



Industrial Intelligent Gateway

User Manual

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1.Product Introduction

1.1. Overview

Industrial Intelligent Gateway

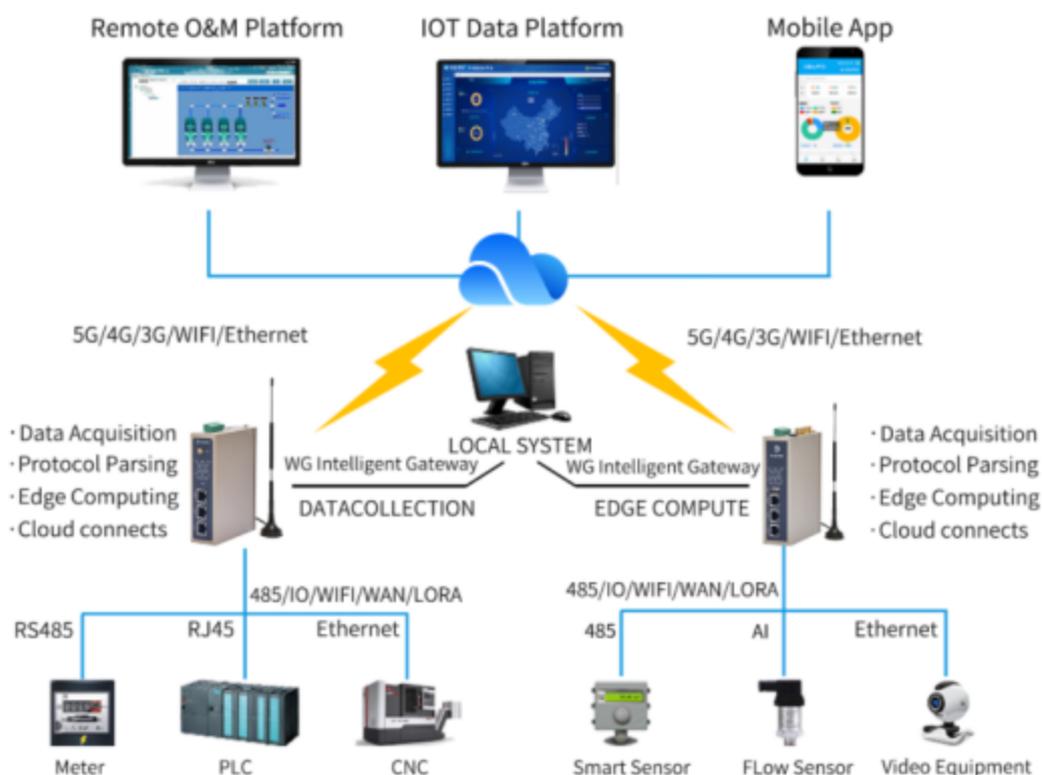
Data Acquisition, Edge Computing, Data Cloud Upload



WideIoT's Industrial Intelligent Gateways are critical edge nodes for both Industrial IoT (IIoT) systems and Industrial SCADA systems. It is capable of collecting data from a wide range of devices, including PLCs, CNCs, meters, sensors, robotic arms, environmental protection equipment, and energy devices. Following protocol conversion, edge computing, and data standardization, it integrates this data into various industrial cloud platforms and software, such as IoT Platform, SCADA, MES, and EMS.

WideIoT's Industrial Intelligent Gateways are widely used in industrial fields such as smart factories, smart grids, smart water conservancy, environmental monitoring, sewage treatment, elevator monitoring, packaging machinery, printing and dyeing machinery, engineering machinery, textile machinery, water supply equipment, and thermal boilers. Multiple network access options, a rich protocol library, stable and

reliable connectivity, and comprehensive gateway management and application functions assist industrial customers in building Industry 4.0 service systems.



✓ Rich Interfaces, Access Anywhere, Anytime

Supports 5G, 4G, 3G, PPPoE, Wi-Fi networks, digital IO input/output, and serial terminal communication, providing different access solutions for different application scenarios.

✓ Edge Computing, Intelligent Analysis Applications

Built-in protocol analyzer supporting mainstream industrial control protocols (Modbus/Siemens/Mitsubishi/Schneider/Omron/Delta/Gukuang, etc.) and customized proprietary protocols; implements local computing through strategy rule calculation and application deployment distribution; allows custom formula

creation based on algorithms and logic; convenient logical operations and formula calculations enhance device control capability and real-time performance.

✓ **Efficient Transmission, Massive Device Access**

Built-in WideIoT data communication protocol WDCP enables standardized access, collection, and control of complex machine types on-site; built-in MQTT IoT protocol can stably and reliably aggregate data to data centers for computation and storage; optimized channel technology, edge computing, and data compression/encryption technologies enable massive device access.

✓ **Industrial Quality, High-Reliability Design**

Industrial-grade imported components and industrial-grade hardware protection design.

Supports link real-time detection, enabling automatic re-dial upon disconnection, maintaining long-lasting link connection.

Device fault self-healing design: Embedded hardware watchdog and software watchdog technologies enable device operation fault self-repair, ensuring high device availability.

System Security Guard: Monitors system and application status in real-time through the System Security Guard, preventing and recovering from unsafe and unstable system nodes.

✓ **Powerful Security Features**

Data transmission security: Supports L2TP, PPTP, IPSec VPN, Open VPN, CA certificates to ensure secure data transmission.

Network protection security: Powerful firewall function, allowing customized comprehensive protection strategies according to customer needs, such as

supporting SPI full state detection, Secure Shell (SSH), intrusion protection (Ping disabled), DDoS defense, attack defense, IP-MAC binding, and other firewall functions to protect the network from external attacks.

✓ **Edge Interaction**

Device time calibration: Enables direct time synchronization between the gateway and PLC.

Device liveness: Enables status linkage between the gateway and PLC.

✓ **Protocol Penetration**

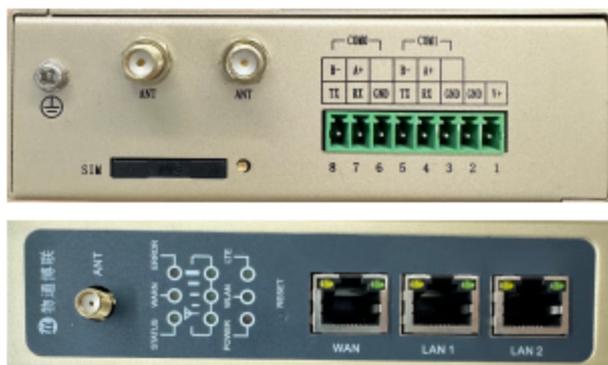
Opens an open protocol MQTT channel; by configuring the gateway, the original data reported by the device can be parsed on the server side, enabling message interaction between device-server and server-device, facilitating device protocol development.

✓ **Multi-Network Mutual Backup**

Effectively solves issues like data packet loss caused by network switching; customizable watchdog function enables automatic seamless network switching; features multiple layers of customizable configuration, supporting up to three network interfaces simultaneously selected, periodic detection, simple configuration steps, ensuring network link security.

1.2. Technical Specifications

Product Interfaces



Note: Accessories and interfaces may vary depending on the model. Refer to the actual product.

Power

Item	Content
Input Voltage	DC 12V
Acceptable Voltage Range	DC 6~35V

Power Consumption

Operating Mode	Power Consumption
Standby	80mA~120mA@12V
Communication	200mA~220mA@12V
Peak	240mA@12.0V

Physical Characteristics

Item	Content
Enclosure	Metal shell (champagne gold), IP30 protection level, suitable for most industrial control applications.
Dimensions	136x106.5x35(mm)
Weight	500g

Other

Item	Content
Operating Temperature	-20℃ ~ 70℃
Storage Temperature	-40 ℃~ 85℃
Relative Humidity	5% ~ 95% (non-condensing)

2. Installation Guide

2.1. Installation Overview

The gateway must be correctly installed to achieve its designed functions. The installation of this device must be guided by a qualified engineer approved by the company.

⚠ Warning:

Do not install the device while it is powered on.

2.2. Packing List

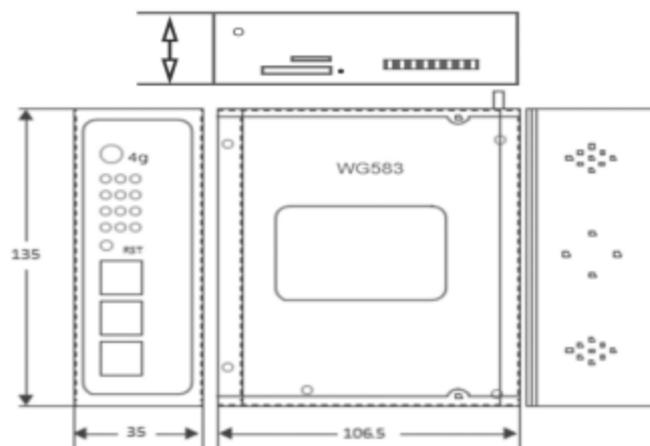
For safe transportation, you need proper packaging. Please retain the packaging materials after unpacking the device for potential future transportation needs.

It includes the following components:

- ✦ 1 Gateway
- ✦ 1 Wireless Cellular Antenna (if the model has 4G function)
- ✦ 2 WIFI Antennas (if the model has WIFI function)
- ✦ 1 Power Cable
- ✦ 1 Ethernet Cable
- ✦ 1 DIN Rail Clip
- ✦ Product Certifications
- ✦ Warranty Card

2.3. Installation and Cable Connection

Dimensions (Unit: millimeters)



Antenna Installation:

The wireless 4G antenna interface is a standard SMA female connector (on the side). Please insert the cellular antenna into this interface and ensure it is tightened to avoid affecting signal quality.

The wireless WIFI antenna interfaces are 2 standard SMA male connectors (on the top). Please insert the WIFI antennas into these interfaces and ensure they are tightened to avoid affecting signal quality.

Note: Do not mix the 4G antenna with the WIFI antennas, as this may cause the device to malfunction.

SIM/UIM Card Installation Steps:

Gently press the round eject button on the left side of the card slot, and the SIM/UIM card tray will automatically pop out. For installation, place the SIM/UIM card into the tray, ensuring the metal chip side faces outward, then insert the tray back into the device.

(The following is an example for a single SIM version)

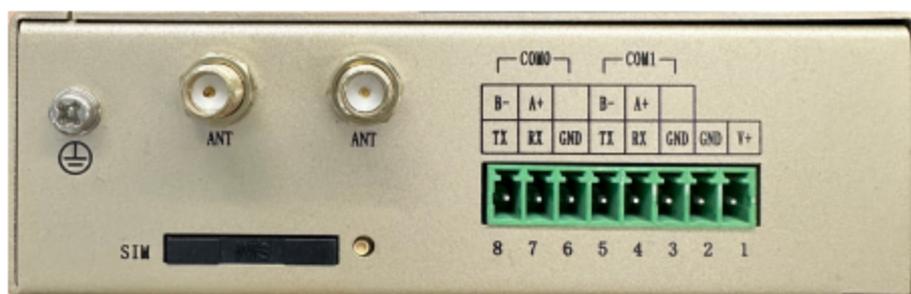


Ethernet Cable Connection:

Connect one end of the Ethernet cable to the gateway's LAN port and the other end to the user equipment's Ethernet port. The network cable specification is defined as follows:

LAN1	LAN2	Color
1	1	White/Orange
2	2	Orange
3	3	White/Green

4	4	Blue
5	5	White/Blue
6	6	Green
7	7	White/Brown
8	8	Brown



3.5mm Terminal Block Interface Definition:

This 8-pin terminal block includes POWER and RS485 (RS232) functions. The specific definitions are as follows:

Power Wiring		
Gateway Terminal	GND	VIN
	V-	V+
Description	Connect to DC6-35V negative pole	Connect to DC6-35V positive pole

RS485 Wiring		
Gateway Terminal	B-	A+
	T/B	R/A
Description	Connect to device RS485-	Connect to device RS485+

RS232 Wiring			
Gateway	TX	RX	GND

Terminal	T/B	R/A	GND
Description	Connect to device RS232RX	Connect to device RS232TX	Connect to device RS232GND

2.4. Power Supply Description

The WG series gateways are typically used in complex external environments. To adapt to the environment and enhance system stability, this gateway adopts advanced power supply technology. Users can use the standard 12V DC / 1A power adapter supplied with the device, or directly use a 6--35V wide-range DC power supply to power the device.

If users use other power supplies, they need to ensure stable output (ripple less than 300mV, instantaneous voltage not exceeding 35V), and the power is greater than 8W. We recommend using the standard 12V DC / 1A power adapter supplied with the device.

2.5. Indicator Lights Description

The gateway is equipped with the following LED indicators:

"STATUS", "WARN", "ERROR", 4G Signal Strength Indicator*3, "POWER", "WLAN", and "LTE".

Indicator	State	Description
STATUS	Blinking	Operating
WARN	Solid On	Cannot connect to 4G network
	Solid Off	4G Connected / Not Enabled
ERROR	Solid On	Abnormal Operation

	Solid Off	Normal Operation
POWER	Solid On	Power Normal
WLAN	Solid On	WIFI Enabled
	Solid Off	WIFI Disabled
LTE	Solid On	4G Enabled
	Solid Off	4G Disabled

2.6. Reset Function

This gateway is equipped with a reset button labeled "Reset". This button is used to restore the device to factory settings.

Operation Steps

First, power off the gateway and then power it back on;

When the STATUS and WARN indicators start alternating blinking, immediately press and hold the RESET button;

Wait until the ERROR light enters a slow blinking state before releasing (or hold for 3 seconds before releasing);

Press and hold the RESET button again until the ERROR light changes to fast blinking before releasing (or hold for 3 seconds before releasing);

At this point, the gateway will begin the automatic reset process.

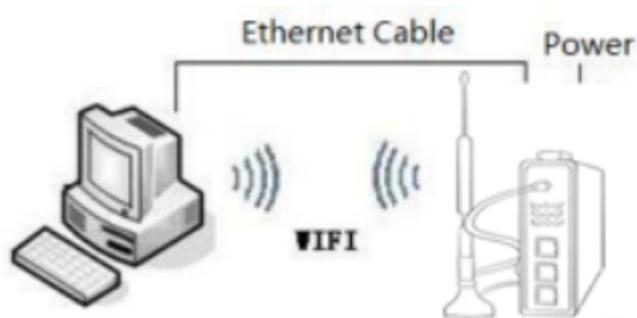
3. Configuration and Management

3.1. Configuration Connection

Connection Method Before Gateway Configuration

Before configuring the gateway, connect it to the computer using the included Ethernet cable.

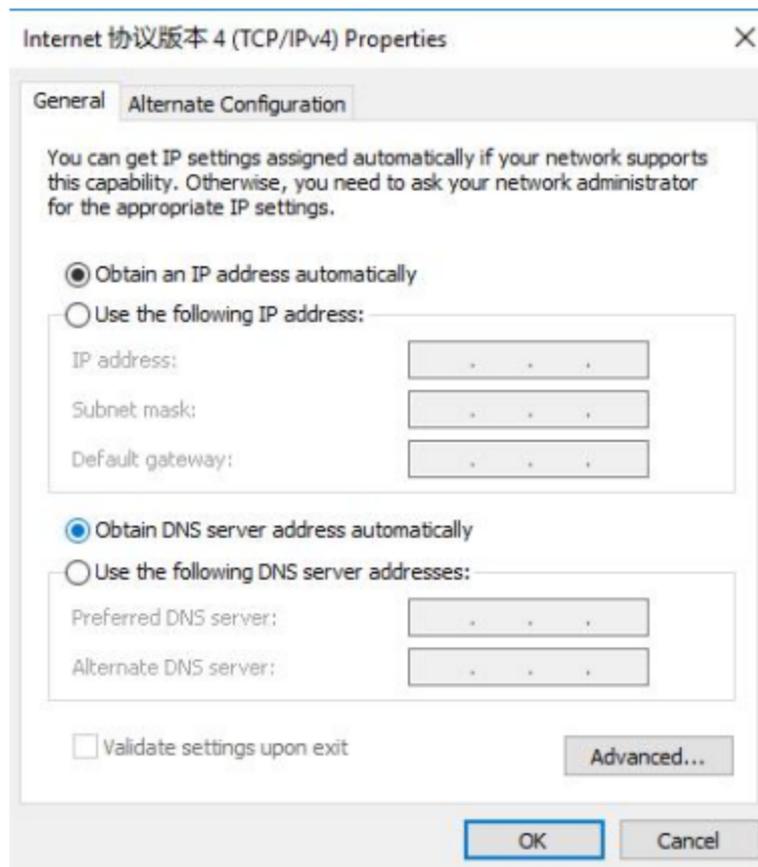
Wired Connection: Insert one end of the Ethernet cable into any LAN port of the gateway, and the other end into the Ethernet port of the computer.



3.2. Accessing the Configuration Interface

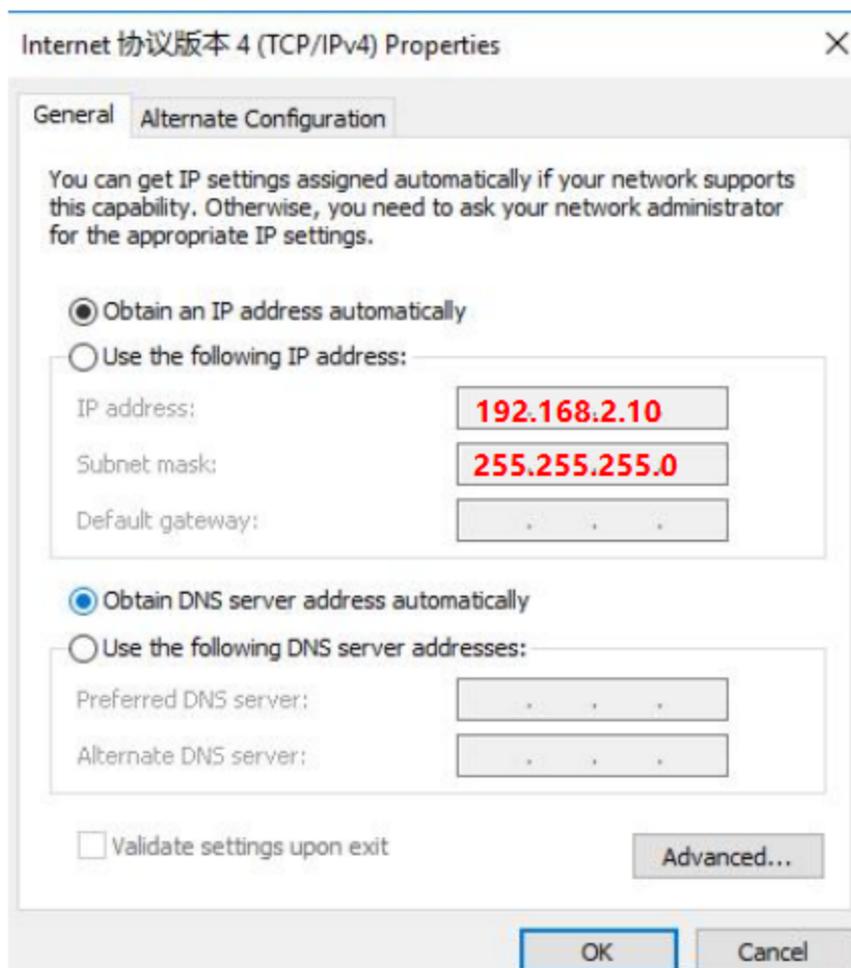
3.2.1. Computer IP Address Setting (Two Methods)

Method 1: Obtain IP Address Automatically



Method 2: Static IP Address Setting

Set the computer's IP address to 192.168.2.10 (or another IP address in the 192.168.2 network segment), subnet mask to 255.255.255.0, and default gateway to 192.168.2.1. The DNS can be set to any local available DNS server.



3.2.2. Logging In to the Configuration Interface

This chapter introduces the main functions of each setting page. Users can access the gateway's configuration interface via a web browser on the connected computer. The configuration interface includes 11 main pages: Setup, Wireless, Services, VPN, Security, Access Restrictions, NAT, QoS Setting, Applications, Administration, and Status.

To access the web-based configuration tool, open IE or another browser, enter the default gateway IP address 192.168.2.1 in the address bar, and press Enter.



Enter the correct username and password, then click "Login". The default username is "admin" and the default password is "123456". You can modify the default username and password in the "System" section.

3.3. Configuration and Management Functions

3.3.1. Ethernet Settings

1) Basic Settings

"WAN (Wide Area Network)" is used to configure how the gateway connects to the Internet. Specific parameter information can be obtained from your Internet Service Provider (ISP).

WAN Connection Type Setting

Select the required connection type from the drop-down menu. There are 3 optional types: Static IP, Automatic Configuration-DHCP, and PPPoE.

Type 1: Static IP

This connection type is usually used for dedicated line access, such as enterprise or commercial fiber. The Internet Service Provider (ISP) will provide you with detailed

network parameters, such as IP address, subnet mask, gateway, and DNS information. You need to use these parameters to configure the gateway.



Type 2: Automatic Configuration - DHCP

This is the default WAN connection type, used by some wired network service providers and home broadband Internet services.



The IP address of the WAN port will be obtained automatically via DHCP.

Type 3: PPPoE

When using a PPPoE connection, the Internet Service Provider (ISP) will provide a username, password, and service name. Enter this information into the relevant setting fields of the gateway.

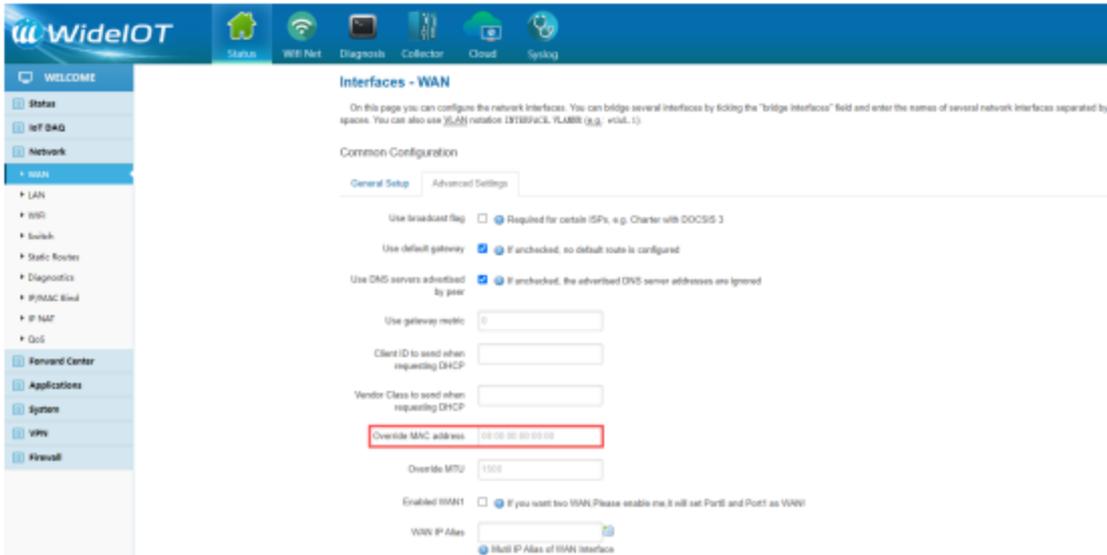


PAP/CHAP Username: The username used to log in to the Internet

PAP/CHAP Password: The password used to log in to the Internet

2) MAC Address Cloning

Some Internet Service Providers (ISPs) require users to register a MAC address. If you do not want to re-register the MAC address, you can clone the gateway's MAC address to the MAC address already registered with the ISP.



3.3.2. Wireless WiFi Settings

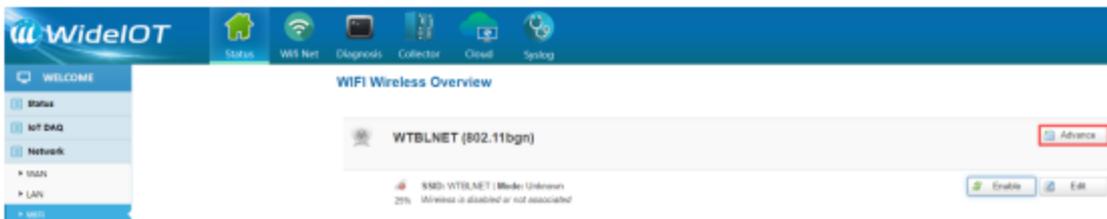
1) Basic Settings

WiFi client Configuration

WiFi Network - Click to enable



Click "Advanced"



Click "Scan"



Click "Join Network"



Enter the WIFI password - Click "Submit"

Join Network: Settings

Replace wireless configuration An additional network will be created if you leave this unchecked.

WPA passphrase

Specify the secret encryption key here.

Name of the new network

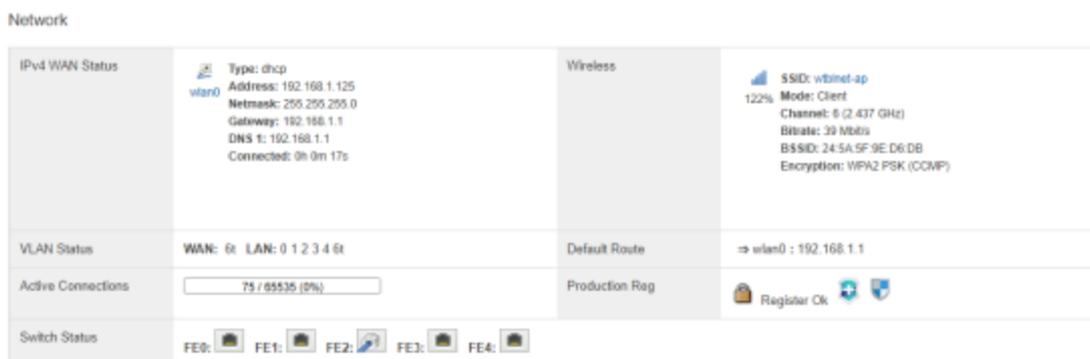
The allowed characters are: A-Z, a-z, 0-9 and .

Create / Assign firewall-zone

- ipsecvpn: ipsecvpn
- l2tp: l2tp
- lan: lan mygre_static
- n2mvpn: n2mvpn
- openconnect: openconnect (empty)
- openvpn: openvpn
- pptp: pptp
- wan: wan 3gnet ewan (empty) openvpn n2mvpn l2tp pptp ipsecvpn openconnect (empty)
- unspecified-or-create:

Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the create field to define a new zone and attach the interface to it.

Click "Status" - Scroll down to check the WIFI connection status. The figure below indicates that WIFI is connected.

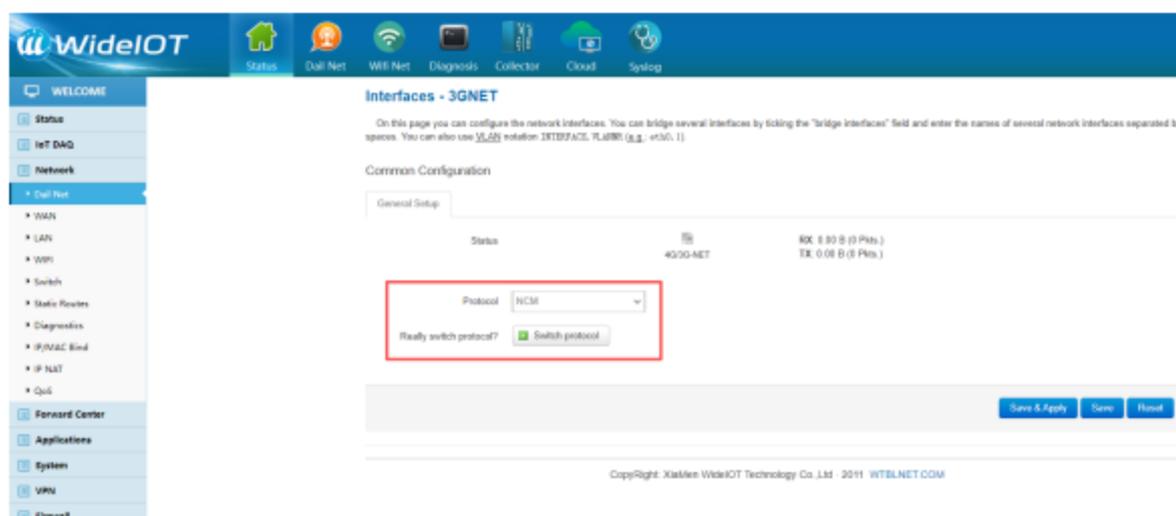


3.3.3. Dial-Up Network Settings

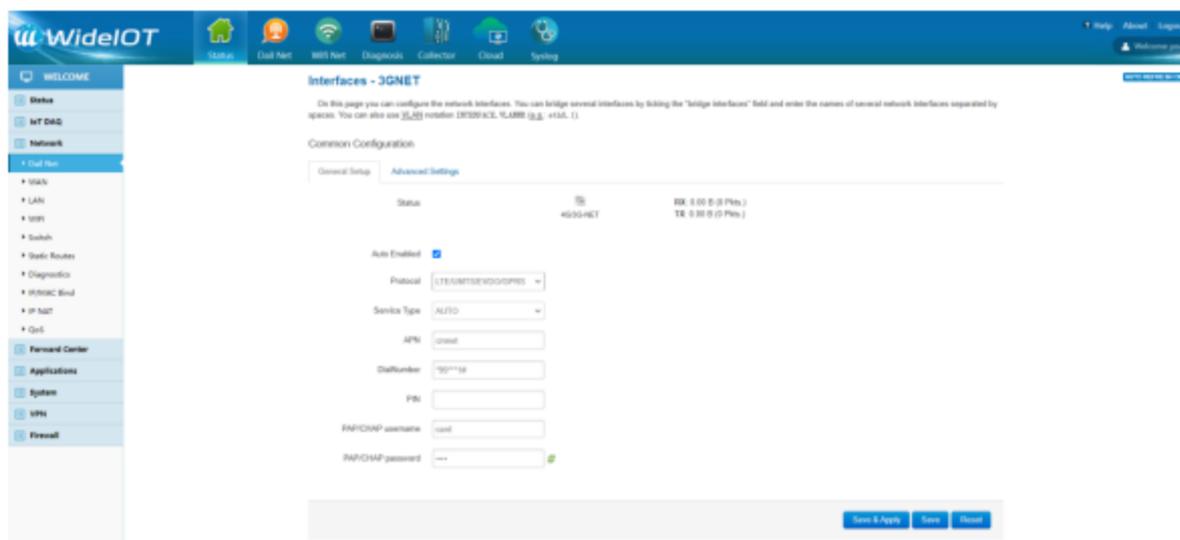
1) Basic Settings

Data Card Internet Configuration

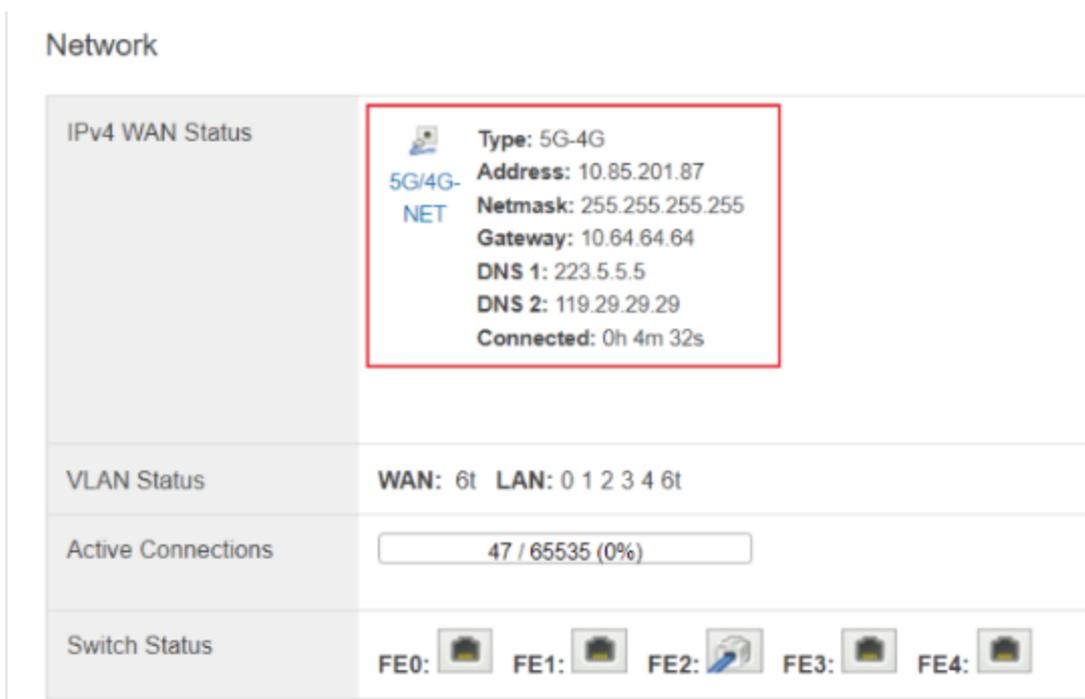
5G Dial-up Network ----- Switch communication protocol to NCM (5G mode), click Save & Apply. Dial-up network is checked by default from the factory.



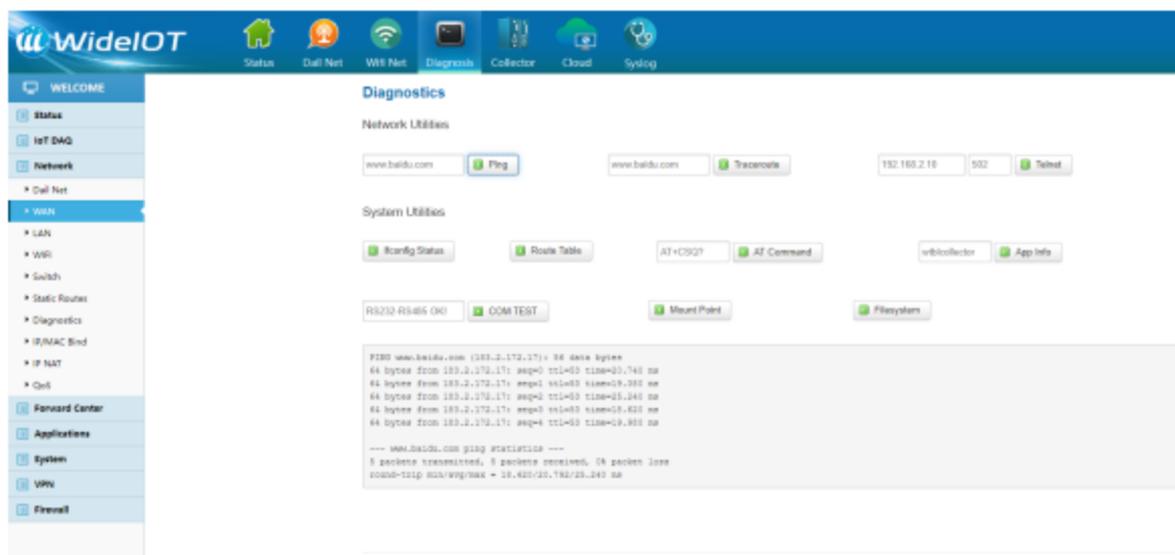
4G Dial-up Network ----- Switch communication protocol to LTE (4G mode), click Save & Apply. Dial-up network is checked by default from the factory.



Click "Status" - "Overview" - "Dail NET" - Check the network connection information



Use the diagnostic command "PING" to test connectivity to baidu to confirm Internet access



Note: If no SIM card is inserted, the SIM card is in poor contact, no antenna is connected, or the data card is in arrears, the system may restart irregularly.

3.3.4. VPN Configuration

1) PPTP

PPTP is a protocol that can be used for secure transmission (by establishing a VPN network). It is an extension protocol of the PPP protocol. Unlike the PPP data link layer, it encapsulates PPP data packets (such as dial-up authentication, IP allocation, etc.) within TCP/IP network IP packets. PPTP can also be used in private LAN-To-LAN networks.

Basic Settings

Turn on Auto Start, fill in the VPN server address, client username, and client user password.



Advanced Settings

Authentication Mode

When connecting to a VPN server based on a Linux system, select: ALL/pap/chap.

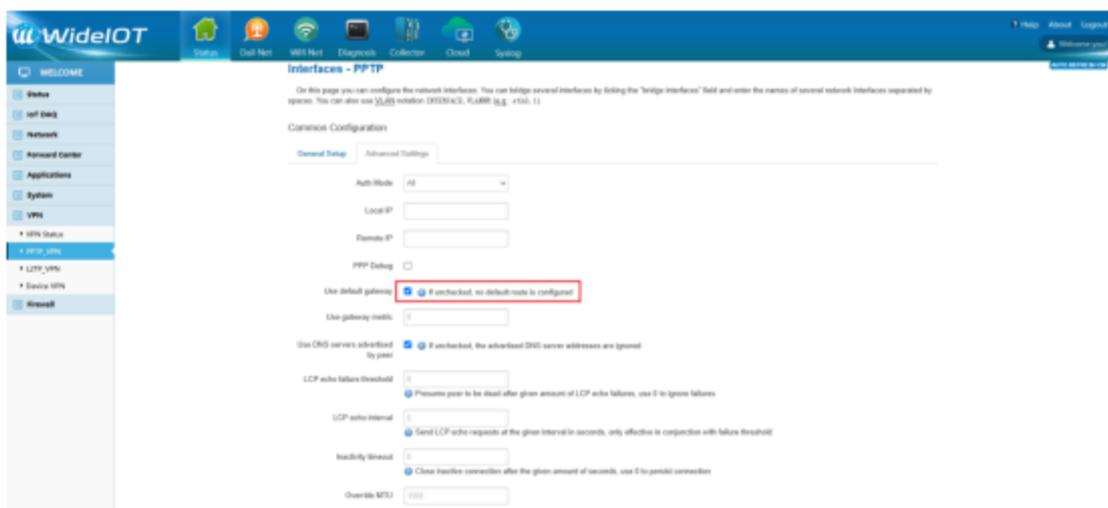
When connecting to a VPN server based on a Windows system, select:

Mschap/Mschap-v2.



Dual Channel Mode;

Dual Channel Internet Access: To both access the public internet and use the VPN service, the PPTP default gateway option needs to be removed.



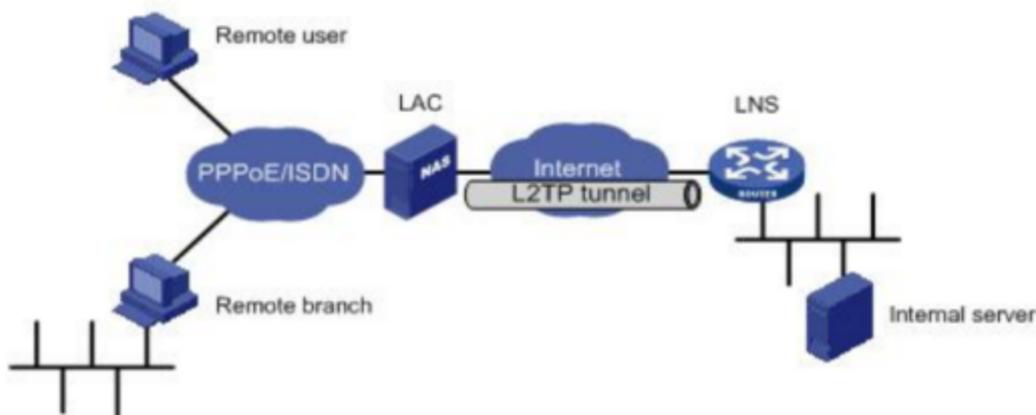
Specify the client tunnel address. After completing the basic and advanced settings, you can Save & Apply.



```
pptp-pptp Link encap:Point-to-Point Protocol
inet addr:100.100.100.2 P-t-P:100.100.100.1 Mask:255.255.255.255
UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1200 Metric:1
RX packets:574 errors:0 dropped:0 overruns:0 frame:0
TX packets:687 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:3
RX bytes:50091 (48.9 KiB) TX bytes:55970 (54.6 KiB)
```

2) L2TP

L2TP (Layer 2 Tunneling Protocol) is a type of VPDN (Virtual Private Dial-up Network) tunneling protocol. VPDN refers to using the dial-up function of a public network to access the public network, implementing a virtual private network, thereby providing dedicated network access services for industrial field devices. That is, VPDN provides an economical and effective point-to-point connection method between remote users and private enterprise networks.



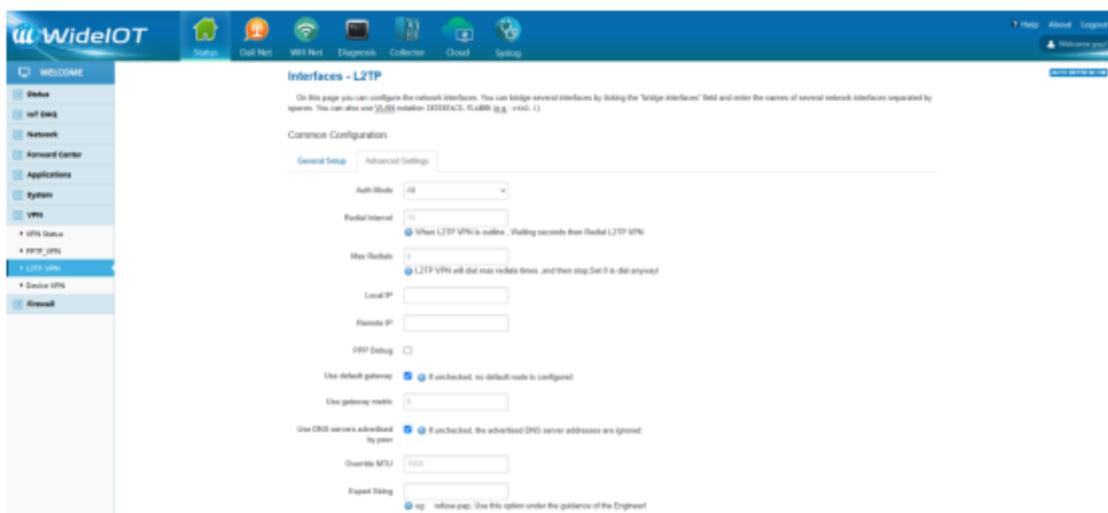
Basic Settings

Check Auto Start, enter "L2TP Name", enter the public IP address or domain name of the VPN server in "L2TP Server"; enter the username and password created earlier on the VPN server in "Username" and "Password", they need to be consistent;



Advanced Settings

Depending on the type of L2TP server, more in-depth configuration can be performed in the advanced options. Generally, basic configuration is sufficient. L2TP servers embedded in LINUX systems generally use CHAP authentication mode, Windows generally selects Mschap-V2. If unsure, please select ALL, then click "Save".



```

12tp-12tp Link encap:Point-to-Point Protocol
inet addr:200.200.200.12 P-t-P:200.200.200.1 Mask:255.255.255.255
UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1200 Metric:1
RX packets:4 errors:0 dropped:0 overruns:0 frame:0
TX packets:11 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:3
RX bytes:46 (46.0 B) TX bytes:572 (572.0 B)

```

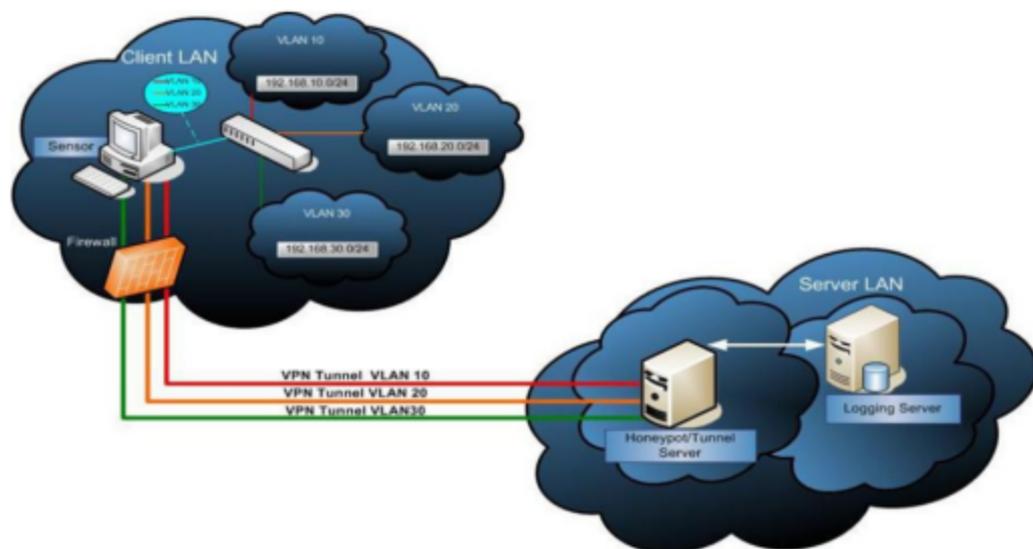
3) OPEN VPN

VPN technology establishes a private tunnel on the public network through key exchange, encapsulation, authentication, and encryption means, ensuring the integrity, confidentiality, and validity of transmitted data.

OpenVPN utilizes virtual network cards to implement SSL VPN functionality in a new way, adapting to almost all applications above the IP layer. All OpenVPN communication is based on a single IP port, using UDP protocol by default and recommended, while TCP is also supported. OpenVPN connections can pass through most proxy servers and work well in NAT environments. The server has the function of "pushing" certain network configuration information to the client, including IP addresses, routing settings, etc. OpenVPN provides two types of virtual network interfaces: universal Tun/Tap drivers, through which three-layer IP tunnels or virtual two-layer Ethernet can be established, the latter can transmit any type of two-layer Ethernet data. The transmitted data can be compressed by the

LZO algorithm. The official port assigned by IANA (Internet Assigned Numbers Authority) to OpenVPN is 1194.

The characteristic of OpenVPN using common network protocols (TCP and UDP) makes it an ideal replacement for protocols like IPsec, especially when ISPs (Internet service providers) filter certain specific VPN protocols.



Configuration Parameters

Description of relevant parameters for configuring Open VPN on the gateway.

OpenVPN Configuration Parameters		
No.	Configuration Parameter	Description
1	remote port	192.168.1.15 1194
2	proto	udp tcp
3	nobind	Do not bind
4	remote_random	None
5	comp_lzo	yes
6	tun_ipv6	None
7	verb	6
8	ca	ca.crt
9	dh	dh2048.pem
10	cert	some-client.crt
11	key	some-client.key

12	auth_user_pass	Not set (non-password)
13	username	Not set (non-password)
14	password	Not set (non-password)
15	keepalive	10 60
16	pkcs12	some-client.pk12 (None)
17	secret	secret.key (None)

VPN Configuration

Fill in the local IP address and port number of the server in the Remote Host field, and select TCP for the Communication Protocol.



Upload the computer client CA root certificate, local certificate, and local key, then finally Save & Apply.

CA

Uploaded File (1.68 KB)

[? Certificate authority](#)

重新上传 Reload

CERT

Uploaded File (5.23 KB)

[? Local certificate](#)

重新上传 Reload

KEY

Uploaded File (1.66 KB)

[? Local private key](#)

重新上传 Reload

-- Additional Field -- Add

```
C:\Windows\system32\cmd.exe
Windows IP 配置

以太网适配器 以太网 4:
    连接特定的 DNS 后缀 . . . . . : Lan
    本地连接 IPv6 地址 . . . . . : fe80::8cf:15d8:21a4:89b8%22
    IPv4 地址 . . . . . : 192.168.14.152
    子网掩码 . . . . . : 255.255.255.0
    默认网关 . . . . . : 192.168.14.100

以太网适配器 MyTap1:
    媒体状态 . . . . . : 媒体已断开连接
    连接特定的 DNS 后缀 . . . . . :

C:\Users\TANG>ping 192.168.13.235

正在 Ping 192.168.13.235 具有 32 字节的数据:
来自 192.168.13.235 的回复: 字节=32 时间=144ms TTL=61
来自 192.168.13.235 的回复: 字节=32 时间=152ms TTL=61
来自 192.168.13.235 的回复: 字节=32 时间=167ms TTL=61
来自 192.168.13.235 的回复: 字节=32 时间=157ms TTL=61

192.168.13.235 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 144ms, 最长 = 167ms, 平均 = 155ms

C:\Users\TANG>
```

3.3.5. Security Settings

1) Firewall

Firewall settings include parameter configurations for Basic Settings, Access Control, Port Forwarding, SNAT, DMZ, Advanced Rules, etc.

Basic Settings

This page contains basic settings, which mostly do not require configuration.



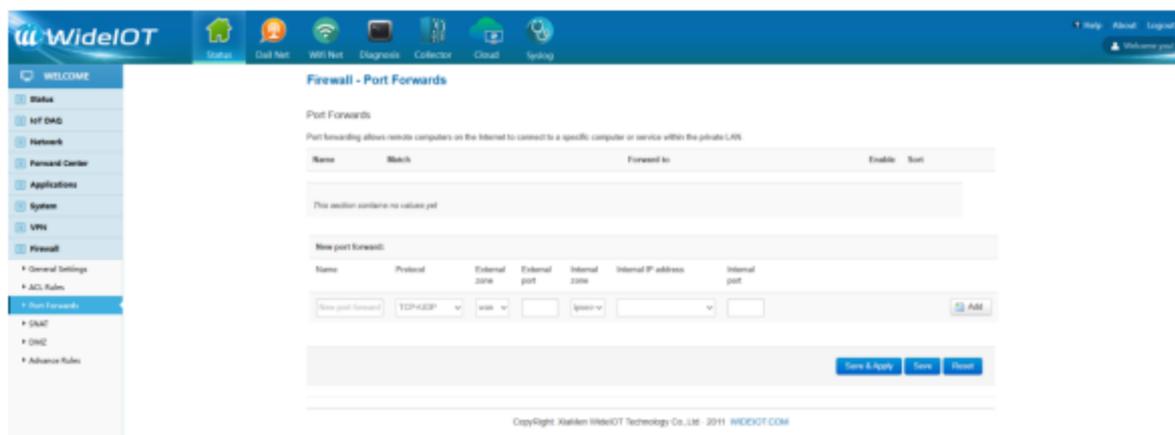
Access Control

This page contains basic access control settings. ACL rules, i.e., Access Control List rules, are used to define the data packet transmission policy from the external network to the internal network. Fine-grained control can be applied to protocol, target IP address, external port, source IP address, internal port, and action (accept, drop, reject).



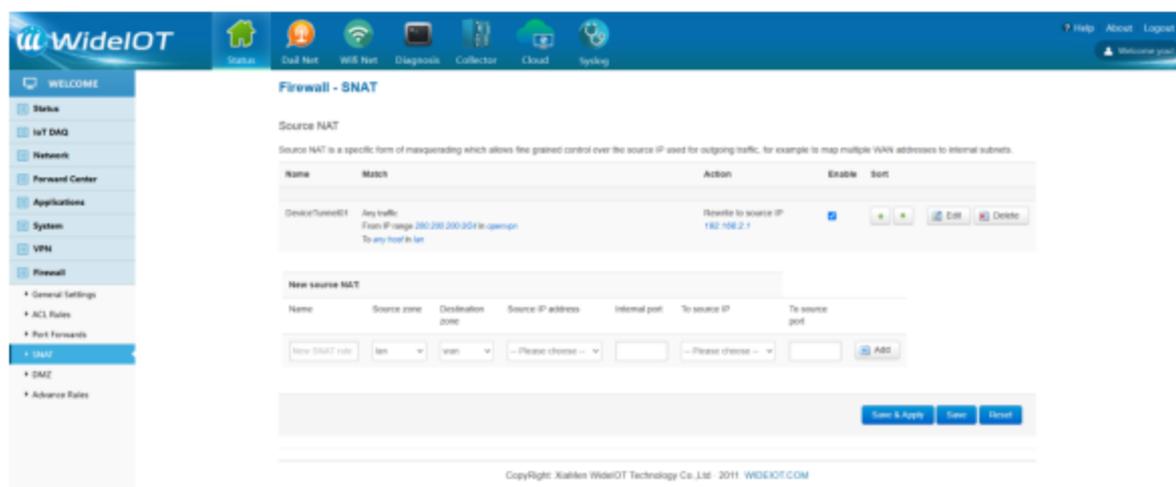
Port Forwarding

Port forwarding, also called port mapping, maps a port of the external network host's IP address to a machine on the internal network to provide corresponding services. When a user accesses this port of the IP, the gateway automatically forwards the request to the corresponding machine within the LAN. A typical application is to open a fixed port on the NAT gateway (router) and set which internal IP and port the data received on this port should be forwarded to. This mapping relationship persists regardless of whether there is a connection or not. This allows the public network to actively access a computer on the internal network.



SNAT

SNAT refers to replacing the source address and port in the data packet with a specified IP address and specified port when the data packet is sent out from the gateway. This way, the receiver considers the source of the data packet to be the host and port of the replaced IP. Source NAT is a special form of packet masquerading that allows fine-grained control over the source IP of outgoing traffic.



DMZ

The DMZ firewall solution adds a security line of defense for the internal network to be protected and is generally considered very secure. At the same time, it provides an area to place public servers, thus effectively avoiding situations where some internet applications need to be public, conflicting with internal security policies.



Advanced Rules

Advanced applications mainly provide more refined and flexible firewall control. There are several commonly used advanced rules by default; these advanced rules should not be deleted.



3.4. Configuring Data Acquisition

3.4.1. Modbus

1) Special Instructions

Byte Bit Extraction

Bit registers default to using the BIT type for reading and writing, such as 0X, 1X;

Non-bit registers do not support the Bit type, e.g., 4X cannot be defined as Bit type;

Byte registers (except bit registers) support byte bit extraction.

Example: The current value of modbus address 40001 is 3, need to extract the first bit.

Decimal 3 (short) = Binary (0000 0000 0000 0011)

Gateway configuration:

Register 4X, Register Address 1.0, Data Type short

Acquisition result: 1

Special types for analog sensors

WordFloat / DWordFloat / UWordFloat / UDWordFloat

The above types are mainly used for collecting analog data. When collecting analog data, the value given by the sensor is 16-bit (word) or 32-bit (Dword). After multiplying by a scaling factor, a floating-point data value is obtained, hence the need for the four types mentioned above.

Assume we are collecting data from a temperature sensor. The collected data value is 255, but the device point list requires us to set a scaling factor of 0.1, meaning the actual temperature is 25.5°C. If using ushort/short/ulong/long types and setting the scaling factor to 0.1, the value read by the gateway would be 25; if using WordFloat, DWordFloat, UWordFloat, UDWordFloat types, and setting the scaling factor to 0.1, then the value read by the gateway would be 25.5°C.

2) Modbus Function Codes

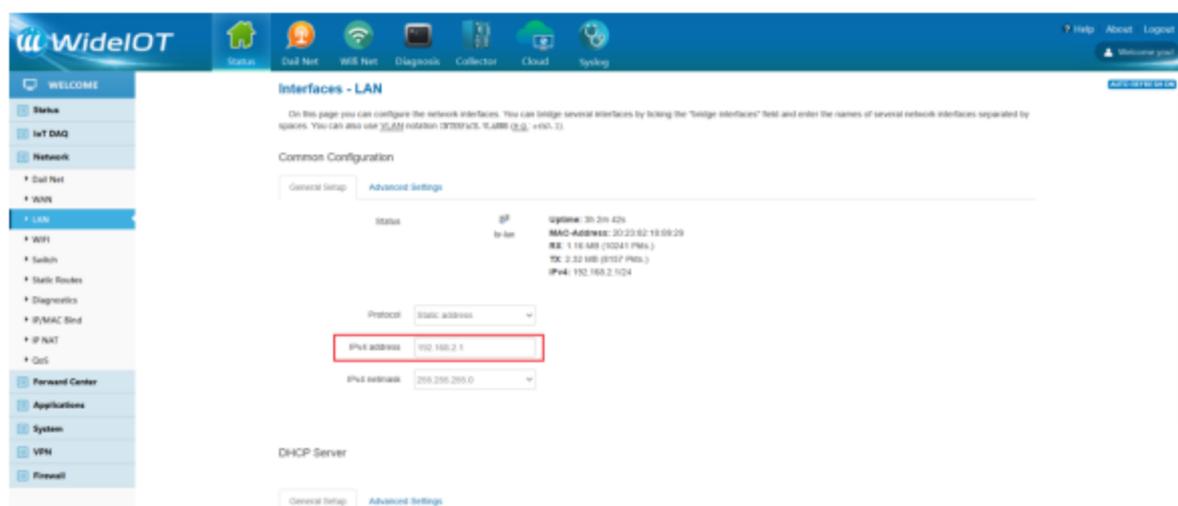
Function Code	Register	Register	Common Data Types	Register Address	Attribute
01	Read Coil Register	0X	BIT	0-65535	Read/Write

02	Read Status Register	1X	BIT	0-65535	Read Only
03	Read Holding Register	4X	SHORT	0-65535	Read/Write
04	Read Input Register	3X	SHORT	0-65535	Read Only
05	Write Single Coil				
06	Write Single Register				
15	Write Multiple Coils				
16	Write Multiple Registers				

3) Modbus TCP Acquisition

Gateway and PLC Connection

For network port communication, ensure the device's address and the gateway's LAN port address are on the same subnet. The gateway LAN port address (default: 192.168.2.1) can be modified by logging into the gateway WEB management interface: Network - LAN Internal Address.



- ① Obtain the PLC network port parameters via the PLC programming software.
- ② Connect the PLC network port to the gateway network port (LAN or FE1) using a network cable.

Configuration Parameters

Modbus TCP Communication Parameters			
Communication Protocol	Interface Type	IP Address	Port Number
Modbus TCP	Network Port	Instrument/ PLC Address	502
Extended Field (Default 0)	a;b;c a: Whether the address is 1-based, Base1=1, starting address is 1; Base1=0, starting address is 0; b: Algorithm, 0 means read one by one; 1 means merge algorithm (default 0 is fine); c: Double word byte order, 0 means byte order ABCD; 1 means CDAB; 2 means BADC, 3 means DCBA		

Adding a Device

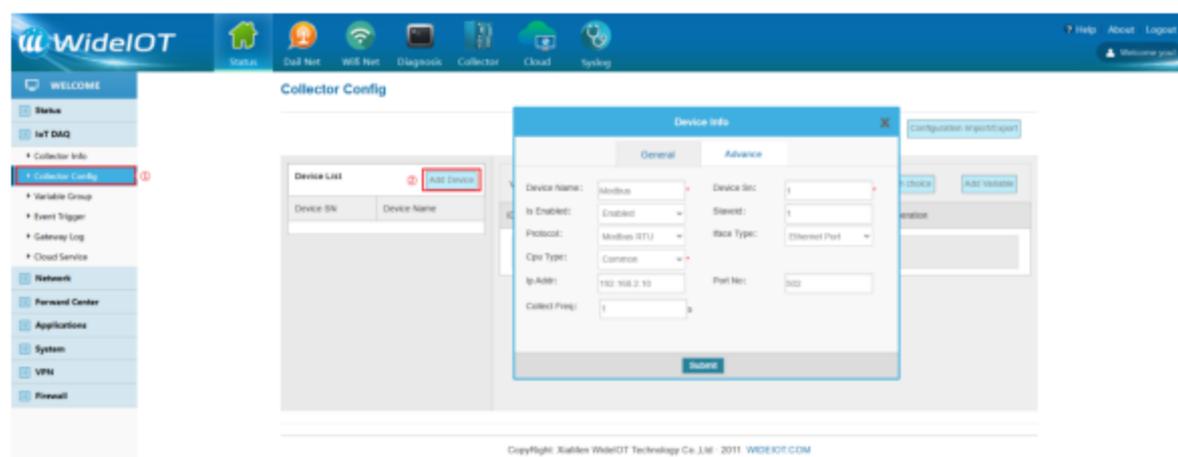
Data Acquisition Configuration --- Add Device --- Device Configuration --- Save

Communication Protocol: Modbus TCP;

IP Address: Fill in the PLC's IP address;

Port Number: 502 (Modbus default 502);

Acquisition Cycle: Custom acquisition frequency.



Advanced Options

Reply Timeout: If no data is received from the PLC within the specified time, it is judged as a timeout;

Extended Field: Fill in according to the actual situation of the PLC;

Maximum Packets per Read: The amount of data the gateway reads at one time;

Device Category: Label for this device.

The screenshot shows a 'Device Info' dialog box with two tabs: 'General' and 'Advance'. The 'Advance' tab is active. It contains four input fields: 'Ack Timeout' with a value of 600 and a unit of 'ms', 'maxPacketLen' with a value of 0, 'Extras Field' with a value of 0, and 'DeviceCategory' which is empty. A 'Submit' button is located at the bottom center of the dialog.

Adding Variables

Added Device --- Add Variable --- Variable Configuration --- Save

Variable Name: Customizable (recommended not to use Chinese characters);

Variable Alias: Customizable (recommended to use Chinese characters);

Variable Type: Select the corresponding variable type based on the PLC point's data type;

Register Type and Address: The register type and offset address of the point on the PLC.

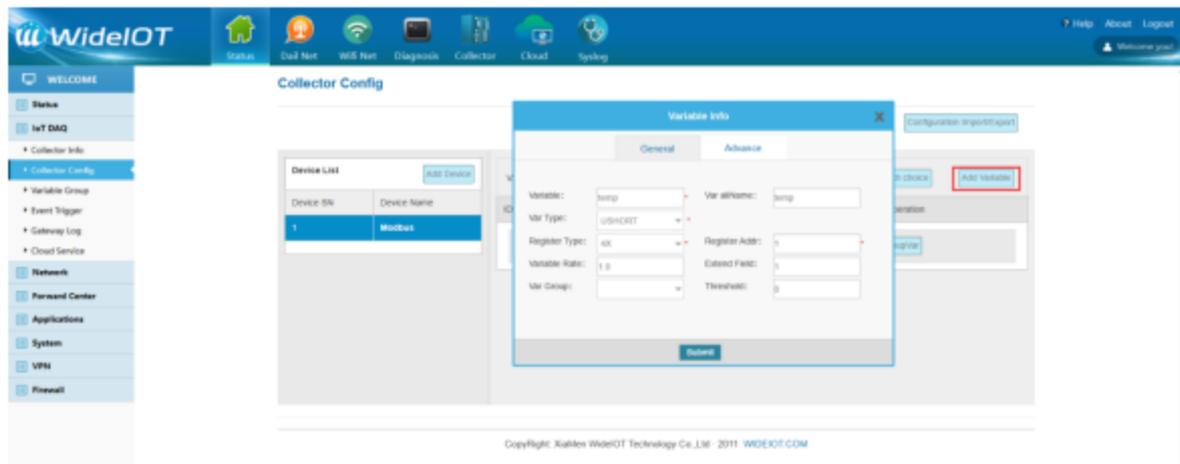
Extended Field: a;b;c

Where a represents string length (valid when data type is string);

b represents byte order, 0/1/2/3 represent byte order ABCD / CDAB / BADC /

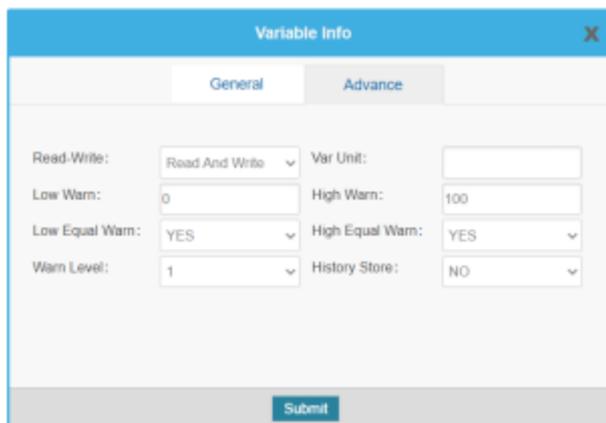
DCBA respectively;

c represents encoding format (valid when data type is string), 1 means ASCII code, 2 means GB2312 encoding.



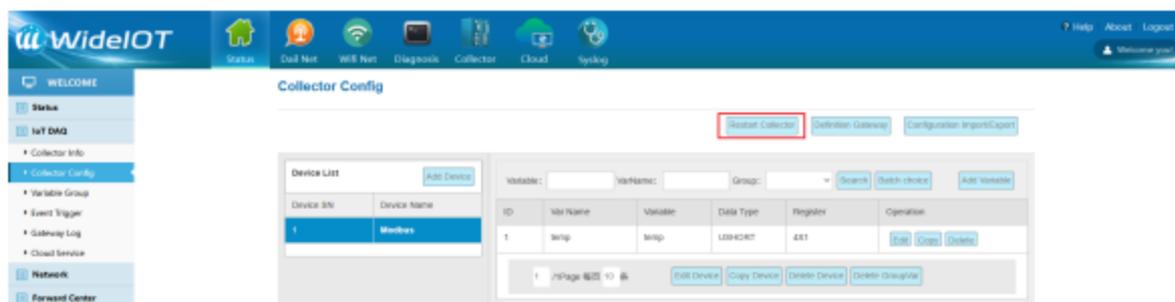
Advanced Options

Define data rules for the point (read/write permissions, unit, alarm rule settings, etc.).

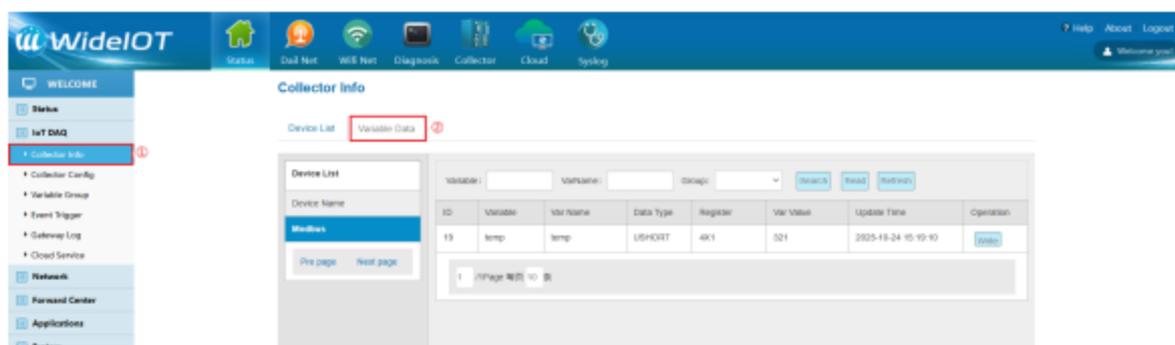


(5) Restart Acquisition Program

After completing the data acquisition configuration (device information + variable parameters), restart the acquisition program to make the configuration effective.



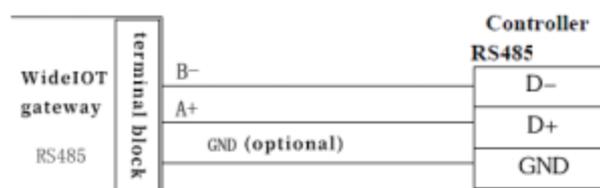
You can then see the collected data in: Data Acquisition Information --- Variable Data --- Device Name.



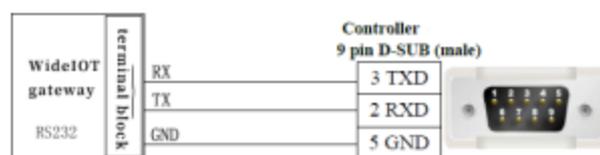
4) Modbus RTU Acquisition

Obtain the device's serial port parameters (slave address, serial port number, baud rate, data bits, stop bits, parity) from the product manual or using the corresponding product configuration software, and wire accordingly based on the device's connection type.

(1) 485 Serial Port Wiring



(2) 232 Serial Port Wiring



(3) Configuration Parameters

Modbus RTU Communication Parameters		
Communication	Interface Type	Slave Address

Protocol		
Modbus RTU	485 Serial Port, 232 Serial Port	Instrument/ PLC Station Address
Serial Port Number	Default COM0; Gateway WG581: COM1	
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity	
Extended Field (Default 0)	<p>a;b;c;d</p> <p>a: Whether the address is 1-based, Base1=1, starting address is 1; Base1=0, starting address is 0</p> <p>b: Algorithm, 0 means read one by one; 1 means merge algorithm (default 0 is fine)</p> <p>c: Double word byte order, 0 means byte order ABCD; 1 means CDAB; 2 means BADC, 3 means DCBA</p> <p>d: Idle time, unit ms</p> <p>Example: When the gateway collects data from an RTU device, due to many points/large address span, multiple requests need to be initiated. If no idle time is set, after the gateway requests device data and receives the device's reply, it will immediately send the next request. This is fine in most cases, but a few RTU devices do not support fast acquisition, so an idle time needs to be set. That is, if the idle time is set to 500ms, the gateway requests device data -> receives device reply -> waits for the set idle time 500ms -> requests next data.</p>	

Adding a Device

Data Acquisition Configuration --- Add Device --- Device Configuration --- Save.

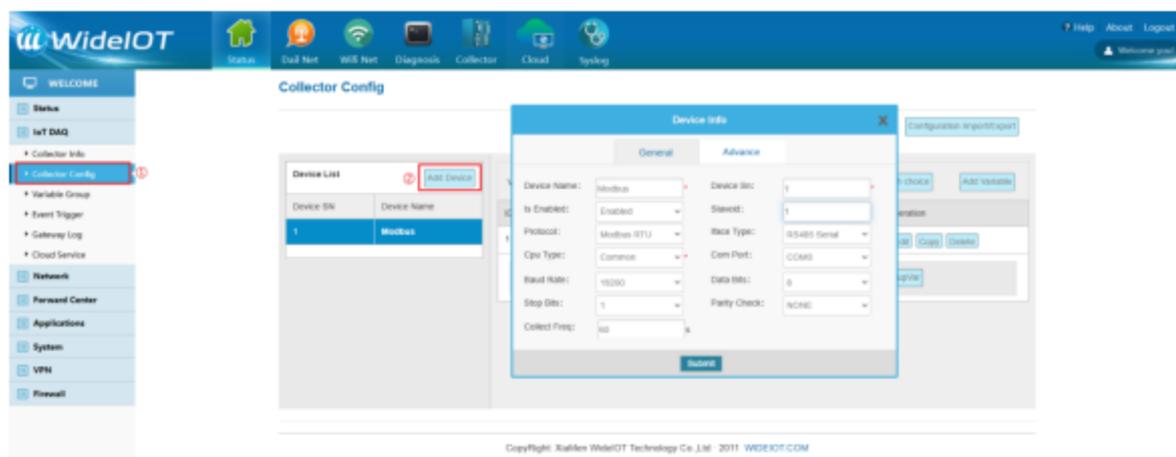
Communication Protocol Selection: Modbus RTU;

Fill in the required serial port parameters according to the configuration parameters;

Slave Address: Fill in the device address of the device;

Serial Port Number: Must correspond to the serial port number on the gateway connected to the device;

Acquisition Cycle: Custom acquisition frequency.



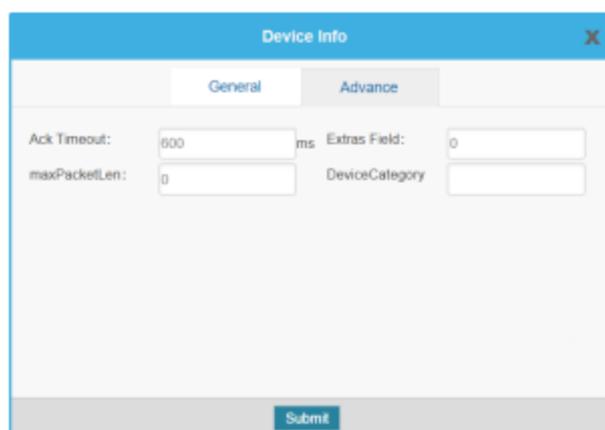
Advanced Options

Reply Timeout: If no data is received from the PLC within the specified time, it is judged as a timeout;

Extended Field: Fill in according to the actual situation of the PLC;

Maximum Packets per Read: The amount of data the gateway reads at one time;

Device Category: Label for this device.



Adding Variables

Added Device --- Add Variable --- Variable Configuration --- Save

Variable Name: Customizable (recommended not to use Chinese characters);

Variable Alias: Customizable (recommended to use Chinese characters);

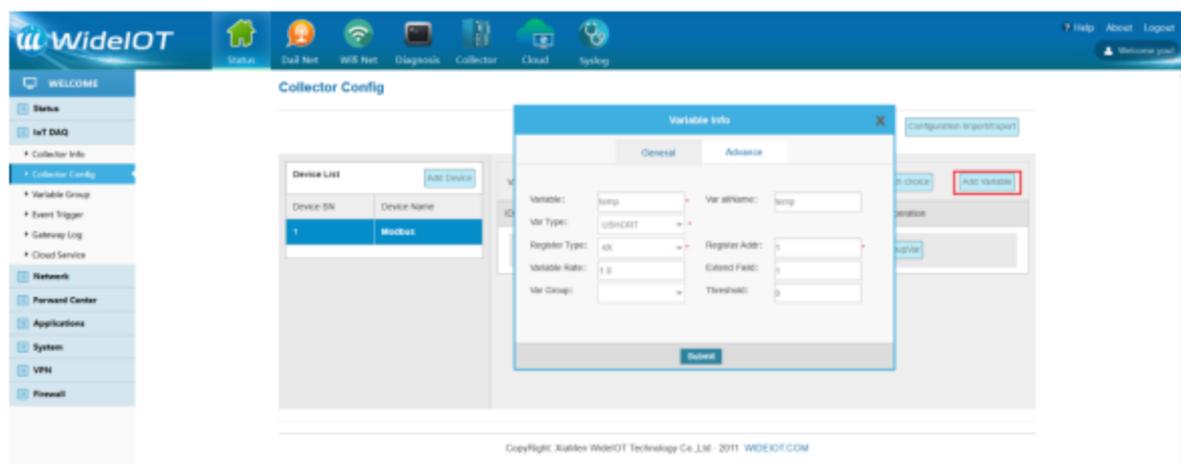
Variable Type: Select the corresponding variable type based on the PLC point's data type;

Register Type and Address: The register type and offset address of the point on the PLC.

Extended Field: a;b

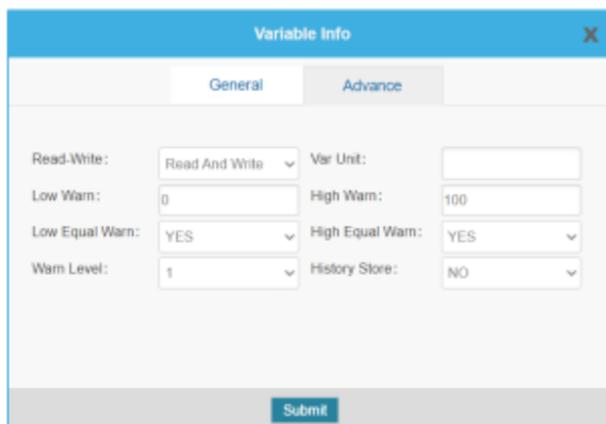
Where a represents string length (valid when data type is string);

b represents byte order, 0/1/2/3 represent byte order ABCD / CDAB / BADC / DCBA respectively.



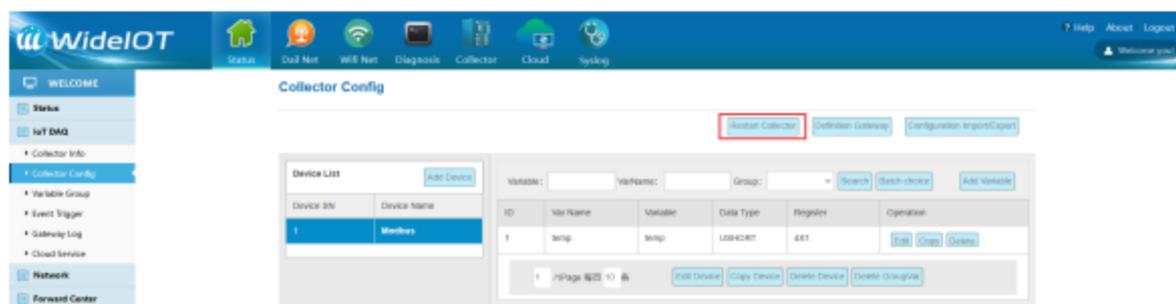
Advanced Options

Define data rules for the point (read/write permissions, unit, alarm rule settings, etc.).

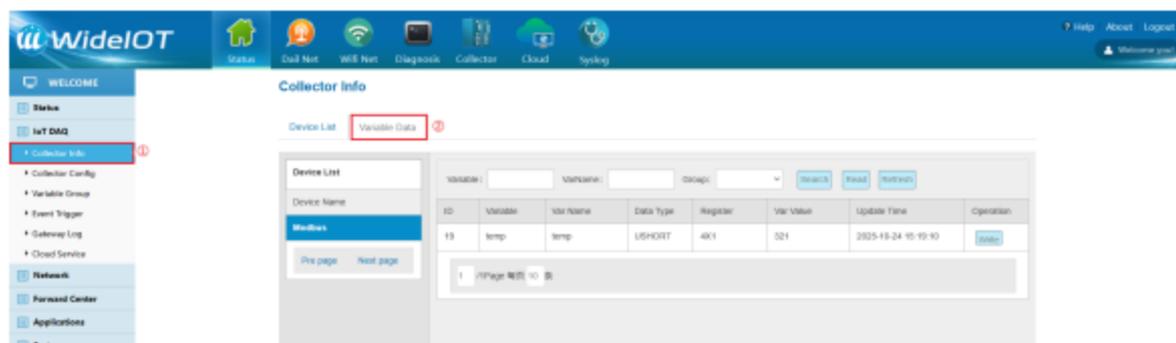


Restart Acquisition Program

After completing the data acquisition configuration (device information + variable parameters), restart the acquisition program to make the configuration effective.



You can then see the collected data in: Data Acquisition Information --- Variable Data --- Device Name.

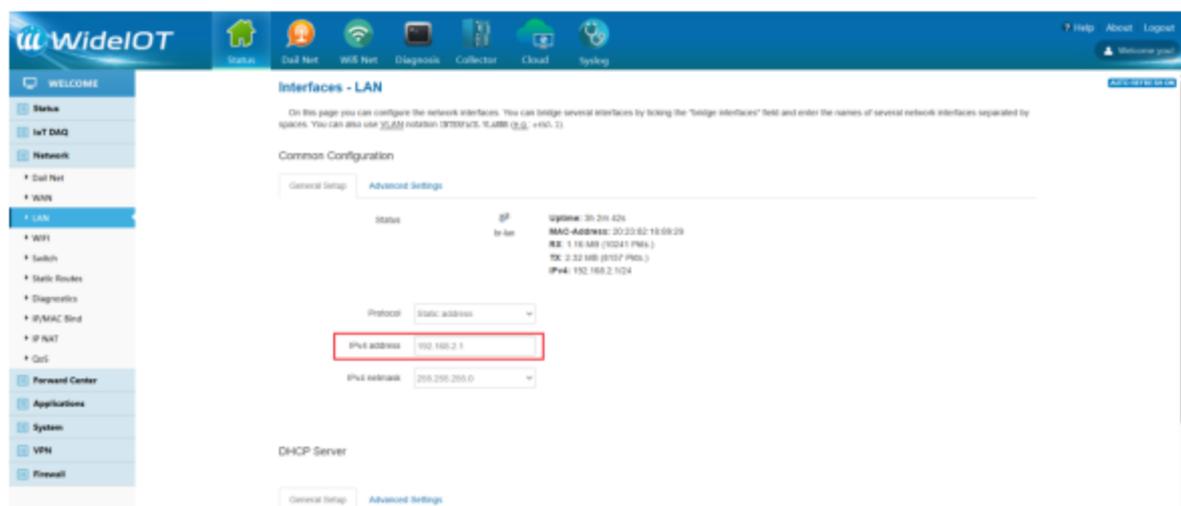


5) Modbus RTU over TCP Acquisition

Gateway and PLC Connection

For network port communication, ensure the device's address and the gateway's LAN port address are on the same subnet. The gateway LAN port address (default:

192.168.2.1) can be modified by logging into the gateway WEB management interface: Network - LAN Internal Address.



- ① Obtain the PLC network port parameters via the PLC programming software.
- ② Connect the PLC network port to the gateway network port (LAN or FE1) using a network cable.

Configuration Parameters

Modbus RTU over TCP Communication Parameters			
Communication Protocol	Interface Type	IP Address	Port Number
Modbus RTU over TCP	Network Port	Instrument/ PLC Address	502
Extended Field (Default 0)	a;b;c;d a: Whether the address is 1-based, Base1=1, starting address is 1; Base1=0, starting address is 0; b: Algorithm, 0 means read one by one; 1 means merge algorithm (default 0 is fine); c: Double word byte order, 0 means byte order ABCD; 1 means CDAB; 2 means BADC, 3 means DCBA d: Idle time, unit ms Example: When the gateway collects data from an RTU device, due to many points/large address span, multiple requests need to be initiated. If no idle time is set, after the gateway requests device data and receives the device's reply, it will immediately send the next request. This is fine in most cases, but a few RTU devices do		

	<p>not support fast acquisition, so an idle time needs to be set. That is, if the idle time is set to 500ms, the gateway requests device data -> receives device reply -> waits for the set idle time 500ms -> requests next data.</p>
--	---

Adding a Device

Data Acquisition Configuration --- Add Device --- Device Configuration --- Save

Communication Protocol: Modbus RTU/TCP;

IP Address: Fill in the PLC's IP address;

Port Number: 502 (Modbus protocol default port is 502);

Acquisition Cycle: Custom acquisition frequency.



Advanced Options

Reply Timeout: If no data is received from the PLC within the specified time, it is judged as a timeout;

Extended Field: Fill in according to the actual situation of the PLC;

Maximum Packets per Read: The amount of data the gateway reads at one time;

Device Category: Label for this device.

Adding Variables

Added Device --- Add Variable --- Variable Configuration --- Save

Variable Name: Customizable (recommended not to use Chinese characters);

Variable Alias: Customizable (recommended to use Chinese characters);

Variable Type: Select the corresponding variable type based on the PLC point's data type;

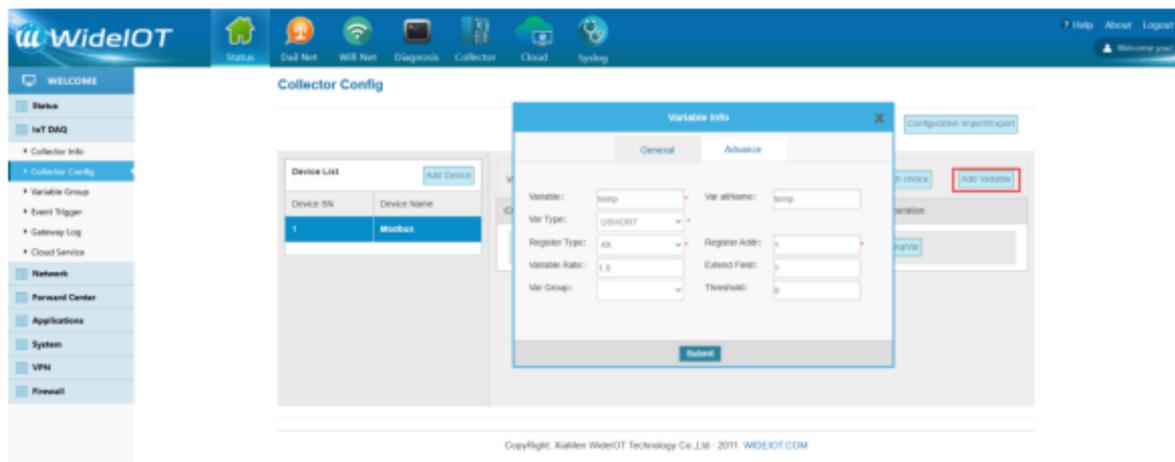
Register Type and Address: The register type and offset address of the point on the PLC.

Extended Field: a;b;c

Where a represents string length (valid when data type is string);

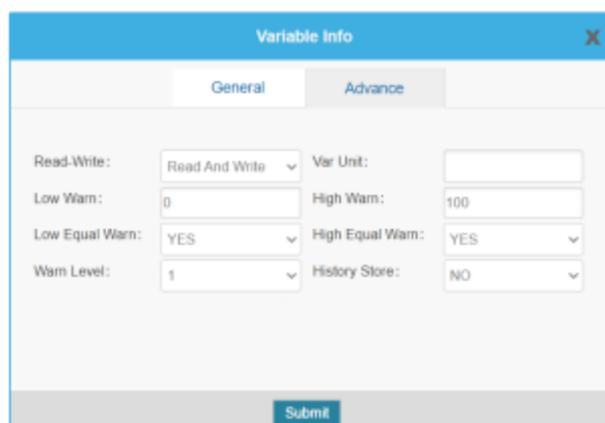
b represents byte order, 0/1/2/3 represent byte order ABCD / CDAB / BADC / DCBA respectively;

c represents encoding format (valid when data type is string), 1 means ASCII code, 2 means GB2312 encoding.



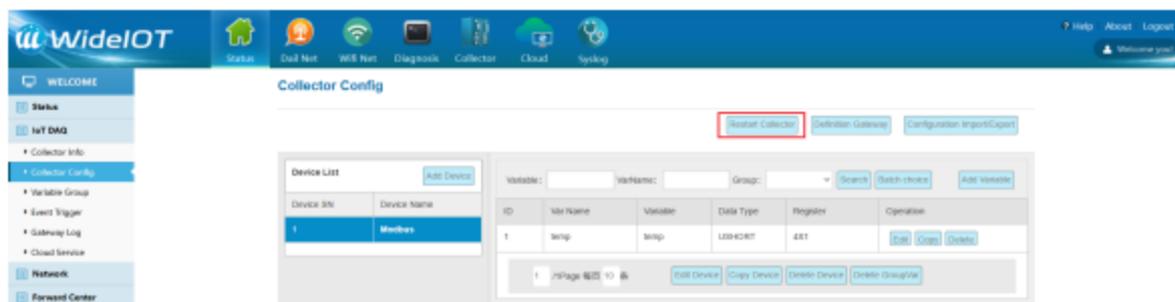
Advanced Options

Define data rules for the point (read/write permissions, unit, alarm rule settings, etc.).

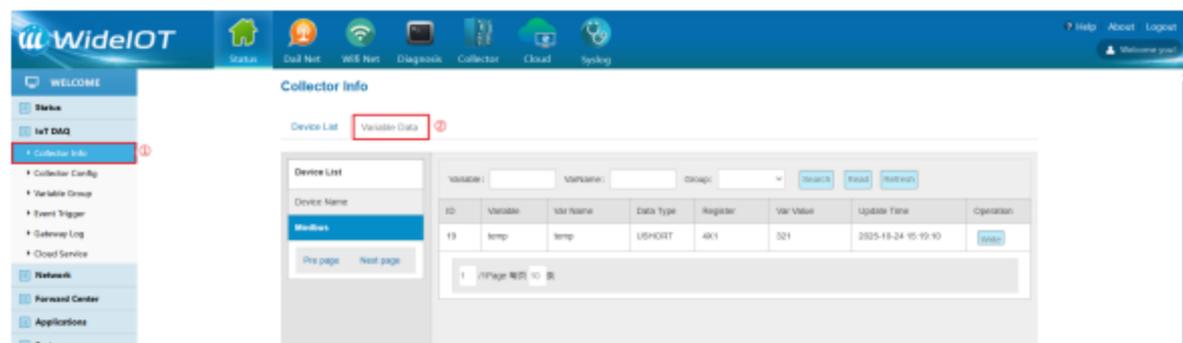


Restart Acquisition Program

After completing the data acquisition configuration (device information + variable parameters), restart the acquisition program to make the configuration effective.



You can then see the collected data in: Data Acquisition Information --- Variable Data --- Device Name.



3.4.2. Siemens PLC

1) Special Instructions

DB Block Register Configuration Method

In the PLC, the DB block address format is DB{Block Number}.DB{Data Type}{Byte Address}.{Bit Address}. When configuring on the gateway, it needs to be converted.

General Rules for Gateway Configuration:

Register Type: Select DB

Address Format: {Block Number}.{Byte Address}.{Bit Address} (for bit operations)

or {Block Number}.{Byte Address} (for non-bit operations)

PLC Address Example	Gateway Register Type	Gateway Register Address	Gateway Data Type
DB1.DBX1.0	DB	1.1.0	bit
DB1.DBB1	DB	1.1	byte
DB1.DBW2	DB	1.2	short
DB1.DBD4	DB	1.4	Long/float

V Memory Area Register Configuration Method

In the PLC, the V memory area address format is V{Data Type}{Byte Address}. When configuring on the gateway, the conversion rule is simpler because it does not have the concept of a block number.

General Rules for Gateway Configuration:

Register Type: Select V

Address Format: {Byte Address}

PLC Address Example	Gateway Register Type	Gateway Register Address	Gateway Data Type
V1.0 (or via byte bit addressing)	V	1	bit
VB1	V	1	byte
VW2	V	2	short
VD3	V	3	Long/float

Supported Protocols

PLC Series	Serial Protocol (RS-232/485)	Ethernet Protocol	Remarks
S7-200	PPI (Programming Port)	S7 Communication (requires additional 243 network module) ISOTCP (requires additional 243 network module)	When using PPI protocol for acquisition, data parity bit is EVEN When using ISOTCP243 protocol for acquisition, extended field needs to be set to 3;1
S7-200 SMART	PPI (Programming Port)	S7 Communication ISOTCP	When using ISOTCP243 protocol for acquisition, extended field needs to be set to 0;1
S7-300	MPI (Multi-Point Interface)	S7 Communication ISOTCP	When using ISOTCP243 protocol

			for acquisition, extended field needs to be set to 0;2
S7-400	MPI	S7 Communication ISOTCP	Need to configure device extended field, use programming software to connect to PLC to query rack number, slot number
S7-1200	×	S7 Communication ISOTCP	/
S7-1500	×	S7 Communication ISOTCP	/

Supported Registers

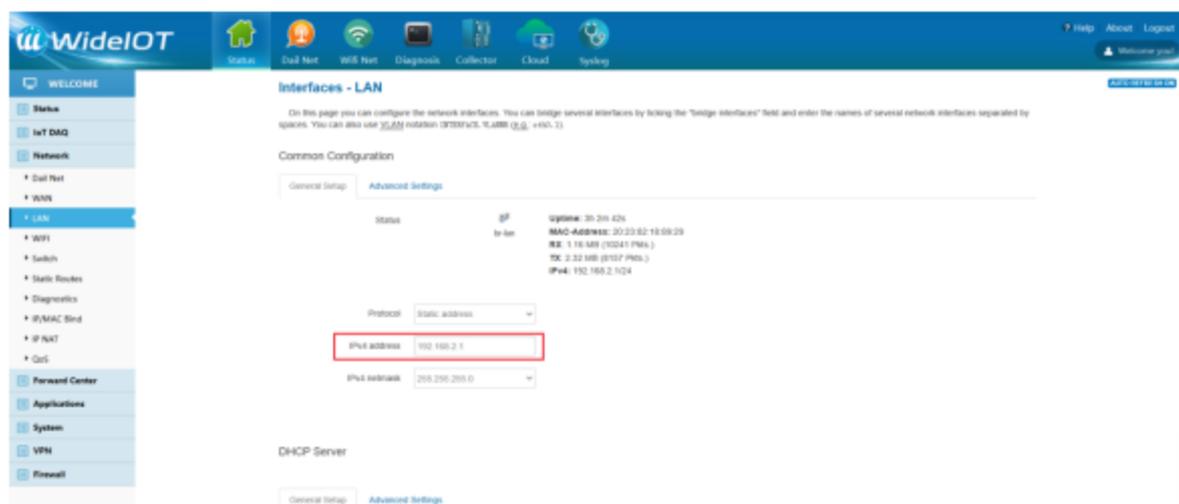
Element Symbol	Register Type	Function Description
I	Input Image Register	Digital Input (DI)
Q	Output Image Register	Digital Output (DO)
M	Bit Memory	Bit memory area, can access M area data by bit, byte, word, or double word
T	Timer	Timer storage area, used for time accumulation
C	Counter	Counter storage area, used to count the number of low-to-high pulses at its input
DB	Data Block	Global data storage area, customizable structure, used for storing complex data
V	Variable Memory	Variable storage area, can access V area data by bit, byte, word, or double word
AI	Analog Input Image	Analog Input
AO	Analog Output Image	Analog Output
P	Peripheral Direct Input	Direct access to peripheral modules
L	Local Variable	Local storage area, used to pass formal parameters to subroutines
SM	Special Memory	Special memory, can be accessed by bit, byte

IECC	IEC Counter	Counter storage area (200 series specific)
IECT	IEC Timer	Timer storage area, used for time accumulation (200 series specific)

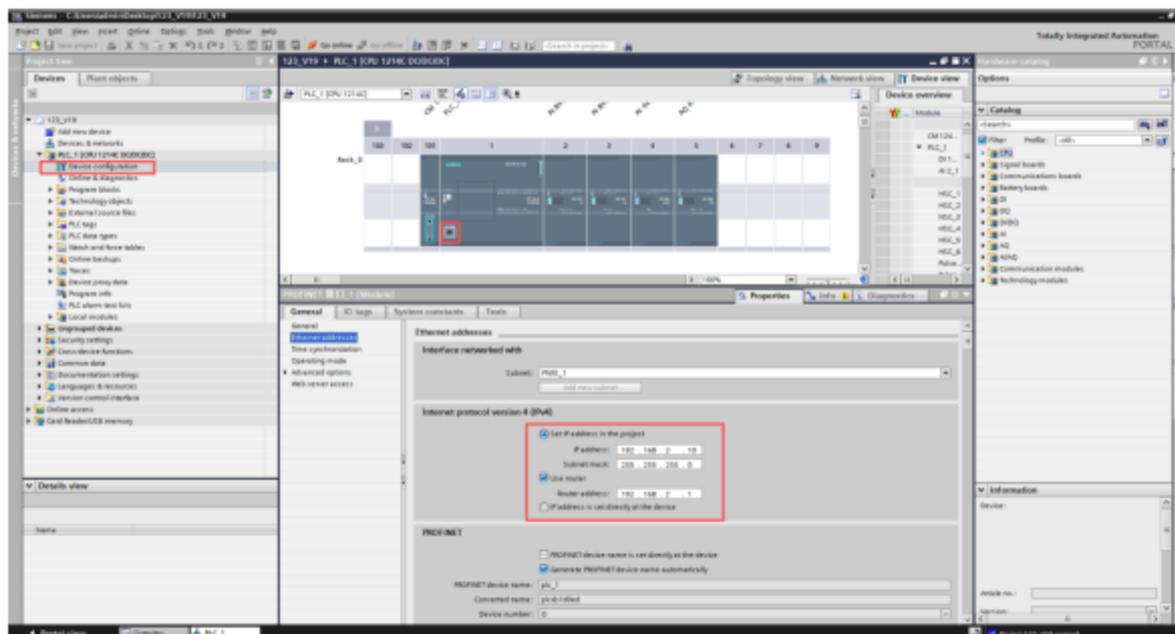
2) Network Port Acquisition

Gateway and PLC Connection

PLC uses network port communication. Ensure the PLC's address and the gateway's LAN port address are on the same subnet. The gateway LAN port address (default: 192.168.2.1) can be modified by logging into the gateway WEB management interface: Network - LAN Internal Address.

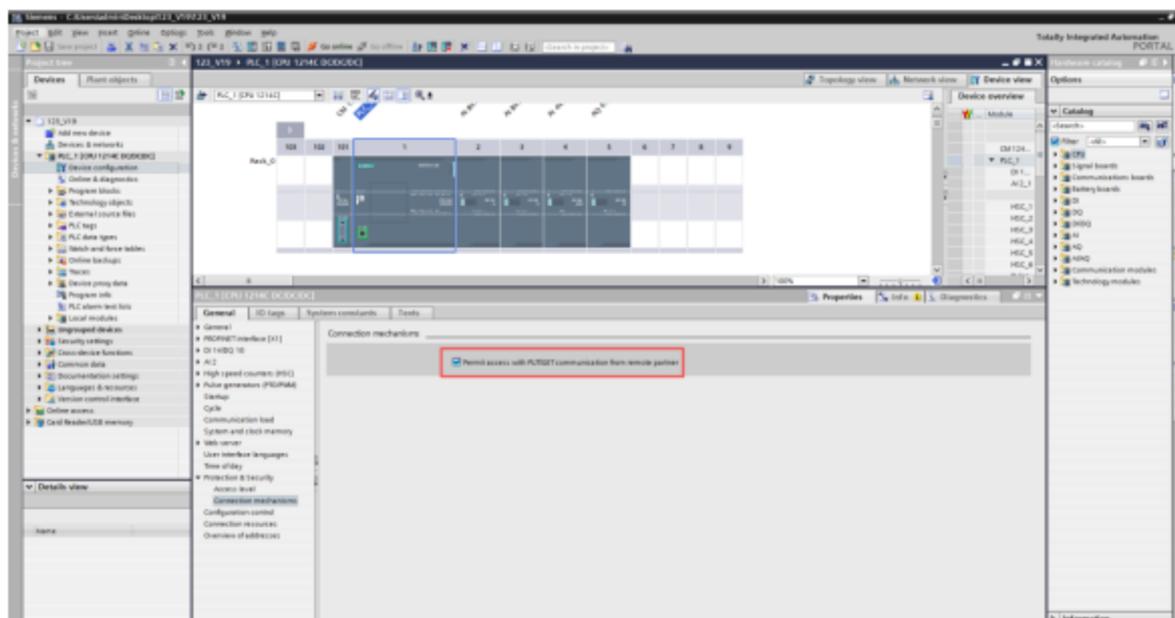


- ① Connect the Siemens PLC to the computer via network, use TIA portal to obtain and set the IP address, subnet mask, and default gateway.
- ② Connect the Siemens PLC network port to the gateway network port (LAN or FE1) using a network cable.



Note: The PLC program needs to check if the PUT/GET allow remote access function is enabled! (If not enabled, the gateway log will print:

```
DEBUG [20725:wtbl_siemens_wrapper.c:1217] Read fuction result [33028]=**[context is not supported. Step7 says:Function not implemented or error in telgram.]**
```



Configuration Parameters

Communication Protocol	Interface Type	IP Address	Port Number
Siemens ISOTCP; Siemens ISOTCP243; Siemens S7;	Network Port	PLC IP Address	102

Extended Field	<p>a;b;c (Rack Number; Slot; Algorithm)</p> <p>Default is 0, i.e., 0;0;0</p> <p>0;0;0 (s7-200/1200/1500) 0;1;0 (S7-200Smart)</p> <p>0;2;0 (S7-300) 3;1;0 (CP243 module)</p>
----------------	--

Adding a Device

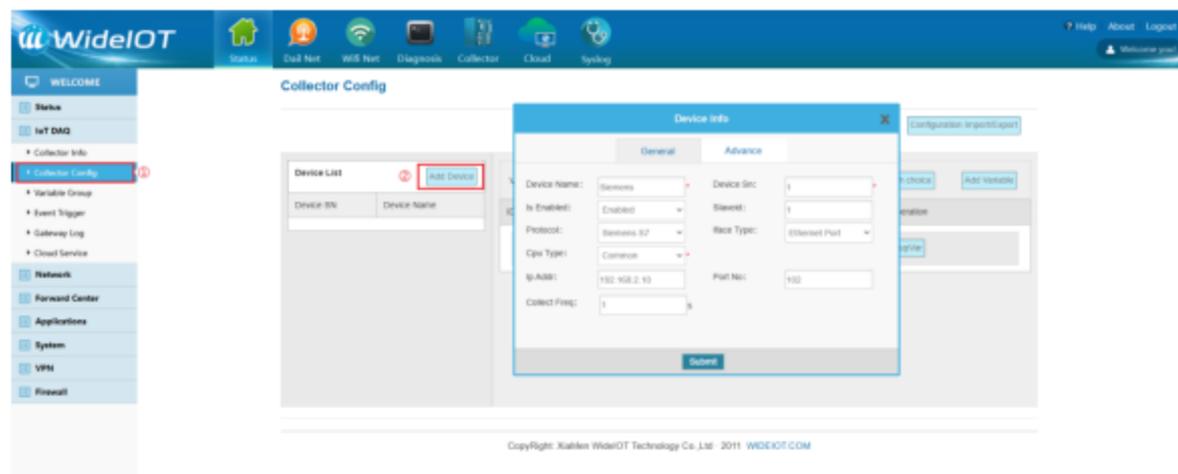
Data Acquisition Configuration --- Add Device --- Device Configuration --- Save

Communication Protocol: Siemens ISOTCP/Siemens S7 (For S7-200smart, select Siemens S7);

IP Address: Fill in the PLC's IP address;

Port Number: 102 (Siemens default 102);

Acquisition Cycle: Custom acquisition frequency.



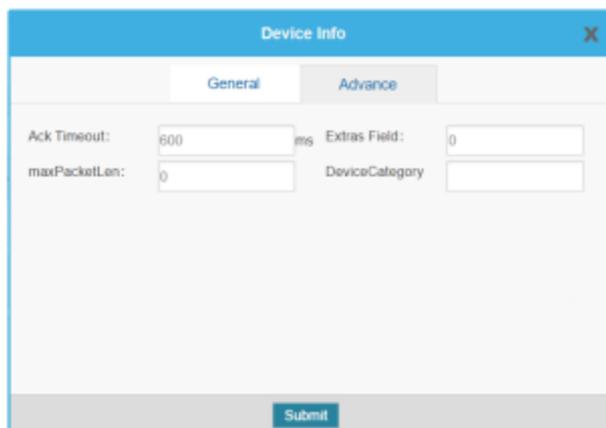
Advanced Options

Reply Timeout: If no data is received from the PLC within the specified time, it is judged as a timeout;

Extended Field: Fill in according to the actual situation of the PLC;

Maximum Packets per Read: The amount of data the gateway reads at one time;

Device Category: Label for this device.



Note: For 200smart, the extended field should be changed to: 0;1;0; for the 243 network port module, the extended field should be changed to: 3;1;0

Adding Variables

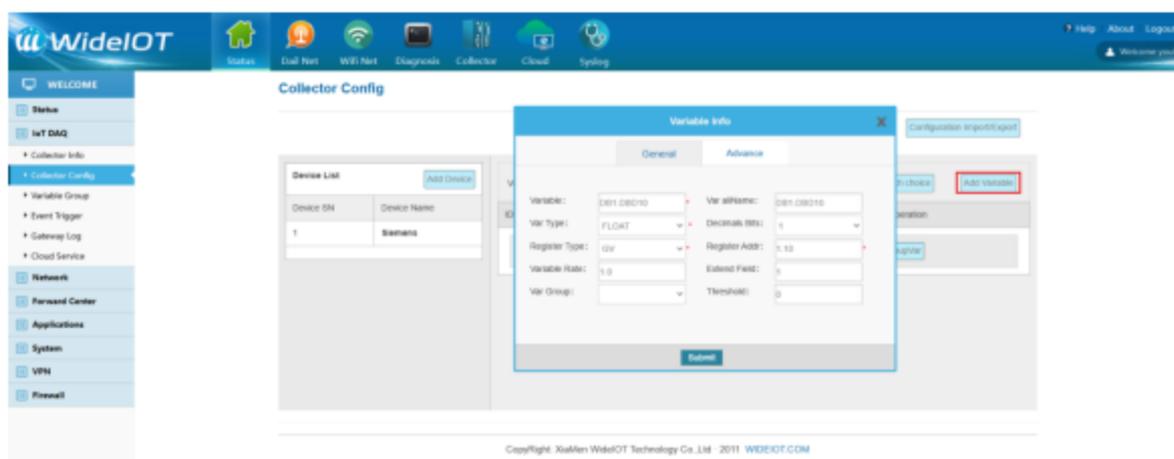
Added Device --- Add Variable --- Variable Configuration --- Save

Variable Name: Customizable (recommended not to use Chinese characters);

Variable Alias: Customizable (recommended to use Chinese characters);

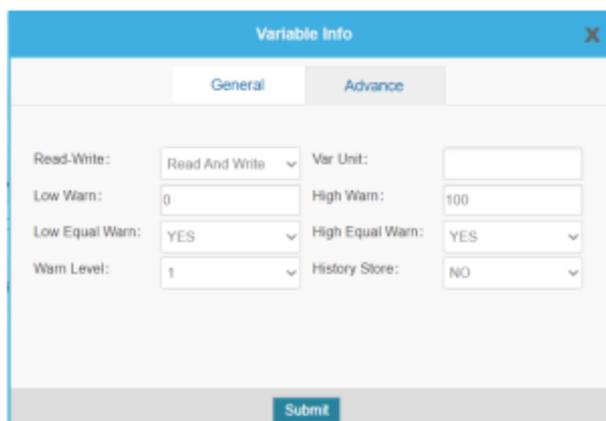
Variable Type: Select the corresponding variable type based on the PLC point's data type;

Register Type and Address: The register type and offset address of the point on the PLC.



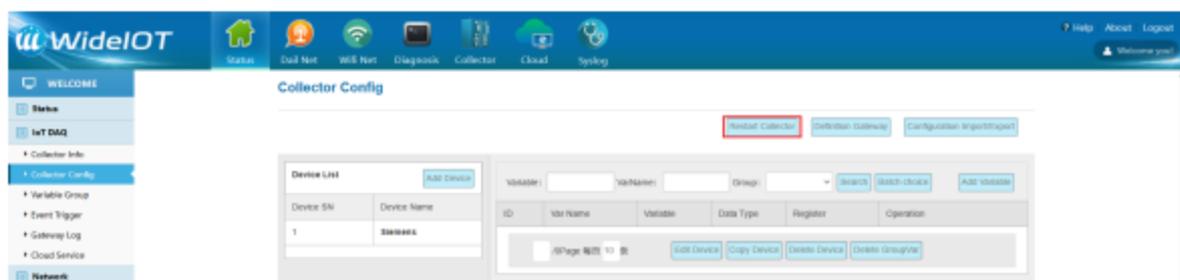
Advanced Options

Define data rules for the point (read/write permissions, unit, alarm rule settings, etc.).

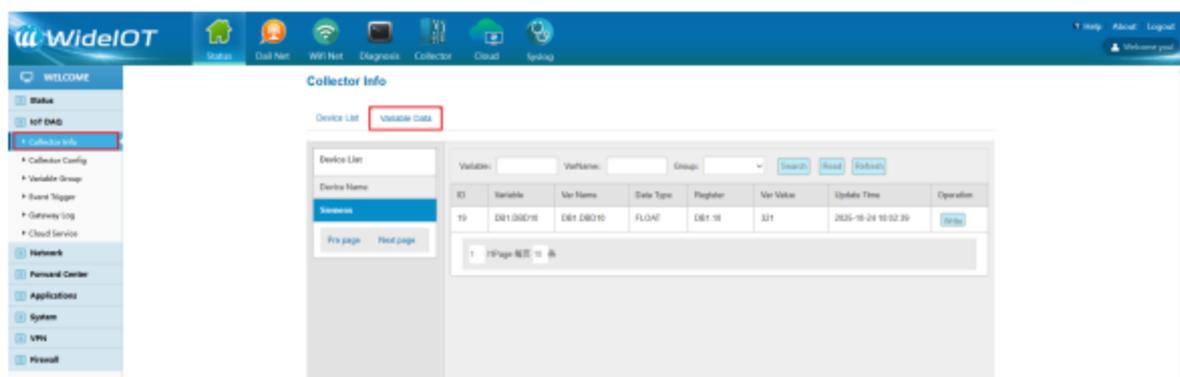


Restart Acquisition Program

After completing the data acquisition configuration (device information + variable parameters), restart the acquisition program to make the configuration effective.



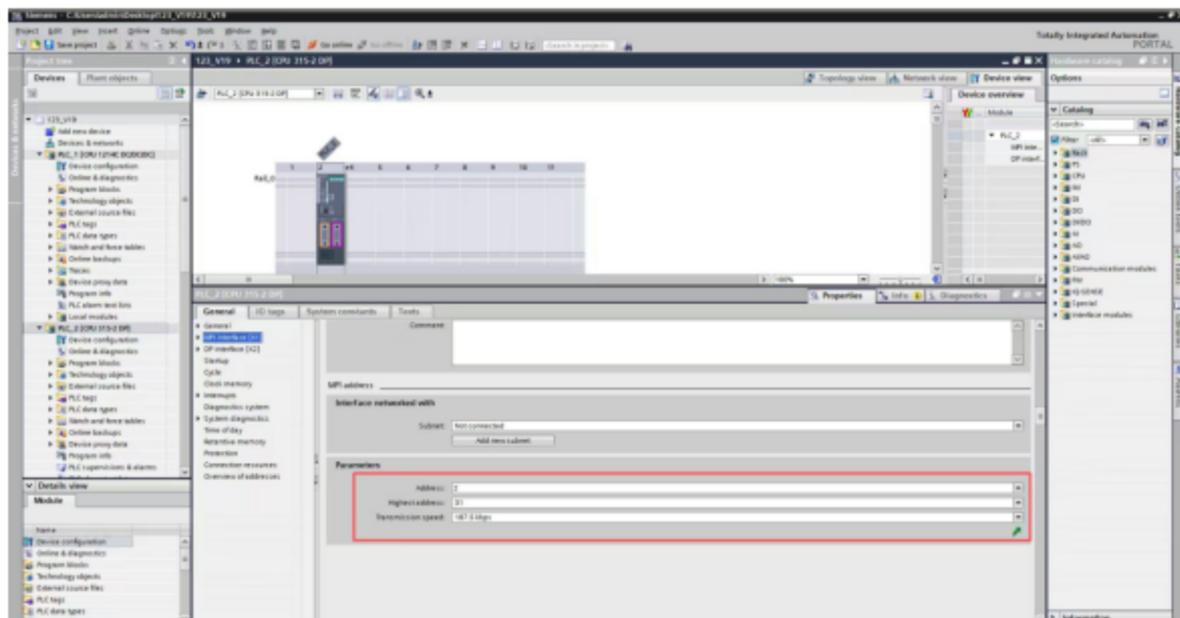
You can then see the collected data in: Data Acquisition Information --- Variable Data --- Device Name.



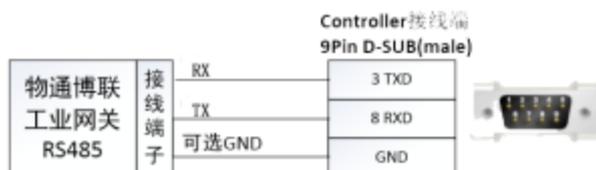
3) Serial Port Acquisition

Obtaining Serial Port Parameters

Connect the Siemens PLC to the computer via network, use TIA portal to obtain and set the serial communication parameters: address and baud rate. (Default: Data Bits: 8; Even Parity; Stop Bits: 1;)



485 Serial Port Wiring



Configuration Parameters

Communication Protocol	Interface Type	Slave Address
Siemens PPI; Siemens MPI;	485 Serial Port	Station Number
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity	
Serial Port Number	Default COM0; Gateway WG581: COM1	
Extended Field		
Siemens PPI	0	
Siemens MPI	187;0(Default) MpiSpeed;Algorithm;SilentTime MPI rate; Algorithm; Idle Time	

Adding a Device

Data Acquisition Configuration --- Add Device --- Device Configuration --- Save.

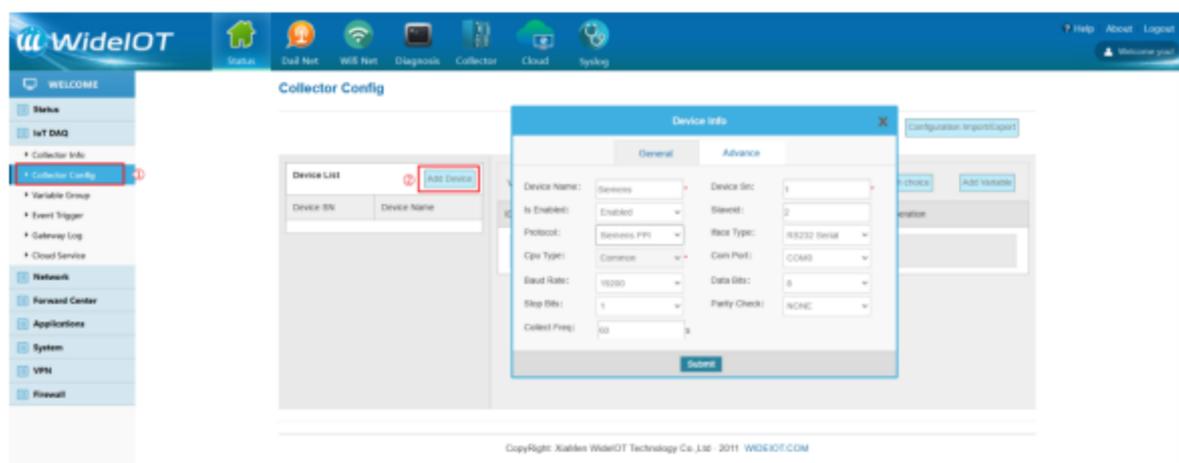
Communication Protocol Selection: Siemens PPI/Siemens MPI;

Fill in the required serial port parameters according to the configuration parameters;

Slave Address: Fill in the device address of the device;

Serial Port Number: Must correspond to the serial port number on the gateway connected to the device;

Acquisition Cycle: Custom acquisition frequency.



Advanced Options

Reply Timeout: If no data is received from the PLC within the specified time, it is judged as a timeout;

Extended Field: Fill in according to the actual situation of the PLC;

Maximum Packets per Read: The amount of data the gateway reads at one time;

Device Category: Label for this device.



Adding Variables

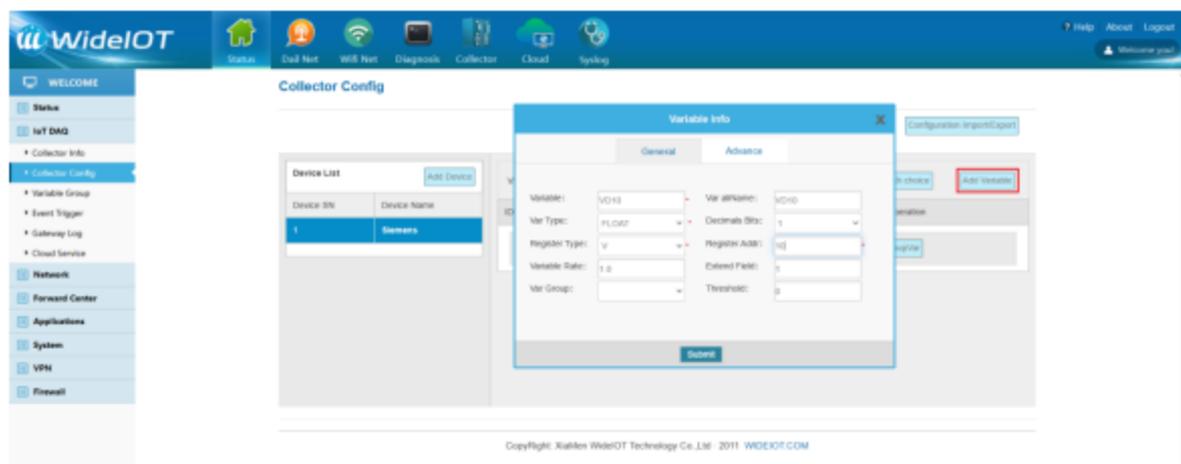
Added Device --- Add Variable --- Variable Configuration --- Save

Variable Name: Customizable (recommended not to use Chinese characters);

Variable Alias: Customizable (recommended to use Chinese characters);

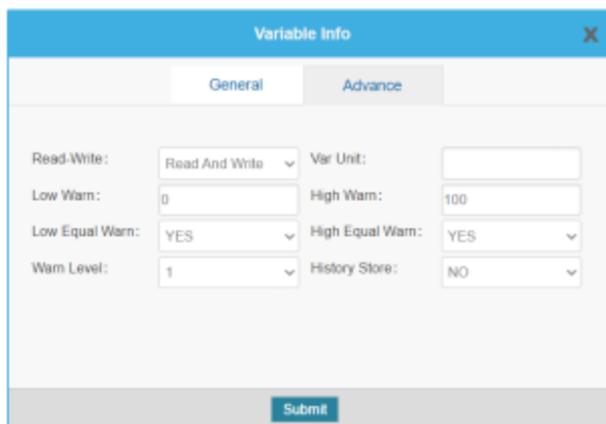
Variable Type: Select the corresponding variable type based on the PLC point's data type;

Register Type and Address: The register type and offset address of the point on the PLC.



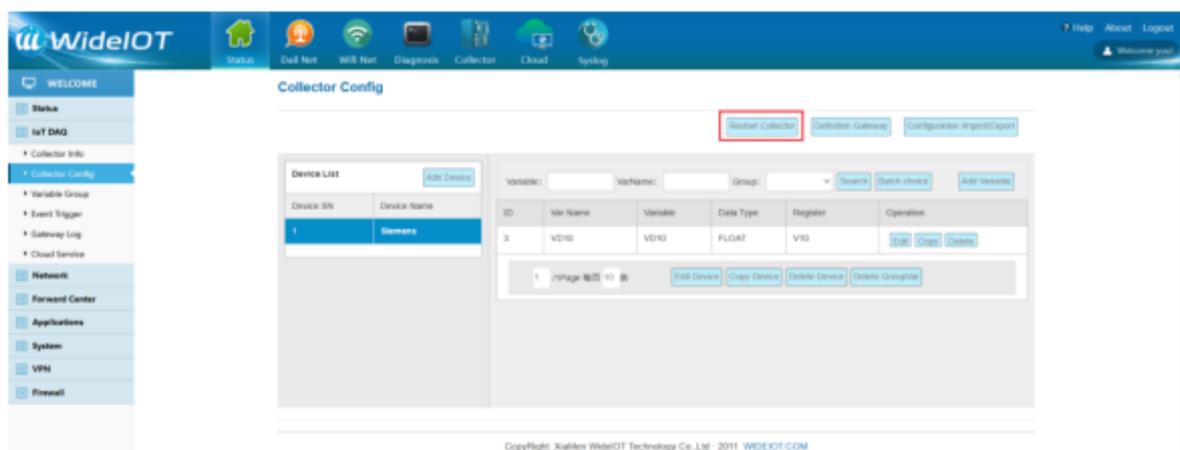
Advanced Options

Define data rules for the point (read/write permissions, unit, alarm rule settings, etc.).

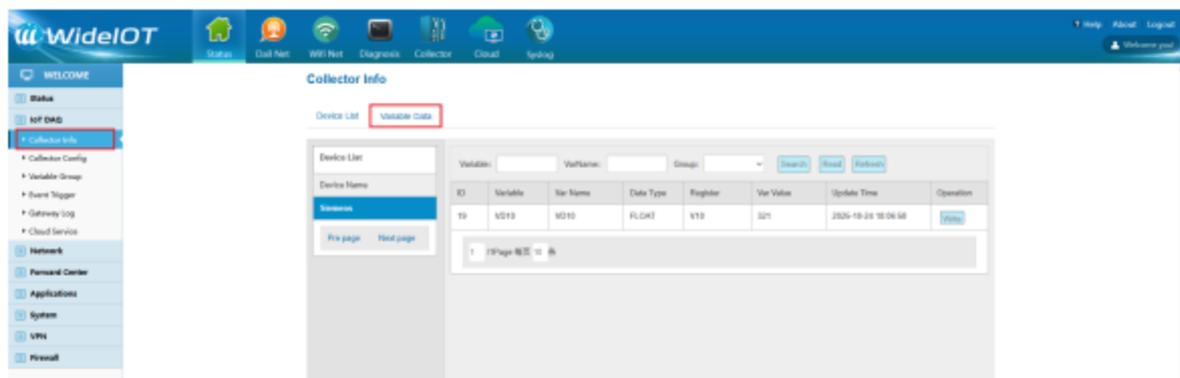


Restart Acquisition Program

After completing the data acquisition configuration (device information + variable parameters), restart the acquisition program to make the configuration effective.



You can then see the collected data in: Data Acquisition Information --- Variable Data --- Device Name.



3.4.3. Mitsubishi i PLC

Supported Protocols

Protocol Name	Protocol Type	Applicable PLC Series	Applicable Scenario	Corresponding Gateway
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				Protocol
Fx Links	Programming Port Communication Protocol	FXSeries	Read FX series PLC programming port data	Mitsubishi FX_232DE
Fx Serial	Serial Communication Protocol	FX Series	Read FX series PLC serial port data	Mitsubishi FX_485BD
MC A1E	Network Communication Protocol	FX3U Series	Read FX3U series PLC register data	Mitsubishi FX3UG_NET
MC Qna-3C	Serial Communication Protocol	FX5U, A Series, Q Series, L Series, etc.	Read register data of the above series PLCs	Mitsubishi Qserial_COM
MC Qna-3E	Network Communication Protocol	FX5U, A Series, Q Series, L Series, etc.	Read register data of the above series PLCs	Mitsubishi Qserial_NET

Supported Registers

Register	Register	Data Type
Stepping Relay	S	BIT
Special Link Relay	SB	BIT
Link Relay	B	BIT
Indicator	F	BIT
Latch Relay	L	BIT
Special Internal Relay	SM	BIT
Internal Relay	M	BIT
File Register	R	SHORT
Counter Value	CN	SHORT
Input Relay	X	BIT
Output Relay	Y	BIT

Hold Timer Value	SN	SHORT
Timer	TN	SHORT
Special Link Register	SW	SHORT
Link Register	W	SHORT
Special Data Register	SD	SHORT
Data Register	D	SHORT

Ethernet Communication Main Parameters	
Communication Protocol	Qserial_NET
Interface Type	Network Port
IP Address	PLC IP Address
Port Number	PLC Port Number, Mitsubishi requires programming software to set
Extended Field	0;255;0;4;1;0 (Default) Netno; PLCno;pcno;Code Format; flow;Algorithm; Network Number; PLC Station Number;Upper Computer Station Number;Communication Format; Data Format; Algorithm; Communication Format: 1=Format1; 4=Format4 Data Format: 1=ASCII (Default); Data Format 0=Binary;
Serial Communication Main Parameters	
Communication Protocol	Qserial_COM
Interface Type	Serial Port
Slave Address	Station Number
Serial Port Number	Default: COM0; WG581Series: COM1
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity

Extended Field	0;255;0;4;1;0 (Default) Netno; PLCno;pcno;Code Format; Algorithm;SilentTime Network Number; PLC Station Number;Upper Computer Station Number;Communication Format;Algorithm;Idle Time ms Communication Format: 1=Format1; 4=Format4
----------------	---

Ethernet Communication Main Parameters	
Communication Protocol	FX3UG_TCP
Interface Type	Network Port
IP Address	PLC Ethernet Parameters
Port Number	
Extended Field	0(Default 0;255;0;4;0;0) Netno; PLCno;pcno;Code Format; Algorith Network Number; PLC Station Number;Upper Computer Station Number;Format;Algorithm;Idle Time codeformat=1 , codeformat=4

Serial Communication Main Parameters	
Communication Protocol	FX_485BD、FX_232BD
Interface Type	Serial Port
Slave Address	PLCSerial Port Parameters
Serial Port Number	Default: COM0 ; GatewayWG581Series: COM1
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity
Extended Field	0(Default255;4;0;0) pcno;Code Format; waittimes;Algorithm;SilentTime Upper Computer Station Number;Format, PLC Wait Time;Idle Time ms codeformat=1 , codeformat=4

3.4.4. Omron PLC

Supported Protocols

PLC Series	Host Link Protocol Support	FINS/TCP Protocol Support	Remarks
CP1/CP1E/CP1H	✓ (RS-232/485)	✓ (Requires additional option board, e.g., CP1W-CIF41)	CP1H some models support FINS/TCP
CJ1/CJ2	✓ (Serial Port)	✓ (Requires Ethernet module, e.g., CJ1W-ETN21)	CJ2 natively supports more protocols
CS1	✓ (Serial Port)	✓ (Requires Ethernet module)	
NJ/NX	✗	✓ (Some models support)	High-end series
CQM1	✓ (Serial Port)	✗ (No Ethernet support)	Older models
SYSMAC C Series	✓ (Serial Port)	✗ (No FINS/TCP)	Legacy PLCs

Supported Registers

Register Type	Host Link Support	FINS/TCP Support	Address Range Example	Description
CIO (I/O Area)	✓	✓	CIO 0 ~ CIO 6143	Input/Output Relay Area
WR (Work Area)	✓	✓	WR 0 ~ WR 511	Internal Work Register
HR (Hold Area)	✓	✓	HR 0 ~ HR 511	Power-off Retentive Register
AR (Special Area)	✓	✓	AR 0 ~ AR 959	System Status/Special Function Register
DM (Data Area)	✓	✓	DM 0 ~ DM 32767	Data Storage Area (16-bit)
TIM (Timer)	✓	✓	TIM 0 ~ TIM 4095	Timer Current Value (Read/Write)
CNT (Counter)	✓	✓	CNT 0 ~ CNT 4095	Counter Current Value

				(Read/Write)
TK (Task Flag)	✘ (Limited support on some models)	✓	TK 0 ~ TK 31	Task Status Flag (NJ/NX Series)
EM (Extended Data Area)	✘ (Only some new models)	✓	EM0 ~ EM32767	Extended Data Storage Area (CJ2/NJ, etc.)

Ethernet Communication Main Parameters

Communication Protocol	Omron_Fins_TCP、Omron_Fins_UDP
Interface Type	Network Port
IP Address	PLC Ethernet Parameters
Port Number	
Extended Field	<p>0 (Default; C/CP/CJ/CS/CP Series)</p> <p>0;0;0;1;0;0;0;0(CV Series)</p> <p>netNo;nodeNo;unitAddress;cpuType;codeForm;waitTimes;Algorithm;SlentTime</p> <p>Network Number; Node Number; Unit Number; CPU Type; Code Format; PLC Reply Wait Time; Algorithm; Idle Time</p> <p>For gateway directly connected to PLC, Network Number, Node Number, Unit Number are all 0</p> <p>CPU Type: 0为 CS/CJ/CP/NSJ Series; 1为 CVM1/CV Series。</p> <p>Code Format: 0 for Direct + Cascade (Long Format); 1 for Direct (Short Format).</p>

Serial Communication Main Parameters

Communication Protocol	Omron_Hostlink
Interface Type	Serial Port
Slave Address	Station Number
Serial Port Number	Default: COM0; Gateway WG581 Series: COM1
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity

Extended Field	<p>0 (Default; C/CP/CJ/CS/CPSeries) 0;0;0;1;0;0;0(CVSeries) netNo;nodeNo;unitAddress;cpuType;code form;waittimes;Algorithm;Slient Time Network Number; Node Number; Unit Number; CPU Type; Code Format; PLC Reply Wait Time; Algorithm;Idle Time For gateway directly connected to PLC, Network Number, Node Number, Unit Number are all 0 CPU Type: 0为 CS/CJ/CP/NSJSeries;1为 CVM1/CVSeries。 Code Format: 0 for Direct + Cascade (Long Format); 1 for Direct (Short Format). Wait for PLC reply time is generally set to 0, 1 means reply immediately.</p>
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3.4.5. Delta PLC

Supported Protocols

Delta PLC Series	Delta DVP-RTU	Delta DVP	Remarks
DVP-SS/SA/SC	✓	✗	Serial only (RS-485/232)
DVP-ES/EX	✓	✗	No built-in Ethernet
DVP-ES2	✓	✓ (Built-in)	With network port, supports TCP
DVP-EC	✓	✗	/
DVP-SV/EH3	✓	✓ (Requires module)	Requires external DVP-EN01
DVP-PS	✓	✓ (Built-in)	Built-in Ethernet
DVP-PM	✓	✗	Basic type, no network port
AS/AD/AM	✓	✓ (Built-in)	High-end series
Motion Control Series	✓	✓ (Built-in)	10MC/15MC/50MC

Supported Registers

Register	Register	Data Type
External Input Node	X	BIT

External Output Node	Y	BIT
Internal Auxiliary Node	M	BIT
Sequence Control Node	S	BIT
Timer Node	T	BIT
Counter Node	C	BIT
Timer Buffer	TW	SHORT
Counter Buffer	CW	SHORT
Counter Buffer (Double Word 32-bit)	CW	LONG
Data Register	D	SHORT

Delta PLC Ethernet Communication Parameters

Communication Protocol	Interface Type	IP Address	Port Number
Delta DVP	Network Port	Controller IP Address	502
Extended Field	0 (Default) Algorithm; silentTime Algorithm; Idle Time ms Algorithm=0, Read one by one Algorithm=1, Merge algorithm		

Delta PLC Serial Port Communication Parameters

Communication Protocol	Interface Type	Slave Address
Delta DVP	485 Serial Port	Station Number
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity	
Serial Port Number	Default: COM0; Gateway WG581 Series: COM1	
Extended Field	0 (Default) Algorithm; silentTime Algorithm; Idle Time ms Algorithm=0, Read one by one Algorithm=1, Merge algorithm	

3.4.6. Fatek PLC

Supported Protocols

PLC Series	Serial Protocol (RS-	Ethernet Protocol	Gateway Protocol
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	232/485)		Selection
FBsSeries	FATEK Modbus RTU (Master/Slave)	FATEK OVER TCP Modbus TCP	FATEK (Serial Port) FATEK OVER TCP (Ethernet)
FBeSeries	Modbus RTU (Master/Slave)	✗	FATEK (Serial Port)
FBvSeries	Modbus RTU (Master/Slave)	Modbus TCP	FATEK (Serial Port) FATEK OVER TCP (Ethernet)
FBs-CMSeries	Modbus RTU (Master/Slave)	Modbus TCP (Requires Ethernet module)	FATEK (Serial Port) FATEK OVER TCP (Ethernet)
FBs-MNSeries	Modbus RTU (Master/Slave)	✗	FATEK (Serial Port)

Supported Registers

Register Type	Register	Common Data Types	Remarks
Bit Register	X	Bit	/
	Y	Bit	
	M	Bit	
	S	Bit	
	T	Bit	
	C	Bit	
Word Register	R	Short	/
	D	Short	
	RT	Short	
	RC	Short	

Fatek PLC Ethernet Communication Parameters

Communication Protocol	Interface Type	IP Address	Port Number
FATEK over TCP	Network Port	Controller IP Address	500
Extended Field	0 (Default)		

3.4.7. Panasonic PLC

Supported Protocols

PLC Series	Serial Protocol (RS-232/485)	Ethernet Protocol	Gateway Protocol Selection
FP-XSeries	Modbus RTU(Slave) Panasonic MEWTOCOL Protocol	Modbus TCP Panasonic dedicated Ethernet protocol (MEWTOCOL OVER TCP)	MEWTOCOL (Serial Port) MEWTOCOL OVER TCP (Ethernet)
FP0RSeries	Modbus RTU(Slave) MEWTOCOL	✗	MEWTOCOL (Serial Port)
FP7Series	Modbus RTU (Master/Slave) MEWTOCOL	Modbus TCP Ethernet /IP	MEWTOCOL (Serial Port)
FPΣSeries	Modbus RTU(Slave) MEWTOCOL	✗	MEWTOCOL (Serial Port)
FP0HSeries	Modbus RTU(Slave) MEWTOCOL	✗	MEWTOCOL (Serial Port)

Supported Registers

Register Type	Register	Common Data Types	Remarks
Bit Registers	X (WX)	Bit (Short)	When selecting BIT data type, address format is: X.X
	Y (WY)	Bit (Short)	
	L (LD)	Bit (Short)	When selecting Short data type, address format is: X
	R (WR)	Bit (Short)	
Word Registersr	T	Short	Differentiate SV/EV via variable extended field setting (0;0 / 0;1)

	C	Short	Differentiate SV/EV via variable extended field setting (0;0 / 0;1)
	D	Short	/
	LD	Short	
	F	Short	
	IX	Short	Only supports reading IX0
	IY	Short	Only supports reading IY0
	ID	LONG	ID0=IX0(low word)+IY0(high word)

Panasonic PLC Ethernet Communication Parameters			
Communication Protocol	Interface Type	IP Address	Port Number
MewtocoIOOverTcp	Network Port	Controller IP Address	9094
Extended Field	0 (Default)		

Panasonic PLC Serial Port Communication Parameters		
Communication Protocol	Interface Type	Slave Address
Mewtocol	232Serial Port	Station Number
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity	
Serial Port Number	Default: COM0; GatewayWG581Series: COM1	
Extended Field	0 (Default)	

3.4.8. Keyence PLC

Supported Protocols

PLC Series	Serial Protocol (RS-232/485)	Ethernet Protocol	Gateway Protocol Selection
KV-NanoSeries	Modbus RTU(Slave) Keyence Host Link	×	KeyenceNano (Serial Port)

	Protocol		
KV-1000/700	Modbus RTU(Slave)	✗	KeyenceNano (Serial Port)
KV-3000/5000/5500	Modbus RTU(Slave) Keyence Host Link Protocol	Modbus TCP Ethernet /IP (some models) Keyence Host Link Protocol	KeyenceNano (Serial Port) KeyenceNanoOverTcp (Ethernet)
KV-7500/8000	Modbus RTU(Slave) Keyence Host Link Protocol	Modbus TCP Ethernet /IP FL-net Keyence MCProtocol	KeyenceNano (Serial Port) KeyenceMc3eA (ASCII) (Ethernet) KeyenceMc3eB (Binary) (Ethernet)
KV-EP21V/LE20V	✗	Modbus TCP Ethernet /IP Keyence MCProtocol	KeyenceMc3eA (ASCII) (Ethernet) KeyenceMc3eB (Binary) (Ethernet)

Supported Registers

PLC Register	Register	Register Type	Gateway Mc Protocol Corresponding Register
MR	Internal Relay	Bit	M
B	Link Relay	Bit	B
LR	Latch Relay	Bit	L
CR	Control Relay	Bit	SM
DM	Data Memory	Word	D
W	Link Register	Word	W
ZF	File Register	Word	Z/ZR
CM	Control Memory	Word	SD

Communication Protocol	Interface Type	IP Address	Port Number
KeyenceNanoOverTcp	Network Port	PLCIP Address	8501
Extended Field	0 (Default)		

Communication Protocol	Interface Type	IP Address	Port Number
KeyenceMc3eA (ASCII) ; KeyenceMc3eB (Binary);	Network Port	PLCIP Address	5000
Extended Field	0 (Default)		

Communication Protocol	Interface Type	Slave Address
KeyenceNano	RS485/RS232Serial Port	PLC Station Number
GatewaySerial Port Number	Defaultcom0; Gateway581 : com1	
Serial Port Parameters	Baud Rate, Data Bits, Stop Bits, Parity	
Extended Field	Default 0	

3.4.9. Beckhoff PLC

Supported Protocols

PLC Series	Dedicated/Other Protocol	Gateway Protocol Selection
CX1000Series	TwinCAT ADSProtocol	Beckhoff
CX2000Series	TwinCAT ADSProtocol	Beckhoff
CX5000Series	TwinCAT ADSProtocol	Beckhoff
CX7000Series	TwinCAT ADSProtocol	Beckhoff
CX8000Series	TwinCAT ADSProtocol	Beckhoff
CX8091Series	TwinCAT ADSProtocol	Beckhoff

Supported Registers

PLC Register	Register	Data Type
MX	Bit Memory Area	Bit

MB	Bit Memory Area	Byte
MW	Bit Memory Area	Word
MD	Bit Memory Area	Double Word
IX	Input Image Area	Bit
IB	Input Image Area	Byte
IW	Input Image Area	Word
ID	Input Image Area	Double Word
QX	Output Image Area	Bit
QB	Output Image Area	Byte
QW	Output Image Area	Word
QD	Output Image Area	Double Word
TAG	标签名	Word

Beckhoff PLC Ethernet Communication Parameters			
Communication Protocol	Interface Type	IP Address	Port Number
Beckhoff	Network Port	Controller IP Address	48898
Extended Field	a.a.a.a:Port1;b.b.b.b:Port2 a.a.a.a.a: is the TwinCAT AMS NetId; Port1: For TwinCAT2 fill in 801,811,821,831, for TwinCAT3 fill in 851,852,853; b.b.b.b: is the AMS NetId added for the gateway in the Route in TwinCAT; Port2 can be filled arbitrarily, can be set to 0		

3.4.10. AB (Allen-Bradley) PLC

Supported Protocols

PLC Series	Serial Protocol (RS-232/485)	Ethernet Protocol	Gateway Protocol Selection
Micro800	Modbus RTU (Master/Slave)	Modbus TCP Ethernet /IP	AB-Micro-CIP (Ethernet)

MicroLogix	Modbus RTU(Slave) DF1	✘	/
CompactLogix	Modbus RTU(Requires programming)	Modbus TCP Ethernet /IP OPC UA	AB-EIP (Ethernet)
ControlLogix	Modbus RTU(Requires programming)	Modbus TCP Ethernet /IP PROFINET	AB-EIP (Ethernet)
SLC500	DF1 DH-485	✘	/

Communication Protocol	Interface Type	IP Address	Port Number
AB-EIP (Connectionless) AB-EIP-LINK (Connected) AB_MicroCIP(Micro850 model)	Network Port	PLC IP Address	44818

3.4.11. Fuji PLC

Ethernet Main Communication Parameters	
Communication Protocol	CommandST、SPBOTCP
Interface Type	Network Port
IP Address	According to actual device situation
Port Number	According to actual device situation
Extended Field	Default 0

Serial Port Main Communication Parameters	
Communication Protocol	SPB
Interface Type	Programming Port
Slave Address	According to actual device situation
Serial Port Parameters	Baud Rate, Data Bits, Parity, Stop Bits
Extended Field	Default 0

3.4.12. DL/T645Electricity Meter

Data Identifiers

DL/T645-97Protocol

No.	Data Identifier	Data Format	Comment
1	9010	XXXXXX. XX	Current Forward Active Total Energy
2	B611	XXXX	A Phase Voltage
3	B612	XXXX	B Phase Voltage
4	B613	XXXX	C Phase Voltage
5	B621	XX. XX	A Phase Current
6	B622	XX. XX	B Phase Current
7	B623	XX. XX	C Phase Current
8	B630	XX. XXXX	Instantaneous Total Active Power
9	B631	XX. XXXX	Instantaneous A Phase Active Power
10	B632	XX. XXXX	Instantaneous B Phase Active Power
11	B633	XX. XXXX	Instantaneous C Phase Active Power
12	B640	XX. XX	Instantaneous Total Reactive Power
13	B641	XX. XX	Instantaneous A Phase Reactive Power
14	B642	XX. XX	Instantaneous B Phase Reactive Power
15	B643	XX. XX	Instantaneous C Phase Reactive Power
16	B650	X. XXX	Total Power Factor
17	B651	X. XXX	A Phase Power Factor
18	B652	X. XXX	B Phase Power Factor
19	B653	X. XXX	C Phase Power Factor
20	C032	NNNNNNNNNN	Meter Number

DL/T645-07Protocol

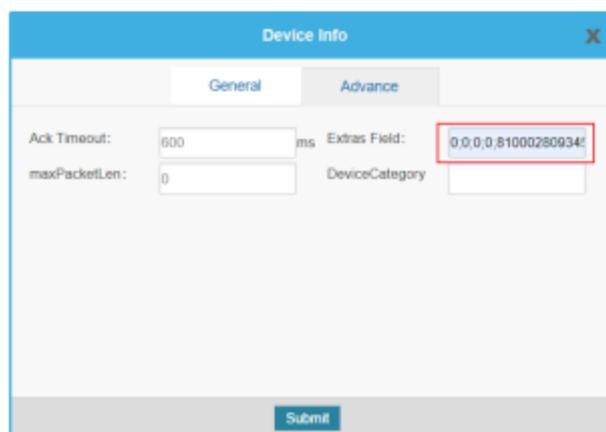
No.	Data Identifier	Data Format	Comment
1	00000000	XXXXXX.XX	Combined Active Total Energy
2	00000100	XXXXXX.XX	Combined Active Tariff 1 Energy
3	00000200	XXXXXX.XX	Combined Active Tariff 2 Energy
4	00000300	XXXXXX.XX	Combined Active Tariff 3 Energy
5	00000400	XXXXXX.XX	Combined Active Tariff 4 Energy
6	02010100	XXX.X	A Phase Voltage
7	02010200	XXX.X	B Phase Voltage
8	02010300	XXX.X	C Phase Voltage
9	02020100	XXX.XXX	A Phase Current
10	02020200	XXX.XXX	B Phase Current
11	02020300	XXX.XXX	C Phase Current
12	02030000	XX.XXXX	Instantaneous Total Active Power
13	02030100	XX.XXXX	Instantaneous A Phase Active Power
14	02030200	XX.XXXX	Instantaneous B Phase Active Power
15	02030300	XX.XXXX	Instantaneous C Phase Active Power
16	02040000	XX.XXXX	Instantaneous Total Reactive Power
17	02040100	XX.XXXX	Instantaneous A Phase Reactive Power
18	02040200	XX.XXXX	Instantaneous B Phase Reactive Power
19	02040300	XX.XXXX	Instantaneous C Phase Reactive Power
20	02050000	XX.XXXX	Instantaneous Total Apparent Power
21	02050100	XX.XXXX	Instantaneous A Phase

			Apparent Power
22	02050200	XX.XXXX	Instantaneous B Phase Apparent Power
23	02050300	XX.XXXX	Instantaneous C Phase Apparent Power
24	02060000	X.XXX	Total Power Factor
25	02060100	X.XXX	A Phase Power Factor
26	02060200	X.XXX	B Phase Power Factor
27	02060300	X.XXX	C Phase Power Factor
28	00010000	XXXXXX.XX	Forward Active Total Energy
29	00010100	XXXXXX.XX	Forward Active Tariff 1 Energy
30	00010200	XXXXXX.XX	Forward Active Tariff 2 Energy
31	00010300	XXXXXX.XX	Forward Active Tariff 3 Energy
32	00010400	XXXXXX.XX	Forward Active Tariff 4 Energy
33	00020000	XXXXXX.XX	Reverse Active Total Energy
34	00020100	XXXXXX.XX	Reverse Active Tariff 1 Energy
35	00020200	XXXXXX.XX	Reverse Active Tariff 2 Energy
36	00020300	XXXXXX.XX	Reverse Active Tariff 3 Energy
37	00020400	XXXXXX.XX	Reverse Active Tariff 4 Energy
38	02800001	XXX.XXX	Neutral Line Current
39	02800002	XX.XX	Grid Frequency
40	02800004	XX.XXXX	Current Active Demand
41	00030000	XXXXXX.XX	Combined Reactive 1 Energy
42	00040000	XXXXXX.XX	Combined Reactive 2 Energy
43	01010000	xx.xxxx,YYMMDDhhmm	Forward Active Total Maximum Demand and Occurrence Time
44	01020000	xx.xxxx,YYMMDDhhmm	Reverse Active Total Maximum Demand and

			Occurrence Time
45	01090000	xx.xxxx,YYMMDDhhmm	Forward Apparent Total Maximum Demand and Occurrence Time
46	010A0000	xx.xxxx,YYMMDDhhmm	Reverse Apparent Total Maximum Demand and Occurrence Time
47	01150000	xx.xxxx,YYMMDDhhmm	A Phase Forward Active Maximum Demand and Occurrence Time
48	01160000	xx.xxxx,YYMMDDhhmm	A Phase Reverse Active Maximum Demand and Occurrence Time
49	011D0000	xx.xxxx,YYMMDDhhmm	A Phase Forward Apparent Maximum Demand and Occurrence Time
50	011E0000	xx.xxxx,YYMMDDhhmm	A Phase Reverse Apparent Maximum Demand and Occurrence Time
51	01290000	xx.xxxx,YYMMDDhhmm	B Phase Forward Active Maximum Demand and Occurrence Time
52	012A0000	xx.xxxx,YYMMDDhhmm	B Phase Reverse Active Maximum Demand and Occurrence Time
53	01310000	xx.xxxx,YYMMDDhhmm	B Phase Forward Apparent Maximum Demand and Occurrence Time
54	01320000	xx.xxxx,YYMMDDhhmm	B Phase Reverse Apparent Maximum Demand and Occurrence Time
55	013D0000	xx.xxxx,YYMMDDhhmm	C Phase Forward Active Maximum Demand and Occurrence Time
56	013E0000	xx.xxxx,YYMMDDhhmm	C Phase Reverse Active Maximum Demand and Occurrence Time

57	01450000	xx.xxxx,YYMMDDhhmm	C Phase Forward Apparent Maximum Demand and Occurrence Time
58	01460000	xx.xxxx,YYMMDDhhmm	C Phase Reverse Apparent Maximum Demand and Occurrence Time
59	05050001	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Time
60	05050101	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Forward Active Energy Data
61	05050201	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Reverse Active Energy Data
62	05050301	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Combined Reactive 1 Energy Data
63	05050401	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Combined Reactive 2 Energy Data
64	05050901	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Forward Active Max Demand & Time Data
65	05050A01	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Reverse Active Max Demand & Time Data
66	05051001	xx.xxxx,YYMMDDhhmm	(Last) Time-of-Use Tariff Switching Variable Data
67	04000402	xxxxxxxxxxxx	Meter Number
69	00000200	XXXXXX.XX	Combined Active Peak Energy
70	00000300	XXXXXX.XX	Combined Active Normal Energy
71	00000400	XXXXXX.XX	Combined Active Valley Energy
72	00010100	XXXXXX.XX	Forward Active Peak Energy
73	00010200	XXXXXX.XX	Forward Active Peak Energy

			(Note: Duplicate description? Likely Shoulder/Off-Peak)
74	00010300	XXXXXX.XX	Forward Active Normal Energy
75	00010400	XXXXXX.XX	Forward Active Valley Energy
76	00020100	XXXXXX.XX	Reverse Active Peak Energy
77	00020200	XXXXXX.XX	Reverse Active Peak Energy (Note: Duplicate description? Likely Shoulder/Off-Peak)
78	00020300	XXXXXX.XX	Reverse Active Normal Energy
79	00020400	XXXXXX.XX	Reverse Active Valley Energy
80	06010101	NN,uu	Schedule Remote Trip Control (0-99)
81	06010102	..	Cancel Remote Trip Control
82	06010201	NN,uu	Schedule Remote Close Control (0-99)
83	06010202	..	Cancel Remote Close Control
84	06010301	NN,uu	Schedule Simulated Test Trip Control (0-99)
85	06010302	..	Cancel Simulated Test Trip Control
86	06010401	NN,uu	Schedule Self-check
87	06010402	..	Cancel Schedule Self-check



Extended Field: base;algorithm;byteseq;waittime;meterno.

① **base**: Offset, no effect, default is 0; ② **algorithm**: Algorithm, no effect, default is 0; ③ **byteseq**: Byte order, no effect, default is 0; ④ **waittime**: Serial port wait time, default 0 automatically converts to 10ms; ⑤ **meterno**: Electricity meter number.

3.4.13. CJ/T188 Water Meter

Parameter	Register Type	Register Address
Settlement Day Cumulative Flow	RD	1
Current Heat	RD	2
Heat Power	RD	3
Flow Rate	RD	4
Current Cumulative Flow	RD	5
Supply Water Temperature	RD	6
Return Water Temperature	RD	7
Cumulative Working Time	RD	8
Real-time Time	RD	9

The screenshot shows a 'Device Info' window with two tabs: 'General' and 'Advance'. The 'Advance' tab is active. It contains several configuration fields: 'Ack Timeout' (600 ms), 'maxPacketLen' (0), 'Extras Field' (200.0.0.1;12345678), and 'DeviceCategory'. The 'Extras Field' value is enclosed in a red rectangular box. A 'Submit' button is located at the bottom center of the window.

The device extended field in the advanced configuration defaults to 0, the meter number must be correct.

For example: Wait 200ms for each request, meter number 12345678 then input 200;0;0.1;12345678

1、waittime: Serial port wait time, default 0 automatically converts to 10ms

2、meterType: Meter type, default fill 0 automatically converts to 16 (cold water meter)

3、protocolversion: Protocol version number, default fill 0 (protocol header FE FE, identifier order 90 1F);

For example, fill in 0.1

0: Number of FEs in the header, 4.1 means the header is FE FE FE FE;

1: 0 means identifier is 90 1F, 1 means identifier is 1F 90

4、meterno: Meter number

3.4.14. IEC Power Protocol

1) IEC 101

Supported Type Identifiers

Type Name	Register	Common Data Types	Common Start Address	Address Example	Attribute
Teleindication (Single)	TI	Bit	1	100.1.1	Read Only
Teleindication (Double)	TI	Bit	1	100.3.1	Read Only
Telemetry (Normalized)	TI	Short	16385	100.9.16385	Read Only
Telemetry (Short Float)	TI	Float	16385	100.13.16385	Read Only
Telepulse	T1	Short	25601	101.15.25601	Read Only
Single Point Telecommand	T1	Bit	/	45.1.1	Write Only
Double Point Telecommand	T1	Bit	/	46.3.1	Write Only
Set Normalized Value	T1	Short	/	48.9.16385	Write Only
Set Short Float	T1	Float	/	50.13.16385	Write Only

2) IEC 103**Supported Type Identifiers**

Type Name	Register	Common Data Types	Common Start Address	Address Example	Attribute
Teleindication (Single)	TI	Short	1	100.1.40.1	Read Only
Identification	TI	String	1	100.5.160.3	Read Only
Telepulse	TI	Short	1	101.36.1.6	Read Only
Step Position	TI	Short	1	100.38.1.76	Read Only
Step Position SOE	TI	Short	1	100.39.1.76	Read Only
Full Teleindication (Double)	TI	Short	1	100.42.50.14	Read Only
Full Teleindication (Single)	TI	Short	1	100.44.1.149	Read Only
Full Telemetry (Normalized)	TI	Short	1	100.50.1.92	Read Only
Telecommand	TI	Bit	/	100.64.1.48	Write Only
General Teleindication +Telemetry	T1	Short	1	100.10.254.241.8.1.9	Read Only
General Telepulse	T1	Short	1	101.36.254.241.10.1.4	Read Only
General Telecommand	T1	Bit	/	40.1.48.14.1.9	Write Only

3) IEC 104**Supported Type Identifiers**

Type Name	Register	Common Data Types	Common Start Address	Address Example	Attribute
Teleindication	TI	Bit	1	100.1.1	Read Only

Telemetry (Normalized)	T1	Short	16385	100.9.16385	Read Only
Telemetry (Short Float)	T1	Float	16385	100.13.16385	Read Only
Telepulse	T1	Short	25601	101.15.25601	Read Only
Single Point Telecommand	T1	Bit	/	45.1.1	Write Only
Double Point Telecommand	T1	Bit	/	46.1.1	Write Only
Set Normalized Value	T1	Short	/	48.1.16385	Write Only
Set Short Float	T1	Float	/	48.1.16385	Write Only

IEC 104 Device Ethernet Communication Parameters			
Communication Protocol	Interface Type	IP Address	Port Number
IEC 104	Network Port	Device IP Address	2404
Extended Field	a a表示 QCC 参数的值（十六进制）		

3.5. Configuring Forwarding

Center Type	Type Description
IoT Data Cloud Platform	WideIOT IOT platform proprietary format, includes data monitoring, remote maintenance, remote deployment configuration
IoT Management Cloud Platform	WideIOT IOT platform proprietary format, includes remote maintenance, remote deployment configuration
IoT Access Cloud Platform	WideIOT IOT access cloud platform proprietary format, builds VPN remote channel for users' gateways
Open IOT Platform	User self-developed MQTT protocol platform adapted to gateway API interface, contact engineer for relevant information
Alibaba Cloud Platform	Contact engineer for relevant information
Baidu Cloud Platform	Contact engineer for relevant information

Huawei Cloud Platform	Contact engineer for relevant information
ONENET Cloud Platform	Contact engineer for relevant information
Microsoft Cloud/...	Other third-party MQTT thing model platforms can consult engineers for details
Hydrological Environmental Monitoring	Such as SL651 protocol, SLT427 protocol, etc. Contact engineer for relevant information

Note: The aforementioned thing model platforms all use the MQTT protocol.

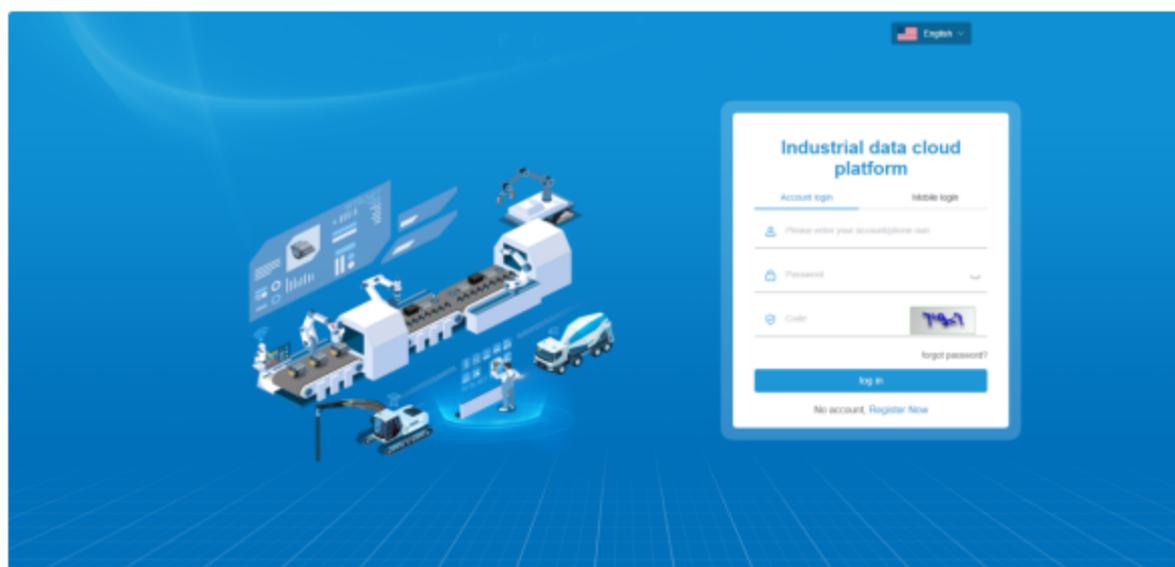
3.5.1. WideIOT Cloud

The gateway connects to the WideIOT Cloud by default. Users can directly log in to the cloud platform, add the gateway, add data acquisition configuration, then deploy the configuration to the gateway to achieve cloud-based data monitoring on the platform.

The following uses collecting data from a Siemens 200smart PLC as an example.

1) Logging into the Platform

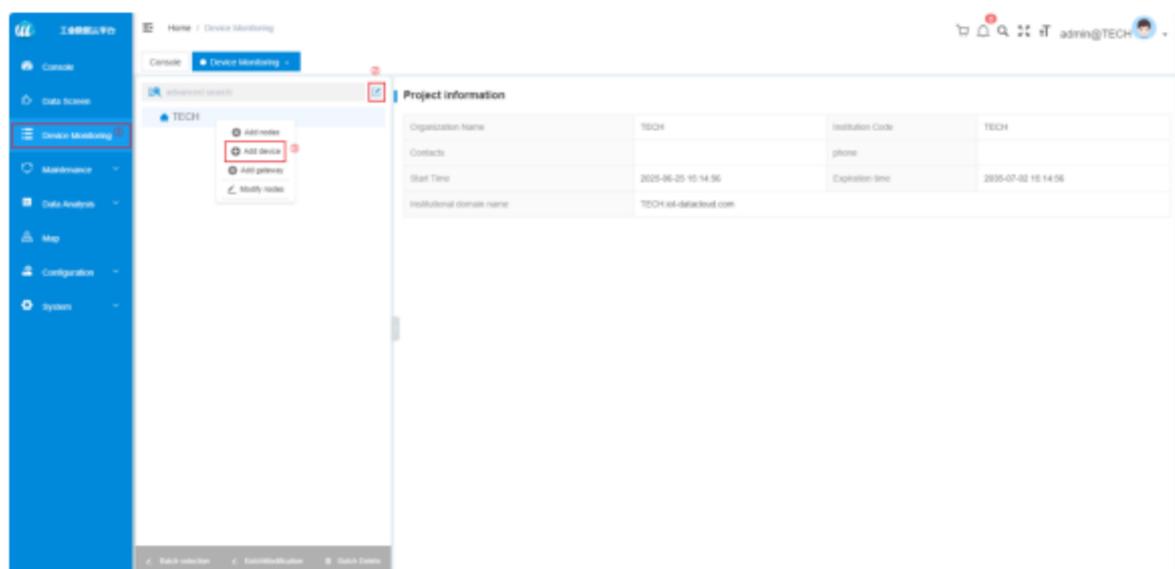
Open a browser, log in to <https://iot.wtblnet.com/>, enter the cloud platform login interface, input the account, password, and verification code. After entering, click the "Login" button (or press Enter) to enter the platform.



2) Adding a Device

Click the left menu "Device Monitoring" ①, then click the edit button ②, right-click on a node in the directory tree that is not a device node type, and select "Add Device" from the pop-up menu.

Ps: This example directly adds a device under the main directory "TECH". When using, it is recommended to first add a node, then add the device under the node for easier categorization.



Fill in the basic device information, click "Gateway" to link an already added gateway or add a new gateway.

Device Management

Basic Settings Advanced setting

Device Properties

* Name * Device SN

Operation * Address

* Catalog Node sort

Collection attributes

Gateway Model

SerialNo Serial Baud

Data Bits Stop Bit

Parity bit

slave Extended Fields

Collection Cycle

Click Add Gateway.

Gateway selection

Double click bind*

Gateway Sn Name Running state

Online status	Gateway Sn	Name	Running state
No Data			

Enter the SN (20 digits) from the gateway label in the Gateway Serial Number field, customize the Gateway Name, and click confirm.

gateway administration ×

Basic information

* Gateway Sn	<input type="text" value="WG583LL0725101005000"/>	* Gateway Name	<input type="text" value="Gateway A"/>
* Catalog Node	<input type="text" value="TECH"/>	Address	<input type="text"/>
* Gateway brand	<input type="text" value="WTBL"/>	* data format	<input type="text" value="Common Format"/>
* Operations	<input type="text" value="Build"/>	Product Type	<input type="text" value="Intelligent Gateway"/>
sort	<input type="text" value="0"/>		

Select the gateway, click confirm, or double-click to associate the gateway.

Gateway selection ×

Double click bind*

Gateway Sn	<input type="text" value="Please enter"/>	Name	<input type="text" value="Please enter"/>	Running state	<input type="text" value="Please select"/>	<input type="button" value="Search"/>	<input type="button" value="Resolving"/>	<input type="button" value="Add gateway"/>
------------	---	------	---	---------------	--	---------------------------------------	--	--

	Online status	Gateway Sn	Name	Running state
<input checked="" type="checkbox"/>	on line	WG583LL0725101005000	Gateway A	Build

Total 1 10/page < 1 > Go to 1

Click " Model" to link an already added model or add a new model.

Device Management

Basic Settings Advanced setting

Device Properties

* Name: * Device SN:

Operation:

* Catalog Node: sort:

Collection attributes

Gateway: Model:

SerialNo: Serial Baud:

Data Bits: Stop Bit:

Parity bit:

slave: Extended Fields:

Collection: Cycle:

Click Add Model.

Model selection

Double click bind

Model Name: Protocol: Interface Type:

Model Name	Protocol	Interface Type	Variables Total
No Data			

Model Name is customizable. Model Protocol, Model Interface, CPU Type (default General is fine) are selected based on the device to be collected.

The screenshot shows a 'Model management' dialog box with a close button (X) in the top right corner. Under the 'Basic Information' section, there are several input fields: 'Name' (Siemens 200 smart), 'TunnelClass' (PLC控制器), 'Interface' (Network Interface), 'Protocol' (Siemens S7), 'CPU type' (be current), and 'sort' (0). At the bottom, there are 'Confirm' and 'Cancel' buttons.

Select the model, click OK or double-click to associate the model.

The screenshot shows a 'Model selection' dialog box with a close button (X) in the top right corner. It features search filters for 'Model Name', 'Protocol', and 'Interface Type', along with 'Search', 'Resetting', and 'Add model' buttons. A table below lists the available models:

	Model Name	Protocol	Interface Type	Variables Total
<input checked="" type="checkbox"/>	Siemens 200 smart	25	0	0

At the bottom, there are 'Confirm' and 'Cancel' buttons, and a pagination control showing 'Total 1', '10/page', and 'Go to 1'.

Fill in the PLC's IP address in the IP Address field, the Siemens port number is 102 by default, set the acquisition cycle, then click confirm to complete adding the device.

Device Management

Basic Settings Advanced setting

Device Properties

* Name: Siemens 200 smart * Device SN: 01

Operations: Operate * Address: 天油门

* Catalog Node: TECH sort: 0

Collection attributes

Gateway: Gateway A Model: Siemens 200 smart

IP Address: 192.168.2.10 Port: 102

slave: 1 Extended Fields: 0

Collection: Open Cycle: 60

Confirm Cancel

3) Defining Variables

Variables, i.e., PLC points. In the device basic information, click "Modify Model".

Home / Device Monitoring

Console Device Monitoring

Siemens 200 smart

Basic information Real time History Alarm Configuration Video DevOps Data report

Siemens 200 smart (SN:01) [Modify device](#)

Device information

Device Name: Siemens 200 smart Equipment serial number: 01

Device status: off line Operational status: [Operate](#)

Gateway information [gateway administration](#) [Online curve](#) [DevOps and diagnosis](#) [Configure deployment](#)

Gateway Name: Gateway A Gateway serial number: WGSBL0725KH000000

Gateway status: on line Gateway signal:

Data acquisition information [Modify Model](#)

Model Name: Siemens 200 smart Model Agreement: Siemens S7 Model interface: Network interface

ip address: 192.168.2.10 ip port: 102 acquisition cycle: 60

statistic

Alarm statistics

Removed: 0 Not recovered: 0 No Data

Work order statistics

Total: 0 unstarted: 0 No Data

Comprehensive statistics

Total videos: 0 Total Variables: 0 Total Screens: 0

Click Define Variables.

Model management

Basic information

* Name: Siemens 200 smart TunnelClass: PLC控制器

* Interface: Network interface * Protocol: Siemens S7

* CPU type: be current sort: 0

Variable Definition

[Defining Variable](#) Number of defined variables 0 Individual

ConfigurationDefinition

[Defining Configuration](#) Number of defined configurations 0 Individual

grouping strategy

[grouping strategy](#)

[Confirm](#) [Cancel](#)

Click "Add".

Variable Definition

Variable Name variable aliasing Variable grouping [Search](#) [Add](#) [Import](#) [Export](#)

<input type="checkbox"/>	Variable Name	variable aliasing	Register	data type	Operate
No Data					

Batch Operation

Go to:

Configure the PLC point.

Variable management
×

Basic Settings Alarm settings

Basic Settings

* Variable Name <input style="width: 90%;" type="text" value="VD10"/>	* variable aliasing <input style="width: 90%;" type="text" value="TEMP"/>
* Variable type <input style="width: 90%;" type="text" value="FLOAT"/>	Variable decimal <input style="width: 90%;" type="text" value="1"/>
* Register type <input style="width: 90%;" type="text" value="V"/>	* Register address <input style="width: 90%;" type="text" value="10"/>

Variable grouping <input style="width: 90%;" type="text" value="Select"/>	Extended Fields <input style="width: 90%;" type="text" value="0"/>
statistical analysis <input style="width: 90%;" type="text" value="Select"/>	

Advanced

variable ordering <input style="width: 90%;" type="text" value="variable ordering"/>	Variable multiplier <input style="width: 90%;" type="text" value="1"/>
read-write <input style="width: 90%;" type="text" value="Read & Write"/>	Variable units <input style="width: 90%;" type="text" value="Variable units"/>
Jump threshold <input style="width: 90%;" type="text" value="0"/>	Storage method <input style="width: 90%;" type="text" value="Remote Only"/>

Variable Name: Custom, does not support special characters;

Variable Alias: Custom;

Variable Type: Select based on the variable's data type;

Register Type: Select based on the variable's register type;

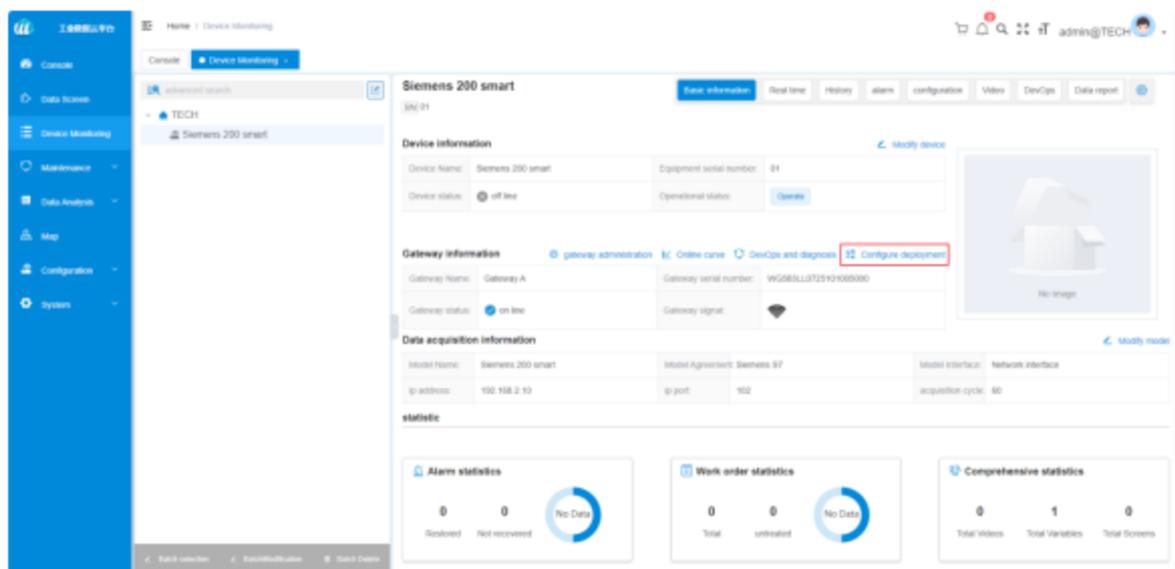
Register Address: Enter the address value of the variable in the register;

Read/Write Permission: Read/write permission for this point.

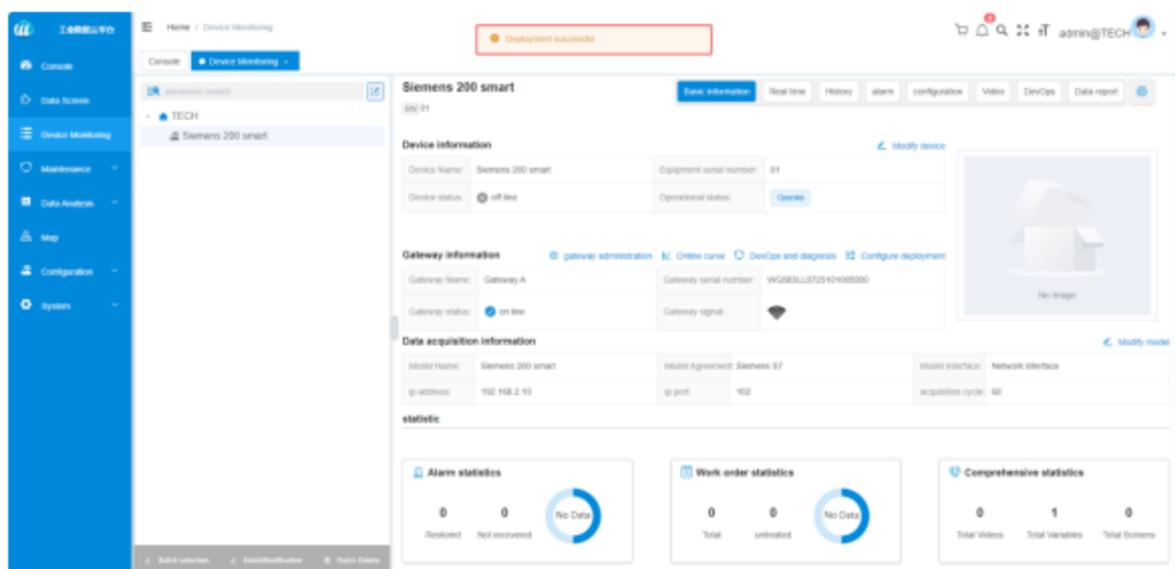
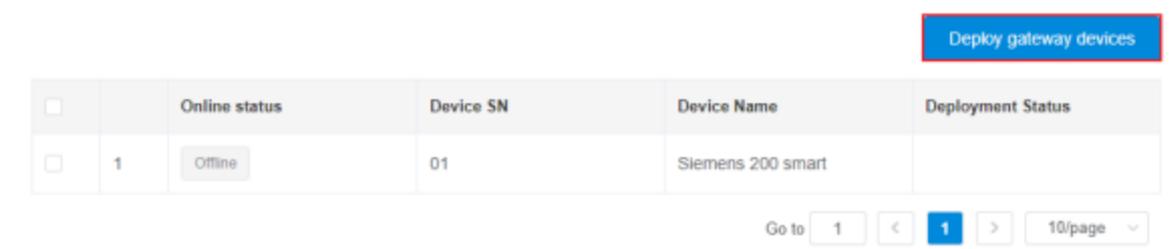
4) Deploying Configuration

Click Configuration Deployment, then click Deploy Devices under Gateway, wait for the prompt that deployment is successful, and the configuration on the platform will be deployed to the gateway.

Ps: Every time you modify or add, you need to successfully deploy the configuration for it to take effect.



Gateway deployment



5) Data Monitoring

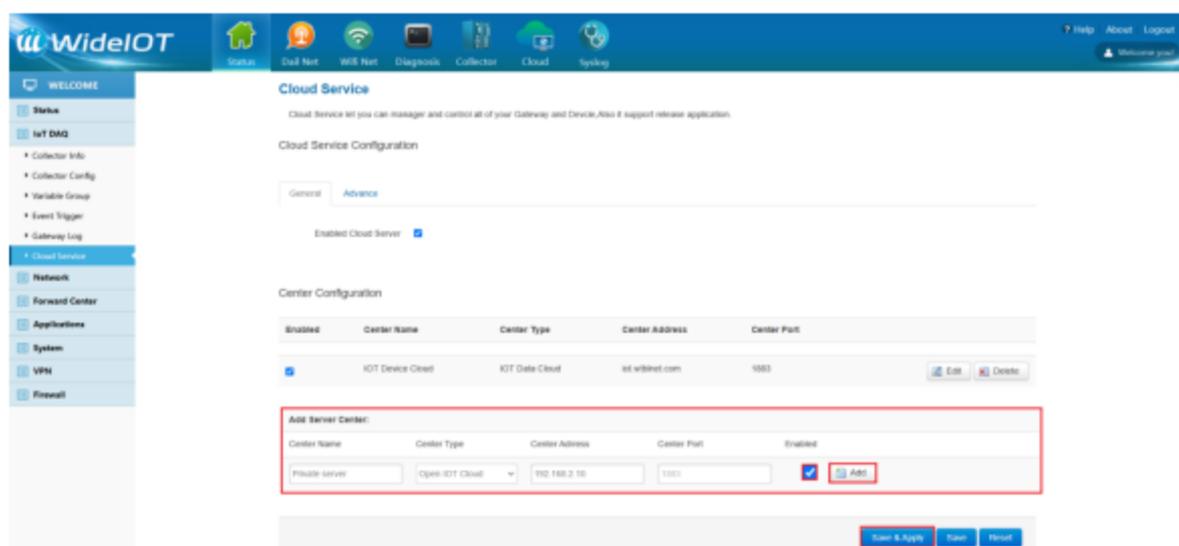
In the device details, click "Real time" to monitor the device's real-time data online.

open platform format API. This allows users to quickly build advanced, professional industrial application systems.

For example, integrating into MES systems, self-developing IoT platforms, building equipment remote operation management platforms, establishing energy management platforms, environmental protection platforms, hydrological and water conservancy platforms, etc.

1) MQTT Configuration

(1) Open IOT Platform: Suitable for users developing their own data cloud platform. Our company will provide the gateway-related MQTT protocol interface documentation. Operation as follows: Cloud Service Center - Add server IP, Port, click Add.

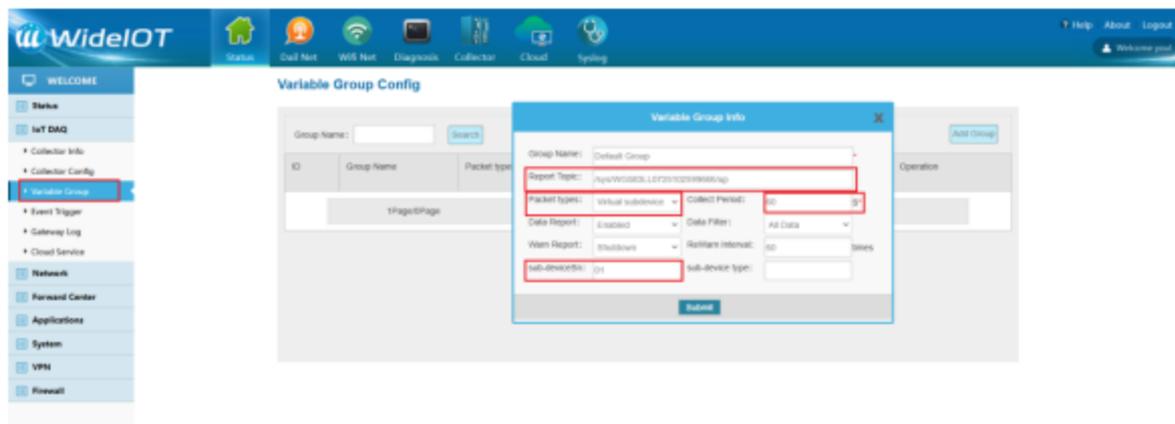


2) Topic Modification

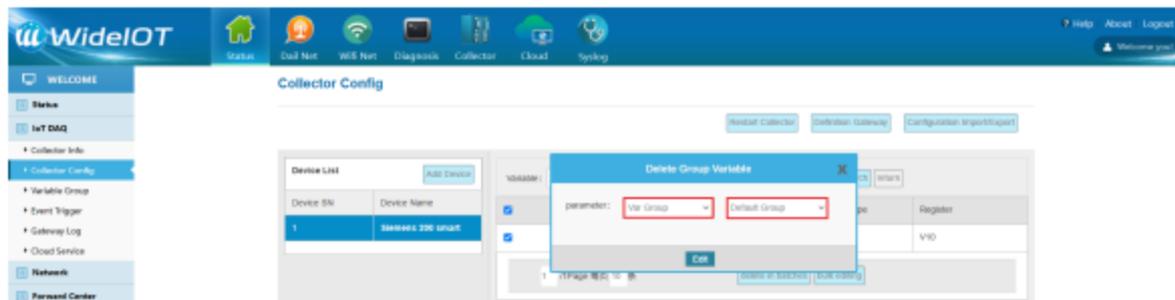
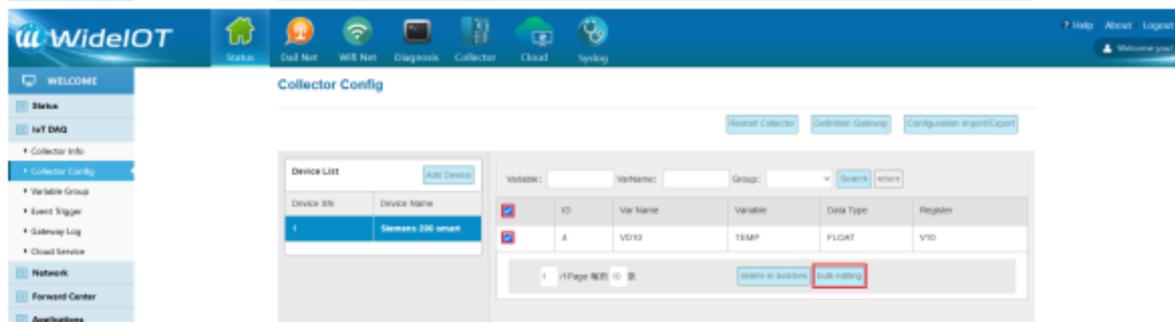
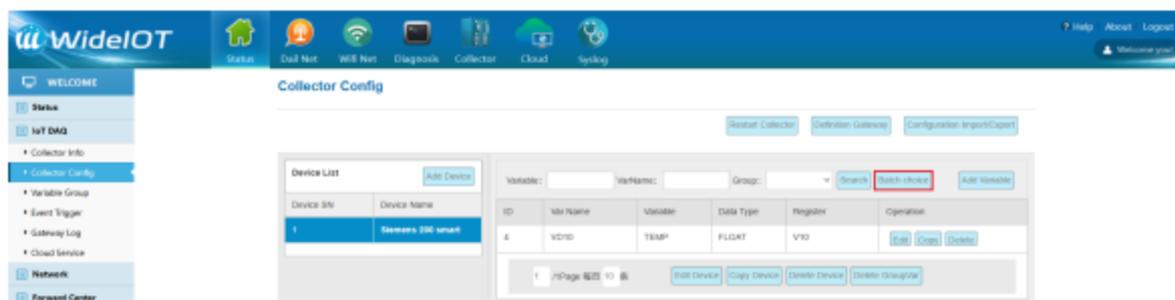
Uplink Topic Definition

When using the open format IOT, you need to define groups to configure the uplink topic:

Create a new group in the Variable Group --- select Virtual Sub-device group type --- fill in the Report Topic --- fill in the Acquisition Cycle and Sub-device Serial Number --- Save & Apply.



(2) In Data Acquisition Configuration, select Batch Select --- check the variable points that need to be bound to this group --- Save --- Restart the acquisition program to take effect.



Downlink Topic Definition

In the Cloud Service Center --- click Modify in the corresponding Center Type --- customize the downlink topic in MQTT Topic. The default Topic is: `/$gatewaySn/down`.

The top screenshot shows the 'Cloud Service' configuration page. It includes a sidebar with navigation options like 'Status', 'IoT DAQ', 'Collector Info', 'Variable Group', 'Event Trigger', 'Gateway Log', 'Cloud Service', 'Network', 'Forward Center', 'Applications', 'System', 'VPN', and 'Firewall'. The main content area is titled 'Cloud Service' and contains sections for 'Cloud Service Configuration' (with 'Enabled Cloud Server' checked), 'Center Configuration' (a table with columns: Enabled, Center Name, Center Type, Center Address, Center Port, and Edit/Delete buttons), and 'Add Server Center' (a form with fields for Center Name, Center Type, Center Address, Center Port, and Enabled).

The bottom screenshot shows the 'Center Configuration - Private server' page. It has tabs for 'General', 'Advance', and 'MQTT Topic' (which is selected). Under the 'MQTT Topic' tab, there are several text input fields for configuring MQTT topics: 'gateway up topic', 'gateway down topic' (highlighted with a red box), 'gateway_heartbeat_topic', 'Alarm Topic', 'History Topic', and 'Recent Topic'. Each field has a dropdown menu with the default value 'iops/gateway/3rnp'. At the bottom, there are buttons for 'Back to Overview', 'Save & Apply', 'Save', and 'Cancel'.

3) API Interface

3.5.2.1.1. Data Monitoring

The gateway is a gateway for the integration of informatization and industrialization (automation and informatization integration). It collects and parses data from different types of devices at the edge node, then standardizes it to provide various data subscriptions and various data reverse control for cloud applications.

The gateway supports multiple instruction formats. The main instruction formats are listed below:

Instruction Character	Instruction Value
cmdId Message Instruction Type	1, Gateway Online Notification
	2, Gateway Offline Notification
	3, Gateway Heartbeat Packet
	85, Read Variable
	86, Read Return
	87, Write Variable
	88, Write Variable Return
	91, Read Gateway Status Information and Gateway Commands
	92, Gateway Command Information and Command Return
	103, Data Reporting
	300, Alarm Reporting
	104, Device Online Heartbeat
	105, Polling Online Status of All Devices under Gateway

3.5.2.1.2. Configuration Deployment

There are two configuration methods: remote configuration on the platform and local gateway configuration. The default factory setting is platform configuration, which is also the most convenient and fastest configuration method (recommended). Normally, there is no need to independently develop configuration functions because the configuration function is relatively complex, so basically, the public cloud or tools provided by WideIoT are used to manage and configure the device. If there are special needs and you want to independently develop a configuration management platform, you can use the configuration interface described in this document.

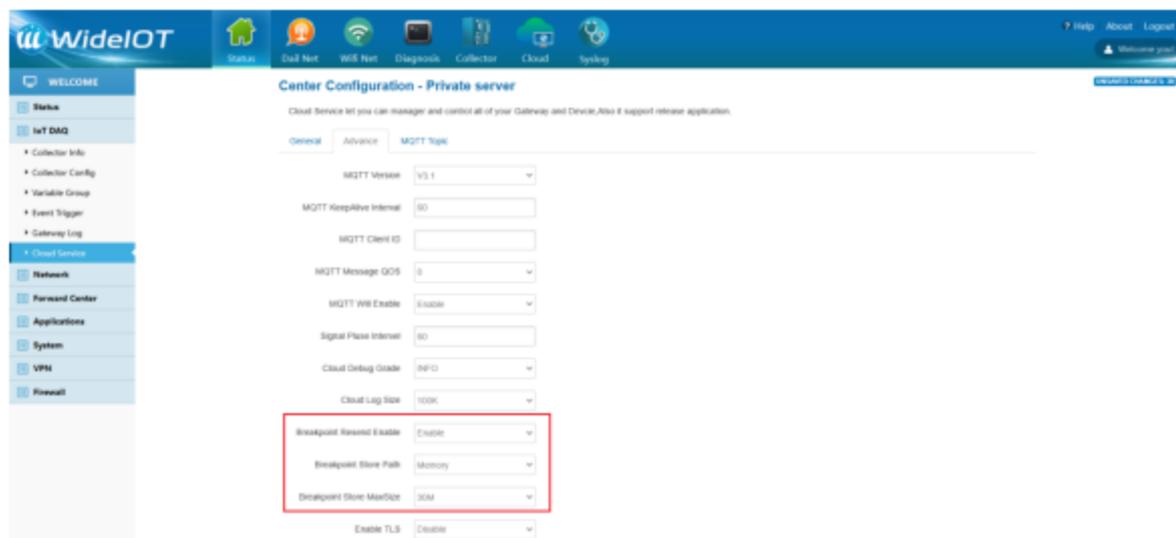
Deployment Function
1, Deploy all configurations under the gateway(Includes the reporting message field configuration for a certain gateway, device configuration, variable configuration, etc.)
2, Deploy all configurations for a single device(Includes the configuration of a certain device, and the variable configuration of that device)
3, Modify gateway configuration(Modify the name of a certain gateway, gateway signal heartbeat packet)
4, Modify single device configuration(Only modify the relevant configuration of a certain device)
5, Modify single variable configuration(Only modify the relevant configuration of a certain variable)
6, Modify variable group configuration(Only modify the relevant configuration of a certain variable group)
7, Clear all configurations of the gateway
9, Deploy group configuration(Deploy all group configurations)
11, Deploy trigger configuration(Deploy all trigger configurations)
12, Modify trigger configuration(Only modify the relevant configuration of a certain trigger)

4) Resume Broken Transfer

Select the corresponding Cloud Service Center --- find the center type for data upload --- click Modify to enter the configuration interface of that center.



Click Advanced Options --- Enable Store and Forward --- Select the Store and Forward path (select according to the gateway model, supports TF, SSD, hard disk, memory, etc.) --- Select the storage capacity size according to the actual storage path size --- Save & Apply.



Note: For the store and forward capacity size, please select the appropriate memory according to the gateway model and the capacity of the inserted TF card.

5) Gateway Logs

3.5.2.1.3. Acquisition Log

Set the acquisition log level to Debug in the cloud access configuration to print detailed logs of the gateway collecting device data, facilitating judgment of the collection situation, especially when data acquisition is abnormal, check the acquisition log. After diagnosis, please change the debug log level to Info (to improve acquisition efficiency).

The top screenshot shows the 'Cloud Service Configuration' page in the WideIoT web interface. The 'Advanced' tab is selected, and the 'Collector Debug Grade' dropdown menu is open, showing 'DEBUG' as the selected option. Other configuration options include 'Device Online Interval', 'Collector Log Size', 'Trigger Debug Grade', 'Trigger Log Size', 'Cloud Debug Grade', 'Cloud Log Size', 'History Size Enable', 'Fatal Failure Retain', and 'DEVICE LINK WATCH'.

The bottom screenshot shows the 'Collection Log' page. The 'Collection Log' tab is selected, and the log content area displays several error messages from 2025-10-24 19:43:08, including 'WAN2n DePublshn: mgmt not connect' and 'WAN2n program result is empty for command 'cat /tmp/widiot/wan2n/modem/collect: by rollback with system!'.

3.5.2.1.4. Forwarding Log

Set the cloud access log level to Debug in the cloud access configuration to print detailed logs of the interaction between the gateway and the cloud platform, facilitating judgment of the cloud access situation, especially when the cloud

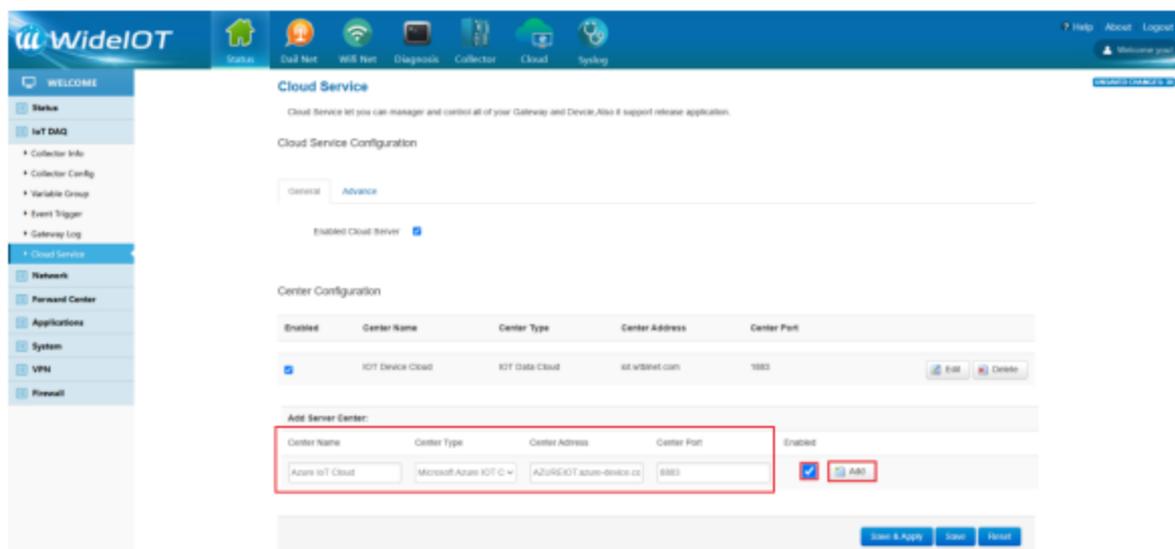
platform data is abnormal or the channel is abnormal, check the cloud access log. After diagnosis, please change the debug log level to Info (to improve operation efficiency).

The top screenshot shows the 'Cloud Service' configuration page. The 'Advanced' tab is selected. The 'Cloud Debug Grade' dropdown menu is open, and 'DEBUG' is highlighted. The 'Device Offline Interval' is set to 60, 'Collector Debug Grade' is INFO, 'Collector Log Size' is 200K, 'Trigger Debug Grade' is INFO, and 'Trigger Log Size' is 200K. The 'Cloud Log Size' is set to 100K, 'History Store Enable' is checked, and 'Fatal Failure Restart' is set to DEBUG. The 'DEVICE LINK WATCH' is set to Disable.

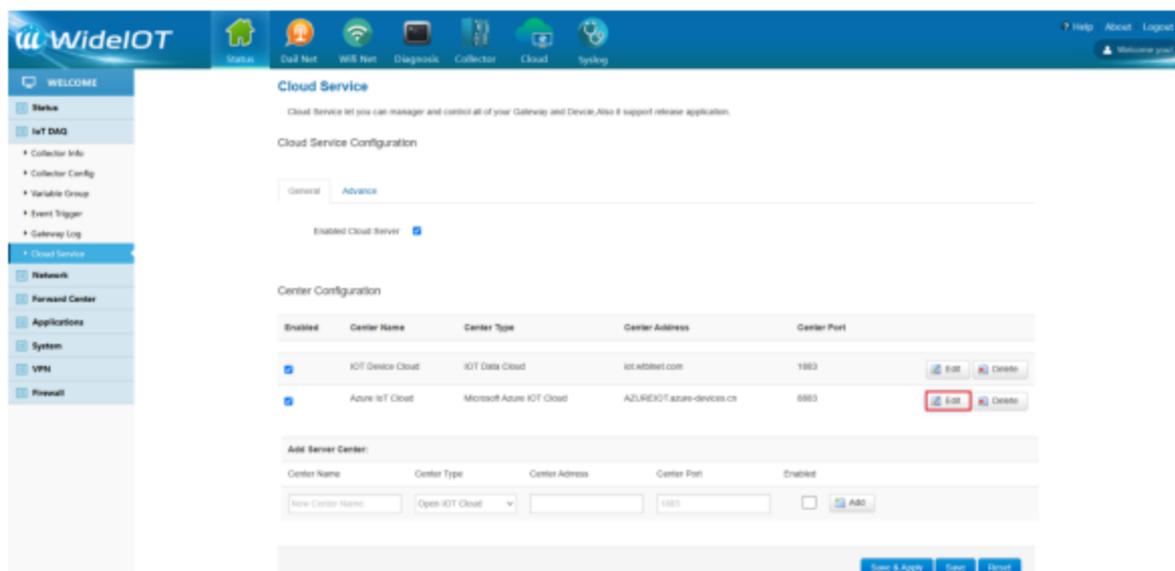
The bottom screenshot shows the 'Cloud Log' page. The 'Collection Log' tab is selected. The log entries are visible, and the 'Download All Log' button is highlighted. The log entries show the following format: [Timestamp] [Device ID] [Event Type] [Message].

3.5.3. Microsoft Azure Cloud

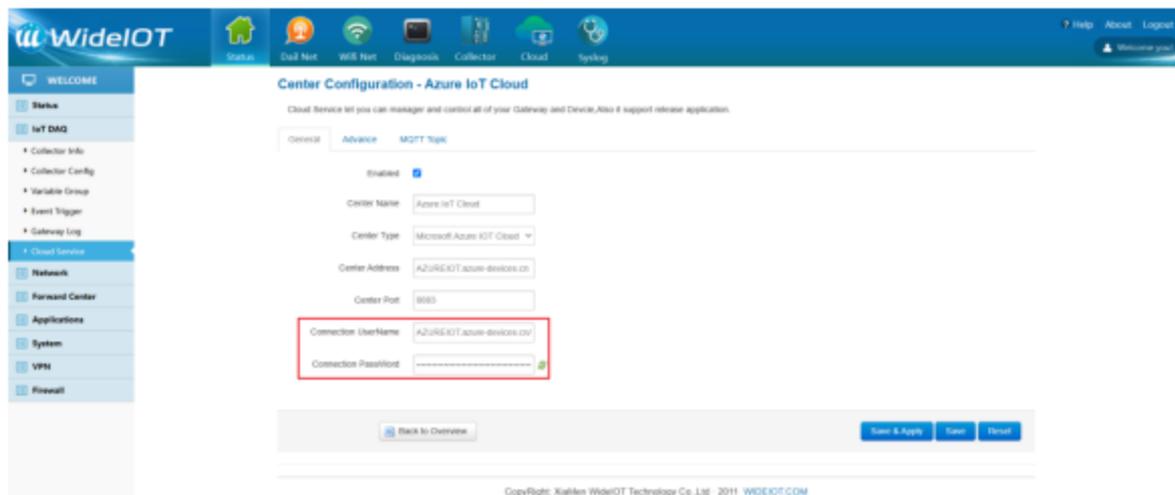
Open the WideIoT gateway WEB interface, create a new connection center, select Microsoft IoT Cloud Platform as the center type, enter the corresponding information, check Enable, click "Add".



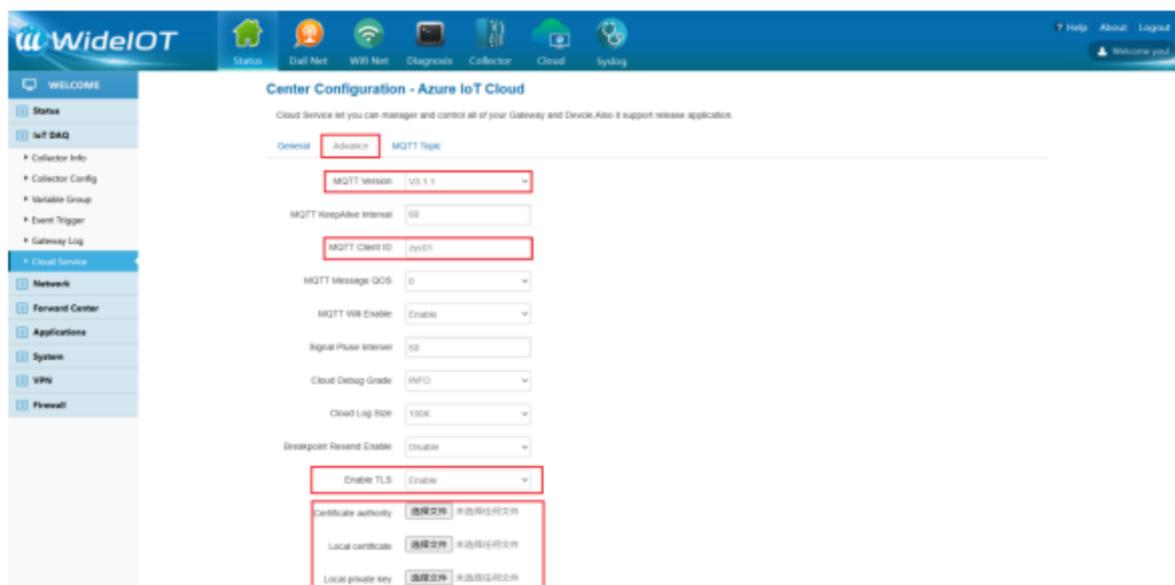
Click Modify, fill in the corresponding data.



Complete the parameters.



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Center Address: AZUREIOT.azure-devices.cn

Where AZUREIOT is the field generated by the Microsoft Cloud web page;

Center Port: 8883

Center Type: Microsoft Cloud Platform

Username: AZUREIOT.azure-devices.cn/zyc01

zyc01 is the created device name (gateway);

Connection Password (SAS Token generated above):

SharedAccessSignature

sr=[AZUREIOT.azure-](https://AZUREIOT.azure-devices.cn)

[devices.cn](https://AZUREIOT.azure-devices.cn)%2Fdevices%2FTest01&sig=OtUB0BqEi3HaA9Rt9RtMRypWtZ2VW0CFd4f4nCA7To%3D&se=1655521938

MQTT Version Selection: 3.1.1

MQTT Client ID fill in the device ID (e.g., zyc01)

Authentication Certificate: Upload azure-ca.crt

After configuration is complete, restart cloud to take effect;

3.5.4. Amazon Cloud

Log in to the gateway WEB interface, click "Data Acquisition" --- "Cloud Service Center", configure the cloud service parameters.



Center Name: Custom

Center Type: Select "Amazon IOT Cloud Platform"

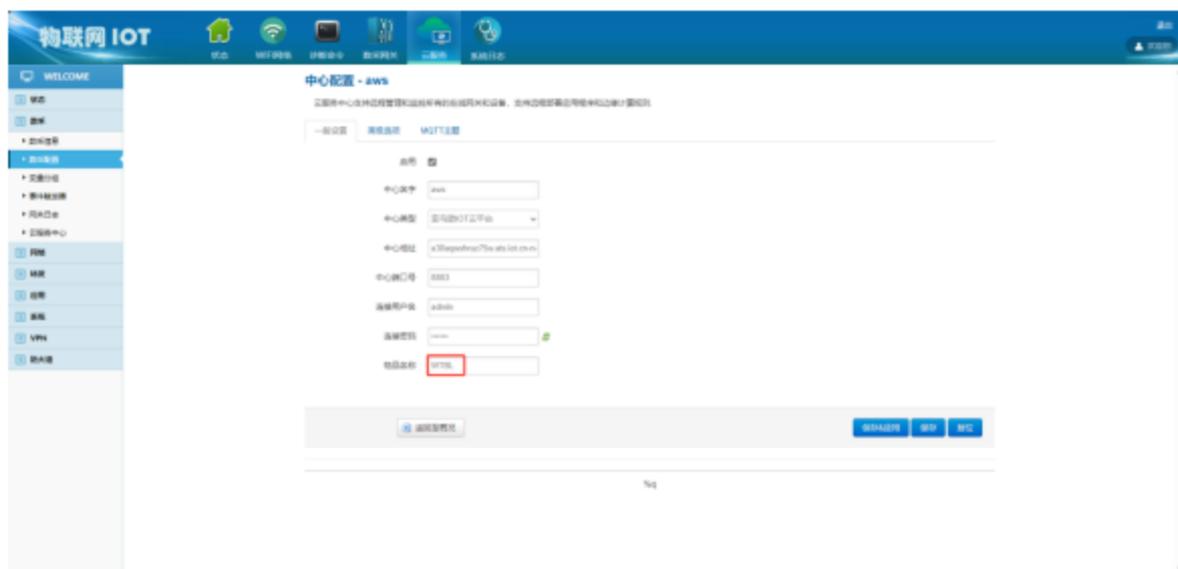
Center Address: Fill in the MQTT server address obtained from section 3.5.4.1.4 of this document.

Center Port Number: 8883

Click Modify to enter more settings.

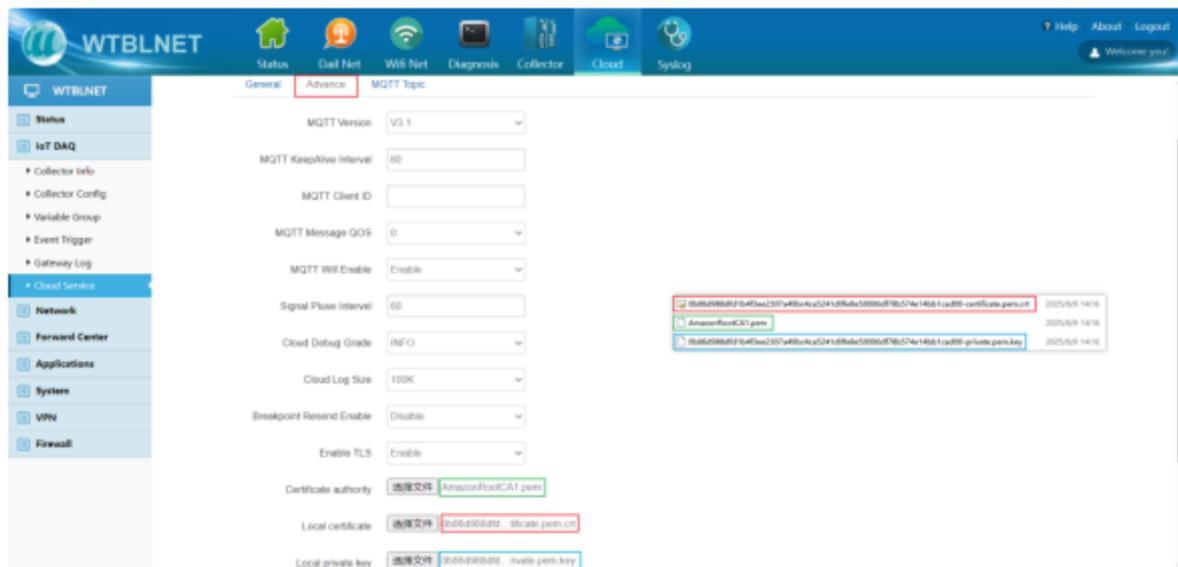


Thing Name fill in the thing name configured on the platform.



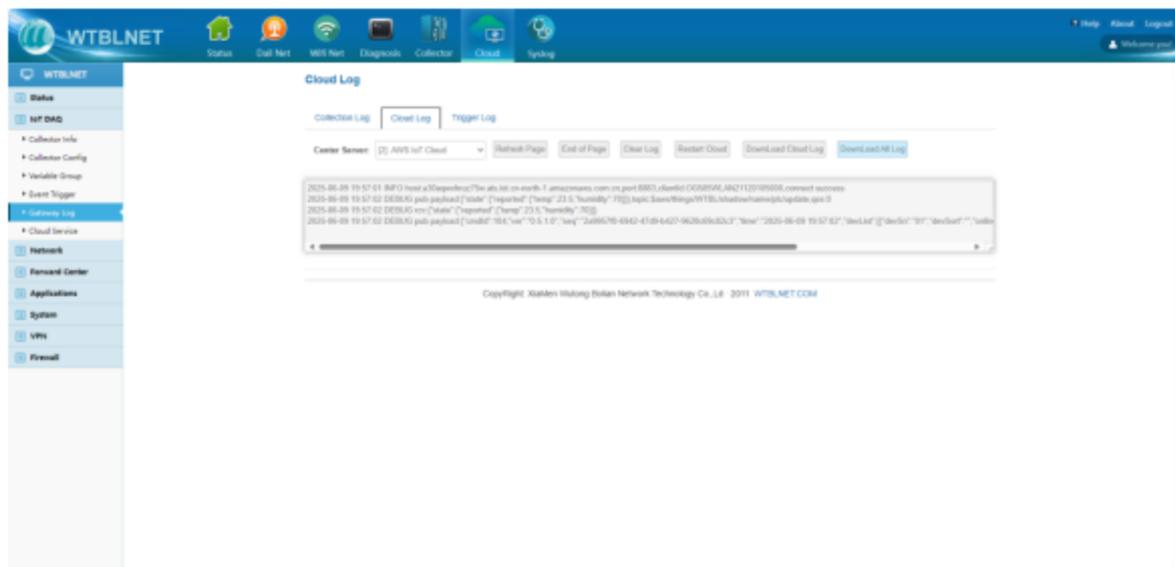
3.5.4.1.1. Configuring Certificates

Enable TLS authentication and configure the certificate files. The corresponding relationship is shown in the figure below. After configuration, click Save & Apply.



3.5.4.1.2. Querying Connection Status

Click the left menu "Data Acquisition" --- "Gateway Logs", select the corresponding cloud service, and check if the connection is successful.



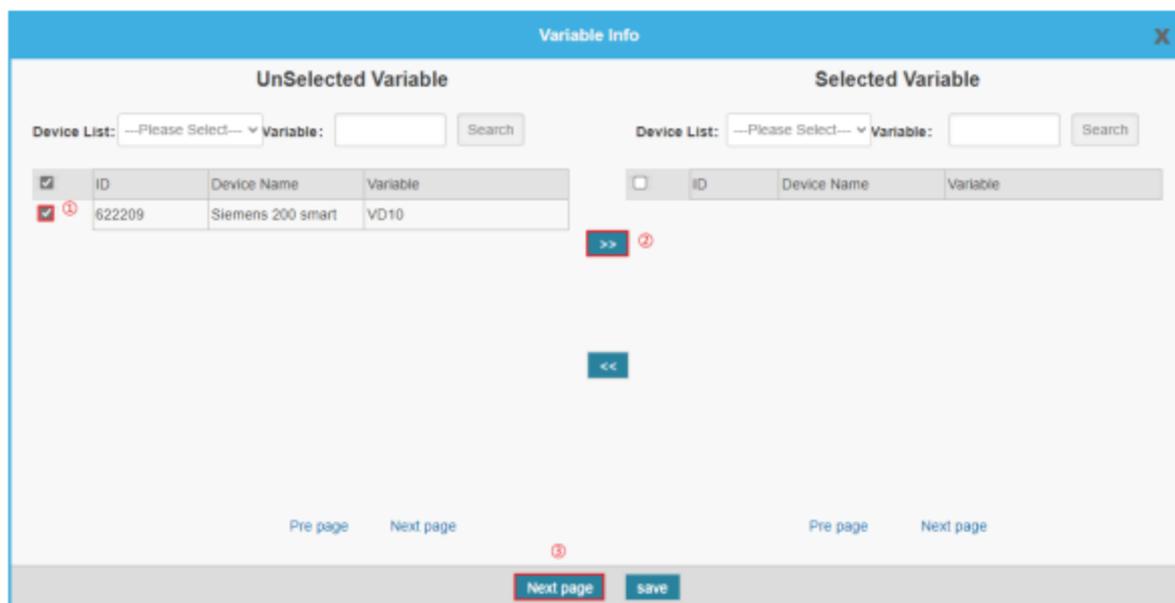
3.5.5. Modbus TCP

Setup Steps: Forwarding Center --- Modbus Tcp Forwarding Center --- Configure forwarding variable point list --- Enable Save --- Restart Forwarding Center.

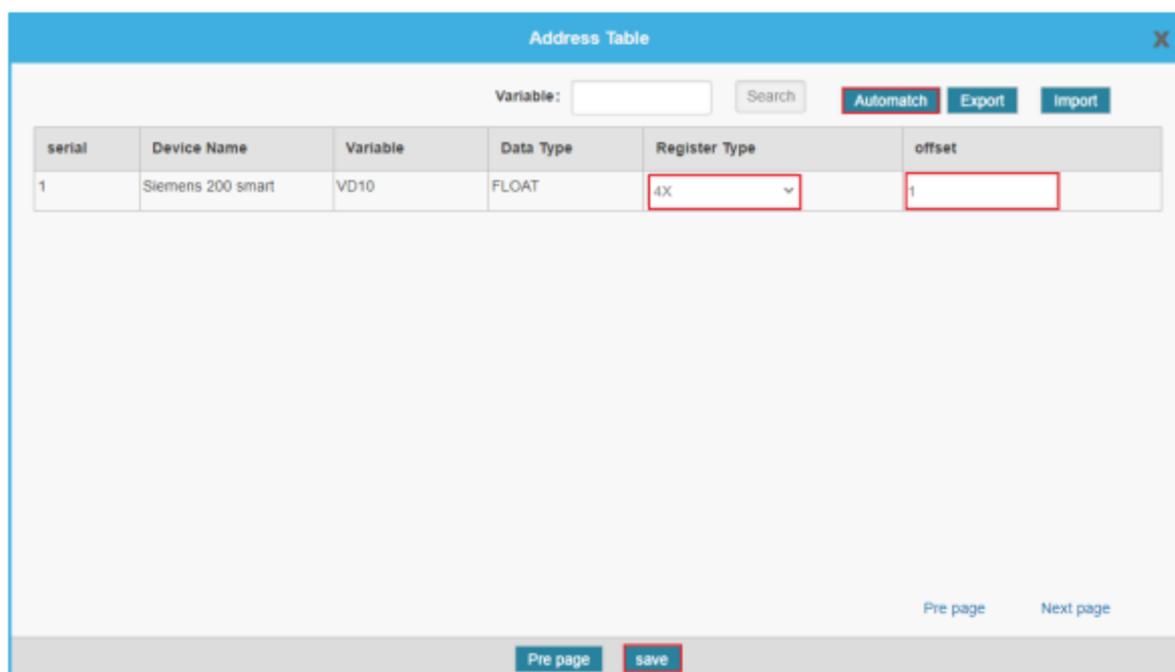


1) Configuring Forwarding

Select the corresponding device variables to be forwarded from the "Unselected Variables" list, move them to the "Selected Variables" list, click Next Page.

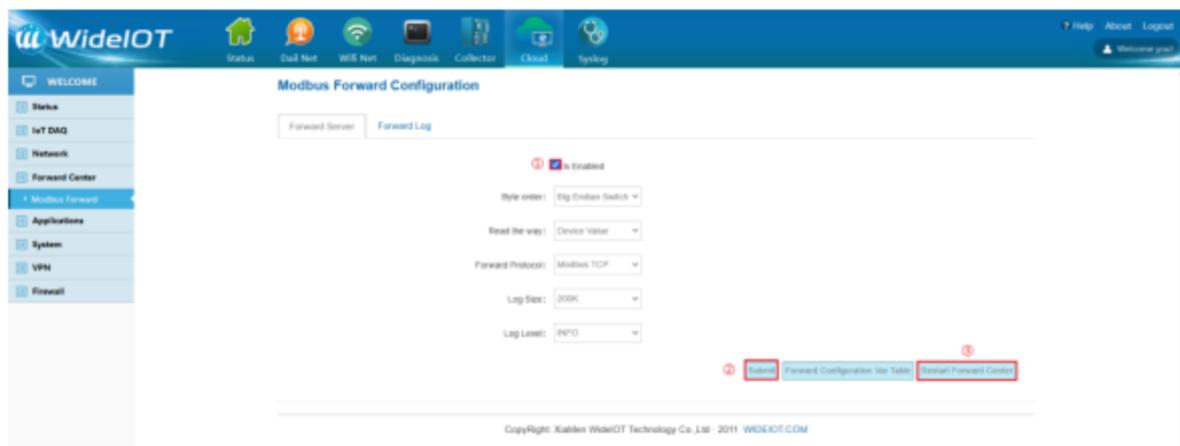


Configure the "Address Mapping Table", select the register type, set the offset address, or click Auto Match.



Register	Common Data Types	Register Address	Attribute
0X	BIT	0-65535	Read/Write
1X	BIT	0-65535	Read Only
4X	SHORT、LONG、FLOAT	0-65535	Read/Write
3X	SHORT、LONG、FLOAT	0-65535	Read Only

2) Enabling Forwarding



Byte Order: Divided into Big Endian, Little Endian, used to adjust the byte order of 4-byte type data such as FLOAT, LONG;

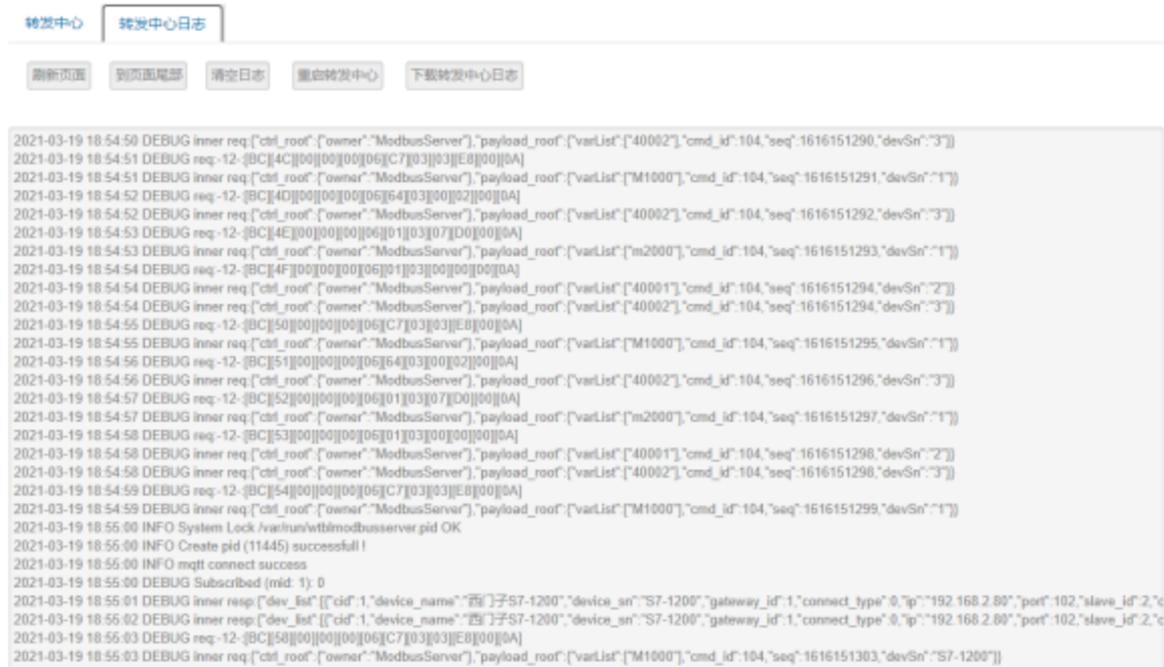
Reading Method: Device Value (Default), Memory Value (reserved function);

Log Size: 20K~10M selectable, default 200K;

Log Level: Fatal, Error, Warning, Notice, Info (Default), Debug;

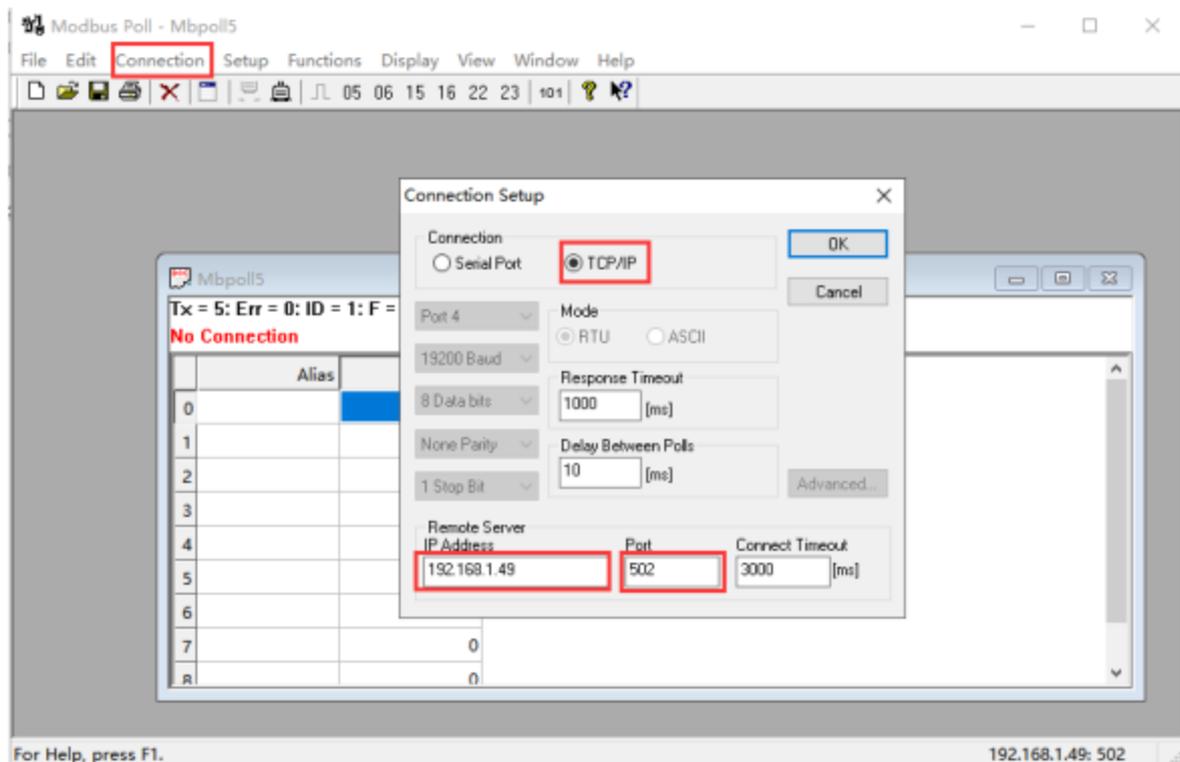
P.s. If an exception occurs during forwarding operation, please adjust the log status to "Debug" to print specific logs. Download the forwarding log and send it to WideIoT technical support engineer for diagnosis. To ensure fast and efficient forwarding of the gateway, please be sure to adjust the log level back to Info after debugging.

转发中心日志



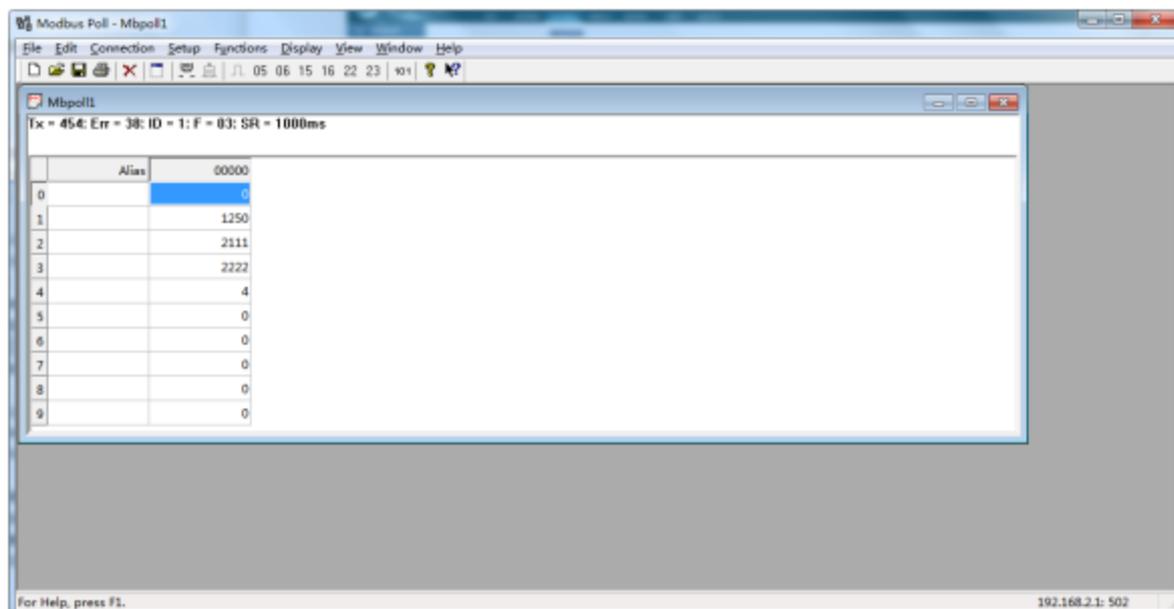
3) Forwarding Test

The gateway forwards the device with communication protocol "Siemens ISO TCP" (Siemens S7-1200) to the communication protocol "Modbus Tcp". Use modbus poll (upper computer software) to read the device data under the gateway.



IP: Either the gateway's WAN IP or LAN IP can be used, depending on the network relationship between the upper computer and the gateway;

Port Number: 502 (fixed value);



After setting the corresponding register type, address, and data type, read and write operations can be performed on the data.

3.5.6. OPC UA

1) Configuring Forwarding

Click the left menu "Data Acquisition" --- "Cloud Service Center", in the "Add Service Center" section, fill in the following information:

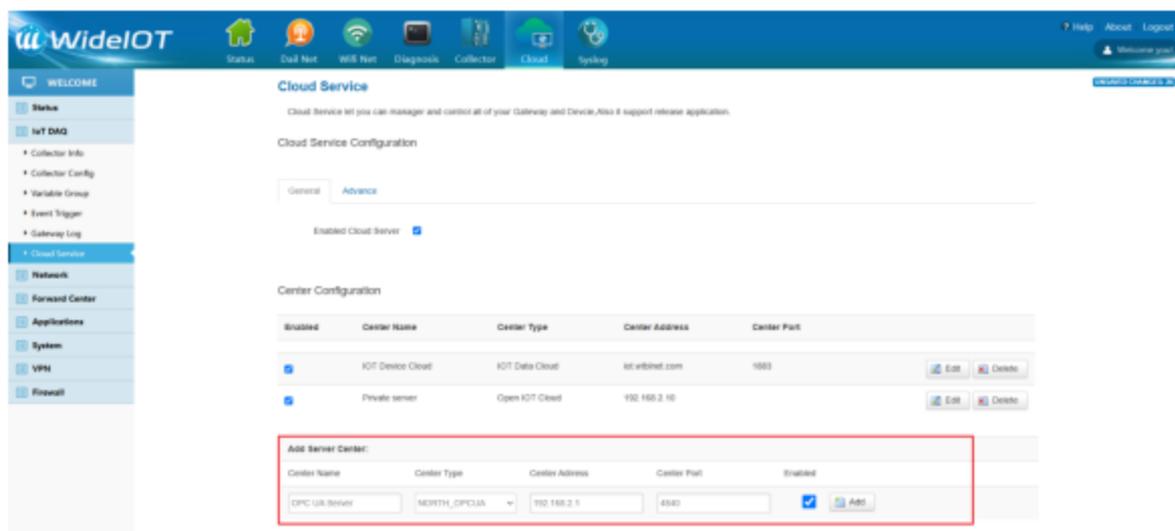
Center Name: Arbitrary

Center Type: Northbound OPC UA Forwarding

Center Address: Fill in the gateway IP address (for example, if the OPC UA client is on the gateway LAN port, fill in the gateway LAN port IP address here: 192.168.2.1)

Center Port: Custom

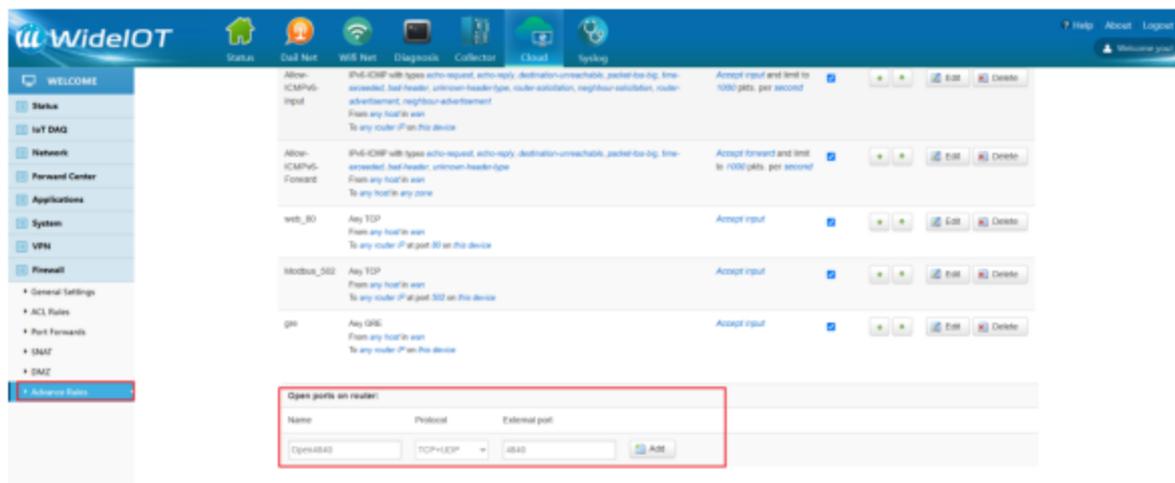
Finally, check Apply and click Add.



Click Save & Apply.

2) Opening Firewall Port

Click the left menu "Firewall" --- "Advanced Rules", in the "Open Router Ports" section, add the center port configured in the cloud service just now, click Add, and finally Save & Apply.





-Industrial IoT product and digital solution



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