BL207 BACnet/IP
BA I/O System

BLIIOT®
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BL207
User Manual

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Shenzhen Beilai Technology Co.,Ltd

Website：https://www.bliiot.com

Preface

Thanks for choosing BLIIoT Distributed I/O. These operating instructions contain all the information you need for operation of BL207.

Copyright

Disclaimer

This document is designed for assisting user to better understand the device. As the described device is under continuous improvement, this manual may be updated or revised from time to time without prior notice. Please follow the instructions in the manual. Any damages caused by wrong operation will be beyond warranty.

Revision History

Update Date	Version	Description	Owner
2021-10-13	V1.0	First Edition	ZLF
2022-07-01	V1.1	Add Profinet, EtherCAT protocol, add platform, logic control functions	HYQ
2023-07-27	V1.1	Change Model name	HYQ
2023-10-24	V1.2	Add BL203, BL206, BL207 description	HYQ
2023-10-24	V1.2	User manual split by model	HYQ

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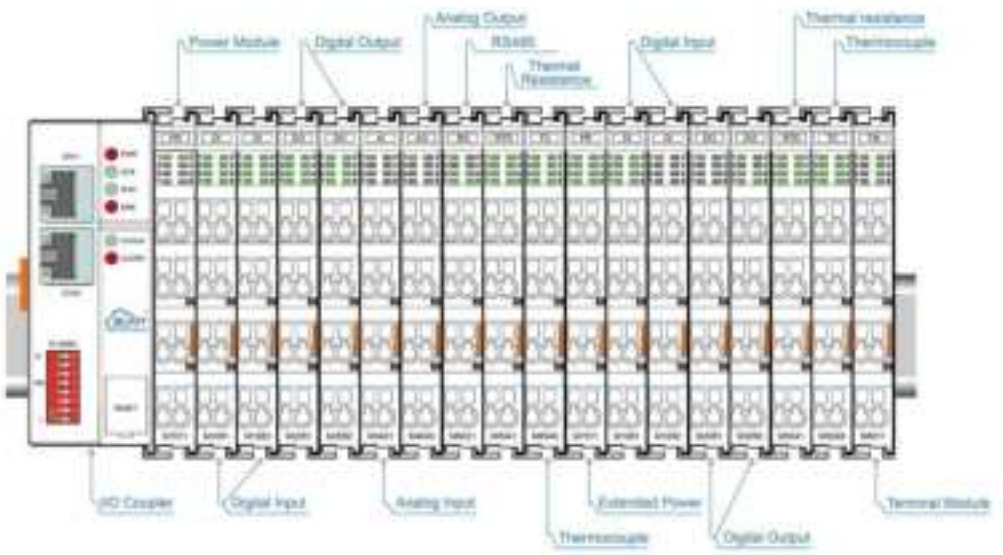
1 Product Introduction

1.1 Overview

BL207 series distributed I/O is a data acquisition and control system, based on a powerful 32-bit microprocessor design, using the Linux operating system, support BACnet/IP, MQTT, OPC UA protocols.

BL207 BACnet I/O system is used for data acquisition and controlling smart devices in buildings to manage energy use, HVAC, lighting, and detection. The BACnet I/O sytem is designed for building automation systems.
The BL207 distributed I/O system consists of 3 parts: Coupler, I/O modules and terminal modules.



The communication between the I/O and the field devices takes place via the Ethernet port of the fieldbus coupler, and the communication between the fieldbus coupler and the I/O modules takes place via the local bus. The two Ethernet ports are internally integrated with a switch function, which can establish a linear topology without the need for additional switches or hubs.

The system needs to use the power module to provide 24VDC system voltage and 24VDC field voltage. Since two independent power supplies are used, the field voltage input interface and system voltage input interface of BL207 coupler are electrically isolated from each other.

When assembling fieldbus node modules, each I/O module can be arranged in any combination, and it is not required to be grouped by module type.

A terminal module must be plugged into the end of a fieldbus node to ensure correct data transmission.

1.2 Typical Application

BL207 BACnet I/O system is used for data acquisition and controlling smart devices in buildings to manage energy use, HVAC, lighting, and detection. The BACnet I/O sytem is designed for building automation systems.

1.3 Features

- Each I/O system can have a maximum of I/O 32 modules.
- Support BACnet/IP, MQTT, OPC UA protocols.
- Support AWS Cloud, Thingsboard, Ignition, Alibaba Cloud, Huawei Cloud, etc.
- The field side, the system side and the bus side are electrically isolated from each other.
- Support 2 X RJ45 interface, integrated switch function, can establish line topology, without the need for additional switches or hubs.
- Convenient wiring connection technology, screw-free installation.

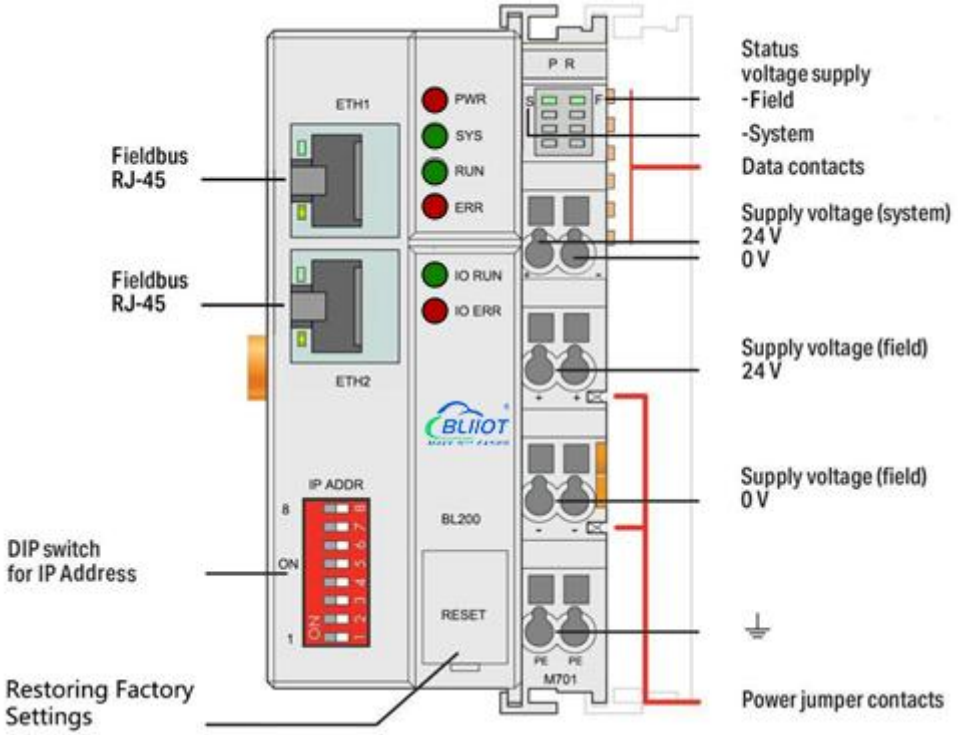
1.4 Model List

Description	Model	Channel	Type
Modbus-TCP I/O Coupler	BL200	/	/
Profinet I/O Coupler	BL201	/	/
EtherCAT I/O Coupler	BL202	/	/
Ethernet/IP I/O Coupler	BL203	/	/
OPC UA EdgeIO Controller	BL205	/	/
MQTT EdgeIO Controller	BL206	/	/
MQTT+OPC UA+Modbus TCP	BL206Pro	/	/
BACnet/IP I/O Coupler	BL207	/	BACnet/IP
BACnet/IP+MQTT+OPC UA	BL207Pro	/	/
8CH DI	M1081	8	NPN (low level trigger)
8CH DI	M1082	8	PNP (high level trigger)

16CH DI	M1161	16	NPN (low level trigger)
16CH DI	M1162	16	PNP (high level trigger)
4CH DO	M2044	4	Relay
8CH DO	M2081	8	PNP
8CH DO	M2082	8	NPN
16CH DO	M2161	16	PNP
16CH DO	M2162	16	NPN
4CH AI Single-Ended	M3041	4	0-20mA/4-20mA
4CH AI Single-Ended	M3043	4	0-5V/0-10V
4CH AI Differential	M3044	4	0-5V/0-10V
4CH AI Differential	M3046	4	±5V/±10V
4CH AO	M4041	4	0-20mA/4-20mA
4CH AO	M4043	4	0-5V/0-10V
4CH AO	M4046	4	±5V/±10V
2CH RTD	M5021	2	3Wire PT100
2CH RTD	M5022	2	3Wire PT1000
2CH RTD	M5023	2	4Wire PT100
2CH RTD	M5024	2	4Wire PT1000
4CH TC	M5048	4	TC(B/E/J/K/N/R/S/T)
2CH RS485	M6021	2	RS485
2CH RS232	M6022	2	RS232
1CH RS485, 1CH RS232	M6023	2	RS485+RS232
Power module	M7011	/	/
Terminal module	M8011	/	/

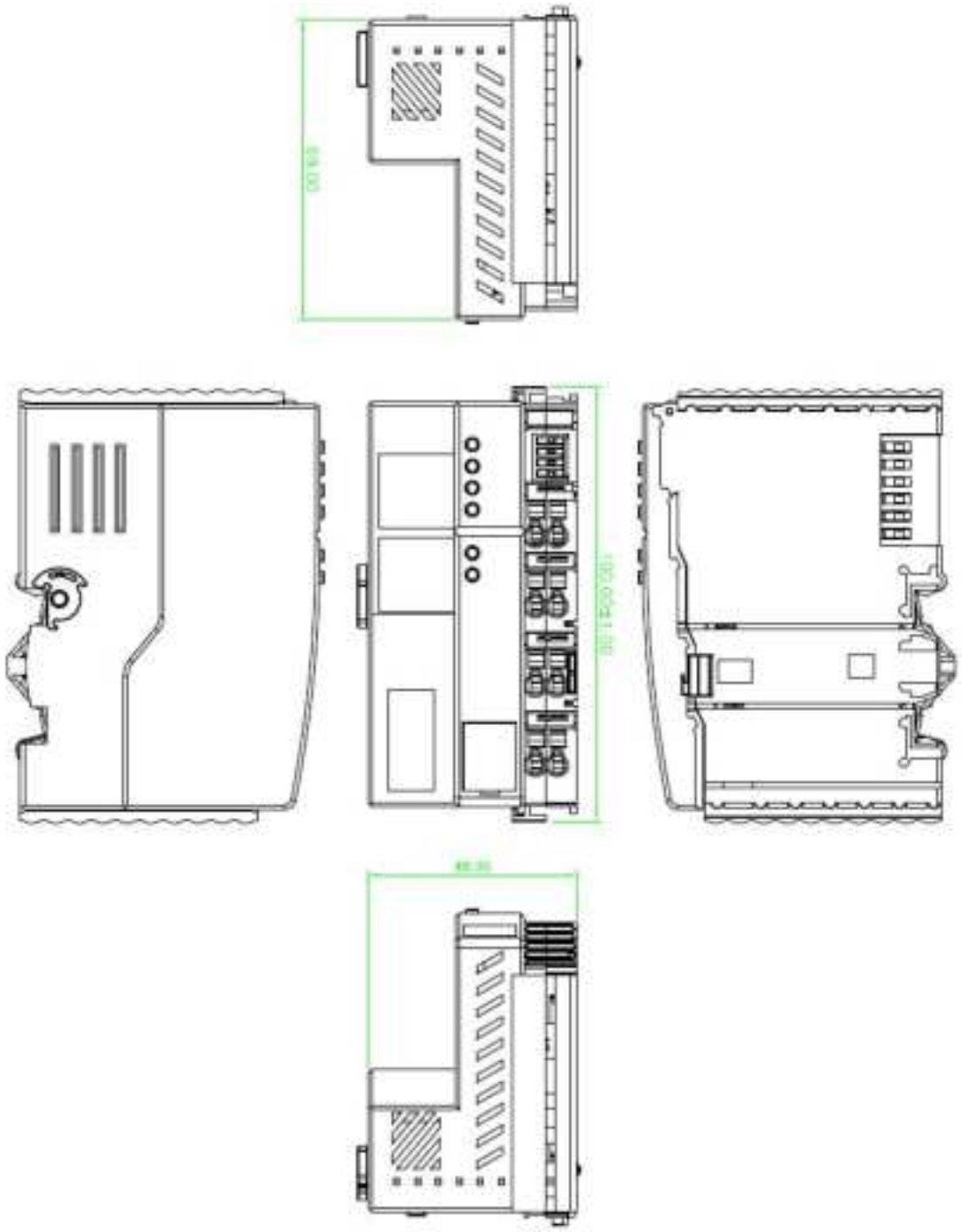
2 Hardware

2.1 I/O Coupler



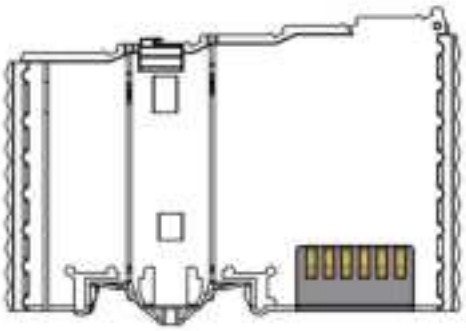
2.2 Dimension

Unit:mm



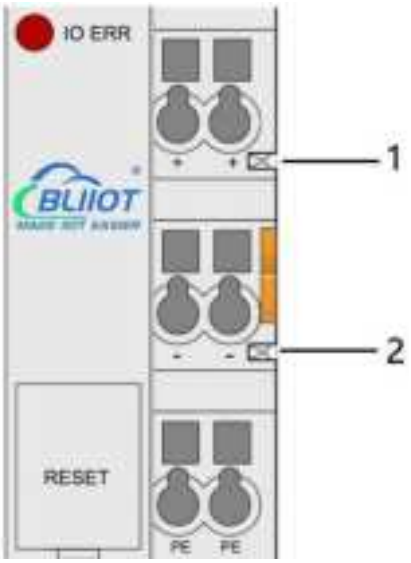
2.3 Data Contacts/Internal Bus

The communication between the fieldbus coupler and the I/O modules, as well as the system power supply of the I/O modules are realized via the internal bus. The internal bus is made up of 6 data contacts, these gold-plated contacts are self-cleaning when connected.



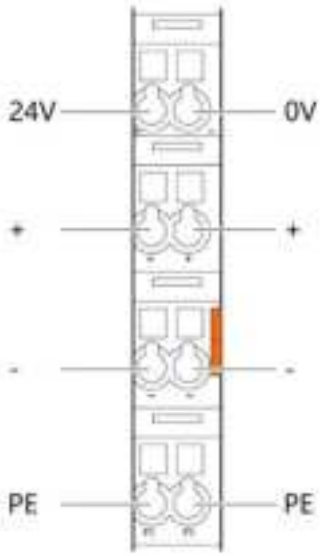
2.4 Power Jumper Contacts

The power module included with the coupler has two self-cleaning power jumper contacts for powering the field side. This power supply has a maximum current of 10A across the contacts, current exceeding the maximum will damage the contacts. When configuring the system, it must be ensured that the above-mentioned maximum current is not exceeded. If it exceeds, a power expansion module needs to be inserted.



No.	Type	Description
1	Spring contact	Supply 24V to the field side
2	Spring contact	Supply 0V to the field side

2.5 Terminal Point



Name	Description
24V	System Power 24VDC
0V	System Power 0VDC
+	Connections Field Supply 24 VDC
+	Connections Field Supply 24 VDC
-	Connections Field Supply 0 VDC
-	Connections Field Supply 0VDC
PE	Grounding
PE	Grounding

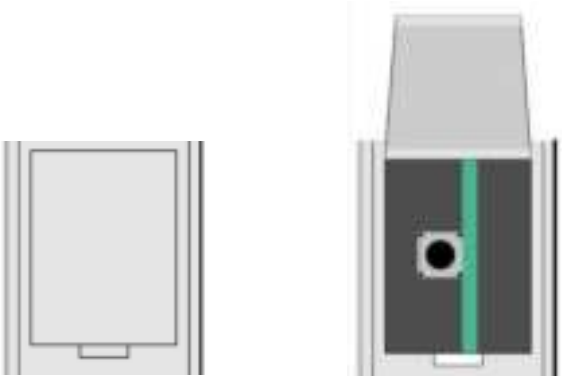
2.6 Factory Reset

This reset button is used to restore the device configuration parameters to the factory state.

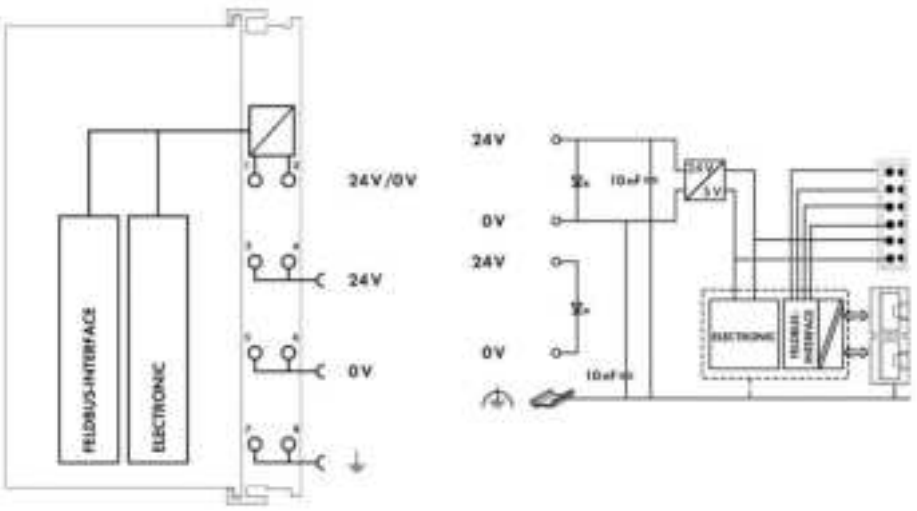
Operation steps:

1.When the device is running, open the flip cover;

2.Press and hold the button for more than 5 seconds, until all the LED lights go off, indicates reset successful, and then the device will automatically restart.



2.7 Electrical Schematic



3 Installation

3.1 Installation Sequence

All distributed couplers and I/O modules from Beilai Technology must be mounted on a standard DIN 35 rail.

Starting from the coupler, the I/O modules are assembled from left to right, and the modules are installed next to each other. All I/O modules have grooves and power jumper contacts on the right side, to avoid assembly errors, I/O modules must be inserted from the right and top to avoid damage to the modules.

Utilizes a tongue and groove system to form a secure fit and connection. With the automatic locking function, the individual components are securely fixed on the rail

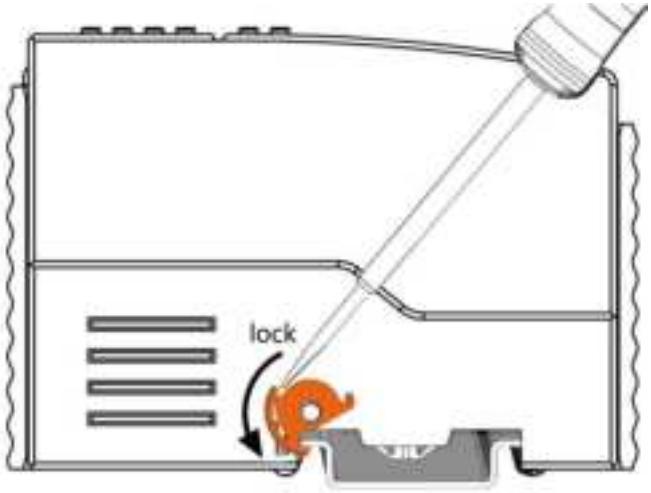
after installation.

Don't forget to install the terminal module! Always plug a terminal module (eg TERM) into the end of the I/O module to ensure correct data transmission.

3.2 Install Coupler

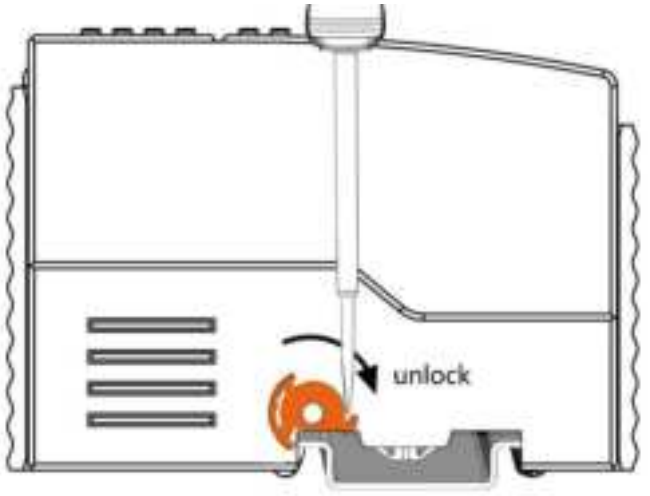
1.Snap the coupler onto the DIN rail first;

2.Use a tool such as a screwdriver to turn the locking cam until the locking cam engages the DIN rail.

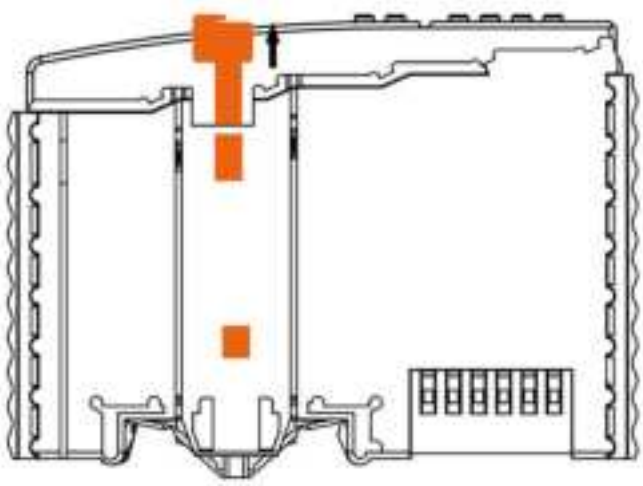


3.3 Remove Coupler

1.Use a screwdriver to turn the locking disc cam until the locking cam no longer engages the rail.



2.Pull the release tab to remove the coupler from the assembly

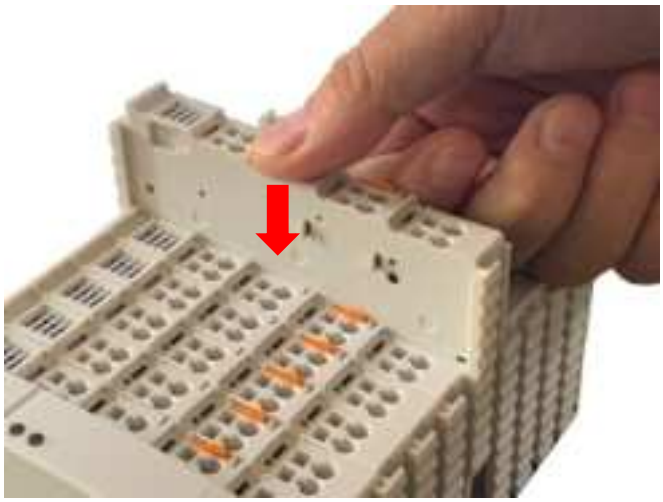


Data or power contacts are electrically disconnected from adjacent I/O modules when the coupler is removed.

3.4 Insert I/O Modules

1.When inserting the module, make sure the tabs on the module line up with the grooves of the coupler or other I/O module to which it is attached.

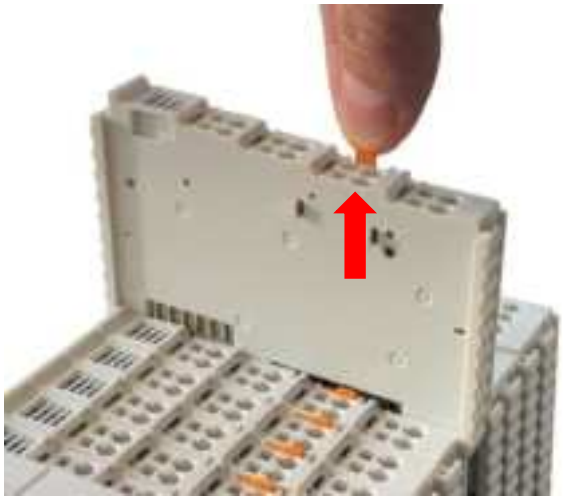
2.Press the I/O module into the assembly position until the I/O module snaps into the rail.



After the I/O module is installed, the electrical connection to the coupler (or the previous I/O module) and the following I/O module is established via the data contacts and the power jumper contacts.

3.5 Remove I/O Modules

Pull up on the latch to remove the I/O module from the assembly.



When the I/O module is removed, the electrical connection to the data or power jumper contacts is disconnection.

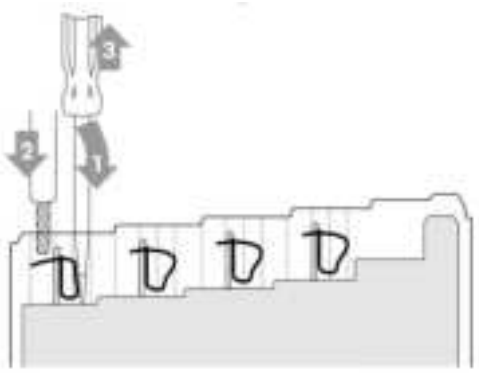
4 Device Connection

4.1 Wiring

CAGE CLAMP connection is suitable for solid, stranded and fine-stranded conductors. Only one wire can be connected to each CAGE CLAMP. If there is more than one wire,

it must be merged into a point before being connected.

1. Open the CAGE CLAMP by inserting the tool into the opening above the junction.
2. Insert the wire into the corresponding open connection terminal.
3. Once the tool is removed, the CAGE CLAMP closes and the wire is clamped firmly by the spring.



4.2 Power Supply

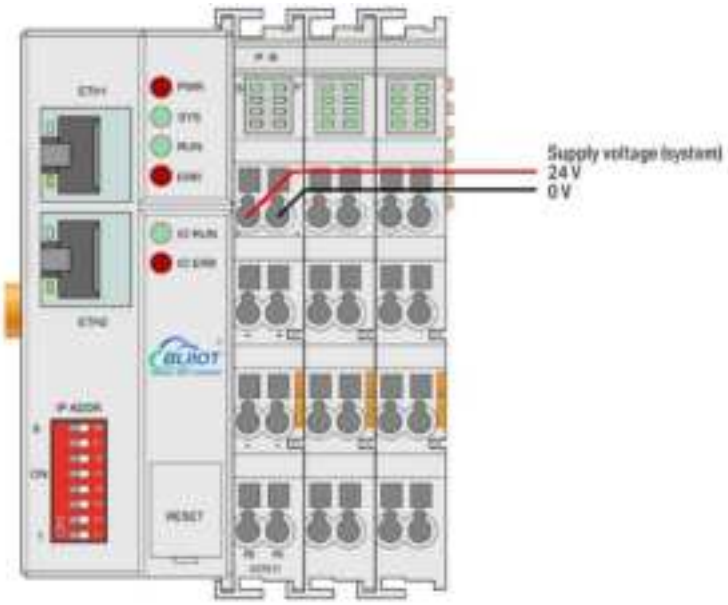
System and field voltages are supplied by power supply modules. The power supply module of the BL207 coupler supplies power for the internal electronics of the coupler and the I/O modules. If necessary (there are many I/O modules and the current is relatively high), it can also be provided through an independent power supply module. The fieldbus interface (Ethernet interface), system and field are galvanically isolated from each other.

4.2.1 System Power

BL207 couplers require 24V DC system power, which is connected from the terminal of the power supply module. The 5V bus voltage required inside the system is converted from the 24V system voltage.

The power supply module only has proper fuse protection, please provide proper overcurrent protection externally.

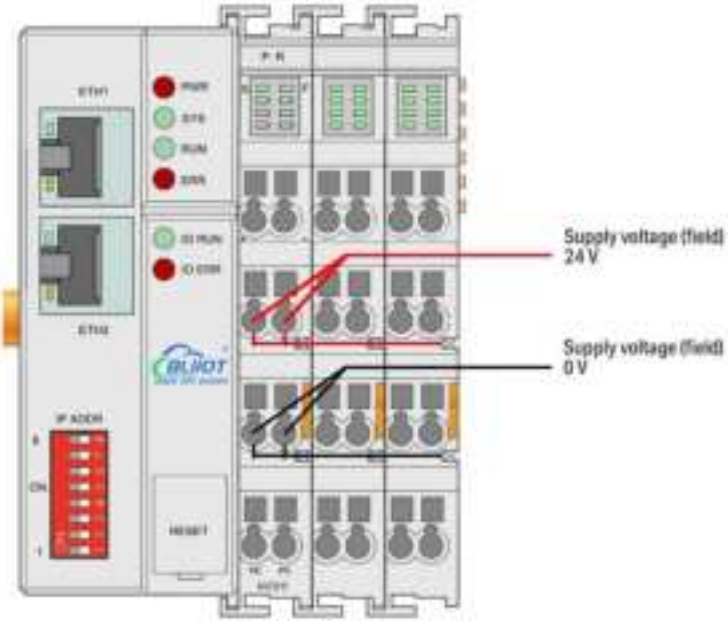
Please pay attention to matching the output power of the power supply module and the load power to avoid excessive load current.



4.2.2 On-site Power Supply

The power supply module supplies 24 VDC on the field side to power the sensors and actuators.

Field power supply only has proper fuse protection. Without overcurrent protection, electronic equipment can be damaged.



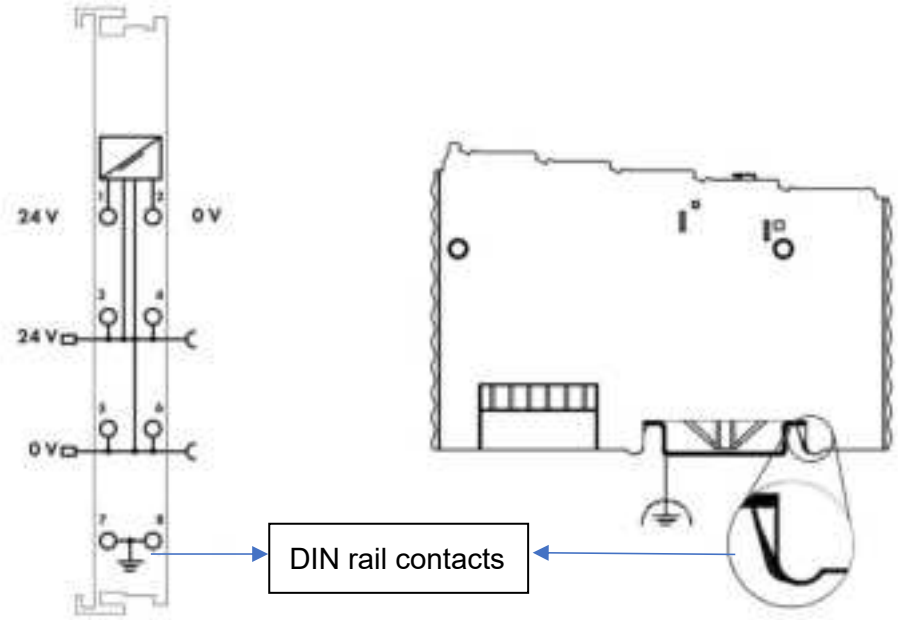
Field-side power is automatically output from the power jumper contact when the I/O module is connected. The continuous load current across the contacts of the power supply must not exceed 10 A.

The problem of excessive load power on the system side or on the field side can be

solved by plugging in additional power supply modules. After plugging in an additional power supply module, a new voltage potential may appear on the field side.
In the case where electrical isolation is not required, the field power supply and the system power supply can use the same power supply.

4.2.3 Grounding

When installing the enclosure cabinet, the cabinet must be grounded, and the rail is electrically connected to the cabinet through screws to ensure that the rail is properly grounded. Grounding can increase resistance to electromagnetic interference. Some components in the I/O system have rail contacts that dissipate EMI onto the rail.



5 BACnet/IP Coupler

5.1 BL207 BACnet/IP Coupler

5.1.1 BL207 Coupler Overview

The BL207 coupler supports BACnet/IP protocol and provides BACnet/IP data as a server, such as HVAC systems, BMS systems, Siemens desigo cc, and other systems

that collect the I/O data of the BL207 coupler through BACnet/IP protocol. The DI, DO, AI, and AO of the BL207 coupler correspond to the BI, BO, AI, and AO of BACnet/IP, respectively. Object instance is the ordering of each way of the I/O module, such as Analog Input.10.present-value represents the 11th way of the AI type module, which is both the third way of the third AI module (There are four ways of each AI module, except for RTD).

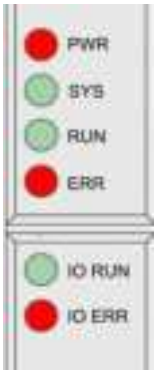
5.1.2 Technical Parameters

Name	Parameter	Description
System power	Input voltage(system)	24 VDC
	Input current(system)	MAX 500 mA@24VDC
	Power Efficiency	84%
	Internal bus voltage	5VDC
	Coupler current consumption	MAX 300mA@5VDC
	I/O current consumption	MAX 1700mA@5VDC
	Isolation protection	500 V system/supply
Field power	Input voltage (field)	24 VDC
	Current carrying capacity (power jumper contacts)	MAX10 ADC
Ethernet	Number	2 X RJ45
	Transmission medium	Shielded twisted pair STP 100 Ω Cat 5
	MAX cable length	100m
	Baud rate	10/100 Mbit/s
	Isolation protection	ESD contact: 8KV, Surge: 4KV(10/1000us)
System	Operating system	Linux
	CPU	300MHz
	RAM	64MB
	Flash	128MB
	I/O Modules	MAX 32
	Protocol	BACnet/IP
Wiring method	Method	CAGE CLAMP
	Wire diameter	0.08 mm² ··· 2.5 mm², AWG 28 ··· 14
	Strip length	8 mm ··· 9 mm / 0.33 in

Environment	Working temperature	0 ··· 55 ° C
	Storage temperature	-40 ··· 70 ° C
	Relative humidity	5 ··· 95% no condensation
	Working altitude	0 ··· 2000 m
	Protection type	IP20
Dimension	Width	48mm
	Length	100mm
	Height	69mm
Material	Color	Light gray
	Housing material	Polycarbonate, Nylon 6.6
	Fire load	1.239 MJ
	Weight	180g
Installation	Method	DIN-35 rail
Certificates	EMC	EN 55022: 2006/A1: 2007 (CE &RE) Class B
		IEC 61000-4-2 (ESD) Level 4
		IEC 61000-4-3 (RS) Level 4
		IEC 61000-4-4 (EFT) Level 4
		IEC 61000-4-5 (Surge)Level 3
		IEC 61000-4-6 (CS)Level 4
		IEC 61000-4-8 (M/S) Level 4

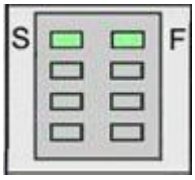
5.1.3 Hardware Interface

5.1.3.1 LED Indicators



LED	Description	Color	Status	Meaning
PWR	Power indicator	Red	ON	Power connection

				successful
			OFF	No power
SYS	System indicator	Green	ON	System is abnormal
			OFF	System is running normally
RUN	Running indicator	Green	Flashing	System is running normally
			OFF	System is abnormal
ERR	Error indicator	Red	ON	BACnet/IP protocol connection error
			OFF	No errors
I/O RUN	I/O Running indicator	Green	Flashing	I/O module is working normally
			OFF	Module not inserted
I/O ERR	I/O Error indicator	Red	ON	I/O module communication error
			OFF	No errors



LED	Description	Color	Status	Meaning
S	System 24V power indicator	Green	ON	Power is OK
			OFF	No power
F	Field 24V power indicator	Green	ON	Power is OK
			OFF	No power

5.1.3.2 Ethernet Port

Connect to the Ethernet-based field bus through ETH 1 interface.
ETH2 is used to connect other nodes that need to access the Ethernet.

5.1.3.3 IP Address Selection Switch

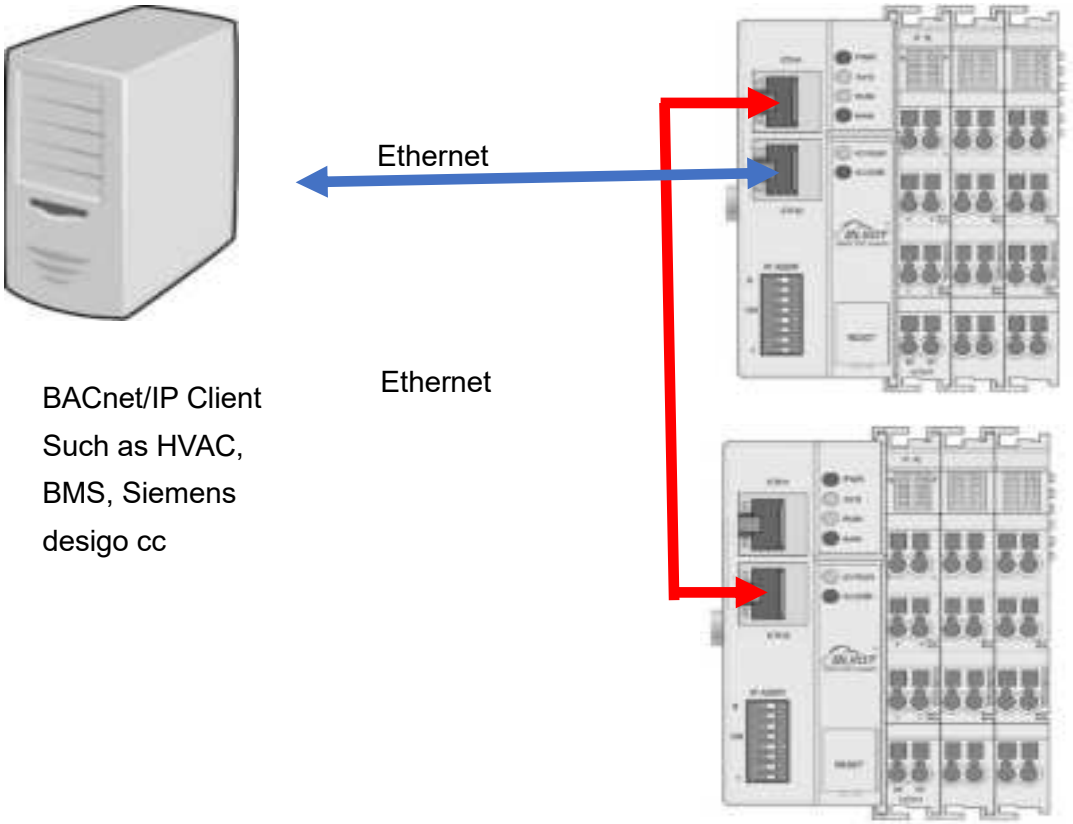
The 8-bit DIP switches are used to set the IP address. The DIP switches are coded starting from DIP switch 1 with the lowest valid bit (2^0) to DIP switch 8 with the highest valid bit (2^7), which corresponds to decimal values: 0-255.

When the value of DIP switch is 1111 1111 (decimal 255), the IP address is set according to the web page, and the web page setting can specify the IP address or set up the automatic acquisition, and when the web page is not set up, the IP address is 192.168.1.10.

For DIP switch values of 0000 0000 - 1111 1110 (decimal 0-254), the 3rd byte of the IP address is determined, and the 1st, 2nd and 4th bytes are fixed bytes, i.e. 192.168.xxx.253.

5.1.4 Coupler Connection

The BL207 coupler acts as a BACnet/IP server and connects to the BACnet/IP client via the ETH2, and ETH1 is used to connect to other BL207 coupler.



5.1.5 Web Configuration

The web configuration allows you to configure the BL207 BACnet/IP Coupler device ID, port number, device name, device description, and location. Web configuration also supports IP modification and web upgrade programs.

5.1.5.1 Preparation Before Configuration

To successfully access the BL207, it must be properly installed and connected to the computer. In addition, configure them with correct IP addresses to keep them in the same network segment.

5.1.5.1.1 Connect Computer and Coupler

1.Mount the fieldbus node on a DIN35 rail. Follow the installation instructions in the "Installation" chapter.
2.Connect the 24 V power supply to the system power terminals.
3.The computer and the bus node can be connected in two ways, one is that the two

are connected to the switch device of the local area network through the Ethernet port; the other is that the two are directly connected point-to-point. For detailed steps, follow the instructions in the "Coupler Connection" chapter.

4.Turn on the power supply and start supplying power.

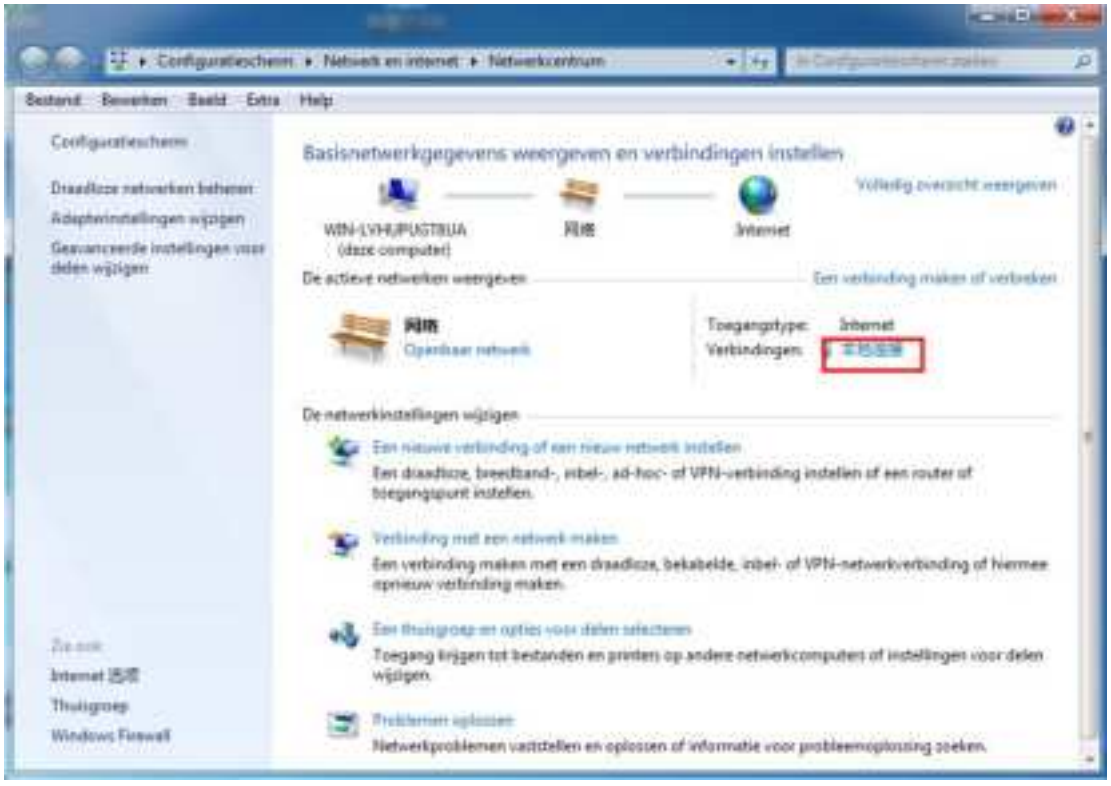
The controller is initialized after power-up, creates process image according to the I/O modules configuration of the node.

5.1.5.1.2 Configure Computer IP Address

There are two ways to configure PC IP address. One is to turn on the automatic IP address option on the PC's local connection to dynamically assign DHCP in the network. The other is to configure a static IP address with the coupler node on the same network segment on the local connection of the PC.

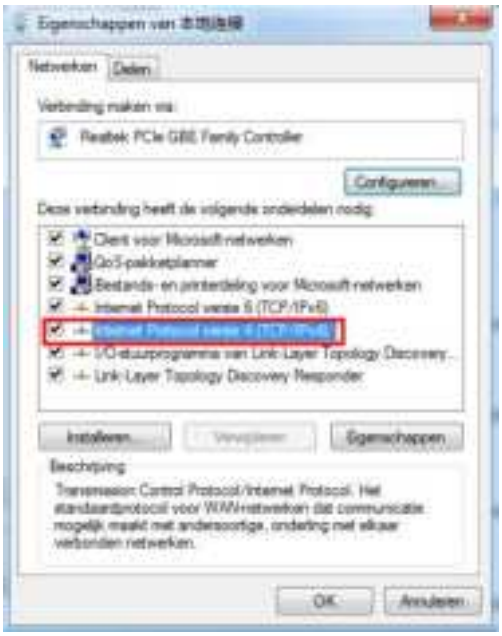
Takes Windows 7 system as an example for configuration. Windows systems are all configured similarly.

1.Click Start > Control Panel > Network and Sharing Center, and click local connection in the window that opens.



2.In the local connection status window, click Properties.

3.Double-click "Internet Protocol Version 4 (TCP/IPv4)" on the local connection properties page.



4.There are two ways to configure the IP address of the PC

- Obtain IP address automatically (system default mode)
  To obtain an IP address automatically from a DHCP server, select "Obtain an IP address automatically";

- Set a static IP address

  Select "Use the following IP address" and set the correct values for the IP address, subnet mask and default gateway.

5.1.5.1.3 Configure Coupler IP address

There are 2 ways to assign an IP address

- Assignment via built-in web page (static IP or automatic IP assignment)
- Assign via DIP switch (static IP)

DIP address selector switch definition

Switch position (ON = 1)	**Value**	**Definition**

0000 0000 --- 1111 1110	0-254	Enable the DIP selector switch assignment function and determine the value of the 3rd byte. Example: 0010 0110 (22 decimal), the IP address is "192.168.22.253".
1111 1111	255	Enable the function of specifying IP on the web page, or select the function of DHCP automatic allocation. When the IP is not allocated through the web, the IP is 192.168.1.10.

5.1.5.1.3.1 Configuration via Web Page

The coupler can be set to an IP address via the "Settings > Local Settings" page after entering the page, or it can be set to be assigned automatically. Select static address, if not set IP address, the IP is 192.168.1.10

5.1.5.1.3.2 Assign IP via DIP Switch

Set the value of the DIP address selector switch to 0000 0000 - 1111 1110 (decimal 0 - 254), and the IP address will be assigned by the DIP switch.
The IP address consists of fixed bytes and variable bytes. The 1st, 2nd and 4th bytes are fixed bytes, the DIP selector switch determines the 3rd byte, namely:
192.168.xxx.253
The controller assigns an IP address via a DIP switch, and the IP address set in this way is static.

5.1.5.1.4 Factory Default Settings

Before logging into the web configuration page, it is necessary for you to understand the following default parameters,
IP: Determined according to the DIP switch, if the DIP switch is 1111 1111, the default IP is 192.168.1.10
If factory default DIP switch is 0000 0000 status, then the IP is 192.168.0.253

Item	Description
Username	admin
Password	Empty

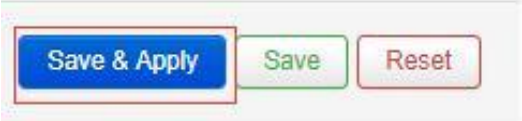
5.1.5.2 Login Configuration Page

1.Open a browser on your computer, such as IE, Chrome, etc.
2.Enter the IP address of the controller node (192.168.1.10) in the address bar of the browser to enter the user login interface.

3.Enter "Username" and "Password" in the login interface, and then click Login.

4.After successfully logging in to the web interface, the display is as follows

5.After configuring the parameters, you need to click the "Save and Apply" button on the page to take effect.



5.1.6 Web Configuration Page Description

5.1.6.1 Status

Users can check overview, system log and kernel log, as well as device parameters and device operating status.

Status > Overview

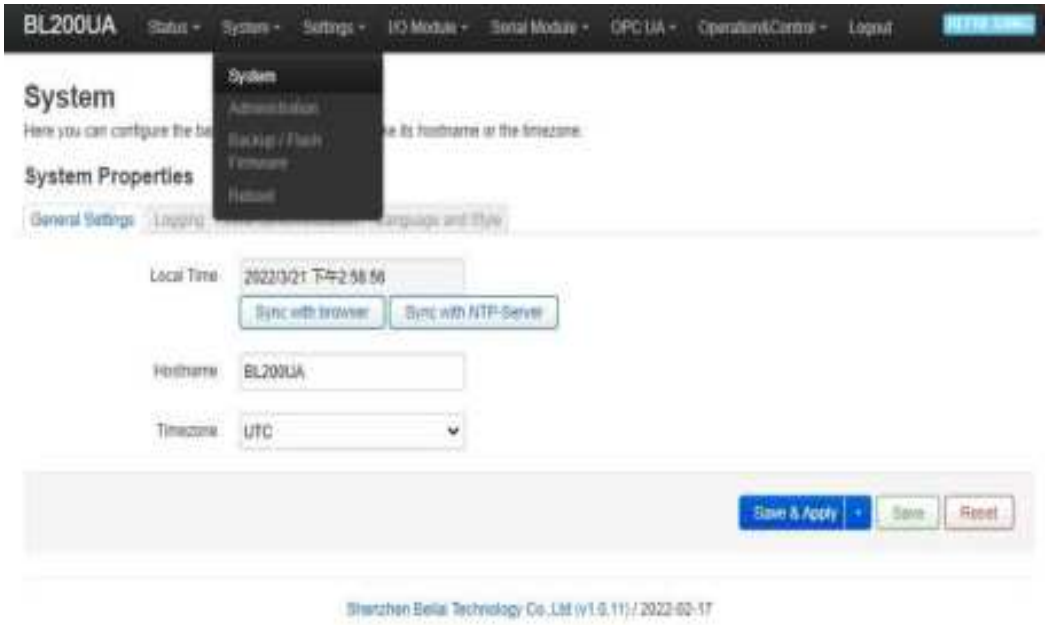
Status > System Log

Status > Kernel Log

5.1.6.2 System

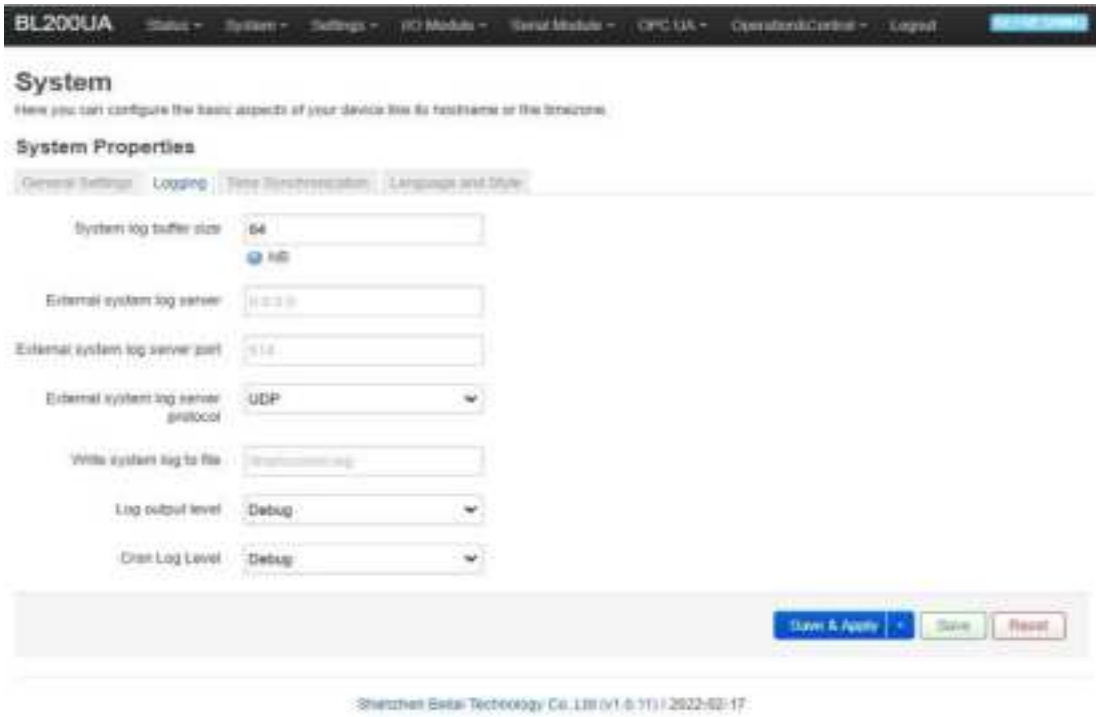
5.1.6.2.1 System

System Properties > General Settings



Item	Description	Default
Local time	Displays the current time of the device. You can click the "Sync browser time" or "Sync with NTP server" button to update the device time.	--
Hostname	The device name can be customized to easily distinguish between multiple devices.	BL200BN
Timezone	The time zone can be selected via the drop down menu	UTC

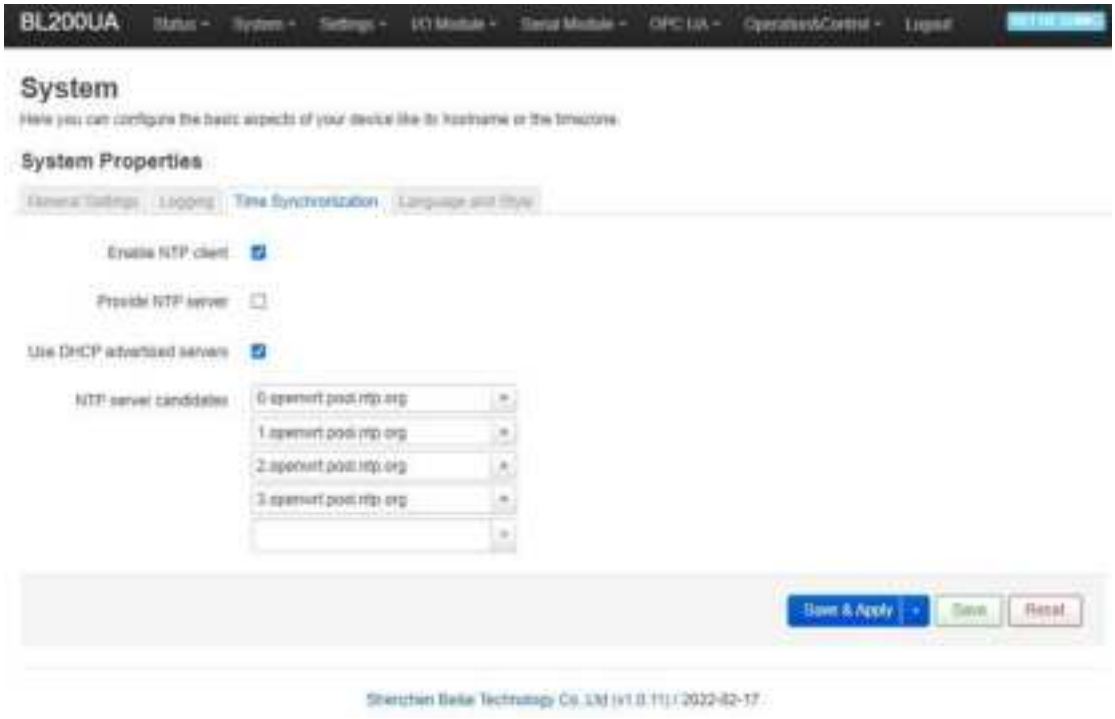
System Properties > Logging



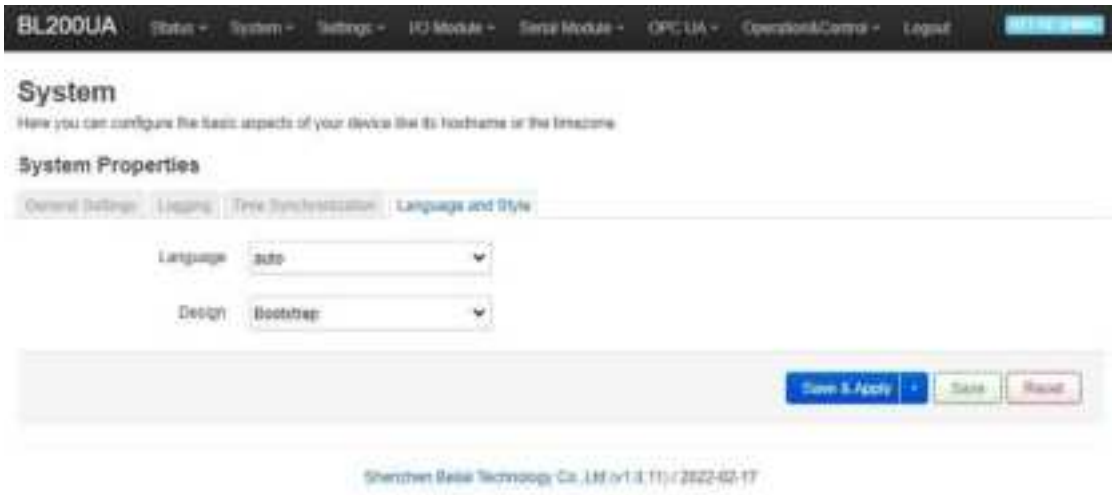
Item	Description	Default
System log buffer size		64
External system log server		
External system log server port		
External system log server protocol		
Write system log to file		
Log output level		
Cron log level		

System Properties > Time Synchronization

A NTP server can be set to synchronize time



System Properties > Language and Style



Item	Description	Default
Language	Available in auto, English, Chinese	auto
Design	Currently only Bootstrap is supported.	Bootstrap

5.1.6.2.2 Administration

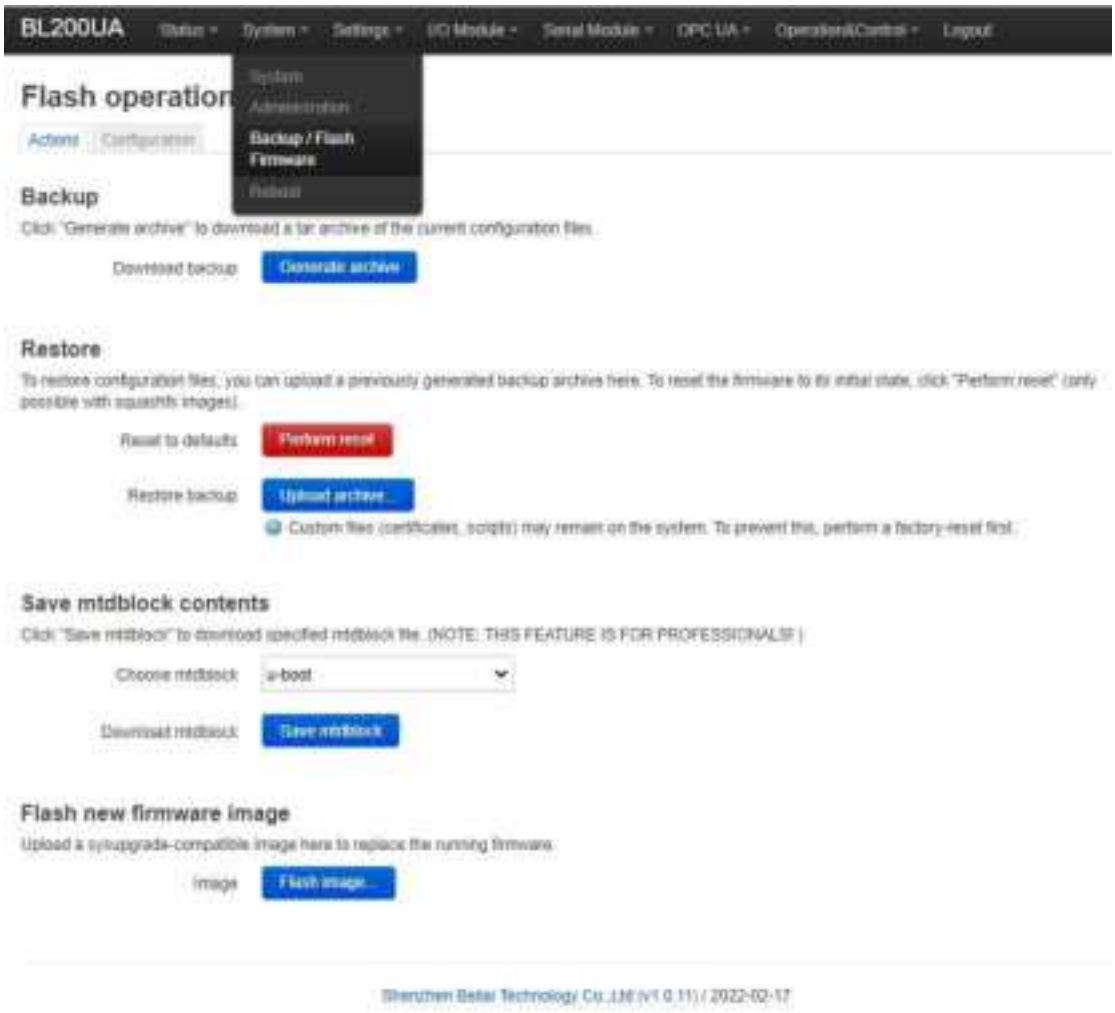
Administration > Router Password

Change the administrator password for accessing the device.

Administration > SSH Keys

Public keys allow for the passwordless SSH logins with a higher security compared to the use of regular passwords. In order to upload a new key to the device, paste an OpenSSH compatible public key line or drag a .pub file into the input field.

5.1.6.2.3 Backup/Flash Firmware

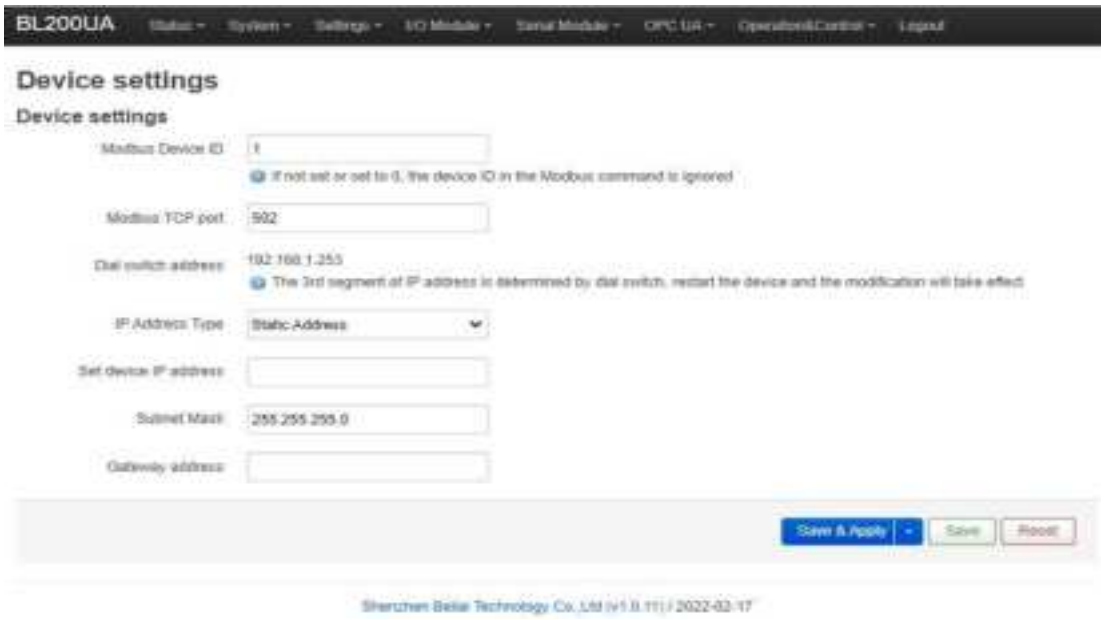


Item	Description	Default
Backup	Click "Generate archive" to download a tar archive of the current configuration files.	--
Restore	To restore configuration files, you can upload a previously generated backup archive here. To reset the firmware to its initial state, click "Perform reset" (only possible with squashfs images).	--
Save mtdblcok	Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS)	--
Flash image	Upload a sysupgrade-compatible image here to replace the running firmware.	--

5.1.6.2.4 Reboot

Click "Perform reboot" will reboot your device

5.1.6.3 Settings



Item	Description	Default
Modbus Device ID	Modbus device ID range is 1~247.	1
Modbus TCP port	Modbus TCP protocol port number, which can be customized.	502
DIP switch address	Displays the IP address set by the DIP switch.	
IP address type	Select from "Static Address", "Dynamic Address(DHCP)".	
Set device IP address	The IP address of the device can be set by yourself, and it needs to be restarted to take effect after setting.	--

Subnet mask	Set IP subnet mask	
Gateway address	Set IP gateway address	

5.1.6.4 I/O Modules

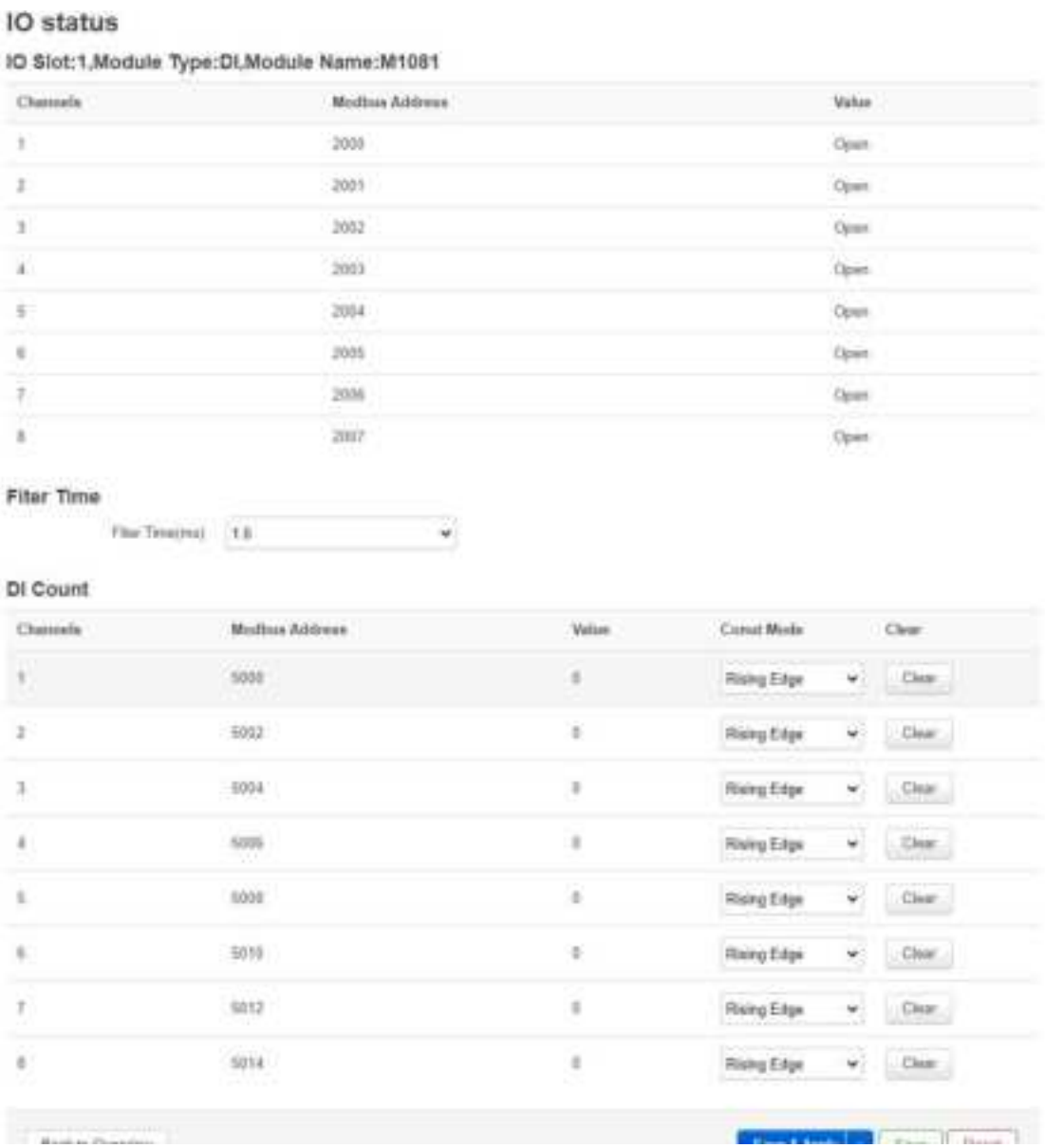
After power on, the coupler automatically recognizes all I/O modules connected to it and creates an internal local process image based on the module type, data width and the module's position in the node.
If I/O modules are added, changed or removed, a new process image is created and the process data addresses change. When adding an I/O module, the process data of all previous I/O modules must be considered.
The couplerr can connect up to 32 I/O modules, including digital input and output, analog input and output and special function modules.

Item	Description
IO slot	The order of IO modules in the slot, the first module card position close to the controller is 1, and the following ones are 2 3 4...
Module name	I/O module model
Module type	I/O module function type
Channel Number	Data width of I/O module
Modbus Address	Process map address of the I/O module inside the controller
24V Address State	Power supply status on the field side of the I/O module, digital, 1 bit
Software version	I/O module internal firmware version

IO status	I/O module and controller communication status
Channel status	Click to view and set the parameters of different types of I/O modules

5.1.6.4.1 Digital Input Module

The digital input module can provide two types of data, one is the current input state value, Boolean type; the other is the counter value, 32-bit numerical type, which supports the clear function.

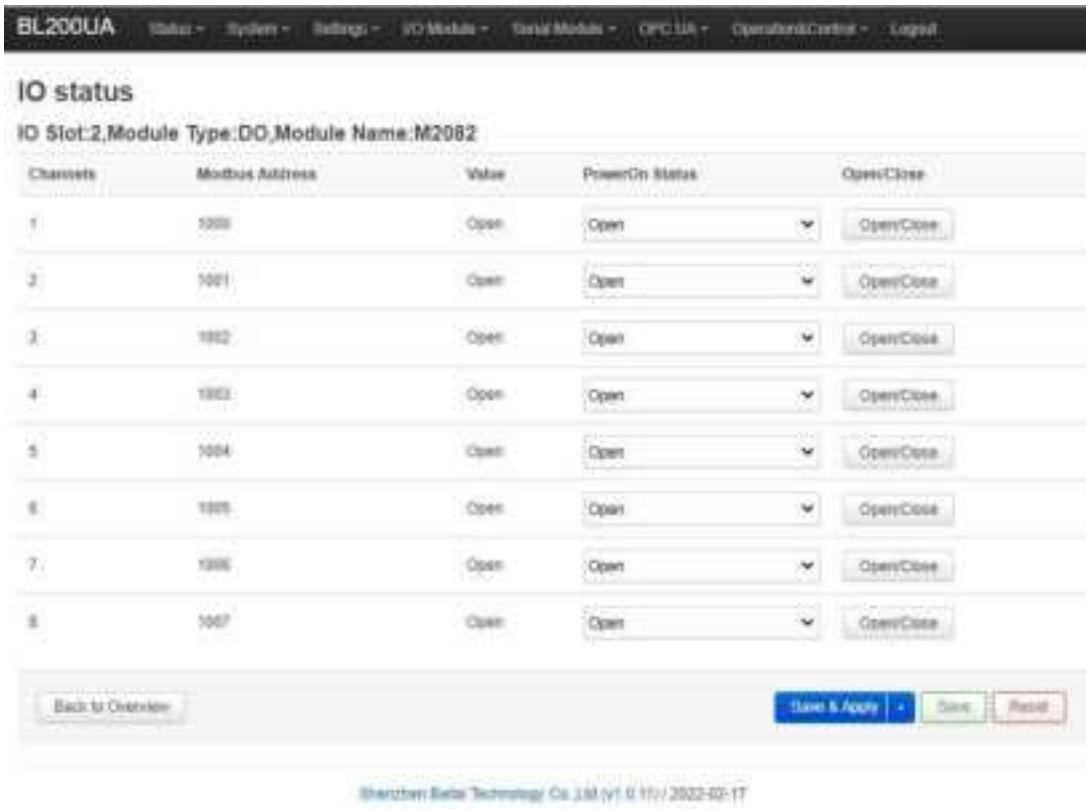


Item	Description
Channels	Channel number of the digital input module

Modbus Address	Process map address of Boolean status data inside the controller
Value	Display the current input state, open: logic 0, close: logic 1
Fliter Time	Selecting the time for DI filtering

Item	Description
Channels	Channel number of the digital input module
Modbus Address	Process map address of the count value inside the controller
Value	Display the current input count value, 32-bit unsigned integer
Count Mode	Selection of "Rising Edge", "Falling Edge", "Rising Edge and Falling Edge" Trigger Counting Methods
Clear	Clear the current channel counter value

5.1.6.4.2 Digital Output Module

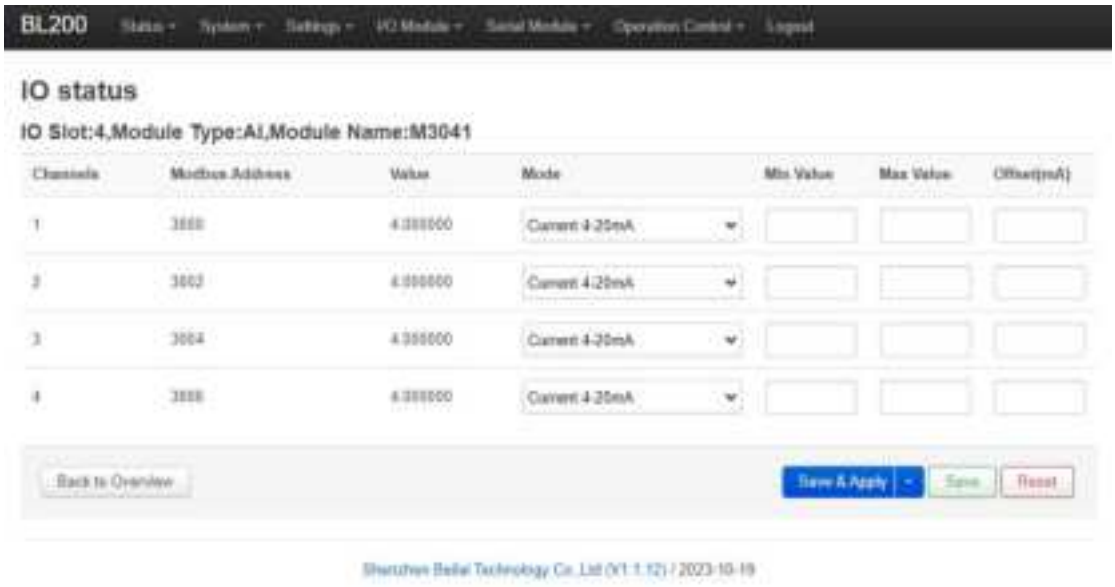


Item	Description
Channels	Channel number of the digital output module
Modbus Address	Process map address of the digital output boolean data inside the controller
Value	Display the current output state, open: 0, close: 1

Power-on status	Set the state of DO after power-on, select from "open", "close", "last"
Open/Close	Can control the current channel output state

5.1.6.4.3 Analog Input Module

The analog input (AI) type module supports setting parameters through the controller web page, so that the data conversion is automatically realized inside the module, and the actual engineering value corresponding to the sensor can be directly output.

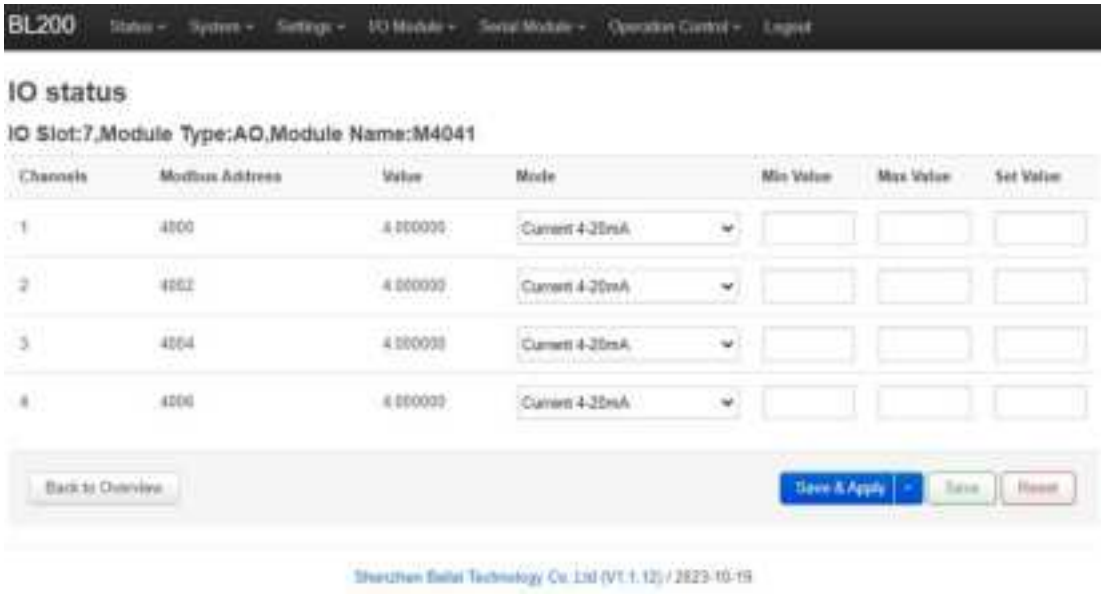


Item	Description
Channels	Channel number of the analog input module
Modbus Address	Process map address of the analog input module inside the controller
Value	Display the actual engineering value input by the current channel, 32-bit single-precision floating-point type
Mode	Different models of analog input modules have different options, please refer to the specific analog input I/O module manual for details.
Min Value	Sensor range minimum
Max Value	Sensor range maximum
Offset(mA)	The offset allows you to adjust the error between acquisition and actual.

There is a linear relationship between the electrical signal value of the analog input module (usually a sensor) and the actual engineering value. Their formulas are as follows (take 4-20mA as an example):
Actual engineering value = (current value - 4) * ((maximum - minimum) / (20 - 4)) + minimum

Take the 4-20mA type water level sensor to measure the depth of the water tower as an example:
The known water level sensor range is 0-100m, the current data is 5.6mA, and the depth of the water tower is calculated:
Into the formula:
(5.6 - 4) * ((100 - 0) / (20 - 4)) + 0 = 10
The depth of the water tower is 10m

5.1.6.4.4 Analog Output Module



Item	Description
Channels	Channel number of the analog output module
Modbus Address	Process map address of the analog output module inside the controller
Value	Display the actual engineering value output by the current channel, 32-bit single-precision floating-point type
Mode	Different models of analog output modules have different options, please refer to the specific analog output I/O module

	manual for details.
Min value	Actual engineering value minimum value
Max value	Actual engineering value maximum value
Set value	You can set the actual project value required for the output

5.1.6.5 BACnet

Web configuration allows you to configure the BL207 Coupler BACnet/IP device ID, port number, device name, device description, and location.

5.2 BL207Pro BA I/O Coupler

5.2.1 BL207Pro Overview

The BL207Pro coupler is based on the BL207 coupler to add MQTT and OPC UA functions.

5.2.2 OPC UA Data Point Node Id

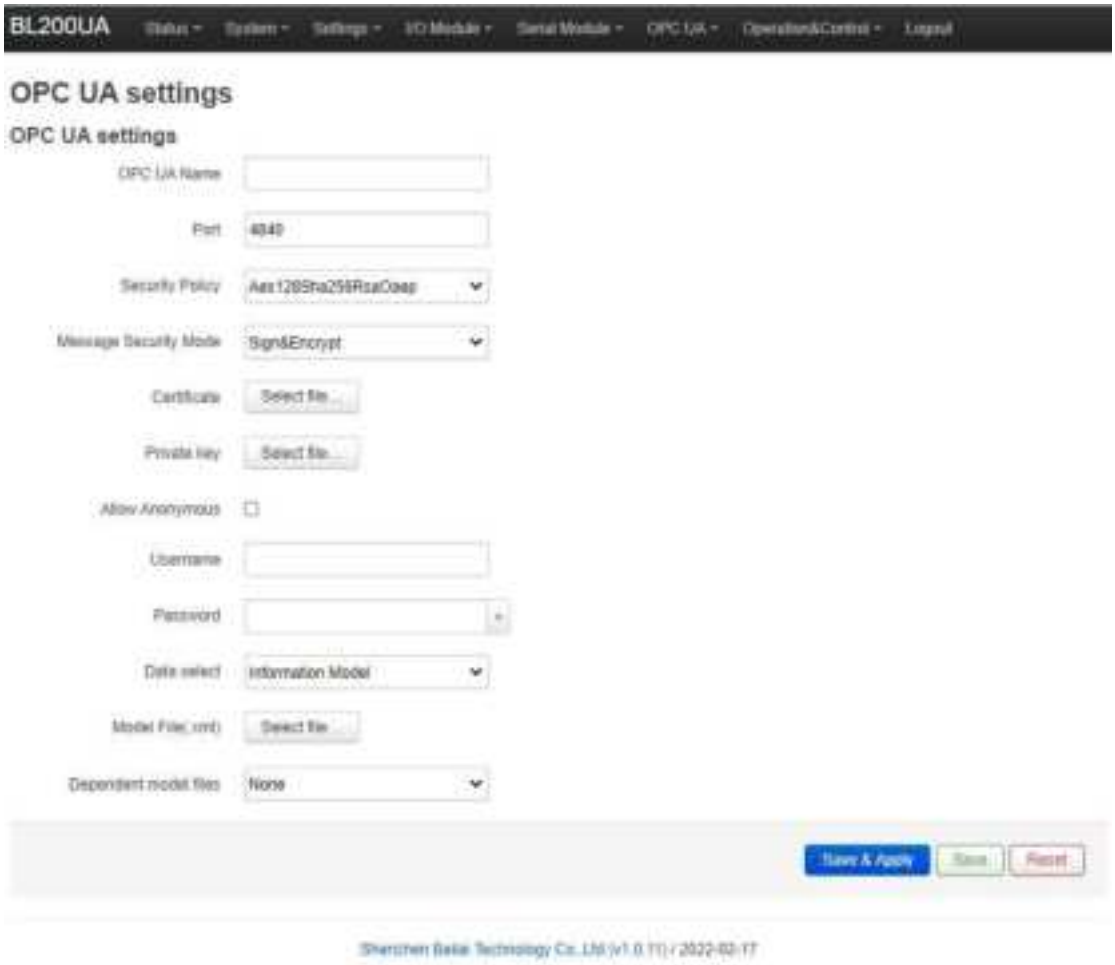
The Node Id for OPC UA defaults to NS=1; S=Modbus mapping address of the I/O data point (for example, the first DO module of the first DO module: NS=1; S=1000), Modbus mapping address range DI: 2000-2999, DO: 1000-1999, AI: 3000-3999, AO: 4000-4999. Custom OPC UA model Node Id can be customized.

5.2.3 MQTT Identifiers

The MQTT identifier is REG+Modbus mapping address (such as the first DO module first DO: REG1000). Modbus mapping address range DI: 2000-2999, DO: 1000-1999, AI: 3000-3999, AO: 4000-4999.

5.2.4 OPC UA Web Configuration Page Description

After configuring the OPC UA parameters, click "Save and Apply" to send it to BL207Pro coupler to take effect.



Item	Description	Default
OPC UA name	OPC UA server name	
Port	OPC UA server port number	4840
Security policy	None basic128rsa15	None

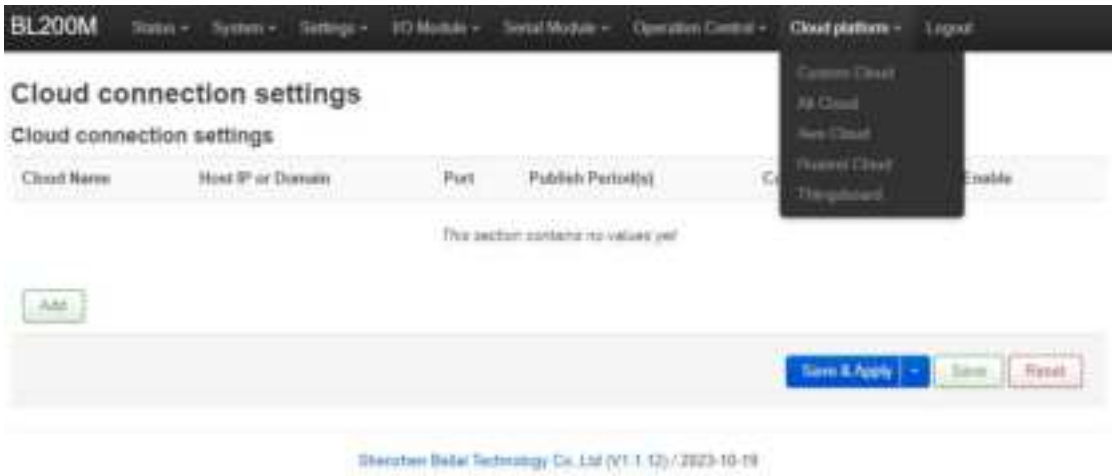
	basic256 basic256sha256 aes128sha256rsaoaep All security policies	
Message security mode	Sign Sign and encrypt	
Certificate	OPC UA certificate, click the uploaded certificate to load the configuration page.	
Private key	OPC UA private key, click on the uploaded certificate to load it into the configuration page.	
Allow anonymous	Whether to enable user name and password login	
Username	Fill in the username	
Password	Fill in password	
Data select	All data Select data point Information model	All data
Select data point	You can select the data points you want to read. "Data selection" option to select "select data point" to have this option	
Model file (.xml)	Upload the information model (.xml) file, select "Information Model" in the "Data Selection" item to have this option	
Dependent model files	Select the number of information models to reference, up to 5 can be selected.	
Dependent Models 1-5	Upload the information model (.xml) file to be referenced	

Note: For a customized information model, the data point description item must be in the format of REG + Modbus address during modeling. For example, DO1 point description item fills in REG1000, and other items are customized.

5.2.5 MQTT Web Configuration Page Description

Once the platforms to be connected have been configured, they need to be sent to the BL207Pro coupler by clicking on "Save and Apply" in order to take effect.

5.2.5.1 Cloud Connection Settings



Click "Add", select "Beilai IIoT V2", and the BLIIoT Cloud MQTT configuration will pop up.

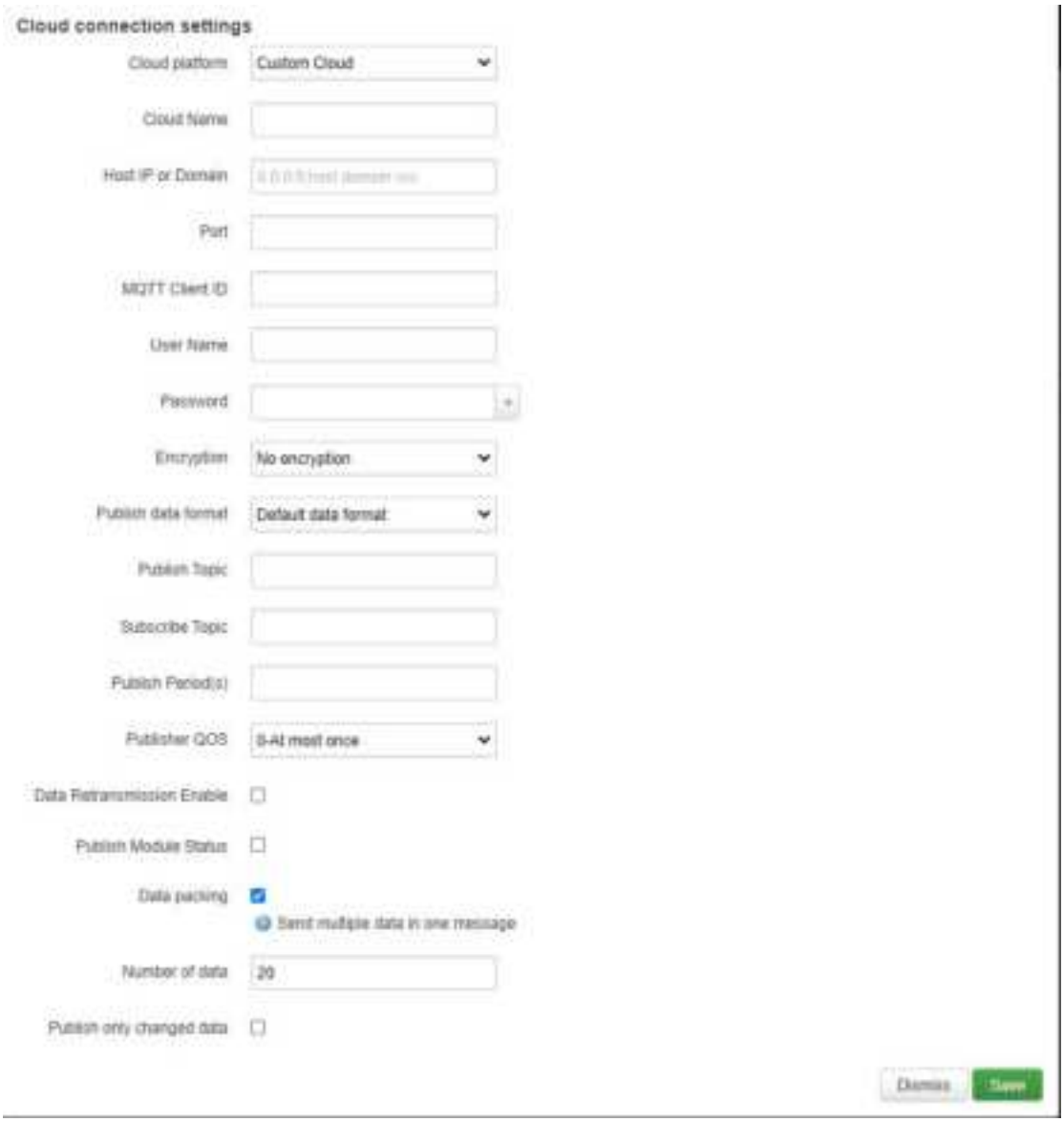
BLIIoT Cloud Connection	
Item	Description
Cloud platform	Beilai IIoT V2
MQTT Client ID	Contact sales person to get it
Publish Period	MQTT data upload interval period
Data Retransmission Enable	Whether to enable data retransmission
Publish Module Status	Whether to publish I/O module status information
Dismiss	Cancel Beilai Cloud Configuration
Save	Save Beilai Cloud Configuration

Note: 1, Configure BLIIoT cloud, click "Save", and also click "Edit" to open the configuration interface, click "Save" again, as shown below.

2, Publish I/O module status information has a separate topic "io_status", the contents

of the I/O slot normal or abnormal status such as: {"slot1": "Normal"}, on behalf of the slot 1 module normal status.

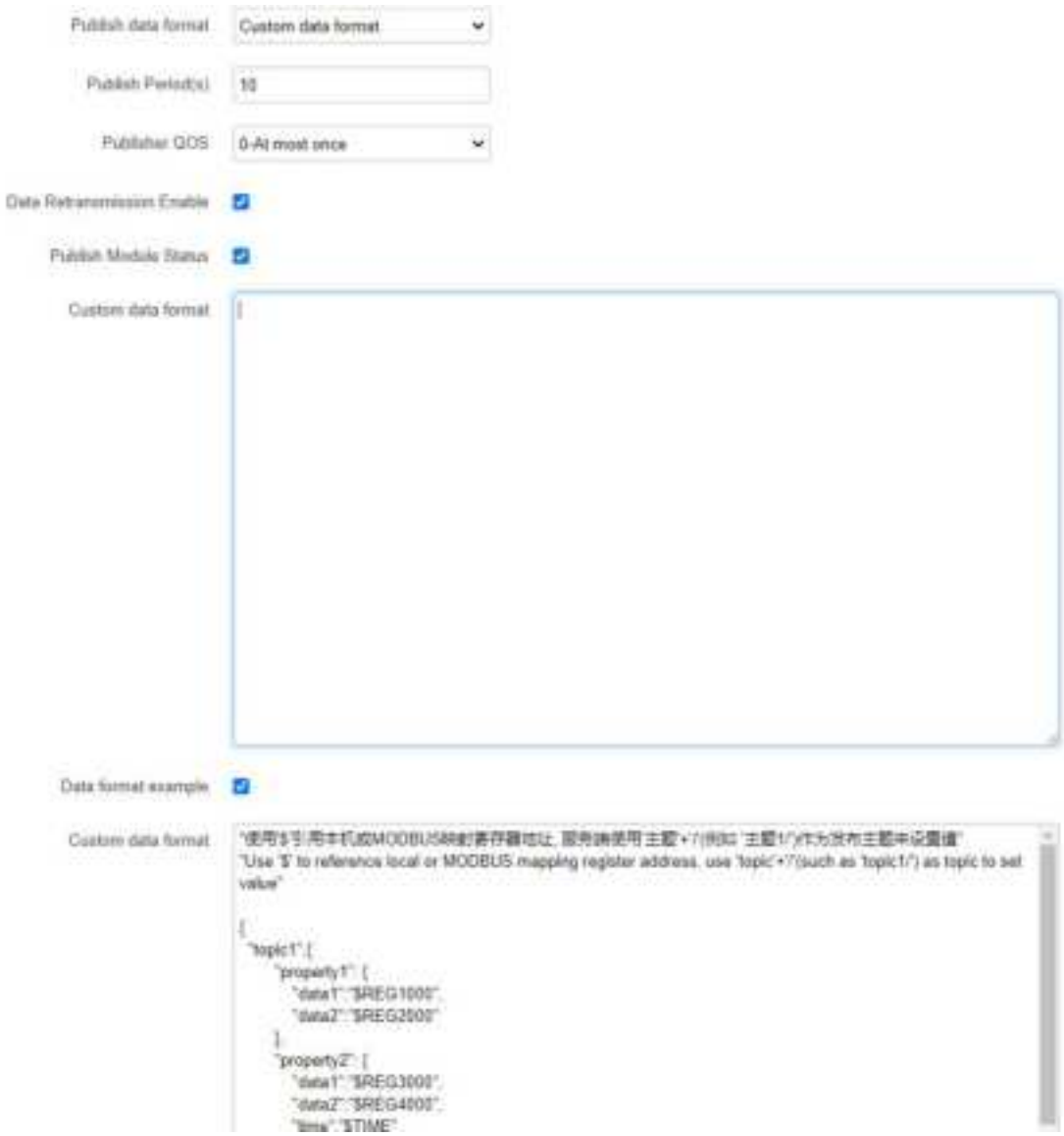
Click "Add", select "Custom Cloud", MQTT data format has a default data format and custom data format.



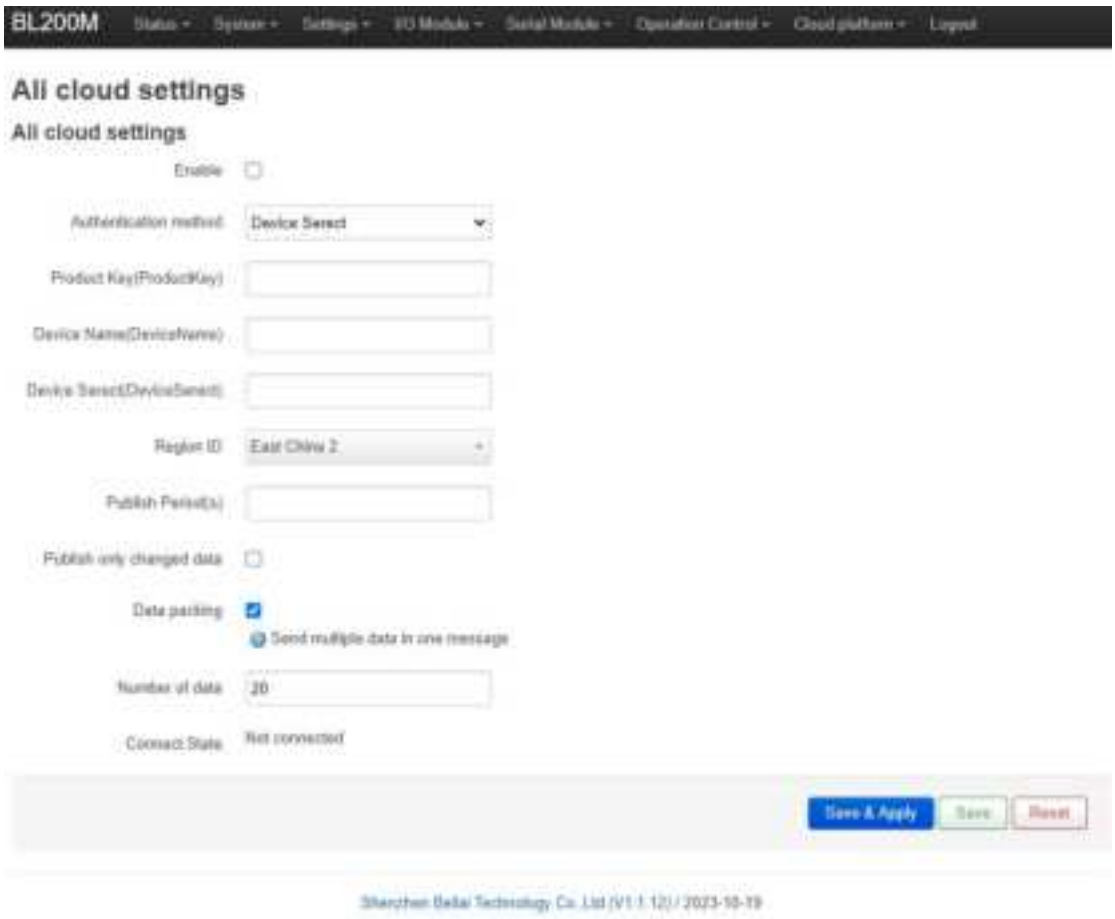
Custom Cloud Connection	
Item	Description
Cloud platform	Custom cloud
Cloud name	Custom cloud platform name
Host IP or Domain	MQTT server IP or domain name
Port	MQTT server port number
MQTT Client ID	The client identifier used by the MQTT connection message, which is used by the server to identify the client.
User name	The username used for MQTT connection messages, which the server can use for authentication and authorization.

Password	The password used for MQTT connection messages, which the server can use for authentication and authorization.
Encryption	"No encryption", "Encryption (root certificate)", "Encryption (self-signed)"
Publish data format	"Default Data Format", "Custom Data Format"
Publish topic	The subject name used for MQTT publish messages, the subject name is used to identify the information channel to which the payload data should be published.
Subscribe topic	The subject name used for MQTT subscribe messages. After subscribing, the server can send a publish message to the client.
Publish period	MQTT data publish interval
Publisher QOS	Publish quality of service "0 - at most once", "1 - at least once", "2 - only once"
Data Retransmission Enable	Whether to enable data retransmission
Publish Module Status	Whether to publish I/O module status information
Data packing	Whether to enable data packaging. Disable means one message sent one data point
Number of data	Number of data points published in one message
Publish only changed data	Whether to enable publishing only data that has changed during the cycle
Dismiss	Cancel MQTT platform configuration
Save	Save MQTT platform configuration

"Publish Data Format" item select "Custom Data Format", pop-up custom data format editing interface, click "Data Format Example" to view the editing example, edit the content to comply with the JSON data format, Subscribe topic is Publish topic /, Click on the blank space outside the edit box when you are done editing.



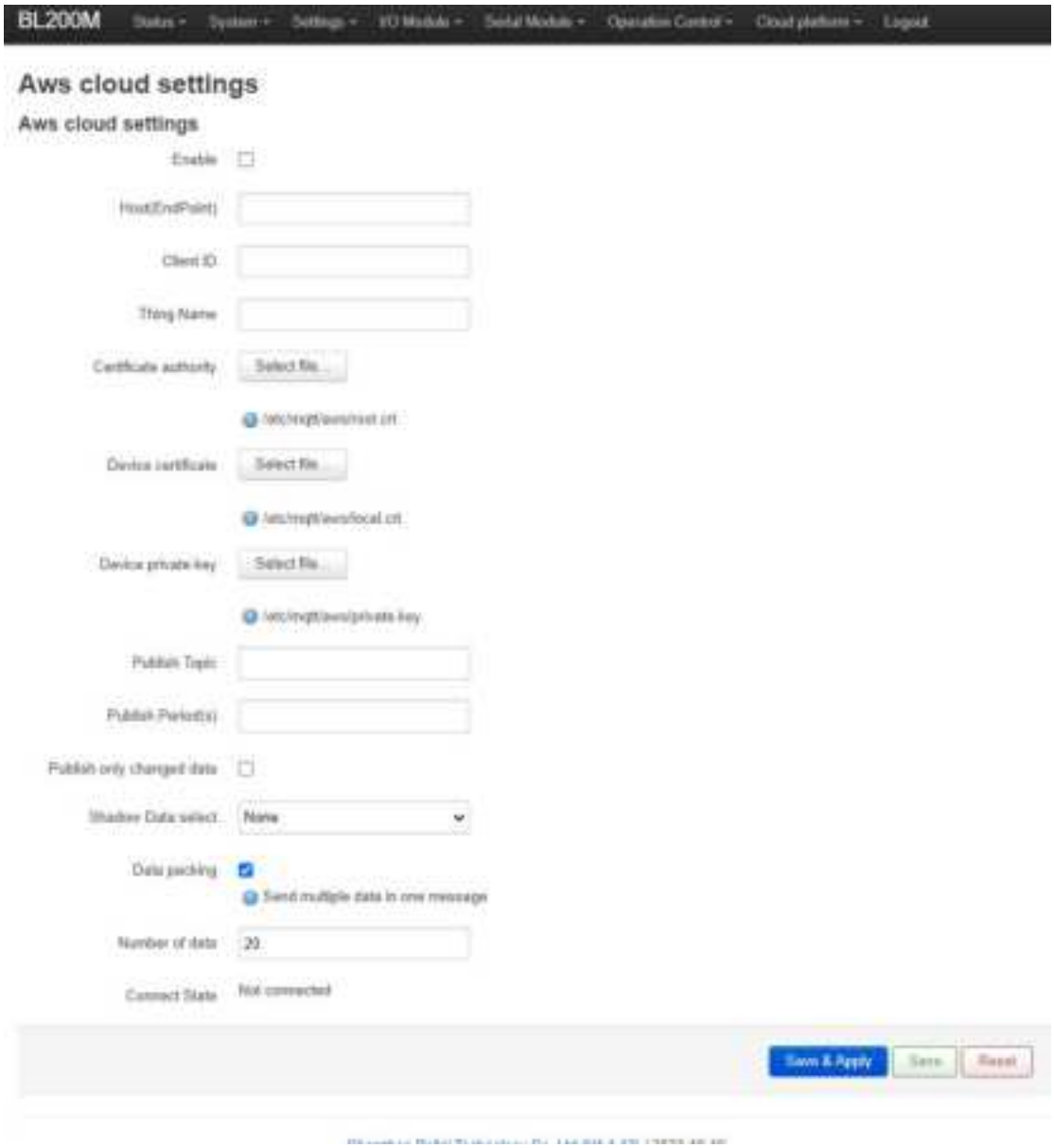
5.2.5.2 Ali Cloud



Ali Cloud Connection	
Item	Description
Enable	Check to enable
Authentication Method	"Device Secret" and "X.509"
Product Key	ProductKey on Ali Cloud
Device Name	DeviceName on Ali Cloud
Device Serect	DeviceSecret on Ali Cloud
Region ID	Ali cloud region, If you need to fill in the IP address, you can do so at Customize.
Publish Period(s)	More than 60s
Certification Authority (root certificate)	Select File Upload, displayed when X509 certificate is selected as the authentication method.
Device Certificate	Select File Upload, displayed when X509 certificate is selected as the

	authentication method.
Device Private Key	Select File Upload, displayed when X509 certificate is selected as the authentication method.
Publish only changed data	Whether to enable publishing only data that has changed during the cycle
Data packing	Whether to enable data packaging. Disable means one message sent one data point
Number of data	Number of data points published in one message
Connect state	After clicking "Save and Apply", you can see whether the connection to Ali cloud is successful or not.

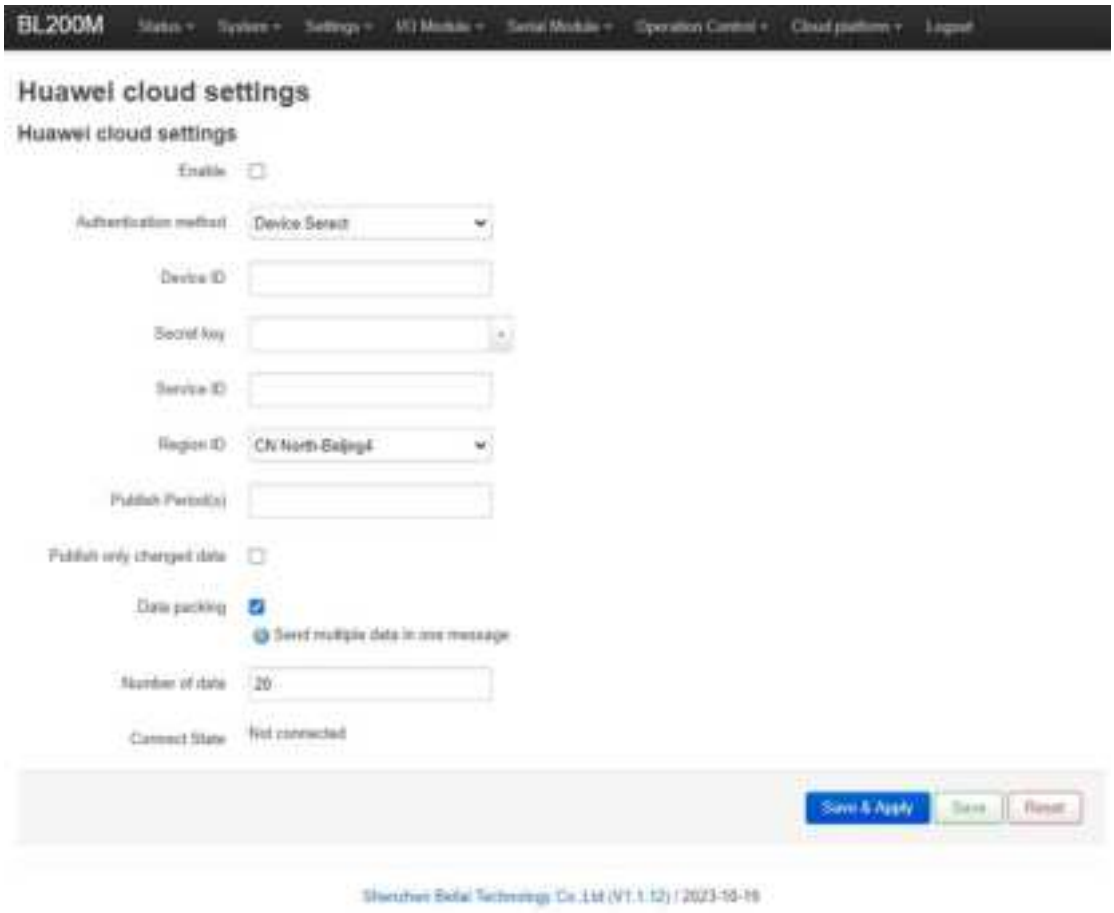
5.2.5.3 AWS



AWS Connection	
Item	Description
Enable	Check to enable
Host(EndPoint)	Set the endpoint
Client ID	The client identifier used in the MQTT connection message, the server uses the client identifier to identify the client, and each client connected to the server has a unique client identifier.
Thing Name	Set thing name
Certification Authority (root certificate)	Select File Upload

Device Certificate	Select File Upload
Device Private Key	Select File Upload
Publish Topic	The subject name used by MQTT to publish messages. The subject name is used to identify which information channel the payload data should be published to. The subject name in the published message cannot contain wildcards.
Publish Period(s)	More than 60s
Publish only changed data	Whether to enable publishing only data that has changed during the cycle
Shadow data select	Shadow control data point selection from None, All Data, Select Data Points
Data packing	Whether to enable data packaging. Disable means one message sent one data point
Number of data	Number of data points published in one message
Connect state	After clicking "Save and Apply", you can see whether the connection to AWS is successful or not.

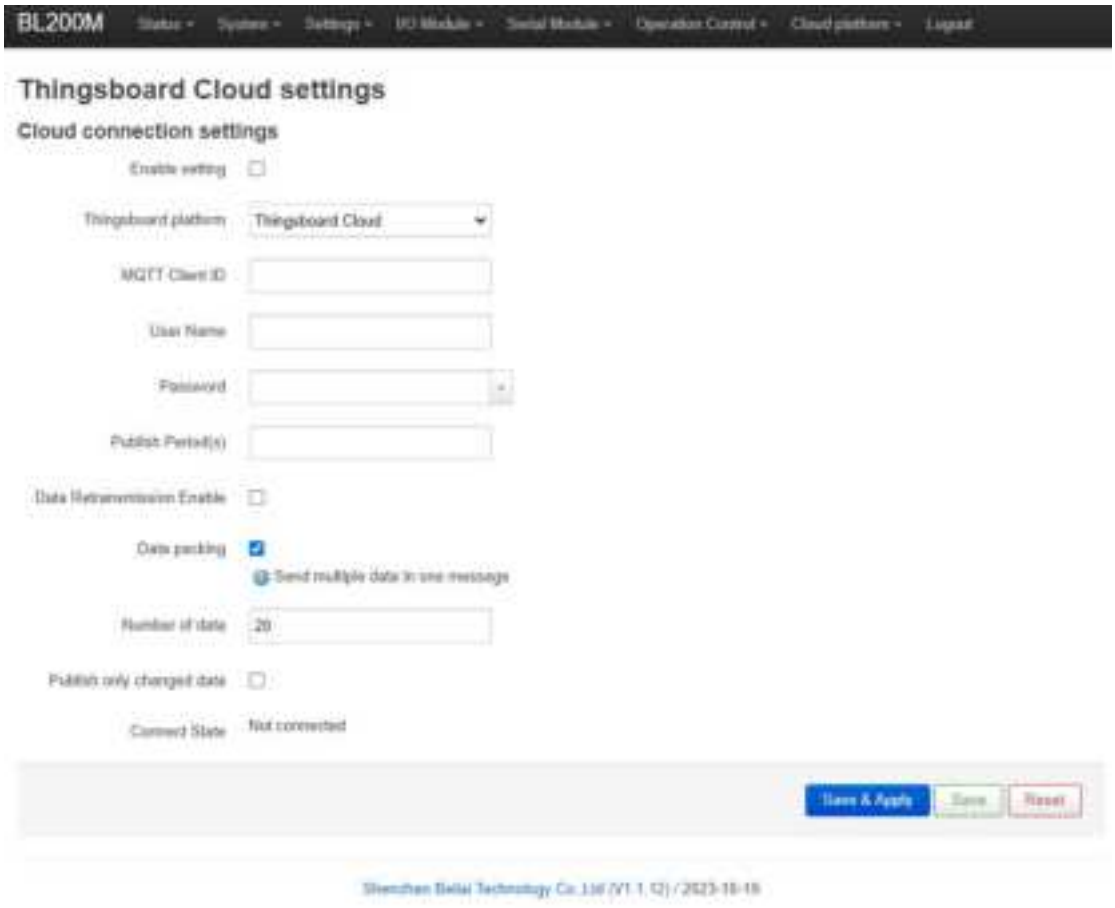
5.2.5.4 HUAWEI Cloud



HUAWEI Cloud Connection	
Item	Description
Enable	Check to enable
Authentication Method	"Device Secret" and "X.509"
Device ID	Huawei Cloud Device ID
Secret key	Password entered when creating the device certificate, you can refer to the HUAWEI CLOUD help document to create a test certificate
Service ID	Products need to create services to report data
Region ID	Device region, select Other to fill in the IP address
Publish Period(s)	More than 60s
Certification authority (root certificate)	Root certificate provided by Huawei cloud, displayed when X509 certificate is selected as the authentication method.
Device certificate	Device certificate deviceCert.pem, upload to /etc/conf directory and select the file, displayed when X509 certificate is selected as the authentication method.

Device key	Device key/deviceCert.key, upload to/etc/conf directory and select the file, displayed when X509 certificate is selected as the authentication method.
Only publish changed data	Whether to enable publishing only data that has changed during the cycle
Data packing	Whether to enable data packaging. Disable means one message sent one data point
Number of data	Number of data points published in one message
Connect state	After clicking "Save and Apply", you can see whether the connection to HUAWEI cloud is successful or not.

5.2.5.5 ThingsBoard



Thingsboard Connection	
Item	Description
Enable Setting	Check to enable
Thingsboard platform	Choose from "ThingsBoard Cloud",

	"Other ThingsBoard Servers".
MQTT Client ID	The client identifier used in the MQTT connection message, the server uses the client identifier to identify the client, and each client connected to the server has a unique client identifier.
User Name	The username used for MQTT connection messages, which the server can use for authentication and authorization.
Password	The password used for MQTT connection messages, which the server can use for authentication and authorization.
Publish Period(s)	More than 60s
Data Retransmission Enable	Check to enable data retransmission
Data Packing	Whether to enable data packaging. Disable means one message sent one data point
Number of data	Number of data points published in one message
Only publish changed data	Whether to enable publishing only data that has changed during the cycle
Connect State	After clicking "Save and Apply", you can see whether the connection to Thingsboard is successful or not.

6 Fieldbus Communication Example

6.1 BL207 Coupler Communication Example

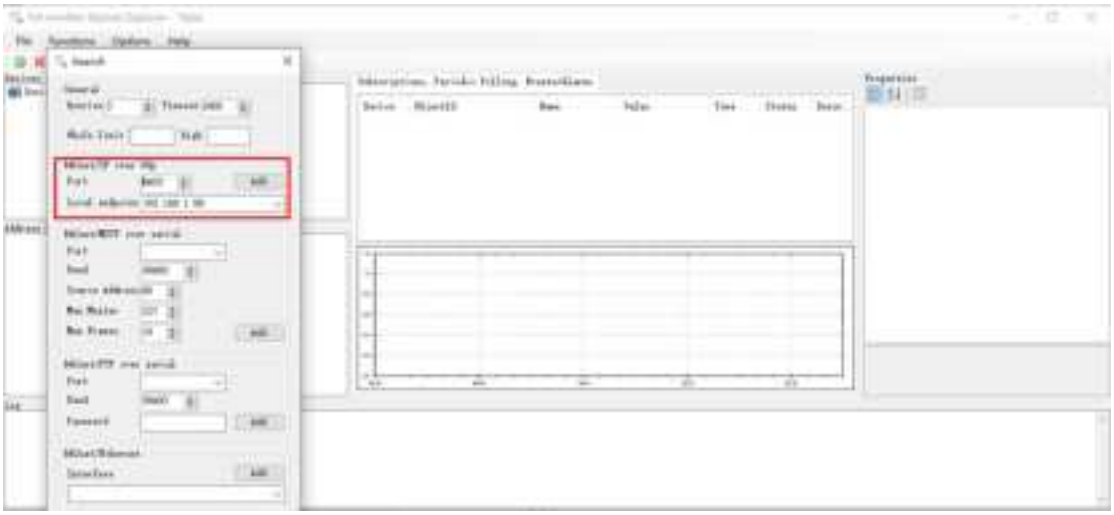
6.1.1 Yabe Acquiring Data From BL207

1. Prepare I/O modules: BL207 coupler, digital output module, digital input module, analog input module, analog output module.

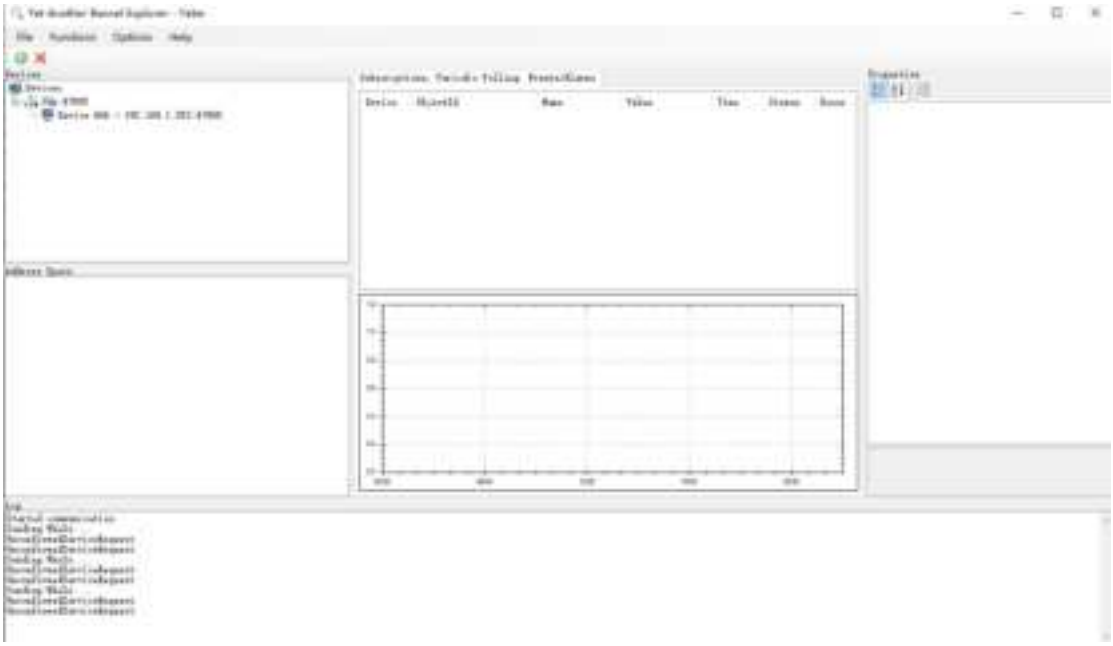
2. BL207 coupler and PC in the same LAN, BL207 coupler IP for 192.168.1.253 as an example, IP address selection switch selection reference 5.1.3.3 IP address selection switch. The dip switch dialing code is shown below:

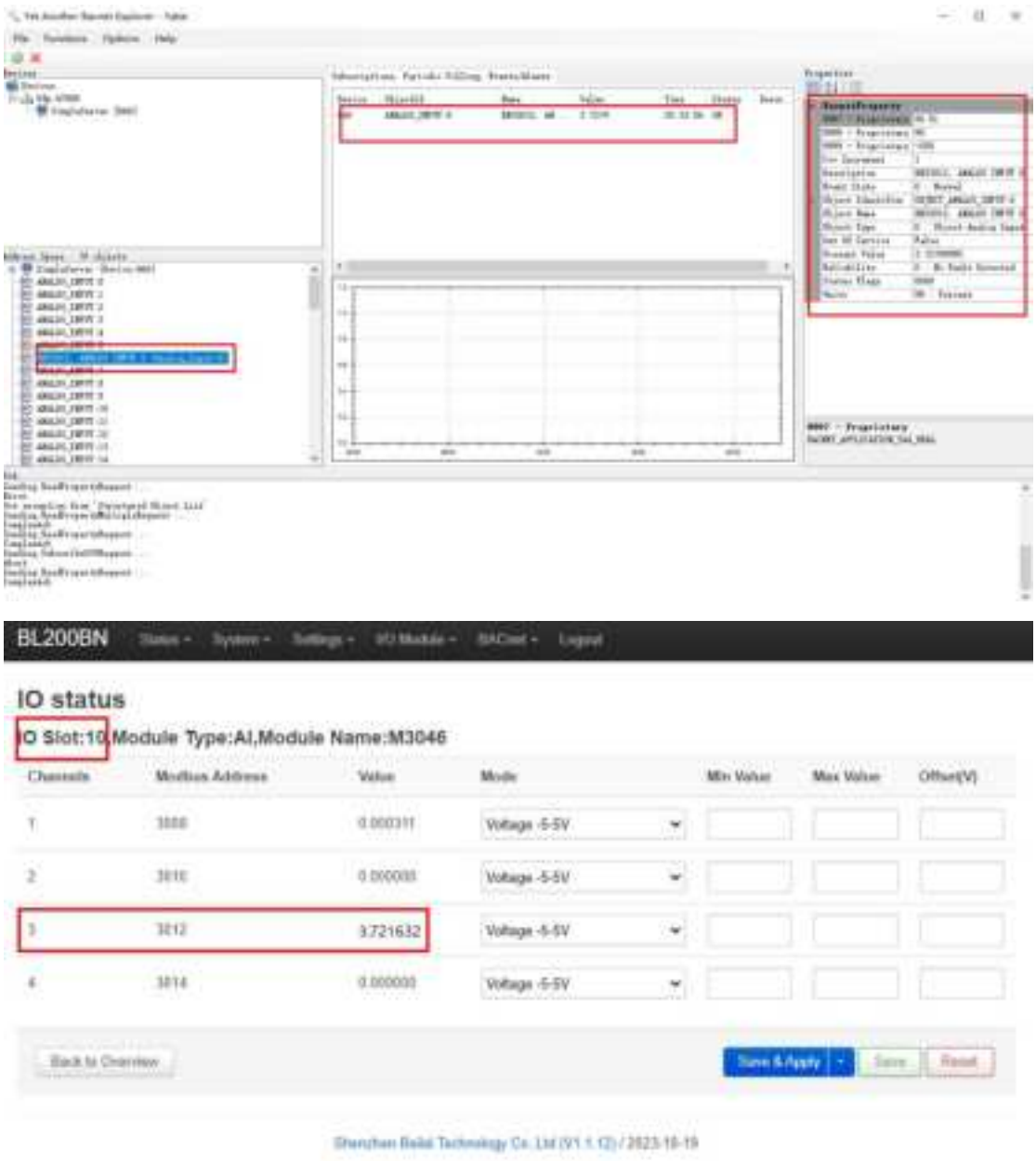
3. The web configuration can keep the defaults or modify the device ID, port number, device name, device description, and location parameters.

4. Open Yabe, click "Devices", right mouse button, select "Add device", a configuration box will pop up, configure the BACnet/IP parameters, the port number is the same as the port number of BL207 BACnet IP settings, select the IP of the computer where the host computer is located, click "Add".



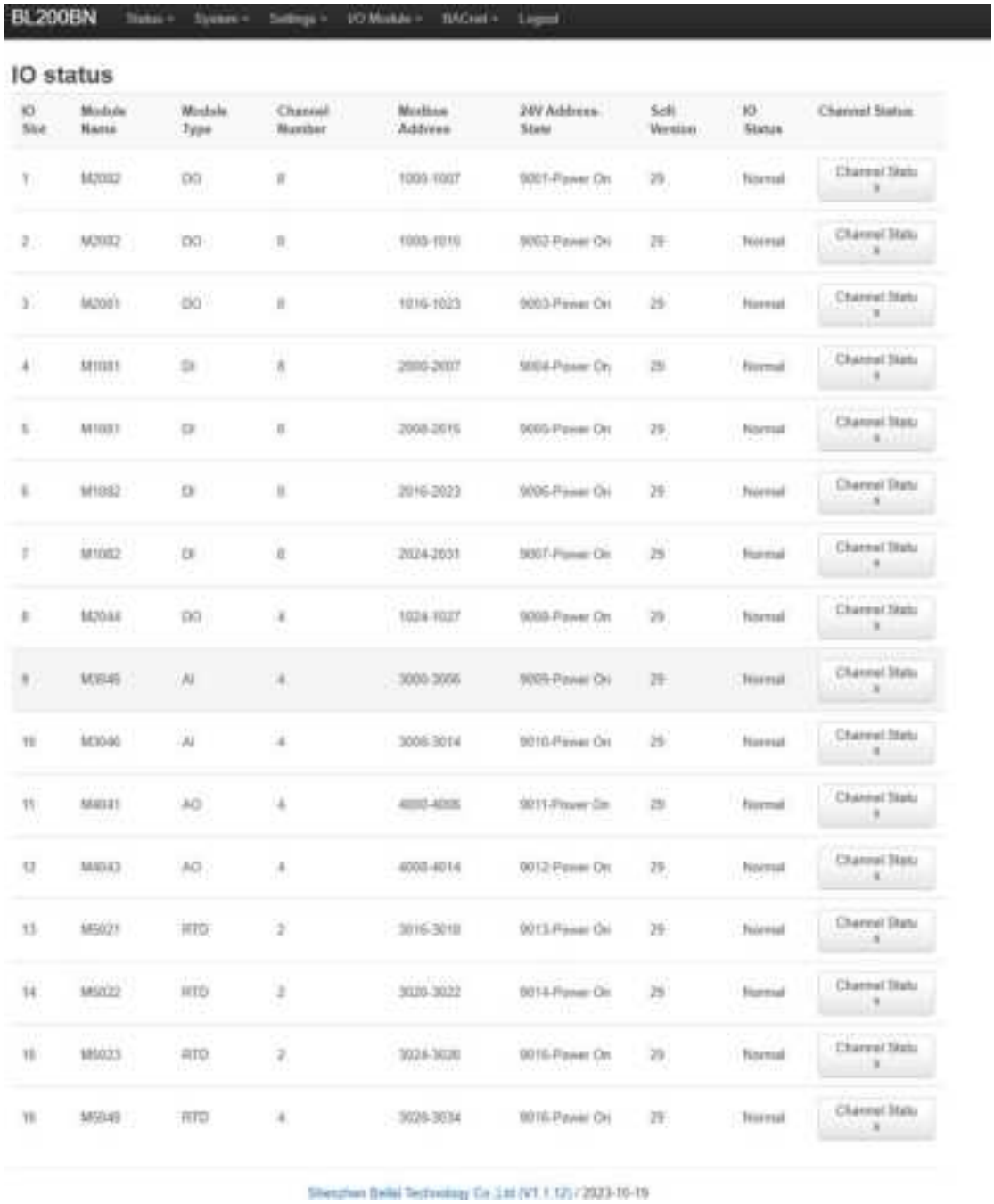
5. Automatically search for BACnet/IP devices on LAN, click on the searched device, read all the data points of the device, click on the read data point, drag it to the middle box to show the value of the data point, and the right box displays the attributes of the data point. For example, click "Analog Input 6" (corresponding to the third channel of the second AI) to see the current value of "3.72823".



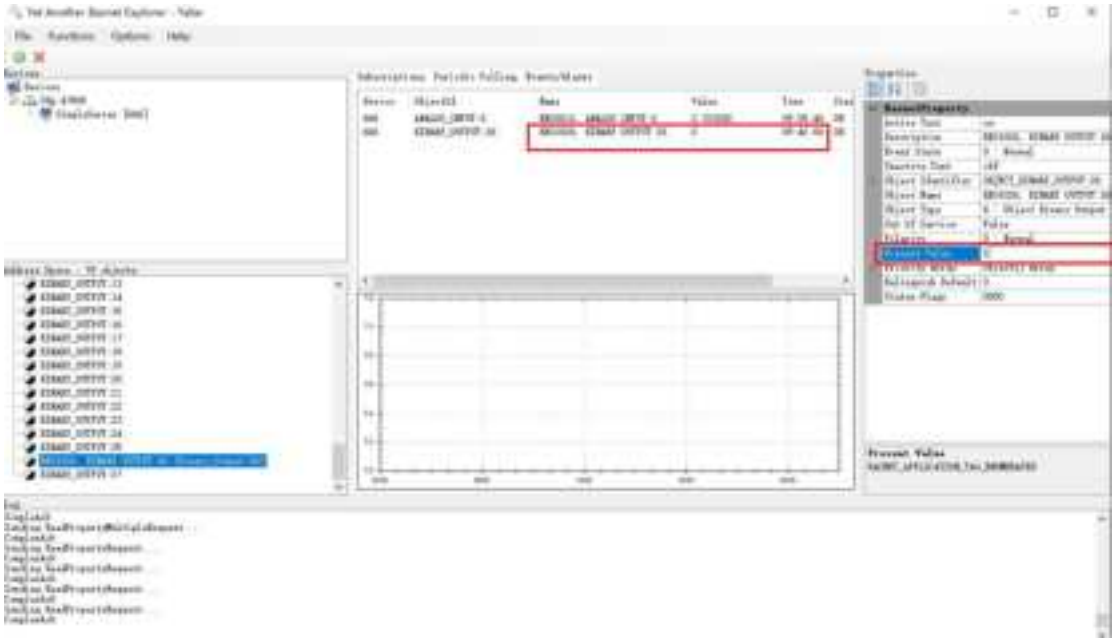


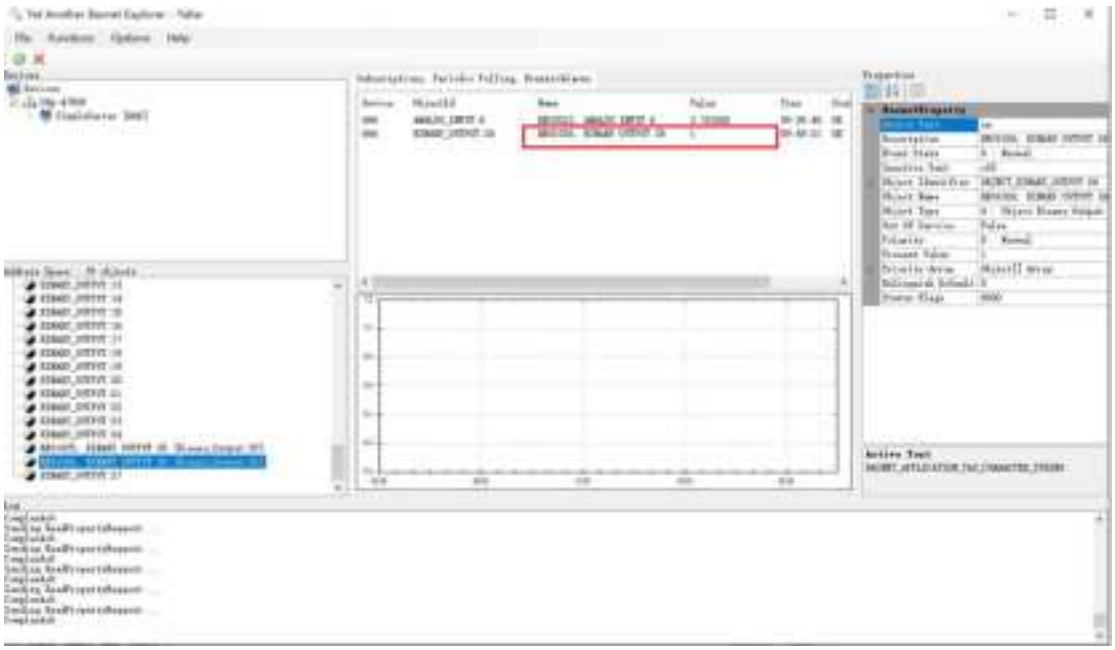
6. The BI, BO, AI, and AO instance objects are the corresponding DI, DO, AI, and AO sorted relative to each other, respectively. As shown in the figure below, the 3rd channel of M2044 in slot 8 is Binary Output, 26 (data point attribute description is REG1026), and there are three 8-channel DOs in front of it, then 3*8=24, 24+3=27, and the DOs are sorted as the 27th channel, and the instance object of BO in BACnet/IP starts from "0", and then the instance object of the 27th channel is "26". For example, the M1082 in slot 7 has a sequencing of 31 for channel 7 (the front slot has three 8-way DIs, so 3*8=24, 24+7=31), which corresponds to a Binary Input, 30 (described as REG2030). Such as card slot 15 of the M5023 first sort of 13-way (in front of two 4-way AI and two 2-way RTD, then 2 * 4 = 8,2 * 2 = 4,8 + 4 + 1 = 13), corresponding to the Analog Input, 12 (the description of the REG3024, one way AI

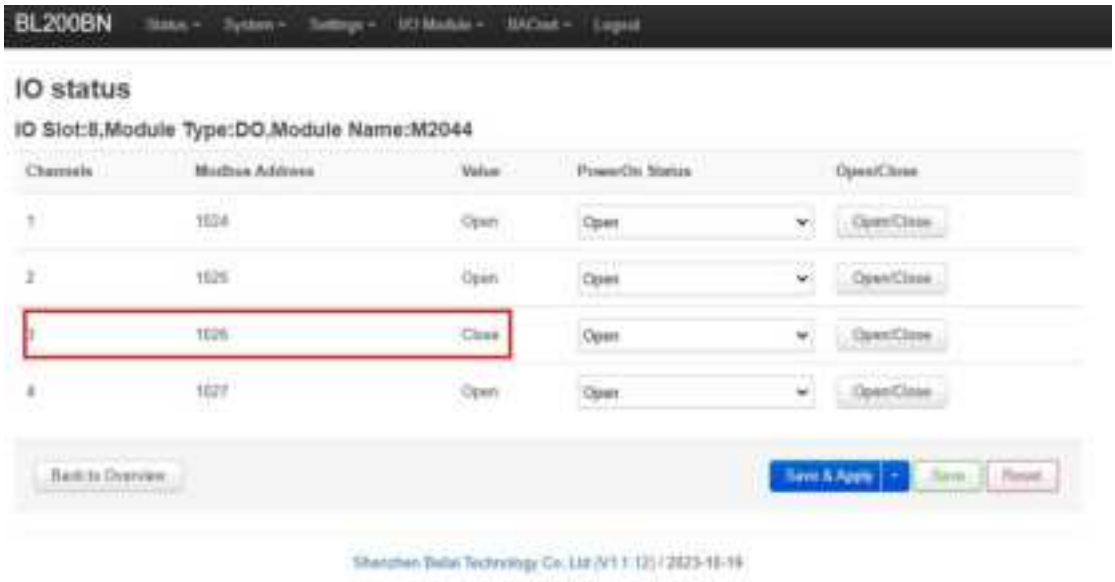
accounted for 2 registers).



7. Control DO, such as control Binary Output, 26 closed (card slot 8 of the M2044 3rd), click on "Binary Output, 26", in the right side of the "BacnetProperty" - "Present Value" to fill in the value of "1", press the keyboard "Enter" key to determine or in the blank space left mouse button.







6.2 BL207Pro Coupler Communication Example

BL207Pro Communication Example BACnet/IP communication can be referred to 6.1 BL207 Coupler Communication Example, OPC UA connection can be referred to BL205 Coupler Communication Example, and MQTT connection can be referred to BL206 Coupler Communication Example.

6.2.2 OPC UA Communication Example

6.2.2.1 UaExpert and BL205 Communication

BL205 coupler to collect DI, DO, AI module, security policy select basic128rsa15, select the signature and encryption method, data format according to the customized information model way, refer to an information model as an example. Data can also be directly uploaded in the format of BLIIoT.

6.2.1.1.1 OPC UA Web Page Configuration

Steps:

(1) Fill in the OPC UA name, which can be customized to facilitate the OPC UA client to search and distinguish different OPC UA servers. For example: fill in "BL205 OPC UA Server".

(2) The port number of the OPC UA server, default: 4840.

(3) Security policy selection. For example, choose basic128rsa15.

(4) Message security mode selection. For example, choose Signing and Encryption.

(5) Upload the certificate and key, click "Select File" > click "Upload File" > select your certificate or key file, click Open > After it is displayed in the file name box, click Upload file > After uploading the file successfully The file you uploaded will be displayed in the box, click the certificate or key file you uploaded > then your certificate or key file will be displayed in the certificate or key item.

(6) Whether to allow anonymity, because of the use of signature and encryption methods, allow anonymity is not checked.

(7) Fill in the username and password. The client needs to fill in the username and password when connecting.

(8) Select the data, because the user-defined information model is used, so choose the "information model".

(9) Upload the information model file. The upload method is the same as uploading the certificate or key file. The uploaded file is an xml file.

(10) Depends on the model file, whether there is a reference model, and how many references are there.

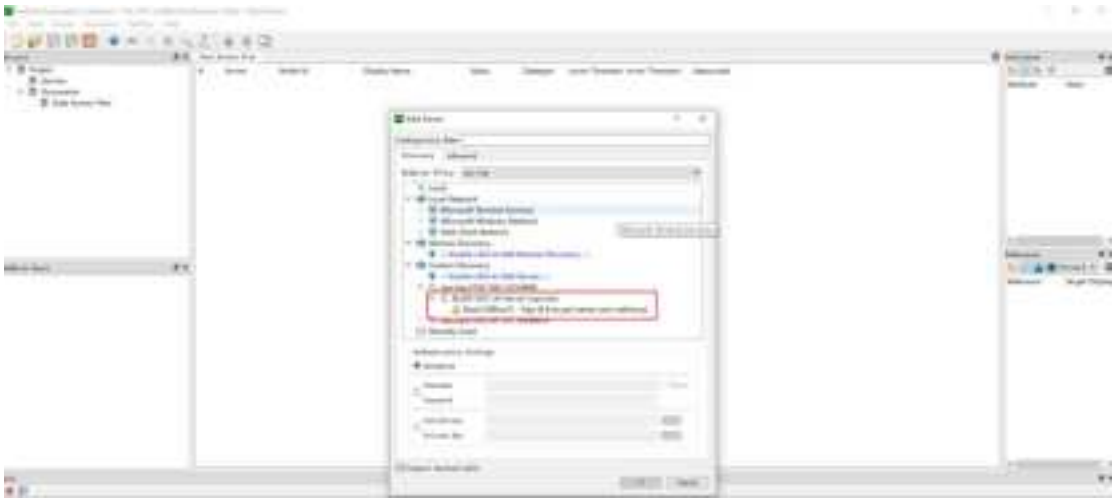
(11) Dependent model: Upload the model you refer to. The upload method is the same as uploading the certificate or key file. The upload is an xml file.

(12) Click "Save and Apply".

6.2.1.1.2 Send and Receive Data Using UaExpert Client

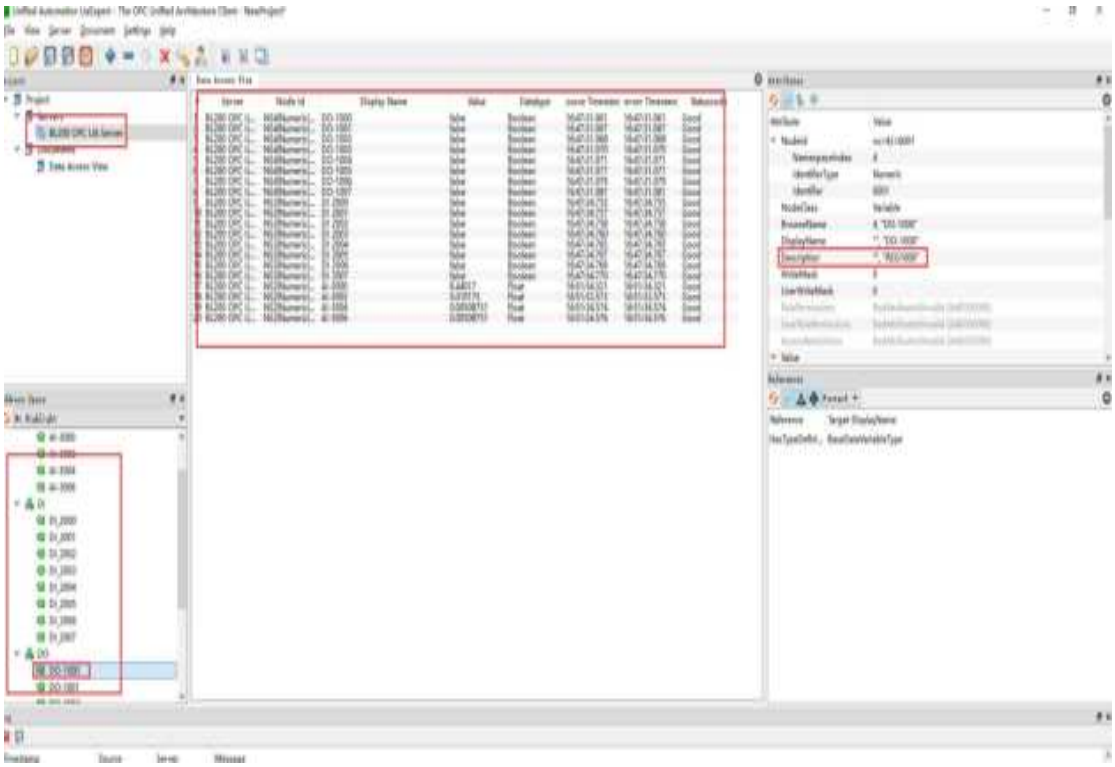
Open UaExpert (OPC UA client) and enter the OPC UA server IP and port.

Click Search, click the searched OPC UA server, and click basic128rsa15 for Signature and Encryption.



Enter the username and password

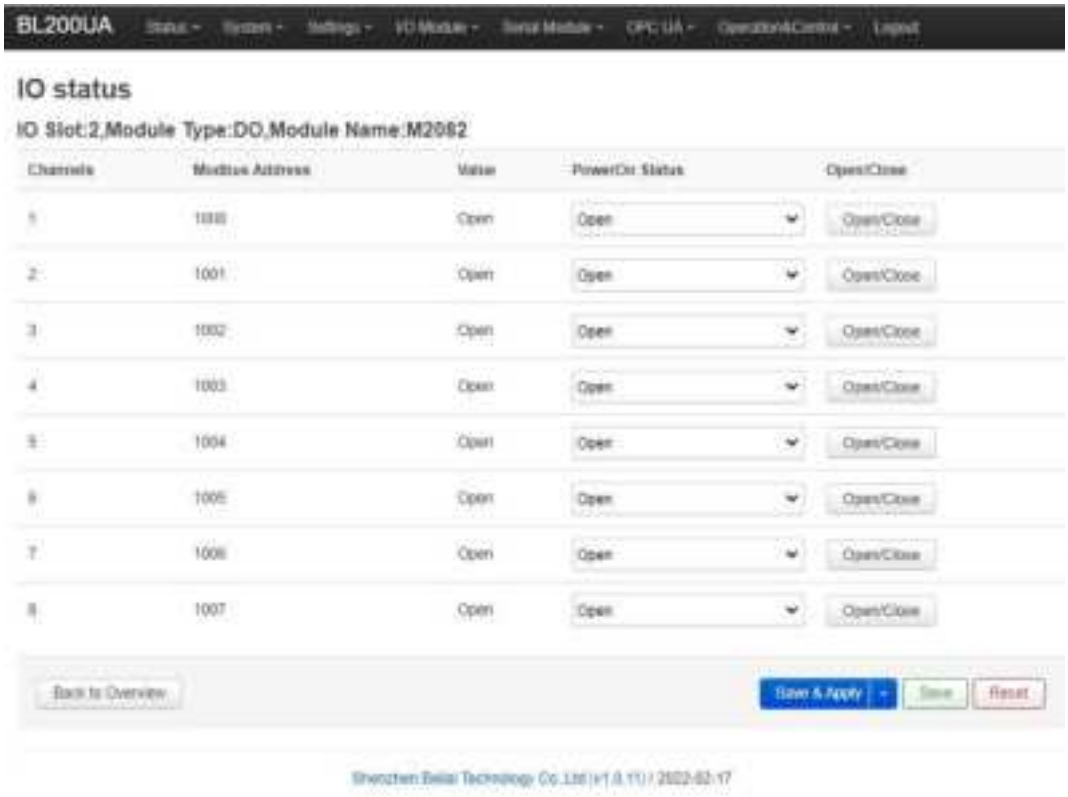
The collected data is as follows:



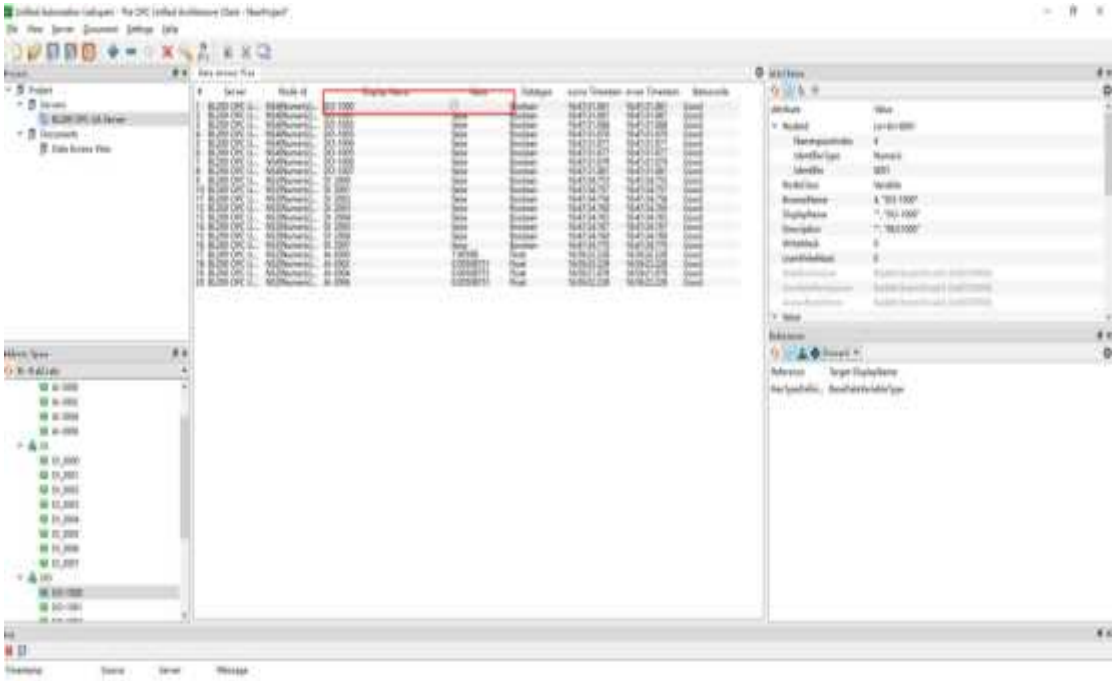
The description item of the custom information model data point must be REG+Modbus address, as shown in the description of the DO-1000 point in the figure above.

OPC UA client data delivery

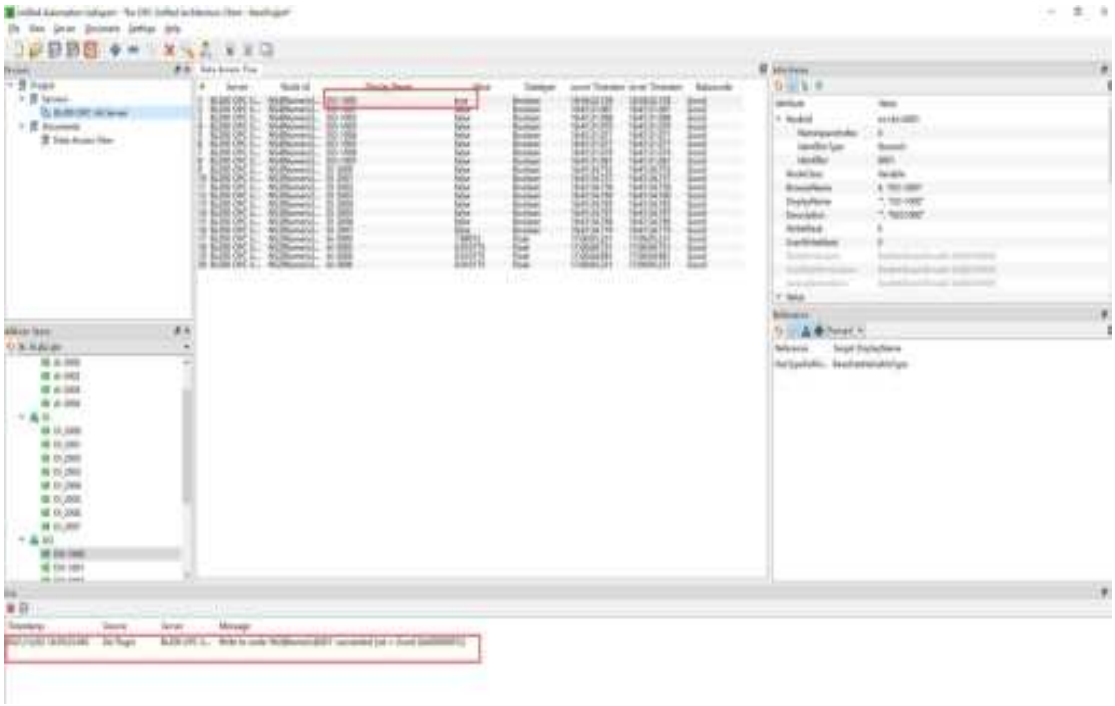
Take the following data point DO-1000 as an example



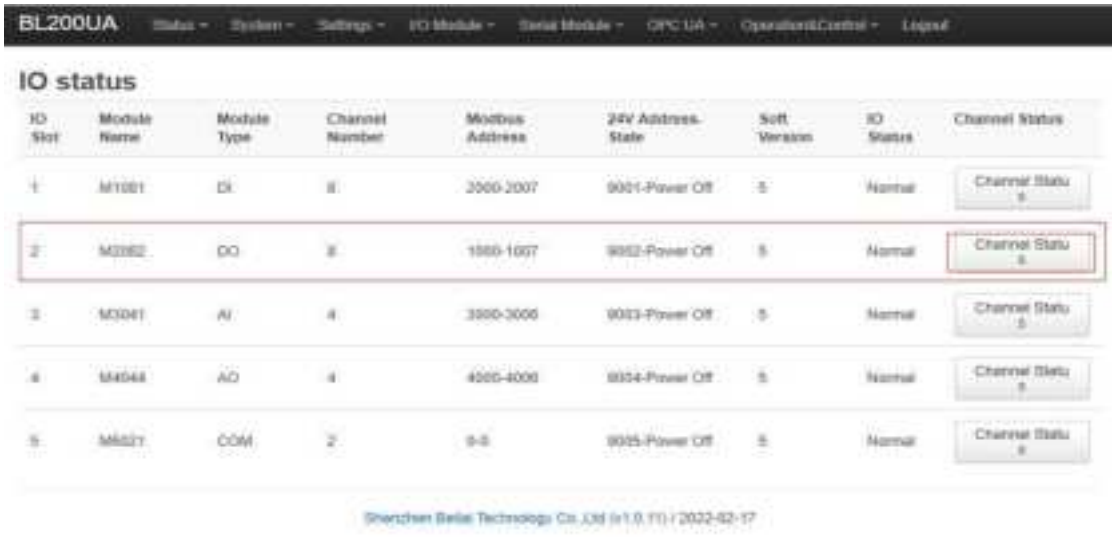
Click the value of the DO-1000 data point, it turned out to be false, there is no √ in the square, click once to put √, click the left mouse button in the blank space or press the [Enter] key on the keyboard.

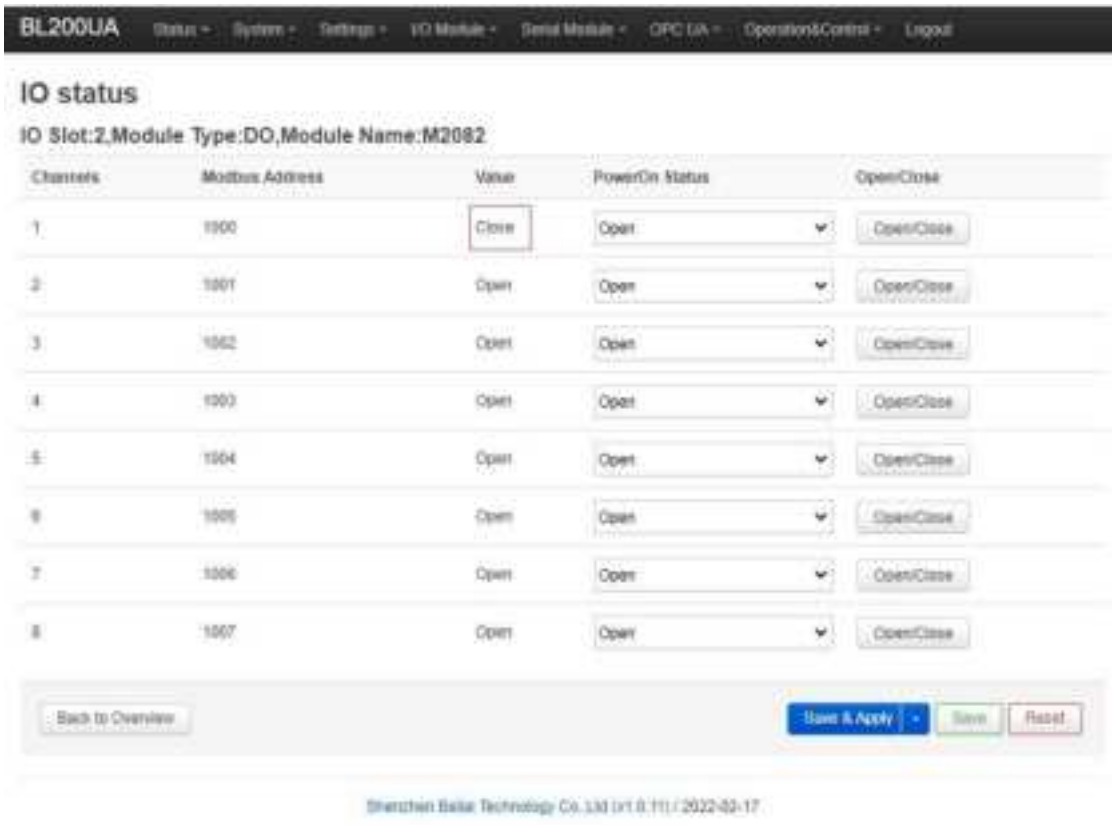


The OPC UA client will send a message successfully. Because the server responds quickly, you can see that the value has changed to "true".



Check the DO status in the web configuration of BL205. DO1 is also changed from the original open to close.





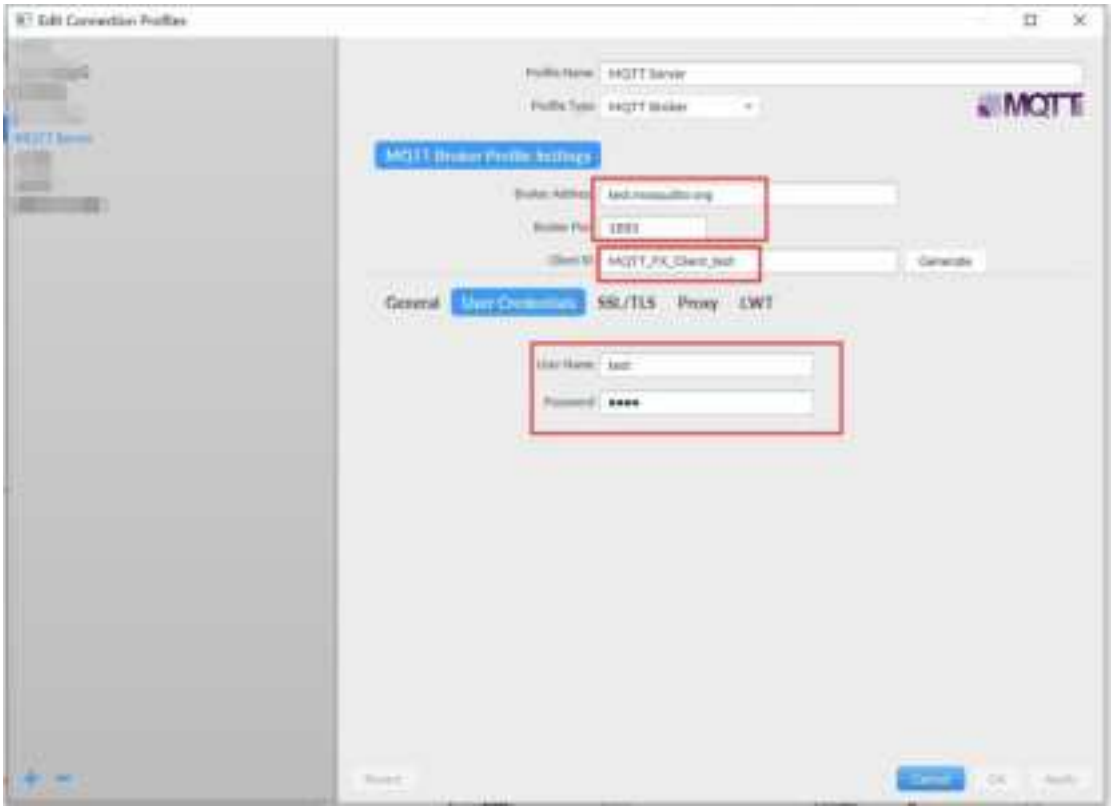
6.2.2 MQTT Communication Example

6.2.1.1 Connecting BL206 to a Custom MQTT

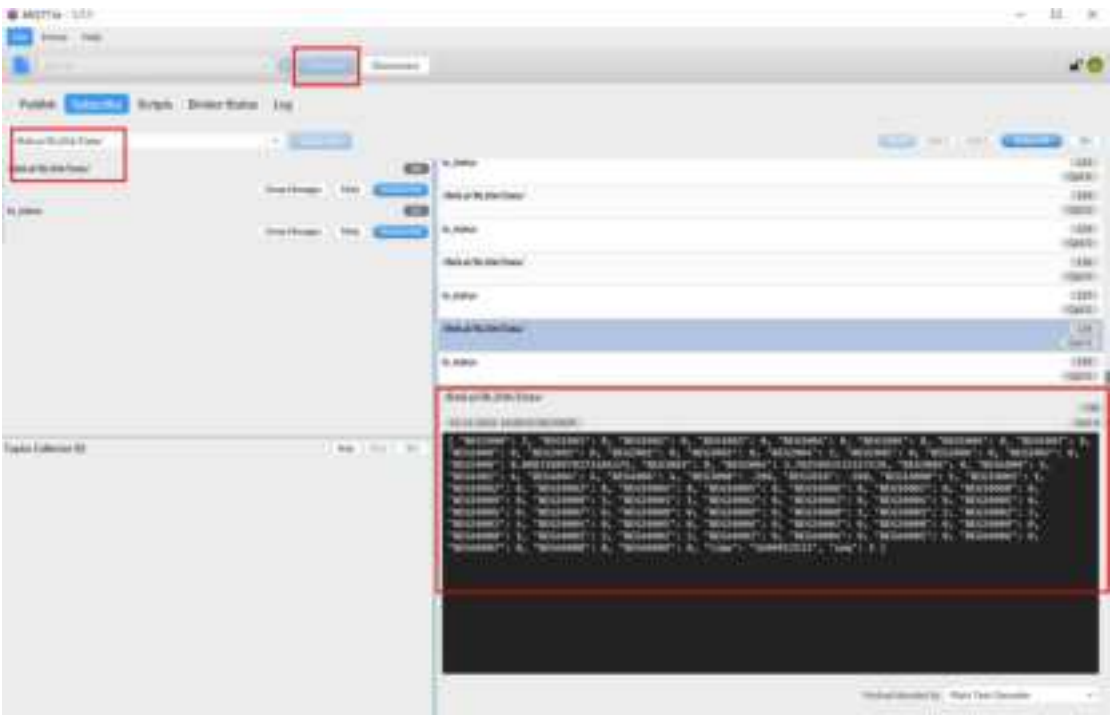
Instructions: 1. Click "Cloud Platform" - "Custom Cloud" 2. Click "Add" button to bring up the cloud platform configuration box. 3. Configure various configurations, refer to 5.2.5.1 Cloud Connection Settings for the description of each item. 4. Click "Save" to

save the configuration. 5. Click "Save and Apply" to send the configuration to the BL206 coupler and check the connection status. Check the connection status, you can check whether the connection is successful or not.

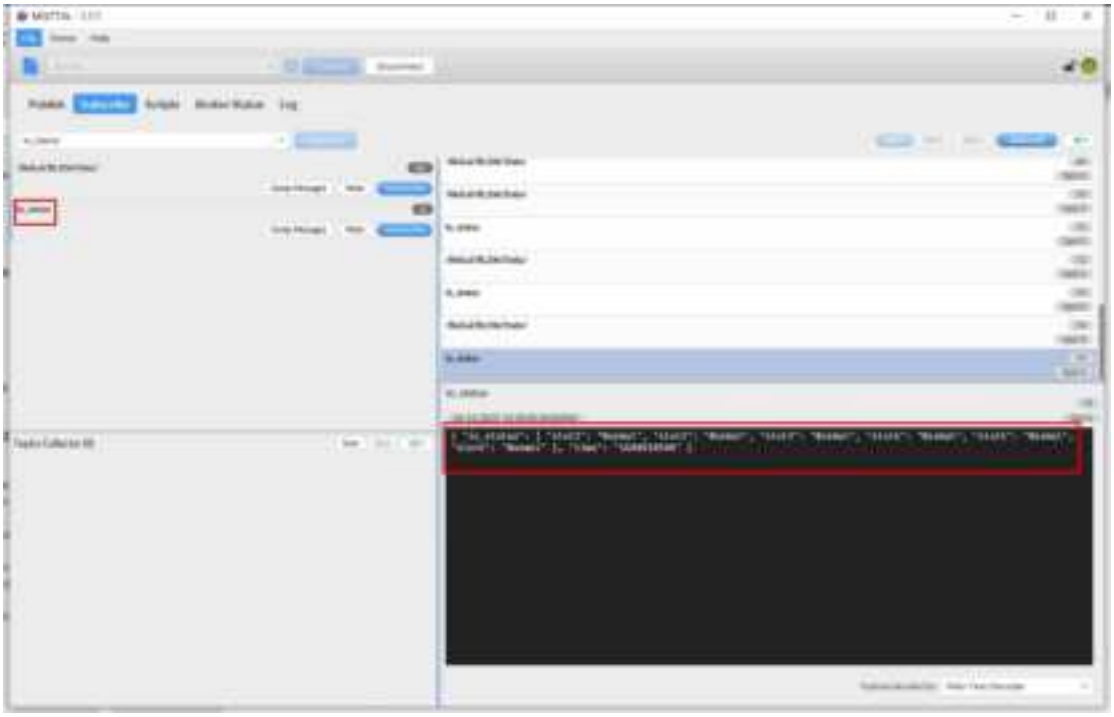
6.2.2.2 View and Send Data with MQTT.fx



The Client ID cannot be the same as the Client ID filled in on the BL206.
Click "connect" to subscribe to the publish topic "/BeiLai/BL206/Data/" of the customized MQTT cloud configuration on BL206, and all the data is shown in the figure below. For identifier description and data format, refer to Note 7.1 Data Publish Format.

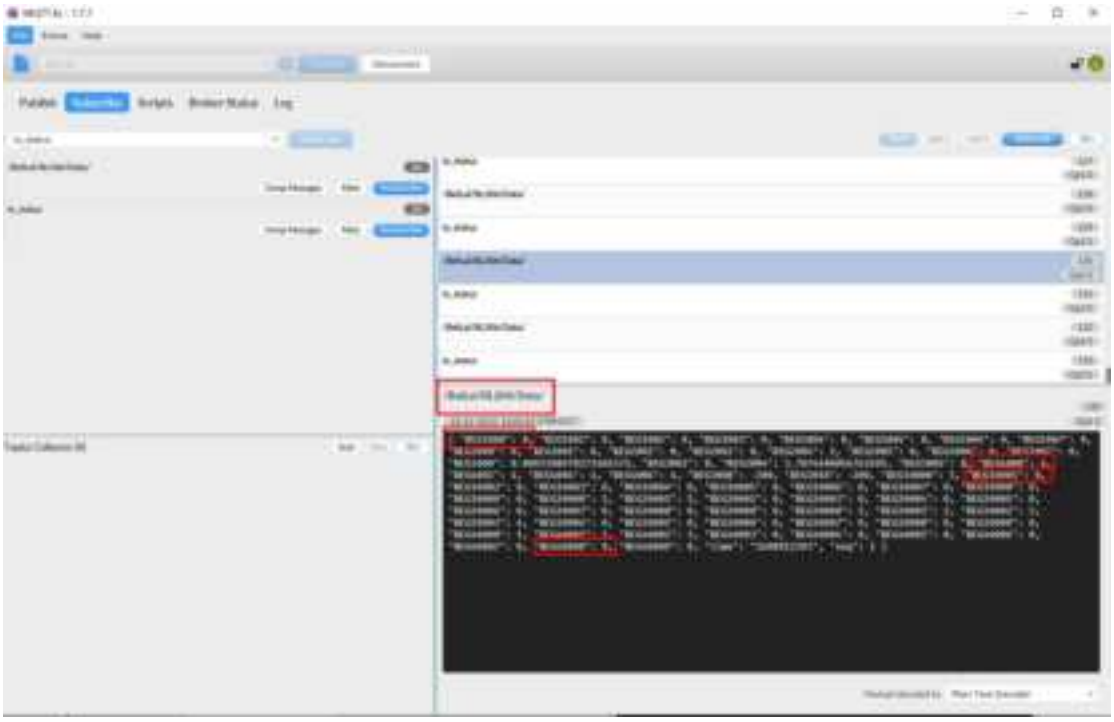


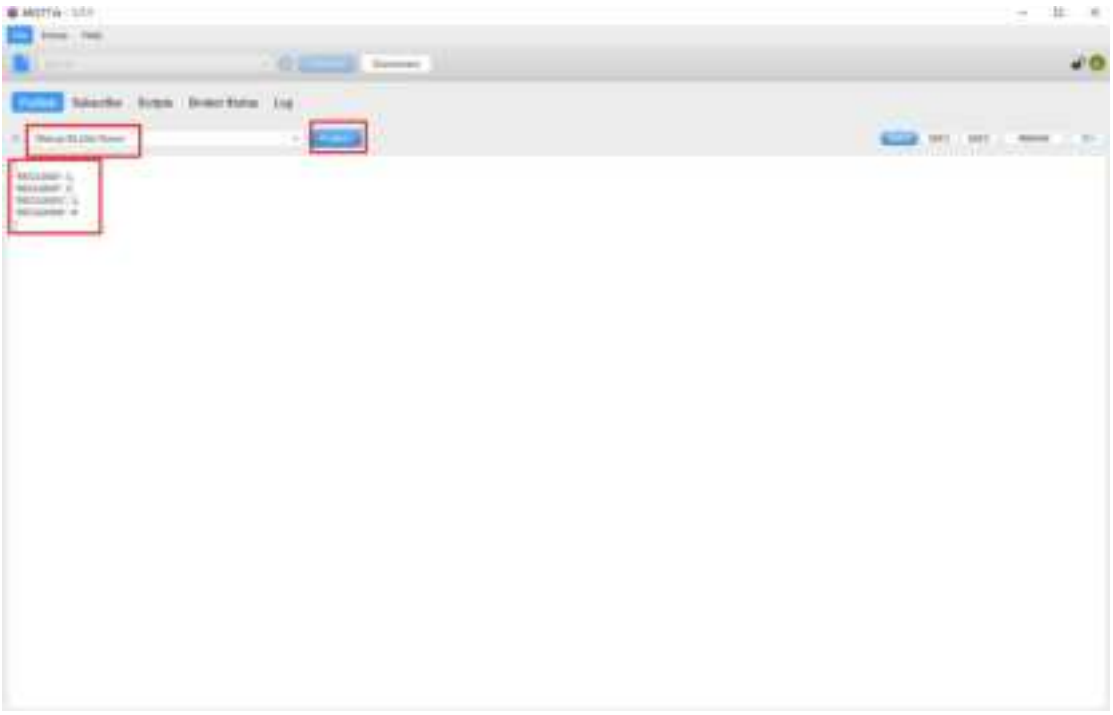
The IO module status message is a separate fixed topic "io_status" that allows you to see if the slot is abnormal.

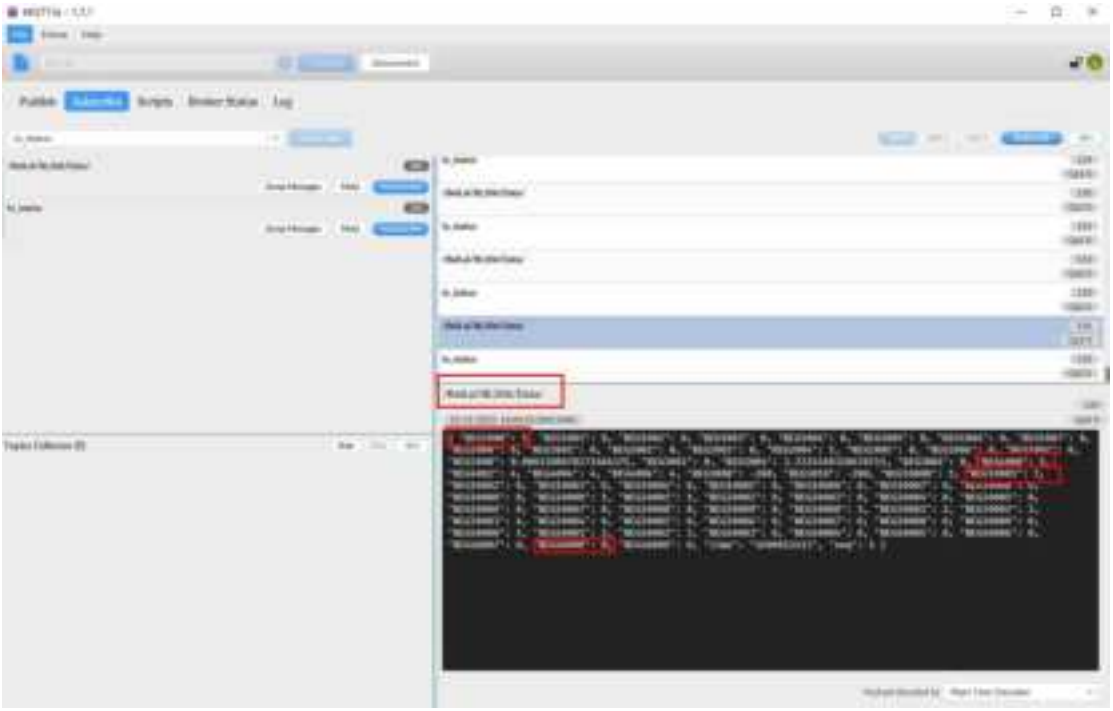


MQTT.fx publish control BL206, the publish topic is BL206 custom MQTT cloud configuration subscribe topic "/BeiLai/BL206/Down" data format reference 7.2 Subscribe Data Format.

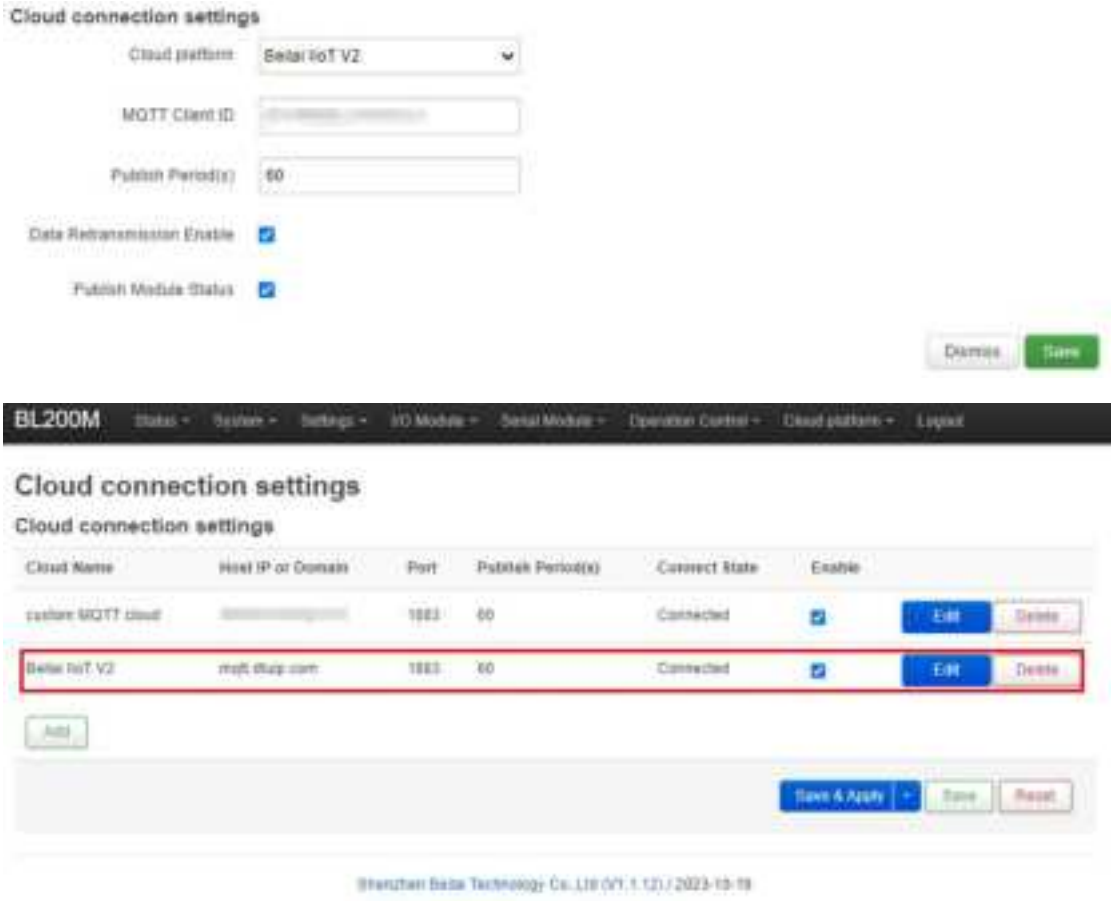
Control DO1 closed, REG1000 is "1", AO1 output 5, "REG4000" is "5", the data collected by the serial port, REG10001 is "1", REG40008 is "8".







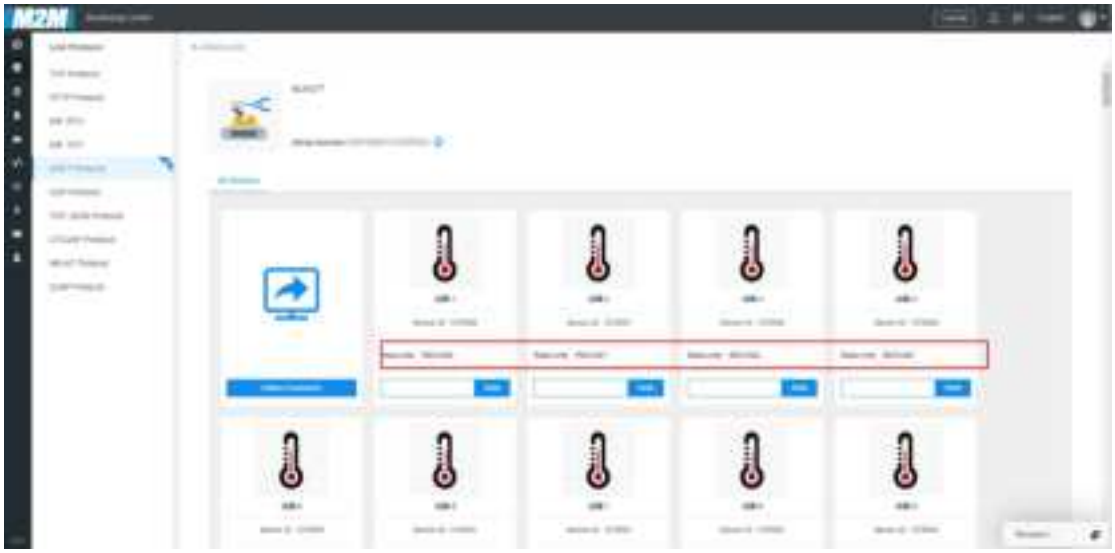
6.2.2.3 Connecting BL206 to BLIIoT Cloud

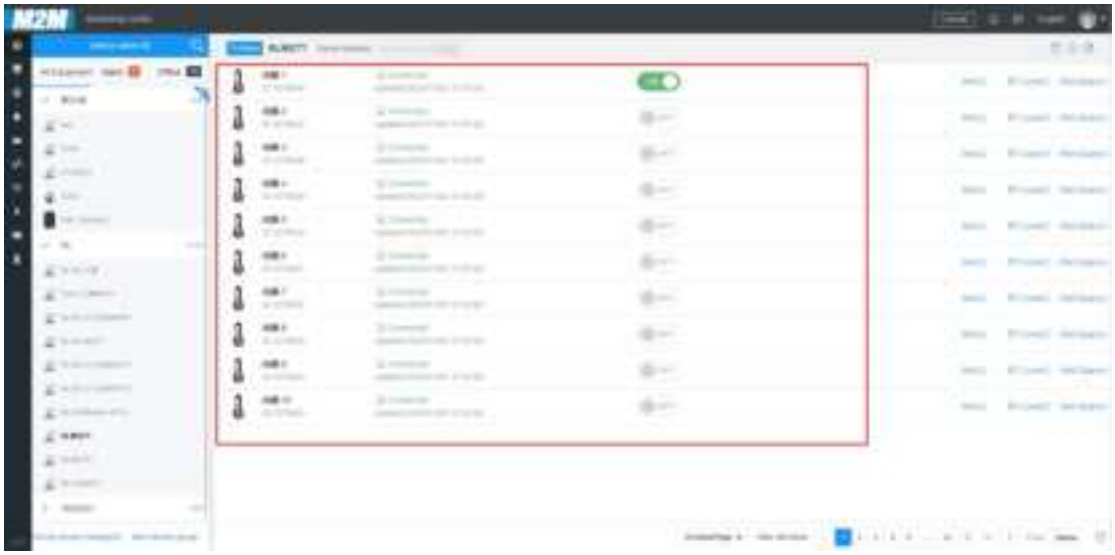


Instructions: 1, Click "cloud platform" - "custom cloud" 2, click on the "Add" button, the pop-up cloud platform configuration box. 3, Select "Beilai IIoT V2", the client ID is BLIIoT cloud platform serial number, fill in the upload period of 60s. 4, Click "Save" to save the configuration. 5, Click "Edit", click "Save" again. 6, Click "Save and Apply", send the configuration to BL206, check the connection status, you can check whether the connection is successful.

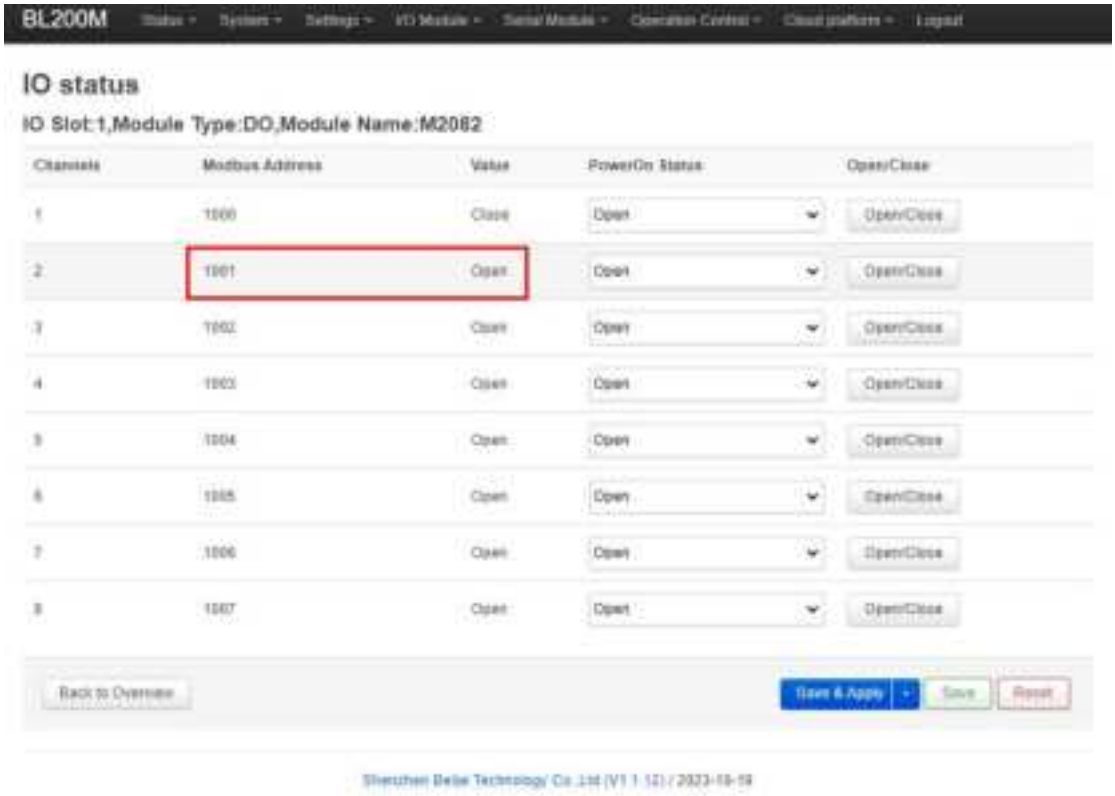
6.2.2.4 BLIIoT Cloud View and Send Data

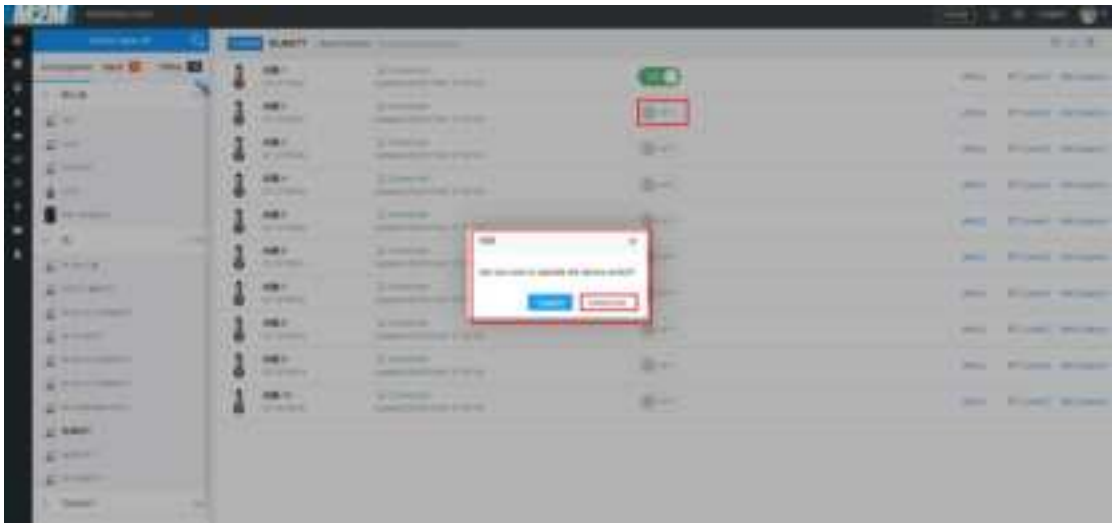
Log in BLIIoT cloud, domain name: www.my-m2m.com. After creating the device, configure the link protocol data point read and write identification can refer to 7.1 Data Publish Format.

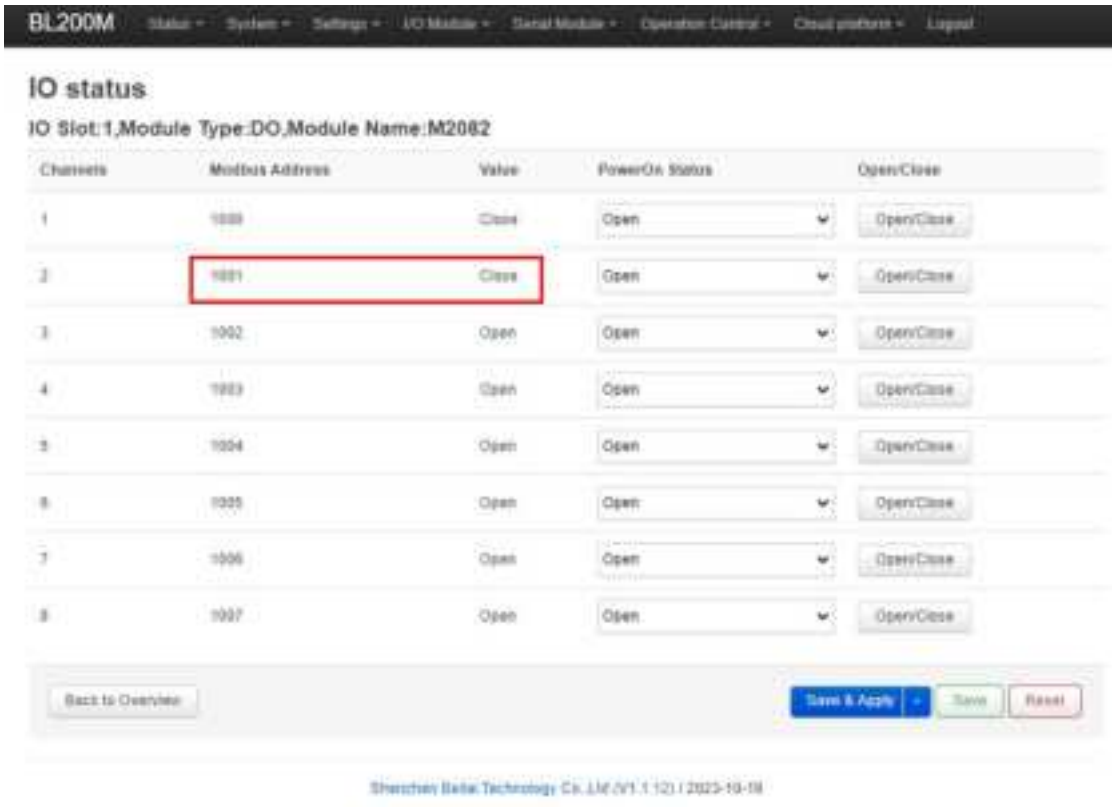


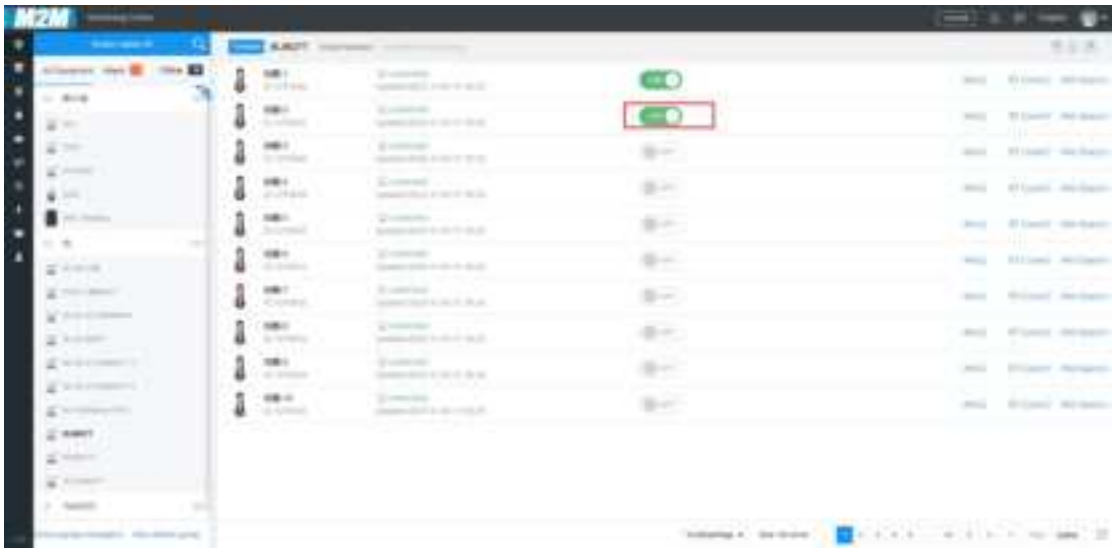


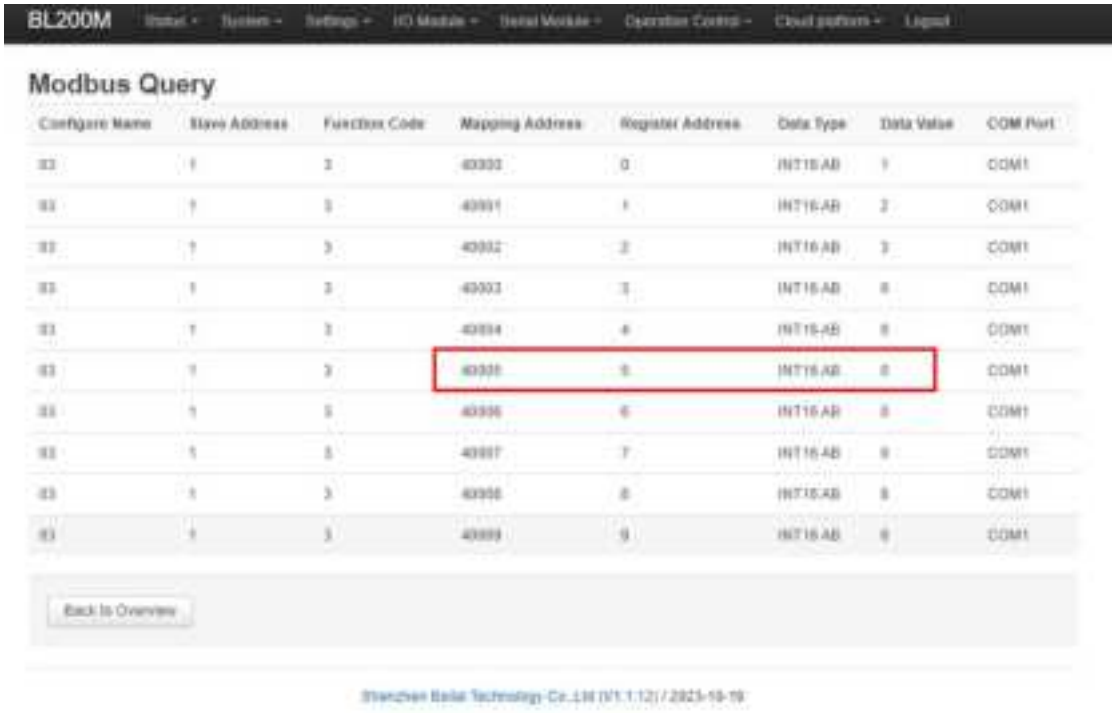
Send data: Control DO2 closed, the data collected by the serial port mapping address 40005 corresponding to the data point send "10".

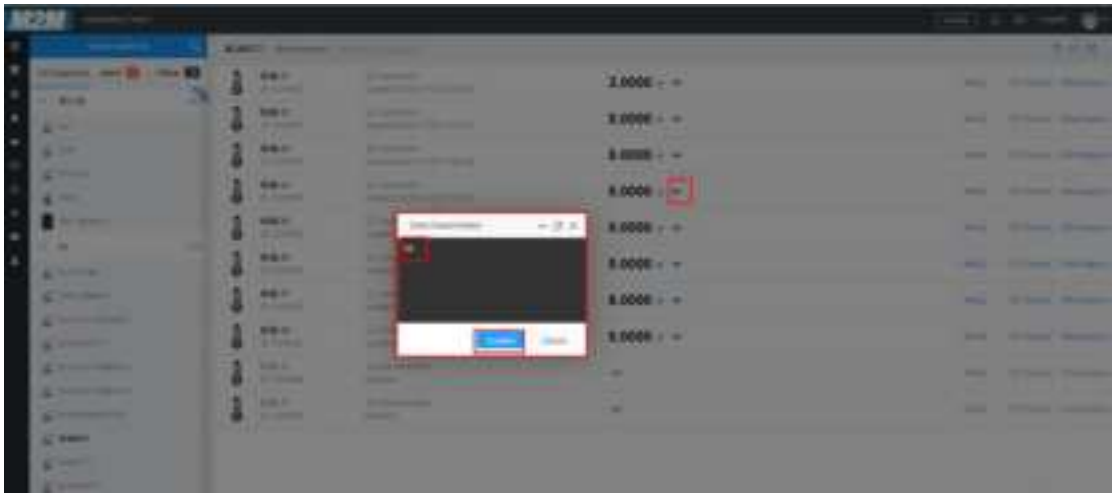


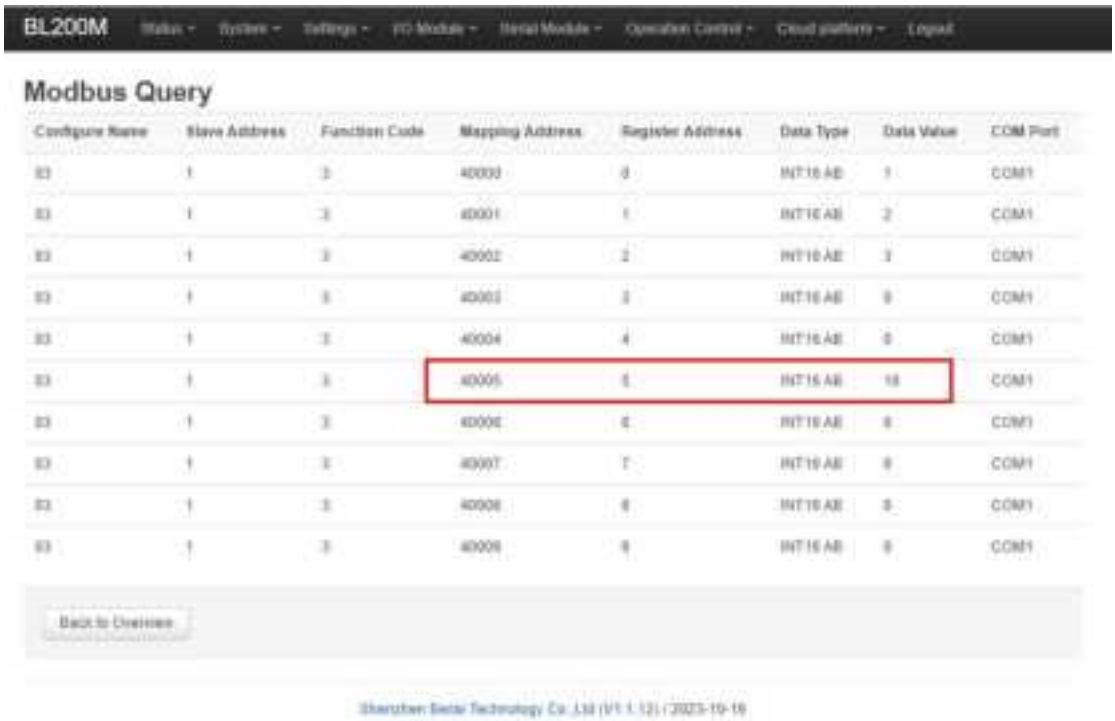


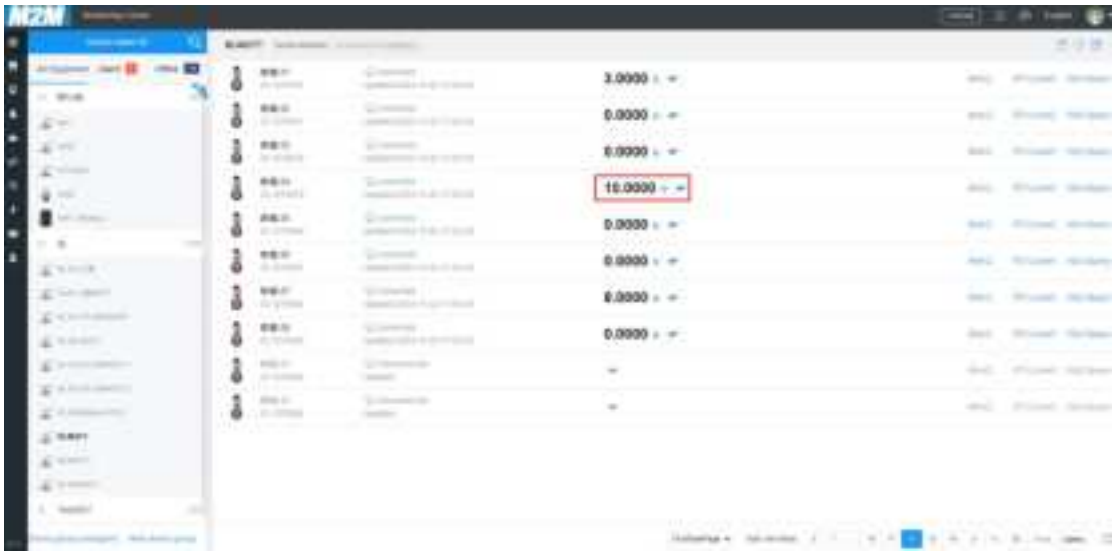

BL200M
Status
System
Settings
I/O Module
Serial Module
Operation Control
Cloud platform
Logout
IO status
IO Slot:1,Module Type:DO,Module Name:M2082
Channels
Modbus Address
Value
PowerOn Status
Open/Close
1
1000
Close
Open
Open/Close
2
1001
Close
Open
Open/Close
3
1002
Open
Open
Open/Close
4
1003
Open
Open
Open/Close
5
1004
Open
Open
Open/Close
6
1005
Open
Open
Open/Close
7
1006
Open
Open
Open/Close
8
1007
Open
Open
Open/Close
Back to Overview
Save & Apply
Save
Reset



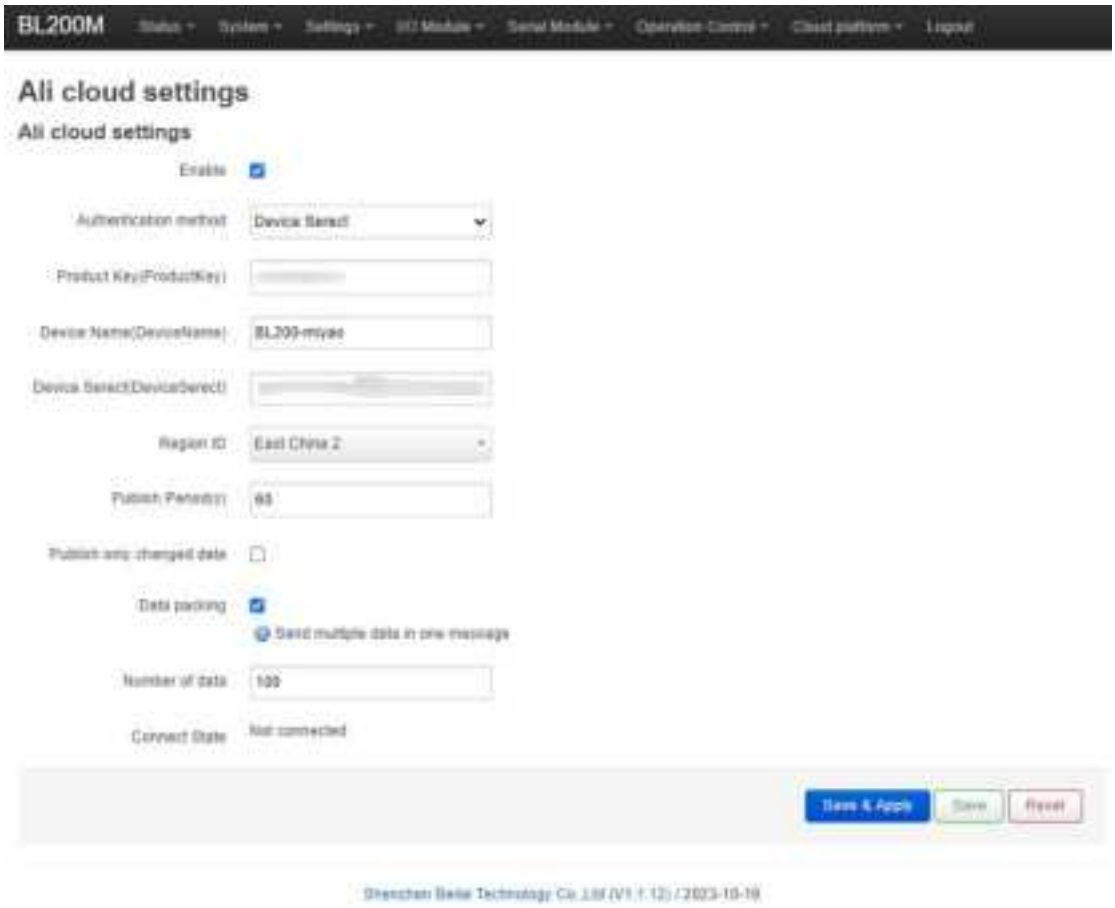

BL200M
Modbus Query
Configure Name
Slave Address
Function Code
Mapping Address
Register Address
Data Type
Data Value
COM Port
Back to Overview



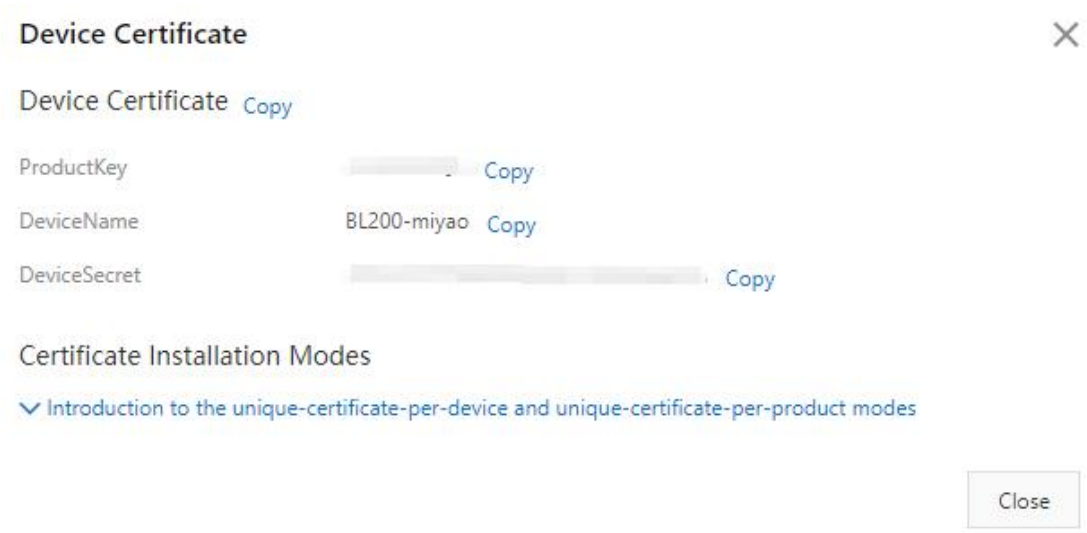

BL200M
Modbus Query
Configure Name
Slave Address
Function Code
Mapping Address
Register Address
Data Type
Data Value
COM Port



6.2.2.5 Connecting BL206 to AliCloud

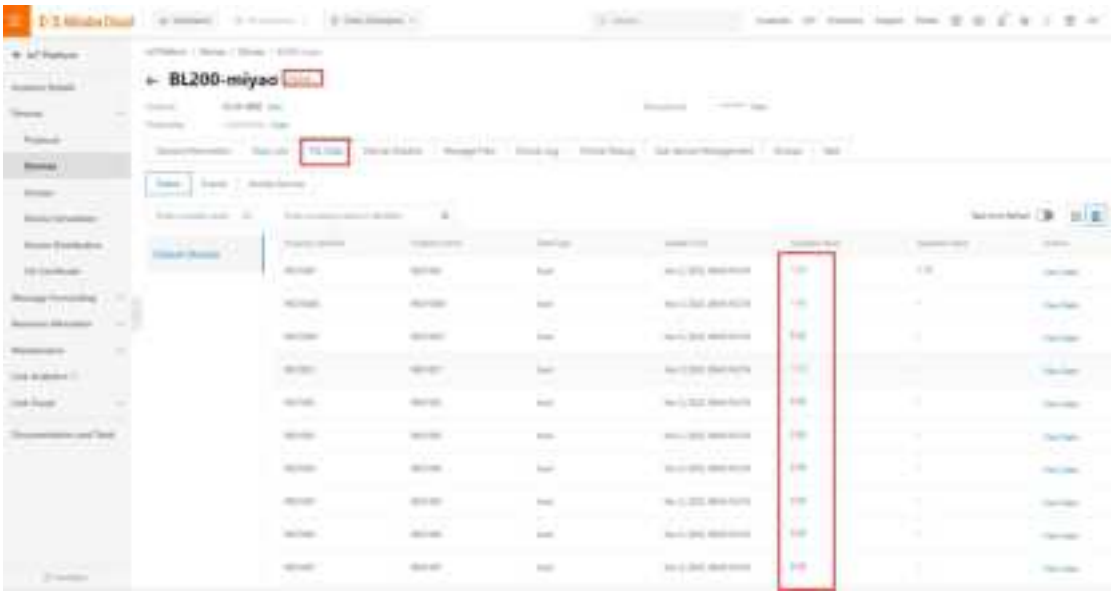


1. Click "Cloud Platform"-"Alicloud". 2. Click "Enable" and select "Device Secret Key" as the authentication method. 3. "Product Secret Key", "Device Name", "Device Secret" and the content of the device certificate of Aliyun platform are the same. 4, Select East China 2 for the region, fill in 60s for the release period, and customize the data packages by packing 100 packages each. 5, Click "Save and Apply", and send the configuration to BL206, and you can check the connection status to see whether the connection is successful.

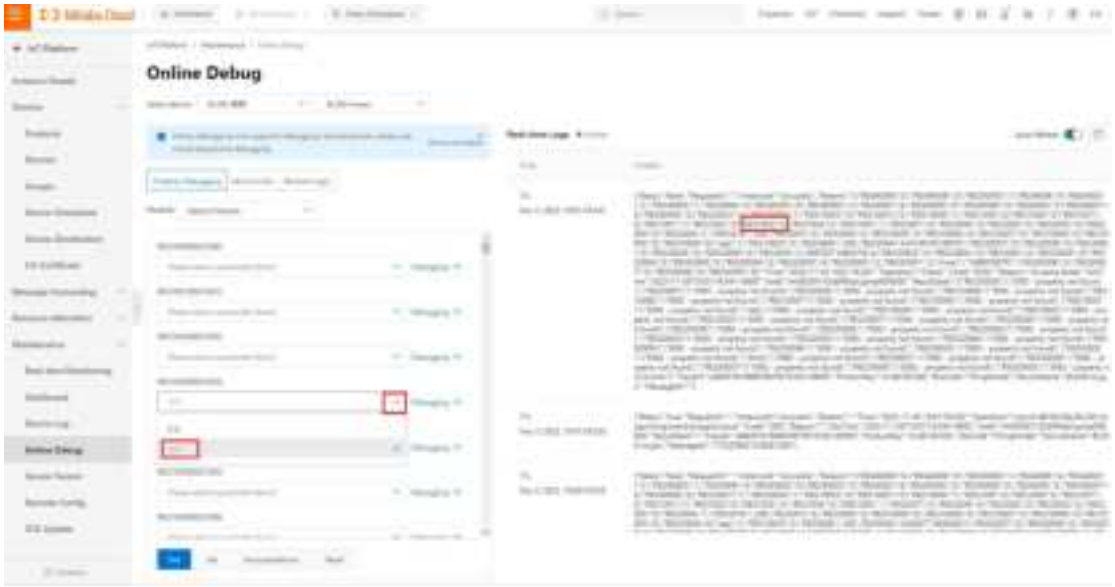


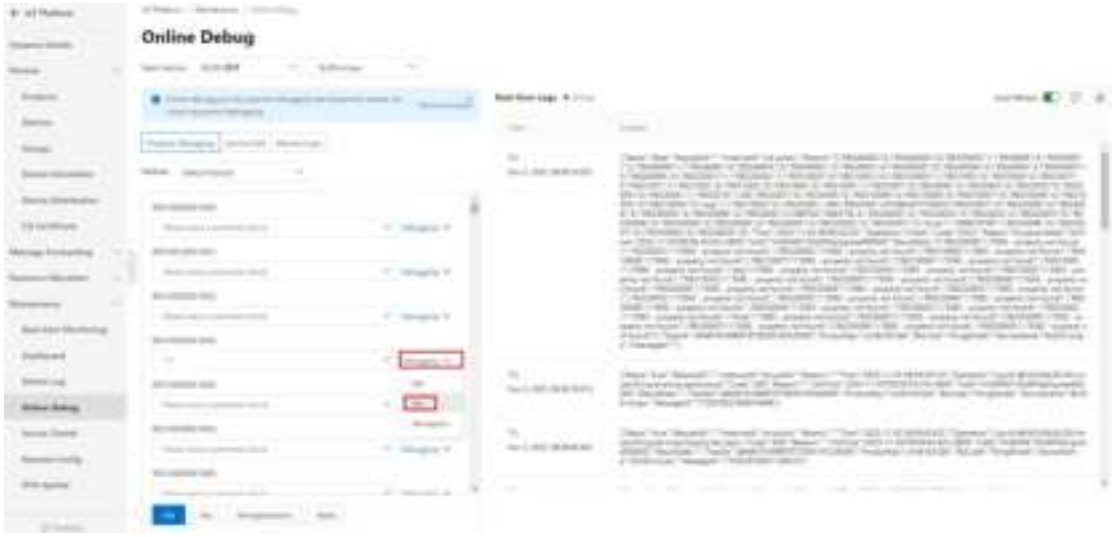
6.2.2.6 View and Send data on AliCloud

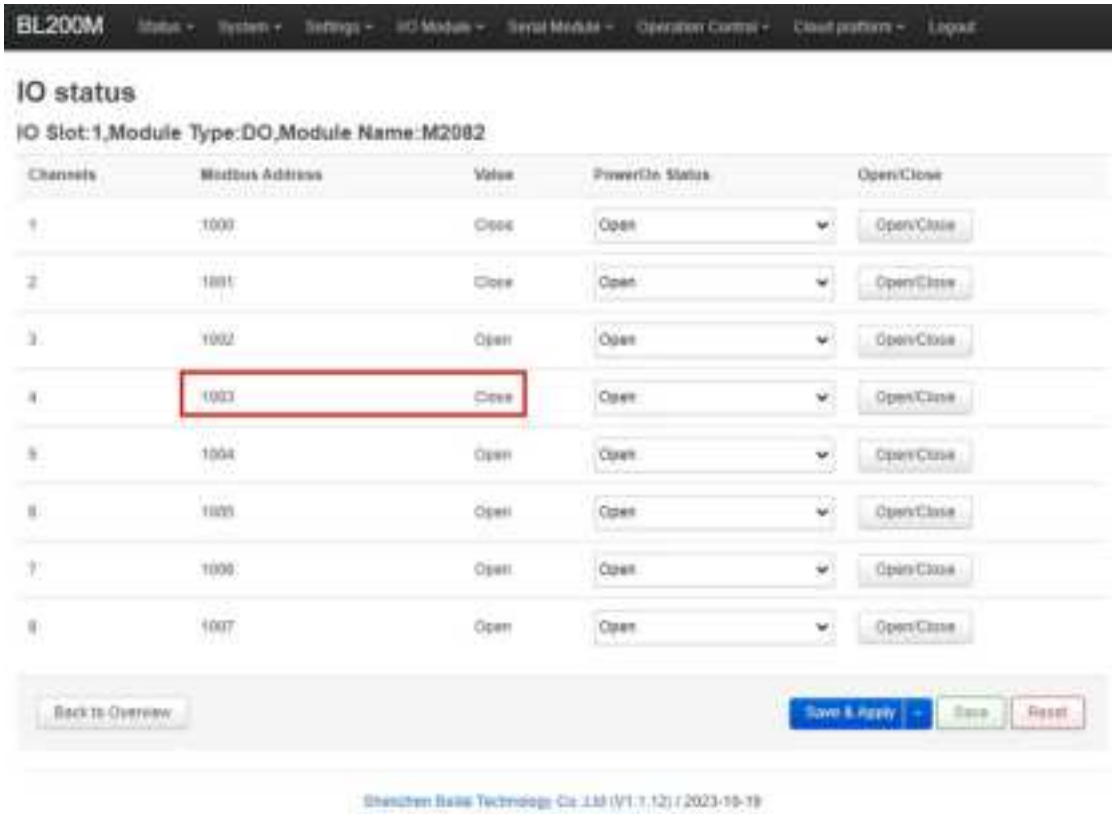
Login to Aliyun, click "TSL Data" to view the data, and refer to 7.1 Data Publish Format for data point read/write identification. The data of local I/O and serial port slave are as follows:

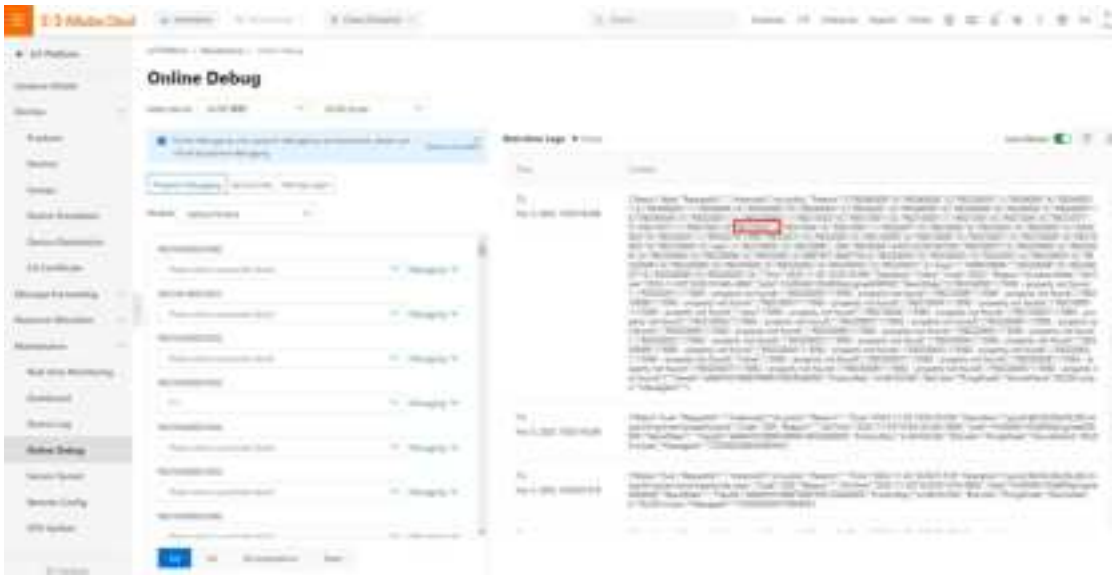


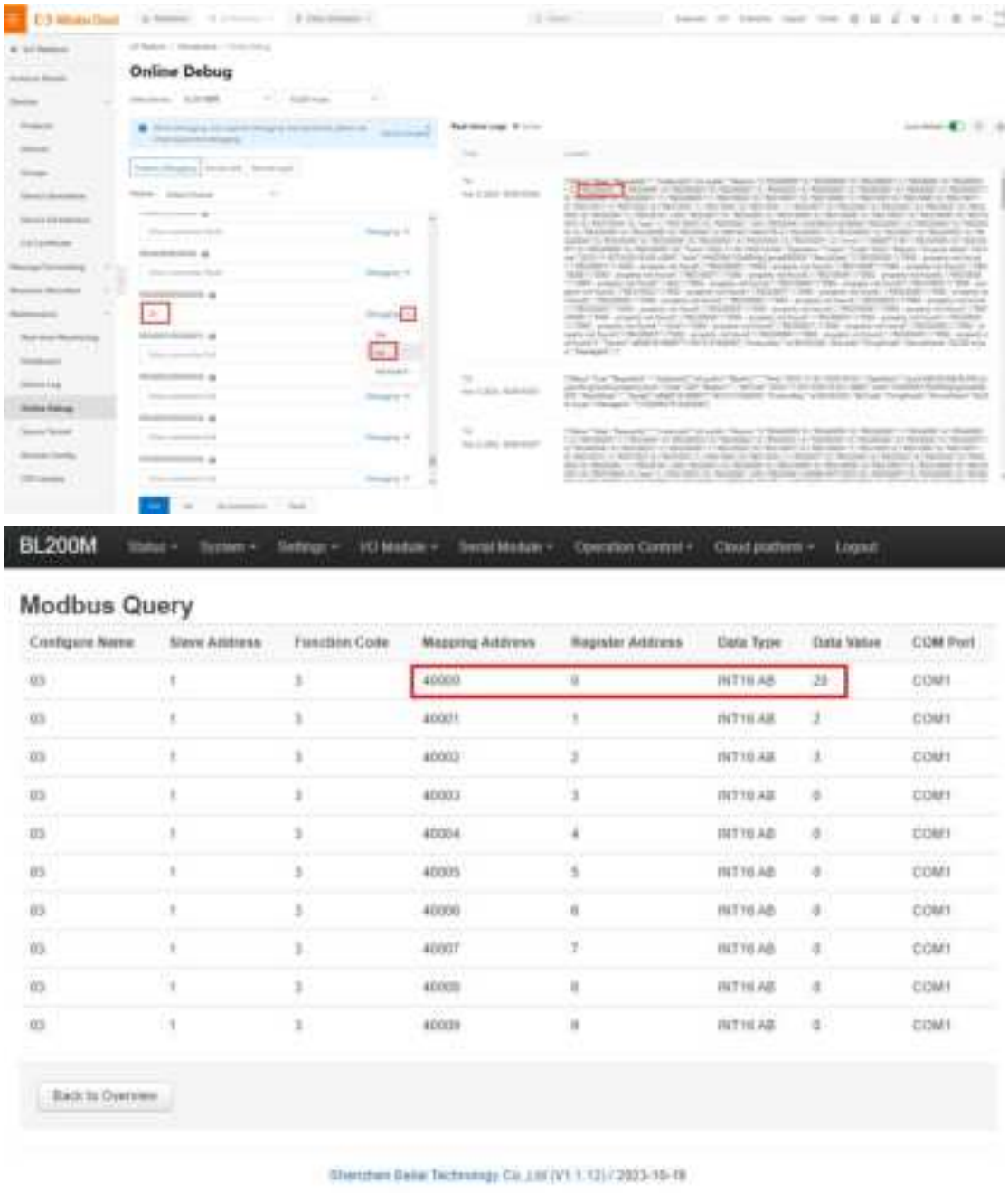
Send data: I/O REG1003 closed, serial slave REG4000 changed from "1" to "20".

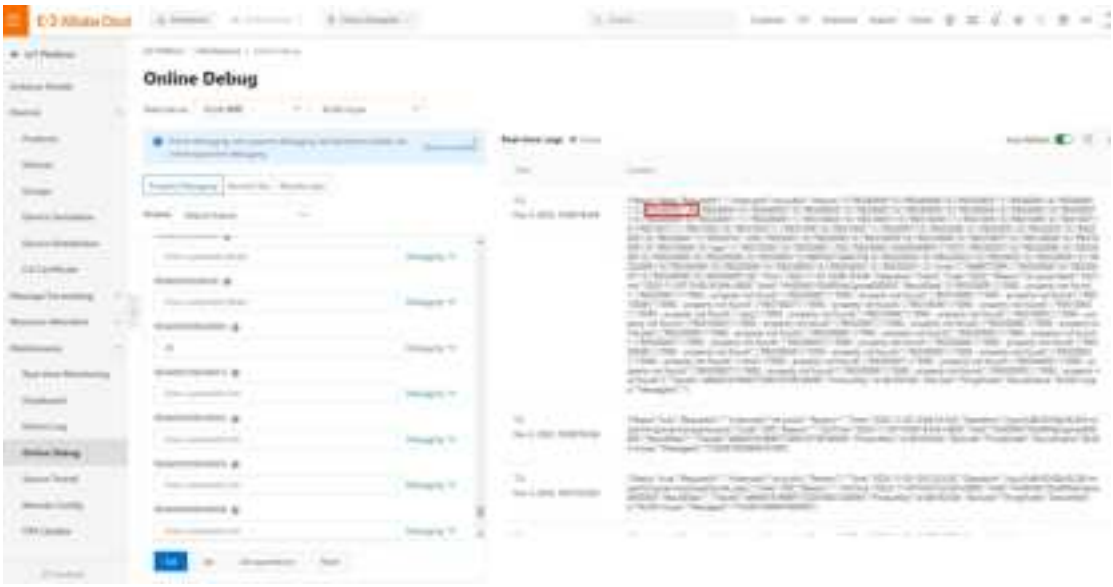




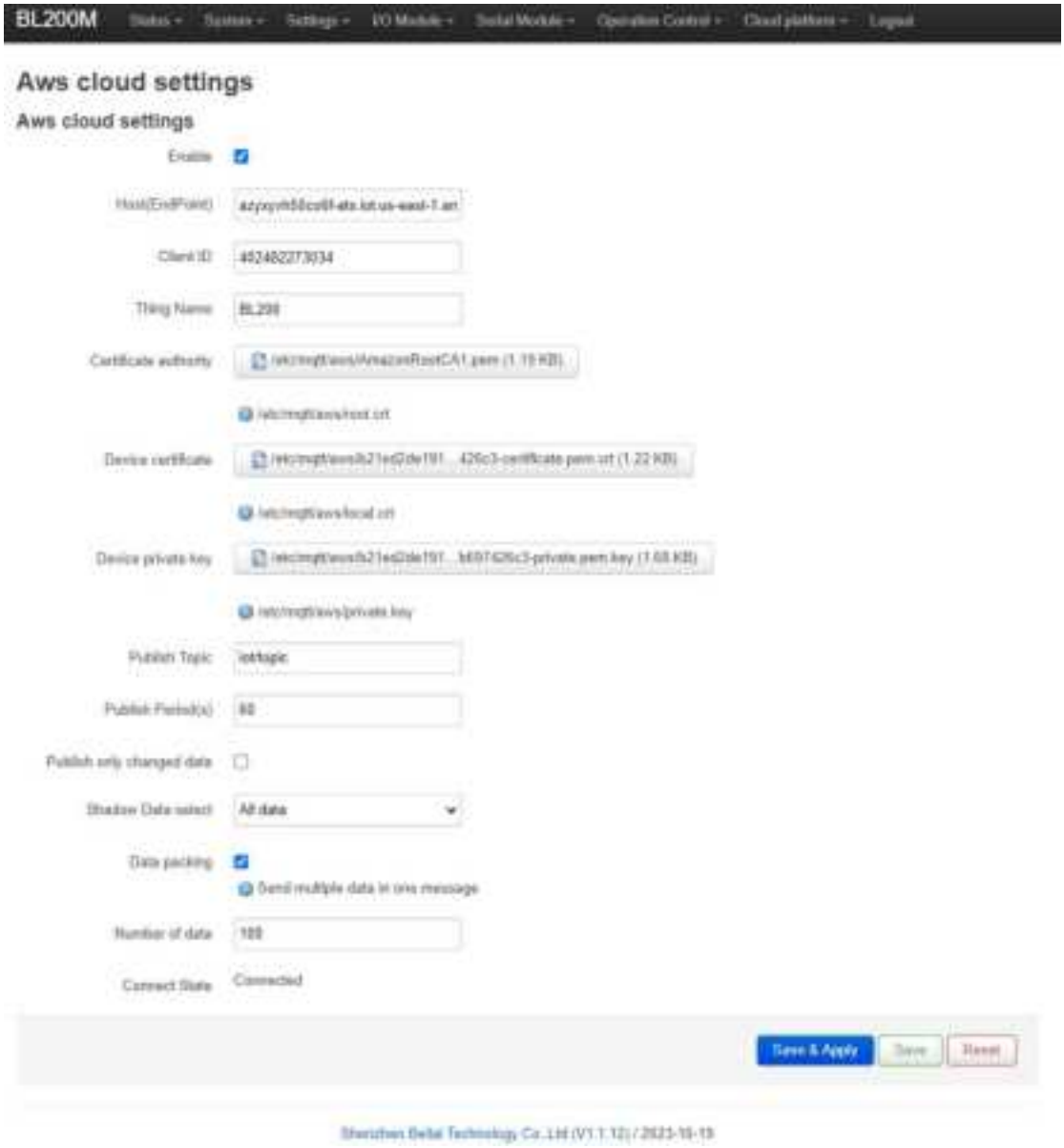

BL200M
IO status
IO Slot:1,Module Type:DO,Module Name:M2082
Channels
Modbus Address
Value
PowerOn Status
Open/Close
Back to Overview
Save & Apply
Save
Reset


Online Debug


Online Debug
BL200M
Modbus Query
Configure Name
Slave Address
Function Code
Mapping Address
Register Address
Data Type
Data Value
COM Port
Back to Overview


Online Debug

6.2.2.7 Connecting BL206 to the AWS

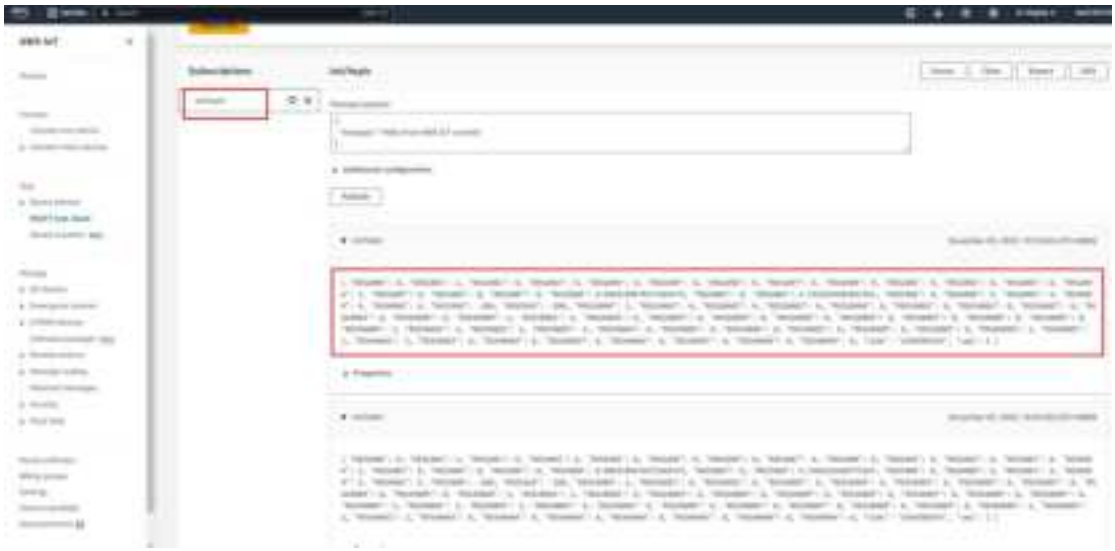


Instructions: 1. Click "Cloud Platform"-"AWS Cloud" 2. Click "Enable". 3. End point: Fill in the same node as the end point in "Settings"-"Device Data End Point" of Amazon Cloud Platform.

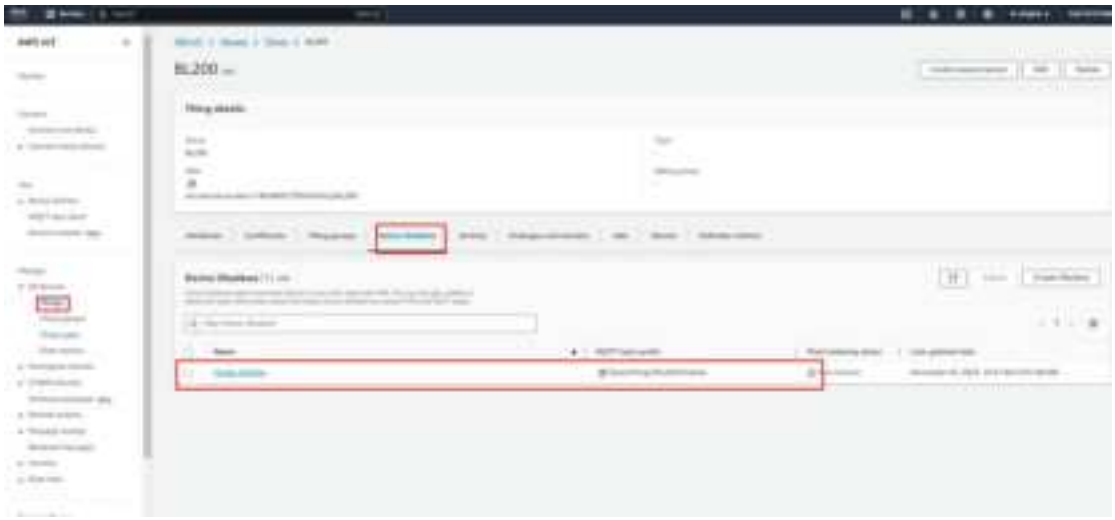
4. Client ID: Fill in the user ID, Thing name: Fill in the thing name created by Amazon.com. 5. Certificate authority, device certificate and device private key are the certificates generated when you upload the thing created by Amazon.com. Download them from Amazon.com. How to upload: Click "Select File"-"Upload File", click the certificate, click the open button in the pop-up window, click "Upload File" in the configuration interface, and upload it to the configuration box. Click "Upload File" in the configuration interface to upload it, select the certificate you need in the box and click it. 6. Publishing topic: Fill in the Amazon platform topic, such as iot/topic. 7. Publishing cycle: 60s. 8. Shadow data selection: Amazon platform shadow send to control BL206, do not need to send control, select "no", send control data can choose to support all data or individual data can be controlled. 9. Data packing 100 per package, customized. 10. Click "Save and Apply", send the configuration to BL206, the connection status can be queried whether the connection is successful.

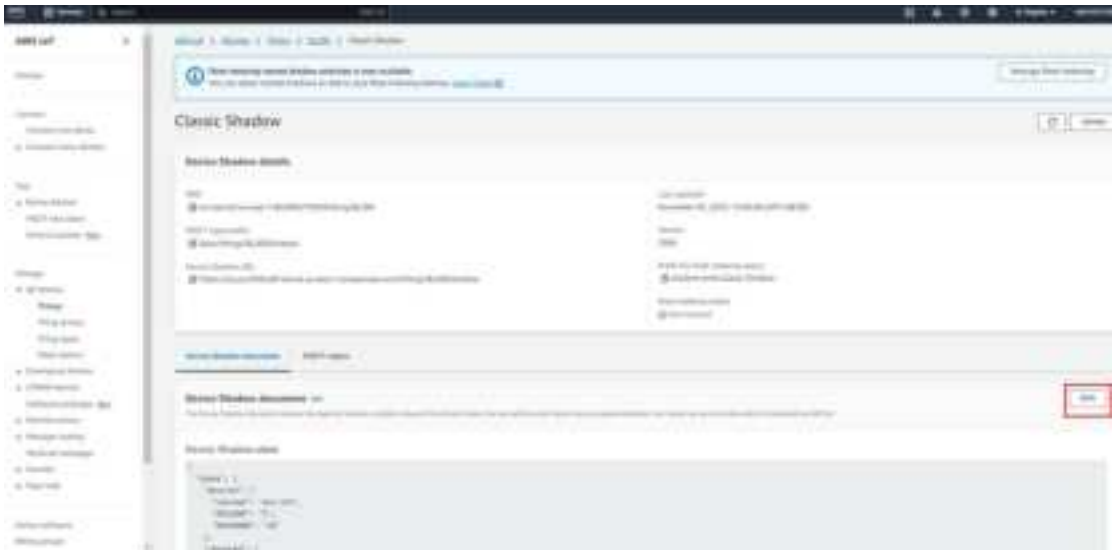
6.2.2.8 AWS View and Send Data

Click "MQTT Test Client" to subscribe to the BL206 Amazon Cloud Configuration publish topic "iot/topic".

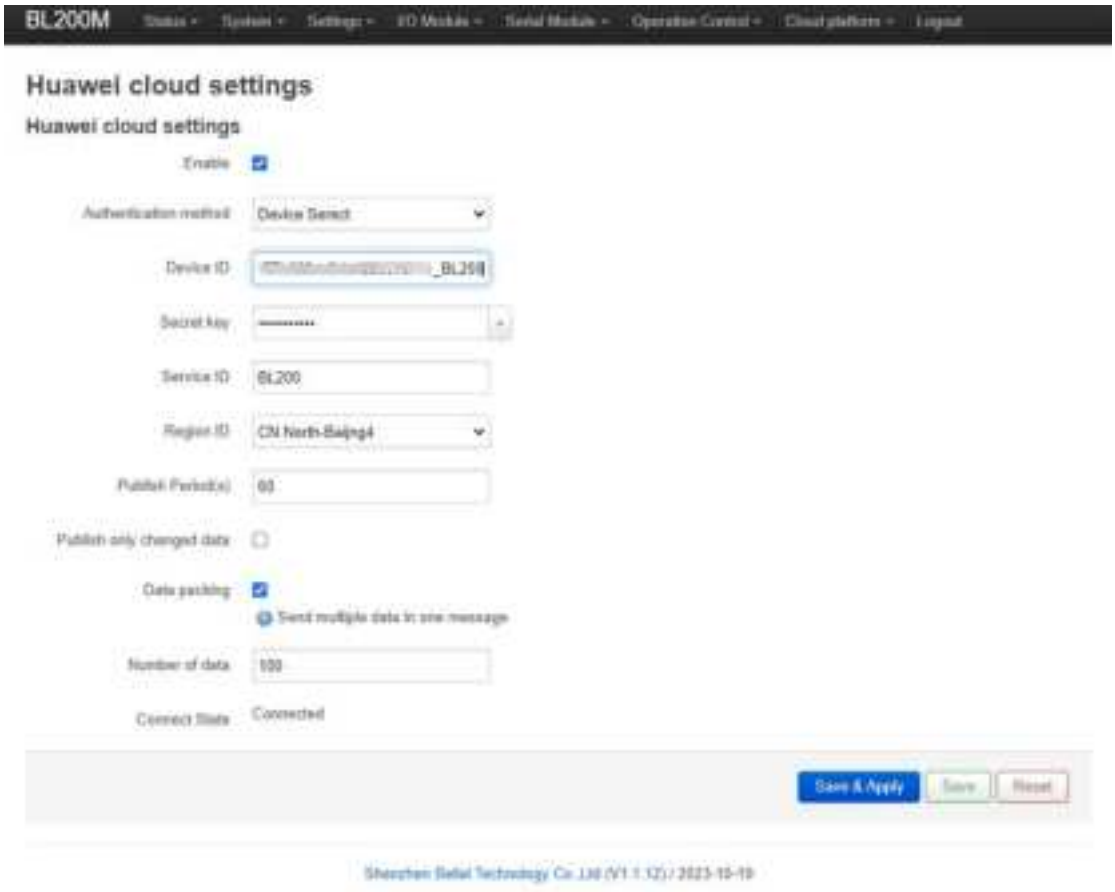


Shadow control REG1000 closed and slave REG40000 is changed from "1" to "20".




Classic Shadow

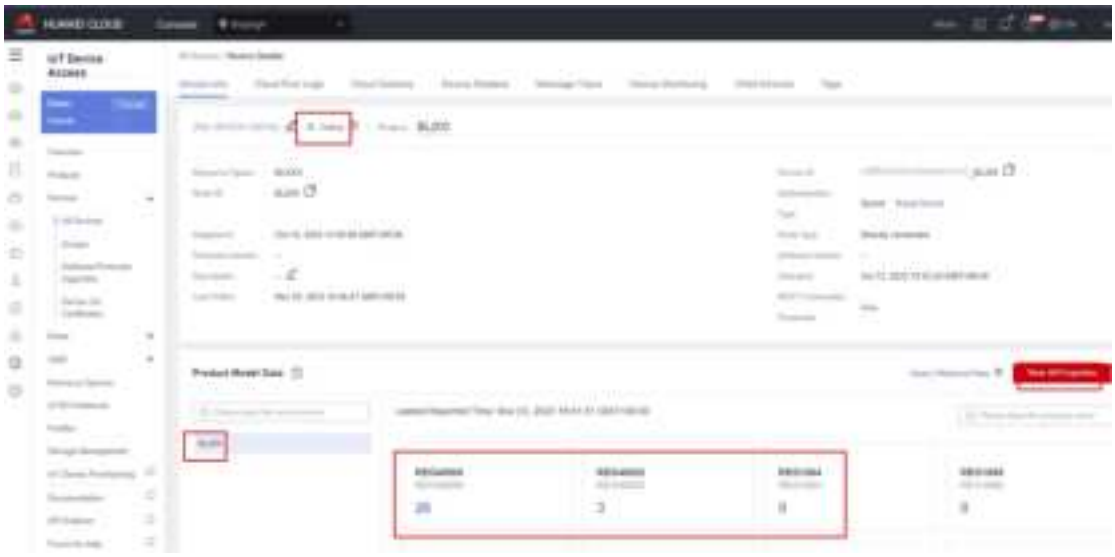
6.2.2.9 Connecting BL206 to Huawei Cloud

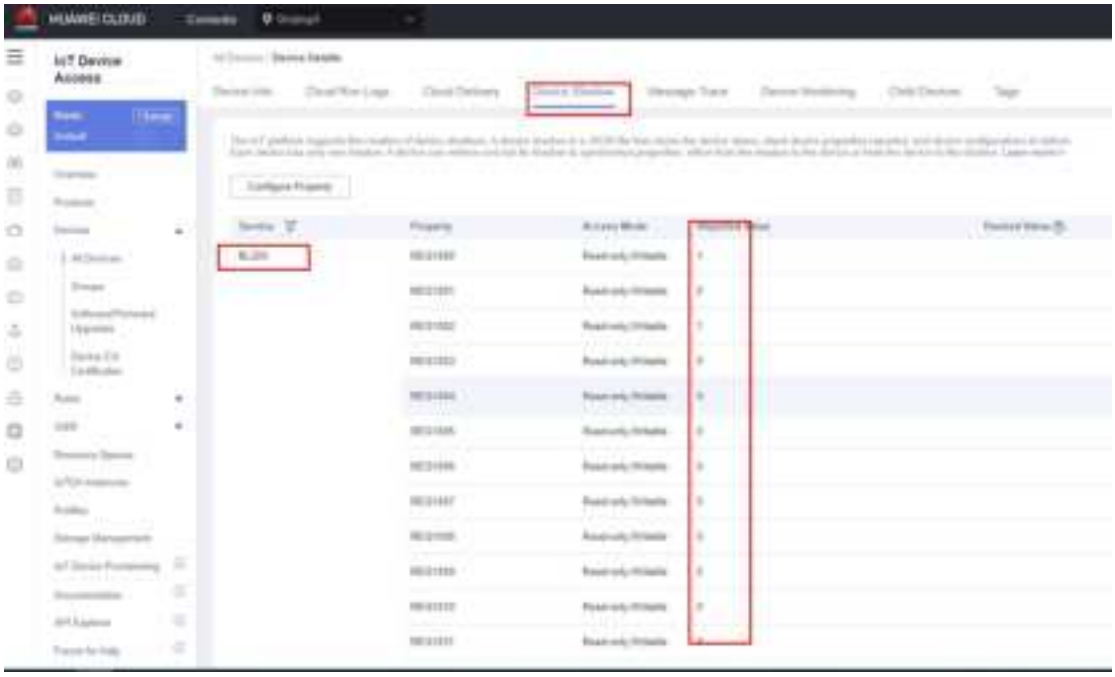


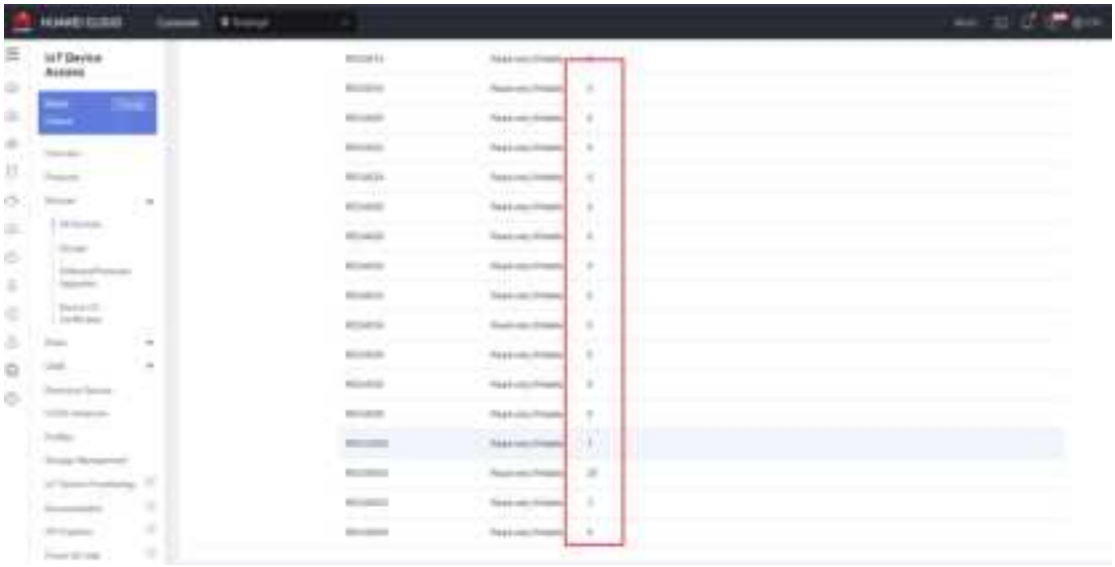
Instructions: 1. Click "Cloud Platform"-"Huawei Cloud". 2. Click "Enable" and select "Device Secret" as the authentication method. 3. Device ID is the same as the device ID of Huawei Cloud Platform, and the key is the password entered by Huawei Cloud Platform to create the device. 4. Service ID is the same as the service ID of Huawei Cloud Platform to create the product. 5. Region ID: Select North China-Beijing4, and you can fill in the IP address if you select others. 6. Publish period: 60s 7. Data packing 100 per package, customized. 8. Click "Save and Apply", the Huawei Cloud configuration is sent to BL206, and the connection status can be queried whether the connection is successful or not.

6.2.2.10 Huawei Cloud View and Send Data

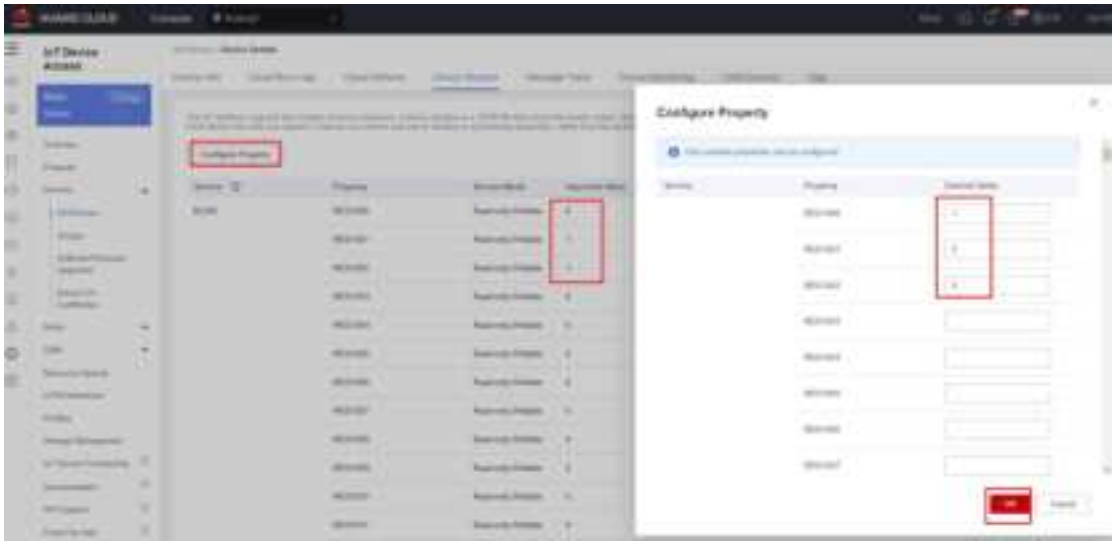
Log in to Huawei Cloud, click Device - Device Info to view the data, and click View All Attributes or Device Shadow to view the data. Click "View All Properties" or "Device Shadow" to view the data, and refer to 7.1 Data Publish Format for data point read/write identifiers. The data of local I/O and serial port slave are as follows:

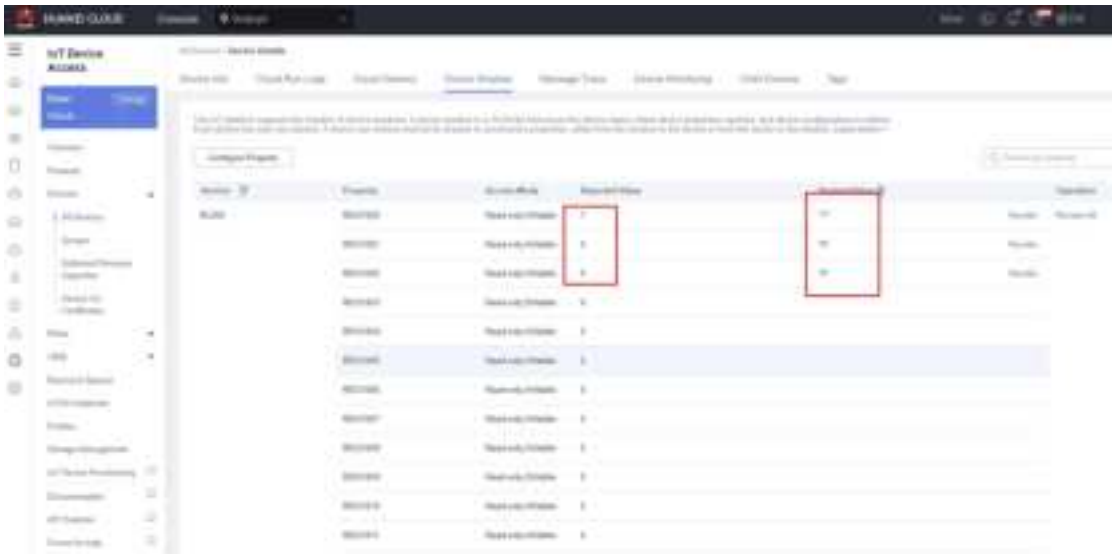






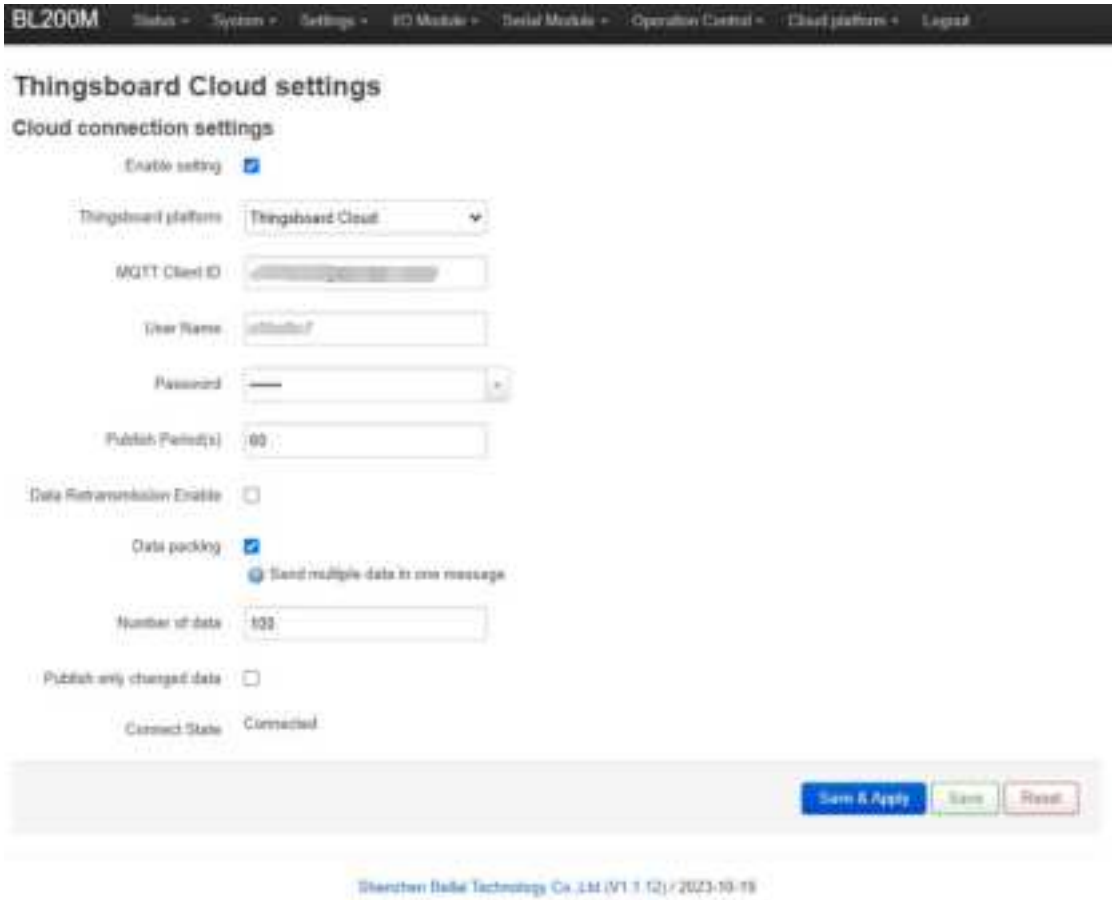
Shadow send: Control REG1000 to close, REG1001 to disconnect, REG1002 to disconnect. Shadow send control AO and control DO with the same principle, need to output how much value, fill in the value can be, AO send control does not do the demonstration.BL206 Huawei Cloud temporarily does not support the message send down and command send down way control.





6.2.2.11 Connecting Thingsboard

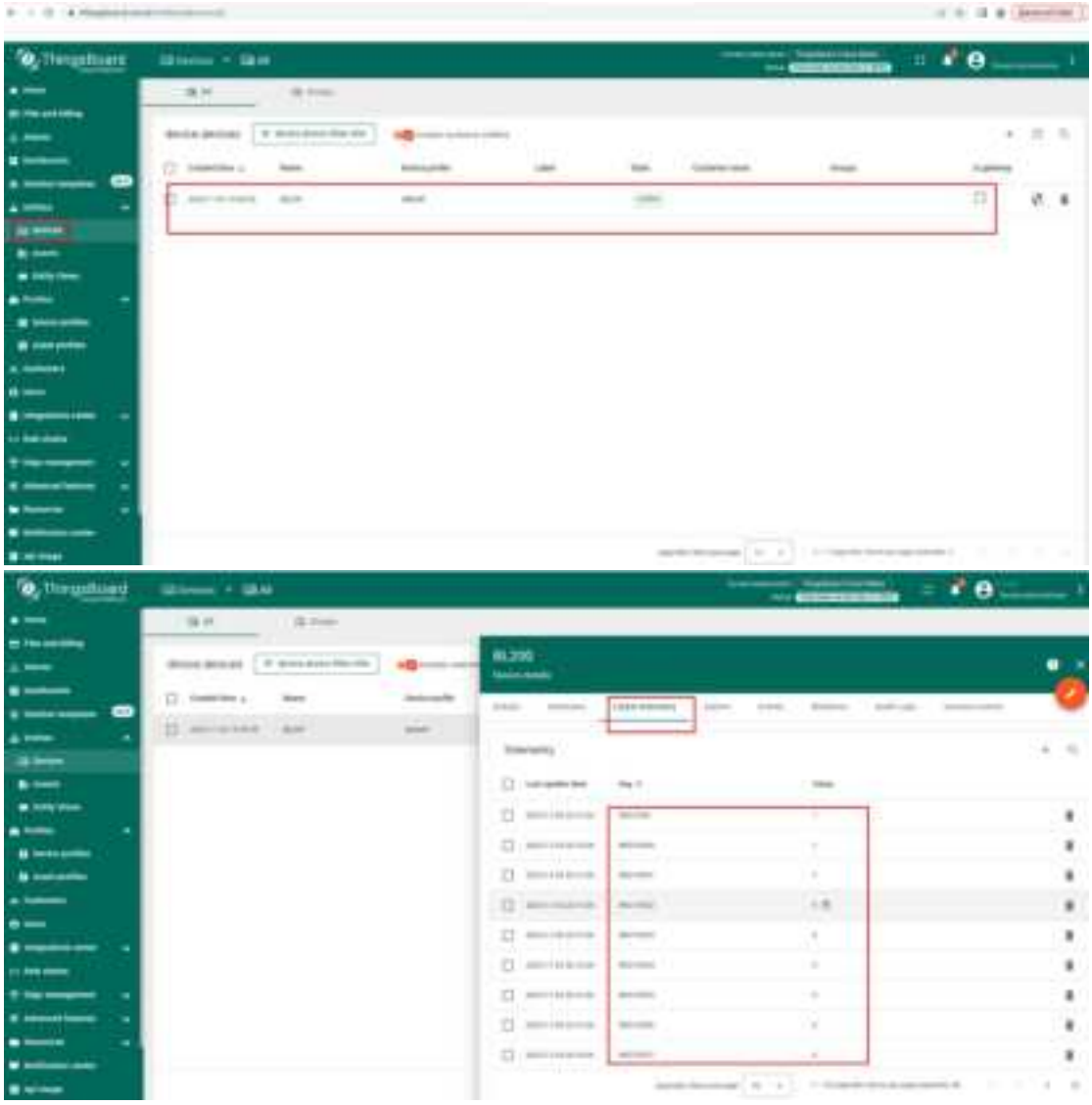
Thingsboard cloud connects to the Pro version of the cloud service with the domain name: thingsboard.cloud. To connect to other thingsboard-formatted cloud platforms, select "Other thingsboard servers". For the time being, only the topic: v1/devices/me/telemetry is supported.

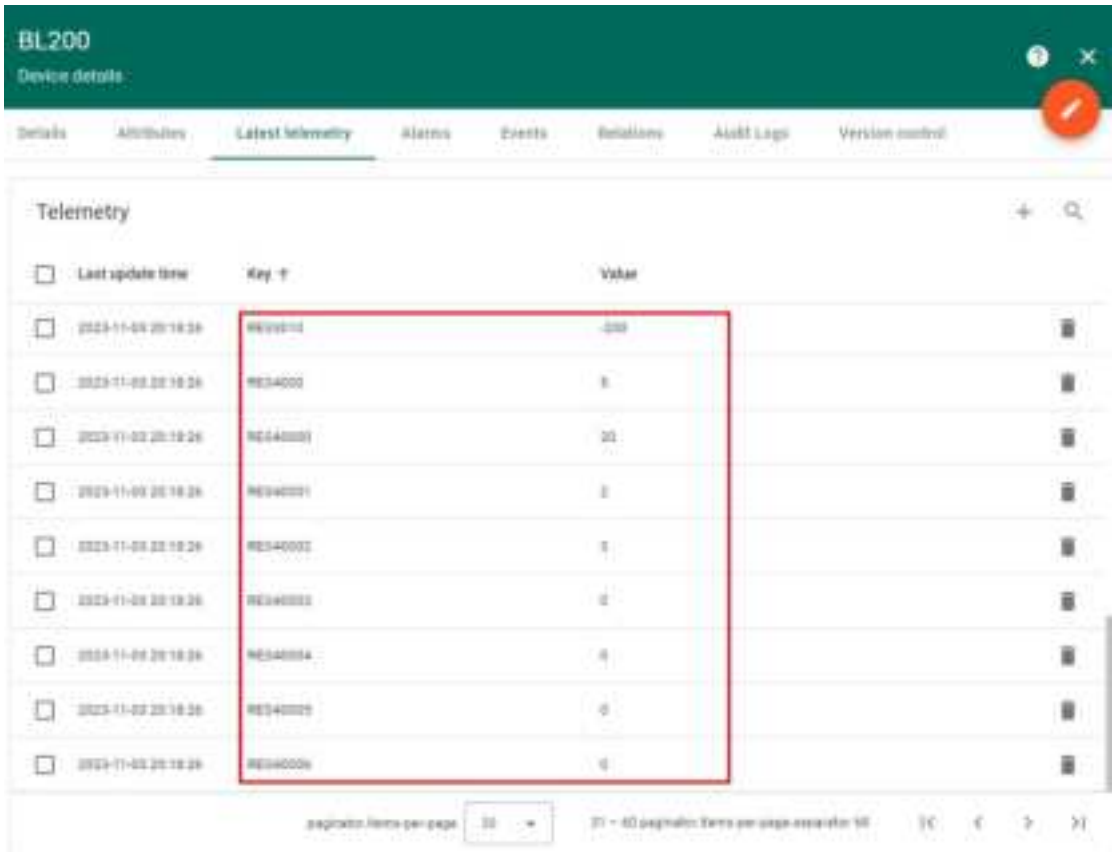


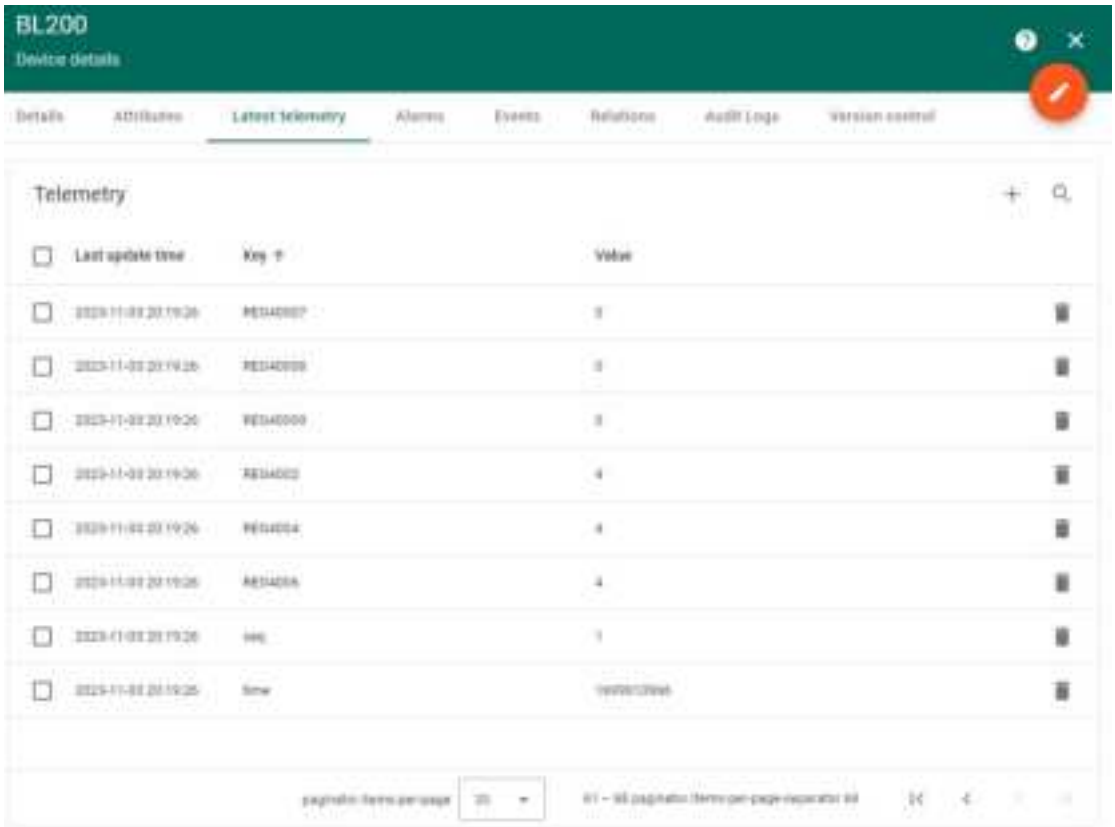
Instructions: 1. Click "Cloud Platform"-"Thingsboard Cloud". 2. Click "Enable" and select "ThingBoard Cloud". 3. Fill in the MQTT client ID, user name and password in the same way as you fill in MQTT Basic when you create a device for thingsboard platform. 4. Publish period: 60s. 5. Data Packaging 6. Click "Save and Apply" to send the thingsboard cloud configuration to BL206, and you can check whether the connection status is successful or not.

6.2.2.12 Thingsboard View Data

Thingsboard sends down control data that is not supported at this time.




BL200
Device details
Telemetry
Last update time
Key
Value


BL200
Device details
Telemetry
Last update time
Key
Value

7 Custom MQTT Protocol

7.1 Data Publish Format

If data packaging is checked during configuration, multiple I/O data points will be sent in one message (multiple messages will be sent separately when there are many data points, and each message contains multiple data points), if not checked, the message only corresponds to one I/O data point, and there are some differences between the two publishing formats.

1) The payload data format in the device publish message

Publish subject: Corresponding to the configured publish subject setting item

{
"REG1000": 1, //Device DO read/write identifier and value
"REG2000": 1, //Device DI reads and writes identifiers and values
"REG3000": 2, //Device AI read/write identification and value
"REG4000": 3, //Device AO read and write identifiers and values
"REG10000": 1, //Serial Port Collect Slave 01 Function Code Read/Write Identification and Value
"REG20000": 1, //Serial Port Collect Slave 02 Function Code Read/Write Identification and Value
"REG30000": 8, //Serial Port Collect Slave 04 Function Code Read/Write Identification and Value
"REG40000": 10, //Serial Port Collect Slave 03 Function Code Read/Write Identification and Value
"time": "1698910380", //Time stamp, data publish timestamp in UTC format
"seq": 1 //Number of packets, packet number
"retransmit":"enable"//Retransmission identifier, indicating historical data (retransmission of historical data has this identifier, real-time data does not have this identifier)
}

Note:

1. Device I/O data point read and write identification:

Data name	Read and write identification	Data type	Description
DO	REG1000~1999	Switcher	0 is open, 1 is close

DI	REG2000~2999	Switcher	0 is open, 1 is close
AI	REG3000~3999	Value	true value = original value
AO	REG4000~4999	Value	true value = original value

2. Serial port module slave I/O data point read and write identification:

Data name	Read and write identification	Data type	Description
Coil state	REG10000~19999	Switcher	According to slave data definition
Input coil	REG20000~29999	Switcher	According to slave data definition
Holding register	REG40000~49999	Value	According to slave data definition
Input register	REG30000~39999	Value	According to slave data definition

7.2 Subscribe Data Format

Payload data format in device subscribe message

Subscribe topic: serial number/+ (corresponding to the configured subscribe topic setting item) (The topic used by BLIIoT V2.0 for downlink publishing messages is named "Serial Number/Sensor ID", so the device subscribe topic needs to add a wildcard "/+", so that the data sent by the platform can be received for control)

{
"REG1000":1, //Device DO downstream control
"REG4000":5, //Device AO downstream control
"REG10001": 1, //Serial Port Slave DO downstream Control
"REG40008":8 //Serial Port Slave AO downstream Control
}

8 Warranty

1) This equipment will be repaired free of charge for any material or quality problems within one year from the date of purchase.
2) This one-year warranty does not cover any product failure caused by man-made damage, improper operation, etc.

9 Technical Support

Shenzhen Beilai Technology Co., Ltd
Website: https://www.bliiot.com