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Wi-Fi Serial Device Server

USR-W630s

User Manual



V2.0

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1. Introduction

USR-W630s is a WIFI5 industrial wireless client with high speed, wide connection, low latency and high stability. It can carry more than 8 WIFI clients in AP mode. It has rich hardware interfaces: 1*RS232, 1*RS485, Ethernet port (1LAN+1WAN/LAN), WiFi antenna, supports AP/AP+STA/bridging mode, and can provide stable and reliable networking solution for different scenarios and different industries. .

This product adopts industrial-grade standards, wide temperature and voltage, strong hardware protection, and has passed a number of harsh environment tests; it has 1*RS232 and 1*RS485 serial ports which can work at the same time, supports MODBUS, MQTT, TCP, UDP and other transmission protocols;it has both software and hardware watchdogs, which can ensure the device's stable working; it can adapt to different industry scenarios and still operate stably and reliably in harsh and harsh environments.

This product DIN rail mounting installation, and is widely used in scenarios that require WIFI centralized large-scale connection and low-latency requirements, such as: AGV cars, inspection robots, sorting manipulators, smart warehousing, smart Medical care, smart factories, video surveillance, unmanned parking lots, industrial automation, smart transportation, smart cities and other scenarios.

1.1. Features

Stable and reliable

◆Fully industrial design, protection grade IP30;

◆Supports desktop placement, wall-mounted installation;

◆Wide voltage DC 9-36V input, with power reverse protection;

◆Industrial grade design, wide temperature -25℃~+70℃ , EMC level 3 protection;

◆Built-in hardware watchdog, fault self-detection, self-repair, and firmware backup and restoration functions to ensure system stability and not crash;

Flexible networking

◆Support dual-band WIFI (2.4G and 5.8G) AP/AP+STA/bridge mode arbitrary networking;

◆Supports 1*10/100M WAN/LAN and 1*10/100M LAN port;

◆Supports RS232/RS485, making serial port data collection easier;

◆Compatible with mainstream industrial protocols: TCP/UDP/MODBUS/HTTP/MQTT/SNMP, etc.;

◆Supports connection to mainstream cloud platforms such as Alibaba Cloud and Amazon Cloud, allowing devices to easily connect to the cloud;

Powerful

◆Supports a complete anti-drop mechanism to ensure the stability of data transmission;

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◆Supports wired/STA multi-network intelligent backup function to keep links open at all times;

◆Supports PUSR Cloud service. You can open the built-in web page of the wireless client through PUSR Cloud for remote operation and maintenance, which facilitates centralized management of equipment systems and improves operation and maintenance efficiency;

◆Supports SNMP, NTP time calibration, MAC-IP binding, anti-question restrictions and other features Function.

2. Get Started

2.1. Login web page

Power on the USR-W630s device，connect PC to USR-W630s via LAN port or via Wi-Fi, users can login router via Chrome or the other browser. The default network parameters are shown in the following table:

Table 1. Default network parameters

Parameter	Default value
2.4G SSID	USR-W630S-xxxx
5.8G SSID	USR-W630S-xxxx_5G
LAN IP	192.168.1.1
Username	admin
Password	admin
Wi-Fi password	None

Note:

Open the browser, enter 192.168.1.1 in the URL blank, and press Enter, it will navigate to the following webpage. After entering the login password, clicking login, the web page will show configuration page of USR-W630s.

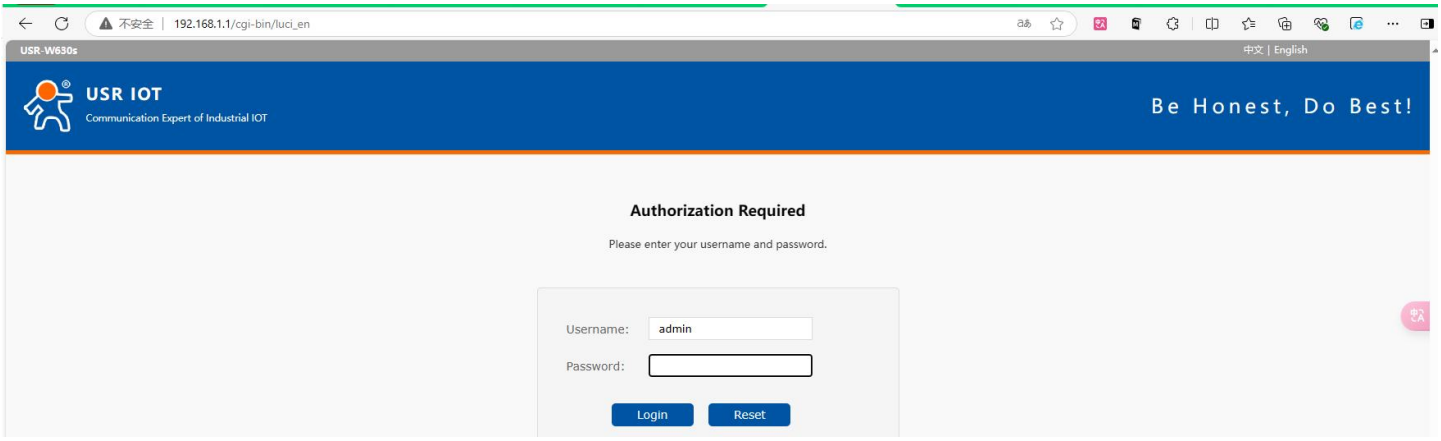


Figure 1. Login Page

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2.2. Brief introduction of the web page

On the left side of the web page is a tab page where you can specifically set some parameters of the module.

- ➢Status: Mainly displays the device's name information, firmware version, routing table, running status, serial port communication status, etc.;
- ➢Network: WAN, LAN, network switching, wireless WiFi hots-pot, wireless client, DHCP, network port mode, network diagnosis;
- ➢Serial port server function: serial port parameter setting, communication protocol setting, network AT configuration, serial port heartbeat configuration, no data re-connection and restart settings;
- ➢Service functions: manned cloud service, DDNS, SNMP service;
- ➢System: host name/password settings, scheduled restart, HTTP port settings, NTP time synchronization, access restrictions, logs, backup/upgrade, factory reset, restart, etc.

3. Status & System

3.1. System Status

Overview of product information, memory usage, network connection status, connected sites, serial port server communication, routing table, DHCP allocation.

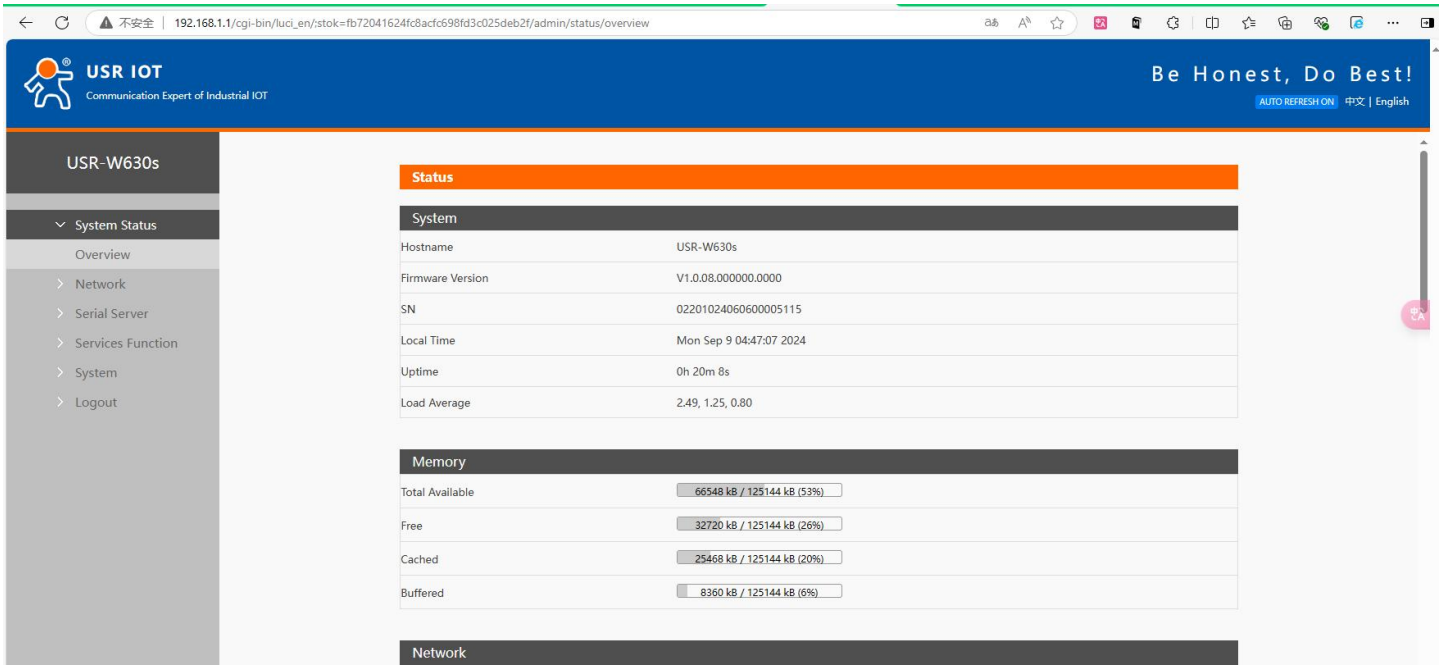


Figure 2. System Status

3.2. Name and password

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The default password can be changed, and the default password is root, and the username cannot be set. This password is the management password (webpage login password). The default host name of the wireless

client is USR-W630s-XXXX.

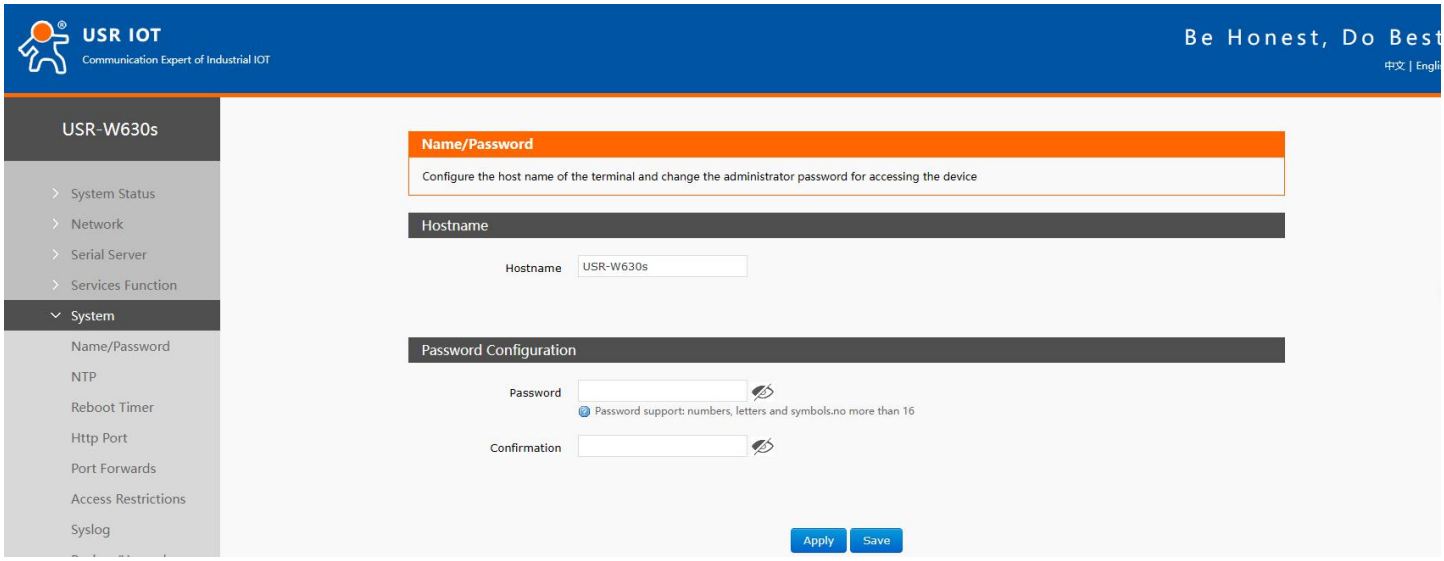


Figure 3. Name and password settings

3.3. Reboot timer

The wireless client can be managed to restart regularly at any time of the day, week, or month, and the running cache can be cleared regularly to improve the stability of the wireless client operation. The page setup is as follows.

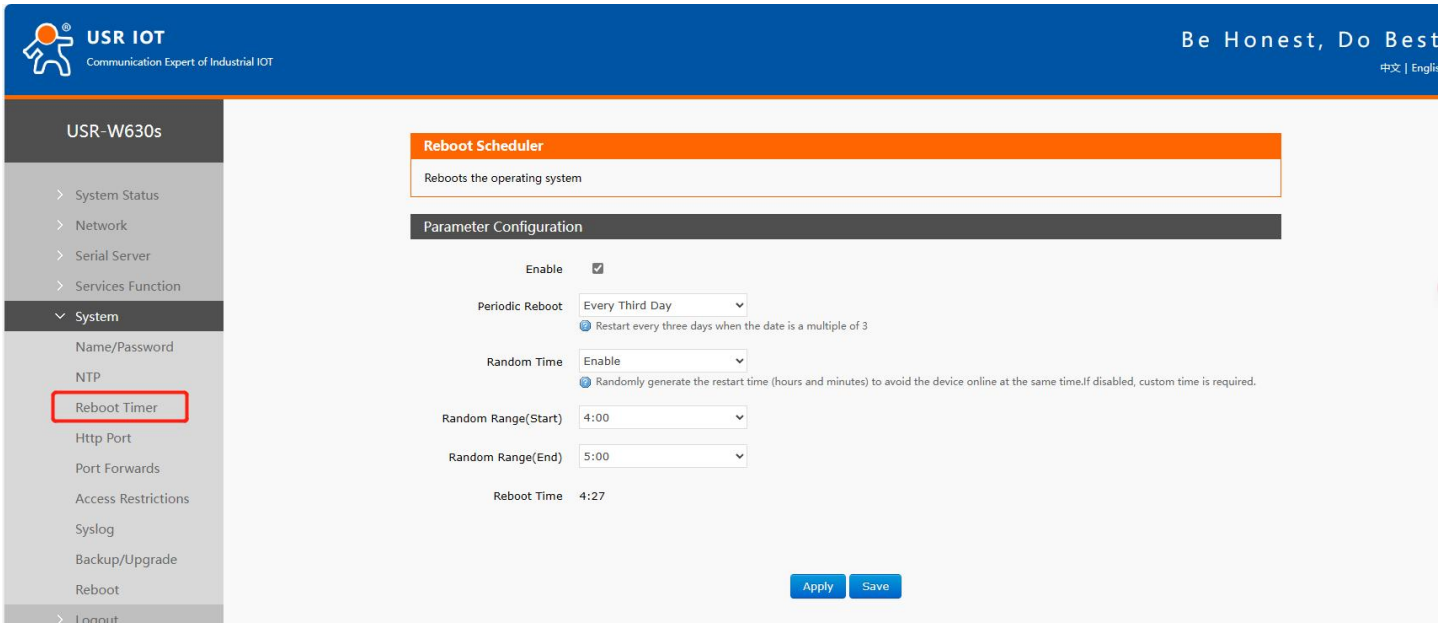


Figure 4. Restart Schedule Settings

3.4. HTTP port

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USR-W630s can set the login web port number to prevent non-operation and maintenance personnel from easily logging into the wireless client for configuration.

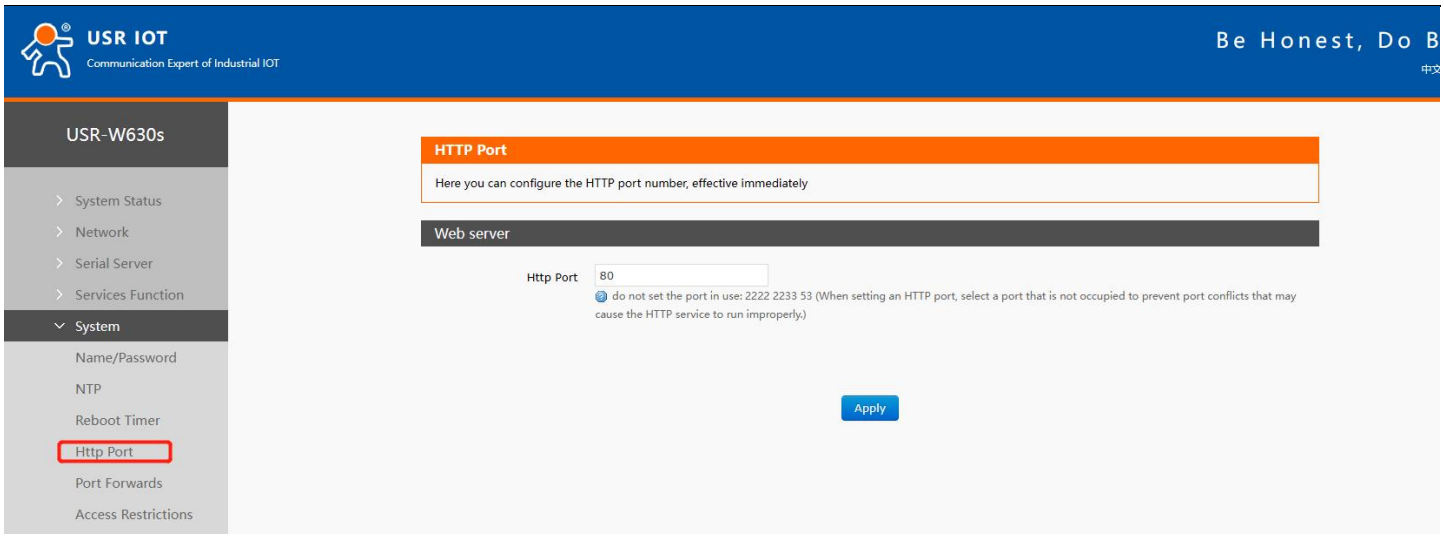


Figure 5. HTTP Port settings

3.5. NTP

➢Time synchronization: The local time can be synchronized through "Sync Browser Time" and the default time zone of the wireless client can be set.

➢NTP calibration: The wireless client can perform network time adjustment, and the NTP client function is enabled by default.

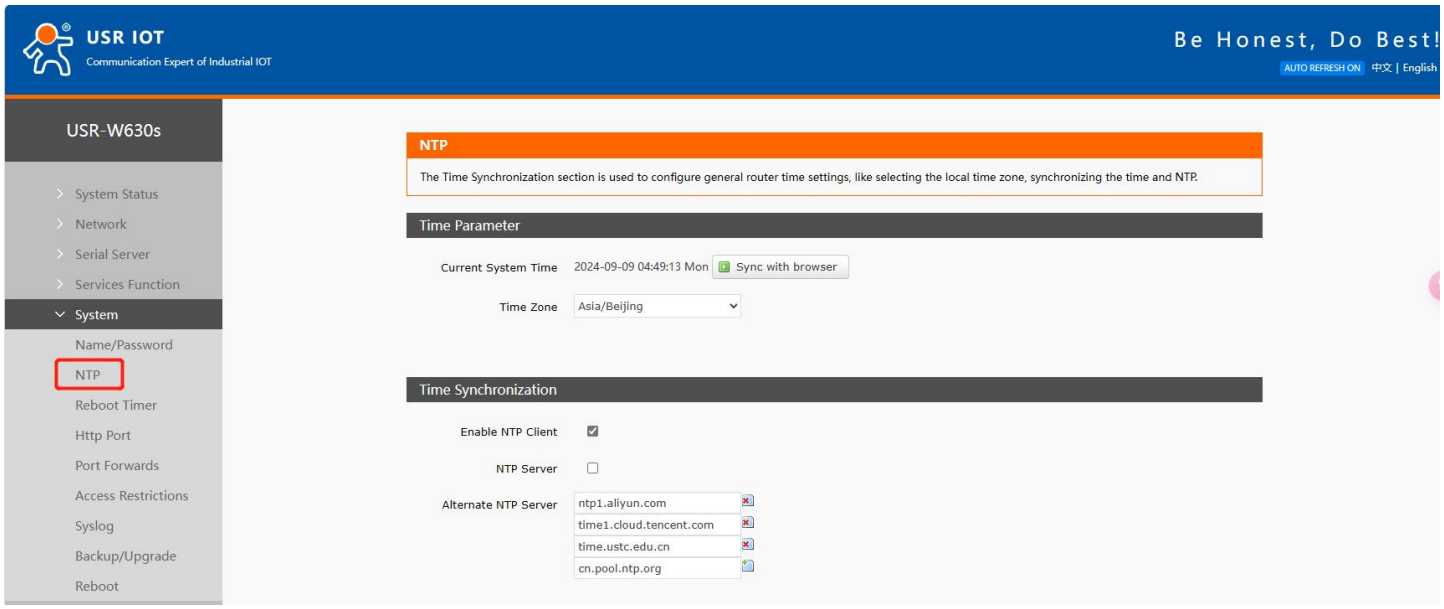


Figure 6. NTP settings

3.6. System log information

Log is divided into remote log and local log, located in the system-log function menu.

Remote log

➢Remote log server: IP of the remote UDP server. When the IP is 0.0.0.0, remote log is not enabled;

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➢Remote log server port: remote UDP server port;

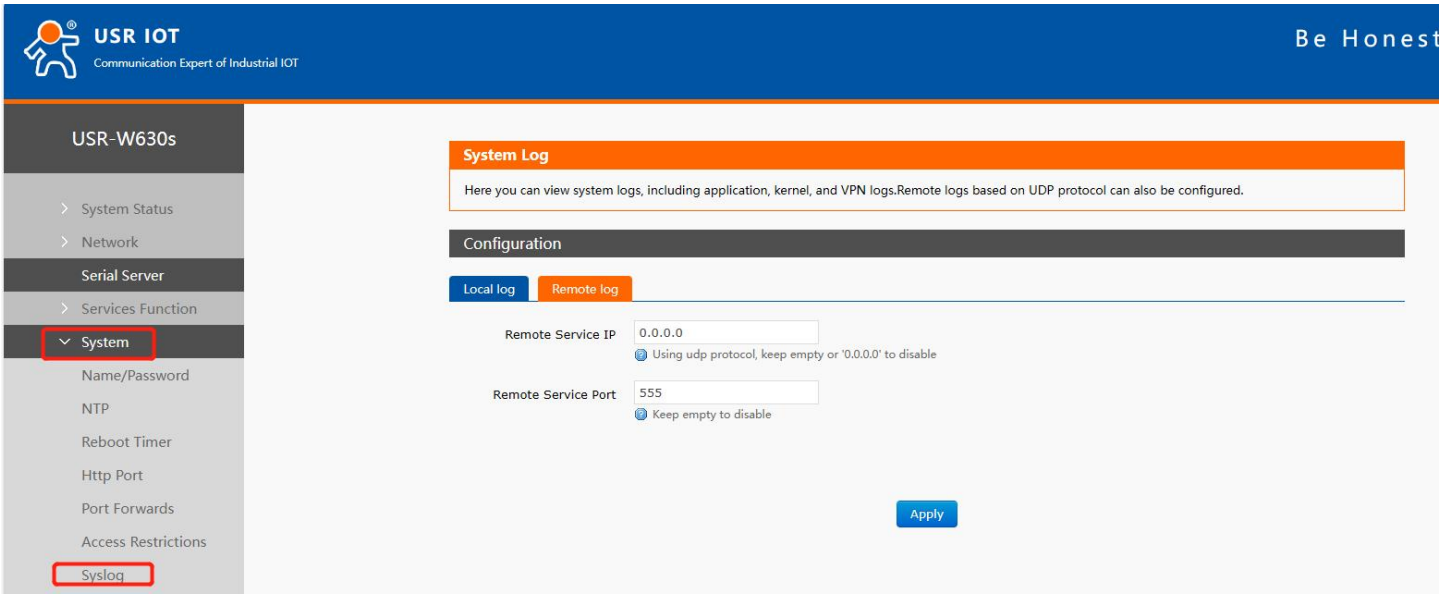


Figure 7. Remote Log

Local log

➢Kernel log level: supports debugging, information, attention, warning, error, fatal error, alert, emergency, a total of 8 levels; debugging is the lowest and emergency is the highest in order; Application log level: same as above;

➢Logs (kernel, application) support instant viewing, clearing, and log file export.

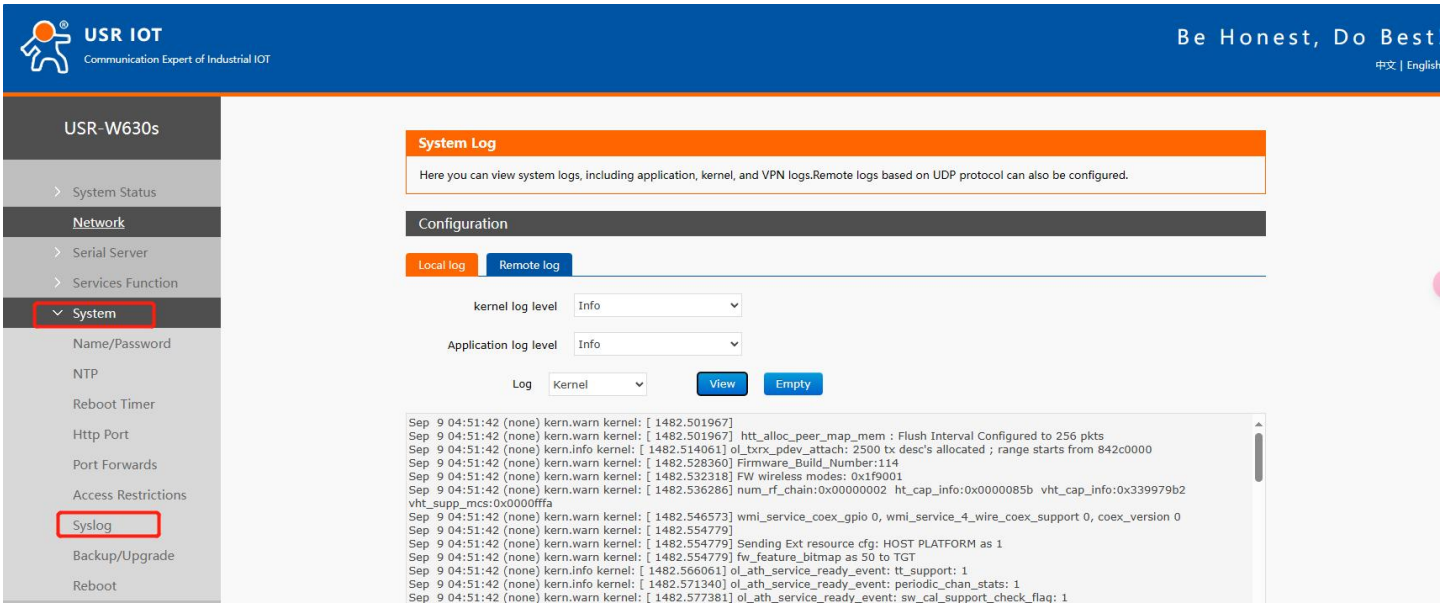


Figure 8. Local Log

3.7. Parameters backup/firmware upgrade

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Parameter backup: Click the "Download Backup" button to back up the current parameter file as a compressed package file, such as backup- USR-W630s-2022-04-20.tar.gz, and save it locally.

Parameter upload: Upload the parameter file (such as backup-USR-W630s-2022-04-20.tar.gz) to the wireless client, then the parameter file will be saved and take effect.

Note:

- ➢The configuration file of USR-W630s must be imported, otherwise configuration confusion may occur;
- ➢Try to import and configure the same version of firmware. Large version differences may cause configuration confusion.

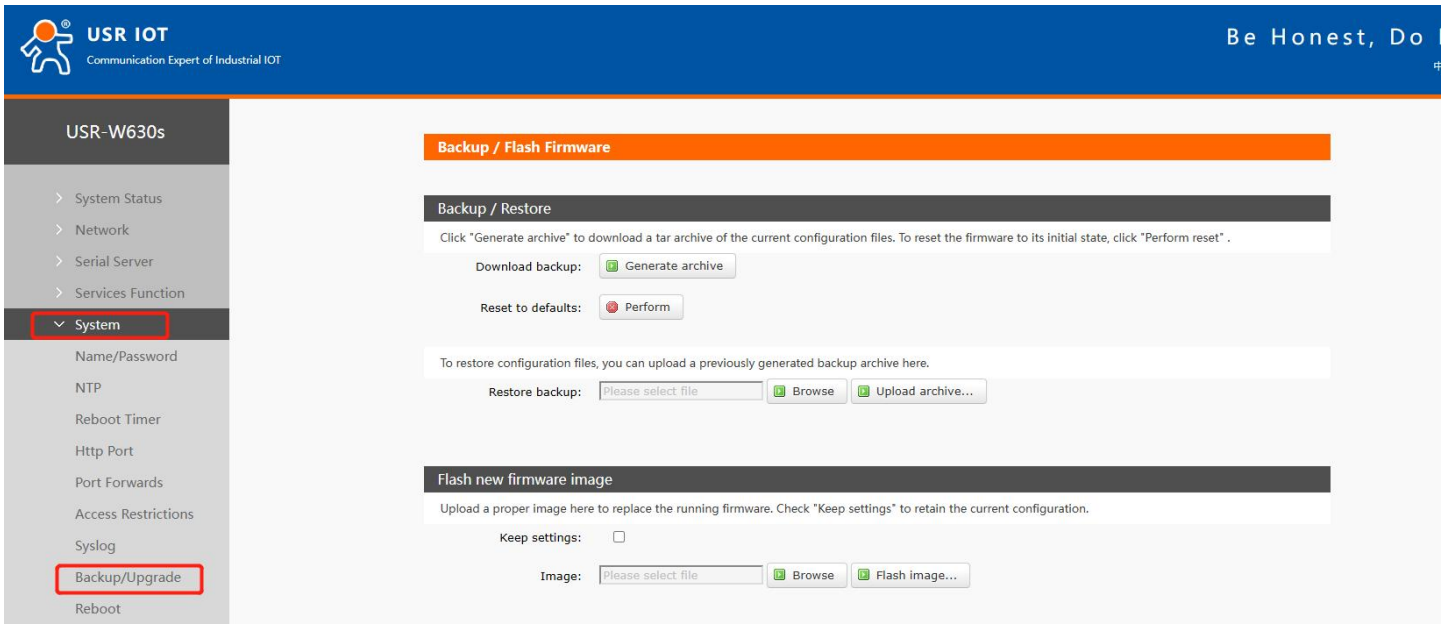


Figure 9. Parameters backup/firmware upgrade

4. Network introduction

4.1. WAN interface

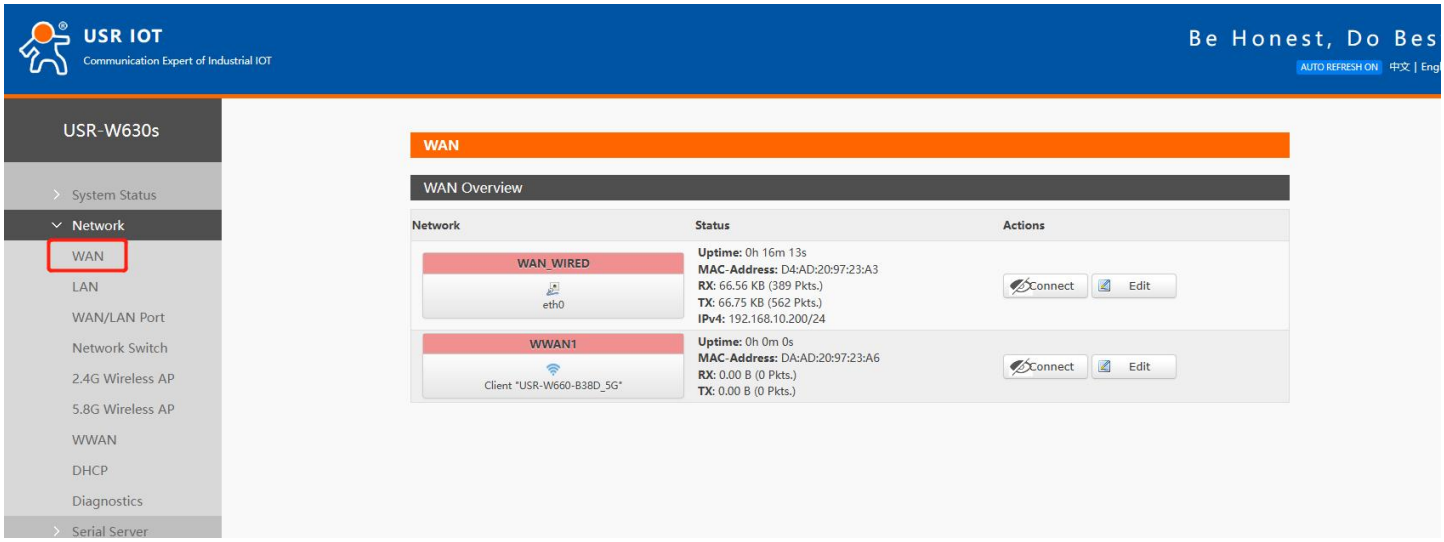


Figure 10. WAN Interface settings

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Note:

➢1 wired WAN port, 1 wireless WAN port, the WAN port is the wide area network interface;

➢Support DHCP client, static IP, PPPOE mode (only wired WAN port);

➢Default DHCP client;

➢The WAN port IP cannot be in the same network segment as the LAN port IP;

➢The network port of this WAN port can be set to LAN, which is convenient for customers to communicate with multiple devices on the LAN. For specific settings, please refer to the network port mode configuration.

4.1.1. DHCP Client

The upper-level router must enable the DHCP service, and use a network cable to connect the upper-level router LAN and this wireless client WAN, so that W630s can obtain the IP.

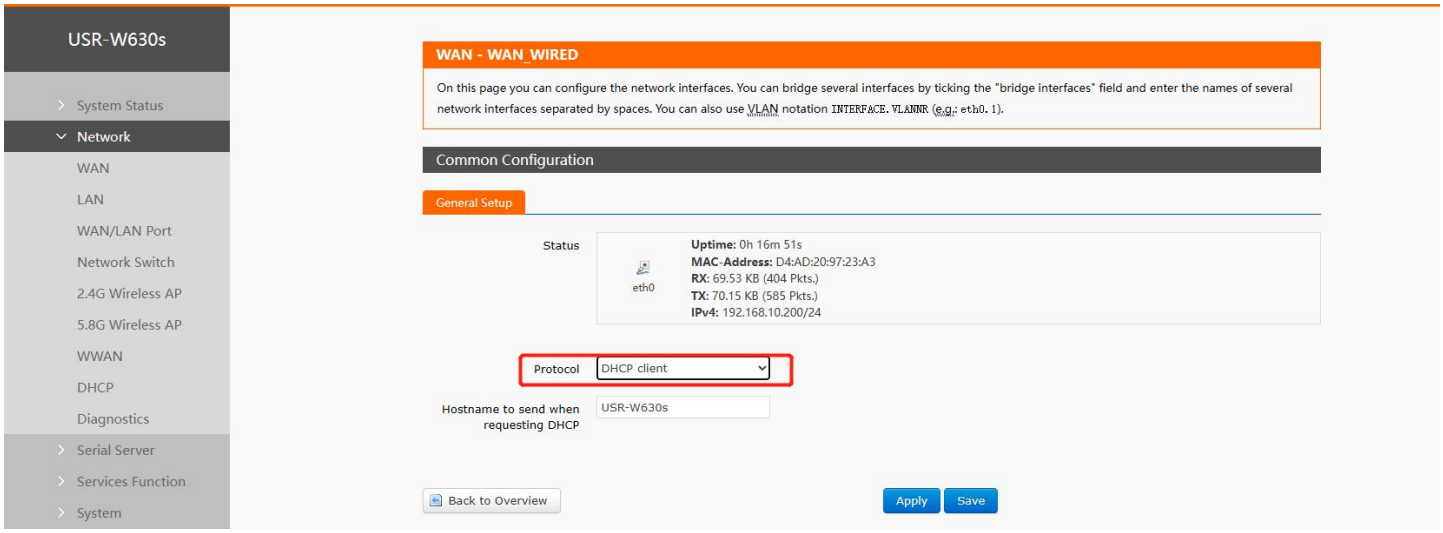


Figure 11. DHCP Client settings

4.1.2. Static IP

Fill in the IP address in the same network segment as the upper-level router. The IP, gateway and subnet mask must be filled in correctly. If it is a dedicated public network cable, the IP, subnet mask, gateway and DNS server must be filled in correctly according to the operator's IP, subnet mask, gateway and DNS server.

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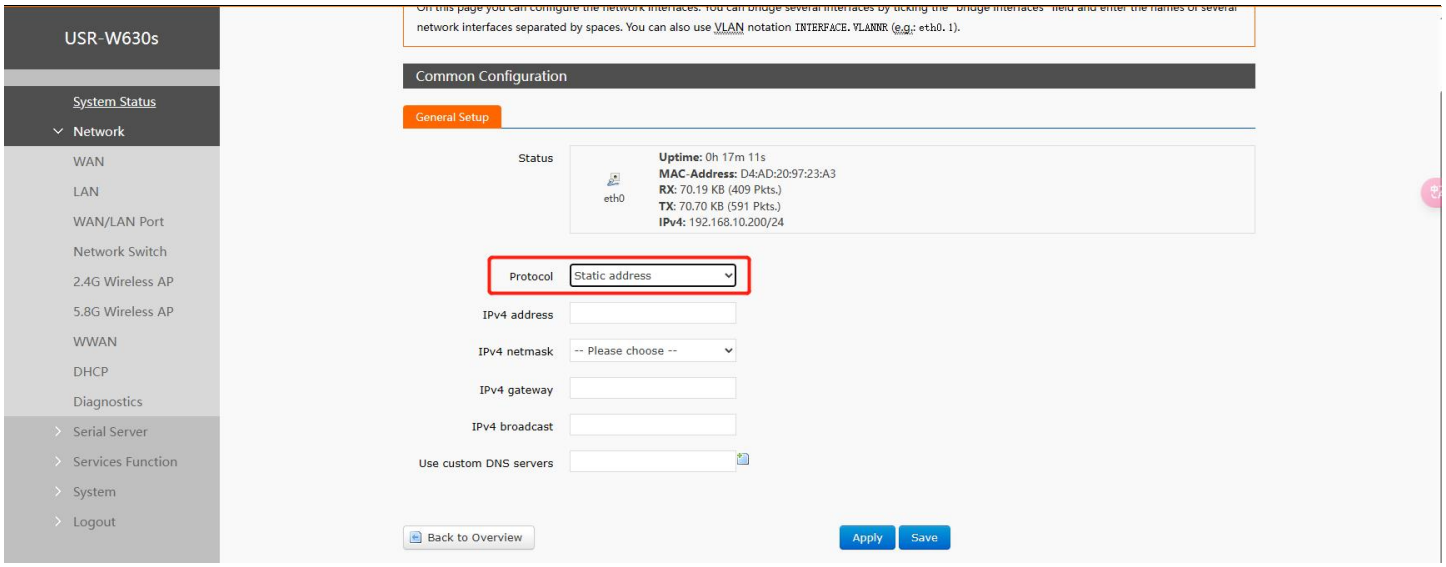


Figure 12. Static IP settings

4.1.3. PPPoE

Only wired WAN can be set, which needs to be filled in according to the correct user name and password given by the operator.

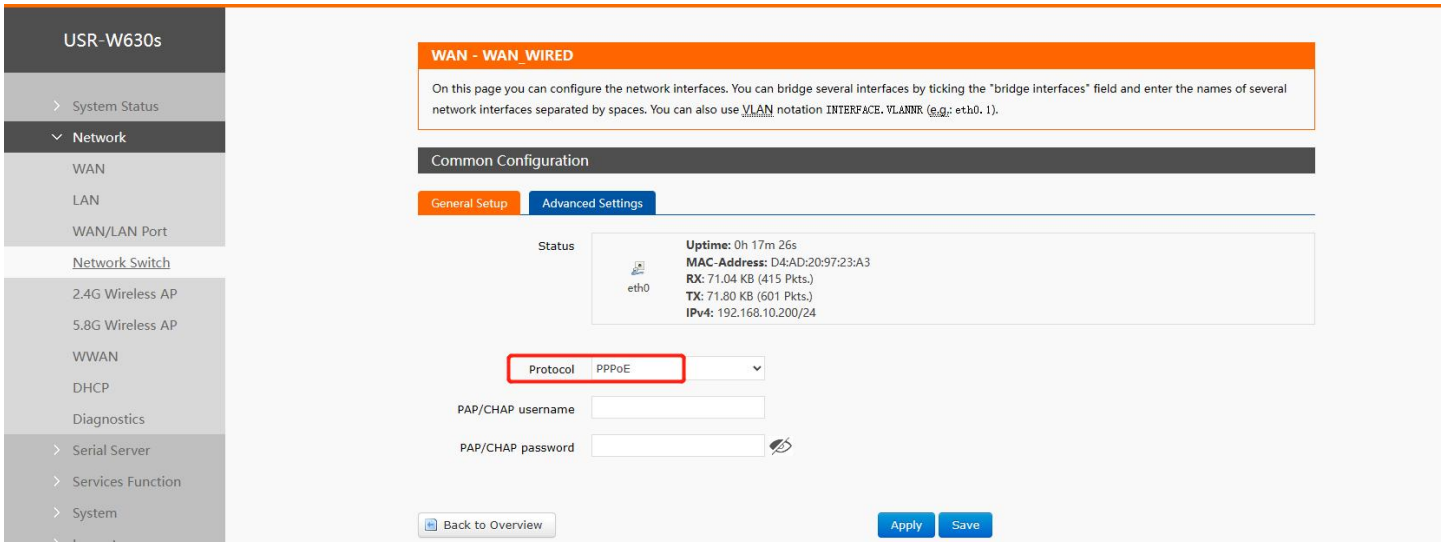


Figure 13. PPPoE settings

4.2. LAN interface

The LAN port is a local area network. There is one LAN port and one WAN/LAN port.

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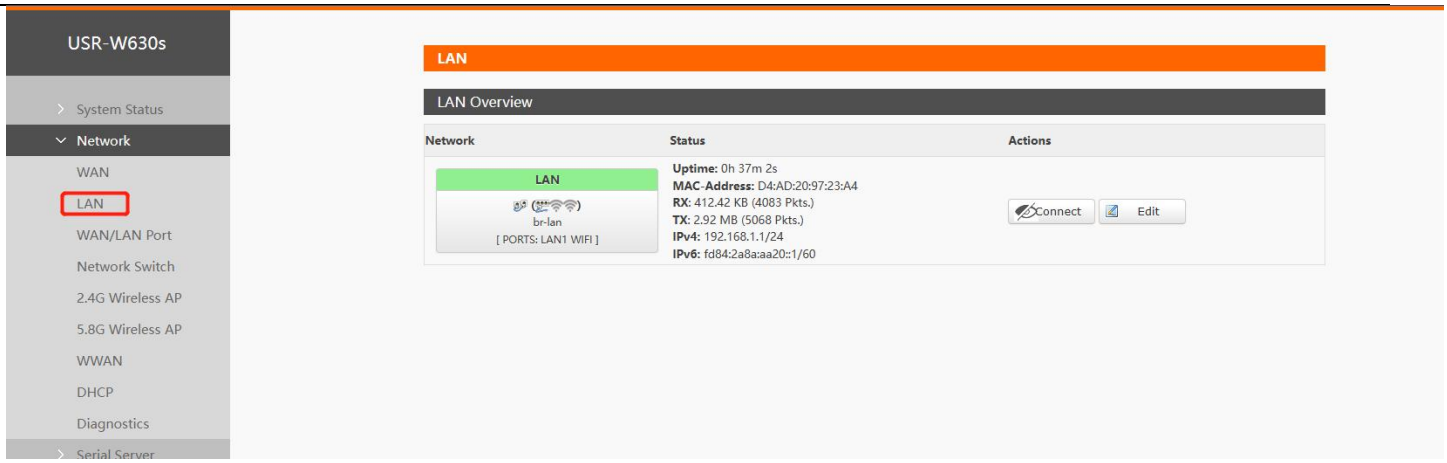


Figure 14. LAN Interface settings

Note:

➢1 LAN port, 1 WAN/LAN configurable;

➢The default static IP address is 192.168.1.1, and the subnet mask is 255.255.255.0. This parameter can be modified, for example, the static IP is modified to 192.168.2.1;

➢The WIFI interface is bridged to the LAN port;

➢The DHCP server function is enabled by default, and all devices connected to the LAN port of the wireless client can automatically obtain an IP address;

➢With simple status statistics function;

4.2.1. General setup

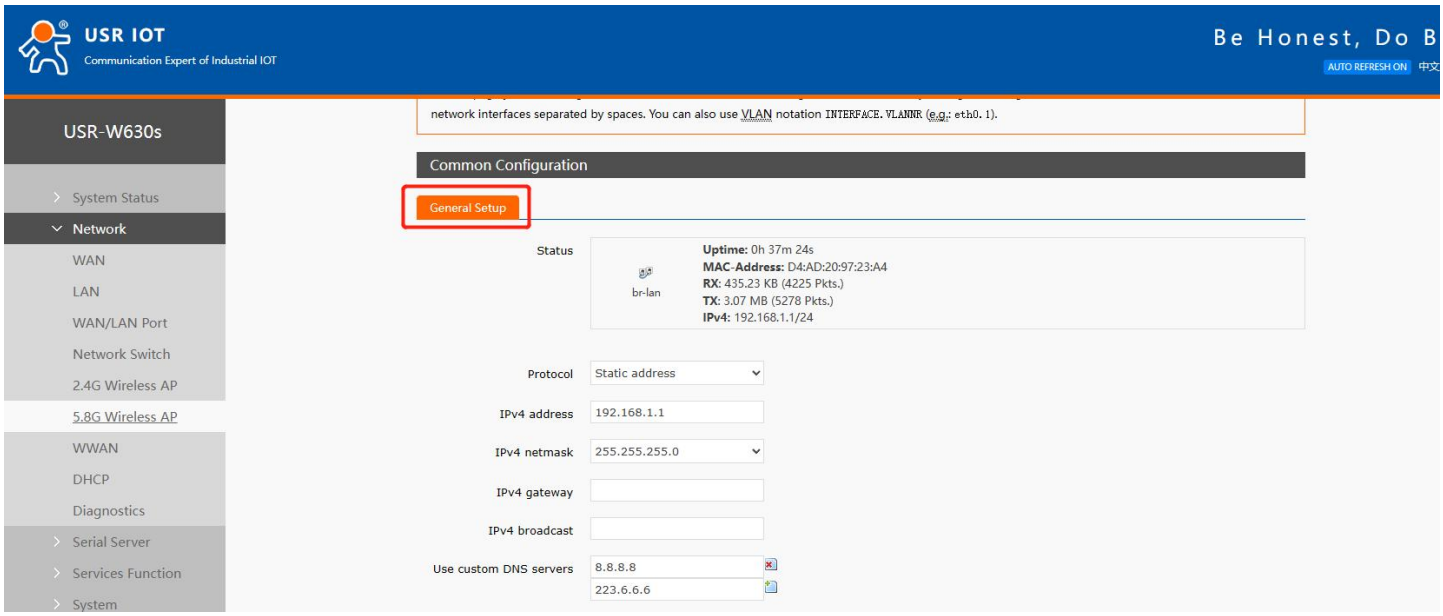


Figure 15. General setup settings

4.2.2. DHCP Server

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The DHCP Server function of the LAN port is turned on by default (you can choose to turn it off), and all

network devices connected to the LAN port can automatically obtain IP addresses.

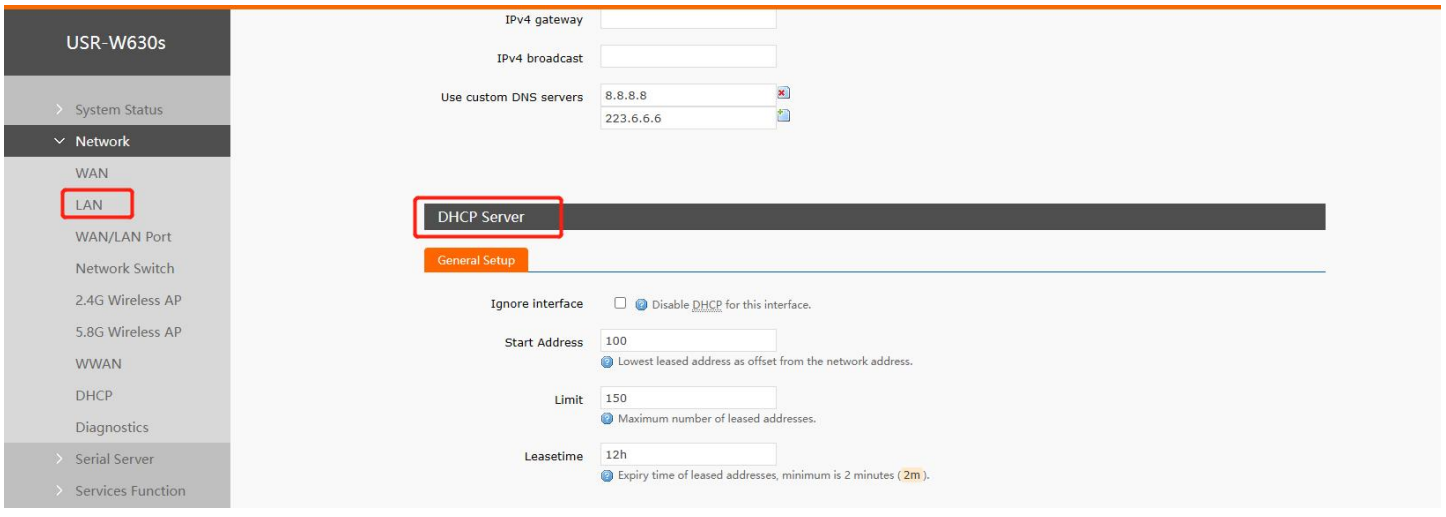


Figure 16. DHCP Server settings

Note:

- ➢You can adjust the starting address of the DHCP pool and the address lease time;
- ➢DHCP default allocation range starts from 192.168.1.100;
- ➢Default lease period 12 hours

4.3. Network switch (Network priority)

In this interface, users can choose network priority. The default is to use the WAN port network first.

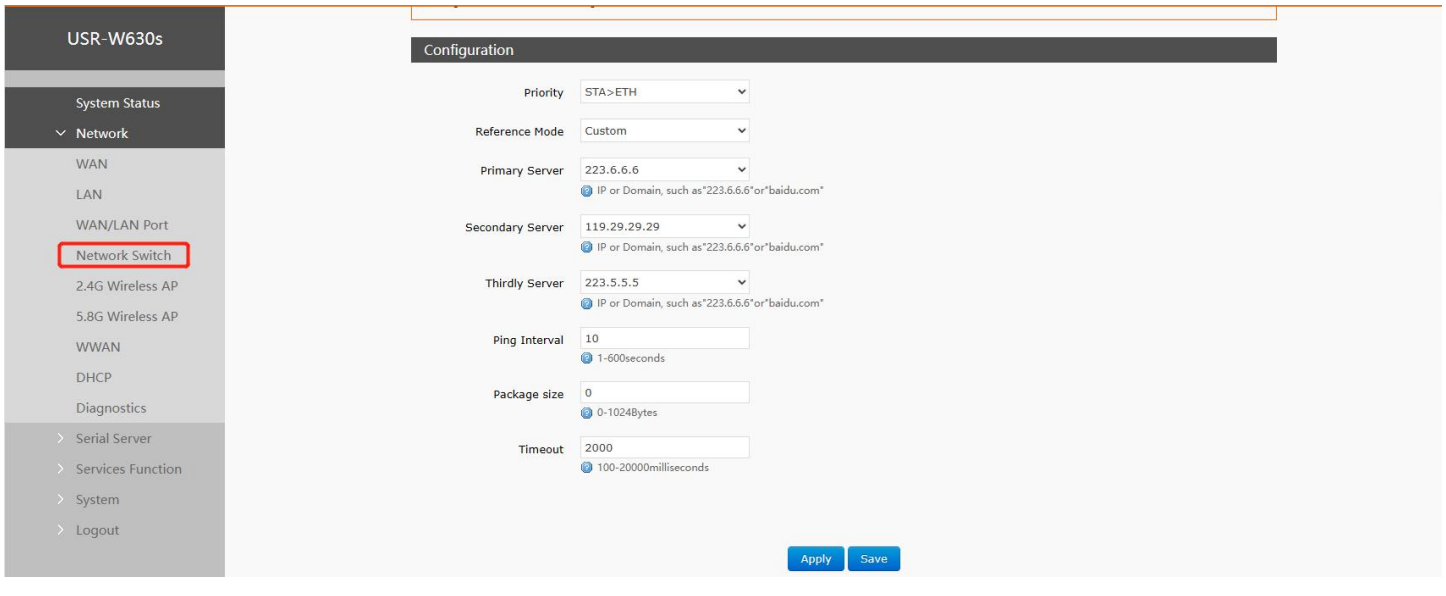


Figure 17. Network Switch settings

Table 2. Network switching configuration

Items	Description	Default
Priority	Wired>Wireless: Prioritize using wired network, Wireless>Wired: Prioritize using wireless network,	Wired>Wireless

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	Disable: Disable the network switching function and use the current Internet access method to access the Internet.	
Reference Mode	Custom: Determine network status based on custom reference address, Gateway: Refer to the gateway to determine network status	Custom
Primary Server	IP/domain name can be set	223.6.6.6
Secondary Server	IP/domain name can be set	119.29.29.29
Third Server	IP/domain name can be set	8.8.8.8
Ping Interval	Link detection interval: configurable, range: 1-600s	10s
Package Size	Ping packet size: configurable, range: 0-1024 bytes	0
Timeout	Ping timeout: configurable, range: 100-20000ms	2000ms

Illustrate:

- Configure network priority detection rules, enabled by default, default network switching order: wired network first;
- Set up 3 groups of IP addresses (you can also set domain names) for detecting the networking status, and perform ping packets in sequence. If the ping is successful, it will be judged that the network is normal and no further operations will be performed;
- If none of the three sets of detection rules can be pinged, perform network switching and continue ping packet detection;
- If neither the wired network nor the wireless network can be pinged, it is judged that the wireless client cannot connect to the external network.

4.4. Wireless AP

W630s supports 2.4G and 5.8G dual-band WIFI, supports modification configuration of SSID, password, channel, etc.;

Dual-band WIFI APs can be turned on at the same time, or one of the APs can be turned off;

Can support 8 clients connecting at the same time;

Supports MU-MIMO and OFDMA technology, supports communication with 8 clients at the same time.

4.4.1. Wi-Fi settings of 2.4 & 5.8G

Users can set Wi-Fi related information on this page.

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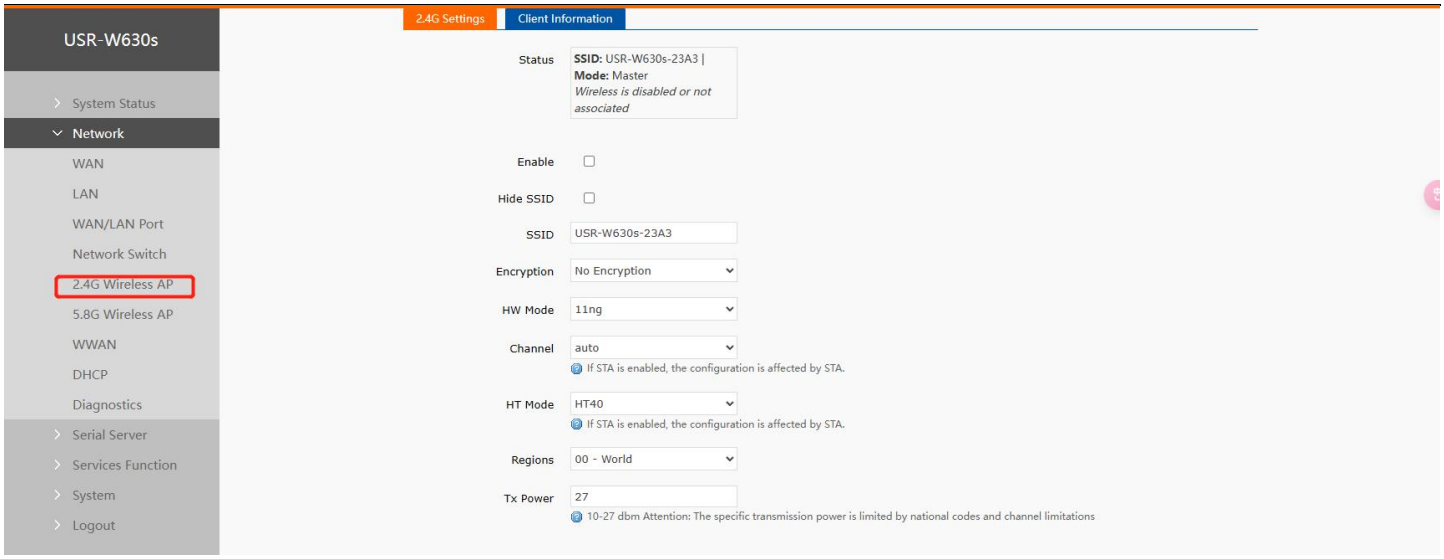


Figure 18. Wi-Fi settings

Table 3. Wi-Fi settings

Items	Description	Default
Enable	To choose whether to enable the Wi-Fi function.	Enable
Hide SSID	To choose whether to hide the SSID. If the SSID is hidden, the user cannot search for the Wi-Fi name on the mobile phone or PC. Users can connect to Wi-Fi by manually entering the SSID.	Disable
SSID	Wi-Fi name, users can modify as needed.	USR-W630s-xxxx/_5.8G
Encryption	To choose Wi-Fi encryption method.	Mixed-psk
Key	The password of Wi-Fi.	www.pusr.com
HW Mode	To choose Wi-Fi standard.	11ng
Channel	To choose Wi-Fi channel.	auto
HT Mode	To choose high throughput.	HT40
Regions	This option is for 5.8G Wi-Fi.	00-World
Tx Power	1-27dbm	27dbm

4.4.2. Client information

On this page, the users can view the device information connected to the USR-G816 through Wi-Fi.

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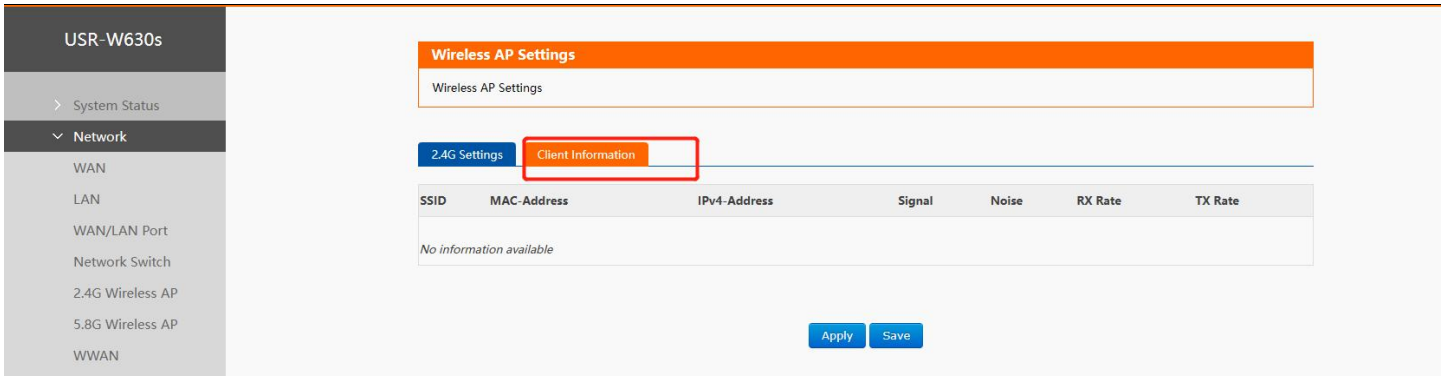


Figure 19. Client Information

4.5. WWAN settings (STA mode)

2.4G or 5.8G wifi client function can be turned on.

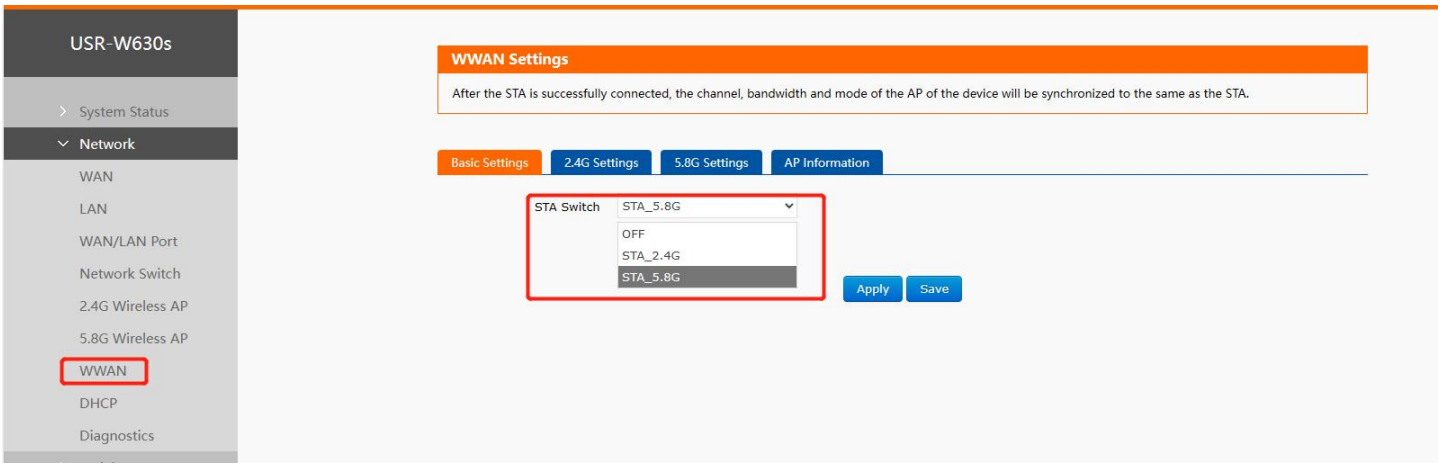


Figure 20. Wi-Fi Client Settings

4.5.1. 2.4G/5.8G STA configuration

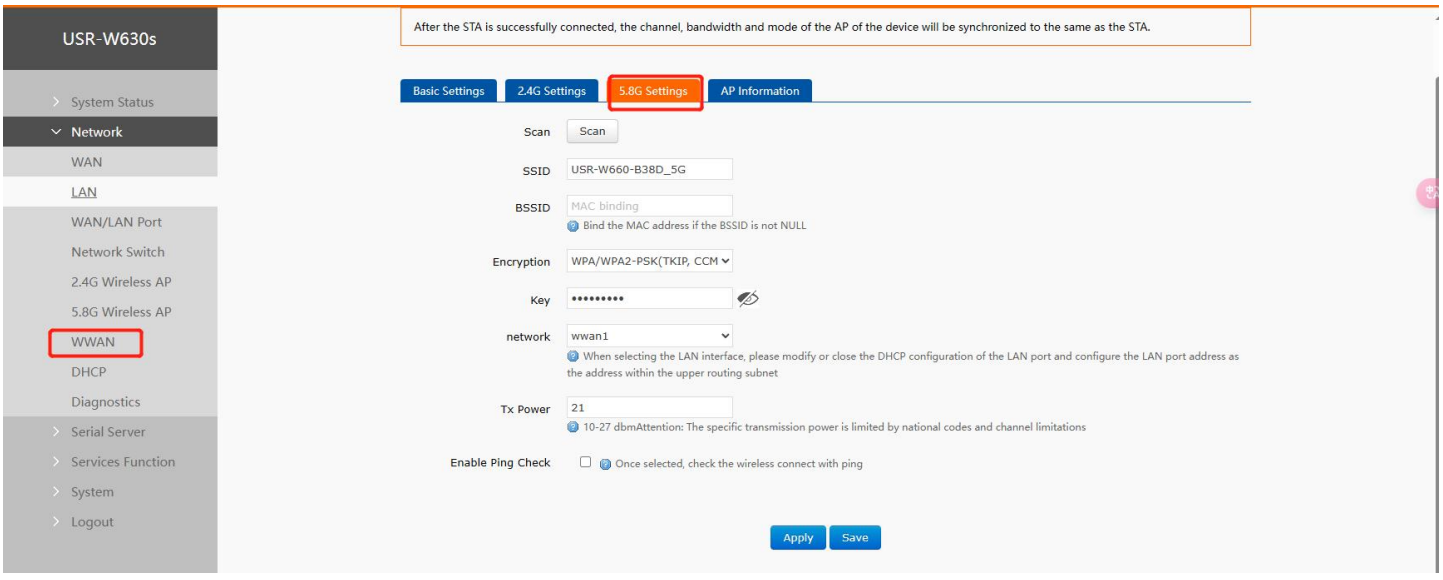


Figure 21. STA Settings

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Table 4. Detail parameters of STA settings

Items	Description	Default
Scan	Users can click the "Scan" button to search for current 2.4/5.8G WIFI hotspots.	
Wi-Fi SSID	Select the AP name to connect to.	WIFI-STA
Encryption	This parameter is selected based on whether the AP is encrypted. No Encryption/mixed-psk.	No Encryption
Key	AP's password.	
Network	lan: bridge mode wwan1: Repeater mode	wwan1
Enable Ping Check	Once selected, check the wireless connect with ping.	Not selected

Illustrate:

➢If you need to set the static IP of STA after turning on STA, please go to Network-WAN to set it;

➢If you set up a bridge to the LAN port, you need to turn off DHCP on the br-lan interface, and set the LAN port address to the same network segment as the AP to be connected;

➢Only one of 2.4G and 5.8G STA can be enabled.

4.5.2. AP information

If the USR-W630s connect to upper-level Wi-Fi successfully, the information will be displayed in this page.

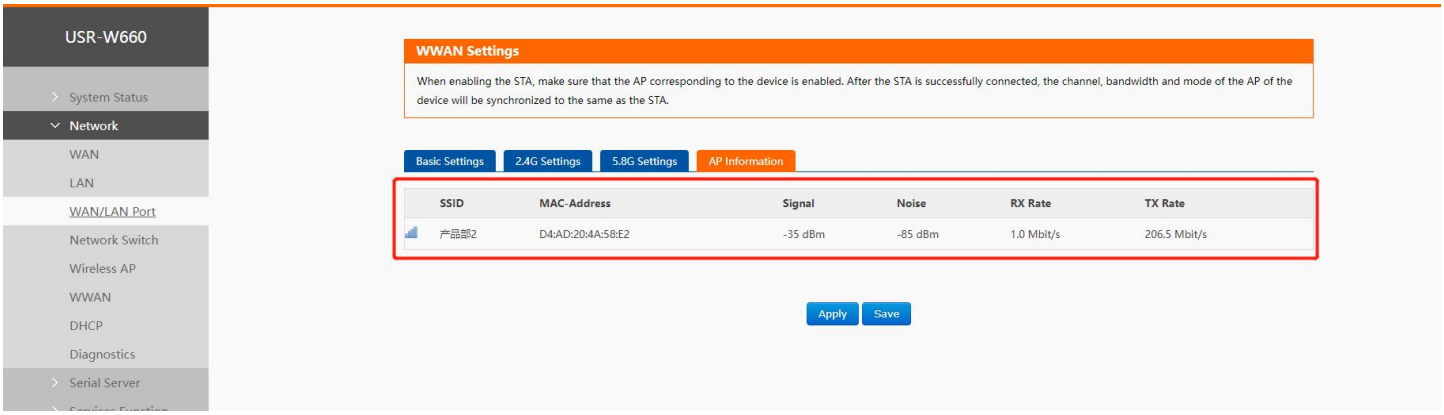


Figure 22. AP Information

4.6. DHCP function

Static address assignment: Set at Network-DHCP. This feature is an extension of the LAN interface DHCP settings and is used to assign fixed IP addresses and host identities to DHCP clients.

Use "Add" to add new lease entries. MAC-address can be used to identify a host, IPv4-address can be used to assign an address, and hostname can be used to assign an identity.

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Note: Up to 100 rules can be added.

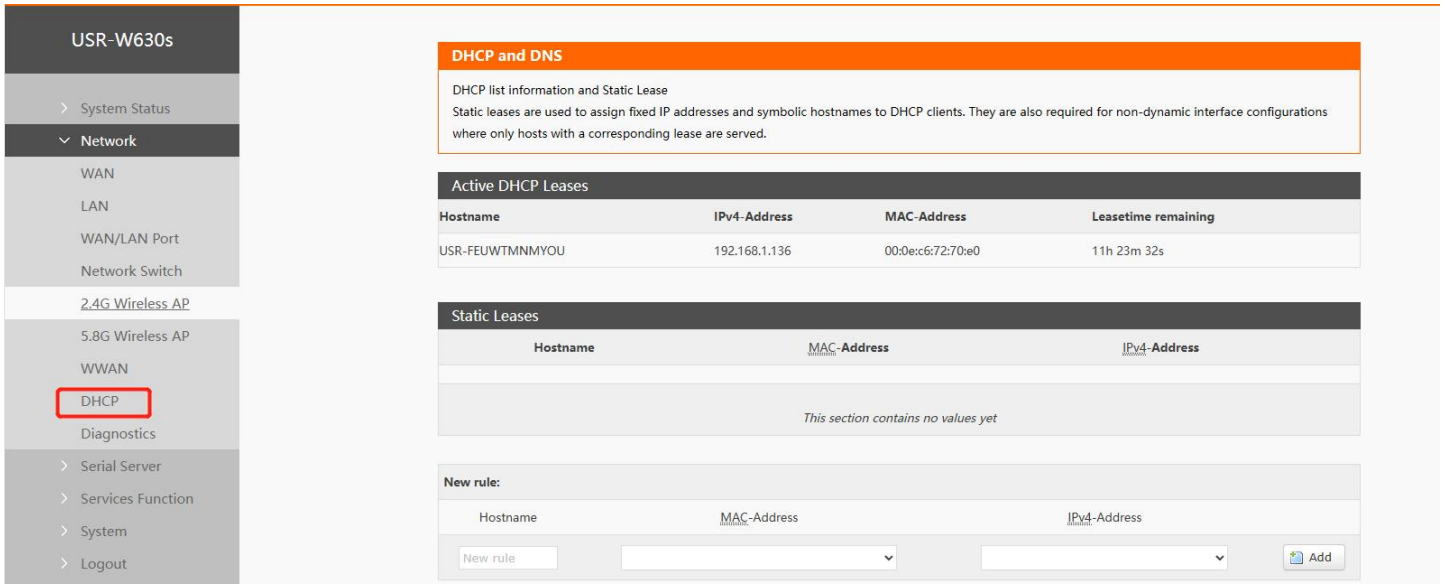


Figure 23. DHCP Settings

4.7. WAN/LAN switching

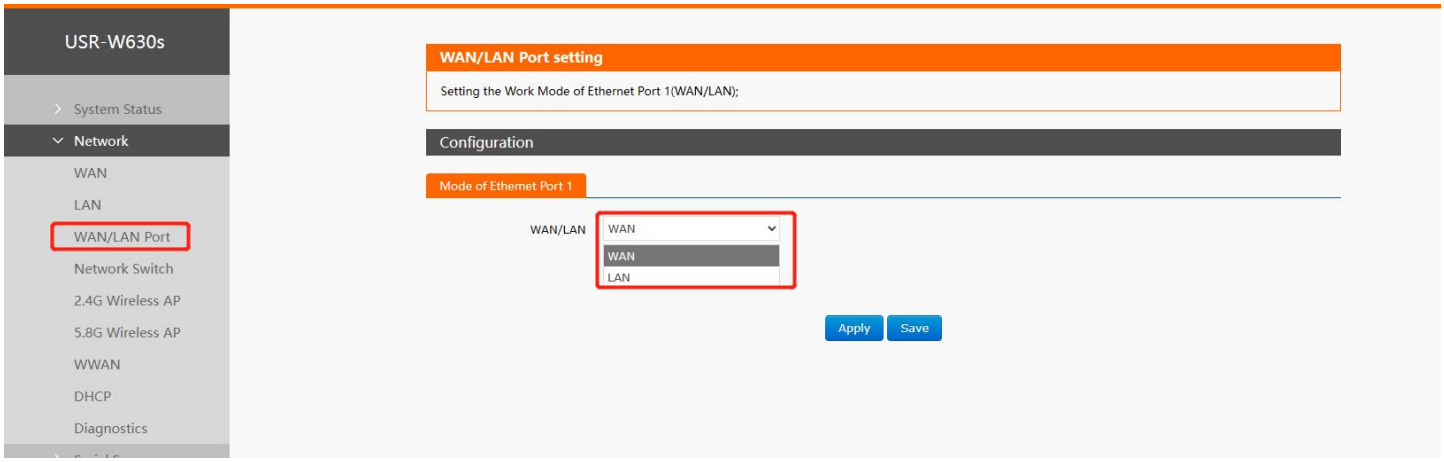


Figure 24. WAN/LAN Switching

4.8. Network diagnostics

Illustrate:

➢Online diagnostic functions, including Ping tool, routing analysis tool, and DNS viewing tool;

➢Ping is a Ping tool that can perform a ping test on a specific address directly on the wireless client;

➢Traceroute is a route analysis tool that can obtain the routing path passed when accessing an address;

➢Nslookup is a DNS viewing tool that can resolve domain names into IP addresses.

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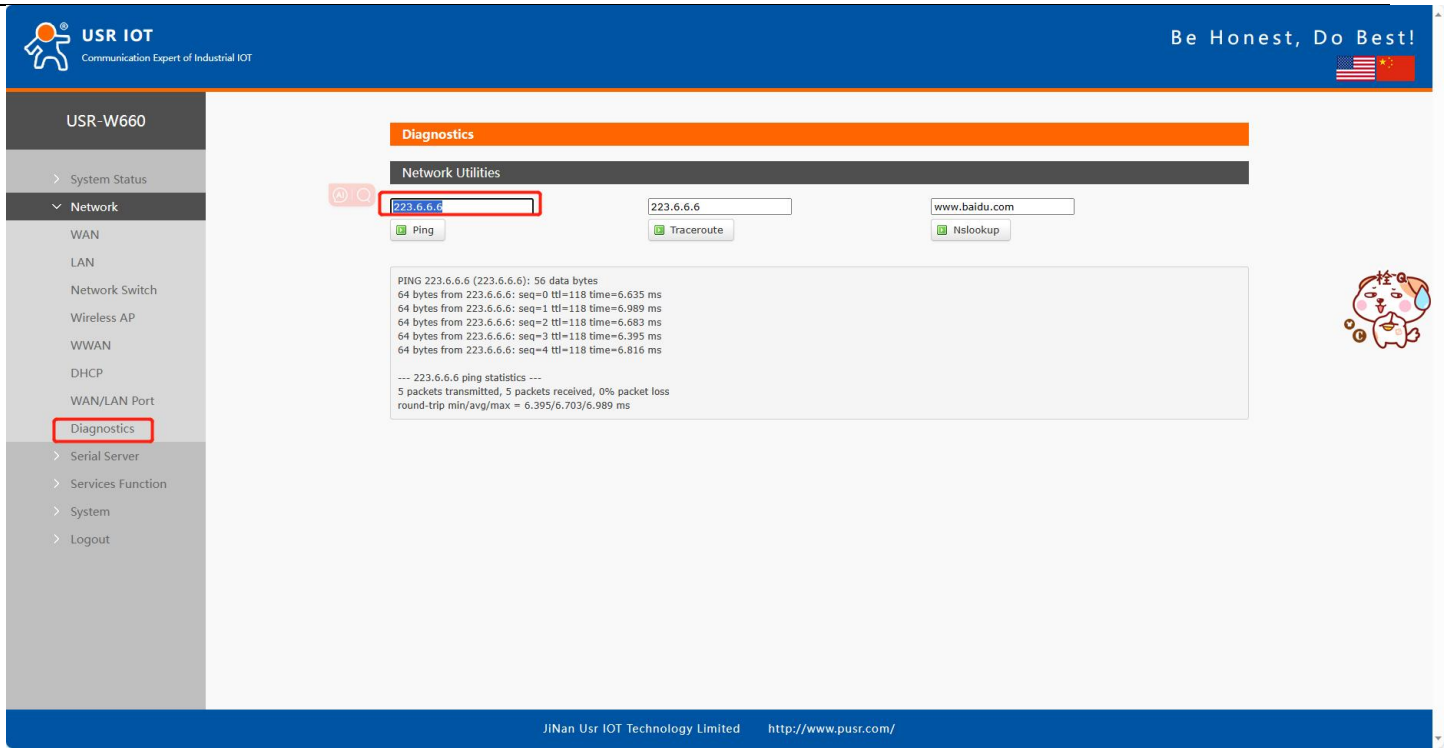


Figure 25. Network Diagnose

5. Serial device server function

USR-W630s is equipped with RS232/RS485, supports TCP, UDP, MODBUS, MQTT, HTTPD and other network protocols, and supports heartbeat packets, registration packets, AT command and other special functions.

5.1. Serial port settings

In this interface, you can set the baud rate, data bits and other parameters of the serial port.

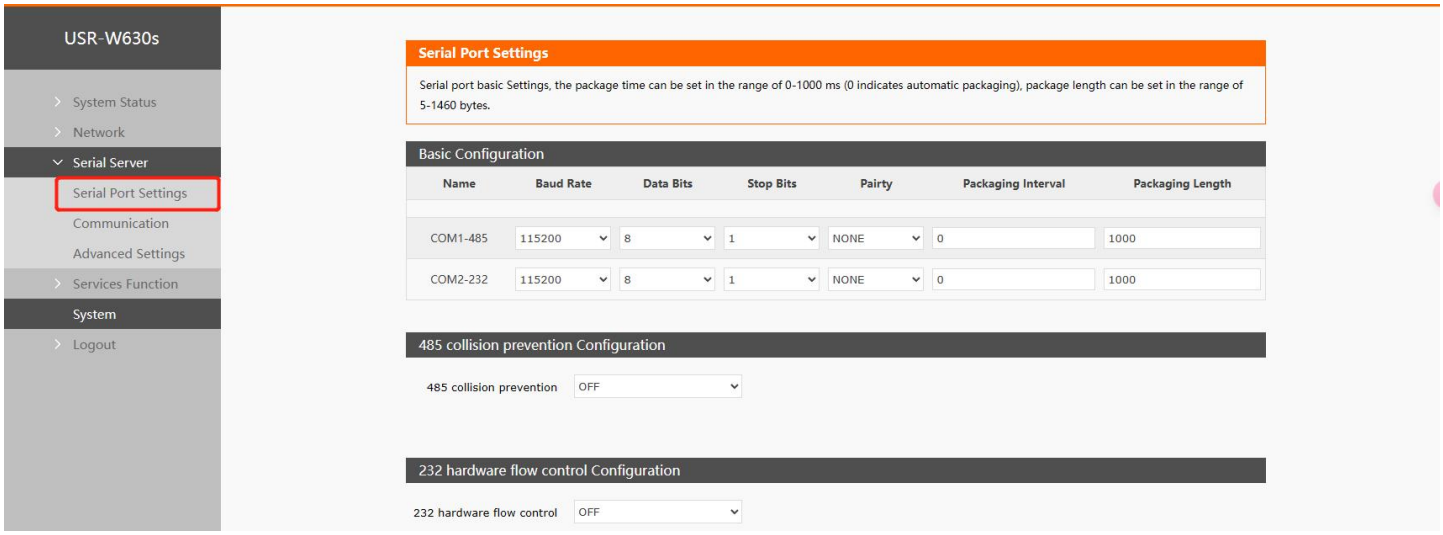


Figure 26. Serial port parameters

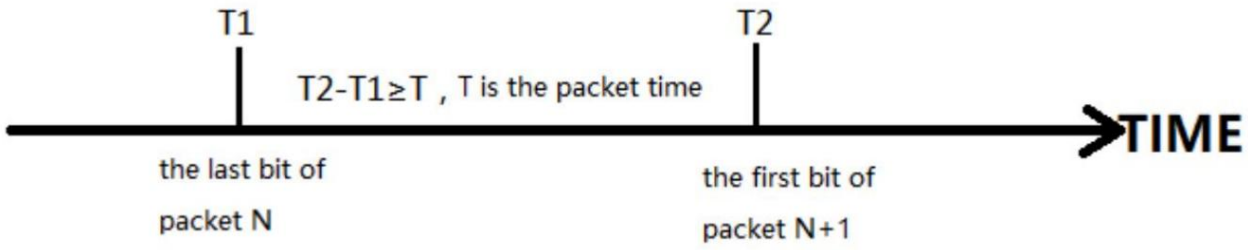
Table 5. Detail parameters of serial port

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Items	Description	Default
Baud Rate	To set the baud rate of RS232 or RS485, you can set: 1200/2400/4800/9600/19200/38400/57600/115200/230400 Note: Only RS485 supports 230400	115200
Data Bits	Range: 7,8	8
Stop Bits	Range:1,2	1
Parity	Range: NONE/ODD/EVEN	None
Packaging Interval	Unit: ms, Range: 10-60000ms	50
Packaging Length	Unit: Bytes Range: 5-1500 Bytes	1000

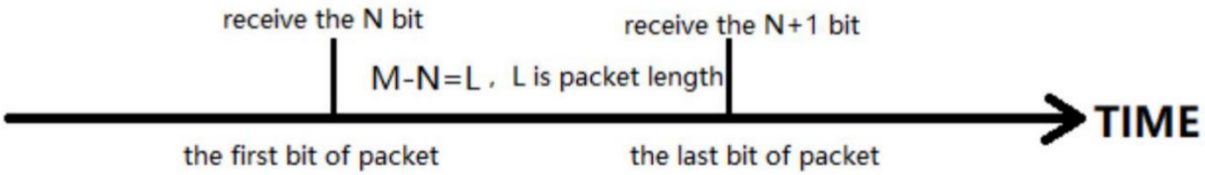
5.1.1. Time triggered mode

When W630s receives data from UART, it will continuously check the interval between two adjacent bytes. If the interval is greater than or equal to a certain "time threshold", then it is considered that a frame has ended, otherwise data will be received until it is greater than or equal to the packing length (default is 1000 bytes). USR-W630s will send this frame of data to the network as a packet. The "time threshold" here is the packaging interval. The settable range is 10ms~255ms. Factory default 50ms.



5.1.2. Length trigger mode

When W630s receives data from UART, it will continuously check the number of bytes received. A frame is considered complete if the number of bytes received reaches a certain "length threshold". USR-W630s sends this frame data to the network as a TCP or UDP packet. The "length threshold" here is the packaging length. The settable range is 5~1500 bytes. Factory default 1000.



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5.2. Communication settings (TCP/UDP socket)

In this interface you can set the parameters of DTU.

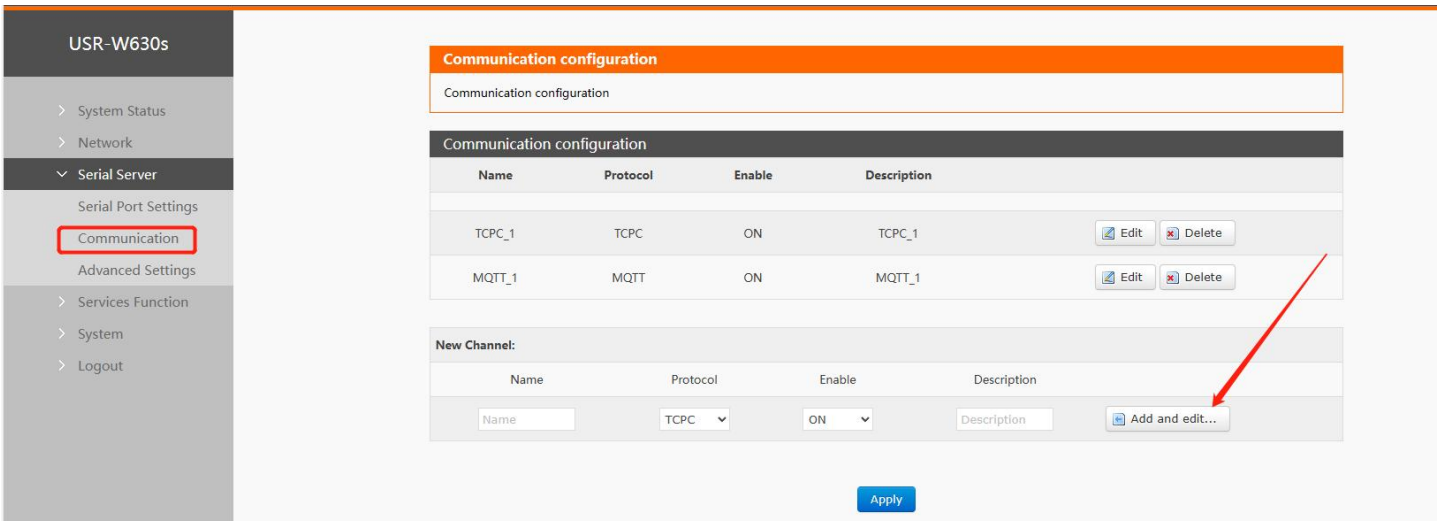


Figure 27. DTU settings

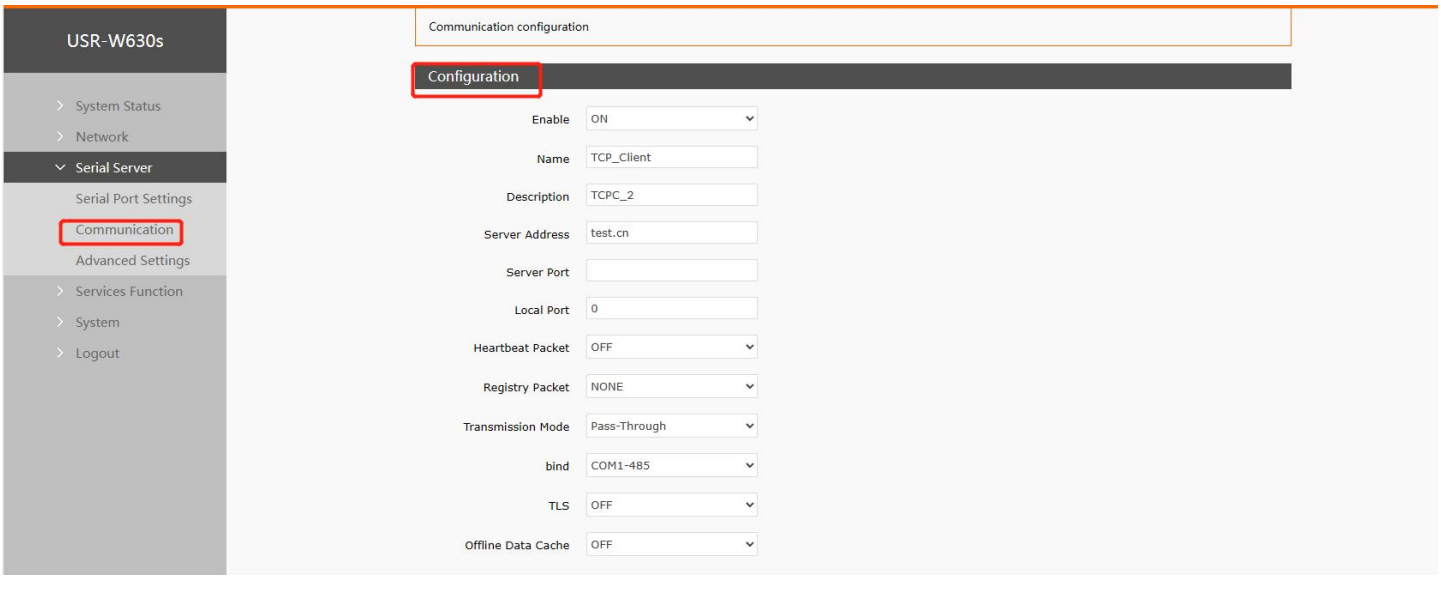
Table 6. Detail parameters of DTU

Items	Description	Default
Name	Set the name of this link.	Null
Protocol	Select the network protocol, you can choose: TCPC/TCPS/UDPC/UDPS/HTTPD/MQTT/AWS/ALI.	TCPC
Enable	Whether to enable this link, ON (enable)/OFF (disable).	Enable
Description	Set notes for this link.	Null

Illustrate:

- Depending on the selection of each protocol, the "Add and Edit" interface will be different accordingly;
- Up to 6 links can be set up.

5.2.1. TCPC Mode(TCP Client)



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Figure 28. TCP Client

Table 7. Detail parameters of TCP client

Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	TCPC_X
Description	Set the remark information of this link.	TCPC_X
Server Address	IP or domain name of server.	test.cn
Server Port	Listening port of server.	None
Local Port	Port of W630s.	0
Heartbeat Packet	Set whether to enable the heartbeat packet function, ON (enable)/OFF (disable).	OFF
Heartbeat packet type	HEX: hexadecimal type, ASCII: character type.	HEX
Heartbeat packet data	Heartbeat packet data content.	None
Heartbeat packet time	The time interval for sending heartbeat packets, unit: seconds.	60
Registration Packet	NONE: turn off the registration packet, Custom: Users can define the content of the registration package themselves, MAC: Use the MAC of the WAN port of the device as the content of the registration packet.	None
Registration packet type	Custom registration packet type, HEX: hexadecimal type, ASCII: character type.	HEX
Registration packet data	Registration packet data content.	None
Registry Packet Contained In	Send a registration packet when connecting to the server, Add the registration packet to the front of each data packet sent to the server.	Sent once when connecting
Transmission Mode	Pass- Through: transparent transmission mode, Modbus RTU: Modbus RTU and Modbus TCP transfer.	Pass- Through
Host Polling	ON: Multiple host polling mode. OFF: Modbus RTU/TCP protocol conversion mode.	OFF
Polling Timeout	Unit: ms Range: 10-6000 ms	200
Modbus Timeout Response	ON: Enable Modbus Timeout Response. OFF: Disable Modbus Timeout Response.	OFF

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Bind	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485
TLS	The version can be TLS1.0 or TLS1.2.	OFF
TLS Authentication	NO AUTH: No certificate verification is required. Server: Only the server certificate is verified. BOTH: Both client and server certificates need to be validated.	NO AUTH
Offline Data Cache	ON: Offline data will be cached and sent when get online again. OFF: Offline data will be not cached.	OFF
Data Overflow handling	Discard old Data: Store the latest data. Discard New Data: When the storage space is used up, no new data will be stored.	Discard old Data
Caching Method	Length Limit/Package Quantity Limit	Length Limit

Illustrate:

- The TCP Client mode can be used in conjunction with the USR custom indicator light. When the TCP Client connects to the server, the USR The indicator light comes on,
- Supports TLS encrypted transmission and offline data caching functions.

5.2.2. TCPS Mode(TCP Server)

Enable TCPS mode.

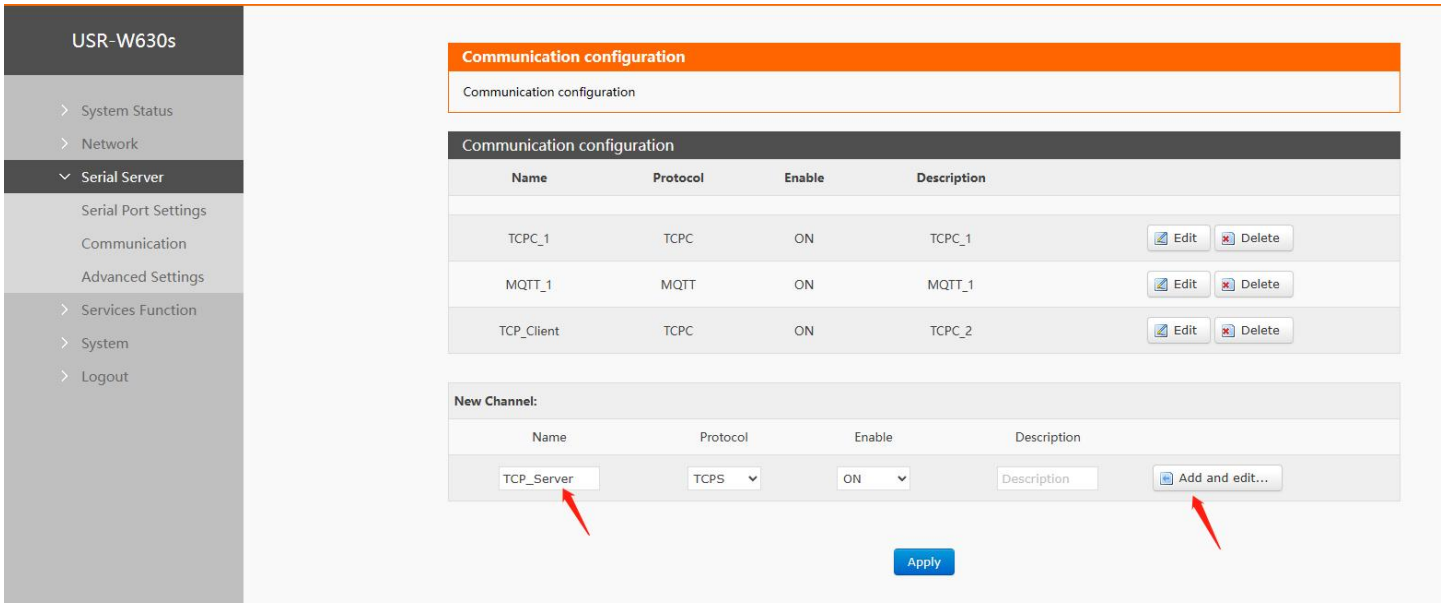


Figure 29. TCP server

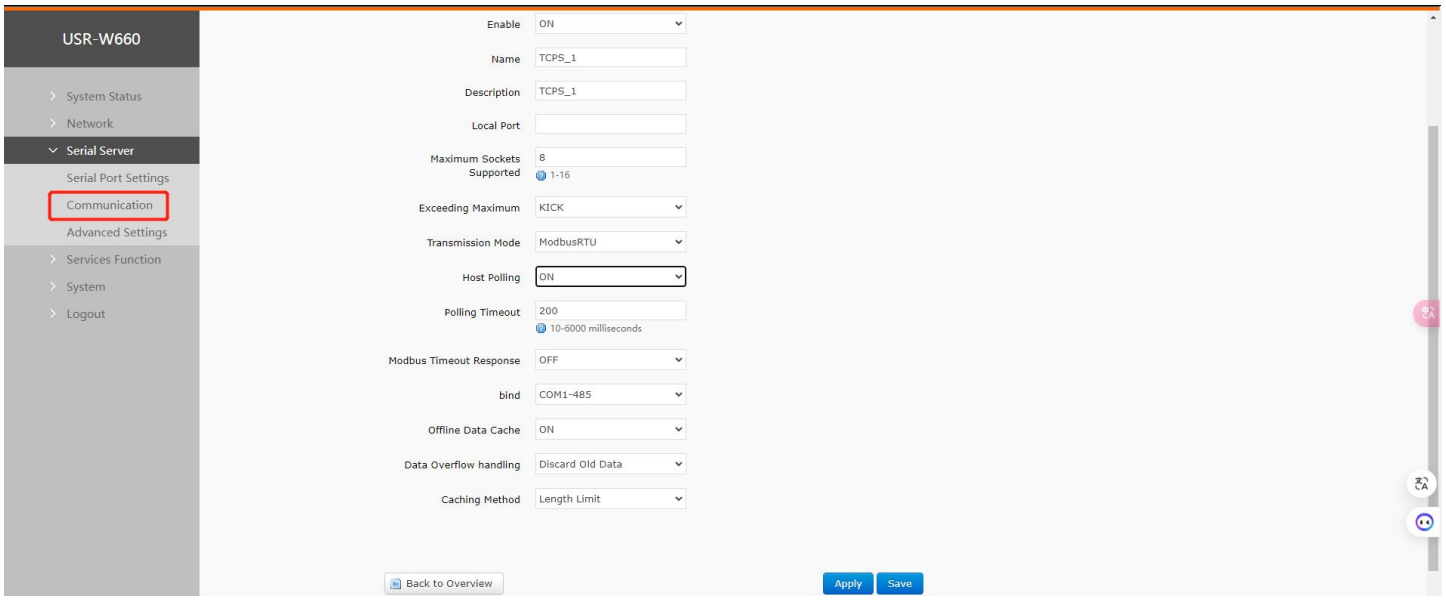


Figure 30. TCP server parameters settings page

Table 8. Detail parameters of TCP server

Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	TCPS_X
Description	Set the remark information of this link.	TCPS_X
Local Port	Port of W630s.	0
Maximum Sockets Supported	Range:1~16	8
Exceeding Maximum	Kick: Kick the older client connection. Keep: Keep the older client connection.	KICK
Transmission Mode	Pass- Through: transparent transmission mode, Modbus RTU: Modbus RTU and Modbus TCP transfer.	Pass- Through
Host Polling	ON: Multiple host polling mode. OFF: Modbus RTU/TCP protocol conversion mode.	OFF
Polling Timeout	Unit: ms Range: 10-6000 ms	200
Modbus Timeout Response	ON: Enable Modbus Timeout Response. OFF: Disable Modbus Timeout Response.	OFF
Bind	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485
Offline Data Cache	ON: Offline data will be cached and sent when get online again. OFF: Offline data will be not cached.	OFF
Data Overflow	Discard old Data: Store the latest data.	Discard old Data

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handling	Discard New Data: When the storage space is used up, no new data will be stored.	
Caching Method	Length Limit: Package Quantity Limit:	Length Limit

5.2.3. UDPC Mode(UDP Client Mode)

Select UDPC mode.

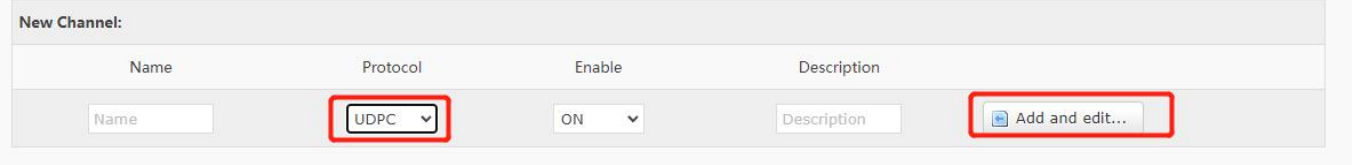


Figure 31. Serial port parameters

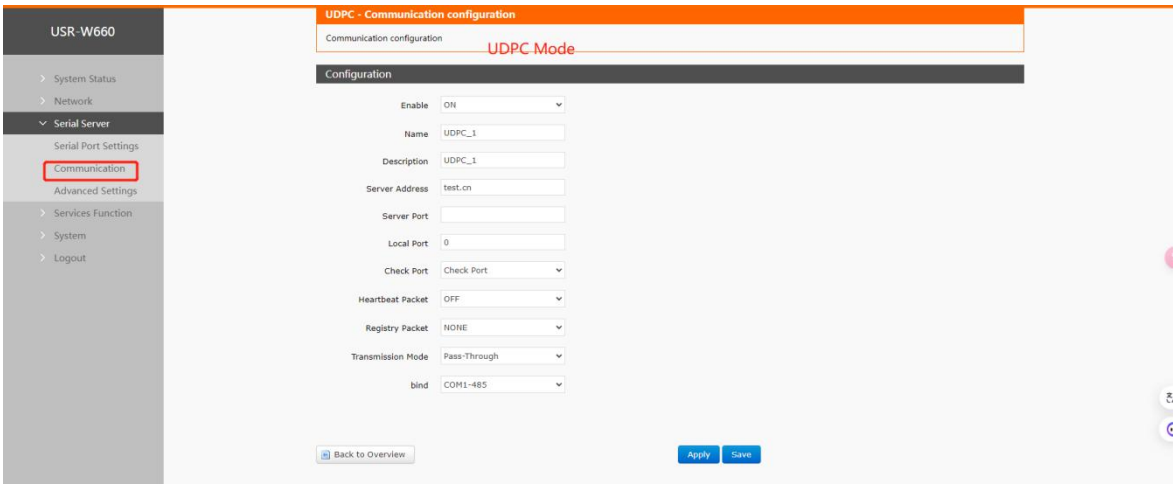


Figure 32. UDPC parameters

Table 9. Detail parameters of UDPC

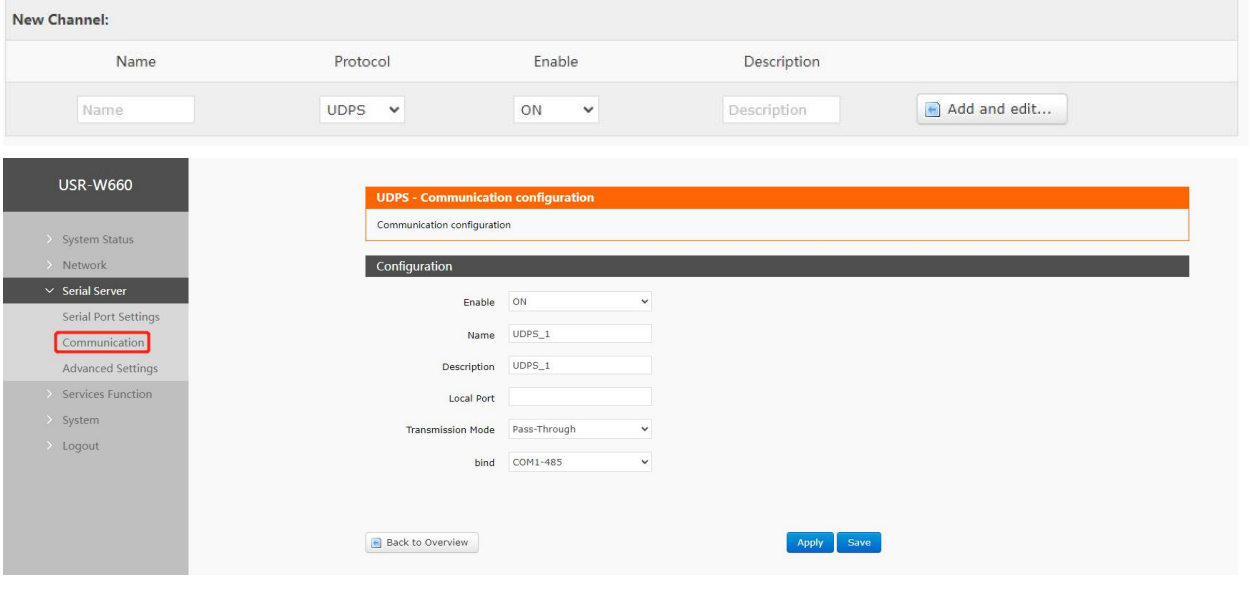
Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	UDPC_X
Description	Set the remark information of this link.	UDPC_X
Server Address	IP or domain name of server.	test.cn
Local Port	Port of W630s.	0
Check Port	Check port / Not check port	Check Port
Heartbeat Packet	Set whether to enable the heartbeat packet function, ON (enable)/OFF (disable).	OFF

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Heartbeat packet type	HEX: hexadecimal type, ASCII: character type.	HEX
Heartbeat packet data	Heartbeat packet data content.	None
Heartbeat packet time	The time interval for sending heartbeat packets, unit: seconds.	60
Registration Packet	NONE: turn off the registration packet, Custom: Users can define the content of the registration package themselves, MAC: Use the MAC of the WAN port of the device as the content of the registration packet.	None
Registration packet type	Custom registration packet type, HEX: hexadecimal type, ASCII: character type.	HEX
Registration packet data	Registration packet data content.	None
Registry Packet Contained In	Send a registration packet when connecting to the server, Add the registration packet to the front of each data packet sent to the server.	After connection
Transmission Mode	Pass- Through: transparent transmission mode, Modbus RTU: Modbus RTU and Modbus TCP transfer.	Pass- Through
Bind	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485

5.2.4. UDPS Mode(UDP Server)

Select UDPS mode.



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Figure 33. UDPS settings

Table 10. Detail parameters of UDPS

Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	UDPS_X
Description	Set the remark information of this link.	UDPS_X
Local Port	Port of W630s.	None
Transmission Mode	Pass- Through: transparent transmission mode, Modbus RTU: Modbus RTU and Modbus TCP transfer.	Pass- Through
Bind	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485

5.2.5. MQTT Mode

5.2.5.1. Basic settings of MQTT

Select MQTT mode.

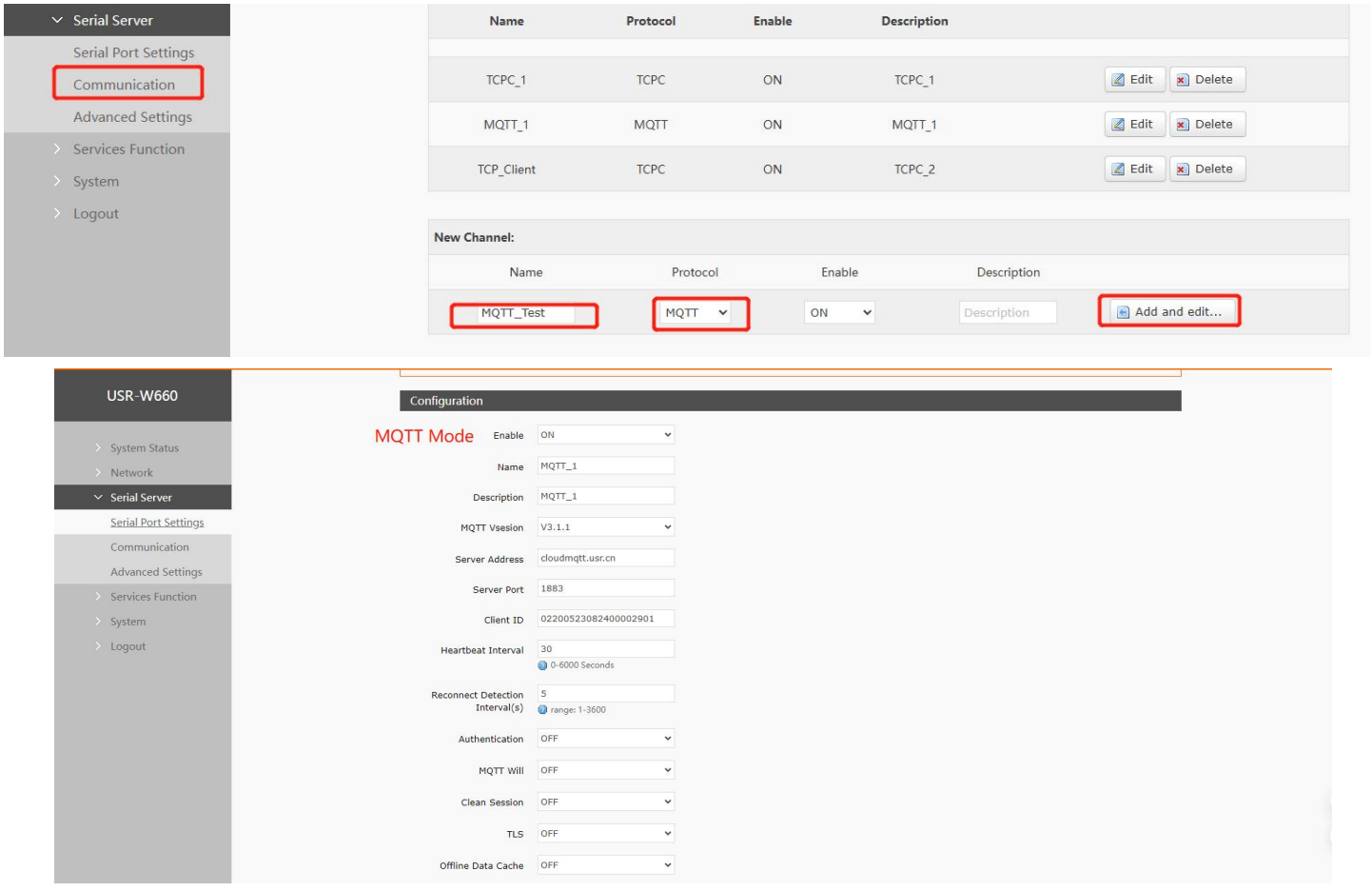


Figure 34. MQTT settings

Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	MQTT_X
Description	Set the remark information of this link.	MQTT_X
MQTT Version	3.1.1 or 3.1	3.1.1
Server Address	IP or domain name of server.	cloudmqtt.usr.cn
Server Port	Listening port of server.	1883
Client ID	To distinguish different clients.	02200523082400002901
Heartbeat Interval	MQTT protocol heartbeat time, unit: seconds. Unit: Second, Range: 0~6000	30
Reconnect Detection Interval	The next reconnection interval after MQTT disconnection. Unit: Second, Range: 1~3600	5
Authentication	If the server requires username and password authentication, it needs to be turned on. ON: Enable authentication. OFF: Disable authentication.	OFF
MQTT Will	MQTT connection flag. When the network is disconnected abnormally, the server will publish this will message to other clients that subscribe to this will topic. ON: Enable MQTT Will. OFF : Disable MQTT Will.	OFF
Topic	Topic of MQTT Will.	None
Will Content	The content of MQTT will.	None
QOS	Set the QOS of the will, which can be set: 0 at most once 1at least 1 time Accurate once	0
KeepMsg	Whether to turn on the last message retention function ON: turn on. OFF: turn off.	OFF
TLS	The version can be TLS1.0 or TLS1.2.	OFF
TLS Authentication	NO AUTH: No certificate verification is required. Server: Only the server certificate is verified. BOTH: Both client and server certificates need to be validated.	NO AUTH
Offline Data Cache	ON: Offline data will be cached and sent when get online again. OFF: Offline data will be not cached.	OFF
Data Overflow handling	Discard old Data: Store the latest data. Discard New Data: When the storage space is used up, no new data will be stored.	Discard old Data
Caching Method	Length Limit:	Length Limit

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	Package Quantity Limit:	

5.2.5.2. Subscribe/Publish Topic

The topic adding function is mainly used to add publishing or subscribing topics. Configuration parameters include basic parameters such as name, TOPIC, QOS , and whether to retain messages. The function of serial port association is to associate the topic with a certain serial port. When publishing, the original data of the serial port will be used as the payload of this topic. When receiving the subscription message, the payload of the subscribed topic will be sent to the serial port as the original data.

Note: Up to 16 topic rules can be set.

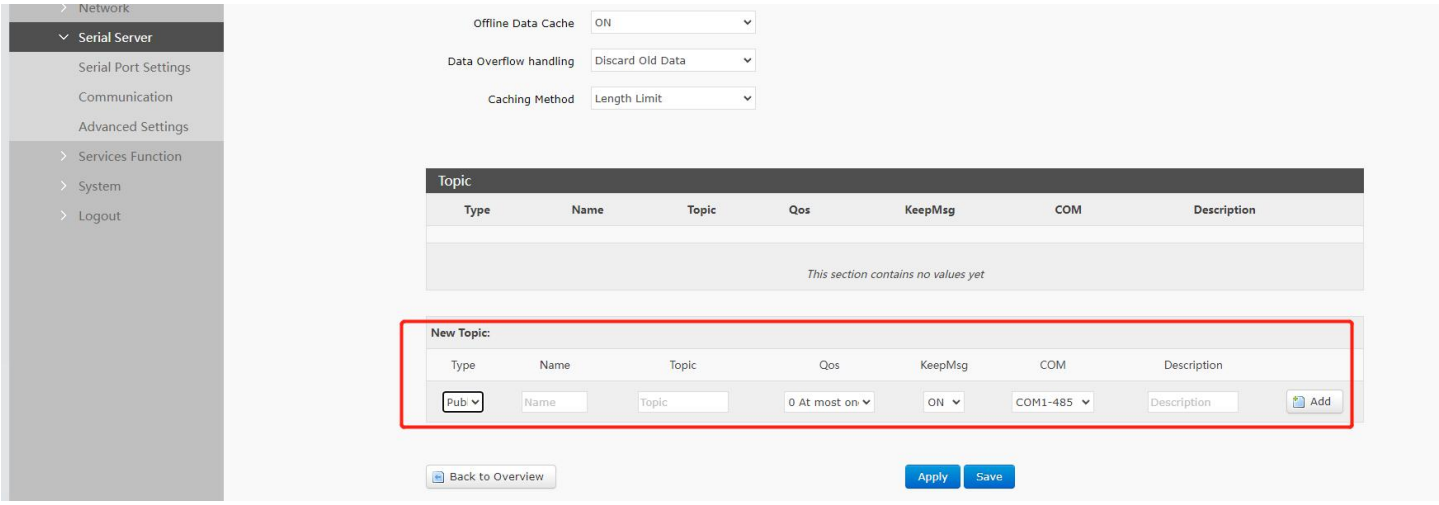


Figure 35. MQTT topic settings

Table 11. Detail parameters of MQTT

Name	Function description	Default value
Type	Topic type: optional publish/subscribe	publish
Name	The name of the topic	NULL
Topic	Topic: topic content	NULL
QoS	Topic message quality, configurable: 0 at most once at least 1 time Accurate once	0
KeepMsg	Set whether to retain the message, ON (retain)/OFF (not retain)	ON
COM	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485

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5.2.5.3. AWS Connection

Connect to AWS via MQTT.

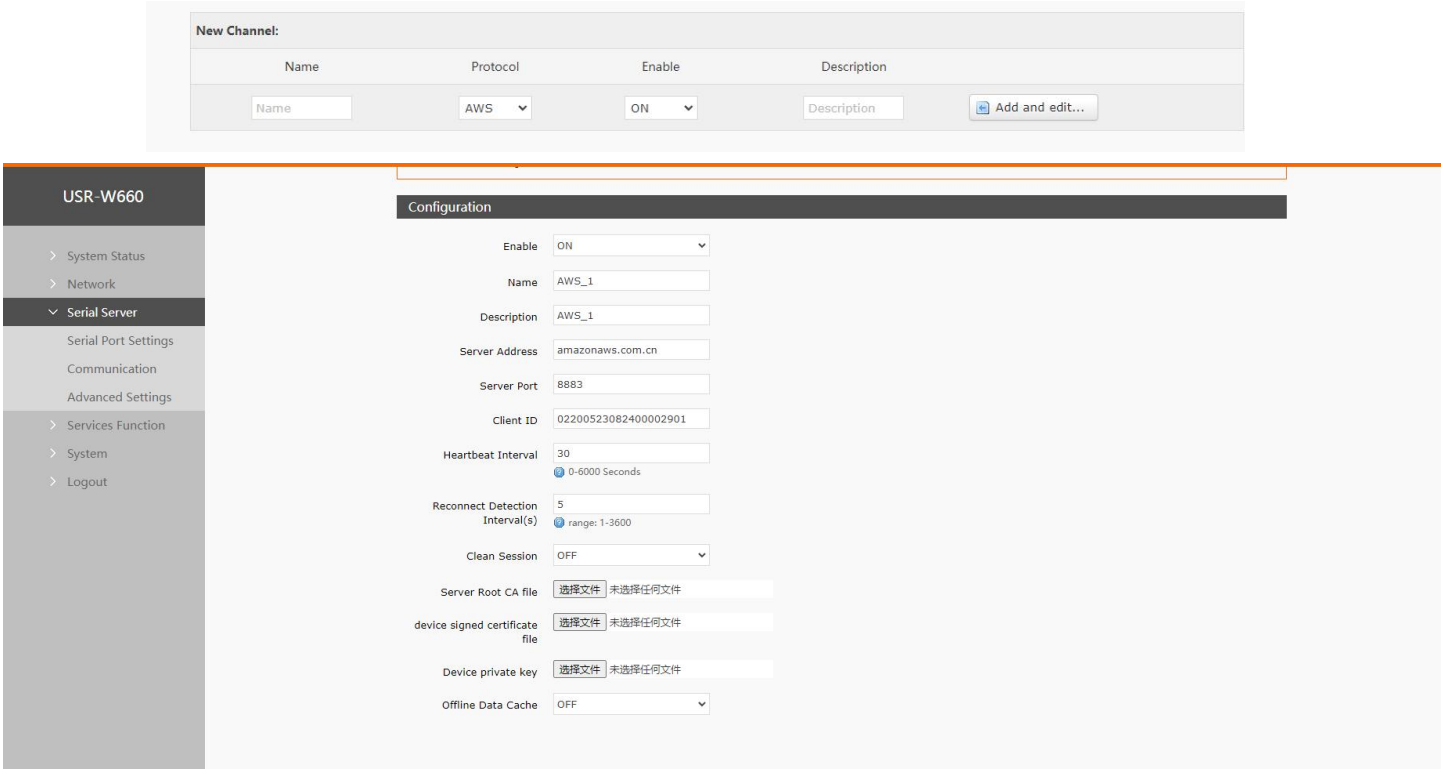


Figure 36. AWS settings

Table 12. Detail parameter of AWS

Items	Description	Default
Enable	Whether this link is enabled. ON (enabled) / OFF (disabled)	ON
Name	Set the name of this link.	AWS_X
Description	Set the remark information of this link.	AWS_X
Server Address	IP or domain name of server.	amazonaws.com.cn
Server Port	Listening port of server.	8883
Client ID	To distinguish different clients.	02200523082400002901
Heartbeat Interval	MQTT protocol heartbeat time, unit: seconds. Unit: Second, Range: 0~6000	30
Reconnect Detection Interval(s)	The next reconnection interval after MQTT disconnection. Unit: Second, Range: 1~3600	5
Clean Session	MQTT protocol connection flag, used to control the survival time of the session state OFF: disable ON: enable	OFF
Server Root CA file	Upload server CA certificate file	NULL
Device signed certificate file	Upload device signed certificate file	NULL
Device private key	Upload device private key file	NULL

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Offline Data Cache	ON: Offline data will be cached and sent when get online again. OFF: Offline data will be not cached.	OFF
Data Overflow handling	Discard old Data: Store the latest data. Discard New Data: When the storage space is used up, no new data will be stored.	Discard old Data
Caching Method	Length Limit/Package Quantity Limit	Length Limit

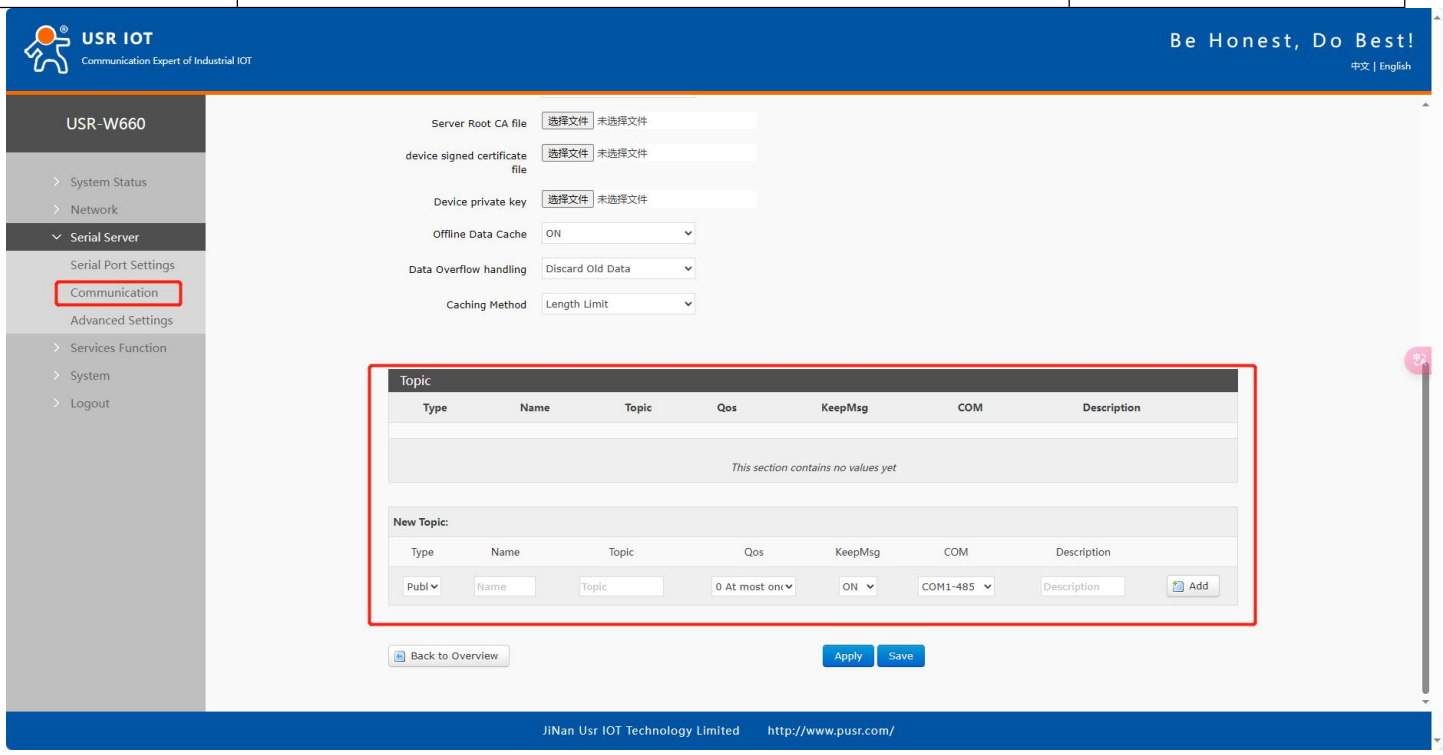


Figure 37. AWS topic settings

Note: Up to 16 topic rules can be set.

Name	Function description	Default value
Type	Topic type: optional publish/subscribe	publish
Name	The name of the topic	NULL
Topic	Topic: topic content	NULL
QoS	Topic message quality, configurable: 0 at most once at least 1 time Accurate once	0
KeepMsg	Set whether to retain the message, ON (retain)/OFF (not retain)	ON
COM	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485

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5.2.6. HTTPD Mode(HTTP client)

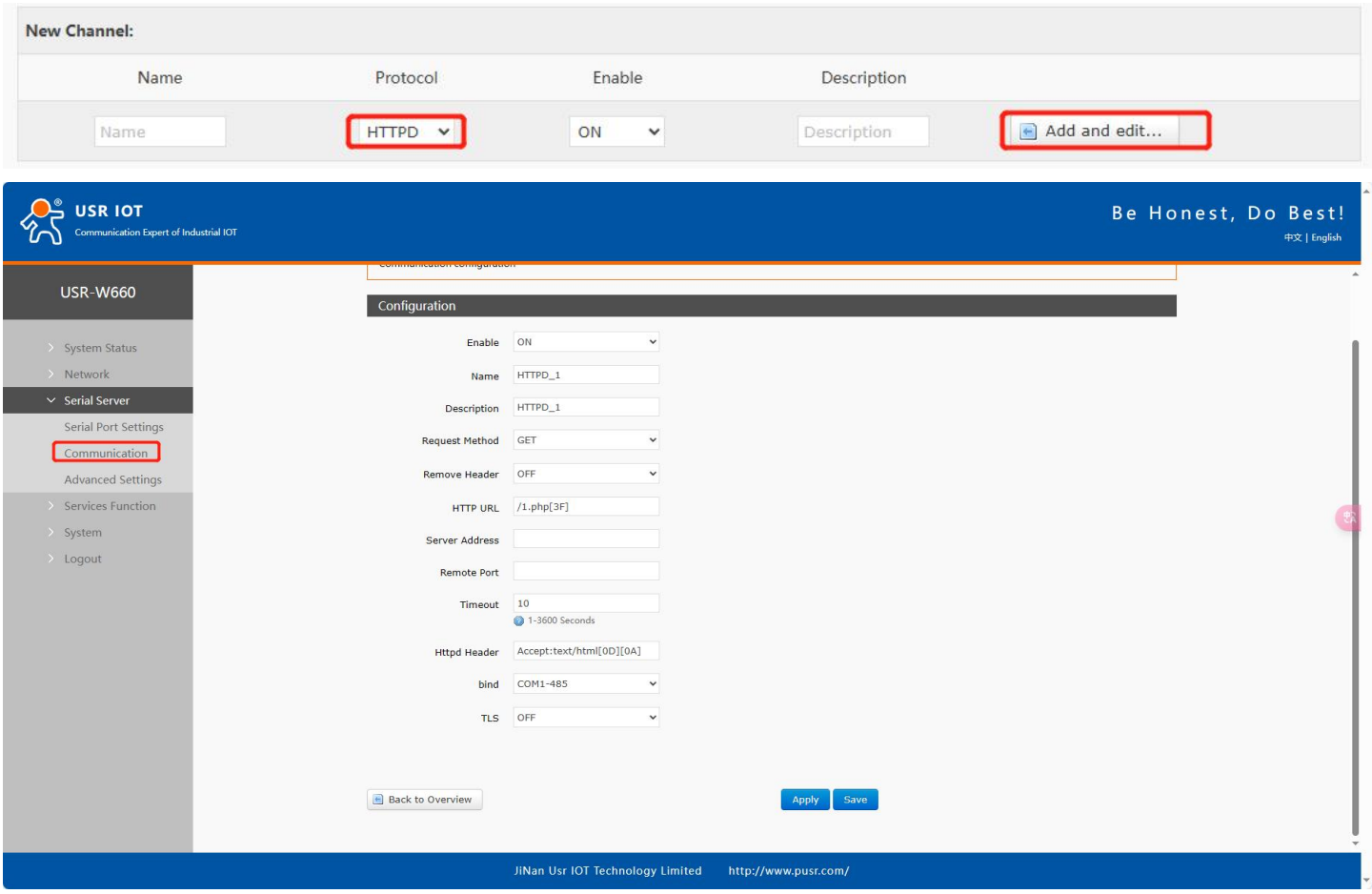


Figure 38. HTTP client settings

Items	Description	Default
Enable	Whether this link is enabled, ON (enabled)/OFF (disabled).	ON
Name	Set the name of this link.	HTTPD_X
Description	Set the remark information of this link.	HTTPD_X
Request method	GET/POST	GET
Remove Header	ON: Set to filter HTTP headers of data packet OFF: Set not to filter HTTP headers of data packet	OFF
HTTP URL	Add the URLs that need to be accessed	/1.php[3F]
Server Address	IP or domain name of server.	NULL
Remote Port	Listening port of server.	NULL
Timeout	If the server does not actively disconnect within the timeout period, this end needs to wait for the disconnection time	10s
Httpd Header	Set HTTP headers of data packet	Accept:text/html[0D][0A]
bind	COM1-485: Data is transmitted by RS485 only. COM2-232: Data is transmitted by RS485 only. COM1+COM2： Data is transmitted by RS485 and RS232 both.	COM1-485
TLS	The version can be TLS1.0 or TLS1.2.	OFF

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TLS Authentication	NO AUTH: No certificate verification is required. Server: Only the server certificate is verified. BOTH: Both client and server certificates need to be validated.	NO AUTH

5.2.7. Heartbeat / Registration package

5.2.7.1. Registration Packet Description

Registration Packet: It is used to enable the server to identify the source device of the data or as a password to obtain server function authorization. The registration packet can be sent when the device establishes a connection with the server or can be spliced at the beginning of each data packet as part of a data packet. The data in the registration packet can be MAC or custom registration data. Explanation:

Selecting MAC means using the WAN port MAC address as the content of the registration packet.

This function is only available when the link is set to tcpc or udpc mode.

5.2.7.2. Network Heartbeat Packet Description

Network Heartbeat Packet: It is sent to the network end, primarily to inform the server of the online status of terminal W630s, in order to maintain a long connection with the server. Explanation:

This function is only available when the link is set to tcpc or udpc mode.

5.3. Advanced settings

Network AT, serial heartbeat packets, and no data operation can be configured.

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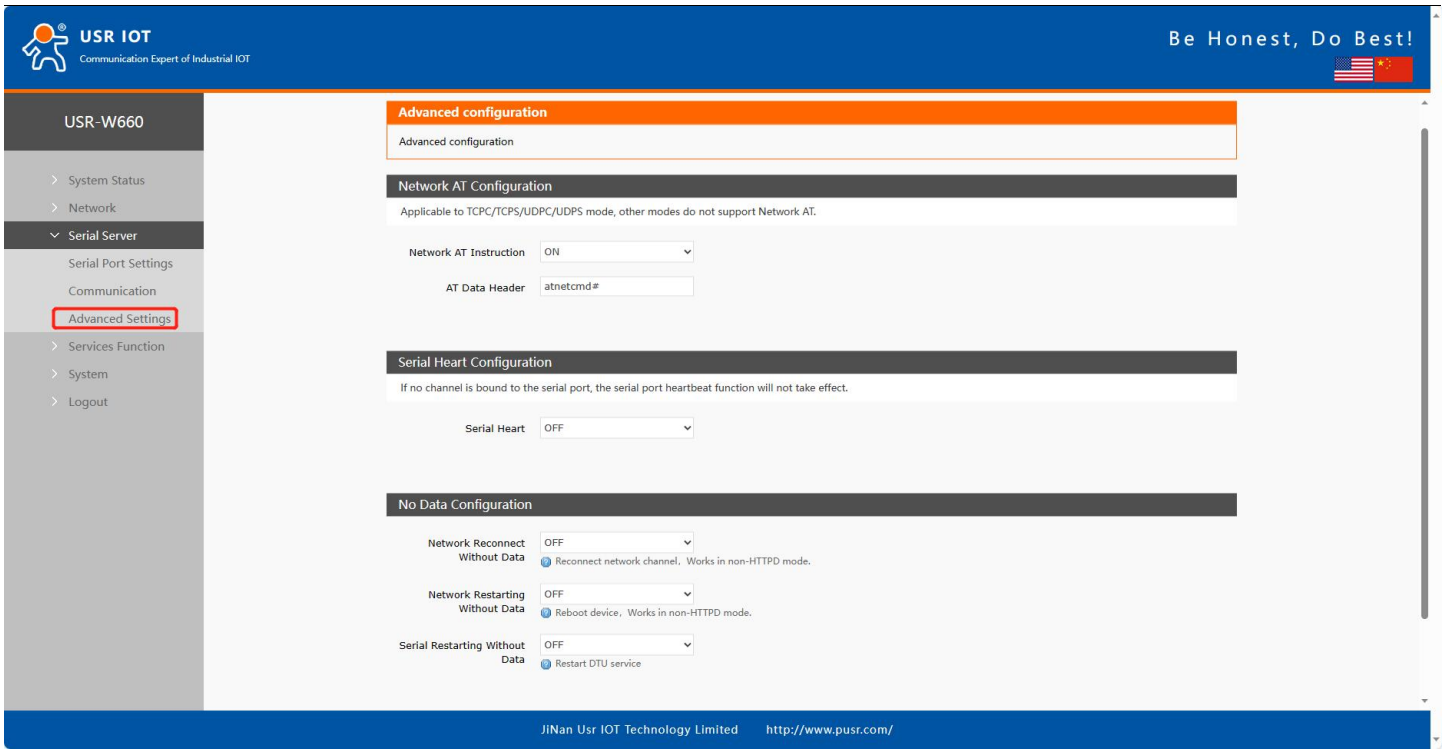


Figure 39.

Items	Description	Default
Network AT Instruction	Whether to enable network AT commands. ON: enabled / OFF: disabled	ON
AT Data Header	Password for network AT commands	atnetcmd#
Serial Heart	ON: enable sending heartbeat packets to the serial port OFF: disable sending heartbeat packets to the serial port	OFF
Heartbeat Type	HEX: hexadecimal type ASCII: character type Refer to section 8.2.7.2 for heartbeat packet details	HEX
User-Defined Packet	Content of the heartbeat packet	NULL
Heartbeat Interval	Interval at which heartbeat packets are sent, in seconds	60
Serial Binding	COM1-485: use 485 channel for data communication COM2-232: use 232 channel for data communication COM1+COM2: use RS232 or RS485 channel for data transmission	COM1+COM2
Network Reconnect Without Data	Trigger reconnection if no data is received from each channel within the set time. Applicable to non-HTTP protocols, see details below for specifics	OFF
Reconnect Detection Interval(s)	Set time interval, in seconds	3600

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Network Restarting Without Data	Trigger device restart if no data is received from all channels within the set time. Applicable to non-HTTP protocols, see details below for specifics	OFF
Restart Detection Interval(s)	Set time interval, in seconds	36000
Serial Restarting Without Data	Trigger device restart if no data is received from all channels within the set time. Applicable to non-HTTP protocols, see details below for specifics	OFF
Restart Detection Interval(s)	Set time interval, in seconds	3600
Effective serial port	COM1-485/COM2-232/COM1+COM2	COM1-485

6. Service function

6.1. PUSR Cloud

PUSR Cloud address: https://account.usriot.com/#/login. Using PUSR Cloud service allows wireless client devices to be monitored and controlled efficiently and uniformly managed on Someone's Cloud platform.

The USR-W630s default disables PUSR Cloud service function. The interface can be configured to report parameters such as traffic statistics, network status, and heartbeat packets. It also supports data reporting to private deployments.

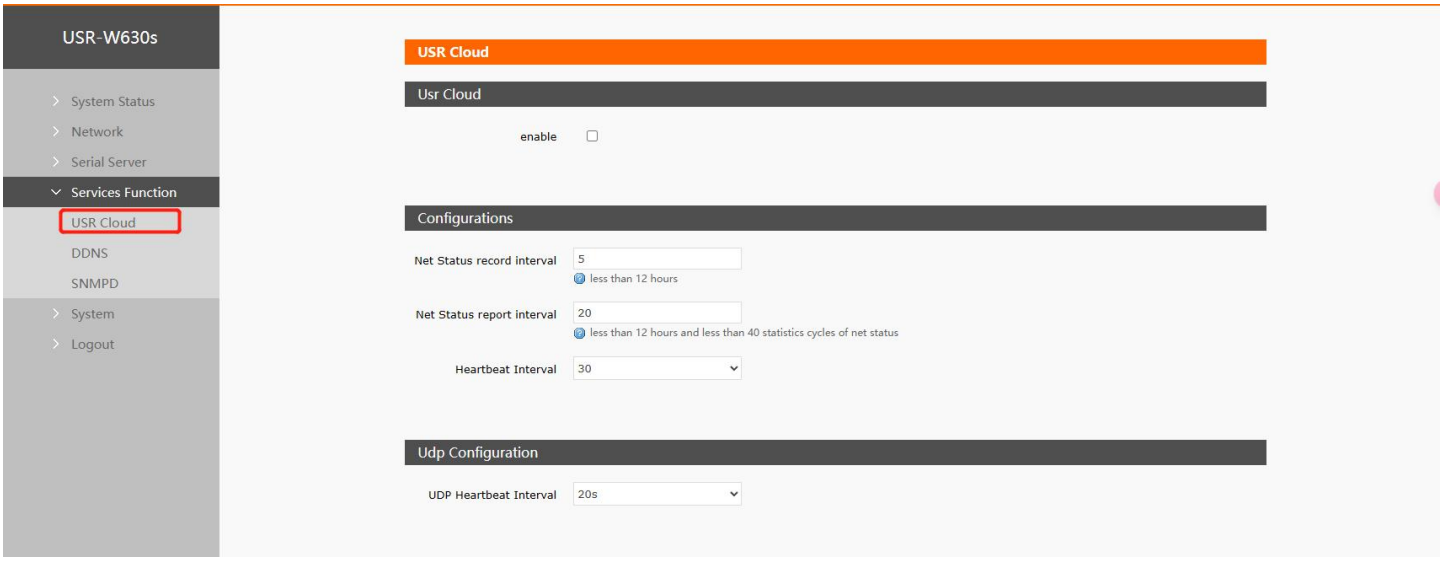


Figure 40. PUSR cloud

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6.2. DDNS

DDNS (Dynamic Domain Name Server) is a service that maps a user's dynamic IP address to a fixed domain name resolution service. Each time a user connects to the network, the client program sends the dynamic IP address of the host to the server program located on the service provider's host through information transmission. The server program is responsible for providing DNS services and implementing dynamic domain name resolution.

6.2.1. Supported Services

The use of dynamic domain names falls into two scenarios. The first scenario is when the wireless client itself supports this service (check under the "Service" dropdown menu and select the corresponding DDNS service provider, here using Peanut Shell). The setup method is as follows:

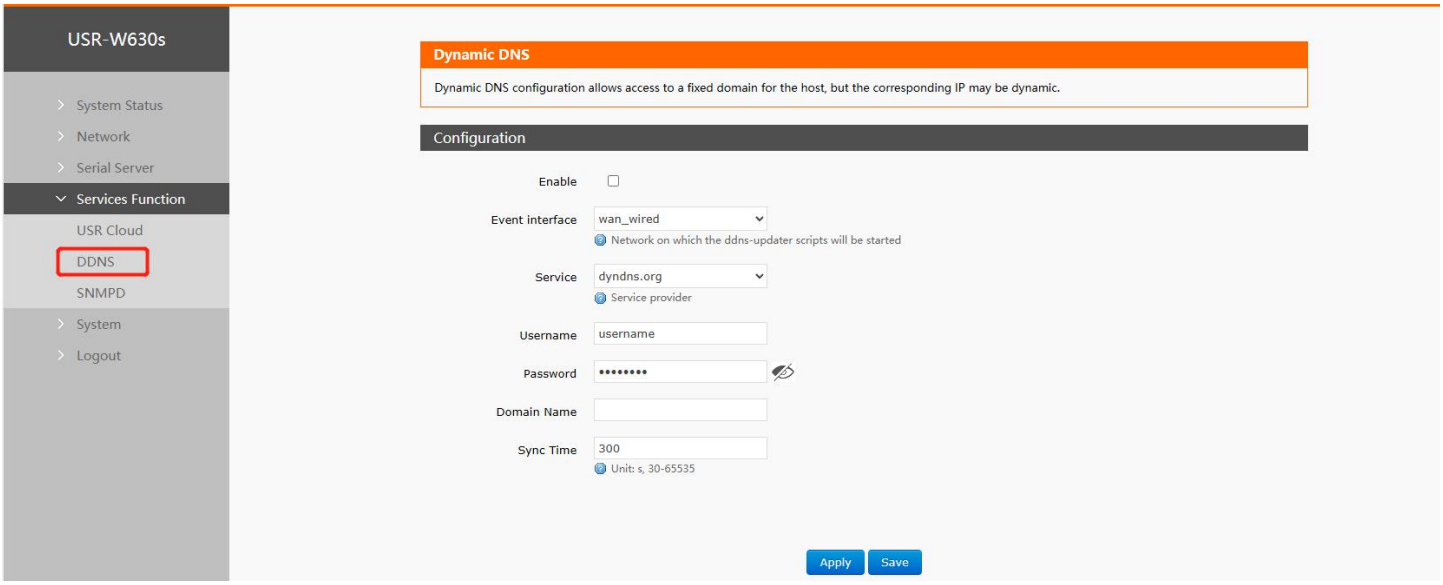


Figure 41. Dyndns Service

- DDNS function provides dynamic domain name resolution capability for wireless clients in the external network, allowing them to apply for a domain name that points to their WAN IP address.
- This feature allows remote access to wireless clients directly through domain names.
- Parameters need to be filled in as follows (using Peanut Shell as an example).

Items	Description	Default
Enable	Check to enable DDNS functionality	Not checked
Event interface	Choose which WAN port as needed	wan_wired
Service	Please fill in the DDNS service address	dyndns.org
Username	Peanut Shell account name	username
Password	Peanut Shell password	password

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Domain Name	DDNS applied domain name	NULL
Sync Time	Unit: s Interval to detect IP address changes	300

6.2.2. User Defined DNS Service

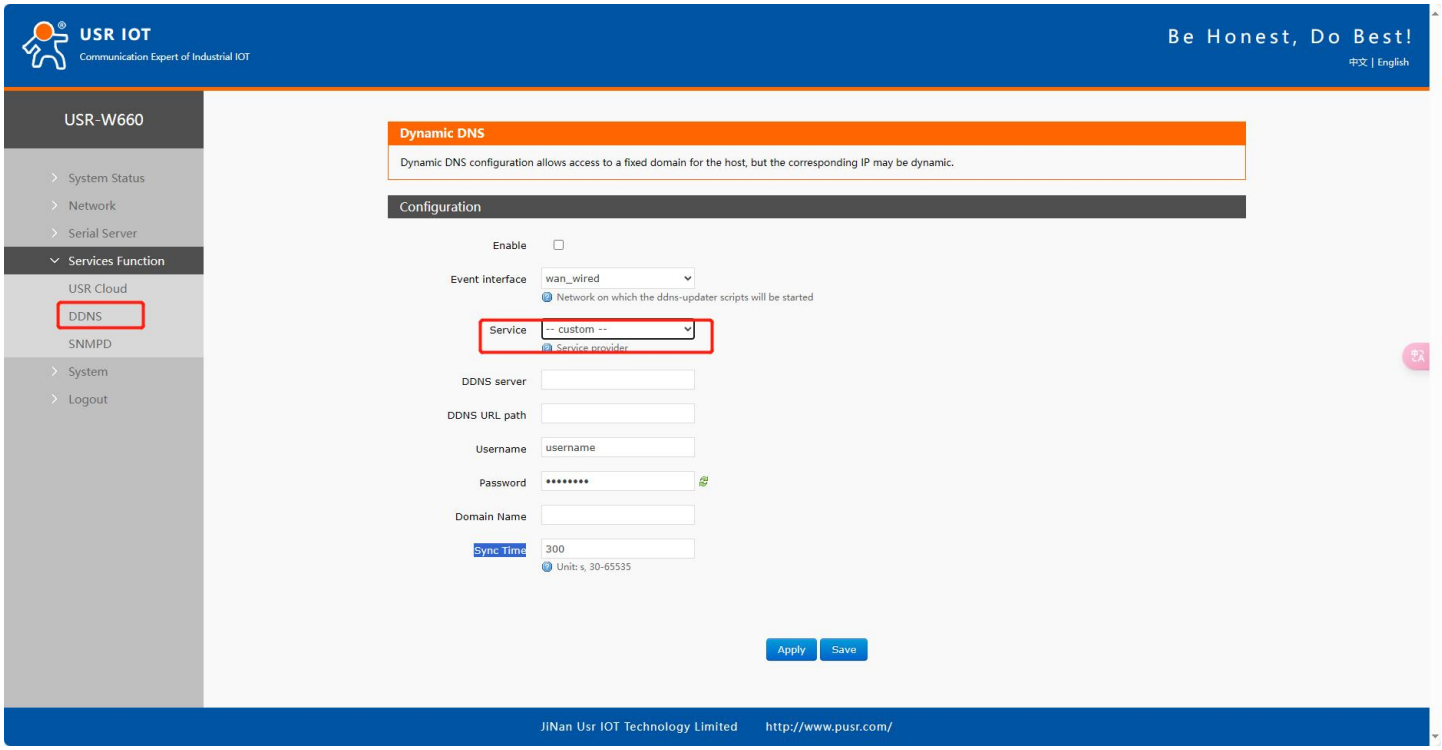


Figure 42. User defined DNS settings

Items	Description	Default
Enable	Check to enable DDNS functionality	OFF
Event interface	Choose which WAN port as needed	wan_wired
Service	Choose the corresponding server, here selecting Custom	dyndns.org
DDNS server	DDNS provider address, here fill in ddns.oray.com	NULL
DDNS URL path	Please fill in the service URL path for DDNS (here using Peanut Shell as an example, select Custom service), Peanut Shell URL is as follows: /ph/update?hostname=%h&myip=%i	NULL
Username	Peanut Shell account name	username
Password	Peanut Shell password	password
Domain Name	DDNS applied domain name	NULL
Sync Time	Unit:Second Range: 30~65535	300

Note:

✓Please strictly fill in the parameters as described in the table, including Service/URL, Registered Domain Name, Username/Password, Interface, to ensure accuracy.

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✓DDNS + Port Mapping can facilitate remote access to the wireless client's internal network.

✓If the network where the wireless client is located does not have a dedicated public IP address, this feature cannot be utilized.

6.3. SNMPD

The USR-W630s device is equipped with SNMP (Simple Network Management Protocol) service, which allows you to remotely view device information, modify device parameters, and monitor device status using the SNMP protocol. It eliminates the need to be physically present on-site for monitoring and configuring the device. This device supports SNMP versions V2C and V3.

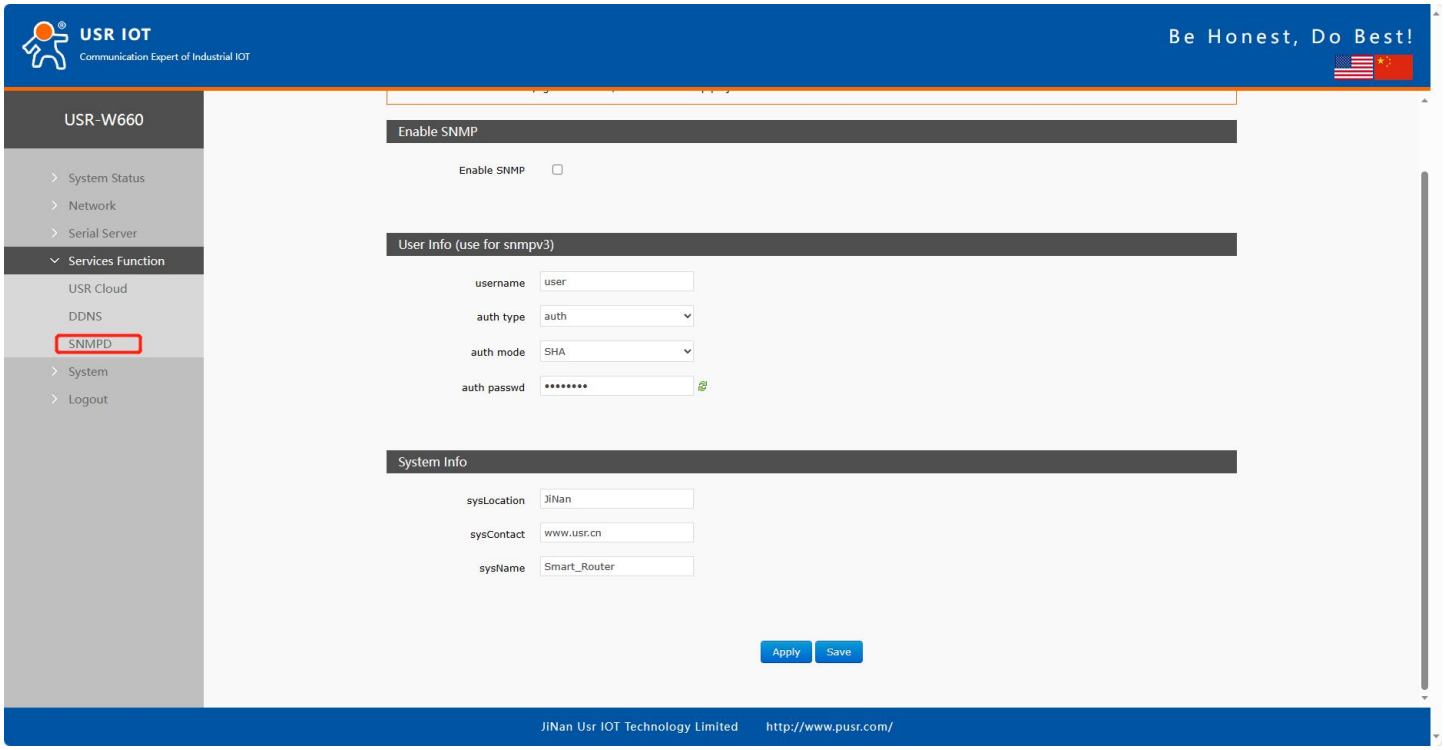


Figure 43. SNMPD settings

Items	Description	Default
Enable SNMP	Enable SNMP service by checking the box	Not checked
username	Name assigned to the SNMP user	user
auth type	Type of authentication, auth or auth_enc	auth
auth mode	Verification protocol used by the user and host to receive traps. MD5 or SHA	SHA
auth passwd	User authorization password	authpass
encryption mode	Encryption protocol type, either DES or AES	DES
encryption passwd	Encryption password used as the encryption private key	privpass

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sysLocation	Location of this device	JiNan
sysContact	Person to contact for this device	www.pusr.com
sysName	Name of this device	Smart_Router

7. Contact Us

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