EdgelO





BL206 BL206Pro 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 BL206 and BL206 Pro.

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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
		Add Profinet, EtherCAT	
2022-07-01	V1.1	protocol, add platform, logic	HYQ
		control functions	
2023-07-27	V1.1	Change Model name	HYQ
2022 10 24	1/1 0	Add BL203, BL206, BL207	
2023-10-24 V1.2		description	
2023-10-24	V1.2	User manual split by model	HYQ



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1 Product Introduction

1.1 Overview

The BL206Pro EdgelO controller is a data acquisition and control system based on a powerful 32-bit microprocessor design with Linux operating system, supports Modbus, MQTT, OPC UA protocols for quick access to on-site PLC, DCS, PAS, MES, Ignition, and SCADA as well as ERP systems, as well as quick connectivity to a number of cloud platforms such as AWS Cloud, Thingsboard, Huawei Cloud, and Ali Cloud.

The I/O system supports programmable logic control, edge computing, and customized applications, it is widely applicable to a variety of IIoT and industrial automation solutions.

The BL206Pro distributed I/O system consists of 3 parts: Controller, I/O modules and terminal module.



The communication between the I/O and the field devices (eg PLC) takes place via the Ethernet port of the controller, and the communication between the controller 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 BL206Pro controller 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

High reliability, easy expansion, easy setting, and convenient network wiring, these capabilities let users efficiently adapt the BL206Pro I/O system to a variety of complex industrial solutions.

The I/O system is widely applicable to a variety of industrial solutions, such as Internet of Things, smart factories, smart cities, smart medical care, smart homes, smart transportation, data center power environment monitoring, electric power, oil monitoring, automobiles, warehousing and logistics and other industries.

1.3 Features

- > Each I/O system can have a maximum of I/O 32 modules.
- > Support Modbus, MQTT, OPC UA protocols.
- Support Alibaba Cloud, Huawei Cloud, AWS Cloud, Thingsboard, Ignition, etc.
- > Support programmable logic control, edge computing.
- 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	Туре
Modbus-TCP I/O Coupler	BL200	/	/
Profinet I/O Coupler	BL201	/	/
EtherCAT I/O Coupler	BL202	/	/
Ethernet/IP I/O Coupler	BL203	/	/



OPC UA EdgelO Controller	BL205	1	/
MQTT EdgelO Controller	BL206	1	MQTT
MQTT+OPC UA+Modbus TCP	BL206Pro	1	MQTT, OPC UA, MQTT
BACnet/IP I/O Coupler	BL207	1	/
BACnet/IP+MQTT+OPC UA	BL207Pro	1	/
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 Controller



2.2 Dimension

Unit:mm



2.3 Data Contacts/Internal Bus

The communication between the I/O controller 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 controller 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.	Туре	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 controllers and I/O modules from Beilai Technology must be mounted on a standard DIN 35 rail.

Starting from the controller, 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 Controller

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 Controller

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 controller 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 controller 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 controller (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, ¹⁶ Shenzhen Beilai Technology Co., Ltd V1.2 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 BL206Pro controller supplies power for the internal electronics of the controller 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

BL206Pro controller 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

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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 BL206 Series Controller

5.1 BL206 MQTT EdgelO Controller

5.1.1 BL206 Overview

The BL206 controller supports MQTT protocol, and data can be uploaded to Alibaba Cloud, Huawei Cloud, AWS Cloud, Thingsboard, BLIIoT cloud, Custom MQTT cloud.



5.1.2 Technical Parameters

Name	Parameters	Description		
	Input voltage(system)	24 VDC		
	Input current(system)	MAX 500 mA@24VDC		
	Power Efficiency	84%		
System	Internal bus voltage	5VDC		
power	Controller current	MAX 300mA@5VDC		
	consumption			
	I/O current consumption	MAX 1700mA@5VDC		
	Isolation protection	500 V system/supply		
	Input voltage (field)	24 VDC		
Field power	Current carrying capacity			
	(power jumper contacts)	MAX TO ADC		
	Number	2 X RJ45		
	Transmission medium	Twisted Pair STP 100 Ω Cat 5		
Ethorpot	MAX cable length	100m		
Ellemer	Baud rate	10/100 Mbit/s		
	location protoction	ESD contact 8KV, Surge		
		4KV(10/1000us)		
	Operating system	Linux		
	CPU	300MHz		
System	RAM	64MB		
System	Flash	128MB		
	Number of I/O modules	MAX 32		
	Protocols	MQTT, HTTP, DHCP, DNS		
	Method	CAGE CLAMP		
Wiring	Wire diameter	0.08 mm ² ··· 2.5 mm ² , AWG 28 ··· 14		
	Strip length	8 mm 9 mm / 0.33 in		
	Working temperature	0 - 55 ° C		
Environment	Storage temperature	-40 ··· 70 ° C		
	Relative humidity	5 ··· 95% no condensation		
	Working altitude	0 2000 m		
	Protection	IP20		
	Width	48mm		
Dimension	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
		EN 55022: 2006/A1: 2007 (CE &RE)
	EMC	Class B
		IEC 61000-4-2 (ESD) Level 4
Cortificated		IEC 61000-4-3 (RS) Level 4
Certificated		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

PWR SYS RUN ERR IO RUN IO ERR				
LED	Description	Color	Status	Meaning
PWR	Power indicator	Red	ON	Power connection successful
			OFF	No power
eve	System indicator	Croop	ON	System is abnormal
515	System indicator	Green	OFF	System is running normally
	Crean	Flashing	System is running normally	
	Running Indicator	Green	OFF	System is abnormal
ERR	Error indicator	Red	ON	Northbound 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	
c	System 24V power	Croop	ON	Power is OK	
5	indicator	Green	OFF	No power	
F	Field 241/ nower indicator	Crean	ON	Power is OK	
	Field 24V power indicator	Green	OFF	No power	

5.1.3.2 Ethernet Port

Connect to the Ethernet-based fieldbus through ETH2.

EHT1 is used to connect other nodes that need to be connected to the Ethernet.



5.1.3.3 IP Address Selection Switch

The 8-bit DIP switch is used to set the IP address. The encoding of DIP switches is done bit by bit, starting from DIP switch 1 with the least significant bit (2^0) to DIP switch 8 with the most significant bit (2^7) , corresponding to decimal values: 0-255.





When the value of the DIP switch is 1111 1111 (decimal 255), the IP address is set according to the web page. The web page setting can specify the IP or set the automatic acquisition. When the web page is not set, the IP address is: 192.168.1.10 When the value of the DIP switch is 0000 0000 – 1111 1110 (decimal 0-254), determine the 3rd byte of the IP address, and the 1st, 2nd and 4th bytes are fixed bytes, namely 192.168.xxx.253

5.1.4 MQTT Identifiers

The MQTT identifier is REG+Modbus mapping address (such as the first DO module first DO: REG1000).

5.1.5 Controller Connection

The BL206 controller comes with 2 x RJ45 Ethernet ports, integrated switch function inside, work in store-and-forward operation mode, each port supports 10/100 Mbit transmission speed and full-duplex and half-duplex transmission mode.

The BL206 controller connect to the router Ethernet network via ETH2 only, while the EHT 1 is for connecting other nodes.

The internal integrated switch supports bypass mode, which can automatically start the bypass mode when the controller system fails, and automatically maintain the link between ETH1 and EHT2.

The wiring of these Ethernet ports conforms to the 100BaseTX specification, which specifies the use of category 5 twisted pair cable as the connecting cable. Cable types S/UTP (Screened unshielded twisted pair) and STP (shielded twisted pair) can be used up to a length of 100m.





5.1.6 Web Page Configuration

BL206 MQTT Controllerr built-in web server is a browser-based configuration utility. When a node is connected to your network, you can access the web console by entering the IP address of the server in your web browser.

5.1.6.1 Preparation Before Configuration

To successfully access the BL206, 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.

5.1.6.1.1 Connect Computer and Controller

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 "Controller 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.

5.1.6.1.2 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.

Verbinding	Victoria de Carto	
IPv4-verbindin	gsmogelijkheden:	Internet
IPv6-verbindin	gsmogelijkheden:	Geen internettoegang
Status van me	dia:	Ingeschakeld
Tijdsduur:		00:11:18
Snelheid:		100,0 Mbps
	9	
Activiteit		
Activiteit	/erzonden —	— Ontvangen
Activiteit	/erzonden — 1,131,653	Ontvangen 40,190,950

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



Verbinding maken via	9	
Realtek PCIe G	BE Family Controller	
Deze verbinding heeft	de volgende onderdel	Configureren
	Manner printerdeling voor Mici ocol versie 6 (TCP/IPv icol versie 4 (TCP/IPv pramma van Link-Layer oppology Discovery Res	osoft-netwerken 6) Topology Discovery ponder Eigenschappen
Papabrining	1	tocal Het

- 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";

lgemeen	Alternatieve configuratie				
IP-instellir deze mog netwerkb	ngen kunnen automatisch v elijkheid ondersteunt. Als o eheerder naar de geschikt	worden toeg dit niet het g e IP-instellin	jewezer jeval is, gen te	n als het , dient u vragen.	netwerk de
Auto	matisch een IP-adres later	n toewijzen	1		
Het	volgende IP-adres gebruik	en:			
IP-adre	es:				
Subnet	masker:			4	
Standa	ardgateway;		4	4	
 Auto 	matisch een DNS-serverad	dres laten to	ewijzer	n	
O De v	olgende DNS-serveradress	sen gebruike	en:		
Voorke	urs-DNS-server;	<u></u>	+	+	
Alterna	tieve DNS-server:				
🗌 Inste	llingen tijdens afsluiten val	lideren		Geava	nceerd

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.



lgemeen IP-instellingen kunnen automatisch word deze mogelijkheid ondersteunt. Als dit r	den toegewezen als het netwerk niet het geval is, dient u de
netwerkbeheerder naar de geschikte IP	-instellingen te vragen. ewijzen
e Het volgende IP-adres gebruiken:	
IP-adres:	192 . 168 . 1 . 202
Subnetmasker:	255 . 255 . 255 . 0
Standaardgateway:	192.168.1.1
Automatisch een DNS-serveradres	i laten toewijzen
De volgende DNS-serveradressen	gebruiken:
Voorkeurs-DNS-server:	192.168.1.1
Alternatieve DNS-server:	
Instellingen tijdens afsluiten valider	Geavanceerd

5.1.6.1.3 Configure Controller 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 sele	ctor switch	definition
------------------	-------------	------------

Switch position (ON = 1)	Value	Definition
	0-254	Enable the DIP selector switch assignment
0000 0000		function and determine the value of the 3rd
1111 1110		byte.
		Example: 0010 0110 (22 decimal), the IP
		address is "192.168.22.253".
		Enable the function of specifying IP on the
		web page, or select the function of DHCP
1111 1111	255	automatic allocation. When the IP is not
		allocated through the web, the IP is
		192.168.1.10.

5.1.6.1.3.1 Configuration via Web Page

The controller 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 28 Shenzhen Beilai Technology Co., Ltd V1.2



address, if not set IP address, the IP is 192.168.1.10



5.1.6.1.3.2 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.



5.1.6.1.4 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

5.1.6.2 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.

BL200UA						
Authorization Re	quired default is admin) and pass	sword(no pas	sword by defa	ult).		
Username	admin					
Password						
						Login Reset
	Shenzi	hen Beilai Ter	chnology Co	Ltd (v1 0 11) / 20	22-02-17	

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



BL200	Status +	System -	Settings -	I/O Module 👻	Serial Module -	Operation Control -	Logout	REFRESHING
Status								
System								
Hostname				BL200				
Model				BL200-Modb	ous TCP IO Module			
Firmware V	ersion			Shenzhen B	eilai Technology Co.	,Ltd. V1.1.12		
Kernel Vers	sion			4.4.194				
Local Time				2023-11-07	08:31:30			
Uptime				0h 6m 36s				
Load Avera	ge			1.39, 0.81, 0	.38			
Memory								
Total Availa	ble					26.77 MB / 56.5	59 MB (47%)	
Used						25.66 MB / 56.5	59 MB (45%)	
Buffered						3.34 MB / 56.5	59 MB (5%)	
Cached					0	9.50 MB / 56.5	9 MB (16%)	
Network								
Active Con	nections					74 / 1638	4 (0%)	
				Shenzhen Beilai	Technology Co.,Ltd	(V1.1.12) / 2023-10-1	9	

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



5.1.7 Web Configuration Page Description

5.1.7.1 Status

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

Status > Overview



BL200UA	Status -	System -	Settings -	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout	REFRESHING
Status _{System}	Overview System I Kernel L	v Log og							
Hostname			E	BL200UA					
Model			E	L200UA-OPCU	A IO Module				
Firmware Versio	n		s	Shenzhe <mark>n</mark> Beilai ⁻	Technology Co.,Ltd	v1.0.11			
Kernel Version			4	.4.194					
Local Time			2	022-03-21 06:44	1:49				
Uptime			3	lh <mark>31m 35s</mark>					
Load Average			C	. 16, 0.11 <mark>, 0</mark> .09					
Memory									
Total Available			I			26.05 MB / 5	56.59 MB (46%)		
Used			1			26.57 MB / 5	56.59 MB (46%)		
Buffered			l			3.21 MB / 5	56.59 MB (5%)		
Cached			l			9.98 MB / 5	6.59 MB (17%)		
Network									
Active Connecti	ons					22 / 16	6384 (0%)		

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Status > System Log

BL200UA	Status -	System -	Settings +	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout
System I	od							
e y o com m	.og							
Thu Jan 1 00:00:2	6 1970 kern	info kernel: [0.000000] Boo	ting Linux on phys	sical CPU 0x0			
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	0.000000J L	nux version 4.4.1	94 (peng@peng) (gco	version 5.4.0 (LEDE GCC 5.4.0 unknowr))#0 PREEMPT Sat May 9 15:23
Thu Jan 1 00:00:2	6 1970 kem	into kernel: [0.000000J CPI	J: ARM926EJ-S [4	41069265) revision 5	(ARIVIVSTEJ), C	r=0005317f	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000000 CPC	bing model: Nuw	e, VIVI Instruction ca	icne	0.1	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000000 Mac	nine model. Nuvo	cache writeback	levvay version.	0.1	
Thu Jan 1 00:00:2	6 1970 kem	debug kemel:	0.0000000000000000000000000000000000000	in node 0 totalnad	Lache Whiteback			
Thu Jan 1 00:00:2	6 1970 kem	debug kemel:	0.0000001 fr	ee area init nod	e: node 0, nodat c06	57704 node m	m map c3f77000	
Thu Jan 1 00:00:2	6 1970 kem	debug kemel:	0.0000001	Normal zone: 128	names used for mem	map		
Thu Jan 1 00:00:2	6 1970 kem	debug kemel	0 0000001	Normal zone: 0 pa	ages reserved			
Thu Jan 1 00:00:2	6 1970 kem	debug kernel:	10000000	Normal zone: 163	84 pages LIFO batcl	1:3		
Thu Jan 1 00:00:2	6 1970 kem	debug kernel:	g [000000.0]	cpu-alloc: s0 r0 d3	32768 u32768 alloc=	1*32768		
Thu Jan 1 00:00:2	6 1970 kem	debug kernel:	[0.000000] p	cpu-alloc: [0] 0				
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.000000] Buil	t 1 zonelists in Zo	ne order, mobility gro	uping on. Total	pages: 16256	
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	0.000000] K	ernel command lin	ne: root=/dev/mtdbloc	k2 console=tty5	50,115200n8 rdinit=/sbin/in	it mem=64M lpj=744448
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.000000] PID	hash table entries	s: 256 (order: -2, 102-	4 bytes)		
Thu Jan 1 00:00:2	6 1970 kern.	info kernel: [0.000000] Den	try cache hash ta	ble entries: 8192 (ord	er: 3, 32768 byt	les)	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.000000] Inoc	le-cache hash tab	le entries: 4096 (orde	er: 2, 16384 byte	es)	
Thu Jan 1 00:00:2	6 1970 kern.	info kernel: [0.000000] Mer	mory: 57756K/655	36K available (4538k	kernel code, 3	05K rwdata, 1704K rodata,	188K init, 252K bss, 7780K reserv
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	V [000000.0	irtual kernel mem	ory layout:			
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	[0.000000]	vector : 0xffff000	00 - 0xffff1000 (4 k	B)		
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	[0.000000]	fixmap : 0xffc00	000 - 0xfff00000 (30	72 kB)		
Thu Jan 1 00:00:2	6 1970 kern.	notice kernel:	[0.000000]	vmalloc : 0xc480	00000 - 0xff800000 (944 MB)		
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	[0.000000]	lowmem : 0xc00	000000 - 0xc4000000	(64 MB)		
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	[0.000000]	modules : 0xbf00	00000 - 0xc0000000	(16 MB)		
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	[0.000000]	.text : 0xc00080	000 - 0xc0620f54 (6	244 kB)		
Thu Jan 1 00:00:2	6 1970 kern.	notice kernel:	0.000000]	.init : 0xc06210	00 - 0xc0650000 (1	88 kB)		
Thu Jan 1 00:00:2	6 1970 kem	notice kernel:	0.0000000	.data : 0xc0650	000 - 0xc069c/84 (306 KB)		
Thu Jan 1 00:00:2	6 1970 kem	info kernel.	0.0000000	DSS OXCOOSC	704 - UXCUODDOIO (2	CDU-1 N	Indaa_d	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000000 SEC	b. Hvvaligh=32, C	and DCU implementat	SEU, CPUSET, P	odes=1	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000000 Field	Ruild time adjuster	cal RCO implementati	1011.		
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000001 NR	IPOS:545	ient of lear failout to .			
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0000001 cloc	ksource: puc980-	timer5: mask: 0xffffff	max_cycles: 0xf	fffff max idle ns: 622155()5635 ns
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0 0000331 sch	ed clock 24 bits	at 120kHz_resolution	8333ns wraps	every 69905062489ns	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.0007411 Con	sole: colour dumr	ny device 80x30			
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.1866161 con	sole (ttyS0) enable	ed			
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.190091] Cali	brating delay loop	(skipped) preset valu	e. 148.88 Bog	oMIPS (lpj=744448)	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.198174] pid	max: default: 327	68 minimum: 301	-		
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.203133] Mou	int-cache hash tal	ble entries: 1024 (ord	er: 0, 4096 byte	s)	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.209708] Mou	intpoint-cache has	sh table entries: 1024	(order: 0, 4096	bytes)	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.218916] CPL	J: Testing write bu	ffer coherency: ok			
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.224983] Sett	ing up static ident	lity map for 0x8400 - 0	0x843c		
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.271558] cloc	ksource: jiffies: m	ask: 0xffffffff max_cyc	les: 0xffffffff, ma	x_idle_ns: 191126044627	50000 ns
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.282316] fute	x hash table entrie	es: 256 (order: -1, 30)	72 bytes)		
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.288874] pinc	trl core: initialized	pinctrl subsystem			
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.296433] NET	C Registered proto	ocol family 16			
Thu Jan 1 00:00:2	6 1970 kern	info kernel: [0.303199] DM	A: preallocated 25	6 KiB pool for atomic	coherent alloca	tions	
Thu Jan 1 00:00:2	6 1970 kem	info kernel: [0.316783] <dt< th=""><th>> nuc980_dt_dev</th><th>rice_init +</th><th></th><th></th><th></th></dt<>	> nuc980_dt_dev	rice_init +			
Thu Jan 1 00:00:2	6 1970 kem.	info kernel: [0.3480161 < DT	> nuc980 dt dev	rice init -			

Status > Kernel Log



L2000/	A Status * System * Settings * I/O Module * Senal Module * OPC UA * Operation&Control * Logout
ernel	Log
0.0000001	= 9 9 Booling Linux on physical CPU 0x0
0.0000001	Linux version 4.4 104 (nend@nend) (acc version 5.4.0 (LEDE GCC 5.4.0 unknown)) #0 PDEEMPT Sat May 9 15-23-54 2020
0.0000001	CPL 4 MM926FLS (41069265) revision 5.4 CM/STE-D, cr=0005317f
0.0000001	CPU: VIVT data cache VIVT instruction cache
0.0000001	Machine model: Nuvoton NUC980 IOT.GateWay Version: 0.1
0 0000001	Memory policy: Data cache writeback
0.0000001	non note 0 totalnates: 16384
0.0000001	free area init node: node 0 nodat c0657704 node mem man c3f77000
0 0000001	Normal zone: 128 pages used for memmap
0 0000001	Normal zone: 0 pages reserved
0 0000001	Normal zone: 16384 pages, LEO batch:3
0.0000001	pcpu-alloc: s0 r0 d32768 u32768 alloc=1*32768
0.0000001	pcpu-alloc: (0) 0
0.0000001	Built 1 zonelists in Zone order, mobility grouping on. Total pages: 16256
0.0000001	Kernel command line: root=/dev/mtdblock2 console=ttyS0,115200n8 rdinit=/sbin/init mem=64M lpj=744448
0.000000]	PID hash table entries: 256 (order: -2, 1024 bytes)
0.0000001	Dentry cache hash table entries: 8192 (order: 3, 32768 bytes)
0.000000]	Inode-cache hash table entries: 4096 (order: 2, 16384 bytes)
0.0000001	Memory: 57756K/65536K available (4538K kernel code, 305K rwdata, 1704K rodata, 188K init, 252K bss, 7780K reserved, 0K cma-reserved)
0.0000001	Virtual kernel memory lavout:
0.0000001	vector : 0xffff0000 - 0xffff1000 (4 kB)
0.0000001	fixmap : 0xffc00000 - 0xfff00000 (3072 kB)
0.000000]	vmalloc : 0xc4800000 - 0xff800000 (944 MB)
0.0000001	lowmem : 0xc0000000 - 0xc4000000 (64 MB)
0.000000]	modules : 0xbf000000 - 0xc0000000 (16 MB)
0.0000001	.text : 0xc0008000 - 0xc0620f54 (6244 kB)
0.000000]	.init : 0xc0621000 - 0xc0650000 (188 kB)
0.000000]	.data : 0xc0650000 - 0xc069c784 (306 kB)
0.000000]	.bss: 0xc069c784 - 0xc06db8f8 (253 kB)
0.000000]	SLUB: HWalign=32, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
0.000000]	Preemptible hierarchical RCU implementation.
0.000000]	Build-time adjustment of leaf fanout to 32.
0.000000]	NR_IRQS:545
0.000000]	clocksource: nuc980-timer5: mask: 0xffffff max_cycles: 0xffffff, max_idle_ns: 62215505635 ns
0.000033]	sched_clock: 24 bits at 120kHz, resolution 8333ns, wraps every 69905062489ns
0.000741]	Console: colour dummy device 80x30
0.186616]	console [ttyS0] enabled
0.190091]	Calibrating delay loop (skipped) preset value 148.88 BogoMIPS (lpj=744448)
0.198174]	pid_max: default: 32768 minimum: 301
0.203133]	Mount-cache hash table entries: 1024 (order: 0, 4096 bytes)
0.209708]	Mountpoint-cache hash table entries: 1024 (order: 0, 4096 bytes)
0.218916]	CPU: Testing write buffer coherency: ok
0.224983]	Setting up static identity map for 0x8400 - 0x843c
0.271558]	clocksource: jiffies: mask: 0xfffffff max_cycles: 0xfffffff, max_idle_ns: 19112604462750000 ns
0.282316]	futex hash table entries: 256 (order: -1, 3072 bytes)
0.288874]	pinctrl core: initialized pinctrl subsystem
0.296433]	NET: Registered protocol family 16
0.303199]	DMA: preallocated 256 KiB pool for atomic coherent allocations
0.316783]	<dt> nuc980_dt_device_init +</dt>

5.1.7.2 System

5.1.7.2.1 System

System	n Properties	s > General	Settings
--------	--------------	-------------	----------

BL200UA	Status -	System -	Settings -	I/O Module -	Serial Module -	OPC UA +	Operation&Control -	Logout	REFRESHING
System Here you can conf System Prop	igure the ba	System Administra Backup / F Firmware Reboot		ke its hostnam	e or the timezone.				
General Settings	Logging Local Time	2022/3/	with browser	Canguage and S 6 Sync with M	Style				
	Hostname	BL200U	IA						
	Timezone	UTC		~					
							Save & Apply	/ • Save	Reset



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

System Properties > Logging

BL200UA	Status -	System - Settings -	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout	REFRESHING
System Here you can config	gure the ba	sic aspects of your devic	e like its hostname o	o <mark>r the timezone.</mark>				
System Prop	erties							
General Settings	Logging	Time Synchronization	Language and Sty	/le				
System lo	g buffer size	64						
		i kiB						
External system	External system log server							
External system log	g server por	t 514						
External syster	m log serve protoco	r UDP	~					
Write syste	em log to file	e /tmp/system.log						
Log	output leve	Debug	~					
Cro	in Log Leve	Debug	~					
						Save & Apply	• Sa	Reset

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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

BL200UA Status -	System - Settings -	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout	FRESHING
System Here you can configure the bas	sic aspects of your devic	e like its hostname	or the timezone.				
System Properties							
General Settings Logging	Time Synchronization	Language and St	tyle				
Enable NTP clien	t 🗾						
Provide NTP serve							
Use DHCP advertised servers	5 🔽						
NTP server candidates	0.openwrt.pool.ntp.	org ×]				
	1.openwrt.pool.ntp.	org ×					
	2.openwrt.pool.ntp.	org ×					
	3.openwrt.pool.ntp.	org ×					
		+					
					Save & Apply	• Save F	Reset

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System Properties > Language and Style

BL200UA	Status -	System -	Settings -	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout	REFRESHING
System Here you can confi System Prop	igure the bas	sic aspects of	your device	like its hostname	or the time <mark>zone.</mark>				
General Settings	Logging	Time Synchi	ronization	Language and St	tyle				
	Language	auto		~					
	Design	Bootstrap	p	~					
							Save & Apply	Save	Reset

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

5.1.7.2.2 Administration

Administration > Router Password



Change the administrator password for accessing the device.

BL200UA	Status -	System -	Settings -	I/O Module -	Serial Module -	OPC UA -	Operation&Control -	Logout
Router Password Router Pa Changes the admi	SSH-Key	System Administra Backup / I Firmware Reboot	ation Flash	vice				
	Passwor	d						
	Confirmatio	n		*				
								Save

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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.

BL200UA s	Status -	System -	Settings -	I/O Module ~	Serial Module -	OPC UA -	Operation&Control +	Logout
Router Password	SSH-Key	S						
SSH-Keys								
Public keys allow for an OpenSSH compati	the passw tible public	ordless SSF key line or	l logins with a drag a <mark>. pub</mark>	a higher security file into the input	compared to the use field.	e of plain pass	words. In order to upload	I a new key to the device, paste
No public keys prese	ent yet.							
-	kev file	Add k	ev					

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5.1.7.2.3 Backup/Flash Firmware

BL2000A Status - Syste	II * Settings * 1/0 wodule * Senai wodule * OFC OA * Operation@Control *	Logoui
Flash operation Adm	em inistration	
Actions Configuration Back	up / Flash ware	
Backup Reb	pot	
Click "Generate archive" to download	a tar archive of the current configuration files.	
Download backup	Generate archive	
Restore	unload a previously generated backup archive here. To reset the firmware to its initial state of	ck "Perform reset" (only
possible with squashfs images).		an rononnrooat (anij
Reset to defaults	Perform reset	
Restore backup	Jpload archive	
0	Custom files (certificates, scripts) may remain on the system. To prevent this, perform a factor	y-reset first.
Save mtdblock contents		
Click "Save mtdblock" to download sp	ecified mtdblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS!)	
Choose mtdblock u-	boot 🗸	
Download mtdblock	Save mtdblock	
Shakes and a standard standard standard		
Flash new firmware image	8	
Upload a sysupgrade-compatible image	ge here to replace the running firmware.	
Image	Flash image	
	Shenzhen Beilai Technology Co.,Ltd (v1.0.11) / 2022-02-17	
Itom	Description	Default
item		Delault
Backup	Click "Generate archive" to download a tar	
•	archive of the current configuration files.	
	To restore configuration files, you can upload a	
	To restore configuration files, you can upload a previously generated backup archive here. To	
Restore	To restore configuration files, you can upload a previously generated backup archive here. To reset the firmware to its initial state, click	
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	
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).	
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). Click "Save mtdblock" to download specified	
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). Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR	
Restore Save mtdblcok	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). Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR	
Restore Save mtdblcok	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). Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS)	
Restore Save mtdblcok Flash image	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). Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS) Upload a sysupgrade-compatible image here to	

replace the running firmware.



5.1.7.2.4 Reboot

Click "Perform reboot" will reboot your device



5.1.7.3 Settings

Device settings Modbus Device ID 1 I not set or set to 0, the device ID in the Modbus command is ignored	
Device settings Device settings Modbus Device ID 1 I I I I I I I I I I I I I I I I I	
Device settings Modbus Device ID 1 I I not set or set to 0, the device ID in the Modbus command is ignored	
Modbus Device ID 1 O If not set or set to 0, the device ID in the Modbus command is ignored	
If not set or set to 0, the device ID in the Modbus command is ignored	
Modbus TCP port 502	
Dial switch address 192.168.1.253	
The 3rd segment of IP address is determined by dial switch, restart the device and the modification will take effect	
IP Address Type Static Address	
Set device IP address	
Subnet Mask 255.255.255.0	
Gateway address	
Save & Apply + Save Re	set

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Item	Description	Default	
Modbus Device ID Modbus device ID range is 1~247.		1	
Modbus TCP port	Modbus TCP protocol port number, which can	502	
Modbus TCP port	be customized.	302	
DIP switch address	Displays the IP address set by the DIP switch.		
ID address type	Select from "Static Address", "Dynamic		
IP address type	Address(DHCP)".		
Set device ID	The IP address of the device can be set by		
Set device IP	yourself, and it needs to be restarted to take		
auuress	effect after setting.		



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

5.1.7.4 I/O Modules

After power on, the controller 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 controller can connect up to 32 I/O modules, including digital input and output, analog input and output and special function modules.

0 st	atus							
IO Slot	Module Name	Module Type	Channel Number	Modbus Address	24V Address- State	Soft Version	IO Status	Channel Status
1	M1081	DI	8	2000-2007	9001-Power On	5	Normal	Channel Statu s
5	M2082	DO	8	1000-1007	9002-Power On	5	Normal	Channel Statu s
	M3041	AJ	4	3000-3006	9003-Power On	5	Normal	Channel Statu s
	M4044	AO	4	4000-4006	9004-Power On	5	Normal	Channel Statu s
	M6021	СОМ	2	0-0	9005-Power On	5	Normal	Channel Statu s

ltem	Description	
	The order of IO modules in the slot, the first module card	
IO slot	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	Date width of 1/0 module	
Number	Data width of 1/O module	
Modbus	Process man address of the UQ module inside the controller	
Address	Process map address of the I/O module inside the controller	
24V Address	Power supply status on the field side of the I/O module, digital, 1	
State	bit	
Software	VQ modulo internal firmwara varaian	
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

5.1.7.4.1 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.

IO status

10	Slot:1,Module	Type:DI,Module Name:M1081	

Channels	Modbus Address	Value
1	2000	Open
2	2001	Open
3	2002	Open
4	2003	Open
5	2004	Open
6	2005	Open
7	2006	Open
8	2007	Open

~

Fiter Time

Fiter Time(ms) 1.6

DI Count

Channels	Modbus Address	Value	Conut Mode	Clear
1	5000	0	Rising Edge 🗸	Clear
2	5002	0	Rising Edge V	Clear
3	5004	0	Rising Edge 🗸	Clear
4	5006	0	Rising Edge 🗸	Clear
5	5008	0	Rising Edge 🗸	Clear
6	5010	0	Rising Edge 🗸	Clear
7	5012	0	Rising Edge 🗸	Clear
8	5014	0	Rising Edge 🗸	Clear

Pask to Quantian

Item	Description	
Channels	Channel number of the digital input module	
40	Shenzhen Beilai Technology Co., Ltd	V1.2

& Apply - Cours | Depot



Madhua Addraga	Process map address of Boolean status data inside the
Moubus Address	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

5.1.7.4.2 Digital Output Module

D Slot:2,Mod	lule Type:DO,Module Nam	ne:M2082					
Channels	Modbus Address	Value	PowerOn Status	Status Open/Close			
1	1000	Open	Open	•	Open/Close		
2	1001	Open	Open	•	Open/Close		
3	1002	Open	Open	•	Open/Close		
4	1003	Open	Open	~	Open/Close		
5	1004	Open	Open	v	Open/Close		
6	1005	Open	Open	•	Open/Close		
7	1006	Open	Open	•	Open/Close		
8	1007	Open	Open	~	Open/Close		

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Item	Description					
Channels	Channel number of the digital output module					
Madhua Addraga	Process map address of the digital output boolean data	a				
Modbus Address Process map address of the digita inside the controller	inside the controller					
Value	Display the current output state, open: 0, close: 1					
41	Shenzhen Beilai Technology Co., Ltd	V1.2				



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

5.1.7.4.3 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.

Channels	Modbus Address	Value	Mode		Min Value	Max Value	Offset(mA)
1	3000	4.000000	Current 4-20mA	•			
2	3002	4.000000	Current 4-20mA	~			
3	3004	4.000000	Current 4-20mA	•			
4	3006	4.000000	Current 4-20mA	~			

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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
value	channel, 32-bit single-precision floating-point type
	Different models of analog input modules have different
Mode	options, please refer to the specific analog input I/O module
	manual for details.
Min Value	Sensor range minimum
Max Value	Sensor range maximum
Offect(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

5.1.7.4.4 Analog Output Module

IO status IO Slot:7,Module Type:AO,Module Name:M4041									
Channels	Modbus Address	Value	Mode	Min Value	Max Value	Set Value			
1	4000	4.000000	Current 4-20mA 🗸						
2	4002	4.000000	Current 4-20mA 🗸						
3	4004	4.000000	Current 4-20mA 🗸						
4	4006	4.000000	Current 4-20mA 🗸						

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Item	Description
Channels	Channel number of the analog output module
Madhua Addraga	Process map address of the analog output module inside the
Modbus Address	controller
Value	Display the actual engineering value output by the current
Value	channel, 32-bit single-precision floating-point type
Mada	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

5.1.7.5 Serial Port Module

Various sensors, meters and other devices that support Modbus RTU(Master) protocol can be connected to the edge controller through the serial port module. It allows process mapping between external sensor data and the coupler via the local bus.

5.1.7.5.1 Serial Port Settings

erial S	ettings										
IO Slot	Module Type	COM Type	COM Name	Baudrat	e	Data	bits	Parity	Stop	bits	Modbus Settings
5	M6021	RS485	COM1	9600	•	8	~	None 🗸	1	~	Modbus Settings
5	M6021	RS485	COM2	9600	~	8	•	None 🗸	1	•	Modbus Settings

5.1.7.5.2 Modbus Settings

Modbus settings are used to add Modbus RTU devices to the serial communication I/O module. A maximum of 25 Modbus commands can be created.



Modbus Master Modbus Master										
Name	Alias	Slave Interface	Slave Address	Function Code	Data Type	Register Start Address	Data Number	Mapping Address	Enable	Query
				T	his section co	ontains no values yet				
			Add							
								Save & Apply	Save	Reset

Enter the custom data name in the input box and click Add

BL200)UA	Status -	System - Sett	tings - I/O Mo	dule - Se	rial Module 👻 OPC L	IA ~ Operatio	n&Control - Lo	gout		
Modbus Master Modbus Master											
Name	Alias	Slave Interface	Slave Address	Function Code	Data Type	Register Start Address	Data Number	Mapping Address	Enable	Query	
				TI	nis section c	ontains no values yet					
			Add								
								Save & Apply 🚽	Save	Reset	

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The configuration box pops

us Master - 1			
Alias			
Slave Interface	COM1	~	
Slave Address			
Function Code	01-Digital Output	•	
Register Start Address	0		
Data Number			
Mapping address alloc	Auto	~	
Polling period(s)			
	😨 If not set, the default i	is 0.2s	
Response timeout(s)			
	If not set, the default i	is 0.5s	
			Dismiss



Item	Description			
Alias	Device nickname can be used to distinguish data			
Slave Interface	Select serial channel			
Slave address	Slave device address, range 1-247			
Function code	Select according to the slave data type, including: "01", 02", "03", "04"			
Register start address	Register start address of slave data			
Data number	Number of slave data			
Mapping address alloc	Support distribution method: auto According to different data types, the system automatically allocates down the starting address of the mapping, and the addresses are continuous. manual Manual allocation allows mapping addresses to be allocated across segments			
Polling period (s)	The interval between two adjacent polling commands			
	After sending the command to the slave, wait for the			
Response timeout	maximum time for the slave to return data. If the time			
(s)	exceeds this time, the slave will be considered to have no			
	response.			

You can modify, delete, and view data of slave, or you can disable collection.

Modl Modbu	bus I	Master	System -	Settings -	I/O Module	o ← Senal Mo	dule + OPC	UA	ation&Contro	I * Logo	ut	
Name	Alias	Slave Interface	Slave Address	Function Code	Data Type	Register Start Address	Data Number	Mapping Address	Enable	Query		
1	1	COM1	1	1	Bool	0	1	10000- 10000		Q u e r y	Edit	Delete
			Add									
			Add						Save & A	pply +		Save

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5.1.7.6 Operation and Control

5.1.7.6.1 Arithmetic Operation

BL200 Status - System -	- Settings - I/O M <mark>o</mark> du	ule 👻 Serial Modu	le - Operatior	n Control - Logout						
Arithmetic operation Logical oper	ration Condition operation	n								
Arithmetic operation										
Arithmetic operation										
50000-50014 addresses are used to save intermediate calculation results, which can be published through mqtt or read through MODBUS										
Name Input1 Oper	ation Input2	Operation	Input3	Output Address	Output Value					
		This section conta	ins no values yet							
	Add									
				Save & A	Apply - Save Reset					
	Shenzhen	Beilai Technology C	o.,Ltd (V1.1.12) /	2023-10-19						
Arithmetic operation - 1										
Input1	REG3000	~								
Operation	+	~								
Input2	REG3000	~								
Operation	+	~								
Input3	REG3000	~								
Quitout Address	REC/000									
Output Address	NL 04000	•								
Publish										
					Dismiss Save					

It supports "addition, subtraction, multiplication, and division" operations between AI, AO, or RS485 slave numerical data, and can also perform operations with "addition, subtraction, multiplication, and division" constants, and freely match 1 or 2 conditions to combine the output results. If a 16-bit register address is used as the output result, the output with a decimal is an integer.



5.1.7.6.2 Logical Operation

3L200	Status +	System +	Settings 👻 I/O Moo	lule + Sei	rial Module 👻	Operation Control + L	ogout	
Arithmeti	c operation	.ogical operatio	n Condition operat	on				
	cal operation	ation						
Name	Input1	Condition (1997)	Relationship	Input2	Condition	Output Address	Output Value	Logic Value
				This secti	on contains no v	alues yet		
		Add						
lumbe	erical Logi	c						
Name	Input1 Co	ndition Thre	shold Relationsh	ip Inputa	2 Condition	Threshold Output	Address Output V	alue Logic Value
				This secti	on contains no v	alues yet		
			_					
		Add						
ombi	national lo	gic						
Name	Input1	Condition	Relationship	Input2	Condition	Output Address	Output Value	Logic Value
				This secti	on contains no v	alues yet		
		Add						
							Save & Apply -	Save Reset
			Shenzher	n Beilai Tech	nology Co.,Ltd ('	/1.1.12) / 2023-10-19		

Bool logic configuration



ogical operation - 1					
Input1	REG1000	~			
Condition	Open	~			
Relationship	Logic And	~			
Input2	REG1000	~			
Condition	Open	~			
Output Type	Bool Type	~			
Output Address	Please choose	•			
Bool Value	Open	~			
Output Delay(ms)					
Set Default					
					Dismiss

Numerical Logic Configuration

Logical operation - 1			
Input1	REG3000	~	
Condition	Greater Than(>)	~	
Threshold			
Relationship	Logic And	~	
Input2	REG3000	~	
Condition	Greater Than(>)	~	
Threshold			
Output Type	Bool Type	~	
Output Address	Please choose	•	
Bool Value	Open	~	
Output Delay(ms)			
Set Default			
			Dismiss Save

Combinational logic configuration



ogical operation - 3					
Input1	1	~			
Condition	Is true	~			
Relationship	Logic And	~			
Input2	2	~			
Condition	Is true	~			
Output Type	Bool Type	•			
Output Address	Please choose	*			
Bool Value	Open	~			
Output Delay(ms)					
Set Default					
					Dismiss

Users can freely set various combination linkages between I/O (digital input and output, analog input and output) or serial port modules (Modbus slave data) according to needs. Whether the built logic is triggered can be judged according to the logic value item of the web page, "0" means not triggered, and "1" means triggered. Logical value items cannot be updated automatically, and the web page must be manually refreshed.

Example:

Logic 1 (And), input condition A and input condition B meet the trigger condition at the same time, output result Y.

Logic 2 (Or), any one of input condition C or input condition D satisfies the trigger condition, and the output result is Y.

Logic 3: Logic 1 + Logic 2 can be combined to form a logic 3 or more combinations.



5.1.7.6.3 Condition Operation

BL200	Status -	System -	Settings -	I/O Module -	Serial Mo	odule - Op	eration Control	- Logout				
Arithmetic	operation Log	gical operat	ion Condit	ion operation								
Condi	ition ope	ration	ı									
Conditio	on operatio	n										
50000-5001	50000-50014 addresses are used to save intermediate calculation results, which can be published through mqtt or read through MODBUS											
Name	Condition(Tr	ue)	Input1	Operation	Input2	Operation	Input3	Output Address	Output Value			
				This	s section coi	ntains no valu	ies yet					
		A	dd									
								Save & Apply	Save Reset			
Conditio	on operation Condition	n - 1 (True)	REG1000	Shenzhen Beila	i Technology	y Co.,Ltd (V1.	1.12) / 2023-10-	19				
		Input1	REG3000		~							
	Оре	eration	+		~							
		Input2	REG3000		•							
	Ope	eration	+		~							
		Input3	REG3000		•							
	Output Ac	ddress	REG4000		•							
	P	^p ublish (
									Dismiss Save			

Conditional operation is based on arithmetic operation plus condition triggering, that is, when the condition is satisfied, AI, AO or RS485 slave numerical type data or constants, these data can be free to choose 1-3 conditions for each other to "add, subtract, multiply or divide" arithmetic operation.

5.1.7.6.4 Example

 $\diamond \quad {\sf Take \ a \ simple \ packing \ system \ as \ an \ example}$

Requirements:

(1) After pressing the start button, the conveyor belt B starts to run first, and drags the empty box forward to the designated position. After reaching the designated position, 51 Shenzhen Beilai Technology Co., Ltd V1.2



SQ2 sends a signal to stop the conveyor belt B from running.

(2) After the conveyor belt B stops, the conveyor belt A starts to run, and the products fall into the boxes one by one. The SQ1 sensor detects the products and detects that the products fall into the box. Conveyor belt A stops running, conveyor belt B starts running, and it goes on and on, until the stop button is pressed, and conveyor belts A and B stop at the same time.

To realize such a function in S7-200SMART, the peripheral wiring needs to use DI and DQ as follows:

	Input	Output			
10.0	Automatic control button	Q0.1	Conveyor A output		
10.1	Stop button	Q0.2	Conveyor B output		
10.2	B conveyor belt moving				
10.3	A conveyor belt moving				
10.4	SQ2 input				
10.5	SQ1 input				

Using BL206 calculation and control simulation to achieve such requirements, the DI and DO required for wiring are as follows:

	Input	Output			
DI1	A conveyor belt moving	DO1	Conveyor A output		
DI2	B conveyor belt moving	DO2	Conveyor B output		
DI3	Stop button				
DI4	Automatic control button				
DI5	Detect empty box sensor,				
	SQ2 input				
DI6	Detect product SQ1 input				

5.1.7.6.4.1 Bool Logic Configuration Example



BL200Pro

Status * System * Settings * I/O Module * Serial Module * OPC UA * Operation Control * Cloud platform * Logout

Arithmetic operation Logical operation Condition operation

Add

Logical operation

Bool Logic

Input1	Condition	Relationship	Input2	Condition	Output Address	Output Value	Logic Value	
REG2000	close	None	none	none	REG1000	close	0	Edit Delete
REG2001	close	None	none	none	REG1001	close	0	Edit Delete
REG2002	close	None	none	none	REG1000,REG1001	Open	0	Edit Delete
REG2003	close	None	none	none	REG1001	close	0	Edit Delete
REG2004	close	None	none	none	REG1000	close	0	Edit Delete
REG2004	close	None	none	none	REG1001	Open	0	Edit Delete
REG2005	close	None	none	none	REG1001	close	0	Edit Delete
REG2005	close	None	none	none	REG1000	Open	0	Edit Delete
	Input1 REG2000 REG2001 REG2002 REG2003 REG2004 REG2005 REG2005	Input1ConditionREG2000closeREG2001closeREG2002closeREG2003closeREG2004closeREG2005closeREG2005close	Input1ConditionRelationshipREG2000closeNoneREG2001closeNoneREG2002closeNoneREG2003closeNoneREG2004closeNoneREG2005closeNoneREG2005closeNone	Input1ConditionRelationshipInput2REG2000closeNonenoneREG2001closeNonenoneREG2002closeNonenoneREG2003closeNonenoneREG2004closeNonenoneREG2005closeNonenoneREG2005closeNonenoneREG2005closeNonenoneREG2005closeNonenone	Input1ConditionRelationshipInput2ConditionREG2000closeNonenonenoneREG2001closeNonenonenoneREG2002closeNonenonenoneREG2003closeNonenonenoneREG2004closeNonenonenoneREG2005closeNonenonenoneREG2005closeNonenonenoneREG2005closeNonenonenoneREG2005closeNonenonenone	Input1ConditionRelationshipInput2ConditionOutput AddressREG2000closeNonenonenoneREG1000REG2001closeNonenonenoneREG1001REG2002closeNonenonenoneREG1000,REG1001REG2003closeNonenonenoneREG1000,REG1001REG2004closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005closeNonenonenoneREG1001REG2005 </td <td>Input1ConditionRelationshipInput2ConditionOutput AddressOutput ValueREG2000closeNonenonenoneREG1000closeREG2001closeNonenonenoneREG1001closeREG2002closeNonenonenoneREG1000,REG1001OpenREG2003closeNonenonenoneREG1000,REG1001OpenREG2004closeNonenonenoneREG1000closeREG2005closeNonenonenoneREG1001openREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNone<</td> <td>Input1ConditionRelationshipInput2ConditionOutput AddressOutput ValueLogic ValueREG2000closeNonenonenoneREG1000close0REG2001closeNonenonenoneREG1001close0REG2002closeNonenonenoneREG1000,REG1001Open0REG2003closeNonenonenoneREG1001close0REG2004closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001Open0REG2005closeNonenoneREG1000Close0REG2005closeNonenoneREG1000Close0</td>	Input1ConditionRelationshipInput2ConditionOutput AddressOutput ValueREG2000closeNonenonenoneREG1000closeREG2001closeNonenonenoneREG1001closeREG2002closeNonenonenoneREG1000,REG1001OpenREG2003closeNonenonenoneREG1000,REG1001OpenREG2004closeNonenonenoneREG1000closeREG2005closeNonenonenoneREG1001openREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNonenonenoneREG1001closeREG2005closeNone<	Input1ConditionRelationshipInput2ConditionOutput AddressOutput ValueLogic ValueREG2000closeNonenonenoneREG1000close0REG2001closeNonenonenoneREG1001close0REG2002closeNonenonenoneREG1000,REG1001Open0REG2003closeNonenonenoneREG1001close0REG2004closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001close0REG2005closeNonenonenoneREG1001Open0REG2005closeNonenoneREG1000Close0REG2005closeNonenoneREG1000Close0

Input1	REG2000	~
Condition	Close	~
Relationship	None	~
Output Type	Bool Type	~
tpu <mark>t</mark> Address	REG1000	×
	Please choose	•
Bool Value	Close	~
out Delay(ms)		
Set Default		

Steps:

- (1) Enter Achuansongdai, click Add, and the configuration box will pop up.
- (2) Enter 1: Select DI1 register REG2000.
- (3) Condition: Select Close.



(4) Relationship: Select "None", because DI1 directly controls the operation of A conveyor belt, so select "None" because there are no other conditions.

(5) Output type: Select Bool type, because DO1 control is Bool.

(6) Output address: REG1000, DI1 only controls one DO1, so only select the DO1 register address, if DI controls multiple registers, you can select multiple registers. As in the third logic "tingzi", press the stop button, both conveyor belts A and B stop.

(7) Bool value: Off, DI1 controls DO1 to close, so choose to close.

(8) Output delay (milliseconds): Since it is a timely response and no delay is required, leave it blank.

(9) Set default: When the selection logic is not established, whether DO1 restores the default state, select according to the requirements.

(10) Click "Save".

(11) Follow the same steps to build other logic.

(12) Click "Save and Apply" to write into the BL206 controller.

5.1.7.6.4.2 Numerical Logic Configuration Example

The Al1 register REG3000 is connected to the temperature sensor to monitor the temperature of the motor. When the collected temperature is greater than 50, the fan is turned on, and the fan is controlled by the DO3 register REG1002.





Similarly, numerical logic and Bool logic have the same logic principle. Numerical logic only judges that the condition is "greater than", "less than" or "equal to" a certain value as a linkage condition.

5.1.7.6.4.3 Combinational Logic Example

The conveyor belt is not running, the temperature of the motor exceeds 50 degrees, the fan is turned on, and the alarm DO4 register REG1003 is triggered.

Combi	national	logic								
Name	Input1	Condition	Relationship	Input2	Condition	Output Address	Output Value	Logic Value		
bj	zidongB	ls false	Logic And	wendu	ls true	REG1003	close	0	Edit	Delete
			Add							



Logical operation - bj		
Input1	zidongB	~
Condition	Is false	~
Relationship	Logic And	~
Input2	wendu	~
Condition	Is true	~
Output Type	Bool Type	~
Output Address	REG1003	×
	Please choose	•
Bool Value	Close	~
Output Delay(ms)		
Set Default	Π	



Steps:

(1) In the Combinational Logic item, input the name "bj", click Add, and the configuration box will pop up.

(2) Input 1: Select the logic name "zidongB" built in Bool logic before, you can choose Bool logic or numerical logic according to your demand.

(3) Condition: Select "Is false", according to your demand, whether the logic selected by input 1 is triggered or not as a condition.

(4) Relationship: Select "Logic And" to choose, according to your demand, the logical relationship between condition 1 and condition 2, you can also select "no" condition 2. (5) Input 2: Select the logic name "wendu", choose Bool logic or numerical logic according to your demand.

(6) Condition: Select "Is true", according to your demand, whether the logic selected by input 2 is triggered or not as a condition.

(7) Output Type: Select "Bool Type", select Bool or numeric data according to "Output Address".

(8) Output address: Select the register address to be operated. DO4 register REG1003.

(9) Bool value: Close, DO4 closed to control the alarm

(10) Output delay (milliseconds): It is a timely response, there is no need for a delay, so do not fill in.

(11) Set default: Choose whether to restore the default state of DO4 when the logic is not valid, according to your demand.



- (12) Click "Save".
- (13) Click "Save and Apply" to write into BL206 controller.

5.1.7.6.4.4 Arithmetic Operation Configurations

The sensor collects the quantity produced in a day and stores it in register REG40002, and through the arithmetic function it calculates the quantity produced in each hour of an 8-hour day and stores it in register REG40004, and the data in register REG40004 can be sent to your platform or server through MQTT, OPC UA or Modbus.

	Sottings -	VO Modulo -	Sorial N	ladula – OP(<u></u>	Decration Control -	Cloud platform -	Logout
tatus • System •	Settings *	I/O Module +	Senariv		JUA V	Operation Control V	Cloud platform +	Logout
ithmetic operation	Logical opera	ation Condition	operation					
rithmetic o	peratio	n						
rithmetic opera	tion							
000-50014 addresses	are used to s	save intermediate	e calculatio	n results, which	can be put	olished through mqtt o	or read through MOI	DBUS
Name	Input1	Operation	Input2	Operation	Input3	Output Address	Output Value	
shengchanxiaolv	REG4002	1	8	+	none	REG4004	0	Edit Delete
	A	Add						
							Save & Apply	Save Reset
		S	henzhen B	eilai Technology	Co.,Ltd (V	1.1.9) / 2023-07-14		
Arithmetic opera	tion - she	ngchanxiao	lv					
	Input1	REG4002		~				
(Oneration	1		~				
	operation	<u></u>						
	Input2	Constant		~				
	Input2	8						
c	Operation	+		~				
	Input3	None		~				
Outpu	t Address	REG4004		~				
	Publish							
								Dismiss
teps								
							_	

(1) Enter the name "shengchanxiaolv", click Add, and a configuration box will pop up.

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(2) Input 1: Select the yield register REG40002.

(3) Operation: Select "/", you can select "add, subtract, multiply and divide" here according to your demand.

(4) Input 2: Select Constant, you can select other register address according to your demand.

(5) Input 2: Fill in the constant because constant is selected, when select a register, there is no such item.

(6) Operation: According to whether there is also a condition 3 selection, if not, then it doesn't matter.

(7) Input 3: Select "none", because there is no need for this condition option, you can also choose registers, constants, none.

(8) Output Address: Select the register address to store the result of the operation.

(9) Click "Save".

(10) Click "Save and Apply" to write into the BL206 controller.

5.1.7.7 Cloud Connection Settings

BL200M	Status -	System -	Settings -	I/O Module -	Serial Module -	Operation Control	¥	Cloud platform -	Logout
Cloud con	onnection s	t ion se t	ttings					Custom Cloud Ali Cloud Aws Cloud	
Cloud Name		Host IP or De	omain	Port	Publish Perio	od(s)	Co	Huawei Cloud Thingsboard	Enable
				This see	ction contains no ve	alues yet			
Add									
							1	Save & Apply	Save Reset

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



Cloud connection settings

Beilai IloT V2 🗸

Dismiss	Save
---------	------

BLIId	oT Cloud Connection
Item	Description
Cloud platform	Beilai IloT 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
Publich Modulo 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.

BL200M	Status - System	- Settings -	I/O Module -	Serial Module 🕶	Operation Control -	Cloud platform -	Logout
Cloud conn	nnection s ection settings	ettings					
Cloud Name	Host IP or Dor	main P	ort Publis	h Period(s)	Connect State	Enable	
Beilai IIoT V2	mqtt.dtuip.com	18	383 30		Not connected		Edit Delete
						Save & Apply	• Save Reset

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



Cloud	connection	settings
Cloud	connection	settina

Cloud platform Custom Cloud Cloud Name Host IP or Domain Pott Pott MOTT Client ID User Name Password Password Password Publish data format Publish data format Publish Topic Publish Topic Publish Period(s) Publish Period(s) Publish Period(s) Publish Module Status Cloud Retransmission Enable Cloud plata packing 20	four connection setting	2		
Cloud NameImage: Image: Im	Cloud platform	Custom Cloud	~	
Host IP or Domain 0.0.0.0,host.domain.cox Pott	Cloud Name			
Port MQTT Client ID User Name Password Password Encryption No encryption Publish data format Publish Topic Subscribe Topic Publish Period(s) Publish Period(s) Publish Poriod(s) Publish Module Status Cata Retransmission Enable Cata Retransmission Enable Cata Retransmission Enable Qata	Host IP or Domain	0.0.0.0;host.domain.xxx		
MQTT Client ID	Port			
User Name	MQTT Client ID			
Password Encryption No encryption Publish data format Publish data format Publish Topic Subscribe Topic Publish Period(s) Publisher QOS OAt most once Publish Module Status Data packing Image: Send multiple data in one message Number of data 20	User Name			
Passwold Encryption No encryption Publish data format Publish data format Publish Topic Subscribe Topic Publish Period(s) Publisher QOS 0-At most once Publish Module Status Data Retransmission Enable Publish Module Status Oata packing 20 Publish only changed data	Decoword			
Encryption No encryption Publish data format Default data format Publish Topic	Password		*	
Publish data format Image: Constraint of the second se	Encryption	No encryption	~	
Publish Topic	Publish data format	Default data format	•	
Subscribe Topic	Publish Topic			
Publish Period(s) Publisher QOS O-At most once Data Retransmission Enable Publish Module Status Data packing Oata packing Image: Send multiple data in one message Number of data 20	Subscribe Topic			
Publisher QOS 0-At most once Data Retransmission Enable □ Publish Module Status □ Data packing ☑ Data packing ☑ Vumber of data □ Publish only changed data □	Publish Period(s)			
Data Retransmission Enable Publish Module Status Data packing Image: Send multiple data in one message Number of data 20 Publish only changed data	Publisher QOS	0-At most once	•	
Publish Module Status □ Data packing ✓ ③ Send multiple data in one message Number of data 20 Publish only changed data □	Data Retransmission Enable			
Data packing Image: Constraint of the second seco	Publish Module Status			
Number of data 20 Publish only changed data	Data packing	 Send multiple data in one me 	essage	
Publish only changed data	Number of data	20		
	Publish only changed data			

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			
	The client identifier used by the MQTT			
MQTT Client ID	connection message, which is used by the			
	server to identify the client.			
	The username used for MQTT connection			
User name	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.			
Energyntian	"No encryption", "Encryption (root			
Encryption	certificate)", "Encryption (self-signed)"			
Publish data format	"Default Data Format", "Custom Data Format"			
	The subject name used for MQTT publish			
Dublich tonic	messages, the subject name is used to			
Publish topic	identify the information channel to which the			
	payload data should be published.			
	The subject name used for MQTT subscribe			
Subscribe topic	messages. After subscribing, the server can			
	send a publish message to the client.			
Publish period	MQTT data publish interval			
Dublisher OOS	Publish quality of service "0 - at most once",			
Publisher QOS	Publish quality of service "0 - at most once", "1 - at least once", "2 - only once"			
Publisher QOS Data Retransmission Enable	Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission			
Publisher QOS Data Retransmission Enable	Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status			
Publisher QOS Data Retransmission Enable Publish Module Status	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information 			
Publisher QOS Data Retransmission Enable Publish Module Status Data packing	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable 			
Publisher QOSData Retransmission EnablePublish Module StatusData packing	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point 			
Publisher QOS Data Retransmission Enable Publish Module Status Data packing	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one 			
Publisher QOS Data Retransmission Enable Publish Module Status Data packing Number of data	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message 			
Publisher QOS Data Retransmission Enable Publish Module Status Data packing Number of data	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data that 			
Publisher QOS Data Retransmission Enable Publish Module Status Data packing Number of data Publish only changed data	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data that has changed during the cycle 			
Publisher QOSData Retransmission EnablePublish Module StatusData packingNumber of dataPublish only changed dataDismiss	 Publish quality of service "0 - at most once", "1 - at least once", "2 - only once" Whether to enable data retransmission Whether to publish I/O module status information Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data that has changed during the cycle Cancel 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.



Publish data format	Custom data format	•
Publish Period(s)	10	
Publisher QOS	0-At most once	×
Data Retransmission Enable		
Publish Module Status		
Custom data format		
Data format example		
Custom data format	"'使用'\$'引用本机或MODBU "Use '\$' to reference local o value" { "topic1":{ "property1": { "data1": "\$REG1000 "data2": "\$REG2000 }, "property2": { "data1": "\$REG3000 "data2": "\$REG4000 "time": "\$TIME"	US映射寄存器地址,服务端使用'主题'+'/(例如'主题1/)作为发布主题来设置值" I or MODBUS mapping register address, use 'topic'+'/'(such as 'topic1/') as topic to set 00". 00". 00".

5.1.7.7.2 Ali Cloud



BL200M Status - Sy	ystem + Settings +	I/O Module -	Serial Module 🕶	Operation Control -	Cloud platform -	Logout
Ali cloud setting	s					
Ali cloud settings						
Enable						
Authentication method	Device Serect	~				
Product Key(ProductKey)						
Device Name(DeviceName)						
Device Serect(DeviceSerect)						
Region ID	East China 2	•				
Publish Period(s)						
Publish only changed data						
Data packing	Send multiple dat	a in one messag	e			
Number of data	20					
Connect State	Not connected					
					Save & Apply	Save Reset

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Ali Cloud Connection				
Item	Description			
Enable	Check to enable			
Authentication	"Dovice Secret" and "X 500"			
Method	Device Secret and A.SU9			
Product Key	ProductKey on Ali Cloud			
Device Name	DeviceName on Ali Cloud			
Device Serect	DeviceSecret on Ali Cloud			
	Ali cloud region, If you need to fill in the			
Region ID	IP address, you can do so at			
	Customize.			
Publish Period(s)	More than 60s			
Certification Authority (root	Select File Upload, displayed when			
	X509 certificate is selected as the			
	authentication method.			
Dovice Cortificate	Select File Upload, displayed when			
	X509 certificate is selected as the			



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

5.1.7.7.3 AWS



BL200M Status - Sy	rstem ≖ Settings ≖	I/O Module ▼	Serial Module 👻	Operation Control -	Cloud platform +	Logout
Aws cloud settin	igs					
Aws cloud settings	20 11					
Enable						
Host(EndPoint)						
Client ID						
Thing Name						
Certificate authority	Select file					
	/etc/mqtt/aws/roo	t.crt				
Device certificate	Select file					
	/etc/mqtt/aws/local	al. crt				
Device private key	Select file					
	/etc/mqtt/aws/priv	ate key				
Publish Topic						
Publish Period(s)						
Publish only changed data						
Shadow Data select	None	~				
Data packing	Send multiple dat	a in one message	e			
Number of data	20					
Connect State	Not connected					
					Save & Apply	Save Reset

AWS Connection				
Item	Description			
Enable	Check to enable			
Host(EndPoint)	Set the endpoint			
	The client identifier used in the MQTT			
	connection message, the server uses			
Client ID	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	Solact File Uplead			
certificate)				



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

5.1.7.7.4 HUAWEI Cloud



BL200M	Status -	System -	Settings -	I/O Module -	Serial Module -	Operation Control -	Cloud platform -	Logout
Huawei	Huawei cloud settings							
Huawei clo	oud settin	igs						
	Enal	ble 🗌						
Authen	ntication meth	od Device	e Serect	~				
	Device	ID						
	Secret k	ey			*			
	Service							
	Region		orth-Beijng4	~				
P	ublish Period	(s)						
Publish on	ly changed da	ita 🗌						
	Data packi	ing 🔽 @ Sei	nd multiple da	ta in one messa	ge			
	Number of da	ata 20						
	Connect Sta	ate Not co	nnected					
							Save & Apply	Save

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HUAWEI Cloud Connection					
Item	Description				
Enable	Check to enable				
Authentication	"Dovice Secret" and "X 500"				
Method	Device Secret and A.309				
Device ID	Huawei Cloud Device ID				
	Password entered when creating the device certificate,				
Secret key	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 deviceCert.pem, upload to /etc/conf				
Device certificate	directory and select the file, displayed when X509				
	certificate is selected as the authentication method.				



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

5.1.7.7.5 ThingsBoard

BL200M Status - Sy	vstem - Settings -	I/O Module -	Serial Module -	Operation Control -	Cloud platform -	Logout
Thingsboard Clo	oud settings					
Cloud connection set	tings					
Enable setting						
Thingsboard platform	Thingsboard Cloud	~				
MQTT Client ID						
User Name						
Password		*				
Publish Period(s)						
Data Retransmission Enable						
Data packing	Send multiple da	ta in one message				
Number of data	20					
Publish only changed data						
Connect State	Not connected					
					Save & Apply	Save Reset

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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)	authorization. More than 60s
Publish Period(s) Data Retransmission Enable	authorization. More than 60s Check to enable data retransmission
Publish Period(s) Data Retransmission Enable	authorization. More than 60s Check to enable data retransmission Whether to enable data packaging.
Publish Period(s) Data Retransmission Enable Data Packing	authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one
Publish Period(s) Data Retransmission Enable Data Packing	authorization.More than 60sCheck to enable data retransmissionWhether to enable data packaging.Disable means one message sent onedata point
Publish Period(s) Data Retransmission Enable Data Packing	 authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one
Publish Period(s) Data Retransmission Enable Data Packing Number of data	 authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message
Publish Period(s) Data Retransmission Enable Data Packing Number of data Only publish	authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data
Publish Period(s) Data Retransmission Enable Data Packing Number of data Only publish changed data	authorization.More than 60sCheck to enable data retransmissionWhether to enable data packaging.Disable means one message sent onedata pointNumber of data points published in onemessageWhether to enable publishing only datathat has changed during the cycle
Publish Period(s) Data Retransmission Enable Data Packing Number of data Only publish changed data	 authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data that has changed during the cycle After clicking "Save and Apply", you can
Publish Period(s) Data Retransmission Enable Data Packing Number of data Only publish changed data Connect State	 authorization. More than 60s Check to enable data retransmission Whether to enable data packaging. Disable means one message sent one data point Number of data points published in one message Whether to enable publishing only data that has changed during the cycle After clicking "Save and Apply", you can see whether the connection to

5.2 BL206Pro EdgelO Controller

5.2.1 BL206Pro Overview

BL206Pro includes the functions of BL200, BL205, and BL206

5.2.2 Technical Parameters

Name	Parameter	Description	
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r	I			
	Input voltage(system)	24 VDC		
System	Input current(system)	MAX 500 mA@24VDC		
	Power Efficiency	84%		
System	Internal bus voltage	5VDC		
power	Coupler current consumption	MAX 300mA@5VDC		
	I/O current consumption	MAX 1700mA@5VDC		
	Isolation protection	500 V system/supply		
	Input voltage (field)	24 VDC		
Field power	Current carrying capacity			
	(power jumper contacts)			
	Number	2 X RJ45		
	Transmission medium	Twisted Pair STP 100 Ω Cat 5		
Ethorpot	MAX cable length	100m		
Ellenet	Baud rate	10/100 Mbit/s		
	loolation protoction	ESD contact: 8KV, Surge:		
		4KV(10/1000us)		
	Operating system	Linux		
	CPU	300MHz		
	RAM	64MB		
	Flash	128MB		
	I/O Modules	MAX 32		
System	Process mapping (Modbus)	• Bool : 4096		
System	data points via serial port	• 16 Bit : 2048		
	module	• 32 Bit : 1024		
	Protocol	Modbus TCP, MQTT, OPC UA,		
		HTTP, DHCP, DNS		
	Maximum number of	15 Modbus TCP		
	connections			
	Method	CAGE CLAMP		
Wiring method	Wire diameter	0.08 mm ² ··· 2.5 mm ² , AWG 28 ···		
		14		
	Strip length	8 mm - 9 mm / 0.33 in		
	Working temperature	0 55 ° C		
	Storage temperature	-40 ··· 70 ° C		
Environment	Relative humidity	5 ··· 95% no condensation		
	Working altitude	0 ··· 2000 m		
	Protection type	IP20		



	Width	48mm	
Dimension	Length	100mm	
	Height	69mm	
	Color	Light gray	
Matarial	Housing material	Polycarbonate, Nylon 6.6	
Material	Fire load	1.239 MJ	
	Weight	180g	
Installation	Method	DIN-35 rail	
Certificates		EN 55022: 2006/A1: 2007 (CE	
		&RE) Class B	
		IEC 61000-4-2 (ESD) Level 4	
	FMC	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	

5.2.3 Hardware Interface

5.2.3.1 LED Indicators

 PWR SYS RUN ERR IO RUN IO ERR 				
LED	Description	Color	Status	Meaning
				Power connection
PWR	Power indicator	Red	ON	successful
			OFF	No power
eve	System indicator	Croop	ON	System is abnormal
515	System indicator	Green	OFF	System is running normally
				, , , , , , , , , , , , , , , , , , , ,
	Dupping indicator	Croon	Flashing	System is running normally



ERR Error indicator		Red ON		Northbound protocol connection error
			OFF	No errors
I/O RUN I/O Running indicator	Green	Flashing	I/O module is working normally	
	Indicator		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
6	System 24V power	Croop	ON	Power is OK
5	indicator	Green	OFF	No power
F	Field 241/ power indicator	Green	ON	Power is OK
	Field 24V power indicator		OFF	No power

5.2.3.2 Ethernet Port

Connect to Ethernet-based fieldbus through ETH2.

EHT1 is used to connect other nodes that need to be connected to the Ethernet.



5.2.3.3 IP Address Selection Switch

The 8-bit DIP switch is used to set the IP address. The encoding of DIP switches is done bit by bit, starting from DIP switch 1 with the least significant bit (2^0) to DIP switch 8 with the most significant bit (2^7) , corresponding to decimal values: 0-255.




When the value of the DIP switch is 1111 1111 (decimal 255), the IP address is set according to the web page. The web page setting can specify the IP or set the automatic acquisition. When the web page is not set, the IP address is: 192.168.1.10 When the value of the DIP switch is 0000 0000 – 1111 1110 (decimal 0-254), determine the 3rd byte of the IP address, and the 1st, 2nd and 4th bytes are fixed bytes, namely 192.168.xxx.253

5.2.4 Modbus Register Mapping

The internal register map of BL206Pro controller consists of 2 parts, one part is the data map of digital input and output and analog input and output module, the address range is 1000...9999; the other part is the serial port module, the address range is 10000... 49999

Modbu	us address	Data	Access	Function	Description
decimal	hex	type	type	code	Description
10001999	0x03 E80x07 CF	1 Bit	read/write	0x01/05/0F	Digital output
20002999	0x07 D00x0B B7	1 Bit	read	0x02	Digital input
30003999	0x0B B80x0F 9F	32 Bit Float	read	0x04	Analog input
40004999	0x0F A00X13 87	32 Bit Float	read/write	0x03/06/10	Analog output
50008999	0x13 880x23 27	32 Bit Unint	read/write	0x03/04/10	DI count value
90009999	0x23 280x27 0F	1 Bit	read	0x02	Module power-on status

The state of digital and analog I/O modules can be determined or changed through the register map (Address 1000 ... 9999).

Determine or change the state of the data mapped from the serial I/O module through address 10000 ... 49999

Modbus addres	Data	Access	Function	Description	
decimal	hex	type	type	code	Description
1000019999	0x27 100x4E 1F	1 Bit	read/write	0x01/05/0F	Digital output
2000029999	0x4E 200x75 2F	1 Bit	read	0x02	Digital input
3000039999	0x75 300x9C 3F	16 Bit	read	0x04	Analog input
4000049999	0x9C 400XC3 4F	16 Bit	read/write	0x03/06/10	Analog output

5.2.5 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), custom OPC UA model Node Id can be customized.

5.2.6 MQTT Identifiers

The MQTT identifier is REG+Modbus mapping address (such as the first DO module first DO: REG1000).

5.2.7 Controller Connection

BL206Pro coupler is to add OPC UA and Modbus TCP protocols to BL206, refer to 5.1.5 Controller Connection.

5.2.8 Web Page Configuration

Refer to 5.1.6 Web Page Configuration.

The BL206Pro controller is based on the BL206 to add the OPC UA and Modbus TCP protocols, so you can refer to the BL206 web configuration page description for the function descriptions of the configuration page.

Modbus TCP is enabled by default, the specific configuration in the web configuration "Settings" item, here only introduce the OPC UA configuration interface. All configurations need to be sent to BL206Pro coupler by clicking "Save and Apply" to take effect.



BL200UA Status - S	system - Settings - I/O N	lodule -	Serial Module -	OPC UA -	Operation&Control -	Logout
OPC UA settings						
OPC UA settings						
OPC UA Name						
Port	4840					
Security Policy	Aes128Sha256RsaOaep	~				
Message Security Mode	Sign&Encrypt	~				
Certificate	Select file					
Private key	Select file					
Allow Anonymous						
Username						
Password			*			
Data select	Information Model	•				
Model File(.xml)	Select file					
Dependent model files	None	•				
					Save & Ap	ply Save Reset

Item	Description	Default
OPC UA name	OPC UA server name	
Port	OPC UA server port number	4840
	None	
	basic128rsa15	
Socurity policy	basic256	Nono
Security policy	basic256sha256	None
	aes128sha256rsaoaep	
	All security policies	
Message security	Sign	
mode	Sign and encrypt	
Cortificato	OPC UA certificate, click the uploaded	
Certificate	certificate to load the configuration page.	
	OPC UA private key, click on the uploaded	
Private key	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	
	All data	
Data select	Select data point	All data
	Information model	
	You can select the data points you want to	
Select data point	read. "Data selection" option to select "select	
	data point" to have this option	
	Upload the information model (.xml) file,	
Model file (.xml)	select "Information Model" in the "Data	
	Selection" item to have this option	
Dependent model	Select the number of information models to	
files	reference, up to 5 can be selected.	
Dependent Models	Upload the information model (.xml) file to be	
1-5	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.



6 Communication Example

6.1 BL206 Communication Example

6.1.1 Connecting BL206 to Custom MQTT

loud connection setting	s	
Cloud platform	Custom Cloud 🗸	
Cloud Name	custom MQTT cloud	
Host IP or Domain		
Port	1883	
MQTT Client ID		
User Name		
Password		*
Encryption	No encryption	
Publish data format	Default data format	l
Publish Topic	/BeiLai/BL206/Data/	
Subscribe Topic	/BeiLai/BL206/Down	
Publish Period(s)	60	
Publisher QOS	0-At most once 🗸	
Data Retransmission Enable		
Publish Module Status		
Data packing	 Send multiple data in one messa 	age
Number of data	100	
Publish only changed data		

Dismiss Save



BL200M	Status -	System -	Settings -	I/O Module -	Serial Module 👻	Operation Control -	Cloud platform -	Logout	
Cloud con	nnect ection s	t ion se settings	ttings						
Cloud Name		Host IP or	Domain	Port	Publish Period(s)	Connect State	Enable		
custom MQTT cl	oud			1883	60	Connected		Edit	Delete
Add							Save & Apply	• Save	Reset

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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 5.1.7.7 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 BL206Pro and check the connection status. Check the connection status, you can check whether the connection is successful or not.

6.1.2 View and Send Data with MQTT.fx

Edit Connection Profiles			– 🗆 X
	Profile Name Profile Type	MQTT Server	
MQTT Server	MQTT Broker Profile Settings Broker Address	test.mosquitto.org	
	Broker Por Client ID	1883 MQTT_FX_Client_test	Generate
	General User Credentials	SSL/TLS Proxy LWT	
	User Name Password	••••	
+ -	Revert		Cancel OK Apply

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.

WQTT.fx - 1.7.1				o x
File Extras Help				
服务端	• 🗘 Connect	Disconnect		-
Publish Subscribe Scripts Broker Statu	is Log			
/BeiLai/BL206/Data/	Subscribe		QoS0 QoS1 QoS2 Autoro	roll Q2+
/BeiLai/BL206/Data/		46	io_status	133 QoS 0
in status	Dump Messages Mute	Unsubscribe	/BeiLai/BL206/Data/	134
10_status	Dump Messages Mute	Unsubscribe	io_status	135
			/Beital/BL206/Data/	QoS 0
			io_status	QoS 0
			/Belt.al/BL206/Data/	138
			io_status	Q05 0
			/D-11-2//D100//D-+-/	Qos 0
			/Beltal/BL200/Data/	138
Topics Collector (0)	San	Stop Q*	<pre>["BEGI000": 1, "REGI001": 0, "REGI002": 0, "REGI003": 0, "REGI004": 0, "REGI005": 0, "REGI006": 0, "REGI006"</pre>	1007": 0, 07": 0, 5, ,
			Payload decoded by Plain Text Decoder	•

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

	MQTT.fx - 1.7.1						×
I Law	File Extras Help						
	11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	• 🕸 Connect	Disconnect				• •
	Publish Subscribe Scripts Broker Statu	s Log					
Ì	io_status	• Subscribe		Qo50 Qo51 Qo52	Autoscro		0,**
X	/BeiLai/BL206/Data/		14	/BeiLai/BL206/Data/		C	69 DoS 0
		Dump Messages Mu	te Unsubscribe	/Beit.ai/BL206/Data/			70
	io_status		3	lo status		C	20S 0
		Dump Messages Mi	te Unsubscribe			C	2oS 0
240				/BeiLai/BL206/Data/		C	72 DoS 0
l				io_status			73
l				/Beilai/BL206/Data/		G	20S 0 74
l						C	QoS 0
l				io_status		q	75 QoS 0
122				io_status			75
				02-11-2023 15:35:00.56100965		- 1	QoS 0
×	Topics Collector (0)	Sca	Stop	{ "io_status": { "slot1": "Normal", "slot2": "Normal", "slot3": "Normal", "slot4": "Normal", "slo "slot6": "Normal" }, "time": "1698910500" }	t5": "No	ormal"	r
Ē				L			
)1							
3							
5							
31							
				Payload decoded by Plain Text D	ecoder		

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".





MOTT.fx - 1.7.1			-	пх
File Extras Help				
	- 🅸 Conne	d Disconnect		-
Publish Subscribe Scripts	Broker Status Log			
io_status	💌 Subscrib	-	QoS0 QoS1 QoS2 Autocroll	•:•
/BeiLai/BL206/Data/		44	io_status	129 QoS 0
io_status	Dump Messages	Mute Unsubscribe	/Bellal/BL206/Data/	130 QoS 0
	Dump Messages	Mute Unsubscribe	lo_status	131 QoS 0
			/Beltai/BL206/Data/	132 QoS 0
			io_status	133 QoS 0
			/Beltal/BL206/Data/	134 QoS 0
			io_status	135 QoS 0
			/BeiLai/BL206/Data/	134
Topics Collector (0)		San Step O(v)	02-11-023 1006-3305030455 [*REG0000*1 0, *REG001*1 0, *REG002*1 0, *REG003*1 0, *REG004*1 0, *REG005*1 0, *REG006*1 0, *REG00 *REG000*1 0, *REG001*1 0, *REG002*1 0, *REG002*1 0, *REG000*1 1, *REG005*0 0, *REG000*1 0, *REG0000*1 0, *REG0000*1 0, *REG0000*1 0, *REG	(Q650) 07": 0, 1: 0,
			Payload decoded by Plain Text Decoder	

6.1.3 Connecting BL206 to BLIIoT Cloud

Cloud connection sett	ings					
Cloud platfor	m Beilai IloT V2		~			
MQTT Client	D					
Publish Period(s) 60					
Data Retransmission Enab	le 🔽					
Publish Module State	us 🔽					
						Dismiss
BL200M Status - S Cloud connection	on settings	I/O Module	✓ Serial Module ✓	Operation Control -	Cloud platform -	Logout
Cloud Name	Host IP or Domain	Port	Publish Period(s)	Connect State	Enable	
custom MQTT cloud		1883	60	Connected		Edit Delete
Beilai IloT V2	mqtt.dtuip.com	1883	60	Connected		Edit Delete
Add						
					Save & Apply	Save Reset

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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.

6.1.4 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.





Monitoring Center				Console Lu	ga English	۷
Device name /ID	BLMQTT Serial Number:	Contraction of the second			80	
All Equipment Alarm 0 Offline 16	政值-1 ID:1279556	☐ connected Updated:2023-11-02 17:04:28	0.0003 🛧 🛩	AlmQ	RT Curve© Hist	Que
✓ 駅以組 0/5 ≦ test	股值-2 ID:1279557		0.0000 🛧 🛩	AlmQ	RT Curve⊙ Hist	Que
<u><u><u></u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u>	数值-3 ID:1279558	Gennected Updated:2023-11-02 17:04:28	3.5696 🛧 🛩	AlmQ	RT Curve© Hist	Que
▲ RTU5022 ▲ S282	股值-4 ID:1279559	G connected Updated:2023-11-02 17:04:28	0.0000 🛧 🛩	AlmQ	RT Curve© Hist	Que
R40 (Modbus)	設備-5 ID:1279560	Connected Updated:2023/11/02 17:03:28	5.0000 🛧 🛩	AlmQ	RT Curve Hist	Que
BL10x-ER	股值-6 ID:1279561	Connected Updated:2023/11/02 17:03:28	4.0000 🛧 🛩	AlmQ	RT Curve Hist	Que
<u><u>x</u>^c D225-Ξ⊞MQTT</u>	数值-7 ID:1279562	Connected Updated:2023/11/02 17:03:28	4.0000 🛧 🛩	AlmQ	RT Curve® Hist	Que
ELTON-ST-2005MART	0.1279553	Connected Updated:2023/11/02 17:03:28	4.0000 🛧 🛩	AlmQ	RT Curve® Hist	Que
5 BL102-S7-200MGTT-1	数值-9 ID:1279564	Gonnected Updated:2023/11/02 17:03:28	1.0000 🛧 🛩	AlmQ	RT Curve® Hist	Que
∑ BL10x(Modbus RTU)	数值-10 ID:1279565	Gonnected Updated:2023/11/02 17:03:28	2.0000 🛧 🛩	AlmQ	RT Curve® Hist	Que
ELMQTT						
EC BLMQTT1						
E BL10xMQTT						
> Test2021 0/2						
Device group managem New device group			10 Article/Page Y Total 140 Article 🗸 1		10 Page Define	

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

	and Type.Do, module Run	10.1112002			
hannels	Modbus Address	Value	PowerOn Status		Open/Close
	1000	Close	Open	•	Open/Close
	1001	Open	Open	•	Open/Close
	1002	Open	Open	•	Open/Close
	1003	Open	Open	•	Open/Close
	1004	Open	Open	~	Open/Close
	1005	Open	Open	•	Open/Close
	1006	Open	Open	~	Open/Close
	1007	Open	Open	~	Open/Close



M	2M Monitoring Center			C	insole 💭	🕼 English	® -
۲	Device name //D Q	Serial Number	r [80	0 2
•	All Equipment Alarm 0 Offline 16	线圈-1 ID:1279546	Connected Updated 2023/11/02 17:29:29		AlmQ	RT Curve G His	st Query∔-
٠	✓ ROUEL 0/5	线圈-2 ID:1279647	Gonnected Updated 2023/11/02 17:29:29	OFF	AlmQ	RT Curve : His	st Query 4-
• \$	<u>1</u> 8265	战图-3 ID:1279548	⊊ Connected Updated 2023/11/02 17:29:29	OFF	AlmQ	RT Curve His	st Query/-
Ø	1 8282	0.1279549	Connected Updated 2023/11/02 17:29:29	OFF	AlmQ.	RT Curve© His	st Query∖⊦
+	R40 (Modbus)	設 純細-5 ID:1279550		OFF	AlmQ	RT Curve® His	st Query∱-
	✓ BL 1/10 ≦≦ BL10xΞΞ	設置-6 1D:1279551	空 Connected Updated 2023/11/02 17:2	I OFF	AlmQ	RT Curve© His	st Query 4-
	<u>№</u> ⁶ D225-Ξ⊞MQTT	8500-7 ID:1279552	Connected Updated 2023/11/02 17:2 Cancel Determine	IOFF	AlmQ	RT Curve© Hit	st Query4-
	∑ ⁶ BL10x-S7-2005MART ∑ ⁶ BL10x-MQTT	战圈-8 ID:1279653	Connected Updated 2023/11/02 17:29:29	OFF	AlmQ	RT Curve© Hit	st Query \-
	<u>№</u> 8L102-S7-200MQTT-1	総冊-9 ID:1279554	♀ Connected Updated 2023/11/02 17:29:29	OFF	AlmQ	RT Curve G His	st Query/-
	5 BL102-S7-200MQTT-2 5 BL10x(Modbus RTU)	线圈-10 ID:1279555	Connected Updated 2023/11/02 17:29:29	OFF	AlmQ	RT Curve© Hit	st Query.∿
	E BLIGMOTT						
	> Test2021 0/2						
_							
	BL200M Status -	System - Settings	- I/O Module - Serial Module -	Operation Control - Cloud platform - Log	jout		

IO status

Channels	Modbus Address	Value	PowerOn Status		Open/Close
1	1000	Close	Open	~	Open/Close
	1001	Close	Open	~	Open/Close
	1002	Open	Open	~	Open/Close
	1003	Open	Open	•	Open/Close
	1004	Open	Open	~	Open/Close
	1005	Open	Open	~	Open/Close
	1006	Open	Open	~	Open/Close
	1007	Open	Open	~	Open/Close



Device name /ID 🔍	BLMQTT Serial	Number 1		B @ Z
All Equipment Alarm Offline 16	战圈-1 ID:1279546	☐ connected Updated 2023-11-02 17:18:29		AlmQ RT Curve⊙ Hist Que
✓ \$53.68 0.5 - ∑ ^c test	线圈-2 ID.1279547	☐ connected Updated:2023-11-02 17:18:29		AlmQ RT Curve⊙ Hist Que
<u>E</u> ⁶ \$265	設 総圖-3 ID:1279548	Generated Updated 2023-11-02 17:18:29	OFF	AlmQ RT Curve Hist Que
£ RTU5022 ↓ \$282	↓ 総圖-4 ID:1279549	Q connected Updated:2023-11-02 17:18:29	OFF	AlmQ RT Curve⊙ Hist Que
R40 (Modbus)	0 総面-5 ID:1279550	G connected Updated:2023-11-02 17:18:29	OFF	AlmQ RT Curve⊙ Hist Que
✓ BL 1/10 -	线图-6 ID:1279551	🖵 connected Updated.2023-11-02 17:18:29	OFF	AlmQ RT Curve⊙ Hist Que
	线圈-7 ID:1279552	🖵 connected Updated.2023-11-02 17:18:29	OFF	AlmQ RT Curve⊙ Hist Que
Set BL 10x-S7-200SMART Set 10x-MQTT	2 総圖-8 ID:1279553	Connected Updated 2023-11-02 17:18:29	OFF	AlmQ RT Curve⊙ Hist Que
EL 102-57-200MQTT-1	美國-9 ID:1279554	☐ connected Updated:2023-11-02 17:18:29	OFF	AlmQ RT Curve Hist Que
5 BL 102-S7-200MQTT-2 5 BL 102(Modbus RTU)	线圈-10 ID:1279555	G connected Updated: 2023-11-02 17:18:29	OFF	AlmQ RT Curve⊗ Hist Que
ELMQTT				
E BLIDMOTT				
> Test2021 0/2				

BL200M Status - System - Settings - I/O Module - Serial Module - Operation Control - Cloud platform - Logout

Modbus Query

Configure Name	Slave Address	Function Code	Mapping Address	Register Address	Data Type	Data Value	COM Port
03	1	3	40000	0	INT16 AB	1	COM1
03	1	3	40001	1	INT16 AB	2	COM1
03	1	3	40002	2	INT16 AB	3	COM1
03	1	3	40003	3	INT16 AB	0	COM1
03	1	3	40004	4	INT16 AB	0	COM1
03	1	3	40005	5	INT16 AB	0	COM1
03	1	3	40006	6	INT16 AB	0	COM1
03	1	3	40007	7	INT16 AB	0	COM1
03	1	3	40008	8	INT16 AB	8	COM1
03	1	3	40009	9	INT16 AB	0	COM1

Back to Overview

M	2M Monitoring Center					Console	🕼 English 🌚 🕶
۲	Device name /ID	BLMC	TT Serial Number				802
	Ali Equipment Alarm 🚺 Offline 1	1	数值-21 ID 1279576	© connected Updated:2023-11-02 17:22:29	3.0000 🛧 🛩	AlmQ	RT Curve - Hist Query-
4	✓ RUIE 0/5 <u>15</u> ⁴ test	1	数值-22 10:1279577	Gennected Updated 2023-11-02 17:22:29	0.0000 🛧 🛩	AimQ	RT Curve® Hist Query
*	Fc 230	1	数值-23 10:1279576	G connectied Updated 2023-11-02 17:22:29	0.0000 🛧 🛩	AimQ	RT Curve Hist Query 4
0	20° RTU5022	1	数值-24 ID:1279579	connected Updated 2023-11-02 17:22:29	0.0000 🛧 🛩	AlmQ	RT Curve Hist Query/r
*	R40 (Modbus)	1	数值-25 ID 1279580	Data Dissemination	- ⊠ × 0.0000 ↑ ♥	AimQ	RT Curve® Hist Query4
2	✓ BL 1/10 X ^C at tou=#	1	数值-26		0.0000 🛧 🛩	AlmQ	RT Curve Hist Query+
	N ^C 0225-EgMGTT	1	数值-27		8.0000 🛧 🛩	AlmQ	RT Curve© Hist Query4
	<u>X</u> ^C BLIDE-ET-2005MART	1	数值-28	Confirm	Cancel 0.0000 🛧 🛩	AlmQ	RT Curve® Hist Query-
	5 BL 102-67-200MQTT-1	a	勤 <u>億</u> -29	Disconnected	+	AlmQ	RT Curve® Hist Query4
	5 81.102-57-200M0TT-2	1	設備-30 10.1279585	Disconnected	+		RT Curve® Hist Query4
	SE BLID-MOTT						12



BL200M Sta	itus - System -	Settings - I/O Moo	lule 👻 Serial Module 👻	Operation Control -	Cloud platforr	n - Logout	
Modbus Qu	uery						
Configure Name	Slave Address	Function Code	Mapping Address	Register Address	Data Type	Data Value	COM Port
03	1	3	40000	0	INT16 AB	1	COM1
03	1	3	40001	1	INT16 AB	2	COM1
03	1	3	40002	2	INT16 AB	3	COM1

03	1	3	40003	3	INT16 AB	0	COM1
03	1	3	40004	4	INT16 AB	0	COM1
03	1	3	40005	5	INT16 AB	10	COM1
03	1	3	40006	6	INT16 AB	0	COM1
03	1	3	40007	7	INT16 AB	0	COM1
03	1	3	40008	8	INT16 AB	8	COM1
03	1	3	40009	9	INT16 AB	0	COM1

Device name //D 🔍	BLMQTT Serial Number				602
All Equipment Alarm 0 Offline 16	♪ 数值-21		3.0000 🛧 🛩	AlmÓ	RT Curve Hist Quer
✓ 駅认組 075 まご test	数值-22 ID 1279577	connected Updated 2023-11-02 17:23:29	0.0000 🛧 🛩	AlmQ	RT Curve Hist Quer
∑ [≤] \$265	政備-23 ID:1279578		0.0000 🛧 🛩	AlmQ	RT Curve : Hist Quer
∑ ^e RTU5022 ↓ S282	数值-24 ID:1279579	☐ connected Updated:2023-11-02 17:23:29	10.0000 🛧 🛩	AlmQ	RT Curve⊙ Hist Quer
R40 (Modbus)	政值-25 ID:1279580	G connected Updated:2023-11-02 17:23:29	0.0000 🛧 🛩	AlmQ	RT Curve Hist Quer
✓ BL 1/10 上 ^C BL10x-三県	数值-26 ID:1279581	G connected Updated:2023-11-02 17:23:29	0.0000 🛧 🛩	AlmQ	RT Curve Hist Quer
∑ ^C D225-Ξ₩MQTT	数值-27 ID:1279582	♀ connected Updated:2023-11-02 17:23:29	8.0000 🛧 🛩	AlmQ	RT Curve® Hist Quer
∑ ^C BL10x-57-200SMART ∑ ^C BL10x-MQTT	設備-28 ID:1279583		0.0000 🛧 🛩	AlmQ	RT Curve : Hist Quer
EL102-S7-200MQTT-1	設備-29 ID:1279584	Disconnected Updated:	*	AlmQ	RT Curve : Hist Quer
∑ BL 102-S7-200MQTT-2 ∑ BL 10x(Modbus RTU)	設置-30 ID:1279585	Disconnected Updated:	*	AlmQ	RT Curve® Hist Quer
ELMQTT					
> Test2021 0/2					



6.1.5 Connecting BL206 to AliCloud

BL200M Status - S	ystem – Settings –	I/O Module - Se	rial Module 🕶	Operation Control -	Cloud platform -	Logout
Ali cloud setting	IS					
Ali cloud settings						
Enable						
Authentication method	Device Serect	~				
Product Key(ProductKey)						
Device Name(DeviceName)	BL200-miyao					
Device Serect(DeviceSerect)						
Region ID	East China 2	•				
Publish Period(s)	60					
Publish only changed data						
Data packing	Send multiple da	ta in one message				
Number of data	100					
Connect State	Not connected					
					Save & Apply	Save Reset

Shenzhen Beilai Technology Co.,Ltd (V1.1.12) / 2023-10-19

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.



Device Certificate		×
Device Certificate (Сору	
ProductKey	. Сору	
DeviceName	BL200-miyao Copy	
DeviceSecret	Сору	
Certificate Installati	on Modes	
✓ Introduction to the ur	nique-certificate-per-device and unique-certificate-per-product m	nodes

6.1.6 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:

E C-D Alibaba Cloud	😡 Workbench 🗮 All Re	esources 👻 👳 China ((Shanghai) v	Q	SearchEx	penses ICP Ente	arprise Support Tickets 🗗	ы Ф. Д. © EN
← IoT Platform	IoT Platform / Devices / Devices	i / BL200-miyao						
Instance Details Devices	← BL200-miya Products BL200-密明 ProductKey	Online View k Copy			DeviceSecret View	×		
Products	Device Information Top	oic List TSL Data D	Device Shadow Manage Files	Device Log Online	Debug Sub-device Management	Groups Task		
Groups	Status Events Invo	oke Service						
Device Simulation	Enter a module name Q	Enter a property name or	r identifier Q					Real-time Refresh 🕥 🔡 🚍
Device Distribution	Default Madula	Property identifier	Property Name	Data Type	Update Time	Updated Value	Expected Value	Actions
CA Certificate	Default Module	REG1000	REG1000	bool	Nov 3, 2023, 09:45:19:274	1 (1)	1 (1)	View Data
Message Forwarding V		REG10000	REG10000	bool	Nov 3, 2023, 09:45:19:274	1 (1)		View Data
Resource Allocation V		REG10001	REG10001	bool	Nov 3, 2023, 09:45:19:274	0 (0)	~	View Data
Maintenance V		REG1001	REG1001	bool	Nov 3, 2023, 09:45:19:274	1 (1)		View Data
Link Visual V		REG1002	REG1002	bool	Nov 3, 2023, 09:45:19:274	0 (0)		View Data
Documentation and Tools		REG1003	REG1003	bool	Nov 3, 2023, 09:45:19.274	0 (0)	са. С	View Data
		REG1004	REG1004	bool	Nov 3, 2023, 09:45:19:274	0 (0)		View Data
		REG1005	REG1005	bool	Nov 3, 2023, 09:45:19.274	D (D)	121	View Data
		REG1006	REG1006	bool	Nov 3, 2023, 09:45:19.274	O (0)		View Data
E Feedback		REG1007	REG1007	bool	Nov 3, 2023, 09:45:19:274	D (0)	φ.	View Data

Close



E C-) Alibaba Cloud	🖩 All Resources 👻 👲 China (Sh	anghai) v	С	Exp	ienses ICP Er	interprise Support Tickets 🕀 🗔 (0 # 0 0 I
← IoT Platform	REG3070	REG3070	float	Dec 22, 2022, 10:31:49.179	° 1		View Data
Instance Details	REG4000	REG4000	float	Nov 3, 2023, 09:45:19:274	5.0		View Data
Devices ^	REG40000	REG40000	int	Nov 3, 2023, 09:45:19:274	1	-	View Data
Products	REG40001	REG40001	int	Nov 3, 2023, 09:45:19:274	2		View Data
Devices	REG40002	REG40002	int	Nov 3, 2023, 09:45:19.274	3		View Data
Groups	REG40003	REG40003	int	Nov 3, 2023, 09:45:19.274	0	×	View Data
Device Distribution	REG40004	REG40004	int	Nov 3, 2023, 09:45:19:274	0	~	View Data
CA Certificate	REG40005	REG40005	int	Nov 3, 2023, 09:45:19.274	0	200	View Data
Message Forwarding V	REG40006	REG40006	float	Nov 3, 2023, 09:45:19.274	0.0		View Data
Resource Allocation V	REG40007	REG40007	int	Nov 3, 2023, 09:45:19.274	0		View Data
Link Analytics 🖄	REG40008	REG40008	float	Nov 3, 2023, 09:45:19:274	0.0		View Data
Link Visual 🗸 🗸	REG40009	REG40009	int	Nov 3, 2023, 09:45:19.274	0		View Data
Documentation and Tools	REG40010	REG40010	float	Oct 29, 2022, 15:11:59.542	5.28		View Data
	REG4002	REG4002	float	Nov 3, 2023, 09:45:19:274	4.0		View Data
	RFG4004	REG4004	float	Nov 3 2023 0945-19274	4.0	121	View Data
	000000	000000		No. 2 2022 00 45 10 274	40		View Gala
	1204000	1004000	noat	nov 5, 2025, 08+5:19/274	~~		View Data
E Feedback	REG4008	REG4008	float	Dec 22, 2022, 10:31:49.179	0	-	View Data

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



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Cloud platform - Logout

BL200M

Status - System -

Settings - I/O Module - Serial Module - Operation Control -

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	Close	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

E C-J Alibaba Cloud	ŵ Workbench 🛛 🗟 All Resources ↔ 😟 China (Shanghai) ↔	Q	Search Expenses ICP Enterprise Support Trickets 🔂 🖾 🎝 🛱 🔉 🕐 EN 🕂			
← IoT Platform	IoT Platform / Maintenance / Online Debug					
Instance Details	Online Debug					
Devices ^	Select device: BL200-密钥 ~ BL200-miyao ~					
Products	Online debugging only supports debugging real equipment, please use Device simulator Device simulator	Real-time Logs Online	Auto-Refresh 💽 C 🖞			
Devices	virtual equipment debugging	Time	Content			
Groups	Property Debugging Service Calls Remote Login	TSL	"Status" "feise" "Requestid" "." "Instanceid" "ist-cubic". "Params" "/\"REG40009\"0\"REG40009\"0\"REG30000\"1\"REG4009\"4\"REG4009\			
Device Simulation	Module: Default Module V	Nov 3, 2023, 10:03:19:346	\"2,\"REG4000\"1,\"REG4004\"4,\"REG4003\"0,\"REG4002\"3,\"REG4002\"4,\"REG4002\"4,\"REG4000\"1,\"REG4004\"4,\"REG4004\"4,\"REG4007\"5			
Device Distribution	REG1000(REG1000)		005/1/0/(REG2004/11/)/REG3010/1-200/(REG2001/10/)REG2000/10/(REG10009/10/)REG10009/10/(REG10009/10/)REG10007/10/(REG10009/10/)REG10009/10/(REG1000			
CA Certificate	Please select a parameter (bool) V Debugging V		G20004(1-0)/REG30009(1-0)/REG30004(1-0)/REG30003(1-4)/REG30002(1-3)/REG30001(1-2)/time/1/1698976999(.)/REG30008(1-0)/REG300 07/10/IREG30009(1-0)/REG30005(10)/Time/1202311-0311023(19246)/Operation1/Check//Code/16327/Reason/15tj pare failed/Jutti me/1202311.10211001814.000071141/HDIOD101/UREMAC.come/Information/Reas(1946)/REG3000211-01-01-01-01-01-01-01-01-01-01-01-01-0			
Message Forwarding \sim	REG1001(REG1001)		me: 2023-11-031 (0031/3546-0000), bitls : hnouldN1/bdzhvip(gmedoudou), kebitubata ; () netsoudou () 592- property not round, /\/\REGIOD9U/\/S092 - property not round\/\REGIOD0U/\/S092 - property not found\/\REGIOD9U\/S092 - property not found\/\REGIOD9U/\/S092 - propety not found\/\REGIOD9U/\/S09Z - propety not found\/\REGIOD9U/\/S09Z - propety not found\/\REGIOD9U/			
Resource Allocation V	Please select a parameter (bool) V Debugging V		(1/1582 - property not found) (1/5e) (1/1592 - property not found) (1/1582) - property not found) (1/1582) - property not found) (1/1592) - property not found) (1/1592) - property not found) (1/1582) - property not			
Maintenance ^	REG1002(REG1002)					
Real-time Monitoring	Please select a parameter (bool)		\^\5992 - property not found\'\Lime\\^5992 - property not found\'\'REG30001\\^5992 - property not found\'\REG30001\\^5992 - property not found\'\REG30001\\^5992 - property not found\'\REG30001\\^5992 - property not found\'\\REG30001\\^5992 - property not found\'\\REG3001\\^5\\5992 - property not found\'\\S992 - property not found\'\S992 - proper			
Dashboard	1.1 Debugging X		o","Messageld":"}			
Device Log	REG1004(REG1004)	TSL	["Status"/true": RequestId': ", finstanceId': "iot-public", "Params": ", "Time": 2023-11-03 10.03:19.336", "Operation": / sys/a1dErXDrQlk/BL200-mi yeo/thing/event/property/post", "Code": 200", "Resson": ", "UtcTime": 2023-11-03110.03:19.336-0800", "IotId": "HoDIDKI 'PDdEMApCgmed000			
Online Debug	Please select a parameter (bool) V Debugging V	Huv 9, 2023, 1003:19:530	000", "ResultData"", "Traceld": S946f181698976999318625880065", "ProductKey1" a1dErXDrQlk", "BizCode": "ThingModel", "DeviceName": "BL20 0-miyao", "Messageid": 1720260334604396544"]			
Secure Tunnel	REG1005(REG1005)	TSL	["Status":"true";"Requestid":"";"InstanceId":"iot-public";"Params":"";"Time":"2023-11-03 10:03:07.519";"Operation":"/sys/a1dErXDrQIk/BL200-mi			
Remote Config	Please select a parameter (bool) V Debugging V	Nov 3, 2023, 10:03:07.519	yearthing/service/property/set_rep/; /code*/:2002*reason**; /utc/ime*/2022+11-037100307.519-0800*; *otd**/*Hh0D0KIY0dERMpCgma d000000*; ResultData***; *TraceId***a9fe01816989769875051034d0065*; *ProductKey**a1dErXDrQIk*; *BiaCode***ThingModel*; *DeviceNam e***BL20***ined****A9feaded***1720260258057094928*)			
OTA Undate	REG1006(REG1006)					
	Diase celert a carmeter (hnol) V Dehunning V Get Set Set expectations Reset					



😑 🕒 Alibaba Cloud	ŵ Workbench III All Resources ∨ 👳 China (Shanghai) ∨	C	Search	Expenses ICP Enterprise	Support Tickets 🔂	e t a c	@ EN	+3 Ma		
← IoT Platform	IoT Platform / Maintenance / Online Debug									
Instance Details	Online Debug									
Devices ^	Select device: BL200-密钥 ~ BL200-milyao ~									
Products	Online debugging only supports debugging real equipment, please use X Device simulator	Real-time Logs Online				Auto-Refresh	C	ť		
Devices	virtuai equipritein ueuugging	Time	Content							
Groups	Property Debugging Service Calls Remote Login	TSL	("Status":"false"RequestId":""."Inst	anceld":"iot-public" "Params":"\\"REI	G40009**0.*REG40008**0.*	REG30000\"1\"REG4006\"4\	*REG40001			
Device Simulation	Module: Default Module 🗸	Nov 3, 2023, 10:05:19:342	\"2,"REG40000\"1,"REG4004\"4,\ 0,\"REG40006\"0,\"REG20001\"1,\" 0,\"REG40006\"0,\"REG20001\"1,\"	"REG40003\"0\"REG40002\"3\"REG REG20000\"1\"REG10002\"0\"REG	G4002\":4\"REG40005\":0\"F \$10001\":0\"REG10000\":1\"F	EG40004\":0\"REG4000\":5\"1 REG1005\":0\"REG1006\":0\"R 6\":0\"REG2002\":0\"REG2002	REG40007\": REG1007\": 2\"0\"PEG2	i.		
Device Distribution			005\":0\"REG2004\":1\"REG3010\": 005\":0\"REG10004\":0\"seq\":1\"F	-200,\"REG2001\":0,\"REG2000\":0,\ REG10003\":0,\"REG3008\":-200,\"RE	"REG10009\":0,\"REG10008\" EG3004\":4.935842514038086	:0,\"REG10007\":0,\"REG10006 ;\"REG20007\":0,\"REG20006\"	2G10006\":0,\"REG10 G20006\":0,\"REG300	2		
CA Certificate	Enter a parameter (float) Debugging V		6*10,*REG20009*10,*REG20008*1 G20004*10,*REG30009*10,*REG30005\ 07*10,*REG30006*10,*REG30005\	.0,*REG3000*:3.108978271484375E 2004*:0,*REG30003*:4,*REG30002 *:0)*.*Time*:*2023+11-03 10:05:19.34	2-4\"REG20003\":0\"REG200 2\":3\"REG30001\":2\\"time\" 42","Operation":"Check","Cod	J2\":0,\"REG3002\":0,\"REG200 \"1698977119\",\"REG30008\" ie":"6332","Reason":"tsi parse f	J05\":0,\"RE ":0,\"REG300 failed","UtcTi	6		
Message Forwarding \sim	Enter a parameter (float)	me*: 2023-11-03T10:05:19.342+0800", "lotid": "Hh0Di0K1VDdERMpCgmad000000", "ResultData": "(\"REG \"\"REG20001\"\"S92 - property not found\"\ \"REG20000", "S92 - property not found\"\ \"S92 - property not found\"\"S92 - property not foun					"REG30000\"\"5092 - property not found 10009\"\"5092 - property not found\"\"REG \"5092 - property not found\"\"REG10005			
Resource Allocation \sim	REG40000(REG40000)		V1/1992,negrety not found/11/set/11/992,negrety not found/11/99200001/1992,negrety not found/11/99200001/19920,negrety not found/11/99200001/19920,negrety not found/11/99200001/199200001/199200001/199200001/199200001/199200001/1992000001/1992000001/1992000001/1992000001/19920000001/19920000001/19920000001/19920000000000					ŝ		
Maintenance ^	20 Debugging 🔨									
Real-time Monitoring	REG40001(REG40001) Get		c) coperty not found\",\"REG30007\"\" operty not found\",\"REG30007\"\" ot found\"3" "Traceld":"a9fef018169	State of the second	IO006\"\"5092 - property not ev"."aldFrXDrOlk" "BizCode"\	found\",\"REG30005\":\"5092 "ThingModel" "DeviceName":"	(**5092 - property n	1		
Dashboard	Enter a parameter (int) Set		o","Messageld":""}							
Device Log	REG40002(REG40002)	TSL	("Status":"true", "Requestid":"","Insta	1'true" (Requestid'') "Instanceid'i lot-public", "Parami 1", "Time" 12023-11-03 1005/19.331", "Operation 1"/1926 146/XD-Qilv8L200-mi ng levent (property) post "Code" 1200", "Reason ", "Utut Time" 12023-11-031100315331-0600", "Istd" "HADDIKK TUDERNG (gmad000 auxiltans" ("Timedor") 1936/10116097110131515160057 ("Nocuticity") 1436/XD-Qilv8C206", "Timedor") 1420						
Device Log	Enter a parameter (int) Debugging 🗸	Nov 3, 2023, 10:05:19:331	yao/thing/event/property/post", Co 000", "ResultData": ", "Traceld": "a9fet 0.mivao", "Messaneld": "1720260833					5		
Online Debug	REG40003(REG40003)		in nyoo , messegera r n zozooos	, ,,,,,,,,,,,						
Secure Tunnel	Enter a parameter (int) Debugging 🗸	TSL	Fishus "New "Research" "Interved" "Orapular", "Research (TRE60000%"), "Res0000%"), "Res0000%", "Res000%", "Res00%", "Res0				"REG40001 "REG40007\":	6		
Remote Config	REG40004(REG40004)	1000 5, 2025, 10:04:15:557					dEG1007*: 2*:0,*REG2			
OTA Update	Enter a parameter (int) Debugging 🗸		005\10\1REG10004\11\1Red5010\1	0051/01/Refs004111/Refs01001130/Refs0101130/Refs000130/Refs000130/Refs0009130/Refs1000130/Refs10001100/Refs10001100/Refs10001100/Refs0000100/Refs10001100			A*:0,*REG30			
	Got Sat Satavnartations Resat									
	ore and derevherrainus ueser									
BI 200M	Status - System - Settings - J/O Module	 Serial Module 	- Operation Contr	rol - Cloud plat	form - Log	out				

Modbus Query

Configure Name	Slave Address	Function Code	Mapping Address	Register Address	Data Type	Data Value	COM Port
03	1	3	40000	0	INT16 AB	20	COM1
03	1	3	40001	1	INT16 AB	2	COM1
03	1	3	40002	2	INT16 AB	3	COM1
03	1	3	40003	3	INT16 AB	0	COM1
03	1	3	40004	4	INT16 AB	0	COM1
03	1	3	40005	5	INT16 AB	0	COM1
03	1	3	40006	6	INT16 AB	0	COM1
03	1	3	40007	7	INT16 AB	0	COM1
03	1	3	40008	8	INT16 AB	0	COM1
03	1	3	40009	9	INT16 AB	0	COM1

Back to Overview



IoT Platform	IoT Platform / Maintenance / Online Debug			
tance Details	Online Debug			
vices ^	Select device: BL200-歌明 ~ BL200-miyao	\sim		
Products	Online debugging only supports debugging real equipment, plea	se use X Device simulator	Real-time Logs Online	Auto-Refresh 🔘 (
Devices	virtual equipment debugging		Time	Content
Groups	Property Debugging Service Calls Remote Login			
Device Simulation	Module: Default Module 🗸		TSL Nov 3, 2023, 10:08:19:344	("Status", "failes", "Bequestid", "Instanceld", "iot-public", "Params", "(!/RE640008/\0), !RE640008/\0), "RE640008/\10," RE640008/\10," RE640008/\10," RE640008/\10," RE64008/\10," R
Device Distribution	increase increases			0,*REG1001*1,*REG1002*0,*REG1003*1,*REG1004*0,*REG1004*0,*REG1004*1,*REG2007*0,*REG2008*0,*REG2003*0,*REG2002*0,*REG2003*0,*REG2003*0,*REG2003*0,*REG2003*0,*REG2003*0,*REG2003*0,*REG10009*0,*REG10000*0,*REG10009*0,*REG10000*0,*REG10000*0,*REG10009*0,*REG10000*0,*REG10000*0,*REG10000*0,*REG10000*0,*REG1000*0,*REG1000*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*REG1000*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*REG1000*0,*R
A Cashilianta	Enter a parameter (float)	Debugging 🗸		001', 3), 'REC1004', 3), 'REC1005', 3), 'REC3006', 'AU(), 'REC304', 'AA(), 'REC3004', 'AA(), 'REC3003', 'A), 'REC30004', 'A), 'REC3004', 'A), 'REC304', 'A), 'A), 'REC
A certificate	REG4038(REG4038) 🕲			07\"0,\"REG30006\"0,\"REG30005\"0,\"Time"\"2023-11-03 10.08:19.344", "Operation"\"Check", "Code"\"6332", "Reason"\"tsl parse failed", "U me"\"2023-11-03T10.08:19.344+0800", "lotid"\"Hh0Di0K1YDdERMpCgmad000000", "ResultData \"\\"REG30000\\"\"5092 - property not foun
sage Forwarding V	Enter a parameter (float)	Debugging 🛩		\/\REG2001\\^TS092 - property not found\\'\REG2000\\^TS092 - property not found\\'\REG10009\\^TS092 - property not found\\'\ 10008\\^TS092 - property not found\\'\REG1000\\'\TS092 - property not found\\'\REG10009\\\'TS092 - property not found\\'\REG10001\\'\TS092 - property not found\\'\REG10001\\'\TS092 - property not found\\'\\REG10001\\'\TS092 - property not found\\'\\REG10001\\'\TS092 - property not found\\'\\REG10001\\'\TS092 - property not found\\'\REG10001\\'\TS092 - property not found\\'\REG10001\\'\TS092 - property not found\\'\\REG10001\\'\TS092 - property not found\\'\\REG10001\\'\\TS092 - property not found\\'\\REG1001\\\\\TS092 - property not found\\'\\REG1001\\\\\TS092 - property not found\\'\\REG1001\\\\\\TS092 - property not found\\'\\\REG1001\\\\\TS092 - property not found\\\'\\REG1001\\\\\TS092 - property not found\\\\\\TS092 - property not found\\\\\\TS092 - property not found\\\\\\TS092 - property not found\\\\\TS092 - property not found\\\\TS092 - property not found\\\\TS092 - property not found\\\\TS092 - property not found\\\\TS092 - property not found\\\TS092 - property not found\\\TS092 - property not found\\\TS092 - property not found\\\TS092 - property not found\\TS092 - property not found\\TS092 - property not found\\TS092 - property not found\\TS092 - property not fou
ource Allocation V	REG40000(REG40000)			perty not found/\"REG20003\"\"5092 - property not found\"\"REG20007\"\"5092 - property not found\"\"REG20003\"\"5092 - property not found\"\"REG2003\"\"5092 - property no
ntenance ^	20	Debugging 🛩		\^\REG20002\^\S092 - property not found\^\REG20005\^\S092 - property not found\^\REG20004\^\S092 - property not found\^\ 30009\\S092 - property not found\^\REG3004\^\S092 - property not found\^\REG3003\^\S092 - property not found\^\
teal-time Monitoring	REG40001(REG40001)			(ii) 3992 - property not rounal (,) 3992 - property not rounal (,) KEUSU0011 (i) 3992 - property not rounal (,) KEUSU008 (ii) 3992 - operty not found') ("REG300051115992 - property not found') ("REG30051115992 - property not found') ("REG3005115992 - pr
lashboard	Enter a parameter (int)	Debugging 🛩		o","Messageld":"")
Device Log	REG40002(REG40002)		TSL	[Status": "true": "RequestId": ","InstanceId": "iot-public", "Params": ", "Time": "2023-11-03 10:08:19:334", "Operation": //sys/a1dErXDrQik/8L200
- Dahar	Enter a parameter (int)	Debugging 🛩	Nov 3, 2023, 10:08:19.334	joorning:even propenty post, code 120, reason + out me 1203+1+031100a1853+4+060, 100a1+model(*) DeviceName*1* 000"; ResultData*", "Traced*:*a9[e01816989772993167397d0065", "ProductKey**a1dErXDrQK*, "BizCode*: "ThingModef", "DeviceName*1* 0-miyao*, "Messageld*1172026159288991166")
nine Debug	REG40003(REG40003) 🚳			
ecure Tunnel	Enter a parameter (int)	Debugging 🛩	TSL Nov 3, 2023, 10:07:32.030	["Status""true", "Reguestid"", "Instanceid", "lot-public", "Params", "Time": 2023-11-03 10.07/32.030", "Operation": //sy/a1dE/XDrQik/BL200 yso/thing/service/property/set_repty", "Code" 2007; "Resson": ", "Utrime": 2023-11-03 10.07/32.030-0000, "Indid": "HINDIX IVDERIMCS 0000000", "Bound Pass", "Transid", "Geolary 19 5000772 500-0000, "Double Vision", "Double Vision, "Double Vision", "Double Vision", "Double Vision", "Double Vision", "Double Vision", "Double Vision", "Double Vision, "Double Vision", "Double Vision, "Double Vision", "Double Vision, "Double Vision", "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision, "Double Vision,", "Double Vision, "Double Vision,", "Double Vision, "Double Visio
emote Config	REG40004(REG40004)			e":"8L200-miyao","Messageld":"1720261394491800065"}
TA Undate	Enter a naramater (int)	Debugging V		



6.1.7 Connecting BL206 to AWS

BL200M Status - Sy	ystem + Settings + I/O Module + Serial Module + Operation Control + Cloud platform + Logout					
Aws cloud settir	ngs					
Aws cloud settings						
Enable						
Host(EndPoint)	azyxyvh50co6f-ats.iot.us-east-1.an					
Client ID	402482273034					
Thing Name	BL200					
Certificate authority	/etc/mqtt/aws/AmazonRootCA1.pem (1.19 KB)					
	/etc/mqtt/aws/root.crt					
Device certificate	http://etc/mqtt/aws/b21ed2de191426c3-certificate.pem.crt (1.22 KB)					
	/etc/mqtt/aws/local.crt					
Device private key	http://www.b21ed2de191b697426c3-private.pem.key (1.68 KB)					
	/etc/mqtt/aws/private.key					
Publish Topic	iot/topic					
Publish Period(s)	60					
Publish only changed data						
Shadow Data select	All data 🗸					
Data packing						
	Send multiple data in one message					
Number of data	100					
Connect State	Connected					
	Save & Apply Save Reset					

Shenzhen Beilai Technology Co.,Ltd (V1.1.12) / 2023-10-19

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.

WS IoT > Settings	
Settings Info	
Device data endpoint Info	
Your devices can use your account's device data endpoint to connect to AWS.	
Each of your things has a REST API available at this endpoint. MQTT clients and AWS IoT Device SDKs 🔀 also use this endpoint	nt.
Endpoint D azyxyvh50co6f-ats.iot.us-east-1.amazonaws.com	
Select security policy Info To customize your TLS settings, such as TLS versions and supported cipher suites, choose a security policy.	
IoTSecurityPolicy_TLS12_1_0_2015_01	
Compare security policies 🔀	



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.

6.1.8 AWS View and Send Data

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

iii services		(ALC'S)	
AWS IoT ×	AWS.IoT > MQTT test client		
Monitor	MQTT test client Info		
Connect	You can use the MQTT test client to mon of changes and events. You can subscribe	tor the MQTT messages being passed in your AWS account. Devices publish MQTT messages that are identified by topics to communicate their state to AWS is to MQTT message topics and publish MQTT messages to topics by using the MQTT test client.	T. AWS IoT also publishes MQTT messages to inform devices and appr
Connect one device Connect many devices	Connection details You can update the connection details b	choosing Disconnect and making updates on the Establish connection to continue page.	⊘ Connected
Test Device Advisor MQTT test client	Subscribe to a topic	Publish to a topic	
Device Location New Manage	Topic filter info The topic filter describes the topic(s) to whit iot/topic	hype want to subsorble. The taple filter can include MQTT elidical characters.	
All devices Greengrass devices LPWAN devices Software packages New	Additional configuration Subscribe		1
Remote actions Message routing	Subscriptions	iot/topic	Pause Clear Export Edit
Security Fleet Hub	iet/topic 🗢 🗙	Message payload [f	
Device software Billing groups) Additional configuration	
Feature spotlight Documentation 🛃		Publish ist/topic	November 03, 2023, 10:53:09 (UTC+0800)



aws is services Q Search	Subscribe	[Alt+S]	Σ Δ ⑦ ◎ N. Virginia + As3123131
Monitor	Subscriptions	iot/topic	Pause Clear Export Edit
Connect Connect one device Connect many devices	iot/topic 🗢	Message payload ('message": "Hello from AWS IoT conside")	
Test Device Advisor MQTT test client		Additional configuration Publish	
Manage All devices Greengrass devices UPUNN devices Software packages New		 iot/topic ("REGLOOD": 0, "REGLOOL": 1, "REGLOOL": 0, "REGLOOL: 0	November 03, 2023, 1055.04 (UTC-0800) 5°: 0, "RESLOND": 1, 0, "RESLOND": 0, "RESLOND: 0, "RESLOND": 0, "RESLOND: 0, "RESLOND: 0, "RESLOND: 0, "RESLOND: 0, "RESLOND: 0, "RESLOND: 0, "R
 Remote actions Message routing Retained messages 		▶ Properties	
 Security Fleet Hub 		▼ iot/topic	November 03, 2023, 10:53:58 (UTC+0800)
Device software Billing groups Settings Feature spotlight Documentation 🗗		("REGIONO": 0, "REGIONI": 1, "REGIONI": 0, "REGIONI": 1, "REGIONI": 0, "REGIONI": 1, REGIONI : 1, "REGIONI": 0, "REGIONI": 1, "REGIONI": 0, "REGIONI": 1, "REGIONI': 1, 1, "REGIONI': 1, 1, "REGIONI': 1, 1, "REGIONI': 1, 1, "RE	5", 0, "REGIONO": 0, "REGIONO: 0," REGIONO: 1," REGIONO:

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

▼ iot/topic			November 03, 2023, 15:52:55 (UTC+0800)
<pre>{ "REG1000": 0] "REG 4": 1, "REG2005": 0 4": 4, "REG4006": 4 G10008": 0, "REG100 "REG300000": 1, "REG 2, "REG40002": 3, "I</pre>	G1001": 0, "REG1002": 1, "REG1003": 0, "REG1004": 0, , "REG2006": 0, "REG2007": 0, "REG3000": 0.0003108578 , "REG3006": -200, "REG31007": -200, "REG10000": 1, " 99": 0, "REG20000": 1, "REG20001": 1, "REG20002": 0, 30001": 2, "REG30002": 3, "REG30003": 4, "REG30004": REG40003": 0, "REG40004": 0, "REG40005": 0, "REG40006	"REG1005": 0, "REG1006": 0, "REG1007": 0, "REG20 27146475, "REG3002": 0, "REG3004": 4.897743225 (Ecl00021": 0, "REG10027": 0, "REG30007": 0, "REG "REG20003": 0, "REG30004": 0, "REG20005": 0, "RE 0, "REG30005": 0, "REG30006": 0, "REG30007": 0, ": 0, "REG40007": 0, "REG40008": 0, "REG40009":	00": 0, "REG2001": 0, "REG2002": 0, "REG2003": 0, "REG200 975562, "REG3005": 0, "REG4000": 5, "REG4002": 4, "REG400 004": 0, "REG30005": 0, "REG10006": 0, "REG20006": 0, "RE 620006": 0, "REG30007": 0, "REG40000": 1] "REG40001": 0, "time": "1698997975", "seq": 1 }
aws III Services Q Search	[Alt+S]		🔎 🗘 🕐 🎯 N. Virginia 🕶 Aa31231316
AWS IOT X	AW5.IoT > Manage > Things > 8L200		
Monitor	BL200 Info		Create secure tunnel Edit Delete
Connect	Thing details		
Connect many devices	Name BL200	Type	
	ARN	Billing group	
Test	0		
Device Advisor	amswssocus-east-1:402482273054(ming) Bc200		
Device Location	Attributes Certificates Thing groups Device Shadows	Activity Packages and versions Jobs Alarms Defender m	trics
Manage	Design Charleson (1) and		
	Device Shadows (1) into Device Shadows allow connected devices to sync their state with AWS. You can also get, upd	ate or	
Things Things or purpose	delete the state information about this thing's Device Shadows by using HTTPS and MQTT to	pics	
Thing types	Q, Filter Device Shadows		< 1 > @
Fleet metrics	Name	MQTT topic prefix	Fleet indexing status Last updated date
 Greengrass devices 	Classic Shadow	🗇 \$aws/things/BL200/shadow	Not indexed November 03, 2023, 10:57:44 (UTC+08:00)
LPWAN devices			
Remote actions			
Message routing			
Retained messages			
 Security 			
Fleet Hub			





{ TECIDOD": 1 "REGIDOD": 0, "REGIDOD": 1, "REGIDOD": 0, "REGIDODD": 0, "REGIDOD": 0, "REGIDODD": 0, "RE



6.1.9 Connecting BL206 to Huawei Cloud

BL200M Status - Sy	stem - Settings -	I/O Module -	Serial Module 🔻	Operation Control +	Cloud platform -	Logout
Huawei cloud se	ttings					
Huawei cloud settings						
Enable						
Authentication method	Device Serect	~				
Device ID	·····	BL200				
Secret key	•••••	*				
Service ID	BL200					
Region ID	CN North-Beijng4	•				
Publish Period(s)	60					
Publish only changed data						
Data packing	Send multiple da	ta in one message				
Number of data	100					
Connect State	Connected					
					Save & Apply	Save Reset

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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.

6.1.10 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:







жина	HUAWEI CLOUD	Console	Beijing4	Y			More 🕞 💭 💮 🖶	EN
Ξ	IoT Device			REG4014	Read-only,Writable	0	1	
0	Protection (Objection			REG4016	Read-only,Writable	0		
	Default			REG4020	Read-only,Writable	0		
ΛΛ	Overview			REG4022	Read-only,Writable	0		
0	Products			REG4024	Read-only,Writable	0		
0	Devices	•		REG4026	Read-only,Writable	0		
٢	All Devices			REG4028	Read-only,Writable	0		
٨	Groups Software/Firmware			REG4030	Read-only,Writable	0		
4	Upgrades			REG4032	Read-only,Writable	0		
٢	Device CA Certificates			REG4034	Read-only,Writable	0		
&	Rules	•		REG4036	Read-only,Writable	0		
\oplus	MãO	*		REG4036	Read-only Writable	0		
8	Resource Spaces			120100	rica a any, rina ano			
	IoTDA Instances			REG4038	Read-only,Writable	0		
	Profiles			REG10000	Read-only,Writable	1		
	Storage Management	12		REG40000	Read-only,Writable	20		
	To L Device Provisioning	C		REG40002	Read-only,Writable	3		
	API Explorer	3		REG40006	Read-only.Writable	0		
	1.2	0						

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.

IoT Device Access	All Devices / Dev	vice Details							
Basic Chang	Device Info	Cloud Run Logs	Cloud Delivery	Device Shadow Mess	age Trace Devic	e Monitoring Child	Devices Tags		×
Default	The loT platto Each device I	orm supports the creation has only one shadow. A de	of device shadows. A dev wice can retrieve and set	ice shadow is a JSON file that stores its shadow to synchronize propertie	the device status, later s, either from the shado	Configure Prop	erty		
Overview	Configure	e Property				Only writable pro	perties can be configured.		
Devices	Service 5	7	Property	Access Mode	Reported Value	Service	Property	Desired Value	
All Devices	BL200		REG1000	Read-only.Writable	0		REG1000	1	
Groups			REG1001	Read-only.Writable	1		REG1001	0	
Software/Firmware Upgrades			REG1002	Read-only,Writable	1				
Device CA Certificates			REG1003	Read-only,Writable	0		REG1002	0	
Rules	•		REG1004	Read-only.Writable	0		REG1003		
O8M	*		REG1005	Read-only.Writable	0		REG1004		
Resource Spaces			REG1006	Read-only,Writable	0				
IoTDA Instances			REG1007	Read-only,Writable	0		REG1005		
Storage Management			REG1008	Read-only,Writable	0		REG1006		
IoT Device Provisioning	ß		REG1009	Read-only,Writable	0		REG1007		
Documentation	8		REG1010	Read-only.Writable	0				
API Explorer	C		REG1011	Rear Loniv Writeble	0			ок	Cancel
API Explorer Forum for help	8		REG1011	Read-only,Writable	0				



HUAWEI CLOUD	Console	Beijing4					More 🔈 🛱 🧑	[∞] ⊕ EN
IoT Device	All Dev	rices / Device Details						
Access	Devic	e Info Cloud Run Logs	Cloud Delivery Dev	ice Shadow Messa	ge Trace Device Monitoring	Child Devices Tags		
Default	Ea	e IoT platform supports the creation ch device has only one shadow. A	on of device shadows. A device shad A device can retrieve and set its shad	ow is a JSON file that stores ow to synchronize properties	the device status, latest device properties , either from the shadow to the device or f	s reported, and device configurations to deliver. from the device to the shadow. Learn more>>		
Overview		Configure Property					Q Search by	property'
Products			Descento	Annes Made	Dependent Value	Desired Volus		Oneratio
Devices	* <u></u>	N 200	Property	Read-only Writeble	1	*1"	Pavoka	Peroke A
Groups		1200	REGIOU	Read-only,vintable			Revoke	Revoke A
Software/Firmware			REG1001	Read-only,Writable	0	"0"	Revoke	
Upgrades			REG1002	Read-only,Writable	0	-0	Revoke	
Device CA Certificates			REG1003	Read-only,Writable	0			
Rules	-		REG1004	Read-only,Writable	0			
O&M	-		REG1005	Read-only.Writable	0			
Resource Spaces			REG1006	Read-only,Writable	0			
IoTDA Instances			REG1007	Read-only.Writable	0			
Profiles			DEC 1009	Road only Writeble	0			
Int Douico Proviniening	e		REGIOU	Read-only, vintable				
Documentation	2		REG1009	Read-only,Writable	Ō			
API Explorer	C		REG1010	Read-only,Writable	0			
Forum for help	8		REG1011	Read-only,Writable	0			

6.1.11 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.

BL200M Status - Sy	stem • Settings • I/O Module • Serial Module • Operation Control • Cloud platform • Logout
Thingsboard Clo	oud settings
Cioud connection sett	11G9
Enable setting	
Thingsboard platform	Thingsboard Cloud 🗸
MQTT Client ID	
User Name	- Contraction -
Password	
Publish Period(s)	60
Data Retransmission Enable	
Data packing	 Send multiple data in one message
Number of data	100
Publish only changed data	
Connect State	Connected
	Save & Apply Save Reset
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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.

6.1.12 Thingsboard View Data

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

← → C ■ thingsboard.cloud	d/entities/devices/all								@ \$ 🛛 🏝 (里秋白秋印可更新]
	🗔 Devices 🔌 🗔	All				Current sub	scription ThingsBoard Clou Status Trial ends on the D	Maker C	P 🛛 Tenant	administrator
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Plan and billing	1	-								
▲ Alarms	device.devices		include customer	entities					+	CQ
📰 Dashboards	Created time	Nome	Device profile	Lobal	Ctote	Custemer some	Crown		le esteveu	
III Solution templates NEW		Name	Device prome	Label	state	Customer name	Group		is gateway	
🚓 Entities 🔷	2023-11-03 19:20:35	9 BL200	default		Active					0 î
Gi Devices										
En Assets										
Entity Views										
💼 Profiles 🔨										
Device profiles										
Asset profiles										
21. Customers										
e Users										
💿 Integrations center 🗸 🗸										
↔ Rule chains										
😤 Edge management 🗸 🗸										
🛠 Advanced features 🗸 🗸										
🖿 Resources 🛛 🗸										
Notification center										
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ThingsBoard	রিট Devices > রেরে রে All	D All				Current su	Ubscription ThingsBoard Cle Status Trial ends on the	ud Maker Dec 3/2023	:: 📌 😝 Ten	ant administrator
Figg ThingsBoard Cloud Platform ♠ Home ■ Plan and billing	دی Devices > در دی ۸۱۱	ចិ All ចេរិ Groups		BI 200		Current su	ubscription ThingsBoard Cir Status (Trial ands on the	Nud Maker Dec 3,2023	:: 📌 😁 Terre	ant administrator
Home Plan and billing Alarms	GD Devices > GG GD All device.devices	j All □ Gio Groups → device.device-filter-title	include custome	BL200 Device details		Current sc	ubscription ThingsBoard Ck Stetus (Trial ends on the	ud Maker Dec 3, 2023	C 🤌 😝 Ten	ent administrator
Home Home Plan and billing Alarma Deshboards	(a) Devices > (a) (a) All device.devices	© All □ Groups → Groups → device-filter-title Name	Include custome Device profile	BL200 Device details		Current su	Ascription ThingsBoard Co Status (Trial and son the	NUG Maker (Dec 3, 2023)	a 📌 🖰 Terr	ent administrator
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	Gb Devices > Ga Ca All device.devices	B All □ GB Groups ▼ device.device.filter-title Name 9 8L200	et include custome Device profile default	El.200 Device details Details Attributes Telemetry Last update time 2022+11-03 20:1626 2022+11-03 20:1626 2022+11-03 20:1626 2022+11-03 20:1626	Latest telemetry Key + #E01000 #E01000 #E01000	Curret a	Events Relations Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Audit Logs	Version control	et admentator :
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2023-11-03 20:18:26	REG40000			20					Î
2023-11-03 20:18:26	REG40001			2					Î
2023-11-03 20:18:26	REG40002			3					Î
2023-11-03 20:18:26	REG40003			0					Î
2023-11-03 20:18:26	REG40004			0					Î
2023-11-03 20:18:26	REG40005			0					Î
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BL200 Device details Details Attributes Telemetry Last update time 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26	Latest telemetry Key ↑ REG40007 REG40008 REG40009 REG4002 REG4004 REG4006	Alarms	Events	Relations Value 0 0 0 4 4 4 4	Audit Logs	Version control		+	× <
BL200 Device details Details Attributes Telemetry Last update time 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26 2023-11-03 20:19:26	Key ↑ REG40007 REG40008 REG40009 REG4002 REG4004 REG4006 seq	Alarms	Events	Relations Value 0 0 0 4 4 1	Audit Logs	Version control		+	
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6.2 BL206Pro Communication Example

BL206Pro supports Modbus TCP, OPC UA, and MQTT connection, and the communication example of MQTT connection can be referred to the communication example of BL206.

6.2.1 Modbus TCP Communication

6.2.1.1 Overview

Modbus is an open, manufacturer-independent fieldbus standard protocol for a variety of applications in manufacturing and process automation.

MODBUS is an application layer messaging protocol at layer 7 of the OSI model that enables client/server communication between devices connected on different types of buses or networks.

Several commonly used networks are as follows:

- TCP/IP over Ethernet
- Asynchronous serial transmission of multiple media (wired: EIA/TIA-232-E, EIA-422, EIA/TIA-485-A; optical fiber, radio, etc.).
- MODBUS PLUS, high-speed token.

MODBUS is a request/response protocol that provides services specified by function codes.

The MODBUS protocol allows easy communication within all types of network architectures.





MODBUS protocol defines a simple protocol data unit (PDU) independent of the underlying communication layer. The mapping of the MODBUS protocol on a specific bus or network can introduce some additional fields on the Application Data Unit (ADU).



6.2.1.1.1 Modbus TCP

The Modbus TCP protocol is a variant of the Modbus protocol that is optimized for communication over a TCP/IP connection. The protocol is designed for data exchange at the field level (ie for I/O data exchange in the process image). On the server side, all packets are sent over a TCP connection with port number 502. The general Modbus TCP message is as follows:

byte	0	1	2	3	4	5	6	7	8 - n
	Transaction		Protocol						
Definition			identifier(Fie	ld	Slave	Modbus	Data
Deminion	identi	fier	Alway	/S	len	gth	address	function code	Dala
			00)						



6.2.1.1.2 Modbus Data Encoding

Modbus uses "big endian" representation for address and data items. This means that when transferring numbers larger than a single byte, the most significant byte is sent first.

6.2.1.1.3 Modbus Data Type

Data type	Object type	Access type	Description
Digital input	1 bit	read	Digital input
Coil	1 bit	read/write	Digital output
Input register	16 bit (word)	read	Analog input
Holding register	16 bit (word)	read/write	Analog output

The modbus protocol is based on the following basic data types:

For each basic data type, one or more function codes are defined. These function codes allow digital or analog input and output data, as well as internal variables to be set or read directly from the fieldbus node.

6.2.1.2 Modbus Function Code

The function codes supported by the BL200 fieldbus node are shown in the table below. To perform the required functions, please specify the respective function codes and the address of the selected input or output channel or register.

Modbus function code	Function	Access type	Description	
0x02	read digital input	read		
0x01	read coil	read/write	Access by 1 bit	
0x05	write a single coil	read/write		
0x0F	write multiple coils	read/write		
0x04	read input register	read		
0x03	read multiple registers	read/write	Access by 16 Pit	
0x06	write a single register	read/write		
0x10	write multiple registers	read/write		

The MODBUS function is performed as follows:



1. The MODBUS TCP master (such as PC) sends a request to the BL206Pro fieldbus node using a specific function code;

2. The BL206Pro fieldbus node receives the data message, and then responds to the master with correct data according to the master's request.

If a fieldbus node receives an incorrect request, it sends an error data telegram (exception) to the master.

Exception codeDescription0x01illegal function0x02illegal data address0x03illegal data value0x04slave device failure

The meaning of the exception code contained in the exception is as follows:

6.2.1.2.1 Function Code 0x02

This function code is used to read the continuous state of single or multiple digital inputs.

1. Request

The request specifies the starting address and the quantity to be read.

Field Name	Number of bytes	Example	Description
Transaction	2 Byte	0x00 01	Identification of Modbus
identifier	2 8910		request/response transactions
Protocol	2 Byte	0×00.00	0x00 00: Modbus protocol
identifier	2 Dyte	0,00,00	
Message	2 Buto	0x00.06	The number of bytes of the following
length		00000	data
Device	1 Byto	0x01	Slave address identification
address	Т Буїе	0.01	
Eunction code	1 Byte	0x02	Read digital input, use function code
	Т Бусе	0702	0x02
Start address	2 Byte	0v07 D0	The address is detailed in the
			"Modbus Register Mapping" chapter
Enter quantity	2 Byte	0x08	Read 8 digital inputs

2. Response



The data field indicates the value of the input state. A binary 1 corresponds to the on state and a 0 corresponds to the off state. The least significant bit (LSB) of the first data byte contains the first bit of the request, the others are in ascending order. If the response data is not a multiple of 8, the remaining bits of the last data byte will be padded with zeros (towards the upper bits of the byte).

Field Name	Number of bytes	Example	Description
Transaction	2 Byte	0×00 01	Identification of Modbus
identifier	2 Dyte	0,00 01	request/response transactions
Protocol	2 Buto	0,000.00	0x00 00: Modhus protocol
identifier			
Message	2 Duto	0,000.04	The number of bytes of the following
length		000004	data
Device	1 Puto	0x01	Slave address identification
address	I Dyte		
Eunction code	1 Byte	0x02	Read digital input, use function code
	Т Бусе	0,02	0x02
Data bytes	1 Byte	0x01	Number of bytes of data
Data	1 Byte	0x89	Response data

3. Abnormal

Field Name	Number of bytes	Example	Description			
Function code	1 Byte	0x82	Modbus function code + 0x80			
Abnormal code	1 Byte	0x01	0x01 or 0x02			

4. Example

Read the value of 8 digital inputs from address 2000 to 2007.

request

0x00 01 00 00 00 06 01 02 07 D0 00 08

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00 06		01	01	07 D0		00 08	
illust	Trans	action	Protoc	Protocol Message		Device	Function	Start		Numb	er of	
rate	identif	ier	identif	ier	length		address	code	address		coils	

response

0x00 01 00 00 00 04 01 02 01 89

Byte	1	2	3	4	5	6	7	8	9	10
Data	00	01	00	00	00 04		01	01	01	89
illust	Trans	action	Protocol Message		age	Device	Function	Data butaa	Dete	
rate	identif	ier	identif	fier	length		address	code	Data bytes	Dala

Status from 2007 to 2000 is displayed as byte value 0x89 or binary 1000 1001. Address 2007 is the most significant bit MSB of the byte, 2000 is the least significant bit LSB, the distribution from high to low is as follows:

Bit	7	6	5	4	3	2	1	0
Address	2007	2006	2005	2004	2003	2002	2001	2000
Status	1	0	0	0	1	0	0	1
illustrate	close	open	open	open	close	open	open	close

6.2.1.2.2 Function Code 0x01

This function code is used to read the continuous status of single or multiple coils in the remote device.

1. Request

The request specifies the starting address, which specifies the address of the first coil, and the number of coils.

Field Name	Number of bytes	Example	illustrate			
Transaction	2 Byto	0,00.01	Identification of Modbus			
identifier	2 Dyte	000001	request/response transactions			
Protocol	2 Puto	0,000.00	0x00 00: Modbus protocol			
identifier						
Message	2 Puto	0,000.06	The number of bytes of the following data			
length	2 Dyte	00000				
Device	1 Puto	0x01	Slove address identification			
address	ГБуце	0.001				
Function code	1 Byte	0x01	Read coil, use function code 0x01			
Start address	2 Duto	0,02 50	The address is detailed in the			
Start address			"Modbus Register Mapping" chapter			
Number of	2 Puto	0,000.09	Pood 9 poil states			
coils			Reau o coll states			


2. Response

The data field indicates the value of the input state. A binary 1 corresponds to the on state and a 0 corresponds to the off state. The least significant bit (LSB) of the first data byte contains the first bit of the request, the others are in ascending order. If the response data is not a multiple of 8, the remaining bits of the last data byte will be padded with zeros (towards the upper bits of the byte).

Field Name	Number of bytes	Example	illustrate			
Transaction	2 Buto	0x00.01	Identification of Modbus			
identifier	2 Dyte	0,000 01	request/response transactions			
Protocol	2 Puto	0,000.00	0x00 00: Madhua protocol			
identifier		00000				
Message	2 Puto	0,000.04	The number of bytes of the following			
length		000004	data			
Device	1 Duto	0v01	Slave address identification			
address						
Function code	1 Byte	0x01	Read coil, use function code 0x01			
Data bytes	1 Byte	0x01	Number of bytes of data			
Data	1 Byte	0x89	Response data			

3. Abnormal

Field Name	Number of bytes	Example	illustrate
Function code	1 Byte	0x81	Modbus function code + 0x80
Abnormal code	1 Byte	0x01	0x01 or 0x02

4. Example

Read the status values of 8 coils from addresses 1000 to 1007.

request

0x00 01 00 00 00 06 01 01 03 E8 00 08

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00	06	01	01	03 E8		00 08	
illustr	Trans	action	Proto	ocol	Messa	age	Device	Function	Initial		Numb	er of



ate	identifier	identifier	length	address	code	address	coils

response

0x00 01 00 00 00 04 01 01 01 89

Byte	1	2	3	4	5	6	7	8	9	10
Data	00	01	00	00	00 04		01	01	01	89
illustr	Trans	action	Proto	ocol	Messa	age	Device	Function	Data hutaa	Dete
ate	identifier identifier		ifier	length		address code		Data bytes	Data	

Status from 1007 to 1000 is displayed as byte value 0x89 or binary 1000 1001. Address 1007 is the most significant bit MSB of the byte, 1000 is the least significant bit LSB, the distribution from high to low is as follows:

Bit	7	6	5	4	3	2	1	0
Address	1007	1006	1005	1004	1003	1002	1001	1000
Status	1	0	0	0	1	0	0	1
illustrate	close	open	open	open	close	open	open	close

6.2.1.2.3 Function Code 0x05

This function will write a single coil status to the slave device.

1. Request

Field Name	Number of bytes	Example	illustrate
Transaction	2 Buto	0x00.01	Identification of Modbus
identifier			request/response transactions
Protocol	2 Puto	0,000.00	0x00 00: Madhua protocol
identifier			
Message	2 Puto	0,000.06	The number of bytes of the following
length		00000	data
Device	1 Puto	0x01	Slave address identification
address	ГБује	0.001	
Function code	1 Byte	0x05	To write a single coil, use function code
	ТЪую	0,00	0x05
Register	2 Byte		The address is detailed in the
address	ddress		"Modbus Register Mapping" chapter
Data input	2 Byte	0xFF 00	This value is: 0xFF 00 or 0x00 00. 0xFF



	00 means write 1, 0x00 00 means write
	0.

2. Response

Field Name	Number of bytes	Example	illustrate		
Transaction	2 Puto	0x00.01	Identification of Modbus		
identifier		000001	request/response transactions		
Protocol	2 Duto	0,000.00	avec ou Madhua protocol		
identifier					
Message	2 Duto	0,00,06	The number of bytes of the following		
length		00000	data		
Device	1 Duto	0,01	Slove address identification		
address	ГБуце		Slave address identification		
Function code	1 Byte	0x05	To write a single coil, use function code		
	,		0x05		
Data bytes	2 Byte	0x03 E8	Write the register address of the coil		
			This value is: 0xFF 00 or 0x00 00.		
Data input	2 Byte	0xFF 00	0xFF 00 means write 1, 0x00 00		
			means write 0.		

3. Abnormal

Field Name	Number of bytes	Example	illustrate
Function code	1 Byte	0x85	Modbus function code + 0x80
Abnormal code	1 Byte	0x81	0x01 or 0x02

4. Example

Write the state value of the coil at address 1000 as 1, that is, the closed state.

request

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00 06		01	05	03 E8		FF 00	
illustr	Transa	action	Proto	col	Messa	age	Device	Function	Coil		VV/rito "1"	
ate	identifi	er	ident	fier	length		address	code	address		write	I

0x00 01 00 00 00 06 01 05 03 E8 FF 00



response

0x00 01 00 00 00 06 01 05 03 E8 FF 00

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00 06		01	05	03 E8		FF 00	
illust	Trans	action	Protoc	Protocol Message		age	Device	Function	Coil		Write	"1"
rate	identif	ier	identif	ier	length	l	address	code	address			

6.2.1.2.4 Function Code 0x0F

This function code is used to set multiple consecutive coils to open or close. The on/off state of the request is specified by the content of the request data field. A logical "1" requests the corresponding output to close, and a logical "0" requests it to open. The normal response returns the function code, the starting address and the number of coils executed.

1. Request

Field Name	number of bytes	Example	illustrate			
Transaction	2 Buto	0×00.01	Identification of Modbus			
identifier	2 Dyte	0,000 01	request/response transactions			
Protocol	2 Buto	0200.00	0x00 00: Madhus protocol			
identifier		0,00,00				
Message	2 Byte	0v00 08	The number of bytes of the following			
length		0,00,00	data			
Device	1 Byte	0v01	Slave address identification			
address	Т Буїе					
Function code	1 Bvte	0x0F	Write multiple coils, use function code			
	· _ y		0x0F			
Start address	2 Byte	0x03 E8	The address is detailed in the			
	2 Dyte		"Modbus Register Mapping" chapter			
Number of	2 Buto	0200 08				
coils		0,00,00				
Data bytes	1 Byte	0x01				
Data	1 Byte	0xFF				



Field Name	number of bytes	Example	illustrate			
Transaction	2 Puto	0,000.00	Identification of Modbus			
identifier			request/response transactions			
Protocol	2 Duto	0,000.00	avec ou Madhua protocol			
identifier			UXUU UU: Modbus protocol			
Message	2 Duto	0,000.06	The number of bytes of the following			
length		00000	data			
Device	1 Byto	0x01	Slave address identification			
address	ГБуце					
Function code	1 Bvte	0x0F	Write multiple coils, use function code			
			0x0F			
Start address	2 Byte	0x03 E8				
Number of	2 Puto	0,000.09				
coils						

Field Name	number of bytes	Example	illustrate
Function code	1 Byte	0x8F	Modbus function code + 0x80
Abnormal code	1 Byte		0x01 or 0x02

4. Example

Starting from address 1000, close all 8 coils, that is, write the value of 8 coils as 0xFF. request

0x00 01 00 00 00 08 01 0F 03 E8 00 08 01 FF

Byte	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Data	00	01	00	00	00 00 08		01	0F	03 E8		00 08		01	FF
illust	Transaction Protocol		Message		Device	Function	Start		Num	ber	Data	Data		
rate	identif	ier	ident	tifier	lengtl	า	address	code	address		of coils		bytes	Dala

response

0x00 01 00 00 00 06 01 0F 03 E8 00 08

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00 0	00 06		01	0F	03 E8		00	08
illustrate	Transa	action	Prot	ocol	Message		Device	Function	Start		Numb	er of





identifier	identifier	length	address	code	address	coils

6.2.1.2.5 Function Code 0x04

This function code is used to read consecutive input registers in multiple remote devices. The request PDU specifies the address of the starting register and the number of registers. The register data in the response message is packed into two bytes per register, and the binary content within each byte is right-aligned.

1. Request

Field Name	Number of bytes	Example	illustrate			
Transaction	2 Byte	0x00 01	Identification of Modbus			
identifier	2 Dyte	0,00 01	request/response transactions			
Protocol	2 Buto	0×00.00	0x00 00: Madbus protocol			
identifier						
Message	2 Buto	0x00.06	The number of bytes of the following			
length		00000	data			
Device	1 Buto	0x01	Slave address identification			
address	Т Буїе	0.01				
Function code	1 Byte	0x04	Read input register, use function code			
	1 Dyte	0,01	0x04			
Start address	2 Buto		The address is detailed in the			
Start address	2 Dyte		"Modbus Register Mapping" chapter			
Number of	2 Buto	0,000.08				
registers						

Field Name	Number of bytes	Example	illustrate			
Transaction	2 Buto	0,000.00	Identification of Modbus			
identifier	2 Dyte	0,00000	request/response transactions			
Protocol	2 Buto	0,000.00	0x00.00: Modbus protocol			
identifier	2 Dyte	0,00000				
Message	2 Buto	0,00 13	The number of bytes of the following			
length	2 Dyte	000 13	data			
Device	1 Puto	0x01	Slove address identification			
address			Slave address identification			



Function code	1 Byte	0x04	Read input register, use function code 0x04
Data bytes	1 Byte	0x10	
		0x 3F 8E 38	
	16 Byte	86 40 0E	
Data		38 86 40 55 54 CA	
		40 8E 35	
		3F	

Field Name	Number of bytes	Example	illustrate
Function code	1 Byte	0x84	Modbus function code + 0x80
Abnormal code	1 Byte	0x01	0x01 or 0x02

4. Example

Starting at address 3000, read the values of the 4 analog inputs. Since the BL200 controller node register map data type is 32Bit Float, that is, 1 analog input data = 2 registers = 4 bytes, 8 input registers need to be read.

request

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00 06		01	04	0B B8		00 08	
illustr	Trans	action	Prote	ocol	Message		Device	Function	Start		Num	per of
ate	identif	fier	ident	tifier	lengtl	h	address	code	address		regis	sters

0x00 01 00 00 00 06 01 04 0B B8 00 08

response

0x00 01 00 00 00 13 01 04 10 3F 9D 70 A4 40 15 C2 8F 40 5C CC CD 40 91 EB 85

Byte	1	2	3	4	5	6	7	8	9	1025
Data	00	01	00	00	00 13		01	04	10	xxx
illustr	Transa	action	Proto	col	Mess	age	Device	Function	Data hutaa	Dete
ate	identifier identifier		fier	length		address	code	Data bytes	Dala	

The data part has a total of 16 bytes, which are converted into decimal as follows115Shenzhen Beilai Technology Co., LtdV1.2



Byte	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Data	3	F 9D	70 A	4	40 15 C2 8F				40 5C CC CD				40 91 EB 85			
Decimal	1.23				2.34			3.45					4.	56		
illustrate	First data				Second data			Third data			Fourth data					

6.2.1.2.6 Function Code 0x03

This function code is used to read continuous holding registers in multiple remote devices. The request PDU specifies the address of the starting register and the number of registers. The register data in the response message is packed into two bytes per register, and the binary content within each byte is right-aligned.

Field Name	number of bytes	Example	illustrate			
Transaction	2 Byte	0x00 01	Identification of Modbus			
identifier	2 2 9 10		request/response transactions			
Protocol	2 Bute	0×00.00	0x00 00: Modbus protocol			
identifier	2 Dyte	0,00,00				
Message	2 Buto	0,000.06	The number of bytes of the following			
length	2 Dyte	00000	data			
Device	1 Byte	0v01	Slave address identification			
address	T Dyte	0.01				
Function code	1 Bvte	0x03	Read holding register, use function			
	,		code 0x03			
Start address	2 Byte		The address is detailed in the			
Start address	2 Dyte		"Modbus Register Mapping" chapter			
Number of	2 Byte	0,000.08	Number of holding registers to road			
registers						

1. Request

Field Name	Number of bytes	Example	illustrate				
Transaction	2 Byte		Identification of Modbus				
identifier	Z Dyte	0,00,00	request/response transactions				
Protocol	2 Puto	0,000.00	0x00 00: Madhua protocol				
identifier	Z Dyte	00000					
Message	2 Byte	0x00 13	The number of bytes of the following				



length			data
Device address	1 Byte	0x01	Slave address identification
Function code	1 Byte	0x03	Read holding register, use function code 0x03
Data bytes	1 Byte	0x10	Data bytes
Data	16 Byte	0x 3F 9D 70 A4 40 15 C2 8F 40 5C CC CD 40 91 EB 85	Response data

Field Name	Number of bytes	Example	illustrate
Function code	1 Byte	0x83	Modbus function code + 0x80
Abnormal code	1 Byte	0x01	0x01 or 0x02

4. Example

Starting at address 4000, read the values of the 4 analog outputs (belonging to the holding registers). Since the analog output I/O module register map data type is 32Bit Float, that is, 1 analog output data = 2 registers = 4 bytes, it is necessary to read 8 holding registers.

request

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00 00		06	01	03	0F A0		00 08	
illustr	Trans	action	Protocol		Message		Device	Function	Start		Num	per of
ate	identif	ier	identifier		length		address	code	addre	ess	regis	sters

0x00 01 00 00 00 06 01 03 0F A0 00 08

response

0x00 01 00 00 00 13 01 03 10 3F 9D 70 A4 40 15 C2 8F 40 5C CC CD 40 91 EB 85

Byte	1	2	3	4	5	6	7	8	9	1025
Data	00 01 00 00 13		13	01	03	10	xxx			



illustr	Transaction	Protocol	Message	Device	Function	Data hytop	Dete
ate	identifier	identifier	length	address	code	Data bytes	Dala

The data part has a total of 16 bytes, and the conversion to decimal is as follows:

Byte	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Data	31	F 9D	70 A	4	40 15 C2 8F			40 5C CC CD				40 91 EB 85				
Decimal		1.:	23		2.34				3.45					4.	56	
illustrate	Firs	st dat	a		Second data				Thi	rd da	ita		Fou	irth c	lata	

6.2.1.2.7 Function Code 0x06

This function code is used to write to holding registers in a single remote device. The request PDU specifies the address of the starting register and the number of registers. The register data in the response message is packed into two bytes per register, and the binary content within each byte is right-aligned.

This function code is only suitable for reading the serial port I/O module register mapping data, the address range: 40000 ... 49999. The data type of the analog input/output I/O module is 32Bit Float format, the complete data cannot be read, and this function cannot be used.

Field Name	Number of bytes	Example	illustrate
Transaction	2 Puto	0,000.01	Identification of Modbus
identifier	2 Dyte	0,000 01	request/response transactions
Protocol	2 Puto	0,000.00	0x00 00: Madhua protocol
identifier	2 Dyte	00000	
Mossage longth	2 Buto	0×00.06	The number of bytes of the following
wessage length	2 Dyte	0,00,00	data
Device address	1 Byte	0x01	Slave address identification
Function code	1 Byte	0x06	Write a single holding register, use
	- Dyto	0,00	function code 0x06
Register	2 Byte	0,000 10	The address is detailed in the
address			"Modbus Register Mapping" chapter
Data	2 Byte	0x04 D2	

1. Request



Field Name	Number of bytes	Example	illustrate
Transaction	2 Byte	0x00 00	Identification of Modbus
Identifier			request/response transactions
Protocol	2 Byte	0×00.00	0x00.00: Modbus protocol
identifier	2 Dyte	0,00,00	
Magaga longth	2 Puto	0,000.06	The number of bytes of the following
wessage length		00000	data
Device address	1 Byte	0x01	Slave address identification
Eupetion code	1 Buto	0x06	Write a single holding register, use
Function code	ГБује	0,000	function code 0x06
Register	2 Puto	0,75.20	
address		0215 30	
Data	2 Byte	0x04 D2	

Field Name	Number of bytes	Example	illustrate
Function code	1 Byte	0x86	Modbus function code + 0x80
Abnormal code	1 Byte	0x01	0x01 or 0x02

4. Example

Write the value of register address 40000 to 1234 (0x04 D2).

request

0x00 01 00 00 00 06 01 06 9C 40 04 D2

Byte	1	2	3	4	5	6	6 7 8		9	10	11	12
Data	00	01	00	00	00 06		01	06	9C 40		04 D2	
illustr	Transa	action	Proto	ocol	Message		Device	Function	Register		Dete	
ate	identifi	er	ident	ifier	length		address	code	addre	SS	Data	

response

0x00 01 00 00 00 06 01 06 9C 40 04 D2

Byte	1	2	3	4	5	6	7	8	9	10	11	12
Data	00	01	00	00	00	06	01	0F	9C	40	04	D2



illustr	Transaction	Protocol	Message	Device	Function	Register	Dete
ate	identifier	identifier	length	address	code	address	Data

6.2.1.2.8 Function Code 0x10

This function code is used to write to consecutive holding registers in multiple remote devices. The request PDU specifies the address of the starting register and the number of registers. The register data in the response message is packed into two bytes per register, and the binary content within each byte is right-aligned.

1. Request

Field Name	Number of bytes	Example	illustrate
Transaction	2 Puto	0×00.01	Identification of Modbus
identifier	2 Dyle	00001	request/response transactions
Protocol	2 Byte		0x00.00: Modbus protocol
identifier		0,00,00	
Message	2 Byte	0×00 17	The number of bytes of the following
length		0,00 17	data
Device	1 Byte	0x01	Slave address identification
address	Т Буїс	0,01	
Function code	1 Bvte	0x10	Write multiple holding registers, use
	,		function code 0x10
Start address	2 Bvte	0x0F A0	The address is detailed in the "Modbus
	,		Register Mapping" chapter
Number of	2 Byte	0x00 08	
registers	2 0 910		
Data bytes	1 Byte	0x10	
		0x	
		3F 9D 70	
		A4 40 15	
Data	16 Byte	C2 8F 40	
		5C CC	
		CD 40 91	
		EB 85	

Field Name Number of bytes Example illustrate
--



Transaction identifier	2 Byte	0x00 00	Identification of Modbus request/response transactions			
Protocol identifier	2 Byte	0x00 00	0x00 00: Modbus protocol			
Message	2 Byte	0x00 13	The number of bytes of the following			
length	2 Dyte	0,00 13	data			
Device	1 Byte	0v01	Slave address identification			
address	T Dyte	0.01				
Eunction code	1 Byte	0v10	Write multiple holding registers, use			
	ТЪую	0,10	function code 0x10			
Start address	2 Byte	0x0F A0				
Number of	0 Dute	0,000.00				
registers						

Field Name	number of bytes	Example	illustrate
Function code	1 Byte	0x90	Modbus function code + 0x80
Abnormal code	1 Byte	0x01	0x01 or 0x02

4. Example

Starting at address 4000, write the values of the 4 analog outputs. Since the BL200 controller node register map data type is 32Bit Float, that is, 1 analog output data = 2 holding registers = 4 bytes, 8 holding registers need to be written.

request

0x00 01 00 00 00 17 01 10 0F A0 00 08 10 3F 9D 70 A4 40 15 C2 8F 40 5C CC CD 40 91 EB 85

Byte	1	2	3	4	5	6	7	8	9	10	11	12	13	1423
Data	00	01	00	00	00 17	0	1	10	0F	A0	00 ()8	10	xxx
illust rate	Tran ion iden	sact tifier	Prote iden	ocol tifier	Messa ge length	Devi addr	ress	Function code	Star addr	t ress	Numb regist	er of ters	Data bytes	Data

The data part has a total of 16 bytes, and the conversion to decimal is as follows:

Byte	14										
Data	3F 9D 7	70 A4	40 15	C2 8F	40	5C CC	CD	4	0 91	EB 8	5



Decimal	1.23	2.34	3.45	4.56
illustrate	First data	Second data	Third data	Fourth data

response

0x00 01 00 00 00 06 01 10 0F A0 00 08

Byte	1	2	3	4	5	6	7 8		9	10	11 12	
Data	00	01	00	00	00 06		01	10	0F A0		00 08	
illust	Trans	action	Protoc	Protocol		age	Device	Function	Start		Num	per of
rate	identif	ier	identif	ier	length		address	code	address		registers	

6.2.2 OPC UA Communication Example

6.2.2.1 UaExpert and BL206Pro Communication

The BL206Pro collects DI, DO, and AI modules, selects basic128rsa15 as a security policy, and selects a signature and encryption method. The data format is based on a custom information model. Take an information model as an example. The data can also be uploaded directly according to the format of our company. For the definition of each configuration, please refer to chapter 5.2.8 web page configuration.



6.2.2.1.1 OPC UA Web Page Configuration

BL200UA Status - S	System - Settings - I/O Module	- Serial Module -	OPC UA -	Operation&Control -	Logout
OPC UA settings	6				
OPC UA settings					
OPC UA Name	BL200 OPC UA Server				
Port	4840]			
Security Policy	Basic128Rsa15	•			
Message Security Mode	Sign&Encrypt ~	•			
Certificate	/etc/opcua/server_cert.der (98	88 B)			
Private key	/etc/opcua/server_key.der (1.	19 KB)			
Allow Anonymous					
Username	BL200]			
Password		*			
Data select	Information Model	•			
Model File(.xml)	/etc/opcua/do.xml (9.95 KB)]			
Dependent model files	One model file				
Dependent model 1st(.xml)	/etc/opcua/di.xml (9.77 KB)	J			
				Save & Ar	poly Save Reset

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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 "BL206Pro 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.

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(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".

6.2.2.1.2 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.

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Enter the set username and password

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The collected data is as follows:

Unified Automation UaExpert - The OPC	Unified Arch	itecture Client - Nev	vProject*									-	DX
<u>File View Server D</u> ocument <u>S</u> etting	ıs <u>H</u> elp												
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l'imestamp Source	Server	Message											^

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



O Slot:2,Mod	lule Type:DO,Module Nam	ne:M2082			
Channels	Modbus Address	Value	PowerOn Status		Open/Close
1	1000	Open	Open	•	Open/Close
2	1001	Open	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

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Click the value of the DO-1000 data point, it turned out to be false, there is no $\sqrt{}$ in the square, click once to put $\sqrt{}$, 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".

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Y 👖 Project		# Canvar	Node Id	Dirolay Name	Value	Datatione	ourre Timerta	n erver Timerter	n Statuscoda	G R R		
Servers Servers Servers Server Server Douments Data Access View		1 BL200 OPC U 2 BL200 OPC U 3 BL200 OPC U 4 BL200 OPC U 5 BL200 OPC U 6 BL200 OPC U 7 BL200 OPC U 8 BL200 OPC U 9 BL200 OPC U 9 BL200 OPC U 11 BL200 OPC U 12 BL200 OPC U 13 BL200 OPC U 15 BL200 OPC U 16 BL200 OPC U 18 BL200 OPC U 18 BL200 OPC U 19 BL200 OPC U 19 BL200 OPC U	NS4INumeric_ NS4INumeric_ NS4INumeric_ NS4INumeric_ NS4INumeric_ NS4INumeric_ NS4INumeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS3Numeric_ NS2Numeric_ NS2Numeric_ NS2Numeric_	D0-1000 D0-1001 D0-1003 D0-1004 D0-1004 D0-1007 D0-1007 D0-1007 D1-1004 D0-1007 D1-1007 D1-2000 D1-2001 D1-2000 D1-2000 D1-2004 D1-2005 D1-2005 D1-2005 D1-2005 D1-2005 D1-2005 D1-2006 D1-2007 D1-2008 D1-2009 D1-2009 <td< th=""><th>true false f</th><th>Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Float Float Float</th><th>1659:22.729 1647:31.067 1647:31.068 1647:31.070 1647:31.071 1647:31.071 1647:31.071 1647:31.071 1647:31.071 1647:34.751 1647:34.752 1647:34.750 1647:34.750 1647:34.750 1647:34.751 1647:34.750 1700:05.231</th><th>16:59:22.729 16:47:31.067 16:47:31.068 16:47:31.070 16:47:31.070 16:47:31.071 16:47:31.071 16:47:31.071 16:47:31.071 16:47:31.757 16:47:34.755 16:47:34.756 16:47:34.756 16:47:34.756 16:47:34.757 16:47:34.757 16:47:34.757 16:47:34.757 17:00:05.231</th><th>Good Good Good Good</th><th>Attribute Vadeld NamespaceIndex IdentifierType IdentifierType Identifier NodeClass BrowseName DisplayName Description WriteMask UserWriteMask UserWriteMask UserWriteMask UserSetermisions AccessRetrictions Value</th><th>Vulie vs-skj=6001 4 Numeric 6001 variabil *,"D0-1000" *","D0-1000" *","T0-1000" 0 0 Badstmithoutellewsid (Ne035000) Badstmithoutellewsid (Ne035000) Badstmithoutellewsid (Ne035000)</th><th></th></td<>	true false f	Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Boolean Float Float Float	1659:22.729 1647:31.067 1647:31.068 1647:31.070 1647:31.071 1647:31.071 1647:31.071 1647:31.071 1647:31.071 1647:34.751 1647:34.752 1647:34.750 1647:34.750 1647:34.750 1647:34.751 1647:34.750 1700:05.231	16:59:22.729 16:47:31.067 16:47:31.068 16:47:31.070 16:47:31.070 16:47:31.071 16:47:31.071 16:47:31.071 16:47:31.071 16:47:31.757 16:47:34.755 16:47:34.756 16:47:34.756 16:47:34.756 16:47:34.757 16:47:34.757 16:47:34.757 16:47:34.757 17:00:05.231	Good Good Good Good	Attribute Vadeld NamespaceIndex IdentifierType IdentifierType Identifier NodeClass BrowseName DisplayName Description WriteMask UserWriteMask UserWriteMask UserWriteMask UserSetermisions AccessRetrictions Value	Vulie vs-skj=6001 4 Numeric 6001 variabil *,"D0-1000" *","D0-1000" *","T0-1000" 0 0 Badstmithoutellewsid (Ne035000) Badstmithoutellewsid (Ne035000) Badstmithoutellewsid (Ne035000)	
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Check the DO status in the web configuration of BL206Pro. DO1 is also changed from the original open to close.

0 st	atus							
IO Slot	Module Name	Module Type	Channel Number	Modbus Address	24V Address- State	Soft Version	IO Status	Channel Status
1	M1081	DI	8	2000-2007	9001-Power Off	5	Normal	Channel Statu s
2	M2082	DO	8	1000-1007	9002-Power Off	5	Normal	Channel Statu s
3	M3041	AI	4	3000-3006	9003-Power Off	5	Normal	Channel Statu s
4	M4044	AO	4	4000-4006	9004-Power Off	5	Normal	Channel Statu s
5	M6021	COM	2	0-0	9005-Power Off	5	Normal	Channel Statu s

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O Slot:2,Mod	dule Type:DO,Module Nan	ne:M2082			
Channels	Modbus Address	Value	PowerOn Status		Open/Close
1	1000	Close	Open	~	Open/Close
2	1001	Open	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

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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

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