 Network

In the Network Settings column, users can set and query network-related parameters, such as login gateway settings, wifi settings, SIM card properties, firewall, etc. The following will introduce some of the setting options commonly used by users.

4.4.1 Interface

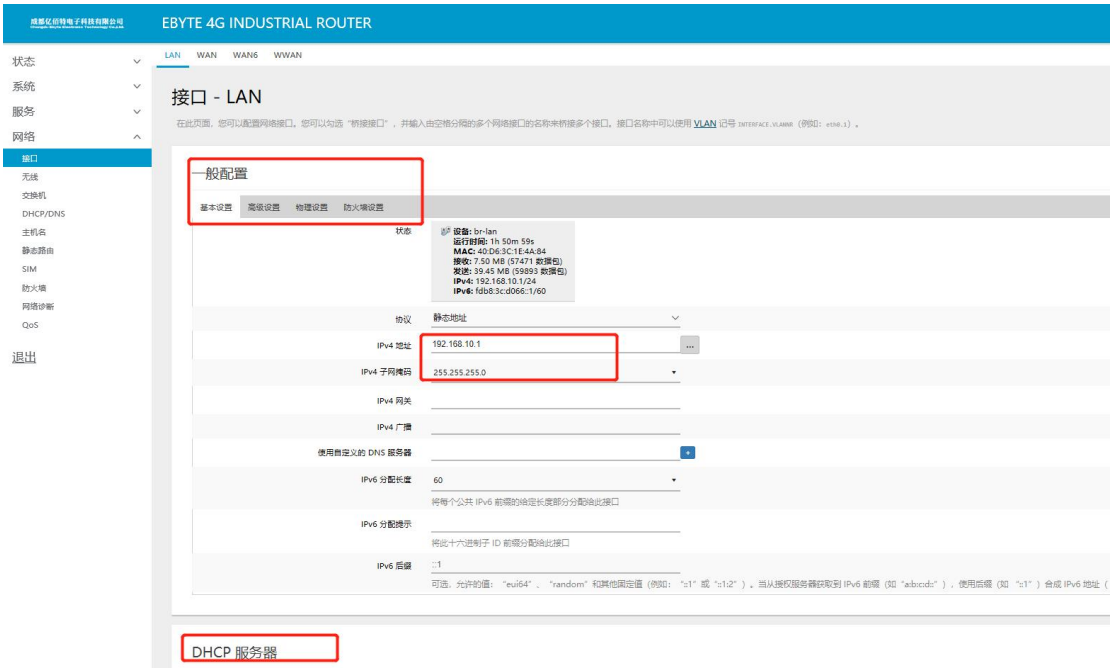
In Network-->Interface, users can set the LAN port, WAN port, and 4G network related settings, as shown in the figure below:



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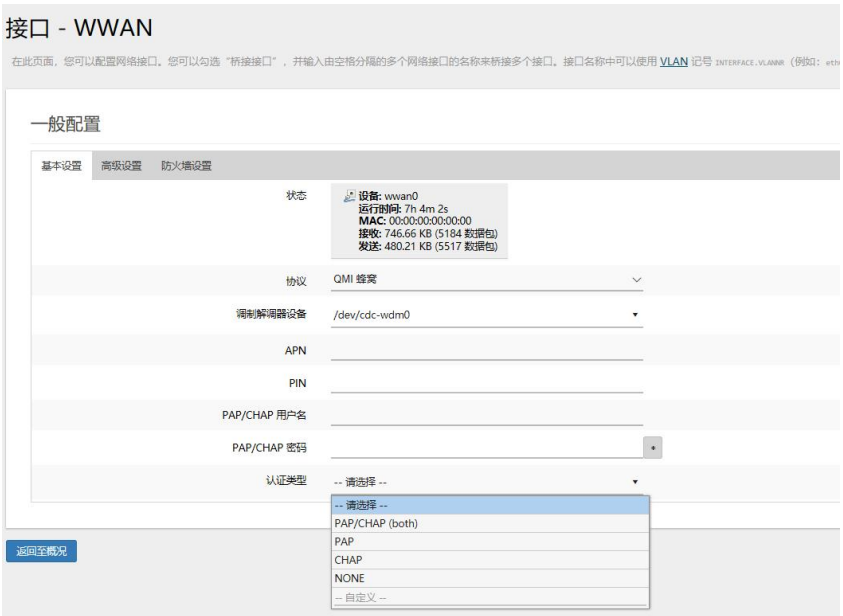
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In the LAN option, you can set the gateway, subnet mask, etc. of the 4G router, as well as make related settings for the DHCP function, as shown in the figure below.



In the general configuration, users can set the login IP, DHCP IP pool, number of clients, lease period and other settings of the 4G router. The default DHCP allocation IP range is 192.168.10.100~192.168.1.250, the default lease period is 12h, and dynamic DHCP IP allocation is enabled by default. Users can choose to disable it according to their needs.

For the 4G network interface, if the user is using an ordinary mobile phone card, there is no need to set the relevant APN information . If the user is using an APN dedicated network card with a special APN address , when creating a 4G interface , you also need to fill in the relevant APN information in the figure below .



This device also supports VPN clients (pptp , l2tp protocol types). Below, we will demonstrate the VPN client.

First, we click Add New Interface and get the following information. Here, we set the name to P PTP and select P P t P as the protocol .

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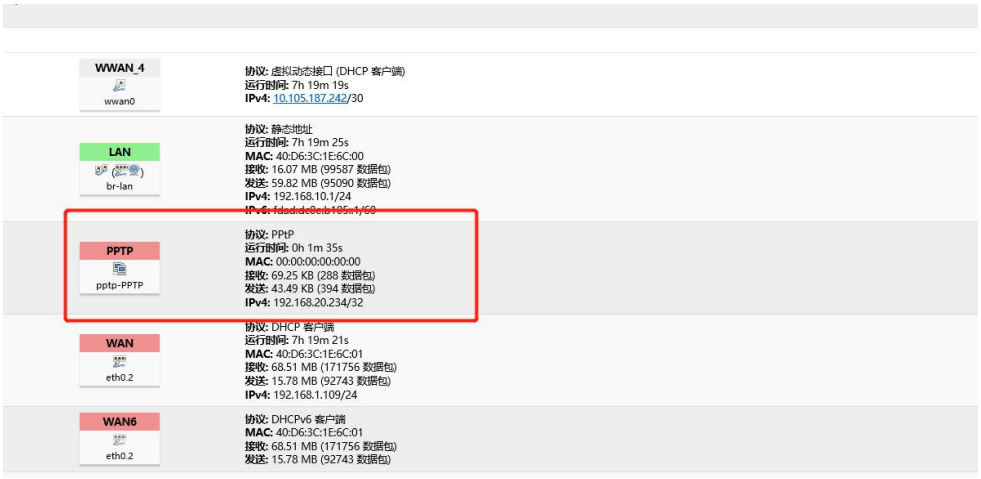
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In the basic settings, we enter the corresponding server IP , username and password, add the interface to the firewall, and save and apply.



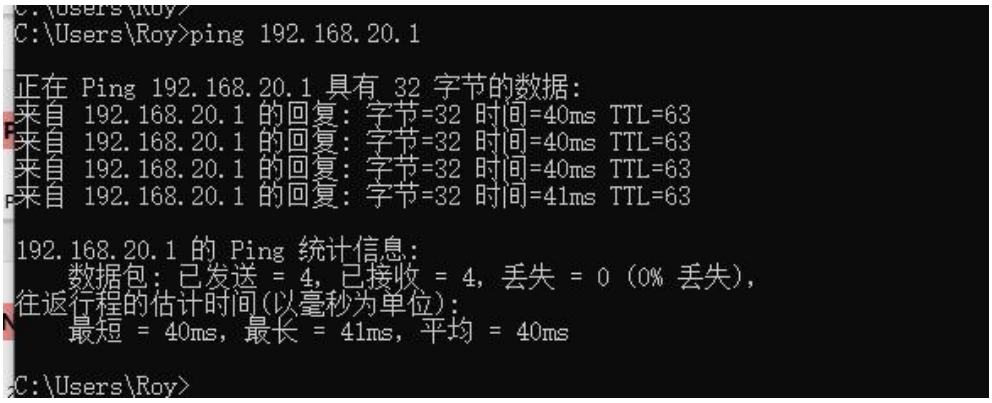
Wait for a while, and then the VPN interface is assigned an IP address by the server , indicating that the remote VPN server has been connected .



At this point, we can ping the intranet IP of the ping server .

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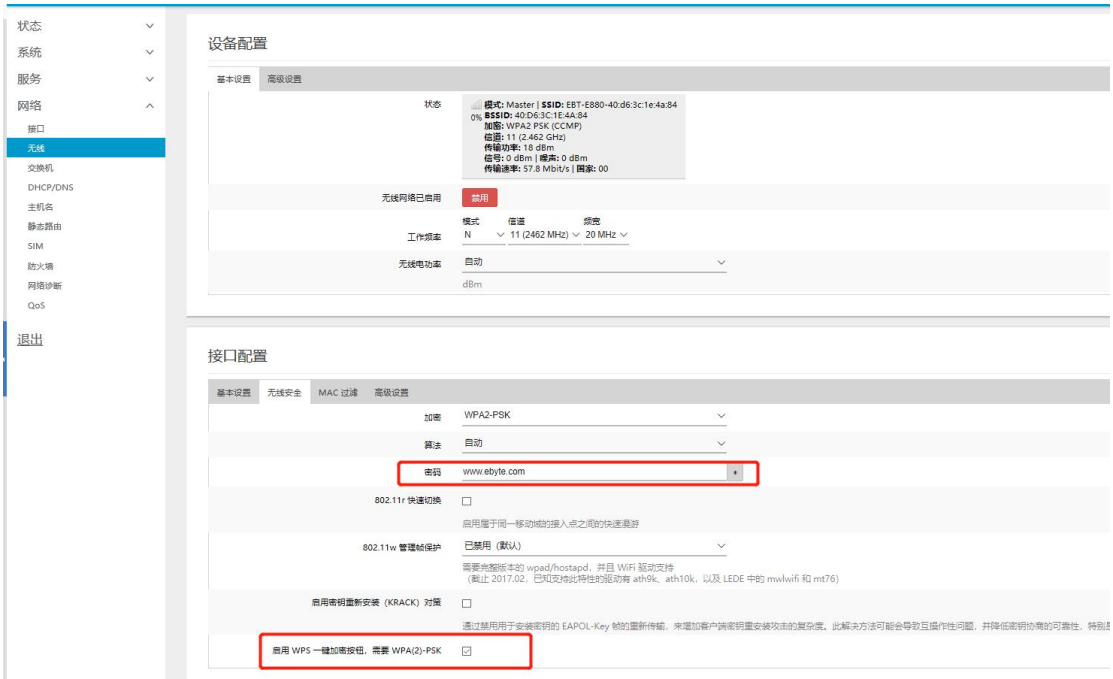


Similarly, the settings for VPN and PPP using L2TP are roughly the same.

We will not give an overview of other interfaces here. At the same time, we also recommend that customers do not easily set the relevant parameters of other interfaces unless they have special needs or are professionals.

4.4.2 Wireless

In the Network-->Wireless-->Wireless Overview option, click the Edit option and users can set and query wireless-related parameters, such as setting wireless passwords, working modes, MAC filtering, etc., as shown in the figure below.



In wireless WIFI, the default WIFI name is: EBT-E880-XX:XX:XX:XX:XX:XX

The characters after EBT-E880- are the MAC address of the device.

The default WIFI password is: www.ebyte.com

In addition, the 4G router has a WPS one-key Internet access function, which is turned on by default. If the user wants to connect to this device wirelessly, he needs to turn on the WPS button function of the WIFI device, and then short press the WPS button on the side of the device to easily connect to WIFI without entering a password.

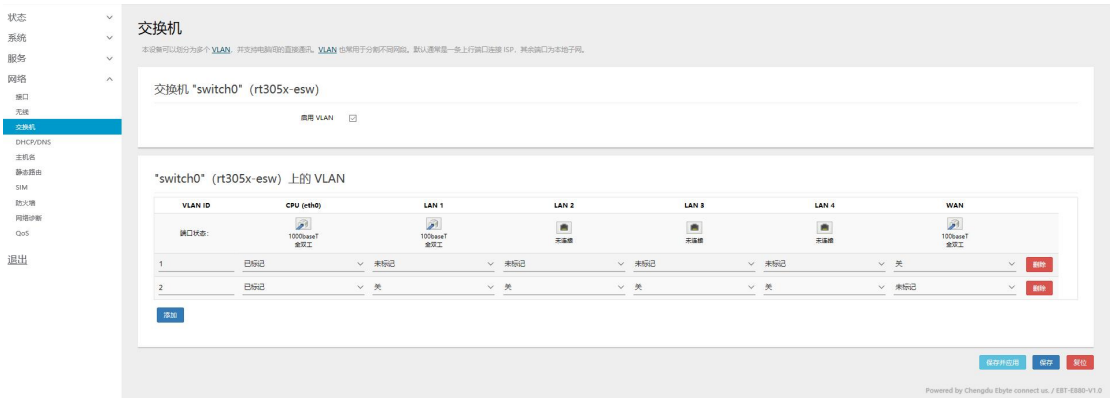
4.4.3 Switch

In Network->Switch Options, users can combine Network->Interface to set the type of network port (such as LAN port or WAN port) or enable/disable the network port. In later versions, relevant settings will be made in combination with load balancing. The

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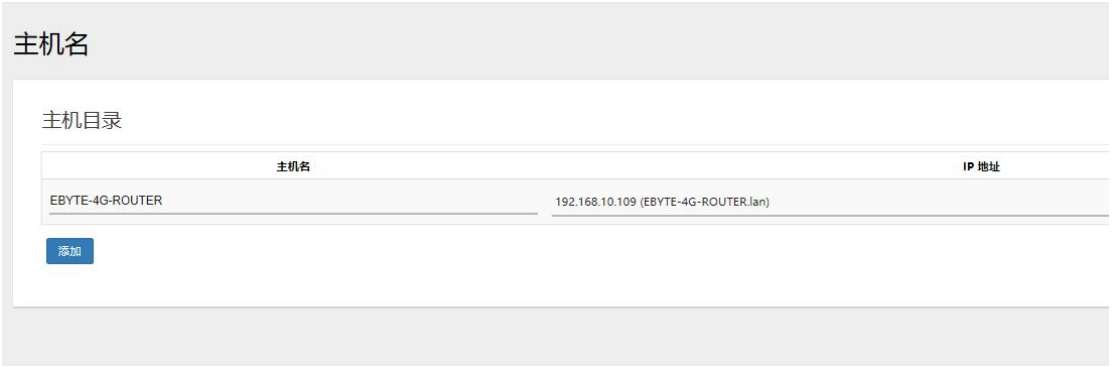
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setting interface is shown in the figure below.



4.4.4 Host Name

exist In the Network->Hostname option, you can implement custom domain name resolution. Users can fill in any host name (domain name) they want. Here we set "EBYTE-4G-ROUTER" as the host name, and the corresponding IP address is 192.168.10.109. In this way, the mapping between the host name and the IP address is realized. When EBYTE-4G-ROUTER is resolved locally, the actual resolution is 192.168.10.109 address.



Then, we ping the host name in the Windows command line as follows:



4.4.5 Static Routing

Static routing can achieve communication between two different network segments. Assume the following configuration:

The WAN port address of router R1 is 192.168.0.112, and the LAN port gateway is 192.168.10.1;

The WAN port address of router R2 is 192.168.0.147, and the LAN port gateway is 192.168.20.1;

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If the user wants to enable the PC under the R1-LAN port in the LAN to access the PC under the R2-LAN port and realize the communication function between different network segments, a static route can be added on R1 to achieve it. First, set the static route on R1, and then set it on R2 with the same principle, as shown in the figure below.



After adding, you should change the forwarding option from Reject to Accept in Network-->Firewall-->Basic Settings, as shown in the figure below.

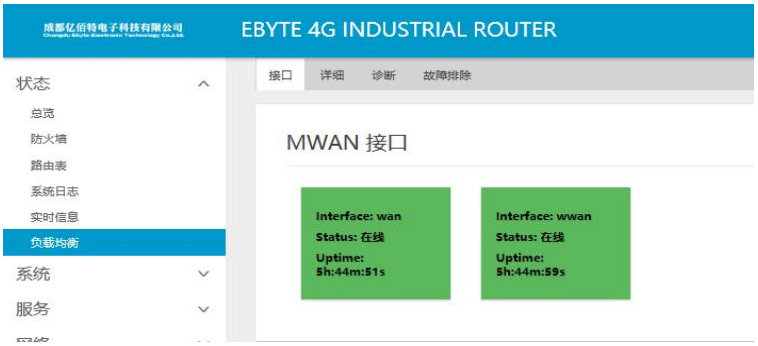


By default, no static routing function is added.

4.4.6 Load Balancing

The load balancing function can dynamically allocate the usage priority, enable, and even the traffic ratio between the multiple network interfaces of the router (such as wired Ethernet and 4G wireless). It enables users to make relevant allocation mechanisms based on the actual network environment. Below, we will explain the load balancing function.

On our router, two network interfaces are connected, namely wan (wired Ethernet) and wwan (4G wireless) . When we turn on the machine, we can view the running status of the two interfaces in Status - > Load Balancing Selection.



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Here, users can use other sub-options to handle some interface exceptions or set some parameters.

In the option Network-->Load Balancing, users can set the relevant parameters of load balancing, as shown in the figure below.



In this device, we have set up two multi-port load balancing configurations for users by default. Below, we will give a brief explanation of the relevant sub-options of this function for the load balancing composed of these two interfaces. After understanding, users can learn to configure their own rules.

interface:

It is used to add, delete or configure all the external network access interfaces that need to be load balanced, and configure the related parameters of interface status definition and detection.

Through the edit button, you can view the relevant settings between each interface. Some parameters are explained below.

[Tracking IP]: Determine whether the device's external network access is normal by detecting and tracking the destination host being pinged, which is usually a public IP.

[Tracking Reliability]: Specifies how many IP addresses can be connected before the interface is considered online.

[Ping Count]: The number of times the external network is pinged.

[Ping Timeout]: It is considered a timeout when the ping to the external network fails or there is no response.

[Ping Interval]: How often to ping the destination host IP.

[Interface Offline]: When the number of Ping failures reaches this value, the interface will be considered offline.

[Interface Online]: When the number of successful Ping attempts reaches this value, the interface that has been considered offline will be brought back online.

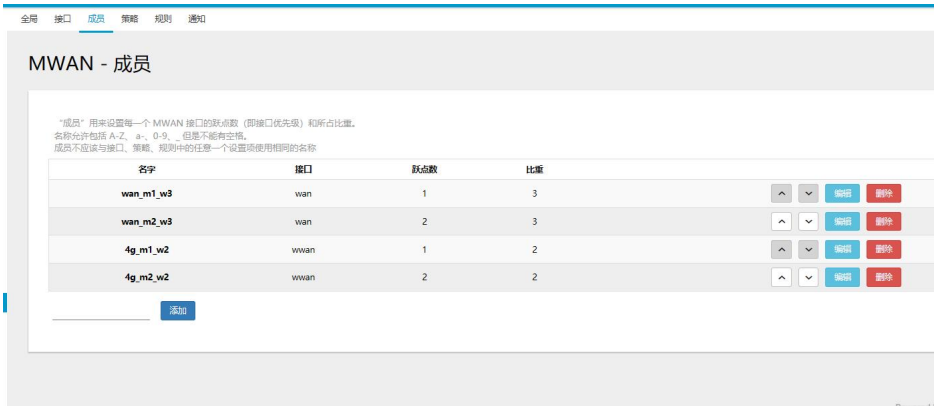
[Metric]: Displays the priority of this interface among multiple interfaces (the smaller the metric value, the higher the priority). It cannot be modified here.

member:

It is used to set the number of hops (i.e. interface priority) and the weight of each MWAN interface. The member naming rule is generally: "Interface Name_Number of Hops_Weight Ratio". As shown in the figure below.

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Four members are defined above, each with a different combination of hop counts and weights, which provide services for the subsequent strategies.

Strategy:

Used to group members and tell MWAN how to distribute traffic using this policy in the "rule". Members with lower hops will be used first. Members with the same hops divide the traffic in proportion according to the weight. Members with higher weights among the load-balanced members will be allocated more traffic. This device has 5 default policies, as shown in the figure below.



The explanations are shown in the following table:

name	illustrate
w an _only	Only use traffic from the wired Ethernet interface
BA lanced	from both Ethernet and 4G wireless interfaces is captured in a 3 :2 ratio
4g _only	Only use traffic from the 4G wireless interface
wan_1_4g_2	Wired first, 4G backup
4g_1 _ wan_2	4G first, wired backup

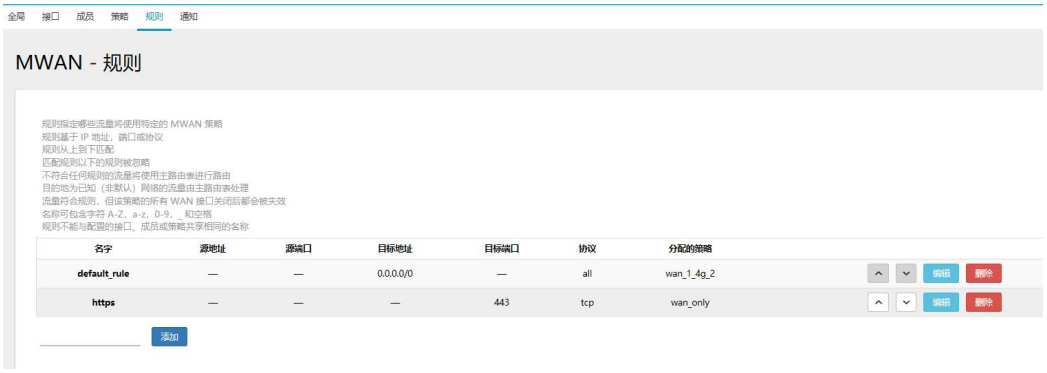
rule:

It divides traffic into specified "policies" based on IP address, protocol, and port. Rules are matched in order from top to bottom. Except for the first rule that can match a communication, other rules will be ignored. Communications that do not match any rules will be handled by the system default routing table.

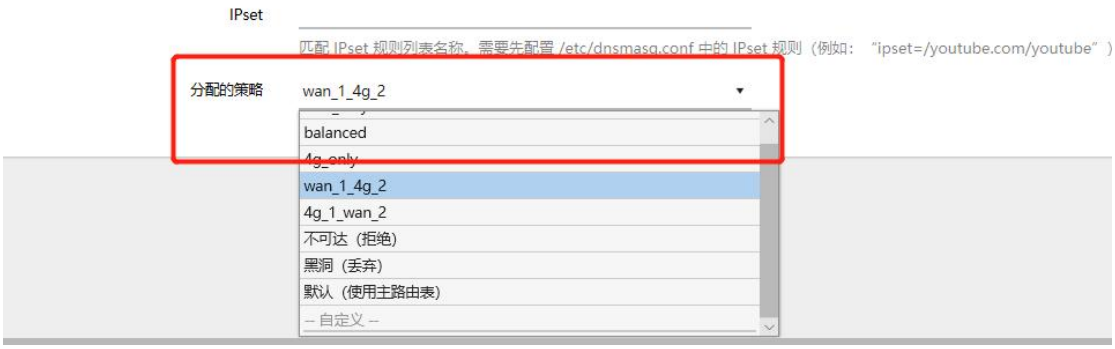
As shown in the figure below, all target addresses or protocols follow the wan_1_4g_2 strategy, which means that wired network data is used first. When the wired Ethernet fails or there is no data flow, traffic is obtained from the 4G interface . When the first rule is not met, the following one is matched, otherwise it will be ignored.

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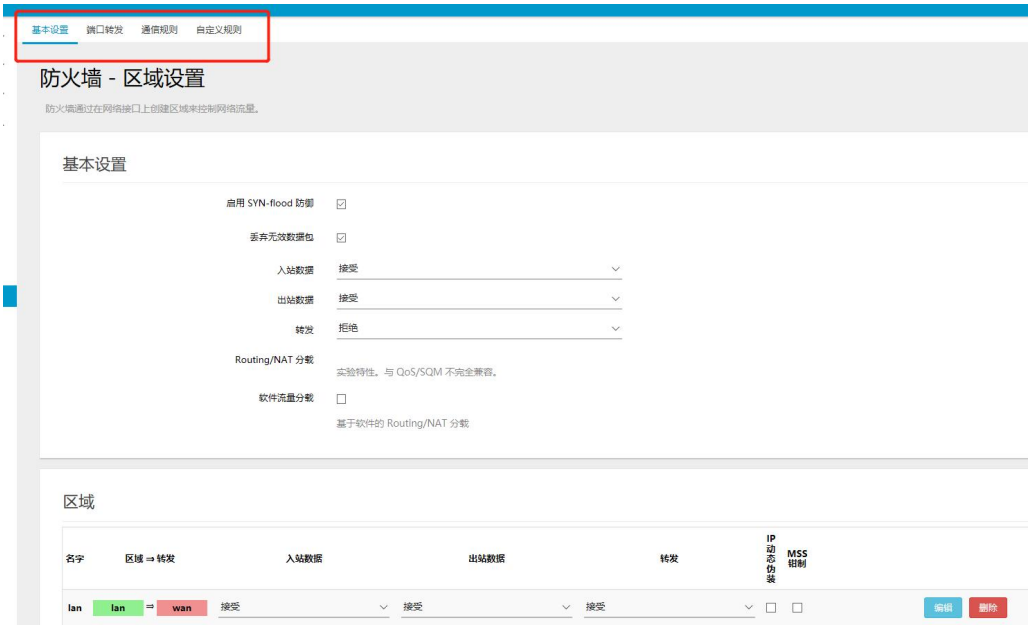


If the current policy type meets the user's needs, the user needs to click the edit button in the default_rule rule in the above figure to modify the corresponding policy.



4.4.7 Firewall

In the Network->Firewall option, make settings related to network security and communication rules, as shown in the figure below.



4.4.7.1 Dynamic IP spoofing (MASQ)

MASQ also means MASQUREADE, address masquerading, which converts the source IP of the data packet leaving the router into the IP address of an interface on the router. As shown in the figure, check IP dynamic masquerading, and the system will modify

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the source IP address of the data packet leaving the router to the IP address of the WAN port. Here, the default mode is to enable IP dynamic masquerading.



4.4.7.2 Communication rules (SNAT&DNAT)

In Network -> Firewall -> Communication Rules, there is a column called Source NAT. Source NAT is a special form of packet masquerading that changes the source address of the data packet leaving the router. For example, the source IP address of the data packet leaving the router is fixed to 192.168.1.1 (real IP: 192.168.10.1). Its setting interface is shown below. The one named EBYTE is the display interface after setting, and the one named TEST is the display interface when adding.



In this device, Source NAT is not added by default. When using this function, users can make relevant settings according to relevant needs.

DNAT is the replacement of the destination address, which replaces the destination IP address of the data packet entering the router whose destination address is the WAN port IP with the IP address set by the user.

4.4.7.3 Port forwarding

Port forwarding allows computers from the Internet to access computers or services within a private LAN. For example, to forward TCP data on port 82 on the external network to port 82 on the internal network 192.168.10.119, the following settings will be used.



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4.4.8 Network Diagnosis

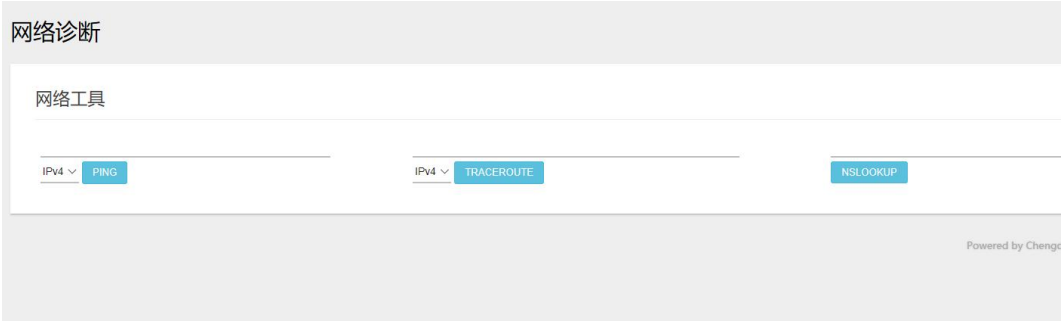
In the Network->Network Diagnosis option, online diagnosis function is supported:

Ping tool, directly on the router side, performs a ping test on a specific address.

Router parsing tool, which obtains the routing path when accessing the address.

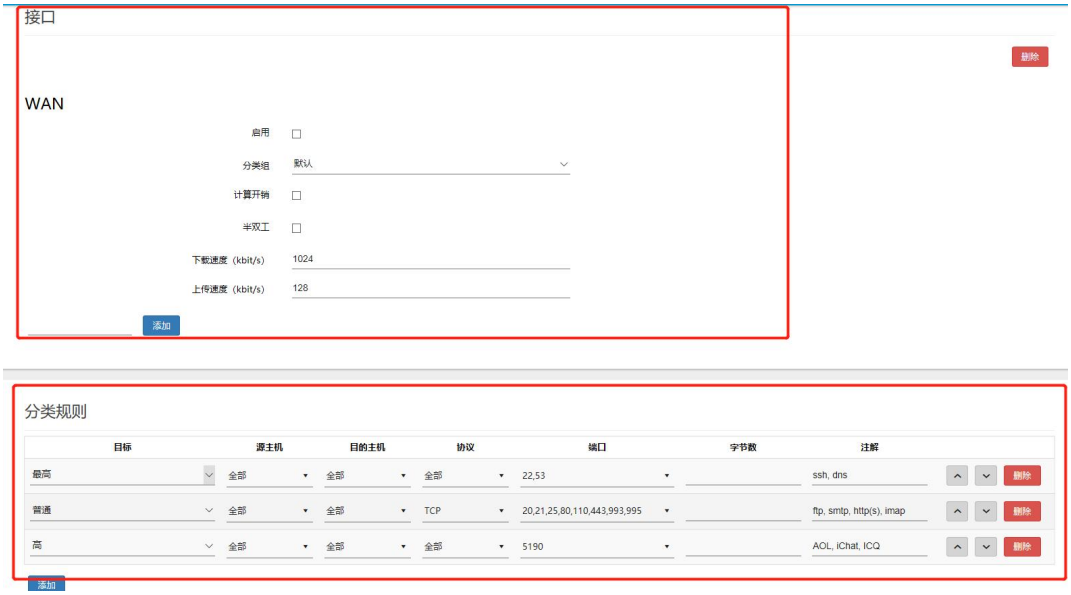
DNS viewing tool can resolve domain names into IP addresses.

As shown in the figure below.



4.4.9 Flow Control Management (QoS)

In the Network->Qos option, you can sort traffic packets according to network address, port or service, and set network speed limit for a certain interface, as shown in the figure below.

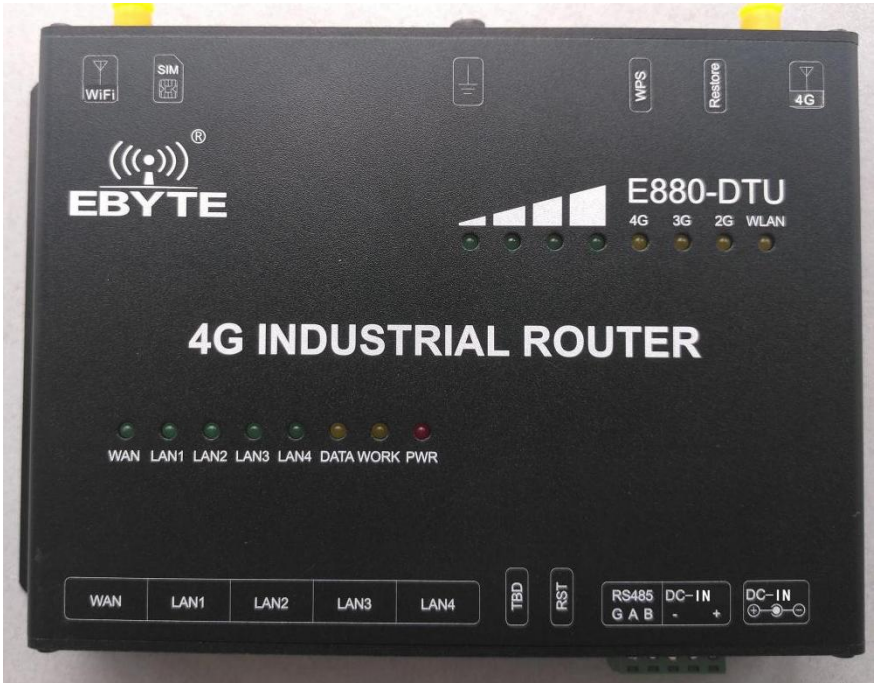


5 Equipment Panel Labels and Function Settings

The actual picture of the device panel (front view) is shown in the figure below.

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5.1 LED Indicator

The description of each LED indicator on the panel is shown in the following table.

name	illustrate
Power	Always on after power on
WORK	After booting, it flashes at a frequency of 1S
WAN	The WAN port is plugged in and the other end of the cable is connected to a device, and the light is always on.
LAN1-4	The LAN port is plugged in, and there is a device at the other end of the cable, and the light is always on.
WLAN	When the WIFI network is successfully started, it is always on. When there is a device connected or data is exchanged, it flashes
2G/3G/4G	The current network attribute indicator light, when there is no service, all lights are off, with at most one light on
Signal strength 1-4	Indicates the signal quality of the current network properties. The more lights are on, the stronger the signal is.
DATA	Reserve

5.2 Button Settings

The functions and usage instructions of each physical button on the panel are shown in the following table.

name	illustrate
RST	Hardware reset: short press this button to restart.

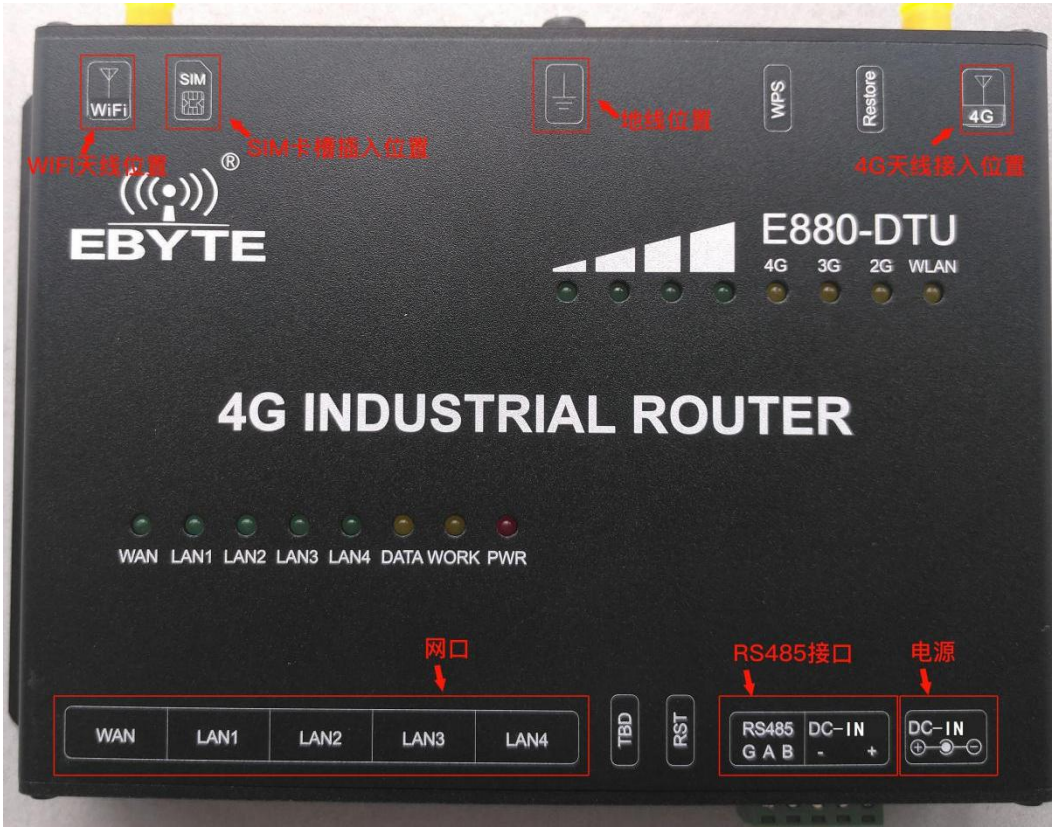
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WPS	WPS Internet access function: short press this button and use the WPS button function on the access device to achieve password-free Internet access
Restore	Press and hold the button for more than 5 seconds to restore the factory settings.

5.3 Other markings

In the panel, other logo descriptions are shown in the figure below.



6 AT SMS Command Description

This device also supports sending AT commands via SMS to remotely control the 4G router. The following are the instructions and function descriptions.

AT SMS content	Functional Description
EBYTESMSAT+ATI	Version Query
EBYTESMSAT+QCCID	Query the QCCID/ICCID number of the 4G module
EBYTE SMSAT+IMEI	Check IMEI number
EBYTESMSAT+CSQ	Query the current 4G signal quality
EBYTESMSAT+RELD	Restart settings received message reply + RLAD RUN
EBYTESMSAT+REBT	Restore factory settings Receive message reply + RLBT RUN
EBYTESMSAT+QNWINFO	Current connected network properties
EBYTESMSAT+CIMI	SIM card CIMI number
EBYTESMSAT+CNUM	Query the current 4G module number
EBYTESMSAT+QSPN	Check current telecom providers

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7 Revision History

Version	Revision Date	Revision Notes	Maintainer
1. 3	2025-05-27	Modified Version	huaa

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