Multiple-Protocol IoT Gateway BL110

Modbus RTU, PLC, BACnet MS/TP, Modbus TCP, BACnet IP, MQTT, OPC UA





BL110 User Manual

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Shenzhen Beilai Technology Co., Ltd

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Preface

Thanks for choosing BLIIoT Multiple-Protocol IOT Gateway BL110. Reading this manual with full attention will help you quickly learn device functions and operation methods.

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Disclaimer

This document is designed for assisting user to better understand the device. As the described device BL110 is under continuous improvement, this manual may be updated or revised from time to time without prior notice. This Multiple-Protocol Gateway is mainly used for industrial data transmission over Ethernet or 4G network. Please follow the instructions in the manual. Any damages caused by wrong operation will be beyond warranty.

Revision History

Revision Date	Version	Description	Owner
Aug 10, 2021	V1.0	Initial Release	HYQ
May 9, 2022	V1.1	Add more information about thingsboard, openVPN, BACnet , optimize the operation on Siemens PLC, Mitsubishi PLC and Omron PLC data acquisition.	HYQ



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1 Product Introduction

1.1 General Introduction

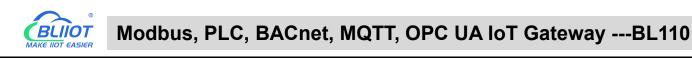
Developed on Linux system, BL110 is a robust and cost-effective Multiple-Protocol IOT gateway with high stability. It has 1 RS232, 3 RS485, 1 CAN, 2 RJ45 (1WAN & 1LAN), 2 USB, 2 Power Input interfaces and 1 SIM Card Slot. Network can be connected via 4G or Ethernet to achieve high speed and low latency of data transmission.

In downlink, it supports various PLC protocols, Modbus RTU Master, Modbus TCP Master, DL/T645, IEC101, IEC104, BACnet IP and BACnet MS/TP protocols

In uplink, it supports Modbus TCP, MQTT, OPC UA, BACnet IP, HUAWEI Cloud, Alibaba Cloud, AWS Cloud, ThingsBoard Cloud, Sparkplug B, and King Pigeon Cloud. Users can connect it to various clouds as well as SCADA, OPC UA, MES, BAS and other master computers for data processing. It can be online in different clouds and master systems simultaneously.

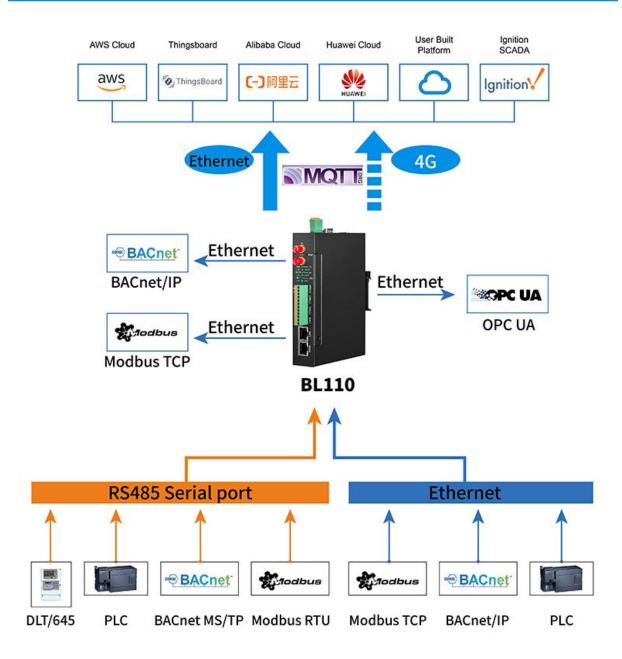
With TSL/SSL data encryption and routing function, it can be used to provide internet access for other devices with cyber security. More devices can be connected to it with cascaded switch for data processing. Due to complete functions and industrial grade quality, it can be used in many application areas.

BL110 supports remote management or configuration through OpenVPN tunnels.



1.2 Application Diagram

BL110 Application Diagram



1.3 Packing List

Before connecting BL110 gateway, please make sure below items are included in the package: (Pictures are for reference only. Follow actual items.)

• 1XBL110 Gateway





• 1x 4PIN 3.5mm wiring terminal for power input



• 1x 485 or 232 12PIN 3.5mm wiring terminal



• 1 x 4G SMA cellular network antenna



• 2 x wall-mounting clip kit(Optional accessories)



• 1 x DIN-Rail mounting clip kit(Optional accessories)





- 1 x User Manual (PDF Soft copy)
- 1 x SIM Card Picking PIN



• 1 x Product Qualification Certificate



• 1 x Warranty Card



Note: If any of above items are missing, please contact BLIIoT Sales team.

1.4 Features

- Downlink supports: various PLC protocols, Modbus RTU Master, Modbus TCP Master, DL/T645, IEC101, IEC104, BACnet IP, BACnet MS/TP, etc.
- Uplink supports: Modbus TCP, MQTT, OPC UA, BACnet IP, HUAWEI Cloud, Alibaba Cloud, AWS Cloud, ThingsBoard Cloud, Sparkplug B, King Pigeon Cloud, etc.
- DC 9-36V power supply with terminal wiring. 2 channels of redundancy power input with reverse wiring prevention protection design, either channel can be used.
- > 1 RS232, 3 RS485 (Can be RS232 if required).



- Serial port baud rate supports 2400bps-115200bps; Stop bit supports 1, 2; Data bit supports 7, 8;
 Parity bit supports None, Odd, Even.
- 2 RJ45 Ethernet ports, 1WAN+1LAN. Data of equipment connected to LAN, WAN or cascade switch can be collected. Both network link and rate indicators are available. Built-in isolation transformer for up to 2KV electromagnetic insulation.
- Support TSL\SSL data encryption for security.
- Support routing function.
- Support 4G network with APN setting; Ethernet network will be firstly used if it's available, if Ethernet is disconnected, it will shift to 4G network automatically.
- Support remote management or configuration through OpenVPN tunnels
- > Support sending configuration files and change the configuration remotely through MQTT
- Support Modbus RTU to Modbus TCP, transparent transmission.
- Support RESET button with function of returning to factory setting to prevent wrong parameter setting (long press RESET until RUN indicator is off).
- > Support hardware and software watchdog with high reliability.
- > Support restart the device at a scheduled time
- Metal case with IP30 protection grade, safely isolated from inner system, especially suitable for industrial control application.
- Compact size: 109mm*31mm*145mm, support wall-mounting and DIN Rail mounting.

1.5 Technical Parameter

Category	Item	Description		
	Processor	ARM9, clock speed 300Mhz		
System	Storage	128MB(can be extended to 1G)		
	Flash Memory	64MB		
	Input Voltage	DC 9~36V		
Power Supply	Power Consumption	Normal: 115mA@12V, Max: 168mA@12V。		
	Wiring	Support reverse wiring prevention protection		
	Spec	2 x RJ45, 10/100Mbps, adaptive MDI/MDIX		
Ethernet Port		ESD ±16kV (contact), ±18kV (air);		
	Protection	EFT 40A (5/50ns);		
		Thunder strike 6A (8/20µs)		



	QTY	3x RS485/(optional RS232)+1xRS232			
	Baud Rate	1200bps-115200bps			
	Data Bit	7,8			
Serial Port	Parity Bit	None, Even, Odd			
	Stop Bit	1, 2			
		ESD ±8kV (contact), ±15kV (air);			
	Protection	EFT 2KV, 40A (5/50ns)			
CAN Port		Reserved for future development			
	QTY	1			
SIM Card Slot	Spec	Drawer type, support 1.8V/3V SIM/UIM card(NANO)			
	Protection	Built-in 15KV ESD protection			
	QTY	1*Firmware Upgrading+1*Program Debugging			
USB Port	Spec	Micro USB OTG			
	Protection	Over-Current Protection			
	Antenna QTY	1			
	Antenna Type	SMA Hole			
		GSM/EDGE:900,1800MHz			
	L-E Version	WCDMA:B1,B5,B8			
		FDD-LTE:B1,B3,B5,B7,B8,B20			
		TDD-LTE:B38,B40,B41			
		GSM/EDGE:900,1800MHz			
		WCDMA:B1,B8			
	L-CE Version	TD-SCDMA:B34,B39			
		FDD-LTE:B1,B3,B8			
4G		TDD-LTE:B38,B39,B40,B41			
(Optional)	L-A Version	WCDMA:B2,B4,B5			
		FDD-LTE:B2,B4,B12			
		GSM/EDGE:850,900,1800MHz			
	L-AU Version	WCDMA:B1,B2,B5,B8			
		FDD-LTE:B1,B3,B4,B5,B7,B8,B28			
		TDD-LTE:B40			
	L-AF Version	WCDMA:B2,B4,B5			
		FDD-LTE:B2,B4,B5,B12,B13,B14,B66,B71			
		GSM:900,1800			
	CAT-1 Version	FDD-LTE:B1,B3,B5,B8			
		TDD-LTE:B34,B38,B39,B40,B41			
	Antenna QTY	1			
GPS	Antenna Type	SMA Hole			
(Optional)	Tracking Sensitivity	> -148 dBm			
	Flat Position Precision	2.5m			



	Protocol	NMEA-0183 V2.3			
		Stead on when powered on,			
	RUN Indicator	flickering if running, off if not running			
	ALARM Indicator	Stead on if alarm is triggered, off if alarm is recovered			
		Flickering if Ethernet is used, stead on if 4G is used, off			
	NET Indicator	if no network communication			
Indicator	TVD Indicator	Flickering if it's transmitting data, off if no data			
Indicator	TXD Indicator	transmission			
	RXD Indicator	Flickering if it's receiving data, off if no data receiving			
	GPS Indicator	Flickering if GPS signal is received, off if no signal			
		Weak signal (0-14), 1 indicator is on			
	4G Indicator	Intermediate signal (14-22), 2 indicators are on			
		Strong signal (22-31), 3 indicators are on			
	Internet Protocol	IPV4, TCP/UDP, DHCP, DNS, etc			
	IP Retrieving	Static IP/DHCP			
	Data Service	Support transparent transmission			
	DNS	Support Domain Name resolution			
Software	Configuration	PC software configuration, support WIN XP, WIN 7,			
	Configuration	WIN 8 & WIN 10			
	Network Cache	Transmitting: 8Kbyte; Receiving: 8Kbyte			
	Login Package	Support custom login package			
	Heartbeat Package	Support custom heartbeat package			
	MTBF	≥100,000 hours			
		EN 55022: 2006/A1: 2007 (CE &RE) Class B			
		IEC 61000-4-2 (ESD) Level 4			
		IEC 61000-4-3 (RS) Level 4			
Safety	EMC	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			
	Others	CE, FCC			
Environment	Working	-40∼80℃,5~95% RH			
Environment	Storage	-40∼85℃,5~95% RH			
	Case Material	Metal Case			
	Size	109mm×31mm×145mm(L*W*H)			
Others	Protection Grade	IP30			
	Net Weight	470g			
	Mounting	Wall-mounting/DIN Rail Mounting			

1.6 Model Selection

Model	WAN	LAN	CAN	COM1	COM (Default RS485) (can be RS232 if required)	OPC-UA	Open VPN	4G	GPS
BL110	1	1	1	RS232	3	×	×	\checkmark	Optional
BL110E	1	1	1	RS232	3	×	×	×	×
BL110UA	1	1	1	RS232	3	\checkmark	×	×	×
BL110Pro	1	1	1	RS232	3	\checkmark	\checkmark	\checkmark	Optional

Note: COM1 is RS232, 3 COM ports are RS485(Can be RS232 if required)

1.7 Supported Protocols

Downlink supported protocols

Supported	Connecting	Protocol	Testing Status
Supported	Interface		
Modbus COM Port		Standard Modbus RTU	ОК
	Ethernet Port	Standard Modbus TCP/IP	ОК
Smart Meter	COM Port	DLT645-2007	ОК
Smart Meter	Ethernet Port	IEC101, IEC104	Ongoing
BACnet	COM Port	BACnet MS/TP	ОК
DAChet	Ethernet Port	BACnet/IP	ОК
PLC Brand			
	COM Port	S7-200 full series PLC	ОК
	COMPOR	S7-200SMART full series PLC	ОК
	Ethernet Port	S7-200SMART full series PLC	ОК
Siemens		S7-300 full series PLC	ОК
		S7-400 full series PLC	ОК
		S7-1200 full series PLC	ОК
		S7-1500 full series PLC	ОК
		FX1S series, FX2N series	ОК
	COM Port	FX3S series, FX3U series, Expansion	
		board RS232/485BD	
Mitsubishi		Q series(Q03UDE, Q04UDEH,	ОК
	Ethernet Port	Q06UDEH, Q10UDEH, Q13UDEH,	
		Q20UDEH, Q26UDEH, Q002UD), L	
		serials(L02, L26-BT), FX5U serials	
OMRON	COM Port	CJ/CS/CP/CP1H/CP1L serials	OK
UNIKON	Ethernet Port	CJ/CS/CP/CP1H/CP1L series	OK



Delta	COM Port	DVP series	ОК
FATEK	COM Port	FB series	Ongoing
AB	COM Port	DF1 protocol	Ongoing
Schneider	COM Port	full series	Ongoing
Schneider	Ethernet Port	full series	Ongoing
XINJIE	COM Port	XCseries	Ongoing
ABB		AC500series	To be started
Emerson			To be started
Hitachi			To be started
Keyence		KVseries	To be started
KOYO		Kseries	To be started
LG			To be started
VIGOR			To be started

If your PLC is not listed in above table, please contact BLIIoT after-sale service team.

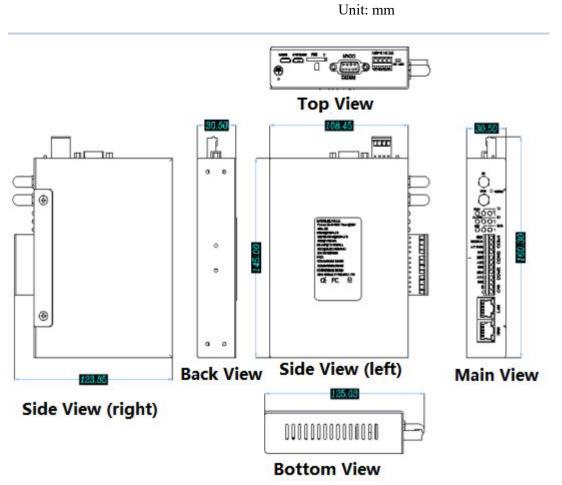
Uplink Supported Protocols

Protocol	Description
Transparent Transmission	Only support COM port transparent transmission
Modbus RTU to Modbus TCP	Yes, support Modbus RTU to Modbus TCP
Modbus TCP	Can only be server with Ethernet port communication
OPC UA	Can only be server with Ethernet port communication
BACnet/IP	Can only be server with Ethernet port communication
	Currently only support "King Pigeon", "thingsboard", "Sparkplug B"
Custom MQTT	JSON data format, others are under development
HUAWEI Cloud	Support Private Key /Certificate connection to HUAWEI Cloud
AWS Cloud	Yes, suppport AWS Cloud
Alibaba Cloud	Support Private Key /Certificate connection to Alibaba Cloud
ThingsBoard Cloud	Yes, support ThingsBoard cloud,Select ThingsBoard data module
	in custom MQTT
Modbus RTU	Yes, support Modbus RTU, configure it in King Pigeon Modbus
King Pigeon Cloud	Yes, support King Pigeon Cloud, configure Modbus RTU/MQTT



2 Hardware Introduction

2.1 Outline Dimension



2.2 Power input Interface



2 channels of 9~36VDC power input with reverse connection protection



2.3 COM1 Port



COM1 is fixed RS232 interface

2.4 SIM Card Slot



Before placing SIM card, make sure device is powered off. Use the SIM card picking PIN to press the slot and take out the tray, place the SIM card and push back the tray with SIM card. Note: make sure device is placed flatly like above picture when inserting or removing SIM card

2.5 **Debugging & Firmware Upgrading USB Interface**



DEBUG is program debugging port, DOWNLOAD is firmware upgrading interface

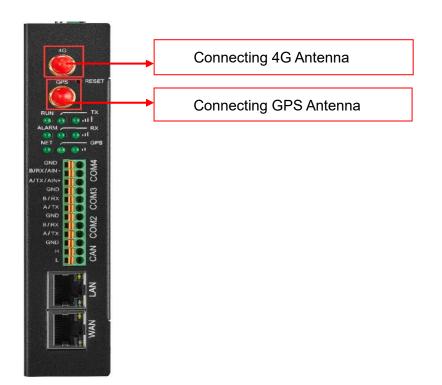


2.6 Earthing Interface



Before connecting Gateway device BL110, make sure it's grounded with grounding screw to prevent electromagnetic interference.

2.7 4G & GPS Antenna Interface



2.8 LED Indicator

LED Indicator Introduction						
Item		Status	Description			
RUN		Flickering	Device is running normally			
	Device Running	Off	Device is in faulty			
ALARM	Alarm	Stead on	Alarm is triggered			
	Alam	Off	No alarm			
NET	Ethernet/4G	Flickering	Ethernet network is working			
	Communication	Stead on	4G network is working			



Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110



		Off	No Ethernet or 4G network		
ТХ	Data transmitting	Flickering	Data is transmitted		
	Data transmitting	Off	No data transmitting		
RX	Data Dessiving	Flickering	Data is received		
RA	Data Receiving	Off	No data is received		
GPS	GPS Signal	Flickering	GPS signal is received		
GFS	GFS Signal	Off	No GPS signal is received		
		1 LED ON	Weak signal (0-14)		
ul l	4G Signal	2 LED ON	Intermediate Signal (14-22)		
		3 LED ON	Strong signal (22-31)		
Network DEINE in the stand will be a face do an an an intervention of the standard sector.					

Note: RUN indicator will be steady on once it's powered on, if it's not on, please check whether power source has problem or it's reversely connected.

2.9 Reset Button

After gateway BL110 is running, long press RESET button with pin for 10 seconds until RUN indicator is off. Device will restart automatically and return to factory setting.





2.10 COM Port & CAN Port

4G	
	T
ALARM O all ALARM RX NET GPI O O UI	S
GND B/RX/AIN- A/TX/AIN+	
GND B/RX A/TX	
COW3 COW3 COW3 COW5 COW5 COW5 COW5 COW5 COW5 COW5 COW5	
R	
WAN	

RS485(or RS232) & CAN Port					
Ite	em	Description			
	GND	Grounding wire			
	B/RX/AIN-	RS485 data-(B)/ data receiving/			
COM4		Analog input-			
001014	A/TX/AIN+	RS485 data+(A)/ data			
		transmitting/			
		Analog input+			
	GND	Grounding wire			
СОМЗ	B/RX	RS485 data-(B)/ data receiving			
COMIS	A/TX	RS485 data+(A)/ data			
		transmitting			
	GND	Grounding wire			
COM2	B/RX	RS485 data-(B)/ data receiving			
COMZ	A/TX	RS485 data+(A)/ data			
		transmitting			
	GND	Grounding wire			
CAN(Reserved)	Н	Signal wire			
	L	Signal wire			

2.11 WAN Port & LAN Port



以太网口						
Indicator	Color	Status	Description			
Network	Croop	Stead on	100Mbps mode			
speed	Green	Off	10Mbps mode			
		Stead on	Network connected			
Network link	Yellow	Flickering	Data is transmitting			
		Off	Network disconnected			

3 Product Mounting

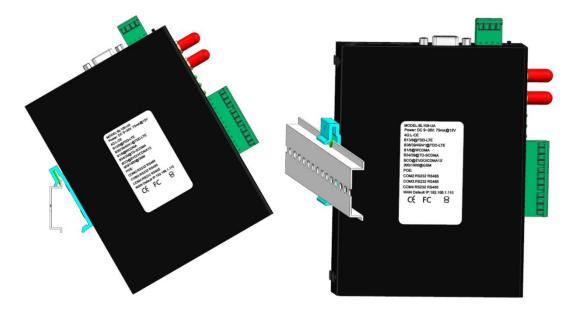
BL110 can be placed on flat surface, mounted on the wall and DIN Rail

3.1 Wall-Mounting



Wall-Mounting(Optional)

3.2 **DIN Rail Mounting**



DIN Rail Mounting(Optional)

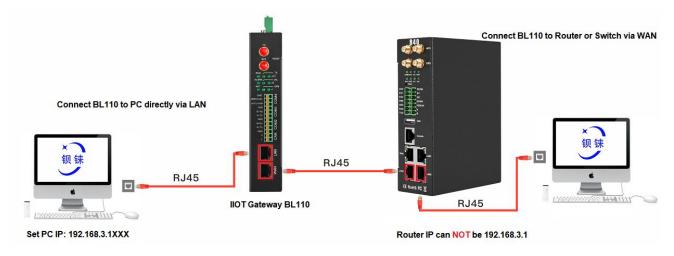


4 Configuration Software Introduction

4.1 Login to Configuration Software

Connect BL110 to router or switch through WAN port with standard direct network cable or cross network cable. Router or switch IP can't be the same as Gateway BL110 IP 192.168.3.1. Make sure BL110 and PC are in the same local area network. If it's necessary to connect the gateway to PC directly, use standard cross network cable to connect through BL110 LAN port. (If BL110 is connected to PC directly, PC IP must be specified to 192.168.3.1 as default LAN IP of gateway is 192.168.3.1 from factory setting. IP address, subset mask, MAC and DNS are needed for PC IP setting)

Note: WAN port IP is retrieved automatically, LAN port IP is 192.168.3.1 from factory setting



Wiring of Connecting BL110 to Router/Switch and PC:

4.1.1 Open Configuration Software

Double click BL10x_V1.1.3.7

on PC to execute BL110 configuration software to open below page



Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110

0		1		٢		?	(I)
earch		Read Config.	Write Config.				Abou

4.1.2 Search for Gateway Device

Click "Search" and all devices in the same local area network with the PC will appear. For example, WAN port is connected to the switch, PC and gateway are in the same local area network, and the gateway whose IP is 192.168.1.131 will be found. If there is no device found, please make sure gateway and computer is in the same local area network, and the computer UDP broadcast is normal. If the device cannot be found because of the computer network environment issues, you can enter the IP in the "IP" bar, click connect, login.

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.7 ΟX Q + ٢ Pi ? (i) earch Clear Import Export Read Config. Write Config. Monitor Log 中文 Help About Device Selection X IP Model Nam Version BL110Pro 192.168.1.131 BeiLai V1.1.0 Device IP Connect Refresh

Note: If it's necessary to change PC or Gateway IP, make sure configuration software is closed and open it again.

4.1.3 Connecting Gateway

Double click the device to be configured (For example, double click device with IP 192.168.1.131).



to enter the gateway device configuration interface. You can enter the IP and directly connect to log in if there is no display device because of the network environment.

Parch Clear Import Export Read	d Config. Write	Config. Monitor				。 中文	() Help Abo
一							
RS485 (Modbus RTU)							
E COM2	Name	Value	Cloud	Status	Port	Device Name	Status
\$7-200	Name	BeiLai	MQTT Client		COM1	RS485 (Modbus RTU)	•
- COM3	Time	14:04:28 09-27-2022	MQTT Client II		COM2	s7-200	•
	Model	BL110Pro	Ali IoT	٠	WAN	网口 (Modbus TCP)	•
	Version	V1.1.0	HUAWEI IoT				
⊡ ⊕ WAN	4G Module	EC20CEFILGR06A07M1G	AWS IoT	•			
1 Contraction of the Contraction	IMEI	863418055923288	KingPigeon IoT	•			
└──② 网□(Modbus TCP)	Signal Strength	12 (Normal:14-31)	KingPigeon Modbus IoT	•			
-('Å') 4G	operator	NULL					
D VPN	SIM ICCID	NULL					
└── � OpenVPN	SIM Status	Failed					
— 党 Alarms	_						
DataServices							
- Pass Through			Refresh				
-							
- Modbus TCP Server							
- BACnet/IP							

4.2 Configuration Software Introduction

4.2.1 System Function

earch Clear Import Export Read	Config. Write C	Config. Monitor Log					P (
-	a						
	Name	Value	Cloud	Status	Port	Device Name	Status
Gs7-200	Name	BeiLai	MQTT Client	Status	COM1	RS485 (Modbus RTU)	Status
	Time	14:04:28 09-27-2022	MQTT Client II		COM2	\$7-200	
-@COM4	Model	BL110Pro	Ali IoT		WAN	网口 (Modbus TCP)	
	Version	V1.1.0	HUAWEI IoT				
	4G Module	EC20CEFILGR06A07M1G	AWS IoT				
E-@wan	IMEI	863418055923288	KingPigeon IoT	•			
└──� 网口(Modbus TCP)	Signal Strength	12 (Normal:14-31)	KingPigeon Modbus IoT				
—"Å"4G	operator	NULL					
E WNVPN	SIM ICCID	NULL					
- OpenVPN	SIM Status	Failed					
— 洋 Alarms	4						
Control Contro Control Control Control Control Control Co							
Pass Through			Refresh				
-							
- Modbus TCP Server							
- 🕀 BACnet/IP							

System Function				
Item Description				
Search	Search for all BL110 gateways in the same local area network			
Clear	Open a new default configuration file			



Import	Import gateway configuration file
Export	Export gateway configuration file
Read configuration	Read logged-in BL110 gateway configuration parameters
Write configuration	Save all configuration parameters by click "write configuration". Make sure to click "write configuration" every time after modifying the configuration. The setting will be valid after device restarts automatically
Monitor	Monitor the value of the data point of the currently connected device, and the data in the "Value" item of the display data point page.
Log	System running log. If device issue, click save log to send it to specified email box
English	Click it to change language to English
Help	Under development
About	Software Version, Issue Date, Firmware upgrade information

Basic Information of Gateway BL110				
Item	Description			
Name	BeiLai Gateway. Can be customized			
Time	Local time when reading the gateway			
Model	Gateway device model			
Version	Gateway device version			
Signal Strength	4G module signal value. If it's less than 14, it means weak signal. Full signal value is 31			
4G Modulel	4G module model. If it's null, it means no 4G module			
IMEI	Device IMEI code			
Operators	SIM card service provider			
SIM ICCID	Read SIM card ICCID			
SIM Status	"OK" means the SIM card is successfully registered, "Failed" means it is not registered			
King Pigeon IoT	Green light means King Pigeon MQTT Client is connected, gray means King Pigeon MQTT Client is not connected.			
King Pigeon Modbus	Green light means King Pigeon Modbus cloud is connected,			
loT	gray means King Pigeon Modbus cloud is not connected.			
MQTT Client	Green light means MQTT Client is connected, gray means MQTT Client is not connected.			
MQTT Client II	Green light means MQTT Client II is connected, gray means MQTT Client II is not connected.			
Ali IOT	Green light means Alibaba cloud is connected, gray means Alibaba is not connected.			



HUAWEI IOT	Green light means HUAWEI cloud is connected, gray means HUAWEI not connected.
AWS IOT	Green light means AWS is connected, gray means AWS is not connected.
	Green indicates gateway is communicating with slave
Device Online Status	devices
Prompting Box	Gray indicates gateway fails to communicate with salve
	device
Refresh	Refresh basic information of gateway

4.2.2 Advanced Settings

The private network setting is to allow the dedicated Ethernet or dedicated 4G network to set the IP that can be used or the server that can be connected. If it is an ordinary Ethernet or 4G network, no settings are required.

Search Clear Import Export Read	1 1 0				() Help Ab
- (₩ ⁾ 4G ⊡- VPN				• 567	
 └── 𝔅 OpenVPN		Advanc	ed Settings		
一位Alarms	Private Network			Password	at
Tasks		including losites			9
DataServices					9
Pass Through	и и ==				•
	Private Network	•		Default Password : 12345	5
- Modbus TCP Server	Keepalive IP	Ping	192.168.1.1	Old Password	
- 🕀 BACnet/IP	NTP Server cn.pool.ntp.	org		New Password	
OPC UA					
- MQTT Client					
- MQTT Client II				OK	Cancel
-OAli IoT					
- HUAWEI IOT			Refresh		
-OAWS IoT					
- 🕀 KingPigeon IoT					
GringPigeon Modbus IoT					
Advanced Settings					
	A	dvanced Setting			

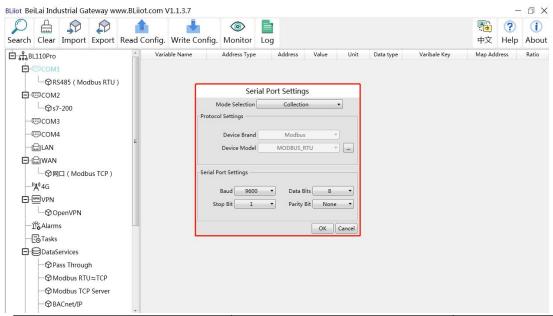
		Advanced Setting
Iter	m	Description
	Private network	Choose from "WAN" and "4G" according to your needs, and
Private network		only configure it with a dedicated network.
	Keepalive IP	Dedicated IP that can be used
	NTP Server	Dedicated connected NTP server
		Ping the gateway IP connected to the network port, you can
Network Diagnosis	Ping	judge whether the LAN connected to the BL110 network port is
		normal, fill the gateway IP, click Ping, green means normal.

4.2.3 COM Port Introduction

All 4 COM Port configuration is the same. Below is the introduction of COM1 configuration.

4.2.3.1 COM Port Attribute Configuration

Double click COM1 to open COM Port Attribute configuration box.



	ltem	Description	Default
Mode Selec	tion	Select from "Collection", "Pass	Collection
would Selec	uon	through", "Modbus RTU to TCP"	
		Select from "Modbus",	
	Device Brand	"BACnet", "Mitsubishi",	Modbus
		"Siemens","OMRON","DELTA"	
Protocol	Device Model	Select slave device according	Modbus RTU
Settings	Device woder	to selected brand	
Settings		Device command interval time	Polling Interval : 20ms
	Polling Interval	and device return timeout time,	Timed out: 200ms
	And Time out	click the button next to the	
		device model to set it.	
		Select from "1200", "2400",	9600
	Baud Rate	"4800", "9600", "19200",	
Serial Port		"38400", "57600", "115200"	
Settings	Stop Bit	Select "1Bit" or "2Bit"	1Bit
	Data Bit	Select "7Bit" or "8Bit"	8Bit
	Parity Bit	Select "None", "Even" ,"Odd"	None
	ОК	Confirm COM configuration	



Cancel

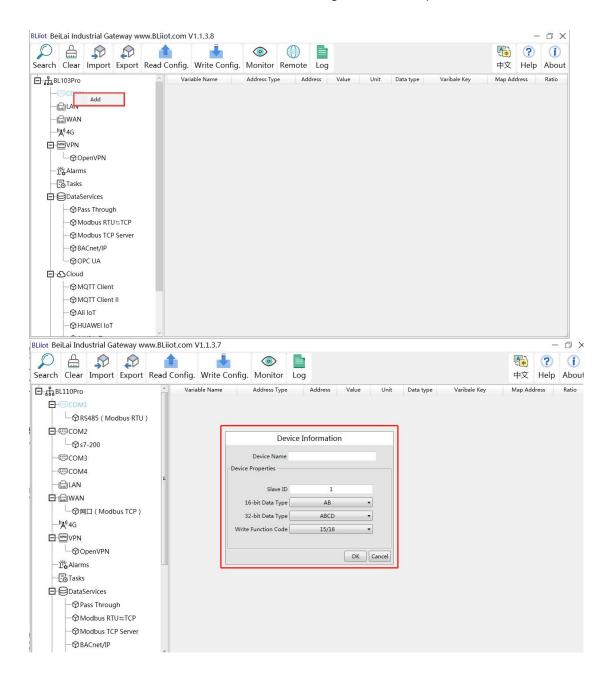
Cancel COM port configuration

4.2.3.2 Add COM Port Device

Right click COM1 and click Add to add device. Device configuration box will pop up. For the added device, double click it to show device configuration information. Right click to delete device.

The byte order of the configuration data points is also set here

Note: Total 50 devices can be connected through the 4 COM ports.





0				A	-								0	đ
			P			٢	\bigcirc						?	
earch	Clear	Import	Export	Read Config.	Write Config.	Monitor	Remote	Log				中文	Help	Abo
]BL	103Pro			^ Var	iable Name	Address Typ	be Add	dress	Value Un	t Data type	Varibale Key	Map Ad	dress	Ratio
0	⊡COM1													
	Lor	Delet	_											
-ré	ے LAN	Delet												
-ré	WAN													
1.5	A ")4G													
	™VPN													
T		oenVPN												
-1	Alarm													
1.12	Tasks													
	DataS													
<u> </u>														
		ss Throug												
		odbus RTI												
	-ØM	odbus TCI	P Server											
	-ØBA	Cnet/IP												
	-00	PC UA												
Ðð	Cloud													
	-OM	QTT Clien	t											
	11	QTT Clien	e II											
	-OM	carri ciicii												

Note: device attributes are set according to the selected protocol. For example, device brand is Modbus, set attributes as below table

	D	evice Information	
	ltem	Description	Default
De	evice Name	Name of Data Collecting Device	
	Slave ID	Data Collecting Device Modbus	
Device	Slave ID	Communication Address	
Properties	16-bit Data Type	Select "AB" or "BA"	AB
Fioperties	22 hit Data Tura	Select "ABCD", "DCBA", "BADC",	ABCD
	32-bit Data Type	"CDAB"	ABCD
	Write function code	Select from 05/06, 15/16	15/16
	OK	Confirm device configuration	
	Cancel	Cancel device configuration	

4.2.2.3 Add COM Port Device Datapoint

Click device name and then right click the box on the right, click Add to enter data point configuration box. The outside of the mapping address on the configuration software represents the Modbus address, and M.XXX in the brackets represents the PLC Modbus address. Right click "Add" to add the next data point. You can also right click to delete the data, or double click the data point to edit the data.

Add data points by importing and exporting Excel file. First, create some data points to export, the configuration content of the Excel file is the same as the information configuration principle of the data point configuration box. The variable name, variable label, mapping address, and collection address can not conflict.



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	Variable Properties
Item	Description
Variable Name	Name of Added Datapoint
Variable Key	The MQTT identifier of the data point, can be filled in arbitrarily.
OCT/DEC/HEX	Select from "decimal", "octal", "hexadecimal" according to the
OCT/DEC/HEX	collection address
	Select the register type of the device, different protocols display
Address Type	differently
Address	Address of the collected data point
	Select from Boolean, 16-bit unsigned integer, 16-bit signed
Data Type	integer, 32-bit unsigned integer, 32-bit signed integer, 32-bit
	single precision floating point
Add Number	Datapoint Quantity



Read-Write Type	Select "read only", "read and write"
Ratio	Only set for numeric data. Data can be magnified or minified
Ralio	with certain ratio before sending to cloud
	Address in Gateway where datapoints are stored.
Map address	Boolean: 0~2000 addresses, Numeric: 0-2000 addresses.
	Each register address space is one character
Variable unit	The unit of the data point, fill in as needed, not required.
ОК	Confirm datapoint setting
Cancel	Cancel datapoint setting

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	L ^{OM}				DO2	C	1 Coil Status	(0x)	1				bool	DO2	1	(M.000002) 1	none
		1401			DO3	C	1 Coil Status	(0x)	2				bool	DO3	i	2(M.000003)	none
	LAN				DO4	C	1 Coil Status	(0x)	3				bool	DO4	10	B(M.000004) 1	none
-ć	₩AN				DO5	c	1 Coil Status	(0x)	4				bool	DO5	4	4(M.000005)	none
_((Å) 4G				D06	C	1 Coil Status	(0x)	5				bool	DO6	-	5(M.000006) 1	none
	VPN				DO7	c	1 Coil Status	(0x)	6				bool	D07	6	5(M.000007)	none
	-00	penVPN			DO8	C	1 Coil Status	(0x)	7				bool	DO8	7	7(M.000008)	none
-7	Alarm	c			DIN1	C	2 Input Statu	s(1x)	0	Add			bool	DIN1	8	8(M.000009) r	none
		-			DIN2		02 Input Status(1x)		1	Delet			bool	DIN2	9	0(M.000010) 1	none
	Tasks				DIN3		2 Input Statu	is(1x)	2	Impor	t Excel File		bool	DIN3	-	10(M.000011)		none
E	_				DIN4	C	2 Input Statu	ıs(1x)	3	Expor	Excel File		bool	DIN4	-	1(M.00001	2)	none
	—⊕ Pa	iss Throug	h		DIN5	c	2 Input Statu	is(1x)	4				bool	DIN5		2(M.00001	3)	none
	-ØM	odbus RTI	J≒TCP		DIN6	C	2 Input Statu	ıs(1x)	5				bool	DIN6		3(M.00001	4) 1	none
	-ØM	odbus TCI	Server		DIN7	C	2 Input Statu	is(1x)	6				bool	DIN7	-	4(M.00001	5)	none
	- @BA	ACnet/IP			DIN8	C	2 Input Statu	ıs(1x)	7				bool	DIN8		5(M.00001	6) 1	none
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Select datapoint and right click it to delete datapoint. Double click datapoint to edit it.

4.2.4 LAN Port Introduction

4.2.4.1 LAN Port Attribute Configuration

Double click LAN port to enter setting page. Factory default IP of LAN is 192.168.3.1. Auto IP address distribution and routing functions are turned off in factory setting.

Note: If LAN port is connected to switch, the IP of all devices connected to switch must be the same as LAN port IP.



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LAN Port Configuration				
ltem	Description			
DUOD	Green indicates auto IP distribution for LAN is enabled			
DHCP	Gray indicates auto IP distribution for LAN is turned off			
Denting	Green indicates routing function is enabled.			
Routing	Gray indicates routing function is turned off			
IP Address	LAN port IP Address			
Subnet mask	LAN Port subnet mask			
MAC Address	LAN port MAC			
OK	Confirm LAN port Setting			
Cancel	Cancel LAN port setting			

4.2.4.2 Add LAN Port Device

After configuring LAN port attribute, right click LAN and clik Add to enter device configuration page. Device data can be collected through Gateway BL110 LAN Port or through switch which is connected with LAN.

Note: Total 50 devices can be connected through LAN and WAN



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LAN Port Device Configuration				
Item	Description			
Device Name	LAN Port Device Name			
Device IP	Set IP Address of LAN port device. Device IP Address must			
	be the same as Gateway BL110 LAN IP Address. If it's not the			
	same, need to change device IP address or LAN port IP			
	address. To change LAN port configuration, it will not take			
	effective until restart after power off			
Device Port	Set LAN device port			
Device Brand	Modbus, BACnet, Mitsubish, Siemens, OMRON			
Device Model	Select device Model			
Polling interval	Command interval time and device return timeout time, click			
	the button next to the device model to set it.			



And Time out	
Device address	Only available when the device brand is "BACnet"
16-bit Data Type	Select "AB" or "BA", only configure it if Modbus is selected as
	device brand.
32-bit Data Type	Select"ABCD", "DCBA", "BADC" or "CDAB", only configure it
	if Modbus is selected as device brand.
Write function code	Select from "05/06", "15/16"
ОК	Confirm LAN port device setting
Cancel	Cancel LAN port device setting

4.2.4.3 Add LAN Port Device Datapoint

The procedure to add LAN Port device datapoint is the same as that of adding COM port device datapoint. ID of the Modbus TCP device is configured in the data point configuration box. Refer to <u>Add COM Port Device Datapoint</u>

4.2.5 WAN Port Introduction

4.2.5.1 WAN Port Attribute Configuration

Double click WAN to enter WAN Port Attribute configuration box.

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D = stable Name Ad D = GR S485 (Modbus RTU) ↓ ⊕ @ S2485 (Modbus RTU) ↓ ⊕ @ S7-200	dress Type Address Value Unit Data type Varibale Key Ethernet Settings	Map Address	Ratio
-@COM3 -@COM4 -@LAN	Auto IP IP Address 192.168.1.131 ubnet Mask 255.255.0 Gateway 192.168.1.1 AC Address 08:00:27:28:01:af DNS 114.114.114.114 OK Cancel		
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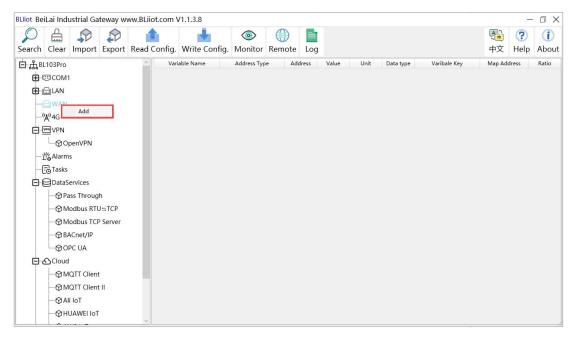
	WAN Port Attribute Configuration
ltem	Description
Auto IP	Green indicates auto retrieving IP



	Gray indicates IP is specified			
IP Address	Current IP Address of WAN Port			
Subnet Mask	Current WAN Subnet Mask			
Gateway	Current WAN Gateway Address			
MAC Address	WAN port MAC address			
DNS	Current WAN port DNS server			
ОК	Confirm WAN port setting			
Cancel	Cancel WAN port setting			

4.2.5.2 Add WAN Port Device

Right click WAN and clik Add to enter device configuration page. Device data can be collected through Gateway BL110 WAN Port or through switch which is connected with WAN. Note: Total 50 devices can be connected through LAN and WAN.





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	WAN Port Device Configuration					
ltem	Description					
Device Name	Name of WAN Port Device					
Device IP	IP Address of WAN Port Device					
Device Port	WAN port device Port					
Device Brand	Select from Modbus, BACnet, Mitsubishi, Siemens, OMRON					
Device Model	Select device Model					
Polling interval	Command interval time and device return timeout time, click					
Time out	the button next to the device model to set it.					
Device address	Only available when the device brand is "BACnet".					
16 bit Data Type	Select "AB" or "BA", only configure it if Modbus is selected					
16-bit Data Type	as device brand.					
32-bit Data Type	Select "ABCD", "DCBA", "BADC" or "CDAB", only configure					
	it if Modbus is selected as device brand.					
Write function code	Select from "05/06", "15/16"					
OK	Confirm WAN port device setting					
Cancel	Cancel WAN port device setting					

4.2.5.3 Add WAN Port Device Datapoint

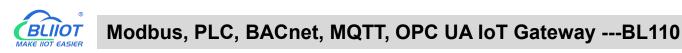
The procedure to add WAN Port device datapoint is the same as that of adding COM port device datapoint. ID of the Modbus TCP device is configured in the data point configuration box. Refer to Add COM Port Device Datapoint

4.2.6 4G Introduction

Double click 4G to enter APN setting box. Note: It's not necessary to set APN for China mainland 4G network. If no 4G module in the device, it's not needed to set it either

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	OK Cancel	
	4G Configuration	

4G Configuration								
Item	Description							
APN	Access Point Name of SIM card cellular network							
User Name	User Name of SIM card cellular network							
Password	Password of SIM card cellular network							



4.2.7 OpenVPN Introduction

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Only BL110Pro have the OpenVPN function, and the gateway device is the client. According to the IP assigned by the OpenVPN server to the gateway device client, you can directly enter the gateway client IP in the "Device IP" item of the configuration software login interface, and click Connect to log in to the gateway device.

	OpenVPN
ltem	Description
Client/Server	Gateway device as client "Client"
IP/domain name	The address of the server with which the client establishes an
	OpenVPN connection
Port	The TCP/UDP port provided by the server for establishing a
	connection, the default is 1194.
TCP/UDP	The protocol used in the communication between the client and
	the server, and the connection method is selected according to
	the server.
TUN/TAP	In TUN mode, 3 Layer tunnel is established to realize
	point-to-point transmission. In TAP mode, 2 Layer tunnel is
	established to implement transparent transmission of IP packets.
	Select the connection method according to the server.
Authentication	Select from "Password Only", "Certificate Only", "Password and
Mode	Certificate" as required
User name	Username of the client, not required for "certificate only" mode.



Password	Client user name password, not required for "certificate only"						
	mode.						
Encryption	Select the data encryption algorithm, and select the connection						
Algorithm	encryption algorithm according to the server.						
CA File	Select File Upload, the root certificate provided by the OpenVPN						
CAFIle	server.						
Client Certificate	Select File Upload, the client certificate generated by the user						
File	based on the root certificate.						
Client Key File	Select File Upload, the key corresponding to the client						
Client Key File	certificate.						
Compression	Select from "LZO" and "LZ4" according to the OpenVPN server						
Algorithm	selection.						
ОК	Confirm OpenVPN configuration						
Cancel	Cancel OpenVPN configuration						

4.2.8 Alarm and Event Configuration

Click "Alarms", move the mouse to the right box, right click, click "Add", to enter "Alarm and Event" setting box. You can configure the data points, action and the action to be performed for alarm recovery.

4.2.8.1 Alarm Point Configuration

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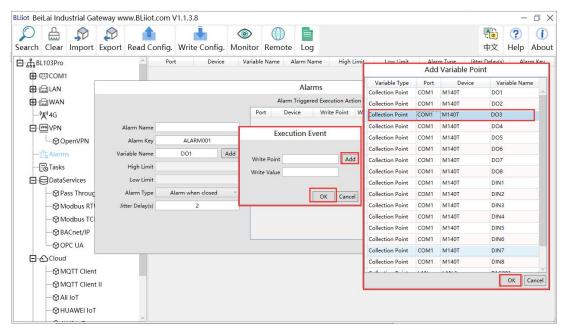
	Alarm and Events Configuration									
Item	Description									
Name	Name of Alarm Point									
Alarm Key	MQTT flag of alarm point, can be randomly set									
Variable Name	Select alarm point and click Add. Datapoint box will pop up. Click									
	the point to be set for alarm and click OK to confirm.									
High Limit	High Limit alarm value of numeric datapoints									
Low Limit	Low limit alarm value of numeric datapoints									
Alarm Type	Select from digital alarm mode: Normally Open or Normally Close									
litter Deley	Within alarm acknowledge time, if data recover to normal value,									
Jitter Delay	no alarm will be triggered. Otherwise it will generate alarm									
OK	Confirm alarms and events setting									
Cancel	Cancel alarms and events setting									

4.2.8.2 Alarm Event Configuration

Put mouse in "Alarm triggered execution action", right click the prompt box, click "Add" to enter event configuration box, and set the operation to be performed when the alarm is triggered. In the same way, put mouse on "Alarm recovery execution action", set operations when the alarm release.



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	Event Configuration								
Item	Introduction								
	Generate the point name according to the selected data point,								
Write Point Name	click "Add" to select the data point to be operated. Click on the								
	data point and click OK								
Write Value	Write the value of the data point to be operated, write "1" or "0"								
	for Boolean, "0" means open, "1" means close.								

4.2.9 Task Plan Configuration

Left click on "Task", move the mouse to the right box, click the right mouse, "Add" will pop up, click



"Add", to enter task schedule setting box, put the mouse in the box, and right click to enter the operation box, click "Add", to enter Execution Event box.

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	-@MQ	TT Client										
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BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.8 – 🗆 X ? + ۲ 中文 Help About Search Clear Import Export Read Config. Write Config. Monitor Remote Log ⊟் _ நிBL103Pro Task Name Time Week G COM1 Tasks 🕀 🖾 LAN Port Device Write Point Write Value 🕀 📾 WAN Task Name -("Å")4G System Action NULL UPN VPN UTC Time : 00 ~ Hour 00 ~ Min _ ⊖ OpenVPN Monday — 🖧 Alarms Add Tuesday Wednesday DataServices Thursday Pass Through Friday Saturday - Modbus TCP Server Sunday - 🕅 BACnet/IP -⊗OPC UA OK Cancel E & Cloud - MQTT Client MQTT Client II Ali IoT HUAWEI IoT

	Task Plan Configuration
ltem	Description
Task Name	Name of Task Plan
System Action	Can set to restart the gateway device regularly. If it is to
System Action	schedule other actions, select "NULL" for this item.
UTC Time	Set the time for task scheduling, this time is UTC time.
Week	Set week day to perform the planned task
	Generate the point name according to the selected data point,
Write Point Name	click "Add" to select the data point to be operated. Click on the
	data point and click OK
Write Value	Write the value of the data point to be operated, write "1" or "0"



	for Boolean, "0" means open, "1" means close.
OK	Confirm Task Plan setting
Cancel	Cancel Task Plan setting

4.2.10 Data Service

4.2.10.1 Transparent Transmission

Set COM mode to Transparent Transmission, set COM parameters and then configure Transparent Transmission parameters. All 4 COM ports can be used for Transparent Transmission. The configuration procedures are the same. Below is the example of setting COM2 for transparent transmission: 1. select transparent transmission mode in COM2, 2. configure COM2 attributes, click OK to enter Data Service configuration page

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白 뷺 BL103Pro 🏠 🗌	Variable Name Address Type	Address Value	Unit Data type	Varibale Key	Map Address	Ratio
-@COM1	Pa	ss Through				
Canalan Canalan	The configuration on this page wi transparent transmission mode.	I take effect only if the serial port	t is set to the			
(Å),4G	СОМ	COM1	~			
D WPN	TCP Mode	TCP Server	w.			
└─ ⊘ OpenVPN	Network Interface	WAN	v l			
— 茳 Alarms	IP/Domain	192.168.1.196				
	Port	5000				
DataServices	TCP Client Settings					
	Login Message					
- Hodbus TCP Server	Login ACK Message					
	Heartbeat Message					
OPC UA	Heartbeat ACK Message					
Cloud	Heartbeat Interval(s)	60				
- @ MQTT Client						
			OK Cancel			
- 🖓 Ali IoT			OK Cancel			

Trans	sparent Transmission Configuration
Item	Description
СОМ	For example COM2
TCP Mode	Select Gateway as "TCP Server" or "TCP Client"
	Only set it when BL110 Gateway is used as TCP server
Network Interface	Select WAN or LAN
	If BL110 is used as server, it can't be set but
IP	automatically show selected WAN or LAN IP
/Domain Name	If BL110 is used as client, fill in transparent transmission
	server IP
Port	If BL110 is used as server, fill in monitoring port
POIL	If BL110 is used as client, fill in server port
Login Mooogo	Data Package of logging in to server, filled in when the
Login Message	gateway device acts as a client.
Login ACK Message	Data Package of server response to login, filled in when
Login ACK Message	the gateway device acts as a client.
Heartbeat Message	Heartbeat Data Package to keep connection, filled in
i leal ibeat Message	when the gateway device acts as a client.
Heartbeat ACK	Data Package of server response to heartbeat, filled in
Message	when the gateway device acts as a client.
Heartbeat Interval	Cycle time of sending heartbeat package. Default is 60s,
	filled in when the gateway device acts as a client.
OK	Confirm Transparent Transmission setting
Cancel	Cancel Transparent Transmission setting

4.2.10.2 Modbus RTU to Modbus TCP

Set COM mode to Modbus RTU to Modbus TCP, set COM parameter and then configure Modbus RTU to Modbus TCP parameters in Data Service. All 4 COM ports can be used as Modbus RTU to Modbus TCP. The setting procedure is the same. Below is the example of setting COM3 as Modbus RTU to TCP: 1. Select Modbus RTU to Modbus TCP mode, 2. Set COM port attributes. 3. Click OK to enter Data Service for configuring Modbus RTU to Modbus TCP.

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Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文 Help About
☐ 🛱 BL103Pro △ Variable Name Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
- WAN Serial Port Settings	
(g) 4G Mode Selection Modbus RTU=TCP ~	
-Protocol Settings Collection	
OpenVPN After setting parameters or seriar port, view go to the data	
-□ŽoAlarms service=>Modbus RTU=TCP to set relevant parameters.	
Tasks	
-Serial Port Settings	
- Pass Through Baud 9600 v Data Bits 8 v	
-⊗ Modbus RTU≒TCP Stop Bit 1 * Parity Bit None *	
⊗ Modbus TCP Server	
- 🕲 BACnet/IP OK Cancel	
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Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文 Help About
☐ ∰BL103Pro	Map Address Ratio
-@COM1	
- Can LAN	
-@WAN	
- ⁽ A) ⁴ G Modbus RTU≒Modbus TCP	
The configuration on this page will take effect only if the serial port is set to the Modbus RTU=TCP mode.	
C ODenVPN	
一位 Alarms COM COM1 一	
TCP Mode TCP Server	
DataServices Network Interface WAN	
- Port 5000	
→ Modbus RTU=TCP	
- @BACnet/IP	
□ □ ⊕ OPC UA □ □ ⊕ Cloud	

Modbus RTU to Modbus TCP Configuration								
Item	Description							
СОМ	For example COM3							
TCP Mode	TCP Server (Gateway can only be TCP Server)							
Network Interface	Select "WAN" or "LAN"							



Port	Fill in port of monitoring BL110 Gateway (required)
OK	Confirm Modbus RTU to Modbus TCP configuration
Cancel	Cancel Modbus RTU to Modbus TCP configuration

4.2.10.3 Modbus TCP Server

BL110 Gateway supports Modbus TCP protocol and provides data as Modbus TCP server. Modbus TCP server is enabled permanently. Only configure Ethernet port and monitoring port. The IP address of the Modbus TCP server can be selected according to the requirements of WAN or LAN. WAN /LAN IP address can be viewed by clicking WAN/LAN

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		/-200 3 4 I□ (Modb penVPN is	us TCP) h J≒TCP		ble Name	Address Type	, odbus 1	Address Value CP Server 502 OK Cancel	Unit	Data type	Varibale Key		1	Ratio
		I IQTT Client IQTT Client												

	Modbus TCP Server Configuration									
Item Description										
Port Fill in gateway monitoring port (required)										
OK	Confirm Modbus TCP Server setting									
Cancel	Cancel Modbus TCP Server setting									

Modbus TCP master computer is used as client to collect function codes supported by Gateway data. Boolean data supports 01, 05, numerical data supports 03, 06, 16-bit byte sequence is AB and 32-bit bytes sequence is ABCD. Follow master computer to fill in Modbus address or PLC Modbus address (The Modbus Address in configuration software). Refer to below datapoint picture. Master computer configuration refers to <u>5.5.2View Data with KingView</u>

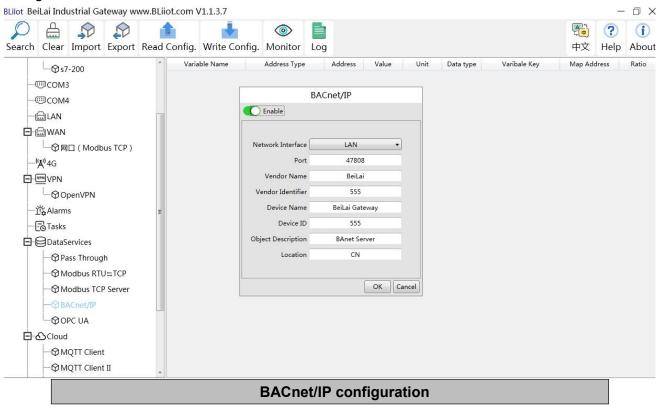


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ப் ஆ கட	L103Pro	1	Vari	able Name		dress Type		lress	Value	Unit	Data type		/aribale Key	Map Ado		Ratio
	COM1		DO1		01 Coil S		0				bool	DO1		0(M.000001		none
	L _{@ M140T}		DO2		01 Coil S		1				bool	DO2		1(M.000002	•	none
-6	⊟ LAN		DO3		01 Coil S		2				bool	DO3		2(M.000003		none
	a wan		DO4		01 Coil S		3				bool	DO4		3(M.000004		none
1.5			DO5		01 Coil Status(0x)			4			bool	DO5		4(M.000005)		none
	'Å')4G		DO6		01 Coil Status(0x) 01 Coil Status(0x)		5				bool	DO6		5(M.000006)		none
	VPN		DO7				6				bool	D07		6(M.000007		none
	└── ⓒ OpenVPN		DO8		01 Coil S		7				bool	DO8		7(M.00008		none
-i	Alarms		DIN1 DIN2			Status(1x)	1				bool	DIN1 DIN2		8(M.000009		none
-6	Tasks		DIN2 DIN3		02 Input Status(1) 02 Input Status(1)		2				bool	DIN2 DIN3		9(M.000010		none
E	DataServices		DIN3		Carriera -	Status(1x)	3				bool	DIN3		11(M.00001		none
T	 └── @ Pass Through		DIN4				4				bool	DIN4				none
	- @ Modbus RTU ≒	TCD	DING			02 Input Status(1x) 02 Input Status(1x)					bool	DING		12(M.000013) 13(M.000014)		none
			DIN7			Status(1x)					bool	DIN7		14(M.00001		none
	- Modbus TCP Se	erver	DIN8		1222254 ·	Status(1x)	7				bool	DIN8		15(M.00001		none
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4.2.10.4 BACnet/IP

BACnet standard is designed for heating, ventilation, air conditioning, and refrigeration control equipment, and also provides a basic principle for the integration of other building control systems (such as lighting, security, fire protection, etc.).

BL110 gateway acts as a BACnet/IP server to provide data. Because the data attributes of various protocols are different, the two object attributes of AV and BV are unified to provide data for the current value. The example is the Modbus address of the data point page map address item on the configuration software.





Item	Description
Enable	Disabled by default, click the button to enable. Gray: Not
	enabled, Green: Enabled.
Network Interface	Select from "WAN" and "LAN"
Port	Fill in the server port, the port must be filled in. Default:
POIL	47808.
Vendor name	Default "BeiLai", can be filled in arbitrarily.
Vendor Identifier	Default "555", can be filled in arbitrarily.
Device name	Default "BeiLai Gateway", can be filled in arbitrarily.
Device ID	Default is "555", the device object instance, if there is also a
	BACnet device in the downlink, be careful not to conflict.
Object Description	Default "BACnet Server", can be filled in arbitrarily.
Location	Default "CN", can be filled in arbitrarily.
ОК	Confirm BACnet/IP configuration
Cancel	Cancel BACnet/IP configuration

Note: The choice of WAN or LAN not only stipulates that the network port of the BACnet/IP service port is provided for the uplink, but also downlink collection of BACnet/IP.

BACnet/IP host computer data acquisition configuration, please refer to: <u>5.5.4 View and send Command by KEPServerEX 6</u> BACnet/IP data points can be extracted from the gateway and automatically generated, do not need to be filled in.

4.2.10.5 OPC UA

Gateway BL110 supports OPC UA and provides data as OPC UA server.

The IP address of the OPC UA server can be selected according to the requirements of WAN or LAN. WAN/LAN IP Address can be viewed by clicking WAN LAN

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-⊗MQTT Client II	- SCOM3 - SCOM4 - LAN - MWAN - Mathematical Models TCP) - W ² 4G - MVPN - OpenVPN - Stasks - Stasks - Stasks - Stasks - S	OPC UA Port 4840 Anonymous User Password Security Strategy none Certificate w PrivateKey w	ribale Key Map Address	Ratio



Item	Description
Enable	Green indicates OPC UA is enabled
Enable	Gray indicates OPC UA is disabled. Default is disabled
Port	Fill in the server port, the port must be filled in. Default: 4840
Anonymous	Disable by default. Gray: Enabled, Green: Disabled.
User	Fill in the user name
Password	User Password
Security	Encryption policy. Select "none", "basic256", "basic128rsa15" or
strategy	"basic256sha256"
Certificate	OPC UA certificate, select file to upload
PrivateKey	OPC UA encryption key, select file to upload
OK	Confirm OPC UA setting
Cancel	Cancel OPC UA setting

OPC UA Client configuration refer to: <u>5.5.6 View Data with UaExpert</u>

OPC UA Client datapoints are retrieved by gateway and generated automatically. It's not necessary to set it. The name of the data point is composed of the device name on the configuration software and the variable name, and the Node id is composed of the device name on the configuration software and the data point label of the device.

4.2.11 Cloud Platform

BL110 can be online in multiple cloud platform simultaneously.

4.2.11.1 MQTT Client

MQTT Client can be connected to cloud with certificate or without certificate.

MQTT Client data format only supports JSON data format of "KingPigeon", "thingsboard", and "sparkplug b". MQTT data format can be customized. More JSON data format and customized JSON data format will be supported in the future.

Connect to the ThingsBoard platform, select JSON data format of "thingsboard-telemetry-gateway". ThingsBoard platform domain name is thingsboard.cloud.

Connect to a platform that supports Sparkplug B, such as the ignition, select the JSON data format of "sparkplug b", click the button next to the data template item, configure the group ID and edge node ID in the configuration box.

MQTT Client supports multiple publishing topics, click "Add" in the publishing topic item to fill in the publishing topic, and you can view the publishing topic name in the drop-down box of the publishing topic item. Select the release topic name and click "Delete" to delete the release topic to be deleted. MQTT Client also supports the selection of different data points for each publishing topic to publish. Put the mouse cursor in the right box, click the right button, a prompt box will pop up, click "Add", a



data point box will pop up, click the data point to be published, Click "OK". Double-click a data point to view the properties. As shown in the figure below: The publishing topic "topic" only publishes the data point "DO1" of the "M140T" device of "COM1", and other data points are not published. The "KingPigeon" JSON data format of MQTT Client and MQTT Client II is the same as that of KingPigeon MQTT. Refer to: <u>5.4.19 King Pigeon MQTT Data Format</u>.

"thingsboard-telemetry-gateway" JSON data format, publish and subscribe topic format refer to the thingsboard official website documentation.

"sparkplug b" JSON data format, publish and subscribe topic format refer to Sparkplug specification Note: The data point box is blank by default, if no data point is selected, all data points are published. If there are multiple publishing topics, only one publishing topic can be blank, and other topics must select the published data points, and cannot be left blank.

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	IP/Dom	ain				Collection Point	COM1	M140T	DO1		
	р	ort	1883								
—" A ")4G	Client	t ID									
E VPN	User Na	me									
G OpenVPN	Passwe	ord									
一党 Alarms	X.5	509									
	CA	File									
DataServices	Client Certificate	File									
—	Client Key	File									
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	MQTT Client Configuration							
ltem	Description							
Enable	Green indicates MQTT Client One is enabled							
	Gray indicates MQTT Client One is not enabled.							
IP/ Domain Name	Fill in IP/Domain name							
Port	Fill in server port(required), default is 1883							
Client ID	Client Identifier of MQTT Connecting message.							
	Server uses it to identify Client							
User Name	User Name of MQTT Connecting message.							
	Server uses it for ID verification and authorization							
Password	Password of MQTT Connecting message							
Fassword	Server uses it for ID verification and authorization							
X.509	Green indicates certificate is enabled							
(Enable Certificate)	Gray indicates certificate is not enabled							



Root Certificate	Select file to upload (Need enable Certificate first)
Client Certificate File	Select file to upload (Need enable Certificate first)
Client Key File	Select file to upload (Need enable Certificate first)
	Json data format selection, choose from "KingPigeon",
	"thingsboard-telemetry-gateway", "sparkplug b", "yundee",
Data template	"dl". Default: KingPigeon. Some data templates have special
	configuration, click the button next to it to configure, such as
	the group ID and edge node ID of the "sparkplug b" template.
Cubeerike Terrie	Topic of MQTT subscribing message. After subscribing server
Subscribe Topic	can send message to client for controlling
	Topic of MQTT publishing message. It's used for MQTT to
	identify message channel of sending valid load data. Wildcard
Publish Topic	can't be included in publishing message topic name.
	Click Add to add more public topics.
	Click Delete to delete Public Topic
Uploading Cycle	Cycle time of MQTT data sending. Default is 30s
	Green indicates offline data will be transmitted once network
Data Re-transmission	recovers; Gray indicates offline data will not be transmitted
	once network resumes. Max 100,000 datapoints can be
(Enable data re-transmission)	re-transmitted. If more than that, the previous ones will be
	deleted
Selection of nublished data	Default is blank, means all data uploaded. In the box on the
Selection of published data	right, click the right mouse button, click "Add", the data point
points	box will pop up, click the data point, and click OK.
OK	Confirm MQTT Client One setting
Cancel	Cancel MQTT Client One setting

4.2.11.2 MQTT Client II

<u>MQTT Client II Configuration is the same as MQTT Client</u> <u>MQTT Client II configuration refer to 4.2.11.1MQTT Client</u> <u>MQTT Client II subscribe topic will not be working. MQTT Client Two is used for view data but not</u> <u>control data from cloud.</u> <u>MQTT Client II and MQTT Client"KingPigeon"JSON data format is the same as that of King Pigeon</u> <u>MQTT. Refer to 5.4.19 King Pigeon MQTT Data Format</u>

4.2.11.3 Alibaba Cloud

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E WWVPN			Ali Io	T	
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DataServices	Authentication Mode	Device Secret	~		
- Pass Through	Region	China(Shanghai)	·		
—	IP				
- Hodbus TCP Se	ProductKey				
- 🕀 BACnet/IP	DeviceName				
-OPC UA	DeviceSecret				
E Cloud	CA File				
- MQTT Client	Client Certificate File				
- MQTT Client II	Client Key File				
- Ali IoT	Upload Cycle(s)	30			
- O HUAWEI IOT					
- @ AWS IoT					
- SKingPigeon IoT					OK Cancel
	s IoT				

	Alibaba Cloud Configuration					
Item	Description					
	Green indicates Alibaba Cloud is enabled					
Enable	Gray indicates Alibaba Cloud is not enabled. Default is					
	disabled					
Authentication	Default is key connection. Select the key or certificate					
Mode	according to your needs, and choose from "Device Secret"					
Mode	and "X.509".					
Region	Select Alibaba Cloud Region, default is China(Shanghai)					
IP	The IP address of Alibaba Cloud Enterprise Edition, not					
	required for the public edition.					
DraduatKov	Set the same ProductKey as the one in Ali Cloud.					
ProductKey	See below illustration (Device-Click DeviceSecret to view it)					
DeviceName	Set the same DeviceName as the one in Ali Cloud					
Devicemanie	See below illustration (Device-Click DeviceSecret to view it)					
DeviceSecret	Set the same DeviceSecret as the one in Ali Cloud					
DeviceSecret	See below illustration (Device-Click DeviceSecret to view it)					
CA File	Select File Upload(Select Certificate Connection to fill in)					
Client certificate file	Select File Upload(Select Certificate Connection to fill in)					
Client key file	Select File Upload(Select Certificate Connection to fill in)					
Uploading cycle	Cycle time of data sending. Default is 30s					
Dublich Datan sint	Default is blank box with all datapoints to be uploaded					
Publish Datapoint	Right click the box and click Add to select datapoint for					
Selection	uploading. Click OK to confirm it.					



OK	Confirm Alibaba Cloud setting
Cancel	Cancel Alibaba Cloud setting

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Alibaba Cloud device model is under development. Thus datapoint must be added one by one. MQTT flag must be the same as the one in configuration software. For example, collect datapoint VW8 of PLCS7-200SMART. MQTT flag in configuration software is VW8. Then set datapoint as VW8 in cloud. Function name can be different from variable name in configuration software.

← Edit Draft						
Product Name BL10x-密钥			Prod	uctKey 'v Copy		
You are editing a draft. You n	eed to click Publish to apply th	e TSL model.				
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Enter a module nar Q +	Default Module					
	Add Standard Feature	Add Self-defined Feature		_		
	Feature Type	Feature Name(all)	Identifier 11-	Data Type	Data Definition	Actions
+Add Module	Properties	VW8 Custom	VW8	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
	Properties	VW6 Custom	. VW6	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
	Properties	VW4 Custom	VW4	int32	Value Range: -2147483648 - 214748 3647	Edit Delete
	Properties	VW2 Custom	VW2	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
	Properties	VW0 Custom	VWO	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
	Properties	Q7 Custom	Q7	Boolean	Boolean value: 0 - 关 1 - 开	Edit Delete
	Properties	Q6 Custom	Q6	Boolean	Boolean value: 0 - 关	Edit Delete
Release or line Back						
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் _{கீ} вட	.110Pro			and the second se	riable Name	Address Typ		ress	Value	Unit	Data type		aribale Key	Map Add	ess	Ratio
-0	⊡COM1				Q		0				bool	Q0		0(M.000001)		none
-0	OM2			Q0.1	Q		0.1				bool	Q1		1(M.000002)		none
				Q0.2	Q		0.2				bool	Q2		2(M.000003)		none
never l	COM4			Q0.3	Q		0.3				bool	Q3		3(M.000004)		none
				Q0.4	Q		0.4				bool	Q4		4(M.000005)		none
	⊒]LAN	-	-	Q0.5	Q		0.5				bool	Q5		5(M.000006)		none
	-@S7-	-200SMAF	RT	Q0.6	Q		0.6				bool	Q6		6(M.000007)		none
-6	WAN			Q0.7	Q		0.7				bool	Q7		7(M.000008)		none
_()	A')4G			VW0	vw		0				uint16	VW0		0(M.400001)	1	
E-0	VPN			VW2	vw		2				uint16	VW2		1(M.400002)	1	
- T-	1	enVPN		VW4	vw		4				uint16	VW4		2(M.400003)	1	
*					VW		6				uint16	VW6		3(M.400004)	1	
	Alarms			VW8	VW		8				uint16	VW8		4(M.400005)	1	
	-@Ma	ss Throug odbus RTU odbus TCF Cnet/IP	J≒TCP													

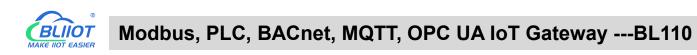
Note: Currently Alibaba cloud device shadow is not supported. Data is written through online debugging. Multiple data sending is not supported.

4.2.11.4 HUAWEI Cloud

HUAWEI Cloud can be connected with or without Certificate. It supports multiple service IDs. Click Add to set Service ID. ID can be viewed from the drop-down list. Click Delete to delete service ID. HUAWEI Cloud supports uploading certain datapoints of each Service ID. Right click the box and click Add to enter datapoint dialog box. Select the datapoint to upload and click OK to confirm it. Double click the datapoint to view its attributes.

Note: 1. Datapoint box is blank in default which means all datapoints will be uploaded. If there're multiple Service IDs, only one Service ID datapoint box can be blank. Datapoints for uploading must be selected for other Service IDs.

2. HUAWEI Cloud device shadow function is not supported. Data is written through synchronization command.



Ø	A				4			B					(?	(j)
Search	Clear	Import	Export	Read Config.	Write Config.	Monitor	Remote	Log						中文	Help	About
	ά ^{γ)} 4G			^												
	VPN		1					HU	AWE	l loT						
	600	penVPN		C Enable												
	🖧 Alarm	IS								Variable Type	Port	D	evice	1	/ariable N	lame
H	Tasks			Authentication	Mode	Device Se	ecret	~								
Þ	DataS	ervices		IP/I	Domain											
	-ØPa	ass Throug	h		Port	188	33									
	-ØM	lodbus RTU	J≒TCP	De	vice ID											
	-ØM	lodbus TCF	9 Server	Dev	ice Key											
	-ØB/	ACnet/IP			CA File											
		PC UA		Client Certific	ate <mark>F</mark> ile											
	Cloud			Client I	Key File											
		QTT Client		Se	erver ID		~ Add	Delete								
		IQTT Client	tll	Upload (Cycle(s)	30)									
		li loT	, I	Data Retransi	mission											
		UAWEI IoT														
		WS IoT													ОК	Cancel
		ngPigeon							_					_		
		ngPigeon		oT												
	Advar	nced Settin	ngs	~												

	HUAWEI Cloud Configuration
Item	Description
Enable	Green indicates HUAWEI Cloud is enabled.
Enable	Gray indicates HUAWEI Cloud is disabled. Default is disabled
Authentication	Default is key connection. Select the key or certificate according
mode	to your needs, and choose from "Device Secret" and "X.509".
	Select connecting to HUAWEI Cloud via MQTT to enter console. Click Overview to get server IP address of device connection
IP/ Domain Name	HUAWEI CLOUD Conoce p Reprint IoT Platform IoT Platform Iot Verview Products Devices Devices Storage Management Access Totocol (Port) Access Address HTTPS (443) Addplottion Iot Platform Iot Platform Iot Platform Builing mode: pay-per use (number of messages) Provides basic device access and management functions. Access Details Access Totocol (Port) Access Address IntTPS (443) Application IntTPS (443) Addp5 (5671) Iot Portice (5683) CoAP (5683) CoAPS (5684) Device a IntTPS (8833)
Port	Default is 1883, fill in 1883 for connecting with Secret Key fill in 8883 for connecting with Certificate (Required)
Device ID	Set the same ID as the one in HUAWEI Cloud (Device-Device ID)
Device Key	Set the same Device Secret Key as the one in HUAWEI Cloud

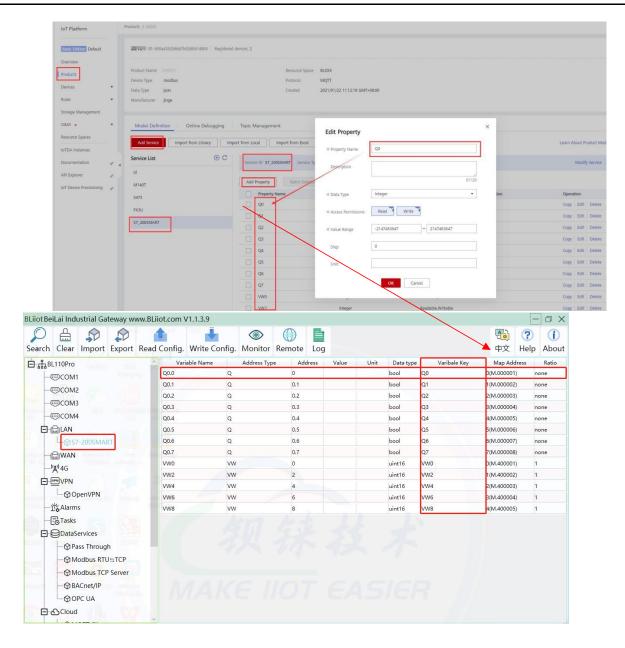


	when creating device in HUAWEI Cloud. If it's forgot, it can be								
	reset in device authentication.								
	(Not necessary if connecting with certificate is selected)								
CA File	Select File Upload(Select Certificate Connection to fill in)								
Client Certificate	Select File Upload(Select Certificate Connection to fill in)								
Client Key File	elect File Upload(Select Certificate Connection to fill in)								
	Set the same Service ID as the one in HUAWEI Cloud.								
	(IOT Platform-Products-Add Service-Service ID)								
	HUAWEI CLOUD Console • Beijingd • Search C								
Service ID	IoT Platform Products / BL101 Image: Edition Default Image: Edition Default Image: Devices Image: Edition Default Image: Devices Image: Edition Default Image: Rules Image: Edition Default Image: Rules Image: Edition Default Image: Rules Image: Rules <								
Upload Cycle	Cycle time of data uploading. Default is 30s								
	Green indicates offline data will be transmitted once network								
Data	recovers; Gray indicates offline data will not be transmitted once								
Re-transmission	network resumes. Max 100000 datapoints can be re-transmitted.								
	If more than that, the previous ones will be deleted.								
Datapoint	Default is blank box with all datapoints to be uploaded								
Uploading	Right click the box and click Add to select datapoint for								
Selection	uploading. Click OK to confirm it.								
ОК	Confirm HUAWEI Cloud setting								
Cancel	Cancel HUWEI Cloud setting								

Set datapoint in HUAWEI Cloud as below picture. If there're multiple service IDs in configuration software and each service ID has different datapoints, configure the same service ID in HUAWEI Cloud. Put MQTT flag as attribute name. For example, collect datapoint Q0 of PLC S7-200SMART, put configuration software MQTT flag Q0 as attribute name.



Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110



4.2.11.5 AWS (Amazon Web Service)

Note: 1. Datapoint box is blank in default which means all datapoints will be published. If multiple topics are published, only one topic datapoint box can be blank. For other topics, datapoints for publishing must be selected.

2.AWS Cloud data writing function is not supported



0 arch	Clear I	sp mport	Export	Read Con	fig. V	Vrite Confi	g. Monito	r Remote	e Log				通 中文	? Help	(i Abo
_(1)	4 ⁽¹⁾ 4G		-	^	Variab	e Name	Address T	ype A	and the second	Value Unit	Data type	Varibale Key	Map Ad	dress	Ratio
	VPN) Enable					Avv	5101					
	_⊖Ope	enVPN		_						Variable Type	Port	Device	Varia	ble Name	
	Alarms														
- 1 5	Tasks			ID	/Domain										
	DataSer			18,	Port		8883								
		s Through			Thing		0005								
		dbus RTU			Client ID										
		dbus TCP	Se		CA File										
	- @ BAC			Client Certif											
	-OOP(UA			: Key File										
8	Cloud				sh Topic			~ Add	Delete						
		TT Client			Cycle(s)		30		tion of the second s						
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		AWEI IOT												OK Car	
	- 🖓 AW													OK Car	icel
		Pigeon I Pigeon I													

	AWS Configuration
Item	Description
Enable	Green indicates AWS is enabled. Gray indicates AWS is disabled. Default is disabled
IP/ Domain Name	Fill in the terminal node, enter the console, and click "Things" - "Interact". With Services Services features, marketplace products, and docs Alless Image: Consect of the services features, marketplace products, and docs AWS IoT Image: Consect of the services features, marketplace products, and docs Alless Image: Consect of the services features, marketplace products, and docs AWS IoT Image: Consect of the services features, marketplace products, and docs Alless Image: Consect of the services features, marketplace products, and docs Monitor: Image: Consect of the services features, marketplace products, and docs Alless Actions - Monitor: Image: Consect of the service features, marketplace products, and docs Connect a device Connect a device Image: Thing services This thing already appears to be connected. Connect a device Connect a device Thing groups Billing Groups Update your Thing Shadow using this fleet API Endpoint. Learn more Shadow using this fleet API Endpoint. Learn more Jobs Filet Hub MQTT Use topics to enable applications and things to get, update, or delete the state information for a thing (Thing Shadow) Learn more
Port	8883 (Required)
Things	Set Item ARN Image: Thing soups Billing groups Billing Groups Jobs
Client ID	Fill in AWS Account ID



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	aws Services ▼ Q Search for	r services, features, marketpla	ace products, and docs [Al	lt+S] D & Oregon ▼
	AWS IOT ×	AWS loT > Things >	BL101	My Account My Organization
	Monitor Activity	THING BL101		My Service Quotas
	Onboard	BLXXX		My Billing Dashboard My Security Credentials
	▼ Manage	Details	Thing ARN	Sign Out
	Types Thing groups	Security		urce Name uniquely identifies this thing.
		Thing groups		
CA File	Select File Upload			
Client certificate file	Select File Upload			
Client key file	Select File Upload			
	Topic created when	creating a	rule, topic ı	name used by MQTT
	to publish message	s, click "Ado	d" to fill in t	he published topic
	name. Click Add to	create more	e Publish T	opics. Select Publish
	Topic and click Dele	ete to delete	e it.	
	aws Services ▼ Q Search	n for services, features, mar	ketplace products, and a	/ocs [Alt+S]
Publish Topic	Tunnels	RULE		
	 ▶ Greengrass ▶ Secure 	BL ENABLED		
	▶ Defend	Overview	Description	
	Act Rules Destinations	Tags	No description Rule query	
	✓ Test ▶ Device Advisor			the messages you want to process with this rule.
	MQTT test client		100 million (100 m	rsion 2016-03-23
Uploading cycle	Cycle time of data u	uploading. D	Default is 30	Os
	Default is blank box	with all dat	apoints to	be published
Datapoint Publishing	Right click the box a		•	-
Selection	publishing. Click Oł			•
ОК	Confirm AWS settin			
Cancel	Cancel AWS setting	0		
		•		

4.2.11.6 King Pigeon Cloud via MQTT

King Pigeon MQTT Data Format refer to: <u>King Pigeon MQTT Data Format</u> Configure it as below:



BLiiot BeiLai Industrial Gateway	/ www.BLiiot.com V1.1.3	.8										-	ΟX
Search Clear Import Expo	ort Read Config. Writ	te Config.	() Monitor	() Remote	Log						通 中文	? Help	() About
_('Å') 4G					Kin	ngPigeo	on loT						
	C Enable												
└─ ۞ OpenVPN							Variable Type	Port	6	Device	Va	riable Na	ne
— 泣 Alarms													
	IP/Domain		1883.dtuij	p.com									
DataServices	Port		1883	3									
- Pass Through	Client ID												
	User Name		MQT	т									
- 🖓 Modbus TCP Serve	Password		MQTT	w									
—⊕ BACnet/IP	Subscribe Topic												
OPC UA	Publish Topic												
日心Cloud	Upload Cycle(s)		30										
- @ MQTT Client	Data Retransmission												
- @ MQTT Client II													
—⊕ Ali loT													
- HUAWEI IOT						11.						ОК	Cancel
-@AWS IoT													
🕀 KingPigeon IoT													
G KingPigeon Modb	us IoT												
-{ô} Advanced Settings	~												

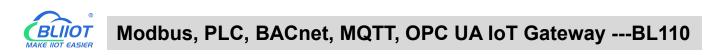
King	Pigeon Cloud via MQTT Configuration								
Item	Description								
Frabla	Green indicates King Pigeon cloud via MQTT is enabled								
Enable	Gray indicates King Pigeon cloud via MQTT is disabled								
IP/Domain Name	1883.dtuip.com								
Port	1883(Required)								
	Fill in device serial number issued by BLIIoT								
Client ID	(Contact BLIIoT sales to get the serial number if required								
	to connect to King Pigeon cloud)								
User Name	MQTT								
Password	MQTTPW								
Subscribe Topic	King Pigeon Device Serial Number/+								
Publish Topic	King Pigeon Device Serial Number								
Uploading Cycle	Cycle time of data uploading. Default is 30s								
	Green indicates offline data will be transmitted once								
	network recovers; Gray indicates offline data will not be								
Data Retransmission	transmitted once network resumes. Max 100, 000								
	datapoints can be retransmitted. If more than that, the								
	previous ones will be deleted								
Publishing Datapoint	Default is blank box with all datapoints to be published								
Selection	Right click the box and click Add to select datapoint for								
	publishing. Click OK to confirm it.								
ОК	Confirm King Pigeon Cloud via MQTT setting								
Cancel	Cancel King Pigeon Cloud via MQTT setting								

Configure datapoint with below procedure. First add datatpoint and then configure datapoint mark. It



must be the same as MQTT flag in configuration software. For example, collect datapoint Q1 of PLC S7-200SMART, in configuration software MQTT flag is Q1, then set Q1 as read-write mark in King Pigeon cloud.

Device	default group	~				
Device	BL10x		20			
Link	MQTT	~	3			
Dropping	Custom	60	1			
Sensor	Append	Batch Addition				
	Q0	Switch type (operable 👻	0 (decimal places)	Unit	0	8 Delete
	Q1	Switch type (operable	0 (decimal places) 👻	Unit	0	8 Delete
	Q2	Switch type (operable 👻	0 (decimal places)	Unit	0	8 Delete
	Q3	Switch type (operable 👻	0 (decimal places)	Unit	0	L Delete
	Q4	Switch type (operable -	0 (decimal places)	Unit	0	J Delete
	Q5	Switch type (operable -	0 (decimal places)	Unit	0	J Delete
	Q6	Switch type (operable -	0 (decimal places)	Unit	0	J Delete
	97	Switch type (operable -	0 (decimal places)	Unit	0	J Delete
	vwo	Numerical Type	0 (decimal places)	↑	0	L Delete
	VW2			1	0	
		inchedi type	0 (decimal places)			
	VW4	Numerical Type 🚽	0 (decimal places) -	1	0	Delete
Monitoring Center	-					Con
	★ Device Ust					Con
k Protocol	► Device Ust An Jensona					Con
ik Protocol P Protocol						Con
k Protocol P Protocol TP Protocol			n	n		
Ik Protocol P Protocol TP Protocol I RTU 3 TCP			J	Ĵ	,	
Ik Protocol P Protocol TP Protocol 8 RTU 9 TCP 2TT Protocol			a1	22		
IK Protocol P Protocol I P Intocol I RTU I TCP ITT Protocol P Protocol			6	Q2 Sensor (D. 1	225048	a3
IK Protocol P Protocol R TU G TCP TTP Protocol R TU Protocol P Protocol P JSON Protocol		Q0	a1		725048	
k Protocol P Protocol TP Protocol RTU TProtocol P Protocol P JSON Protocol CoAP Protocol		08 Sensor ID: 1725046 Read write 00	C1 encer (D: 1725047 Read write: C1	Sensor ID: 1		Sensor ID: 1725049
k Protocol P Protocol RTU TCP RTT Protocol P Protocol P JSON Protocol		Q0 Sensor ID: 1725045	a1	Sensor ID: 1	725048 VMms	Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol		08 Sensor ID: 1725046 Read write 00	C1 encer (D: 1725047 Read write: C1	Sensor ID: 1 Read write Q2		Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol		08 Sensor ID: 1725046 Read write 00	C1 encer (D: 1725047 Read write: C1	Sensor ID: 1 Read write Q2		Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol		08 Sensor ID: 1725046 Read write 00	C1 encer (D: 1725047 Read write: C1	Sensor ID: 1		Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol		08 Sensor ID: 1725046 Read write 00	C1 encer (D: 1725047 Read write: C1	Sensor ID: 1 Read write Q2		Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol	Catego Parameter Catego Parameter Catego Parameter	aa Bensori (D: 1725948 Read write: 00 Works	at escer (b. 1725047 Read surfle at)	Sensor ID: 1 Read write 02		Sensor ID: 1725049
k Protocol P Protocol RT Protocol RT U RT U RT U RT Protocol P Protocol CoAP Protocol -oT Protocol	Per Setting 1 Coding Parameter Coding Parameter Coding Parameter	00 Sensor/D: 1725446 Read-write: 00 Write O	C1 enser (D: 1725047 Read write C1 Ver	Sensor ID: 1 Read write 02	Write	Senso ID: 1725049 Read write 03
k Protocol P Protocol TP Protocol RTU TCP P Protocol P Protocol CoAP Protocol IcoAP Protocol	Par Jetitobil Solitos Parameter Solitos Parameter Q4 Senior ID: 1725050 Read write: 04	00 Bensir ID: 1725648 Read write: 00 Write C5 Bensir ID: 1725651	a1 erer (b. 1725047 Read write: Q1 Ven	Sensor ID: 1	Write	Sensor ID: 1725049 Read write: 03
k Protocol P Protocol TP Protocol RTU TCP P Protocol P Protocol CoAP Protocol IcoAP Protocol	Par Jetitobil Solitos Parameter Solitos Parameter Q4 Senior ID: 1725050 Read write: 04	aa Bensori D: 1725646 Read write 00 Vote 05 Sensori D: 1725051 Read write 05	C1 reser (0: 172502) Read write C1 VPT VPT VPT VPT VPT VPT VPT VPT	Sensor ID: 1	<u>Wes</u>	Sensor ID: 1725049 Read write 03 WW VN0 Sensor ID: 1725054 Read write VW0



arch Clear Import Ex	port Read C	Config.	Write Config.	() Monitor		og				中文	(?) (i Help Abo
BL110Pro	-		ble Name	Address Typ		s Value	Unit	Data type	Variba		
-@COM1		Q0.0	Q		0			bool	Q0	D(M.000001)	none
		Q0.1	Q		0.1			bool	Q1	1(M.000002)	none
		Q0.2	Q		0.2			bool	Q2	2(M.000003)	none
(IIII) CON44		Q0.3	Q		0.3			bool	Q3	3(M.000004)	none
-		Q0.4	Q		0.4			bool	Q4	4(M.000005)	none
		Q0.5	Q		0.5			bool	Q5	5(M.000006)	none
General ST-200SMART		Q0.6	Q		0.6			bool	Q6	5(M.000007)	none
		Q0.7	Q		0.7			bool	Q7	7(M.000008)	none
-('A') 4G		VW0	vw		0			uint16	VW0	D(M.400001)	1
		VW2	vw		2			uint16	VW2	1(M.400002)	1
 ☐ OpenVPN		VW4	VW		4			uint16 uint16	VW4 VW6	2(M.400003)	1
一 岱 Alarms		VW6	VW		6				0.000000	3(M.400004)	1
		VW8	VW		8			uint16	VW8	4(M.400005)	1
- Tasks DataServices											
- Pass Through											
- → Modbus RTU □ T	СР										
- Modbus TCP Ser	rver										
BACnet/IP											

4.2.11.7 King Pigeon Cloud via Modbus

Both King Pigeon Cloud and custom Modbus cloud can be connected via Modbus RTU protocol. BL110 supports function code 01, 05 of Boolean data and function codes 03, 06 of numerical data. 16-bit byte sequence is AB and 32-bit byte sequence is ABCD.

BLiiot Beil	ai Industrial Gateway ww	w.BLiiot.co	m V1.1	1.3.8								-	σx
) Search	Clear Import Export	nead Conf	fig. W	/rite Config. Monitor	() Remote	Log					。 中文	? Help	() About
	ਔ4G ⊡VPN └──────────────	^		King Enable	Pigeon Moo	lbus IoT							
-ü	Alarms		Nan	n				Status	Port		rice Name		Status
-50	B Tasks		ame	You can change the serve	r address to lo	g in to other cloud pla	tforms.	•	COM1	M140T			•
	DataServices	Tir		IP/Domain	mod	bus.dtuip.com		•	LAN	S475			•
	- Pass Through		odel	Port		6651	-	•	-				
			rsion Module			1	-	•	-				
	- Modbus TCP Server	4G						•					
	- BACnet/IP		nal Strei	Login Message				•					
			erator	Login ACK Message					-				
	⊕OPC UA		MICCID	Heartbeat Message		Q							
8	SCloud		M Status	Heartbeat ACK Message		A							
	—⊕ MQTT Client		in otatas	Heartbeat Interval(s)		60							
	—⊕ MQTT Client II												
	—⊕Ali loT					ОК	Cancel						
						Refr							
	- @ AWS IoT												
	- KingPigeon IoT												
	- KingPigeon Modbus Id	7											
<u>6</u>	Advanced Settings	-											

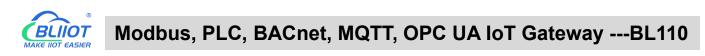
	King Pigeon Cloud via Modbus								
ltem	Description								
Enable	Green indicates King Pigeon Cloud via Modbus is enabled								
Enable	Gray indicates King Pigeon Cloud via Modbus is disabled								
IP/Domain Name	modbus.dtuip.com								
Port	6651 (Required)								
Modbus Station	Set Modbus communication address of this Gateway device								



	Input device serial number issued by King Pigeon
Login Message	(Contact BLIIoT sales to get the serial number)
	Server acknowledges login messages (Not necessary for
Login ACK Message	King Pigeon Cloud)
Heartbeat Message	Q (Heartbeat message to keep connection)
Heartbeat ACK Message	A (Server acknowledges heartbeat messages)
Heartbeat Interval	Cycle time of sending Heartbeat messages, default is 60s
OK	Confirm King Pigeon Cloud via Modbus setting
Cancel	Cancel King Pigeon Cloud via Modbus setting

Configure datapoint in King Pigeon Cloud as below picture. First create datapoint, then configure Modbus ID, function code, address, data format, byte sequence and data collection cycle. Modbus address in King Pigeon cloud and configuration software is deviated by 1. For example, datapoint Q0 of PLC S7-200SMART in configuration software is 8, then put 9 in cloud. Sensor names in cloud can be different from those in configuration software

	default group								
Device	BL10x			<u></u>					
Link	MB RTU			0					
Dropping	Custom -	60		0					
Sensor	Append	Batch Ad	Idition	T .					
	00	Switch type (o	perable	· · · (decimal plac	es) .	Unit	0	1 8	Delete
	Q1	Switch type (o	perable			Unit	0	3	Delete
	Q2	Switch type (o	perable -	 0 (decimal plac 		Unit	o	3	Delete
	Q3	Switch type (o	perable -	 O (decimal plac 		- Unit	0	1	Delete
	Q4	Switch type (o				Unit	0	3	Delete
	Q5	Switch type (o				- Unit	0	1	Delete
	Q6	Switch type (o				- Unit	0	ı	Delete
	Q7	Switch type (o				- Unit	0	3	Delete
	VW0	Numerical Typ				~ ^	0	1	Delete
	VW2	Numerical Typ		0 (decimal plac		- ^	0	1	Delete
	VW4	Namerical Typ		0 (decimal plac		- 1	0	3	Delete
P Protocol	← Device List BL10x	Read write instruction	settings			-			- 1
k Protocol P Protocol TP Protocol		Read write instruction Serial Number		ilave Function Code	Bias	Data Format	Data Bits	Byte Order	— i Acquisitior Cycle
P Protocol TP Protocol I RTU		Serial Number			Bias 9	Data Format	Data Bits	Byte Order	Acquisition
P Protocol TP Protocol I RTU I TCP ITT Protocol	BLIOX	Serial Number	Sensor A	Idress Function Code			Deta Bits	Byte Order	Acquisition Cycle
P Protocol TP Protocol I RTU	BL10x Serial Number 9	Serial Number	Sensor A	01Read and write ~	9	bit	Data Bits	Byte Order	Acquisition Cycle 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol P JSON Protocol CoAP Protocol	BL10x Serial Number 9	Serial Number	a nsor A u 20 1 21 1	01Read and write v	9	bit.	Dota Bits.	Byte Order	Acquisition Cycle 10 10
P Protocol TP Protocol I RTU I TC P I TT Protocol P Protocol P JSON Protocol	BL10x Serial Number 9	Serial Number TDF 1 2 3	9msor Av 00 1 01 1 02 1	Difference Punction Loss 01Read and write ~ 01Read and write ~ 01Read and write ~ 01Read and write ~	9 10 11	DR DR DR	Deta Bits	Byte Order	Acquisition Cycle 10 10 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol CoAP Protocol -IOT Protocol	BLOX Senal Number 9 All Sensos	Serial Number T 2 3 4	COL A COL 1 Q1 1 Q2 1 Q3 1	OTRead and write	9 10 11 12	bit .	Data Bits	Byte Order	Acquisition Cycle 10 10 10 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol CoAP Protocol -IOT Protocol	BL10x Serial Number 9	Serial Number 1 2 3 4 5	nsor A Q0 1 Q1 1 Q2 1 Q3 1 Q4 1	DiRead and write w 01Read and write w	9 10 11 12 13	bi bi bi bi	DetaBits	Byte Order	Acquisition Cycle 10 10 10 10 10 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol CoAP Protocol -IOT Protocol	BLOX Senal Number 9 All Sensos	Serial Number 1 2 3 4 5 8	Sector A Q0 1 Q1 1 Q2 1 Q3 1 Q4 1 Q5 1	01Read and write **	9 10 11 12 13 14	bi bi bi bi bi	Data Bits	Byte Order	Acquisition Cycle 10 10 10 10 10 10 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol CoAP Protocol -IOT Protocol	BLOX Senal Number 9 All Sensos	Serial Number 1 2 3 4 5 6 7	Sensor A Q0 1 Q1 1 Q2 1 Q3 1 Q4 1 Q5 1 Q6 1	Paintoni Loss 01Read and write **	9 10 11 12 13 14 15	bit bit bit bit bit bit bit bit bit bit	Data Bits	Byte Order	Acquistion Cycle 10 10 10 10 10 10 10 10 10
P Protocol TP Protocol IT Protocol IT Protocol P Protocol CoAP Protocol -IOT Protocol	BLOX Senal Number 9 All Sensos	Serial Number 1 2 3 4 5 6 7 8	Symbol A Q0 1 Q1 1 Q2 1 Q3 1 Q4 1 Q6 1 Q6 1 Q7 1	Paintoni Loss 01Read and write	9 10 11 12 13 14 15 16	bi bi bi bi bi bi bi bi	Deta Bits	Byte Order	Acquistion Cycle 10 10 10 10 10 10 10 10 10
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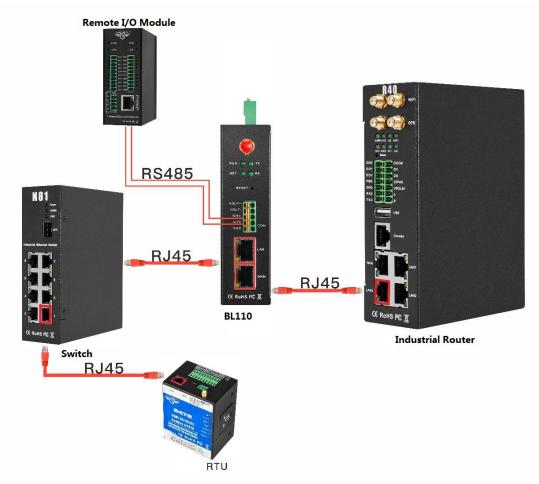
Search Clear Import Export Rea	ad Config.	Write Config.	() Monitor) g				中文 He	P () elp Abor
🗄 கூ்BL110Pro	100	able Name	Address Type		Value	Unit	Data typ		Map Address	
-@COM1	Q0.0 Q0.1	Q		0		-	bool bool	Q0 Q1	0 M.000001)	none
-@COM2	Q0.1	Q		0.1			bool	Q1 Q2	1 M.000002) 2 M.000003)	none
	Q0.2 Q0.3	Q		0.2			bool	Q3	3 M.000003)	none
-@COM4	Q0.3	Q		0.3			bool	Q3 Q4	4 M.000005)	none
	Q0.4	Q Q		0.4			bool	Q5	5 M.000006)	none
L ST-200SMART	Q0.6	Q		0.6			bool	Q6	6 M.000007)	none
	Q0.7	Q		0.7			bool	Q7	7 M.000008)	none
WAN	VW0	vw		0			uint16	vwo	0 M.400001)	1
—('Å')4G	VW2	vw		2			uint16	VW2	1 M.400002)	1
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└── 𝕎 OpenVPN	VW6	vw		6			uint16	VW6	3 M.400004)	1
— 岱 Alarms	VW8	vw		8			uint16	VW8	4 M.400005)	1
Tasks									T	
⊢ ⊕ Pass Through										
↓ ↓ J										
- Modbus RTU										
Modbus TCP Server										
—										
GOPC UA										
E & Cloud										

5 BL110 Gateway Application Example

5.1 Add Modbus Device

Connect IO Module M140 to BL110 COM2 port and connect 4G RTU S475 to BL110 LAN port. M140T DI DO data is collected from COM2 via Modbus RTU protocol. S475 device data is collected from LAN port via Modbus TCP protocol. Connect BL110 WAN port to industrial router R40 LAN port. Router R40 provides network to BL110 Gateway.

5.1.1 Connect M140T & S475 to BL110



Network Switch N81 is connected to BL110 LAN port. S475 is connected to Switch N81. S475 device data is collected through LAN via Modbus TCP. M140T data is collected through COM2 via Modbus RTU protocol. Collected data will be sent to various clouds via 4G router R40 with its routing function. Note: Both WAN and LAN can collect device data. The configuration procedure is the same. This example is introduction to LAN port configuration.

5.1.2 COM Port Configuration

All 4 COM ports configuration procedure are the same. COM1 is RS232. COM2, COM3 and COM4 are RS485. Below example is connecting IO Module M140T to COM2 via RS485

5.1.2.1 COM2 Configuration

COM2 collect M140T data via Modbus RTU. Below is the configuration.



BLiiot BeiLai Industrial Gateway www.BLiiot.com	/1138							1.			οx
Search Clear Import Export Read Config.	•	() Monitor	() Remote	Log					● 中文	? Help	() About
Ver	able Name	Address Type	Ado	dress	Value	Unit	Data type	Varibale Key	Map Ad	dress	Ratio
		Seri	ial Port Se	ettings							
(A) 4G		lode Selection	C	ollection		~					
UVPN VPN	- Protoco	l Settings									
└─ © OpenVPN		Device Brand	N	Aodbus	~						
— 茳 č Alarms		Device Model	MO	DBUS_RT	u v						
DataServices	Serial P	ort Settings —									
—		Baud 9600	v	Data Bits	8	*					
—	Sto	p Bit 1	×	Parity Bit	None	~					
					ОК	Cancel					
GOPC UA											
- I MQTT Client											
- MQTT Client II											
- SAli loT											
HUAWEI IOT											

- (1) Double click "COM2" to enter configuration window
- (2) Mode Selection: Collection
- (3) Device Brand: Modbus; Device Model: Modbus RTU The polling interval and timeout are set by default and set according to requirements.
- (4) Baud rate, Stop bit, Data Bit and Parity Bit will be set the same as that in M140T RS485 port
- (5) Click OK to confirm

Note: Click Write Configuration. Gateway will restart automatically. COM configuration will be valid after device restarting

5.1.2.2 Add COM Port Device M140T

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S		₩.				۲							A	?	(I)
Search	Clear	Import	Export	Read Config.	Write Config	. Monitor	Remote	Log					中文	Help	About
╘─॑क़ऀ₿	L103Pro	~		^ Va	iable Name	Address Typ	be Ad	dress	Value	Unit	Data type	Varibale Key	Map Ad	dress	Ratio
Þ	COM1														
	L_@140	T													
-						Di	evice Infor	an at in a		_					
	WAN					De	evice Infor	mation		_					
H	'Å' }4G					Device Name	•	140 T							
0(VPN				Devic	e Properties —									
	└_@0p	enVPN				Slave II	n	1		÷					
H	🖧 Alarms					16-bit Data Typ		AB							
H	Tasks					32-bit Data Typ		ABCD							
D (DataSe	rvices				e Function Cod		15/16							
	- @Pas	s Throug	ı			e runction cou		15/10		8					
	-@Mo	dbus RTU	≒TCP					[OK	Cancel					
	-@Mo	dbus TCP	Server							ancer					
	- @ BA	Cnet/IP													
	-OOP	C UA													
	ிCloud														
	-@MC	TT Client													
	-@MC	TT Client	П												
	- (Ali	IoT													

- (1) Click COM2, right click the mouse and click Add to enter configuration box
- (2) Set device name, for example, set M140T as device name



- (3) Input device modbus adress, for example, if M140T Modbus ID is 1, put 1
- (4) Select Type of data to be collected. The example is to collect the DI and DO of the M140T, both of which are Boolean type, not numeric type register, select as default.
- (5) Write function code: As default, M140T supports writing multiple registers.
- (6) Click OK to confirm adding M140T
- (7) Click COM1 to view the added device M140T. If more devices to be added, perform the same procedures as above Step (1)-(6)

Note: Click Write Configuration. Gateway BL110 will restart automatically. After restarting, M140T is added successfully.

5.1.2.3 Add COM Port Device M140T Datapoint

earch Clear Import Export Re	ad Config	Write Config			bg				? (i) Ielp Abour
급 _ 鼎 BL103Pro		riable Name	Address Type	Address	Value	Unit Data typ		Map Addres	s Ratio
É-⊞COM1	DO1	01	Coil Status(0x)	0		bool	DO1	0(M.000001)	none
 □	DO2		Coil Status(0x)	1		bool	DO2	1(M.000002)	none
	DO3	01	Va	riable Pro	perties	1.1	000	2(M.000003)	none
	DO4				perdee			3(M.000004)	none
	DO5							4(M.000005)	none
-('A') 4G	DO6	Variable Name	DO1		Varibale Key	DO1		5(M.000006)	none
E WPN	DO7	OCT/DEC/HEX	Decimal	~				6(M.000007)	none
- OpenVPN	DO8							7(M.000008)	none
— 岱 Alarms	DIN1	Address Type	01 Coil Status(0x)	~	Address	0		8(M.000009)	none
Tasks	DIN2	Data type	bool	~	Add Number	1		9(M.000010)	none
DataServices	DIN3 DIN4	Read/Write	Read/Write	*	Ratio	none		10(M.000011) 11(M.000012)	none
Pass Through	DIN4 DIN5	Map Address	0		Variable Unit			12(M.000012)	none
	DIN6	Map Address	0		variable Unit			13(M.000013)	none
	DIN7							14(M.000015)	none
	DIN8					ОК	Cancel	14(M.000015) 15(M.000016)	none
- ③ BACnet/IP	Dirito L							15((1.000010)	none
└─� OPC UA									
E Cloud									
- HQTT Client									
- MQTT Client II									
- MAli IoT									

- (1) Click M140T, move mouse cursor to the right box, right click mouse to enter datapoint configuration window
- (2) Variable name: Set datapoint name, for example, DO1
- (3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated, for example, the MQTT identifier of the DO1 data point is filled in as DO1.
- (4) Select the acquisition address and choose data format according to the requirements, OCT/DEC/HEX are octal/decimal/hexadecimal respectively. The collected Modbus protocol address is input in decimal, so the example selects decimal.
- (5) Address type: Select according to the function codes supported by the collected data points. For example, the DO of the collected M140T supports the "01" function code, so select "01 Coil Status", and DI supports the "02" function code, so select "02 Input Status"
- (6) Address: the register address of the data point, such as: data point DO1 is "0" register address in the M140T, so fill in "0".
- (7) Data type: Select according to the data point, such as: DI and DO of M140T are both coil types,

so select "bool".

- (8) Add Number: If it is collecting continuous addresses, the same function code can be collected multiple times.
- (9) Read/Write: Automatic identifying read-write type according to Address Type
- (10) Map address: fill in the address where the collected data points are stored to the BL110 gateway device, which can be filled in at will. Mapped addresses cannot be duplicated. Range: 0-2000. For example, the data collected from DO1 is stored in the "0" register address of the BL110 gateway. The outside of the mapping address on the configuration software represents the Modbus address, and M.XXX represents the PLC Modbus address.
- (11) Variable Unit: Input any required unit

(12) Click OK to confirm

Note: After clicking OK to confirm the configuration, datapoints will appear in the box lik above picture. If more datapoints to be added, right click the box and click Add to enter datapoint configuration box, repeat Step (2)-(12)

Note: Click Write Configuration. Gateway will restart automatically. After restarting, M140T datapoints are added successfully

5.1.3 Ethernet Port Configuration

Both WAN and LAN can collect device data. The configuration procedure is the same.

5.1.3.1 LAN Port Configuration

BLiiot Be	iLai Ind	ustrial Ga	teway w	ww.BLiiot.com \	/1.1.3.8										-	σ×
) Search	Clear	Import	Export	Read Config.	Write Config.	() Monitor	() Remote	Log						。 中文	? Help	(i) About
⊟் ஃ BI	103Pro			^ Vari	able Name	Address Typ	e Ad	dress	Value	Unit	Data type	Va	ribale Key	Map Ad	dress	Ratio
Þ																
_	G	140T														
	LAN					F	thernet Se	ttinas								
	WAN					-	incriter oc	tungo								
	(Å) 4G					DHCP	Routir	g Enabled								
	VPN					IP Addre	ss 19	2.168.3.1								
	1000	penVPN				Subnet Ma	sk 255	.255.255.0								
	Alarm															
	Tasks DataS					MAC Addre	ss 08:00):27:50:16:a	ас							
	_	iss Throug	h													
		odbus RTL								_						
	1000	odbus TCF						OK	Cance	el						
		ACnet/IP														
		PC UA														
Ð																
	-@M	QTT Client														
	-⊗M	QTT Client	: II													
	- @A	i loT														

Below is the example of configuring LAN port to connect S475.

- (1) Double click LAN to enter configuration box
- (2) DHCP: enable auto IP distribution. Default is disabled. For examples, S475 has been set to auto

retrieving IP, then LAN port must enable DHCP.

- (3) Routing: Enable network rounting function. Default is disabled. For example, S475 data will be collected without network requirement, then disable routing function
- (4) IP Address: defaut is 192.168.3.1, the IP addresses assigned to LAN port devices must be within the range. It can be changed according to requirement. For example, S475 is set to auto retrieving IP and the range is not limited, thus it's not necessary to change it.
- (5) Subnet mask, the subnet mask of the LAN port gateway.
- (6) MAC Addres: Input LAN port MAC address
- (7) Click OK to confirm it

Note: Click Write Configuration and Gateway will restart. Turn off the power of Gateway and restart it. After that LAN port configuration is done successfully

Note: LAN Port IP Address specifies the IP address arrange of LAN port device. If device IP address is not within the range, data can't be collected. Thus it's necessary to change LAN port IP address according to requirement. IP Address change will not be effective until gateway is powered off and powered on again

5.1.3.2 Add LAN Port Device S475

0	Д				A.				A							(A)		(j)
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Search	Clear	Import	Export	Read	Contig.	Write C	onfig.	Monitor	Remote	Log						中文	Help	About
白 _ஃ в	_103Pro			^	Varia	ble Name	Slave	ID Ac	ldress Type	Address	Valu	Je State	Unit	Data type	Varibale Key	Map A	ddress	Ratio
		1																
	∟⊕м	140T						De	evice Infor	mation								
	LAN							Device Nam	e	S475								
	-@\$4	\$75						Device I	P 1	92.168.3.125								
-0	₩AN							Device Por	t	502								
(' A')4G							Device Bran	d	Modbus	~							
Þ	VPN							Device Mode	M	DBUS_TCP	v							
		penVPN					Device	Properties —										
	🛱 Alarm																	
-6	Tasks						16	-bit Data Typ	e	AB	~							
	DataS	ervices					32	-bit Data Typ	e	ABCD	~							
	- @Pa	ass Throug	h				Write	Function Cod	le	15/16	~							
	-⊗M	lodbus RTL	J≒TCP															
	-⊕M	lodbus TCF	Server							OK	Ca	ancel						
	-⊕B4	ACnet/IP																
	-00	PC UA																
Ð	Cloud																	
	-⊗M	QTT Client																
	-OM	QTT Client	11															

- (1) Click LAN and right click mouse to enter device configuration box
- (2) Device Name: input the name of device to be added, such as S475
- (3) Device IP: input S475 IP address. For example, S475 is set to auto retrieving IP. Open S475 configuration software and view its IP(192.168.3.125). Thus input S475 IP 192.168.3.125.
- Note: if LAN port IP is changed and LAN port device auto retrieves IP, please click Write Configuration, power off gateway and power it on again. Then IP change can be viewed
- (4) Device Port: input LAN port device port. For example, S475 Modbus TCP port is 502. Thus put 502
- (5) Device Brand: Modbus; Device Model: Modbus TCP



(BL110 collects S475 through LAN port through Modbus TCP protocol)

- (6) The polling interval and timeout in the button can be defaulted and filled in according to requirements.
- (7) Select Data Type. For example, S475 power source and temperature & humidity data is 16-bit AB type, 32-bit data is not collected. Thus select 16-bit AB type and keep 32-bit data type with default setting
- (8) Write function code: choose 15/16, and choose according to the function code supported by the device.
- (9) Click OK to confirm the setting

Note: S475 device icon will appear after confirming the configuration. If more devices to be added, perform the same procedure as Step (1)-(9)

Note: Click Write Configuration and gateway will restart automatically. After restarting, device S475 is added successfully

5.1.3.3 Add LAN Port Device S475 Datapoint

Search Clear Import Export Read	d Config. Write Co	onfig. Monitor	Remote	E Log				① ① ① ① ① ① ① ① ① ① ① ① ① ① ① ① ① ① ①	P () Abou
白 品 BL103Pro	Variable Name		ddress Type ut Registers(3		Value Unit	Data typ		Map Addres 16(M.400017)	
E-@COM1	temp humidity		ut Registers(3 ut Registers(3			int16	temp humidity	17(M.400017)	
	R.		ariable Pro			Point of	power	18(M.400019)	
	12	v	anable Pro	perties					
-@WAN	Variable Name	temp		Varibale Key	temp				
(Å) 4G	OCT/DEC/HEX	Decimal		Slave ID	1	_			
E-WWVPN									
 → OpenVPN	Address Type	04 Input Registers(3x) ~	Address	24				
一位 Alarms	Data type	int16	¥	Add Number	1				
	Read/Write	Read/Write	*	Ratio	1				
	Map Address	16		Variable Unit					
- Pass Through									
—					OK	Cancel			
- Modbus TCP Server					- OK	Cancer			
OPC UA									
E-&Cloud									
- @ MQTT Client									
- MQTT Client II									

- (1) Click S475, move mouse cursor to the right box, right click the mouse and click Add to enter datapoint configuration box
- (2) Variable Name: Set the name of datapoint, for example, temp
- (3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated. For example, the MQTT identifier of the temperature data point is filled in as temp.
- (4) Select the acquisition address and choose data format according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. The collected Modbus protocol address is input in decimal, so the example selects decimal.
- (5) Slave ID: The Modbus ID of the S475 device is "1", so fill in "1".
- (6) Address Type: S475 temperature supports function code 04, thus select 04 input register



- (7) Address: 24 (Datapoint temperature register address in S475 is 24)
- (8) Data Type: S475 temperature is 16-bit signed numeric data, thus select int16
- (9) Add Number: If consecutive addresses to be collected, the same function code can collect it simultaneously.
- (10) Read/Write: Automatic Identifying it according to Address Type
- (11)Ratio: Set the ratio to be multiplied or minified for uploading to cloud
- (12)Map Address: For example, S475 temperature data is saved in register address 8 of BL110). Modbus mapping address can be any from 0 to 2000 and it can't be repeated
- (13) Variable unit: fill in according to requirements, or not fill in.
- (14) Click OK to confirm.

Note: After confirming the configuration, datapoints will appear in the box like above picture. To add more datapoints, right click the box and click Add to enter configuration box. Perform the same procedure as Step (2)-(14)

Note: Click Write Configuration. Gateway will restart automatically. After device restarting, S475 datapoint is added successfully.

5.1.4 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

5.2 Collecting PLC Data

5.2.1 Configuring Collecting Siemens PLC Data

5.2.1.1 Add Siemens PLC to COM Port

S7-200 COM is RS485. Below is example of adding Siemens PLC S7-200 to COM2. Connect S7-200 RS485 to DB9 signal pin 3 & 8. PIN 3 connects to COM2 RS485 A and PIN 8 connects to COM2 RS485 B



5.2.1.1.1 COM Port Configuration

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3)	-	- 🛛 X
Search Clear Import Export Read Config. Writ	Config. Monitor Remote Log	中文 Help	(i) About
Search Clear Import Export Read Config. Writ	ne Address Type Address Value Unit Data type Varibale Key Serial Port Settings Mode Selection Collection Protocol Settings Device Brand Siemens Device Model S7_200 Serial Port Settings Baud 9600 Data Bits 8 Stop Bit 1 OK Cancel	中文 Help Map Address	About Ratio
-⊕oPC UA ⊡⊖-Scloud			

- (1) Double click COM2 to enter COM attribute configuration box.
- (2) Select data collection Mode

(3) Select Siemens as Device Brand and select S7-200 as Device Model The polling interval and timeout are set according to requirements.

(4) Follow Siemens RS485 port parameters to set the same baud rate 9600, stop bit 1, data bit 8 and parity bit Even

(5) Click OK to confirm it.

Note: Click Write Configuration. COM port configuration will be effective after gateway restart automatically.



5.2.1.1.2 Add COM Port Device S7-200

BLiiotBeiLai Industrial Gateway www.BLiiot.com V1.1.3.9	_	σ×
Image: Search Imag	● ? 中文 Help	() About
Image: Stress of the stress	Map Address	Ratio
- COM3 Device Information		
-BCOM4 Device Name S7-200		
Generation Constraints and the second secon		
AV4G Device Address		
⊡ movem version and the second secon		
- The Alarms OK Cancel		
- ⊕ Pass Through - ⊕ Modbus RTU=:TCP - ⊕ Modbus TCP Server		

(1) Click COM2, right click it and click Add to enter device configuration box

(2) Set Device Name at random like S7-200

(3) Device address: S7-200 serial port address, fill in as required, the address should be consistent

with the S7-200 setting, otherwise the communication will fail

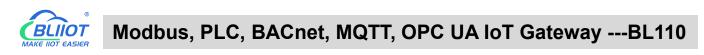
(4) Click OK to confirm adding S7-200

Note: After confirming configuration, S7-200 device icon will appear below COM2. To add more devices, follow the same steps (1)-(4)

Note: Click Write Configuration. Gateway will restart automatically and adding PLC S7-200 is effective

5.2.1.1.3 Add COM Port Device S7-200 Datapoint

Below is part of S7-200 register V & VW data configuration



) Search	Clear II	mport	Export	Read Co	onfig.	Write Config	() Monitor	() Remote	Log				。 中文	? Help	(i) About
ப் _{கீ} ₿L1	10Pro			^	Varia	ible Name	Address Ty	pe Ado	dress	Value Unit	Data type	Varibale Key	Map Add	lress	Ratio
-0	DCOM1			V	0	V		0			bool	VO	8(M.000009)) n	none
	ОСОМ2			V	1	v		0.1			bool	V1	9(M.000010)) n	none
T	LOST-2			V	2	v		0.2			bool	V2	10(M.00001	1) n	none
State of the	the state of the s			V	3	V		0.3			bool	V3	11(M.00001	2) n	none
-@	DCOM3			V	4	V		0.4			bool	V4	12(M.00001	3) n	none
-0	DCOM4			V	5	v		0.5			bool	V5	13(M.00001	4) n	none
ÐÆ	JLAN			V	6	v		0.6			bool	V6	14(M.00001	5) n	none
Repare Note	-@S7-2	OOSMAR	T Defi	v	7	v		0.7			bool	V7	15(M.00001	6) n	none
-6	WAN			V	W10	VW	1	10			uint16	VW10	5(M.400006)) 1	n -
_	⁰ 4G			V	W12			Va	ariable	Properties			6(M.400007) 1	
				V	W14								7(M.400008)) 1	
	VPN			V	W16								8(M.400009)) 1	
- Chilling	-⊕Ope	nVPN		V	W18	Variable	Name	VW10		Varibale Key	VW1	0	9(M.400010)) 1	
一道	Alarms					OCT/DE	C/HEX	Decimal	v						
-50	Tasks					Addres	- T	vw		Address	10				
FIE	DataSer	vices				Addres	siype				10				
		Through				Da	a type	uint16	*	Add Number	1				
TROH D ==		ibus RTU				Read	/Write	Read/Write	۷	Ratio	1				
Banto di	- (Moc	ibus TCP	Server			Map A	ddress	5		Variable Unit					
	- @ BAC	net/IP				1.4									
	OPC	UA										OK Cancel			

(1)Click S7-200, move mouse cursor to the right box, right click the mouse and click Add to enter datapoint configuration box

(2)Variable Name: Set the name of datapoint to be collected, for example, VW10

(3)Variable key, which can be filled in arbitrarily. The identifier cannot be repeated.For example: VW10

(4)Select the collection address according to the requirements and data format filled in the input gateway. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. Siemens I and Q data points are octal, but only decimal can be used because of decimals.

(5)Address Type: select address type according to PLC register. Here VW10 address type is VW

(6)Address: Register address of datapoint. Here VW0 address is 10

(7)Data Type: select data type according to PLC register type

(8)Add Number: If addresses are consecutive, the same register will collect multiple addresses.

(9)Read/Write: select from Read only and Read & Write.

(10)Ratio: set the ratio to be multiplied or minified for uploading to cloud

(11)Map Address: Set address where datapoint will be saved in BL110.

Modbus mapping address can be any from 0 to 2000 and it can't be repeated

For example, set 18 as VW10 mapping address

(12)Variable unit: fill in according to requirements, or not fill in.

(13)Click OK to confirm.

Note: After confirming the configuration, datapoints will appear in the box like above picture. To add more datapoints, right click the box and click Add to enter configuration box. Perform the same procedure as Step (2)-(13)

Note: Click Write Configuration. Gateway will restart automatically and S7-200 datapoint is added successfully.

5.2.1.2 Adding Siemens PLC via Ethernet Port

Siemens PLC data can be collected through WAN, LAN and cascaded switch.

5.2.1.2.1 LAN Port Configuration

Below is example of connecting Siemens PLC S7-200SMART to BL110 LAN port. LAN port

configuration is as below:

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.9		- 🗆 X
Search Clear Import Export Read Config. Write Config.	Image: Second	中文 Help About
A Variable Name GOM1	Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
E E COM2 ↓ © 57-200 - E COM3 - E COM4 E - E LAN ↓ © 57-200SMART - M WAN - M 4G	Ethernet Settings DHCP Routing Enabled IP Address 192.168.3.1 Subnet Mask 255.255.255.0 MAC Address 08.00.27.fdxe9.8f	
白・一 YPN 一 ② OpenVPN 一 流 Alarms 一 読 Tasks	OK Cancel	
DataServices OPass Through OModbus RTU=TCP OModbus TCP Server OBACnet/IP OPC UA		

- (1) Double click LAN to enter configuration box
- (2) DHCP: enable auto IP distribution. Default is disabled.

(3) Routing: Enable network routing function. Default is disabled. For example, PLC S7-200SMART does not need network. Thus it's necessary to enable it.

(4) IP Address: defaut is 192.168.3.1, the IP addresses assigned to LAN port devices must be within the range. WAN and LAN IP address can't be the same. For example, S7-200SMART IP is fixed, then change IP address of gateway.

- (5) Subnet mask: Subnet mask of the LAN port gateway.
- (6) MAC Addres: Input LAN port MAC address
- (7) Click OK to confirm it

Note: Click Write Configuration and Gateway will restart. Turn off the power of Gateway and restart it. After that LAN port configuration is done successfully

Note: LAN Port IP Address specifies the IP address arrange of LAN port device. If device IP address is not within the range, data can't be collected. Thus it's necessary to change LAN port IP address according to requirement. IP Address change will not be effective until gateway is power off and powered on again



5.2.1.2.2 Add LAN Port Siemens PLC S7-200SMART

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.	.9	- 🛛 X
Search Clear Import Export Read Config. Write	ie Config. Monitor Remote Log	中文 Help About
다. 슈BL110Pro	ame Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
-@COM1		
	Device Information	
G S7-200	Device Name S7-200SMART	
— то сомз	Device IP 192.168.1.65	
	Device Port 102	
	Device Brand Siemens ~	
Grand Grand Grand Strength St	Device Model S7_200SMART_E ~	
—(A) ⁴ 4G	Device Properties	
G G OpenVPN		
- m Alarms		
	OK Cancel	
Pass Through		
- Modbus RTU≒TCP		
OPC UA		

(1) Click LAN and right click mouse and click Add to enter device configuration box

(2) Device Name: set device name, for example, set S7-200SMART as device name.

(3) Device IP: input PLC IP address. For example, PLC S7-200SMART IP is 192.168.3.16, thus put 192.168.3.16 here. This is PLC IP address. PLC IP address and LAN Port IP address must be in the same range.

(4) Device Port: input LAN port device port. Default port of S7-200SMART is 102. Thus put 102.

(5)Device Brand: Select Siemens as Device Brand and select S7-200SMART as device model The polling interval and timeout are set according to requirements.

(6)Click OK to confirm adding PLC S7-200SMART

Note: S7-200SMART device icon will appear after confirming the configuration. If more devices to be added, perform the same procedure as Step (1)-(6)

Note: Click Write Configuration and gateway will restart automatically. After restarting, PLC S7-200SMART is added successfully

5.2.1.2.3 Add LAN Port PLC S7-200SMART Datapoint

Below is part of S7-200SMART register Q & VW data configuration



Search Clear Import Exp	port Read (Config.	Write Config.	() Monitor	() Remote	Log						中文	? Help	Abour
🖻 🖧 BL110Pro	~		able Name	Address Typ		dress	Value L	Jnit	Data type		aribale Key	Map Ado	dress	Ratio
-@COM1		Q0.0	Q		0				bool	Q0		0(M.000001		none
		Q0.1	Q		0.1				bool	Q1		1(M.000002		none
@ \$7-200		Q0.2	Q		0.2				bool	Q2		2(M.000003		none
-@COM3		Q0.3	Q		0.3				bool	Q3		3(M.000004		none
		Q0.4	Q		0.4				bool	Q4		4(M.000005		none
-@COM4		Q0.5	Q		0.5				bool	Q5		5(M.000006		none
E CAN		Q0.6	Q		0.6				bool	Q6		6(M.000007		none
-@S7-200SMART		Q0.7	Q		0.7				bool	Q7		7(M.000008	940	none
- WAN		VW0	vw		0				uint16	VW0		0(M.400001	·	1
-(' A ') 4G		VW2	_		V	ariable	Properties				_	1(M.400002	<u>e</u>	1
E WWVPN		VW4									_	2(M.400003		1
G OpenVPN		VW6	Variable	Nama	VW0		Varibale I	×	VWC			3(M.400004		1
		VW8	variable	IName			Varibale	Key	VVVC			4(M.400005	i)	1
— 道 Alarms			OCT/DE	C/HEX	Decimal	×								
Tasks			Addres	s Type	VW	×	Addr	ess	0					
DataServices			Dat	a type	uint16		Add Num	har	1					
- Pass Through														
- Modbus RTU≒TO	CP		Read	/Write	Read/Write	*	Ra	atio	1					
- Modbus TCP Ser	ver		Map A	ddress	0		Variable L	Unit						
- BACnet/IP			1.1											
OPC UA									-	ок	Cancel			

(1) Click S7-200SMART, move mouse cursor to the right box, right click the mouse and click Add to enter datapoint configuration box

(2) Variable Name: Set the name of datapoint, for example, VW0

(3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated.For example: VW0

(4) Select the collection address according to the requirements and data format filled in the input gateway. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. Siemens I and Q data points are octal, but only decimal can be used because of decimals.

- (5) Address Type: select address type according to PLC register. Here VW0 address type is VW
- (6) Address: Register address of datapoint. Here VW0 address is 0
- (7) Data Type: select data type according to PLC register type
- (8) Add Number: If addresses are consecutive, the same register will collect multiple addresses.
- (9) Read/Write: select from Read only and Read & Write.
- (10) Ratio: Set the ratio to be multiplied or minified for uploading to cloud
- (11) Map Address: Set address where datapoint will be saved in BL110. Modbus mapping address can be any from 0 to 2000 and it can't be repeated For example, set 8 as VW0 mapping address
- (12) Variable unit: fill in according to requirements, or not fill in.
- (13) Click OK to confirm.

Note: After confirming the configuration, datapoints will appear in the box like above picture. To add more datapoints, right click the box and click Add to enter configuration box. Perform the same procedure as Step (2)-(13)

Note: Click Write Configuration. Gateway will restart automatically and S7-200SMART datapoint is added successfully.

5.2.1.3 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

5.2.2 Configuring Collecting Mitsubishi PLC Data

5.2.2.1 Add Mitsubishi PLC to COM Port

FX3U has RS422 port. Connects Mitsubishi PLC FX3U with RS422 to RS232 converting cable to COM1. Configure it as below procedure.

5.2.2.1.1 COM1 Configuration

Search Clear Import Export	t Read Config. Write Config. Monitor Remote Log	中文 Help About
E the BL110Pro	Variable Name Address Type Address Value Unit Data type Varibale Key	中文 Help Abou Map Address Ratio
DataServices Opass Through Omodbus RTU=TCP Omodbus TCP Server Omodbus	MAKE IIOT EASIER	

Connect FX3U with RS422 to RS232 converting cable to COM1. Configure it as below

(1) Double click COM1 to enter COM attribute configuration box.

(2) Select data collection Mode: Collection

(3) Select Mitsubishi as Device Brand and select FX3U as Device Model The polling interval and timeout are set according to requirements.

(4) Follow PLC FX3U RS422 port parameters to set the same baud rate 9600, stop bit 1, data bit 7

and parity bit Even

(5) Click OK to confirm it.

Note: Click Write Configuration. COM port configuration will be effective after gateway restart automatically.



5.2.2.1.2 Add Mitsubishi PLC FX3U to COM Port

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.9		_	đΧ
	(A)	?	1
Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文	Help	About
ப் கூல Address Type Address Value Unit Data type Varibale Key	Map Ado	iress	Ratio
© © COM1			
La L <mark>⊗Fx3U</mark>			
E-@COM2			
-⊕ \$7-200			
- COM3 Device Name FX3U			
- COM4			
Gerrare Ger			
- ^(A) 4G			
中 ····································			
© OpenVPN OK Cancel			
Тъ Alarms			
- Tasks			
→ Pass Through			
- ⊕ Modbus RTU=TCP			
Omega Modbus TCP Server			
- BACnet/IP			

- (1) Click COM1, right click it and click Add to enter device configuration box
- (2) Set Device Name at random like FX3U
- (3) Click OK to confirm adding FX3U PLC.

Note: After confirming configuration, FX3U device icon will appear below COM1. To add more devices, follow the same steps (1)-(3)

Note: Click Write Configuration. Gateway will restart automatically and adding PLC FX3U is effective

5.2.2.1.3 Add COM Port Mitsubishi PLC FX3U Datapoint

BLiiot BeiLai Industrial Gateway www.B	Liiot.com V	1.1.3.9					- 0 ×
Search Clear Import Export Rea	d Config.	Write Config. Mor		Log		中文 He	
白 品 BL110Pro	and a second sec		ss Type Addre	ss Value Ur		Map Address	Ratio
E-@COM1	YO	Y	0		bool YO	16(M.000017)	none
4-MFX3U	¥1	Y	1		bool Y1	17(M.000018)	none
	Y2	Y	2		bool Y2	18(M.000019)	none
to a state the state of the sta	Y3	Y	3		bool Y3	19(M.000020)	none
└─�\$7-200	¥4	Y	4		bool Y4	20(M.000021)	none
-@COM3	Y5	Y	5		bool Y5	21(M.000022)	none
-@COM4	Y6	Y	6		bool Y6	22(M.000023)	none
	¥7	Y	7		bool Y7	23(M.000024)	none
ST-200SMART			Varial	ole Properties			
—"Å" 4G		Variable Name	YO	Varibale Key	YO		
D WWVPN		OCT/DEC/HEX	Octal	-			
-OpenVPN			Y	 Address 			
— ന് Alarms		Address Type	Y	Address	0		
Tasks		Data type	bool	 Add Number 	1		
DataServices		Read/Write	Read/Write	 Ratio 	none		
Pass Through		Map Address	16	Variable Unit			
					OK Cancel		
BACnet/IP					UK Cancel		

Below is example of collecting PLC FX3U datapoints Y0-Y7 & D0-7

(1) Click FX3U, move mouse cursor to the right box, right click mouse and click Add to enter

datapoint configuration window

- (2) Variable Name: Set datapoint name, for example, Y0
- (3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated. For example: Y0
- (4) Select the collection address according to the requirements and data format filled in the input

gateway. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. The X and Y data points of

FX3U are octal, so choose octal

- (5) Address Type: Select the address type of Mitsubishi PLC register. Select Y for collecting Y0 datapoint
- (6) Address: Input datapint register address, for example, Y0 register address in FX3U is 0, input 0
- (7) Data Type: Select data type according to PLC register. For example, select bool for Y as it's coil type.
- (8) Add Number: If consecutive addresses are collected, the same register can collect multiple addresses.
- (9) Read/Write: Select from Read only and Read & Write according to PLC register.
- (10) Map Address: Input the address where the collected datapoint is saved in BL110. It can be any address from 0-2000 but can't be repeated. For example, Y0 data is saved in register address 0 of BL110
- (11) Variable unit: fill in according to requirements, or not fill in.
- (12) Click OK to confirm

Note: After clicking OK to confirm the configuration, datapoints will appear in the box lik above picture. If more datapoints to be added, right click the box and click Add to enter datapoint configuration box, repeat Step (2)-(12)

Note: Click Write Configuration. Gateway will restart automatically. After restarting, PLC FX3U datapoints are added successfully

5.2.2.2 Adding Mitsubishi PLC to Ethernet Port

Supports acquisition of Mitsubishi Q series (Q03UDE, Q04UDEH, Q06UDEH, Q10UDEH, Q13UDEH, Q20UDEH, Q26UDEH, Q002UD), L series (L02, L26-BT), FX5U series.

Both the WAN port and the LAN port can collect the Mitsubishi PLC, which can be directly connected to the Mitsubishi PLC or collected through the switch. The configuration principle of the WAN port and the LAN port is the same. WAN port or LAN port acquisition configuration parameters of Mitsubishi Q/L series or FX5U should be consistent with the settings on the PLC.

For example, the parameter setting on Q06UDEH of Q series, Q/L series should select MC protocol communication.



5.2.2.2.1 WAN Port Configuration

WAN port collect data from FX5U through the switch, and the switch is connected to the external network.

The configuration of the WAN port is as follows:

BLiiot BeiLai In	dustrial Ga	teway w	ww.BLiiot.com	/1.1.3.9									_	ΟX
Search Clea	r Import	Export	Read Config.	Write Config.	() Monitor	() Remote	Log					。 中文	? Help	() About
	41 FX3U 42 S7-200		State State State	able Name		thernet Se	dress ttings	Value	Unit	Data type	Varibale Key	Map Ado	dress	Ratio
— (☆) 4G — (☆) 4G — (一) VPN — ① — ① — 公 — 二次 Alar	S7-200SMAF N OpenVPN ms	RT			IP Addre Subnet Mar Gatewa MAC Addre DN	sk 255 ay 19 ss 08:00	2.168.1.22 3.255.255. 12.168.1.1 0.27:5b:38 114.114.1 0	0 :f2 14	el					
-9 -9		J≒TCP												

(1) Double-click "WAN" to pop up the WAN port configuration box.

(2) Auto IP: Whether the WAN port is enabled to obtain IP automatically, it is enabled by default, and can be set as required. In this example, the switch is connected to a router, and the router is enabled to automatically assign IP, so keep it enabled.

(3) IP address: The gateway obtains the IP address from the router. If it is a designated IP, set it according to the requirements, the PLC and the gateway should be in the same local area network.

(4) Subnet mask, the subnet mask of the WAN port gateway, if it is a designated IP, set it according to the requirements.

(5) Gateway: The gateway address obtained from the router. If you specify an IP, set it according to your needs.

(6) MAC address: the MAC address of the gateway.

(7) DNS: The DNS obtained by the gateway from the route, if it is a specified IP, set it according to the requirements.

(7) Click "OK".

Note: Click "Write Configuration" to restart the gateway automatically, and the configuration of the WAN port will not be changed until the restart.

Note: The IP address of the WAN port is the IP address that specifies which network segment the WAN port device is. If the IP address of the WAN port device is not the IP of the network segment set by the WAN, the WAN port cannot be collected. It is necessary to change the WAN port IP or change the WAN port according to the needs. The IP address of the port device. After changing the IP address of the gateway, it must be written

into the configuration, and it will take effect after power off and restart.

5.2.2.2.2 Add Mitsubishi FX5U to WAN Port

BLiiotBeiLai Industrial Gateway www.BLiiot.co	m V1.1.3.9		- 0 ×
Search Clear Import Export Read Con	ig. Write Config. Monitor Remote Log	-	? (i) elp About
白-	Variable Name Address Type Address Value Unit Data type Varibale Key	Map Address	a Ratio
G FX3U	Device Information		
	Device Name FX5U		
GS7-200	Device IP 192.168.1.112		
—ლсомз	Device Port 4999		
COM4	Device Brand Mitsubishi ~		
E - C LAN └─── S7-200SMART	Device Model FX5U_BINARYMODE_ETH ~		
⊡-@wan L⊕Fxsu	- Device Properties		
('A') 4G			
D-WWVPN			
GenVPN → CopenVPN			
— 🖧 Alarms	OK Cancel		
DataServices			
—⊗ Pass Through —⊗ Modbus RTU⇔TCP			
- Modbus TCP Server			

(1) Click "WAN", click the right mouse button, click "Add" to enter device configuration box.

(2) Device name: Name the device, for example, because Mitsubishi FX5U is an example, you can fill in FX5U.

(3) Fill in the IP of the acquisition device, because the designated IP of FX5U is changed to: 192.168.1.112, so fill in 192.168.1.112 here. The IP is viewed on the Mitsubishi programming software. Fill in the IP of the PLC here. It should be noted that the IP of the PLC should be in the same network segment as the IP of the WAN port.

(4) Device port : Fill in as required. The example is 4999 from the Mitsubishi programming software, so it is 4999.

(5) Because it is collecting Mitsubishi FX5U, therefore, equipment brand: select Mitsubishi, equipment model: according to the communication data code setting on the Mitsubishi programming software is binary or ASCII code communication, binary select FX5U_BINARYMODE_ETH, ASCII code select

FX5U_ASCIIMODE_ETH. The polling interval and communication timeout can be defaulted and filled in as required.

(6) Click "OK" to add FX5U.

Note: After clicking OK, the added device will be displayed under the WAN port, as shown in the figure above. If you want to add multiple devices, repeat steps (1)-(6).

Note: Click "Write Configuration" and the gateway will restart automatically. After restarting, the FX5U added to the WAN port will be added successfully.



5.2.2.2.3 Add Mitsubishi FX5U Data Point

Configuration of data collected in register Y of FX5U is as follows:

BLiiot Be	iLai Indu	istrial Ga	teway w	ww.BLiiot.c	om V1.1.3.9											-	ΟX
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Ġ _å в	L110Pro			<u>^</u>	Variable Name		ress Type		dress	Value	Unit	Data typ		Varibale Key	Map Add		Ratio
Ē-⊂	IDDECOM1 I					Y Y		0				bool	Y0 Y7		24(M.00002	antis das	one
	₩ FX	3U		¥7		Ŷ		12				bool	٧/		25(M.00002	6) n	one
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-Line Carlo	L-@S7	-200															
	() () () () () () () () () () () () () (Variable Name	¥7			Varibale k	Key	¥7						
	COM4				OCT/DEC/HEX	Octa		~									
0	⊟ LAN					Ŷ			Addr								
	L_@S7	-200SMA	RT		Address Type			_			7						
0	a wan	18			Data type	bool		v .	Add Numl	ber	1						
	L-@FX	50			Read/Write	Read/W	rite	~	Ra	tio	none						
	'A') 4G				Map Address	25			Variable U	nit							
0.0	VPN																
	Loop	oenVPN										OK Cano	cel				
-	🖧 Alarms	5				0.00											
-	Tasks																
00	BDataSe	ervices															
erman	- @Pa	ss Throug	h Wasa														
	-OM	odbus RTU	J≒TCP														
	-OM	odbus TCF	Server														
				~													

(1) Click "FX5U", move the mouse cursor to the box, right-click the mouse, and click "Add" to enter data point setting box.

(2) Variable name: Name the data point, collecting the data of "Y7", you can fill in: "Y7".

(3) The identifier of the data point can be filled in arbitrarily. The identifier cannot be repeated, for example, the identifier of the collected "Y7" data point is filled in as "Y7".

(4)Select the acquisition address fill in the input gateway in what data format according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. Mitsubishi FX5U X and Y data points are octal, so choose octal. Select according to the needs, such as register W is hexadecimal, register D is decimal.

(5) Address type: Selected according to the collected PLC data points. Collect the data of "Y7", select "Y".

(6) Address: the register address of the collected data point, Collecting the data of "Y7", the address is: 7.

(7) Data type: According to the type of register selected by PLC.

(8) Add Number: If it is to collect continuous addresses, the same register can be collected multiple times.

(9) Read/Write: choose from "read only", "read and write".

(10) Ratio: Set the ratio to be multiplied or minified for uploading to cloud

(11) Map address: Set address where datapoint will be saved in BL110. Modbus mapping address

can be any from 0 to 2000 and it can't be repeated. The mapping address is "17" for collecting "Y7".

(12) Variable unit: fill in arbitrarily according to requirements, or not fill in.

(13) Click "OK".

Note: After clicking "OK", the data points will be displayed in the box as shown in the figure above. If you want to continue adding data points, right-click on the box and click "Add" to enter data point configuration box, repeat (1)--(13) Steps.

Note: Clicking "Write Configuration" will restart the gateway automatically, and the data points collected from FX5U will take effect only after restarting.

5.2.2.3 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

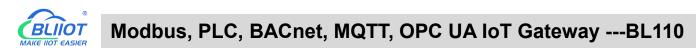
5.2.3 Collecting OMRON PLC Data

5.2.3.1 Add OMRON PLC to COM Port

The configuration of the four COM ports are the same. COM1 is fixed as RS232, and COM2, COM3 and COM4 are optional serial ports for RS232/RS485 (the default is RS485). Select the COM port according to the serial port board, because the gateway device 485 interface is 2-wire, if the serial port board is 485, pay attention to the serial port board DIP switch to select 2-wire or 4-wire.

5.2.3.1.1 COM Port Configuration

Takes the serial port board CP1W-CIF11 and Omron CP1L-L as examples, the serial port board DIP switches 2 and 3 are ON, the DIP switch SW4 of CP1L-L is OFF, the serial port board and other DIP switches of the PLC The location is set as required. The serial port board RDA- or SDA- is connected to the gateway COM2 B, and RDB+or SDB+the gateway COM2 A. CP1L-L serial port configuration mode should select Host Link. COM2 Configuration as shown



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COM2									-						
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80					Device Brand	1	OMRON	×							
10.000	-200SMAI	RT			Device Mode	IC	CJ/CS/CP	Ŷ]						
WAN				Serial	ort Settings —										
└─ØFX	50				Baud 960	0 ~	Data Bits	7	~						
Å ")4G				S	op Bit 2	v			~						
VPN					·	ti									
-OOp	oenVPN							ОК	Cancel						
Alarms	5				1	113									
Tasks															
]DataSe	ervices														
-@M@	odbus RTU	J≒TCP													
	Clear 110Pro COM1 COM2 COM2 COM3 COM3 COM3 COM3 COM4 COM3 COM4 COM3 COM4 COM3 COM	Clear Import .110Pro COM1 COM2 COM2 COM3 COM4 LAN COM4 LAN COM4 LAN COM4	Clear Import Export IntoPro COM1 Com1 Com2 Com3 Com3 Com4 LAN Com57-200 Com4 Com4 Com57-200 Com4 Com57-200 Com4 Com57-200 Com5	Clear Import Export Read Config. 110Pro COM1 COM2 COM2 COM3 COM4 LAN COM4 LAN COM4 CO	Clear Import Export Read Config. Write Config. 110Pro COM1 Com2 COM2 COM2 COM3 COM4 LAN COM4 LAN Com3 COM4 Com3 COM4 Com3 COM4 Com3 COM4 Com3 COM4 Com3	Clear Import Export Read Config. Write Config. Monitor 110Pro Variable Name Address Typ COM1 © FX3U © COM2 © S7-200 © COM3 © COM4 © LAN © S7-200SMART © WAN © S7-200SMART © WAN © FX5U WAN © FX5U A ¹ 4G © VPN © OpenVPN © Alarms © Tasks © DataServices © Pass Through © Modebus RTU=TCP	Clear Import Export Read Config. Write Config. Monitor Remote 110Pro Variable Name Address Type Ad COM1 © COM1 © FX3U © COM2 © COM3 © COM3 © COM4 © LAN © S7-200SMART © WAN © S7-200SMART © WAN © S7-200SMART © WAN © FX5U A ¹ 4G © VPN © OpenVPN © Adarms © Tasks © DataServices © Pass Through © Modbus RTU=TCP	Clear Import Export Read Config. Write Config. Monitor Remote Log 110Pro ©COM1 ⊕FX3U ©COM2 ⊕ S7-200 ©COM3 ©COM4 ⊕LAN ⊕ S7-200SMART ⊕WAN ⊕ S7-200SMART ⊕ PASS Through ⊕ Pass Through ⊕ Modbus RTU=TCP	Clear Import Export Read Config. Write Config. Monitor Remote Log 110Pro Variable Name Address Type Address Type Address Value Cerial Port Settings Mode Selection Collection Protocol Settings Device Brand OMRON Serial Port Settings Device Model Cl/CS/CP Serial Port Settings Baud 9600 Data Bits 7 Stop Bit 2 Parity Bit Even OK Serial Port Settings Baud 9600 Data Bits 7 Stop Bit 2 Parity Bit Even OK Modbus RTU=TCP	Import Export Read Config. Write Config. 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Monitor Remote Log 110Pro Variable Name Address Value Unit Data type Variable Name Address Value Other Color Color Variable Name Address Data Bits 7 Value Stop Bit 2 Parity Bit Even OK Cancel</td> <td>Clear Import Export Read Config. Write Config. Monitor Remote Log 110Pro COM1 CTA3U COM2 COM3 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM5 Device Brand Ode Selection Cords Device Model C/CS/CP WAN Strable Name Object None Com3 DotaServices Pass Through Phass Through Phass Through</td> <td>Import Export Read Config. Write Config. Monitor Remote Log The protect of the pr</td> <td>Clear Import Export Read Config. Write Config. Monitor Remote Log Px Help 110Pro Variable Name Address Type Address Value Unit Data type Variable Key Map Address COM1 PrX3U Serial Port Settings © COM2 Sr-200 © OM3 © COM4 LAN © S7-200 © COM4 LAN © S7-200SMART WAN © OPenVPN % Adarms © Pass Through © Madbus RTU=TCP</td>	Import Export Read Config. Write Config. Monitor Remote Log 110Pro Variable Name Address Value Unit Data type Variable Name Address Value Other Color Color Variable Name Address Data Bits 7 Value Stop Bit 2 Parity Bit Even OK Cancel	Clear Import Export Read Config. Write Config. Monitor Remote Log 110Pro COM1 CTA3U COM2 COM3 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM4 COM5 Device Brand Ode Selection Cords Device Model C/CS/CP WAN Strable Name Object None Com3 DotaServices Pass Through Phass Through Phass Through	Import Export Read Config. Write Config. Monitor Remote Log The protect of the pr	Clear Import Export Read Config. Write Config. Monitor Remote Log Px Help 110Pro Variable Name Address Type Address Value Unit Data type Variable Key Map Address COM1 PrX3U Serial Port Settings © COM2 Sr-200 © OM3 © COM4 LAN © S7-200 © COM4 LAN © S7-200SMART WAN © OPenVPN % Adarms © Pass Through © Madbus RTU=TCP

(1) Double-click "COM3" to enter COM configuration box.

(2) Mode selection: Collection.

(3) Since the example collection is Omron CP1L-L, the equipment brand: select "OMRON" from the drop-down box, and the equipment model: CJ/CS/CP. The polling interval and communication timeout are set according to requirements.

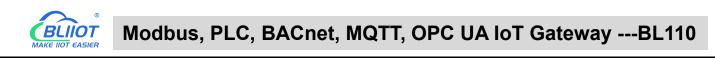
(4) The baud rate, stop bit, data bit, and parity bit are configured according to the parameters of the Omron

CP1L-L serial port, which are consistent with them. Viewed from the Omron programming software, the

Omron serial port selects the standard baud rate: 9600, stop bit: 2, data bit: 7, parity bit: Even.

(5) Click "OK".

Note: Click "Write Configuration" and the gateway device will restart automatically, and the configuration of the COM port will take effect after restarting.



5.2.3.1.2 Add CP1L to COM Port

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.9		-	σ×
		()	(j)
Search Clear Import Export Read Config. Write Config	Monitor Remote Log	中文 Help A	About
白-品BL110Pro 个 Variable Name	Address Type Address Value Unit Data type Varibale Key	Map Address F	Ratio
— -@)СОМ1			
└─ ② FX3U			
	Device Information		
-⊗S7-200			
— (ШСОМЗ	Device Name CP1L-L		
CP1L-L → CP1L-L	Properties		
—ლсом4			
	Device Address 0		
E			
└─ ☆ FX5U			
_"Å"4G	OK Cancel		
UPN			
└─ ② OpenVPN			
— 苎 Alarms			
Tasks			
E DataServices			
— [●] Pass Through			
→ Modbus RTU≒TCP			

(1) Click "COM3", click the right mouse button, click "Add" to enter device configuration box.

(2) Fill in the device name arbitrarily, such as: CP1L-L.

(3) Device address: CP1L-L serial port unit number, fill in as required, the address must be consistent with the unit number set by CP1L-L, otherwise communication will fail.

(4) Click "OK" to add the CP1L-L device.

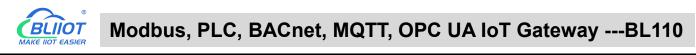
Note: After clicking OK, the added devices will be displayed under COM2, as shown in the figure above,

CP1L-L. If you want to add multiple devices, repeat steps (1)-(4).

Note: Click "Write Configuration" to restart the gateway device automatically. After restarting, the CP1L-L device with COM3 port is added successfully.

5.2.3.1.3 Add CP1L Data Point

Take the CIO register of CP1L as an example



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ப் கீ	.110Pro			~		ole Name	-	ddress Typ		Address	Value	Unit	Data ty		Varibale Key	Map Ad	ldress	Ratio
Ė-@	⊡COM1			CI	102.01		CIO_BIT		2.0	01			bool		2.01	26(M.00002	27) n	one
		3U		C	102.02		CIO_BIT		2.0	02			bool	CIC	02.02	27(M.0000	28) r	ione
E-0	COM2			1				Va	riable P	roperties								
T	L@S7-																	
		200										0.00.04	2					
					Varial	ble Name	C	102.01		Varibal	Key	CIO2.01						
	4@CP	IL-L			OCT/	/DEC/HEX	De	cimal	*									
20.35	■COM4 _				Add	Iress Type	CIC	BIT	v	Ad	dress	2.01		1				
Ð	LAN					Data type	h	ool		Add Nu	nher	1						
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(1) Click "CP1L-L", move the mouse cursor to the box, right-click the mouse, and click "Add" to enter data point setting box.

(2) Variable name: Name the data point, such as: CIO2.01.

(3) The identifier of the data point can be filled in arbitrarily. The identifier cannot be repeated. For example, the identifier of the CIO2.01 data point is filled in as CIO201. Some platform identifiers cannot recognize the decimal point.

(4) Select the acquisition address fill in the input gateway in what data format according to the requirements.

OCT/DEC/HEX are octal/decimal/hexadecimal respectively. The CIO register is collected in bits with decimals, so the decimal system is selected.

(5) Address type: Select according to Omron's register, if you want to collect "CIO2.01", select "CIO_BIT".

(6) Address: The register address of the collected data point, collecting "CIO2.01", so fill in "2.01".

(7) Data type: Select according to the acquisition PLC register, such as: "CIO_BIT" is the coil type, so select "bool".

(8) Add Number: The number of acquisitions. If it is to acquire continuous addresses, the same register can be acquired multiple times.

(9) Read/Write: according to PLC register selection. Select from "Read Only", "Read and Write".

(10) Map address: Fill in the address where the collected data points are stored to the BL110 gateway device, which can be filled in at will. Mapped addresses cannot be duplicated. Range: 0-2000. Such as: collect the data of CIO2.01 and store it to the "16" register address of the BL110 gateway.

(11) Variable unit: fill in arbitrarily according to requirements, or not fill in.

(12) Click "OK".

Note: After clicking "OK", the data points will be displayed in the box as shown in the figure above. If you want to continue adding data points, right-click on the box and click "Add" to enter data point configuration box, repeat (2)--(12) Steps.

Note: Clicking "Write Configuration" will restart the gateway automatically, and the data points added by

CP1L-L will take effect only after restarting.

5.2.3.2 Add OMRON PLC via Ethernet Port

OMRON PLC data can be collected through WAN, LAN and cascaded switch

5.2.3.2.1 LAN Port Configuration

Below is example of adding OMRON PLC CP1L-EL to LAN port. Configure it as below

Search Clear Import Export Read	Config. Write Config. Monitor Remote Log	予約	(i) About
Search Clear Import Export Read	Config. Write Config. Monitor Remote Log Variable Name Address Type Address Value Unit Data type Varibale Key Ethernet Settings DHCP Routing Enabled IP Address 192.168.3.1 Subnet Mask 255.255.0 MAC Address 08:00.27:fd:e9:8f OK Cancel	中文 Help Map Address	About Ratio

- (1) Double click LAN to enter configuration box
- (2) DHCP: Enable auto IP distribution. Default is disabled.
- (3) Routing: Enable network routing function. Default is disabled. For example, PLC CP1L-EL does not need network. Thus it's necessary to enable it.
- (4) IP Address: Defaut is 192.168.3.1, the IP addresses assigned to LAN port devices must be within the range. WAN and LAN IP address can't be the same. For example, CP1L-EL IP is fixed, then change IP address of gateway.
- (5) Subnet mask: Subnet mask of the LAN port gateway.
- (6) MAC Addres: Input LAN port MAC address
- (7) Click OK to confirm it

Note: Click Write Configuration and Gateway will restart. Turn off the power of Gateway and restart it. After that LAN port configuration is done successfully

Note: LAN Port IP Address specifies the IP address arrange of LAN port device. If device IP address is not within the range, data can't be collected. Thus it's necessary to change LAN port IP address according to requirement. IP Address change will not be effective until gateway is powered off and powered on again



5.2.3.2.2 Add OMRON PLC CP1L-EL to LAN Port

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3	9	- 🛛 X
Search Clear Import Export Read Config. Write	Config. Monitor Remote Log	●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●<
白-品BL110Pro Variable N.	me Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
G FX3U	Device Information	
	Device Name CP1L-EL	
G \$7-200	Device IP 192.168.3.151	
	Device Port 9600	
Gerti-L	Device Brand OMRON ~	
	Device Model FINS_TCP ~	
⊡-@LAN	Device Properties	
G FX5U		
_(¥)4G		
- WW VPN	OK Cancel	
—— 广 Alarms		
Pass Through		

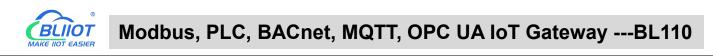
- (1) Click LAN and right click mouse and click Add to enter device configuration box
- (2) Device Name: set device name, for example, set CP1L-EL as device name.
- (3) Device IP: input PLC IP address. For example, PLC CP1L-EL IP is 192.168.3.151, thus put 192.168.3.151 here. This is PLC IP address. PLC IP address and LAN Port IP address must be in the same range.
- (4) Device Port: Fill in LAN port device port. CP1L-EL default port is 9600
- (5) Device Brand: Select Omron as Device Brand and select FINS_TCP as device model The polling interval and timeout are set according to requirements.
- (6) Click OK to confirm adding PLC CP1L-EL

Note: CP1L-EL device icon will appear after confirming the configuration. If more devices to be added, perform the same procedure as Step (1)-(6)

Note: Click Write Configuration and gateway will restart automatically. After restarting, PLC CP1L-EL is added successfully

5.2.3.2.3 Add LAN Port OMRON PLC CP1L-EL Datapoint

Below example is part of PLC CP1L-EL register CIO & D data configuration



() Gearch	Clear	S Import	Export	Read C	Config.	Write Config.	() Monitor	() Remote	Log					中文	? Help	() Abou
_் ஆீ BL	.110Pro			^		able Name	Address Typ		dress	Value	Unit	Data type				Ratio
	⊡COM1				CIOO	CIO	-	0				bool	CIO0 CIO15	28(M.0000)		ione
	-ØFX	3U			CIO15 D0	CIO	_811	0.15				bool uint16	DO	29(M.0000 10(M.4000		ione
-	⊡COM2				D100	D		100				uint16	D100	11(M.4000	0.50	
	⊂⊕s7 ⊡COM3 └─⊖CF							Variable								
19 20	COM4	Categorian Categorian				Variable Name	D10	0	V	aribale Key	D	100				
ÐĆ	LAN					OCT/DEC/HEX	Decima	۲ او								
		-200SMAF	RT			Address Type	D	~		Address	1	00				
		P1L-EL				Data type	uint16	. v	Ad	ld Number		1				
	WAN GFX	(5U				Read/Write	Read/Wr	ite v		Ratio		1				
_(Å ")4G					Map Address	11		Va	riable Unit						
	VPN															
17.11	Loop	oenVPN										ОК	Cancel			
-ì	Alarm	s e			-					_						
-6	Tasks															
+ -	DataS	ervices														

- (1) Click CP1L-EL, move mouse cursor to the right box, right click the mouse and click Add to enter datapoint configuration box
- (2) Variable Name: Set the name of datapoint, for example, D100
- (3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated.For example: D100
- (4) Select the collection address data format filled in the input gateway according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. CP1L-EL D register is decimal, so choose decimal
- (5) Address Type: select address type according to PLC register. Here D100 address type is D
- (6) Address: Register address of datapoint. Here D100 address is 100
- (7) Data Type: select data type according to PLC register type
- (8) Add Number: If addresses are consecutive, the same register will collect multiple addresses.
- (9) Read/Write: Select from Read only and Read & Write.
- (10) Ratio: Set the ratio to be multiplied or minified for uploading to cloud
- (11) Map Address: Set address where datapoint will be saved in BL110.
 Modbus mapping address can be any from 0 to 2000 and it can't be repeated
 For example, set 9 as D100 mapping address
- (12) Variable unit: Fill in according to requirements, or not fill in.
- (13) Click OK to confirm.

Note: After confirming the configuration, datapoints will appear in the box like above picture. To add more datapoints, right click the box and click Add to enter configuration box. Perform the same procedure as Step (1)-(13)

Note: Click Write Configuration. Gateway will restart automatically and CP1L-EL datapoint is added successfully.

5.2.3.3 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

5.2.4 Collecting Delta PLC Data

5.2.4.1 Add Delta PLC to COM Port

The configuration of the four COM ports are the same. COM1 is fixed as RS232, and COM2, COM3 and COM4 are optional serial ports for RS232/RS485 (the default is RS485). Because COM2 and COM3 of DVP-12SA2 are both RS485 ports, select the gateway to use COM2 connection as an example to illustrate the COM port acquisition and configuration operation. DVP-12SA2 COM3+ is connected to gateway COM2 A, COM3- is connected to gateway COM2 B.

5.2.4.1.1 COM Port Configuration

Configure the COM2 port according to the configuration parameters of DVP-12SA2 COM3, the configuration is as follows:

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.9		-	ΟX
Search Clear Import Export Read Config. Write	Config. Monitor Remote Log	中文 Help	() About
□ m BL110Pro Variable Name □ - □ COM1 - □ FX3U □ - □ COM2 - □ S7-200 □ - □ COM3 - □ OCM4 □ - □ COM4 - □ S7-200SMART □ - □ - □ WAN - □ S7-200SMART		中文 Help Map Address	About Ratio
→ G FX5U → W ³ 4G → ₩ VPN → O OpenVPN → C Tasks → DataServices → Pass Through	OK Cancel		

(1) Double-click "COM4" to enter COM configuration box.

(2) Mode selection: Collection.

(3) Because it is a collection of Delta DVP-12SA2, the device brand: select DELTA from the drop-down box, and the device model: DELTA_DVP. The polling interval and communication timeout

in the button are set according to requirements.

(4) The baud rate, stop bit, data bit and parity bit are configured according to the parameters of the COM3 port of DVP-12SA2, which are consistent with them. DVP-12SA2 COM3 port parameters Baud rate: 9600, stop bit: 1, data bit: 7, parity bit: Even.

(5) Click "OK".

Note: Click "Write Configuration" and the gateway device will restart automatically, and the configuration of the COM port will take effect after restarting.

5.2.4.1.2 Add DVP-12SA2 to COM Port

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		A	?	(j)
Search Clear Import Export Read Conf	g. Write Config. Monitor Remote Log	中文	Help	About
	Variable Name Address Type Address Value Unit Data type Varibale Key	Map Addr	ess	Ratio
□-@COM1				
G FX3U				
	Device Information			
G S7-200				
— — — СОМЗ	Device Name DVP-12SA2			
GCP1L-L	Device Properties			
Land Characteria	Device Address 1			
G-GLAN				
CP1L-EL				
L_GFX5U	OK Cancel			
-(A),4G				
D VPN				
 └_⊕OpenVPN				
— 茂 Alarms				
Tasks				
DataServices				
				.dl

(1) Click "COM4", click the right mouse button, click "Add", to enter device configuration box.

(2) Fill in the device name arbitrarily, such as: DVP-12SA2.

(3) Device address: The station number of Delta COM, fill in as required, the address must be consistent with the Delta COM setting, otherwise communication will fail.

(4) Click "OK" to add DVP-12SA2 device.

Note: After clicking OK, the added devices will be displayed under COM2, as shown in the figure above. DVP-12SA2, if you want to add multiple devices, repeat steps (1)-(4).

Note: Clicking "Write Configuration" will restart the gateway device automatically. After restarting, the DVP-12SA2 device with COM4 port added will be added successfully.

5.2.4.1.3 Add DVP-12SA2 Data Point

Taking adding data points Y0 and D0 as an example, the address of register X and Y of Delta

DVP-12SA2 is octal, and the address of register D is decimal.

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		٥ ((1)
Search Clear Import Export Read	Config. Write Con	fig. Monitor Re	mote Log			中文 Help About
白 _品 BL110Pro	Variable Name	Address Type	Address Value	Unit Data type	Varibale Key	Map Address Ratio
COM1	YO	Y	0	bool Y0		30(M.000031) none
└─ ☆ FX3U	DO	D	0	uint16 D0		12(M.400013) 1
		Variab	le Properties			
GS7-200						
□-@СОМ3	Variable Name	YO	Varibale Key	YO		
CP1L-L	OCT/DEC/HEX	Decimal v				
	Address Type	γ ~	Address	0		
DVP-12SA2	Data type	bool v	Add Number	1		
	_					
⊗S7-200SMART	Read/Write	Read/Write *	Ratio	none		
CP1L-EL	Map Address	30	Variable Unit			
D- WAN						
-⊕FX5U				OK Cancel		
— ⁽⁽ Å ¹⁾ 4G		00 0	11 112			
OpenVPN						
— 賞 Alarms						
DataServices						

(1) Click "DVP-12SA2", move the mouse cursor to the box, right-click the mouse, and click "Add" to enter data point setting box.

(2) Variable name: Name the data point, such as: Y0.

(3) The identifier of the data point can be filled in arbitrarily. The identifier cannot be repeated, for

example, the identifier of the Y0 data point is filled in as Y0.

(4) Select the collection address data format filled in the input gateway according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. Register X and Y addresses are in octal, and register D addresses are in decimal.

(5) Address type: according to Delta's register selection, if you want to collect "YO", select "Y".

(6) Address: The register address of the collected data point, such as: collecting "Y0", so fill in "0".

(7) Data type: Select according to the acquisition PLC register, such as: "Y0" is the coil type, so select "bool".

(8) Add Number: The number of acquisitions. If it is to acquire continuous addresses, the same register can be acquired multiple times.

(9) Read/Write: according to PLC register selection. Select from "Read Only", "Read and Write".

(10) Map address: Fill in the address where the collected data points are stored to the BL110 gateway device, which can be filled in at will. Mapped addresses cannot be duplicated. Range:0-2000. For example, the data collected from Y0 is stored in the "0" register address of the BL110 gateway.

(11) Variable unit: fill in arbitrarily according to requirements, or not fill in.

(12) Click "OK".

Note: After clicking "OK", the data points will be displayed in the box as shown in the figure above. If you want to continue adding data points, right-click on the box and click "Add" to enter data point configuration box, repeat (1)--(12) Steps.

Note: Clicking "Write Configuration" will restart the gateway automatically, and the data points added by DVP-12SA2 will take effect only after restarting.

5.2.4.2 Add Delta PLC to Ethernet Port

Ongoing

5.2.4.3 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

5.3 Collecting Watt-Hour Meter Data

5.3.1 Adding Watt-Hour Meter to COM Port

Currently COM ports can only collect watt-hour meter with DL/T645 protocol. COM1 isRS232. COM2, COM3 and COM4 are RS485 ports. Below is example of collecting watt-hour meter data through COM2 as the meter has RS485 interface.

5.3.1.1 COM Port Configuration

4G Industrial Gateway ConfigUrationTool V1	
 BL110UA COM1 COM2 COM2 COM4 LAN WAN 4G Alarms And Events TaskPlan DataServices Modbus RTU =: Modbus TCP Modbus TCP Server OPC UA Cloud MQTT Client One MQTT Client Two Ali IOT Cloud 	Import Configuration File
HUAWEI IOT Cloud WS IOT Cloud Ws IOT Cloud Wingpigeon MQTT Kingpigeon Modbus	Copyright 2021 by Shenzhen Beilai Technology Co. Ltd

Below is example of collecting watt-hour meter with DL/T645-2007 protocol through COM2

- (1) Double click COM2 to enter COM attribute configuration box.
- (2) Select data collection Mode
- (3) Select Watt-hour Meter as Device Brand and select DL/T645 as Device Model
- (4) Follow Watt-hour Meter COM port parameters to set the same baud rate, stop bit, data bit and parity bit
- (5) Click OK to confirm it.

Note: Click Save Data. COM2 port configuration will be effective after gateway restart automatically.

5.3.1.2 Add Watt-hour Meter to COM Port

	5 www.biliot.com
© OPC UA © OPC UA □ ♀ Cloud □ ♀ MQTT Client One □ ⊗ MQTT Client Two □ ⊗ Ali IOT Cloud □ ♀ HUAWEI IOT Cloud □ ♀ AWS IOT Cloud □ ♀ Kingnigen MOT	Name Value Unit Type Address Data type Modbus Maps Address MQTT Flag Enable Ratio Device Information Device Name Immeter (MAX30) Device Postal Address Immeter Immeter

- (1) Click COM2, right click it and click Add to enter device configuration box
- (2) Set Device Name at random like ammeter
- (3) Communication Address: put watt-hour meter communication address
- (4) Click OK to confirm adding watt-hour meter.

Note: After confirming configuration, ammeter icon will appear below COM2. To add more devices, follow the same steps (1)-(4)

Note: Click Save Data. Gateway will restart automatically and adding watt-hour meter is effective

5.3.1.3 Add COM Port Watt-hour Meter Datapoint

4G Industrial Gateway ConfigUrationTool V1. Device Search 📑 New Configuration 👔		ration File	Export Configur	ation File	Read Data	a ∳ Save Da	ta 🚇 Monitoring 📋	Log Ajzi		- > Abou
BL110UA	Name	Value Uni	t Type	Address	Data type	Modbus Mar	Modbus PLC Address	MOTT Flag	Enable	Ra
	A phase voltage		A phase voltage	0	float32	17	400018	REG001	Read-Only	
1	A phase current		A phase current	0	float32	19	400020	REG002	Read-Only	
EX3U	ined active total e I positive active en		bined active total 1 positive active		float32 float32	21	400022	REG003	Read-Only Read-Only	
COM2	rse active total en		arse active total		float32 float32	23	400024 400026	REG004 REG005	Read-Only	
Le ammeter (ID:1)							100020	1120005		
COM3			Variab	le Attrib	utes					
COM4		Variable	Name ase voltage		Variable Un	it				
🛱 🖾 LAN										
L S7-200SMART		Addres	s Type A phase vo		Starting Addre					
WAN		Data type	In DB	Add	ress Offset In D	в				
(%) 4G		Da	ta type float32	· ·	Add Numb	er 1				
Alarms And Events		Read-Writ	e Type Read-Or	ly ~	Rat	io 1				
TaskPlan	Mod	bus Maps Add	fresses 17	(0-2000)	MQTT Fla	REG006				
DataServices					(Custon	nizable)				
Transparent transmission					OK	Cancel				
- Modbus RTU 🛱 Modbus TCP										
Modbus TCP Server										
OPC UA										
È-⊕ Cloud										
- MQTT Client One										
- @ MQTT Client Two										
- @ Ali IOT Cloud										
HUAWELIOT Cloud	× 4					chnology Co. Ltd				

- (1) Click ammeter, move mouse cursor to the right box, right click mouse and click Add to enter datapoint configuration window
- (2) Set datapoint name, for example, Phase A Voltage
- (3) Variable unit: Set any unit as required, can be blank
- (4) Address Type: Select the address type of the meter. For example, Phase A Voltage
- (5) Starting Address: N/A keep it blank
- (6) Data Type: Select 32-bit single-precision floating data type
- (7) Adding Qty: N/A keep it blank
- (8) Read-write Type: Select from Read only
- (9) Modbus Mapping Address: Input the address where the collected datapoint is saved in BL110. It can be any address from 0-2000 but can't be repeated. For example, Phase A Voltage is saved in register address 17 of BL110
- (10)MQTT Flag: can be any identification mark, but can't be repeated. For example, set REG001 as the MQTT flag of datapoint Phase A voltage
- (11) Click OK to confirm

Note: After clicking OK to confirm the configuration, datapoints will appear in the box lik above picture. If more datapoints to be added, right click the box and click Add to enter datapoint configuration box, repeat Step (2)-(12)

Note: Click Save Data. Gateway will restart automatically. After restarting, watt-hour meter datapoints are added successfully

If your required datapoint is not in the list, please contact King Pigeon after-sale service team.

5.3.2 Add Wat-hour Meter to Ethernet Port

Collecting Watt-hour meter data with IEC101 & IEC104 protocols is under development.

5.3.3 Uploading Data to Various Clouds

BL110 collects data of different protocols. The configuration procedures of uploading data to various clouds are the same. Here only introduce configuration of collecting PLC data and send it to various clouds. Refer to <u>5.5 Configuration of Uploading Data to Various Clouds</u>

5.4 Collecting BACnet Device Data

The BL110 gateway supports the collection of nine objects: AI, AO, AV, BI, BO, BV, MSI, MSO, and MSV. The collected value is the current value attribute of these nine objects.

5.4.1 Add BACnet MS/TP Device to COM Port

The configuration contents of the four COM ports are the same. COM1 is fixed as RS232, and COM2, COM3 and COM4 are optional serial ports for RS232/RS485 (the default is RS485).

5.4.1.1 COM Port Configuration

Take the BACnet MS/TP device collected by the COM port as an example, the COM port 485 ports A+ and B- correspond to the A+ and B- ports of the 485 port of the BACnet MS/TP device respectively.



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└──	Device Brand BACnet v	
— Alarms	Device Model BACnet/MSTP v	
DataServices	Serial Port Settings	
Pass Through		
	Baud 38400 V Data Bits 8 V	
- Modbus TCP Server	Stop Bit 1 × Parity Bit None ×	
OPC UA	OK	
- MQTT Client		
- MQTT Client II		
— ⊕ Ali loT		
- HUAWEI IoT		

(1) Double-click "COM1" to enter COM property configuration box. (2) Mode selection: Collection. (3) Since it is a BACnet MS/TP device, device brand: select "BACnet", device model: BACnet MS/TP. The polling interval and timeout are set according to requirements. (4) The baud rate, stop bit, data bit, and parity bit are configured according to the parameters of the serial port of the BACnet MS/TP device, and are consistent with them. (5) Click "OK".

Note: Click "Write Configuration" and the gateway device will restart automatically, and the configuration of the COM port will take effect after restarting.

5.4.1.2 Add COM Port BACnet MS/TP Device

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□ Å BL103Pro ^	Anabie Name Address Type Address Value Onit Data (ype Valibale Key Map Address Ratio
BACnet MS/TP		
- @WAN	Device Information	
-(A),4G	Device Name BACnet MS/TP	
	Device Properties	
一位 Alarms	Local MAC 127	
	Device MAC 1	
	Device Address 3001	
— Modbus RTU≒TCP		
→ Modbus TCP Server	OK Cancel	
- BACnet/IP		
-OPC UA		
- MQTT Client II		
→ S Ali IoT		

(1) Click "COM1", right-click, and click "Add" to enter device configuration box. (2) Fill in the device name arbitrarily, such as: BACnet MS/TP. (3) Local MAC: Fill in as required, default is 127. (4) Device MAC: MAC of BACnet MS/TP device, fill in according to the device. (5) Device address: fill in the BACnet MS/TP device. (6) Click "OK"

Note: After clicking OK, the added devices (BACnet MS/TP) will be displayed under COM1, as shown in the figure above. If you want to add multiple devices, repeat steps (1)-(6).

Note: Click "Write Configuration" to restart the gateway device automatically. After restarting, the BACnet MS/TP device with COM1 port is added successfully.

5.4.1.3 Add BACnet MS/TP Device Data Points

Collection of analog input objects as an example and the configuration refer to:

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(1) Click "BACnet MS/TP", right-click the box on the right, and click "Add" to enter data point setting box. (2) Variable name: Name the data point, such as: collecting data of "analog input 1", it can be filled in as: analog input. (3) Variable key, which can be filled in arbitrarily. The identifier cannot be repeated, for example, the identifier of the collected "analog input 1" data point is filled in as "REG001". (4) Select the acquisition address and choose data format according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. BACnet MS/TP data points choose Decimal. (5) Address type: Select according to the BACnet MS/TP objects type. For example, to collect the data of "analog input 1", select "analog input". (6) Address: the object instance number, such as: collecting the data of "analog input 1", the object instance number is: 1.
(7) Data type: Select according to the attribute selection of the current value for BACnet MS/TP device object. (8) Add Number: If it is to collect continuous addresses, the same register can be collected multiple times. (9) Read/Write type: choose from "read only", "read and write". (10) Ratio: how many times to enlarge or shrink to upload to the platform, fill in according to the needs. (11) Map address: fill in the address where the collected data points are stored to the BL110 gateway device,



which can be filled in at will. Mapped addresses cannot be duplicated. Range: 0-2000. For example, the mapping address for collecting "analog input 1" is "20". The outside of the mapping address on the configuration software represents the Modbus address, and M.XXX in the brackets represents the PLC Modbus address. (12) Variable unit: Fill in arbitrarily according to requirements, you can leave it blank. (13) Click "OK".

Note: After clicking "OK", the data points will be displayed in the box as shown in the figure above. If you want to continue adding data points, right-click on the box and click "Add" to enter data point configuration box, repeat (2)--(13) Steps.

Note: Clicking "Write Configuration" will restart the gateway automatically, and the data points collected from BACnet MS/TP will take effect only after restarting.

5.4.2 Add BACnet MS/TP Devices to Ethernet Port

Both the WAN port and the LAN port can collect BACnet/IP devices, which can be directly connected to BACnet/IP devices or collected through switches.

It is the network port selection setting of the data service "BACnet/IP" item to specify whether it is WAN port collection or LAN port collection.

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OPC UA		
⊡-SCloud		
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—⊕MQTT Client II		
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5.4.2.1 WAN Port Configuration

This example is WAN port collects BACnet/IP through the switch, and the switch is connected to the external network. The configuration is as follows:



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(1) Double-click "WAN" to enter WAN port configuration box. (2) Obtain IP automatically: It is enabled by default, and can be set as required. In this example, it is connected to a router, and the router is enabled to automatically assign IP, so keep it enabled. (3) IP address: The gateway obtains the IP address from the router. If it is designated IP, set it according to the requirements, the PLC and the gateway should be in the same local area network.(4) Subnet mask, the subnet mask of the WAN port gateway, if it is a designated IP, set it according to the requirements. (5) Gateway: The gateway address obtained from the router. If it is designated IP, set it according to your needs. (6) MAC address: the MAC address of the gateway. (7) DNS: The DNS obtained by the gateway from the router, if it is designated IP, set it according to the requirements. (7) Click "OK".

Note: Click "Write Configuration" to restart the gateway automatically, and the configuration of the WAN port will not be changed until it restart.

Note: The IP address of the WAN port is the IP address that specifies which network segment the WAN port device is. If the IP address of the WAN port device is not the IP of the network segment set by the WAN, the WAN port cannot collect. It is necessary to change the WAN port IP or change the WAN port device's IP according to the needs. After changing the IP address of the gateway, it must be written into the configuration, and it will take effect after power off and restart.



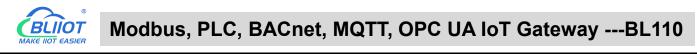
5.4.2.2 Add WAN Port BACnet/IP Devices

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(1) Click "WAN", right click, click "Add" to enter device configuration box. (2) Device name: Name the device, such as: BACnet (3) Device IP: Fill in the BACnet/IP device IP. Note that the IP of the BACnet/IP device must be in the same network segment as the IP of the WAN port. (4) Device port: UDP port, default 47808. (5) Because it is collection of BACnet/IP equipment, device brand: select BACnet, and the device model: BACnet/IP. The polling interval and timeout can be defaulted or filled in according to requirements. (6) Device address: Fill in as required. (7) Click "OK" Note: After clicking OK, the added devices(BACnet) will be displayed under the WAN port, as shown in the figure above. If you want to add multiple devices, repeat steps (1)-(7). Note: Clicking "Write Configuration" will restart the gateway automatically, and the BACnet device addres by the WAN port will be added successfully after the restart.

5.4.2.3 Add BACnet/IP Devices Data Points

Collection of binary input objects as an example, and the configuration is as follows:



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Contraction of the second s	⊡COM1				binaryinp	ut		ry-input	3				bool	REG003		11(M.00001	AS 6 0.54	one
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(1) Click "BACnet", right-click the box on the right, and click "Add" to enter data point setting box. (2) Variable name: Name the data point, such as: collecting the data of "binaryinput 3", it can be filled in as: binaryinput. (3) Variable key can be filled in arbitrarily. The identifier cannot be repeated, for example, the identifier of the "binaryinput 3" data point is filled in as "REG003". (4) Select the acquisition address and choose data format fill in the input gateway according to the requirements. OCT/DEC/HEX are octal/decimal/hexadecimal respectively. Choose Decimal for BACnet/IP data points. (5) Address type: Select according to the collected BACnet/IP object type. For example, to collect the data of "binaryinput 3", select "binaryinput". (6) Address: the object instance number, such as: collecting the data of "binaryinput 3", the object instance number is: 3. (7) Data type: Select according to the attribute selection to collect the current value of the BACnet/IP device object. (8) Add Number: If it is to collect continuous addresses, the same register can be collected multiple times. (9) Read/Write: Choose from "read only", "read and write". (10) Map address: fill in the address where the collected data points are stored to the BL110 gateway device, which can be filled in at will. Mapping addresses cannot be duplicated. Range: 0-2000. For example, the mapping address for collecting "binaryinput 3" is "11". The outside of the mapping address on the configuration software represents the Modbus address, and M.XXX in the brackets represents the PLC Modbus address. (11) Variable unit: fill in arbitrarily according to requirements, or not fill in. (12) Click "OK". Note: After clicking "OK", the data points will be displayed in the box as shown in the figure above. If you want to continue adding data points, right-click on the box and click "Add" to enter data point

configuration box, repeat (2)--(12) Steps.

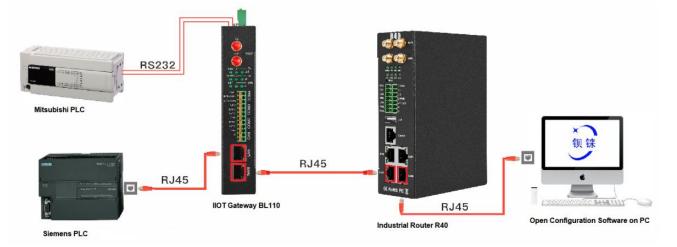
Note: Clicking "Write Configuration" will restart the gateway automatically, and the data points collected from BACnet will take effect only after restarting.

5.4.3 Data Upload to Various Platform

No matter what protocol data is collected by the BL110 gateway, the configuration for transmitting the data to each platform is the same. Therefore, this chapter takes the configuration of collecting PLC protocol data and transferring it to each platform as an example. Refer to: <u>5.5 Data Upload to Various</u> <u>Platform</u>

5.5 **Configuration of Uploading Data to Various Clouds**

Below is the example of connecting Mitsubishi PLC FX3U to BL110 COM1 port and connecting Siemens PLC S7-200SMART to BL110 LAN port. BL110 WAN port is connected to router R40 LAN port. R40 provides network for BL110. See below wiring diagram:



BL110 LAN port is connected to Siemens PLC S7-200SMART Ethernet port, COM1 is connected to Mitsubishi PLC FX3U via RS232 to RS422 converting cable. BL110 collects both PLC data and send to various clouds with network provided by R40 through WAN.

Note: Both WAN and LAN ports can collect device data. This example is collecting data through LAN port. WAN and LAN port configurations are the same as stated in previous introduction. Below is only the introduction to cloud connection configuration



5.5.1 Modbus TCP Server Configuration

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- 読BL103Pro 白							
	Name	Value	Cloud	Status	Port	Device Name	Status
⊕\$475	Name	BeiLai Gateway	MQTT Client	•	COM1	M140T	•
-@WAN	Time	10:38:55 Modbus	TCP Server	•	LAN	S475	•
—('A') 4G	Model	BL103P		•			
E-WN VPN	Version	V1.1.3		•			
	4G Module	EC200S	502	•			
一党 Alarms	IMEI	868618		•	-		
Tasks	Signal Strength	18 (Nor	bus IoT	۲	-		
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- O Modbus TCP Server							
- BACnet/IP				-	1		
OPC UA			Refresh				
E & Cloud							
- MQTT Client							
- MQTT Client II							

- (1) Doubel click Modbus TCP Server to enter configuration box
- (2) Port: This gateway is used as Modbus TCP Server monitoring port. Input any port within range 1-65535. For example, put 502
- (3) Click OK to confirm the setting of Modbus TCP Server.
- (4) Click Write Configuration. Gateway will restart automatically. After restarting, Modbus TCP Server configuration is done successfully.

The Modbus TCP Server has enabled the "502" port by default, which can be directly connected to the upper computer acquisition gateway through WAN or LAN. If the parameters of the port are not modified, no operation is required.

5.5.2 View and Send Command with KingView

Gateway provides data as Modbus TCP server. Modbus TCP host computer will collect data from BL110, like SCADA, MES host PCs. Function codes supported for collecting gateway data: 01 & 05 for boolean data; 03 & 06 for numerical data. Below example is using KingView to view BL110 device data. WAN port IP: 192.168.1.155, Modbus TCP Server port: 502



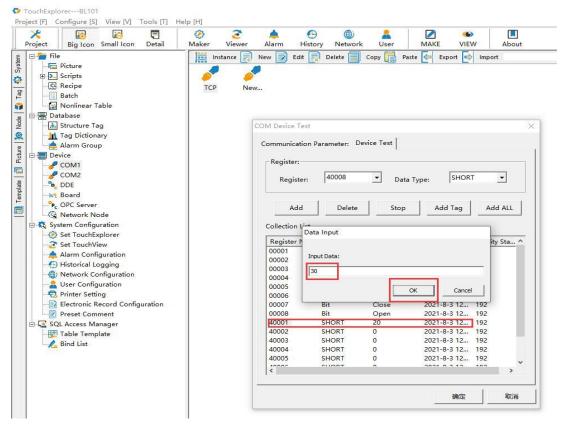
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	DO3	01 Coil Status(0x)	2	False	bool	DO3	2(M.000003)	none
T -	DO4	01 Coil Status(0x)	3	False	bool	DO4	3(M.000004)	none
⊕S475	DO5	01 Coil Status(0x)	4	False	bool	DO5	4(M.000005)	none
— 🖾 WAN	DO6	01 Coil Status(0x)	5	False	bool	DO6	5(M.000006)	none
—('Å') 4G	DO7	01 Coil Status(0x)	6	False	bool	D07	6(M.000007)	none
	DO8	01 Coil Status(0x)	7	False	bool	DO8	7(M.000008)	none
- OpenVPN	DIN1	02 Input Status(1x)	0	True	bool	DIN1	8(M.000009)	none
一 芷 Alarms	DIN2	02 Input Status(1x)	1	True	bool	DIN2	9(M.000010)	none
	DIN3	02 Input Status(1x)	2	True	bool	DIN3	10(M.000011)	none
Tasks	DIN4	02 Input Status(1x)	3	True	bool	DIN4	11(M.000012)	none
DataServices	DIN5	02 Input Status(1x)	4	True	bool	DIN5	12(M.000013)	none
	DIN6	02 Input Status(1x)	5	True	bool	DIN6	13(M.000014)	none
—	DIN7	02 Input Status(1x)	6	True	bool	DIN7	14(M.000015)	none
	DIN8	02 Input Status(1x)	7	True	bool	DIN8	15(M.000016)	none
-MOPC UA								
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E OCloud								
- @ MQTT Client								
- MQTT Client II								



piect Big Icon Small Icon Detail	Maker	3 Viewer	Alarm	History	() Network	User	MAKE	VIEW	About
Big Icon Small Icon Detail File File File Scripts Scripts Batch Nonlinear Table Database Structure Tag Tag Dictionary Alarm Group Device COM1 COM2 DDE Board OPC Server Statum Configuration Set TouchExplorer Set TouchExplorer Set TouchExplorer Prince Setting Printer Setting Electronic Record Configuration Verese Configuration Preset Comment Solt Access Manager Table Template Bind List	Maker	Viewer tance 📄	New Devic	History Edit 📄 e Test ication Para er: jister: Add Dn List B B B B B B B B B B B B B B S S S S S	Network	User Copy Pa Pa Vice Test Data Tag Value Clos	MAKE ste Exp Type: Add 1 Time Stat 2021-8- 2021-8- <td< th=""><th>VIEW ort in Imp SHORT Tag A arg A</th><th>About</th></td<>	VIEW ort in Imp SHORT Tag A arg A	About
			4:000			^	2021.0.1	确定	>

Send command from cloud to control device





TouchExplorer---BL101

Project Big Icon Small Icon Detail	Maker	3 Viewer	Alarm Histo		User	MAKE VIE		I pout
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5.5.3 BACnet/IP Configuration

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白 ∰ BL103Pro 白-;;COM1 │ └-⊗M140T		BA	Cnet/IP	1			
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—"Å"4G	Model	Port	47808	•	-		
UPN VPN	Version	Vendor Name	BeiLai	•			
└── � OpenVPN	4G Module	Vendor Identifier	555	•			
— 芷 。 Alarms	IMEI	Device Name	BeiLai Gateway	•			
	Signal Strength	Device ID	555	•			
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- 🖓 Modbus TCP Server			OK Cancel				
		8	Refre	-b			
OPC UA			Rene				
E-OCloud							
- MQTT Client							
- MQTT Client II							

Operation steps: (1) Double-click "BACnet/IP" to enter BACnet/IP configuration box. (2) Click the Enable button to enable BACnet/IP. Default: off. Gray: Disabled, Green: enabled. (3) Network Interface: select "WAN" port. Click "WAN" to check that the IP address of the WAN port is:

192.168.1.155. (4) Port: BACnet/IP UDP port, default: 47808. (5) Vendor name: can be filled in arbitrarily. (6) Vendor ID: can be filled in arbitrarily. (7) Device name: the name of the BACnet/IP server, which can be filled in arbitrarily. (8) Device ID: Can be filled in arbitrarily. (9) Device Description: Gateway description, which can be filled in arbitrarily. (10) Location: Gateway location, default "CN". (11) Click "OK" to confirm the BACnet/IP configuration. (12) Click "Write Configuration", BACnet/IP will be enabled only after the gateway device restarts.

5.5.4 View and Send Command by KEPServerEX 6

Fill in the UDP port and local instance according to the port and device ID on the configuration software. After it is built, you can add devices by searching devices, or you can add devices yourself. The tags can be automatically imported or created by yourself. The data is unified in AV and BV objects, properties provide external data for the current value. The object instance is the Modbus address of the data point page mapping address item on the configuration software.

(Connected to Runtime) - KEPServerEX 6 Configuration				– 🗆 X
File Edit View Tools Runtime Help				
0 🗃 🖬 🖓 📅 🖄 🕾 🐨 🔊 X 🗞 🖄 X	ec.			
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BAChet/IP	Berler	brid its.	1.000	
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- 🔄 BinaryValue_3	Ethemet Communications	Network Settings		
BinaryValue_4	Write Optimizations	UDP Port	47808	
BinaryValue_6	Advanced	Local Network Number	1	
- BnaryValue 7	Protocol Settings	Local Device Instance	555	
- C BinaryValue_8		Register as Foreign Device	Disable	
3 Binary Value_9		IP Address of Remote BBMD	0.0.0	
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15:43:04 BACnet/IP		Defaults	OK Cancel Apply H	elp
15:43:04 BACnet/IP	L			
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A 29/08/2022 15:43:04 BACnet/IP		em on device. COV item = 'BinaryValue.8.StatusFlags		
29/08/2022 15:43:04 BACnet/IP		sted by device. Reason = 9, Reason string = Unrecog		
29/08/2022 15:43:04 BACnet/IP 29/08/2022 15:43:04 BACnet/IP		em on device. COV item = 'BinaryValue.9.PresentValue ted by device. Reason = 9. Reason string = Unrecog		
29/08/2022 15:43:04 BAChet/IP		xed by device. Heason = 5, Heason string = Unrecog xem on device. COV item = 'BinaryValue. 9. Status Rags		
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Ready				Default User Clients: 0 Active tags: 0 of 0



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一品BL103Pro	^ Varia	able Name	Address Type	Address	Value	Unit	Data type	Varibale Key	Map Address	Ratio
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一	DO2		oil Status(0x)	1	True		bool	DO2	1(M.000002)	none
	DO3		coil Status(0x)	2	True		bool	DO3	2(M.000003)	none
	DO4		oil Status(0x)	3	True		bool	DO4	3(M.000004)	none
└─ ③ \$475	DO5	01 0	oil Status(0x)	4	True		bool	DO5	4(M.000005)	none
	DO6		oil Status(0x)	5	True		bool	DO6	5(M.000006)	none
—" A ")4G	DO7	01 0	coil Status(0x)	6	True		bool	DO7	6(M.000007)	none
UPN VPN	DO8	01 0	oil Status(0x)	7	False		bool	DO8	7(M.000008)	none
- OpenVPN	DIN1	02 li	nput Status(1x)	0	True		bool	DIN1	8(M.000009)	none
— 泣 Alarms	DIN2	02 li	nput Status(1x)	1	True		bool	DIN2	9(M.000010)	none
	DIN3	02 li	nput Status(1x)	2	True		bool	DIN3	10(M.000011)	none
Tasks	DIN4	02 li	nput Status(1x)	3	True		bool	DIN4	11(M.000012)	none
DataServices	DIN5	02 li	nput Status(1x)	4	True		bool	DIN5	12(M.000013)	none
—	DIN6	02 li	nput Status(1x)	5	True		bool	DIN6	13(M.000014)	none
—	DIN7	02 li	nput Status(1x)	6	True		bool	DIN7	14(M.000015)	none
	DIN8	02 li	nput Status(1x)	7	True		bool	DIN8	15(M.000016)	none
- 🗑 BACnet/IP										
-MOPC UA										
E Cloud										
—										

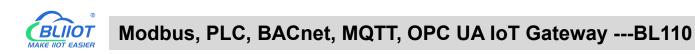
Taking the data point of M140T DO6 as an example, the collected data is "1" when viewed on the configuration software, and the address of the data point of DO6 on BACnet/IP is:

BinaryValue.5.PresentValue 🐸 🗟 📓 🦃 🛅 🖄 🗐 🥥 🗑 🐨 🐚 🛝 🗙 🕅 Data Type Scan Rate - 🗿 Proj Tag B 90 OPC Quick Client - 无标题 View Tools H D 🖙 🖬 🛫 💣 💕 👗 🦄 📾 🗮 🗙 BL10x.B 15:54:08:083 15:54:08:083 15:54:08:083 Good Good Good Good Good Good Good 20971525 DO6 BL10x BinaryValue ring 15:54:08:083 Time 15:53:58 15:53:5 15:53:5 5.54.0 15:53:58 15:53:5 15:55:1 15:55:27 15:55:53 15:56:32 15:57:06 15:53:55 15:53:55 Cnet/IP.BL10x | Device is not resp Default User Clients: 1 Active tags: 558 of 558

Send Command:

Take the value "0" issued by DO6 as an example

×



Project	ctivity		^ Tag	Name	/ Address	Data Type	Scan Rate	Scaling		Description	
BA	Cnet/IP		OPC Qu	ick Client - 无标题 *	n ut nn	- PL 1	100	**		- 0) X
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	AnalogValue_				® i≅ ×						
	AnalogValue_		and the second se	Cnet/IP.BL10x.BinaryValu		ten ID	Data Type	Value			1.
	BinaryValue_0			Cnet/IP.BL10x.BinaryValu Cnet/IP.BL10x.BinaryValu		 Item ID BACnet/IP.BL10x BinaryValue_5.EventSta 		0 Value	Timestamp 15:54:08.083	Quality Good	1 3
	BinaryValue_1			Cnet/IP.BL10x.BinaryValu		BACnet/IP.BL10x.BinaryValue_5.ObjectId		20971525	15:54:08.083	Good	3
	BinaryValue_3		- BA	Cnet/IP.BL10x.BinaryValu	Carlos and		UTTURY	2007102J	× 183	Good	
	BinaryValue_4	1		Cnet/IP.BL10x.BinaryValu		te			× 183	Good	-
	Binary Value			Cnet/IP.BL10x.BinaryValu Cnet/IP.BL10x.BinaryValu					OK 183	Good	-
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BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.8

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MQTT Client II



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5.5.5 OPC UA Configuration

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					Name Time							•	COM1	M140T			•
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- 10 S	Å ")4G				Version	8		Anonyr	nous			•	7				
	VPN				4G Mod			User				•	-				
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	_	Cnet/IP								F	efresh						
	-	C UA															
	Cloud																
	-OMC	QTT Client															
	-MMC	TT Client	11														

- (1) Double click OPC UA to enter configuration box
- (2) Click Enable to enable(green color) OPC UA. Default is disabled(gray color).
- (3) Port: OPC UA Port, default is 4840
- (4) Anonymous: If enabled, OPC UA can be connected without ID and password
- (5) User, Password: only to be set when anonymous is disabled
- (6) Security Policy: Select connection encryption policy(This example is connecting without encryption, thus select None)
- (7) Certificate, PrivateKey: This example is connecting without encryption, then it's not necessary to upload certificate and privatekey.

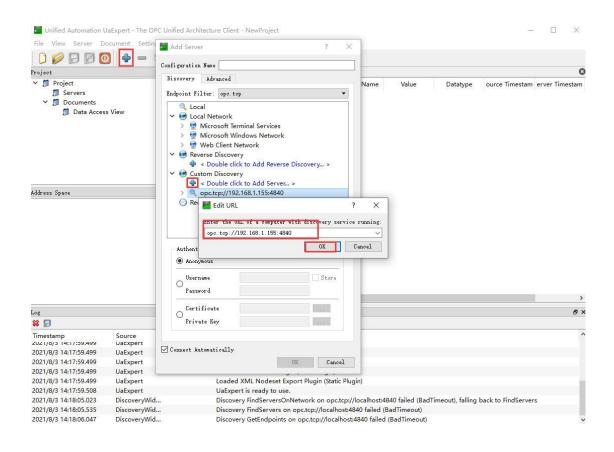
(8) Click OK to confirm OPC UA configuration

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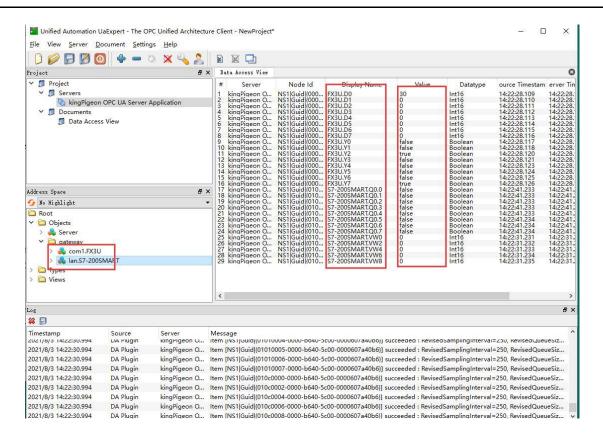
(9) Click Write Configuration. Gateway will restart automatically. After device restarting, OPC UA is configured successfully.

5.5.6 View and Send Command with UaExpert

BL110 provides data as OPC UA server. Below is the example of collecting BL110 data with UaExpert(OPC UA Client). Connecting UaExpert with BL110 OPC UA server. Datapoint will be generated automatically. Datapoint names are the same as variable names in configuration software. Node id Consists of the device name on the configuration software and the device's data point label.

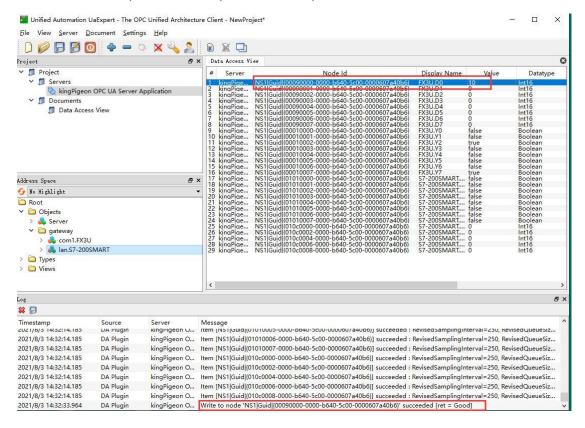






Sending command from cloud to control device remotely.

Double click datapoint value, input value and press enter to confirm it.



5.5.7 MQTT Client Configuration

The "KingPigeon" JSON data format of MQTT Client and MQTT Client II is the same as King Pigeon MQTT. Refer to: King Pigeon MQTT Data Format

Connect to the ThingsBoard platform, select the JSON data format in the

"thingsboard-telemetry-gateway" format. The ThingsBoard platform domain name is thingsboard.cloud.

Connect to a platform that supports Sparkplug B, such as the ignition platform, select the JSON data format in the "sparkplug b" format, click the button next to the data template item, enter configuration box to configure the group ID and edge node ID.

The difference between MQTT Client and MQTT Client II is that the subscription topic of MQTT Client II does not work. The purpose of MQTT Client II is that the platform can view the data but cannot control the data. Therefore, MQTT Client II connection is not introduced.

The configuration of MQTT Client is as follows: Connection without certificate and the JSON data format in KingPigeon format as an example.

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.8		– 🛛 X
	A (?	
Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文 He	elp About
白品BL103Pro MQTT Client		
₩140T Variable Type Port Device	Variable Nam	ne
E- LAN IP/Domain test.mosquitto.org		
-		tus
Client ID BL10x_MQTT		
_(Å) 4G User Name BL10x_MQTT		
Password BL10x_MQTT		
OpenVPN X.509		
一賞 Alarms CA File		
Client Certificate File		
DataServices Client Key File		
- Pass Through Data Template KingPigeon ·		
—		
- Modbus TCP S Publish Topic BL10x_MQTT_data Add Delete		
- BACnet/IP Upload Cycle(s) 30		
OPC UA Data Retransmission		
	ок с	Cancel
—		

(1) Double-click "MQTT Client" to enter configuration box. (2) Click the Enable button to enable MQTT Client. Default: off. Gray: Disabled, Green: enabled. (3) IP/domain: fill in the IP/domain name of the MQTT server. 4) Port: Fill in the MQTT server port, Default: 1883. (5) Client ID: The client identifier used in the MQTT connection message, and the server uses the client identifier to identify the client. (6) Username: The username used in the MQTT connection message, the server can use it for authentication and authorization. (7) Password: The password used in the MQTT connection message, which can be used by the server for authentication and authorization. (8) Data template: Select according to the JSON data format supported by the MQTT server, default is "KingPigeon". (9) Subscribe topic: The topic name used by the MQTT subscription message. After subscription, the



server can send a publish message to the client for control. (10) Publish topic: The topic name used by MQTT to publish the message. The topic name is used to identify which information channel the payload data should be published to. (11) Upload cycle: The interval for regular data release, default is 30S. (12) Data retransmission: whether to enable data retransmission, Gray: disabled, Green: enabled. (13) Select data point upload: select the data point to be uploaded in the box on the right side of the configuration box, the default is blank means all upload.

(14) Click "OK" to confirm the configuration of King Pigeon MQTT. (15) Click "Write Configuration", the MQTT Client will not be enabled until the gateway device restarts. Re-open the configuration software to log in to the device, and you can see on the basic information page that the prompt light of "MQTT Client Online Status" is green, indicating that the MQTT Client is connected. The rightmost shows the online status of the slave device.

earch Clear Import Export Rea	d Config. Write (Config. Monitor Remo	te Log				、 中文	? Help	() Abou
白 読 BL103Pro 白									
	Name	Value	Cloud	Status	Port		Device Name		Status
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- 🛱 WAN	Time	17:08:34 08/29/2022	MQTT Client II	•	LAN	S475			•
('A') 4G	Model	BL103Pro	Ali IoT	•	-				_
- VPN VPN	Version	V1.1.3	HUAWEI IoT	•					
	4G Module	EC200SCNAAR01A09M16	AWS IoT						
一位 Alarms	IMEI	868618052294261	KingPigeon IoT	•					
	Signal Strength	19 (Normal:14-31)	KingPigeon Modbus IoT	•					
- Co Tasks	operator	NULL							
DataServices	SIM ICCID	NULL							
	SIM Status	Failed							
- Hodbus TCP Server									
- 🔂 BACnet/IP									
- MOPC UA			Refresh						
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—⊕MQTT Client II									



5.5.8 View and Send Command with MQTT.fx

Edit Connection Profiles	2		– 🗆 X
	Profile Name	MQTT Server	
	Profile Type	MQTT Broker	MQTT
MQTT Server	MQTT Broker Profile Settings		
n	Broker Addres:	test.mosquitto.org	
	Broker Por	1883	
	Client ID	MQTT_FX_Client_test	Generate
	General User Credentials	SSL/TLS Proxy LWT	
	User Name	test	
	Password	••••	
+ -	Revert		Cancel OK Apply

Note: Client ID can not be the same the Client ID in configuration software

Message received in MQTT.fx:

Subscription Topic of MQTT.fx is the Publishing Topic configured in MQTT Client



MQTT.fx - 1.7.1		
File Extras Help		
MQTT Selver	Connect Disconnect	-
Publish Subscribe Scripts Broker Statu	s Log	
date	Subscribe QoS1 QoS2 Autoscri	
date Dump Messages Mute Ur subscribe	date	1 QoS 0
	date	1
Topics Collector (0) Scan Stop Collector	<pre>03:03:03:021 18:05:54:65154:03 {"sensorDatas":[{"flag":"GPS","lat":"0.0000","lng":"0.0000"}, {"flag":"Y0" er":0}, {"flag": Y1", "switcher":0}, {"flag": Y2", "switcher":1}, {"flag": Y3" er":0}, {"flag": Y4", "switcher":1}, {"flag": Y5", "switcher":0}, {"flag": Y4", "switcher":1], {"flag": Y5", "switcher":0}, {"flag": Y4", "switcher":0}, {"flag": Y5", "switcher":0}, {"flag": Y5", "switcher":0}, {"flag": Y4", "switcher":0}, {"flag": Y5", "switcher":0}, {"flag": Y4", "switcher":0}, {"flag": Y5", "switcher":0}, {"flag": Y4", "switcher":0}, {"flag": Y4", "switcher":0}, {"flag": Y5", "switcher":0}, {"flag": Y4", "switch</pre>	","switch ","switch "value":0 ",{"flag" "Q0","sw "Q3","sw "Q6","sw W2","val
	Payload decoded by Plain Text Decoder	•

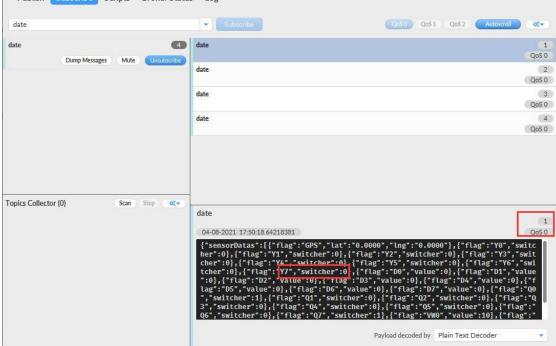
Use MQTT.fx to publish:

Public Topic is the Subscription Topic Configured in MQTT Client

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MQTT Server Connect Disconnect			r 🔴
Publish Subscribe Scripts Broker Status Log			
>> down Publish Qos0 Qos1 Qos2	Retaine	ad 🗋 🔾	0°*
<pre>{ "sensorDatas": ["switcher":1, "flag:"Y7"] "down":"down" } </pre>			



@ MQTT.fx - 1.7.1				×
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MQTT Server	- 🔅 Connect	Disconnect	.	D
Publish Subscribe S	cripts Broker Status Log			
2021-08-04 17:48:35,908 2021-08-04 17:48:41,630 2021-08-04 17:48:41,631 2021-08-04 17:48:41,632 2021-08-04 17:48:41,632 2021-08-04 17:48:41,632 2021-08-04 17:48:41,643 2021-08-04 17:48:41,645 2021-08-04 17:50:04,047 2021-08-04 17:50:04,047 2021-08-04 17:50:07,359 2021-08-04 17:50:07,784 2021-08-04 17:50:18,380 2021-08-04 17:50:26,191 2021-08-04 17:50:26,191 2021-0	<pre>INF0 MqttFX ClientModel INF0 MqttFX ClientModel INF0 BrokerConnectorController INF0 ScriptsController INF0 ScriptsController INF0 ScriptsController INF0 ScriptsController INF0 ScriptsController INF0 ScriptsController INF0 BrokerConnectorController INF0 BrokerConnectorController INF0 MqttFX ClientModel INF0 MqttFX ClientModel</pre>	<pre>: messageArrived() with topic: date : messageArrived() added: message #2 to topic 'date' : onDisconnect : rebuildMessagesList() : Clear console. : Cancel script excution. : Cancel script excution. : Clear console. : Clear console. : Cancel script excution. : onConnect : Clear console. : MqttClient with ID MqTT_FX_Client_test assigned. : session present: false : onSubscribe : rebuildMessagesList() : adtRecentSubscriptionTopic : addRecentSubscriptionTopic : addRecentSubscriptionTopic : sucessfully subscribed to topic date (QoS 0) : messageArrived() with topic: date : messageArrived() with topic: date : publish : attempt to add PublishTopic : sucessfully published message {</pre>		
MQTT.fx - 1.7.1		-		<
File Extras Help				
MQTT Server	👻 🍄 Cannect	Disconnect	•	D
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date	Subscribe	CoSt OoS1 OoS2 Autoscol		





MQTT.fx - 1.7.1	23. 22	пх
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date 6 Dump Messages Mute Unsubscribe		1 QoS 0
	date	2 QoS 0
	date	3 QoS 0
	date	4 QoS 0
	date	5 QoS 0
	date	6 QoS 0
Topics Collector (0) Scan Stop 0:-		
	date 04-08-2021 17:50:38.64238894	2 QoS 0
	<pre>{"sensorDatas":[{"flag":"GPS","lat":"0.0000","lng":"0.0000"},{"flag":"Y0 her":0},{"flag":"Y1","switcher":0},{"flag":"Y2","switcher":0},{"flag":"Y1", cher":0},{"flag":"Y4","switcher":0},{"flag":"Y0","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"flag":"Y2","switcher":0},{"switcher":0},{"switcher":0},{"flag":"Y1","switcher":0},{"swi</pre>	3","swit Y6","swi ","value ":0},{"f lag":"Q0 flag":"Q "flag":"
	Payload decoded by Plain Text Decoder	

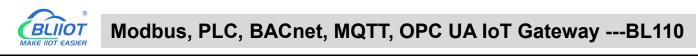
5.5.9 Alibaba Cloud Configuration

😑 🕞 Alibaba (Cloud	🛱 Workbench	China (Sha	~	Q Search		Expenses	Tickets	ICP	Enter
← Public Instance		IoT Platform / De	evices / Devices	/ Device Details						
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Rules	~	Node Type	Devic	DeviceSecret		Сору			Authe	enticatic
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Resource Allocation	~	Created At			MODES re-certificate-per-device and unique-certif	icate-per-product m	odes		.ast C	Online
Link Visual	~	Current Status	Offlir					Close	Device eport	e local l ting
Documentation and To	ols	More Device Inf	ormation							
		SDK Language	-		Version .				Modu	ile Mani



Search Clear Import Export Read Config. Monitor Remote Log Import Import
–(Å) ¹ 4G Ali IoT
OpenVPN Variable Type Port Device Variable Name
- ヴ Alarms Status
Tasks Authentication Mode Device Secret
DataServices Region China(Shanghai)
OModbus R ProductKey
OModbus T DeviceName BL10x
BACnet/IP DeviceSecret
Cloud Client Certificate File
WAQTT Clie Client Key File
WQTT Clie Upload Cycle(s) 30
Tol BA (S)
- O HUAWEI I
-QAWS IoT
G KingPigeon Modbus loT
- 🚱 Advanced Settings

(1) Double-click "Alibaba Cloud IoT" to enter configuration box. (2) Click the Enable button to enable Alibaba Cloud. Default: off. Gray: Disabled, Green: enabled. (3) Authentication mode: Choose whether to use a key connection or a certificate connection. The default is key connection. (4) Region: Select the Alibaba Cloud region, default is China (Shanghai). (5) IP: The IP address of Alibaba Cloud for the enterprise version, don't need to filled in for the public version. (6) ProductKey: The same as the ProductKey in the Alibaba Cloud device. (7) DeviceName: The same as the DeviceName in the Alibaba Cloud device. (8) DeviceSecret: The same as the DeviceSecret in the Alibaba Cloud device. (9) CA file: When enabling certificate connection, select the root certificate file to upload. (10) Client certificate file: When enabling certificate connection, select the client certificate file to upload. (11) Client key file: When enabling certificate connection, select the client key file to upload. (12) Upload cycle: The interval for regular data release, the default is 30S. (13) Select data point upload: select the data point to be uploaded in the box on the right side of the configuration box, the default is blank means all upload. (14) Click "OK" to confirm (15) Click "Write Configuration", and Alibaba Cloud will not be enabled until the gateway device restarts. Re-open the configuration software to log in to the device, and you can see that the "Alibaba Cloud Online Status" indicator light is green on the basic information page, indicating that Alibaba Cloud is connected. The rightmost shows the online status of the slave device.



Clear Import Export Read	Config. Write C	Config. Monitor Remo	te Log			中文	?()HelpAbc
- ⁽ ∰ ² 4G = ⁽ ∰ ² VPN - ⁽ ⊕ ² OpenVPN							
一位Alarms	Name	Value	Cloud	Status	Port	Device Name	Status
	Name	BeiLai Gateway	MQTT Client		СОМ1	M140T	•
	Time	17:30:33 08/29/2022	MQTT Client II	•	LAN	S475	•
Pass Through	Model	BL103Pro	Ali IoT	•	-		
	Version	V1.1.3	HUAWEI IoT	•			
	4G Module	EC200SCNAAR01A09M16	AWS IoT	•			
- Modbus TCP Server	IMEI	868618052294261	KingPigeon IoT	•			
- 🕀 BACnet/IP	Signal Strength	20 (Normal:14-31)	KingPigeon Modbus IoT	۲	7		
└─�OPC UA	operator	NULL					
E-OCloud	SIM ICCID	NULL					
- MQTT Client	SIM Status	Failed					
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→ KingPigeon IoT							
and the second second second second							
└─� KingPigeon Modbus IoT							

5.5.10 View and Send Command in Alibaba Cloud

Add datapoint to Alibaba Cloud as below picture. Make sure datapoint mark is the same as MQTT flag in configuration software. For example, MQTT flag of datapoint VW8 of PLC S7-200SMART is VW8 in configuration software, then set VW8 as datapoint mark in Ali Cloud. Function name and variable name can be different.

Search Cle	-	Export Re	ad Config.	Write Config.	() Monitor	() Remote	Log						中文		About
	Pro			able Name	Address Typ		dress	Value	Unit	Data type		ribale Key		ddress	Ratio
Ė-∞cc	DM1		Q0.0	Q		0				bool	Q0.0		31(M.000		none
0-6	∂FX3U		Q0.1	Q		0.1				bool	Q0.1		32(M.000		none
	DM2		Q0.2	Q		0.2				bool	Q0.2		33(M.000		none
THE P	€S7-200		Q0.3	Q		0.3				bool	Q0.3 Q0.4		34(M.000 35(M.000		none
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			VW0	vw		0				uint16	VW0		13(M.400		1
	DVP-12SA2		VW2	VW		2				uint16	VW2		14(M.400		1
	N		VW4	vw		4				uint16	VW4	1	15(M.400		1
4-6	357-200SMAR	г	VW6	vw		6				uint16	VW6	/	16(M.400	017)	1
6	CP1L-EL		VW8	vw		8				uint16	VW8		17(M.400	018)	1
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ules	~	Default Module						
laintenance	~	+Add Module	Feature Type	Feature Name(all)	Identifier 1	Data Type	Data Definition	Actions
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ink Analytics 🖾	<		Properties	VW6 Custom	VW6	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
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Data received in Alibaba Cloud is as below:

C-J Alibaba Clou	Ud 🛱 Workbench C	hina (Shanghai) 😪		Q Searc	h	ses Tickets ICP En	terprise Support App 🔄	0 7 @ EN
Public Instance	IoT Platform / Devices	/ Devices / Device Details						
Products		niyao Inline 0x-密明 View NeEkKXWV Copy		Г	DeviceSecret View	1		
Devices Groups	Device Information	Topic List TSL Data	Device Shadow Manage Fi	les Device Log Onli	ne Debug Groups Task	-		
Jobs CA Certificate	Status Events Enter a module name	Q. Enter a property name of	or identifier Q				Real-time Refresh	□ :::
ules	V Default Module	Property identifier	Property Name	Data Type	Update Time	Updated Value	Expected Value	Actions
aintenance	V J	D0	D0	int	Aug 12, 2021, 20:05:18.78	30	2	View Data
	~ ~	D1	D1	int	Aug 12, 2021, 20:05:18.78	0	В	View Data
nk Analytics 🖸		D2	D2	int	Aug 12, 2021, 20:05:18.78	0	Ť.	View Data
ocumentation and Tools		D3	D3	int	Aug 12, 2021, 20:05:18.78	0	×	View Data
ocumentation and roots		D4	D4	int	Aug 12, 2021, 20:05:18.78	0	×	View Data
		D5	D5	int	Aug 12, 2021, 20:05:18.78	0	8	View Data
		D6	D6	int	Aug 12, 2021, 20:05:18.78	0		View Data
		D7	D7	int	Aug 12, 2021, 20:05:18.78	10	÷	View Data



Public Instance	D7	D7	int.	Aug 12, 2021, 20:07:49.676	10		Data
ces ^	Q0	Q0	bool	Aug 12, 2021, 20:07:49.676	1 (开)	1(开)	View Data
roducts	Q1	Q1	bool	Aug 12, 2021, 20:07:49.676	0 (笑)	¥	View Data
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roups	Q3	Q3	bool	Aug 12, 2021, 20:07:49.676	0 (关)	*	View Data
bs	Q4	Q4	bool	Aug 12, 2021, 20:07:49:676	0 (96)	i.	View Data
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enance v	Q6	Qő	bool	Aug 12, 2021, 20:07:49.676	0庆)	ę	View Data
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/isual 🗸	VW2	VW2	int	Aug 12, 2021, 20:07:49.676	0		View Data
mentation and Tools	VW4	VW4	int	Aug 12, 2021, 20:07:49:676	0		View Data
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	VW6	VW6	int	Aug 12, 2021, 20:07:49.676			View Data
	VW8	VW8	int	Aug 12, 2021, 20:07:49.676	8	-	View Data
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Sending command from Alibaba Cloud

Note: Currently Alibaba shadow function is not supported. Need to send command from online debugging



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5.5.11 HUAWEI Cloud Configuration

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BeiLai Industrial Gatewa Ch Clear Import Exp Ch	y www.BLiiot.com V1.1.3.8 ort Read Config. Write Config Enable Authentication Mode IP/Domain Port Device ID Device Key CA File Client Certificate File Client Key File Server ID Upload Cycle(s) Starts	Monitor Remote	VAUH	Variable Type Collection Point Collection Point	LAN	S475 S475	中文 Variab temp humidity	le Name
BeiLai Industrial Gatewa Ch Clear Import Exp Ch	y www.BLiiot.com V1.1.3.8 ort Read Config. Write Config Enable Authentication Mode IP/Domain Port Device ID Device Key CA File Client Certificate File Client Key File Server ID Upload Cycle(s) Starts	Monitor Remote	VAUH	Variable Type Collection Point Collection Point	LAN	S475 S475	中文 Variab temp humidity power	le Name
BeiLai Industrial Gatewa Ch Clear Import Exp Ch	y www.BLiiot.com V1.1.3.8 ort Read Config. Write Config Enable Authentication Mode IP/Domain Port Device ID Device Rey CA File Client Certificate File Client Key File Server ID Server ID M144 Data Retransmission	Monitor Remote	VAUH	Variable Type Collection Point Collection Point	LAN	S475 S475	中文 Variab temp humidity power	le Name

(1) Double-click "HUAWEI CLOUD IoT" to enter configuration box. (2) Click the Enable button to enable HUAWEI CLOUD. Default: off. Gray: Disabled, Green: Enabled. (3) Authentication mode: Choose whether to use a key connection or a certificate connection. Default is key connection. (4) IP/domain: Connect to the address of HUAWEI CLOUD, enter the console, click Overview, and the platform access address of the device access service console, you can view the server address. (5) Port: 1883 by default, 1883 for key connection, and 8883 for certificate connection. (6) Device ID: Set the same as the device ID on HUAWEI CLOUD. (7) Device key: Set the same key as the key on HUAWEI CLOUD, and enter the key when creating a device. (8) CA file: When enabling certificate connection, select the root certificate file to upload. (9) Client certificate file: When enabling certificate connection, select the client certificate file to upload. (10) Client key file: When enabling certificate



connection, select the client key file upload. (11) Server ID: Set the same as the service ID on HUAWEI CLOUD, the service ID set when creating the product. One service ID or multiple service IDs can be set. This example introduces multiple service ID applications, adding "M140T" and "S475" service IDs. (12) Upload cycle: The interval for regular data release, the default is 30S. (13) Data retransmission: whether to enable data retransmission, click the button to enable. Gray: disabled, Green: enabled. (14) Select data point upload: select the data point to be uploaded in the box to the right of the configuration box, the default is blank means all upload. In this example, the service ID "M140T" selects the data point of M140T to upload, the service ID item selects "M140T", right-clicks the mouse in the right box, the data point box pops up, and selects the data point of "M140T", for example: click the data point of M140T DO1, click and hold the left mouse button, move the mouse down to the data point to be uploaded, click "OK", and the data point you selected will be displayed in the box. Select the service ID "S475", right-click in the box, the data point box will pop up, select the data point, and click "OK".

(15) Click "OK" to confirm the configuration of HUAWEI CLOUD. (16) Click "Write Configuration", HUAWEI CLOUD will be enabled after the gateway device restarts. Re-open the configuration software to log in to the device. On the basic information page, you can see that the "HUAWEI CLOUD online status" indicator light is green, indicating that HUAWEI CLOUD is connected. The rightmost shows the online status of the slave device.

Search		port Rea	d Config.	Write Co	nfig. Moni	itor Remote	E Log				中文	(?) Help	() About
	V4G ©VPN ©VPN Salarms Tasks DataServices OPass Through OModbus RTU=: OModbus TCP Se OBACnet/IP OPC UA Cloud OMQTT Client II		A Name Time Model Version 4G Model IMEL Signal S operato SIM ICC SIM Sta	dule itrength ir	Va BeiLai Gateway 18:22:12 08/29/ BL103Pro V1.1.3 EC2005CNAAR 6666180522942 21 (Normal:14- NULL NULL Failed	/2022 01A09M16 261	Cloud MQTT Client II Ali IoT HUAWEI IoT AWS IoT KingPigeon IoT KingPigeon Modbus Io	Status	Port COM1 LAN	M140T \$475	Device Name		Status
-6	Ali IoT HUAWEI IoT OHUAWEI IoT OKingPigeon IoT OKingPigeon IoT OKingPigeon Mo Advanced Settings		·				Refi	resh					

5.5.12 View and Send Command in HUAWEI Cloud

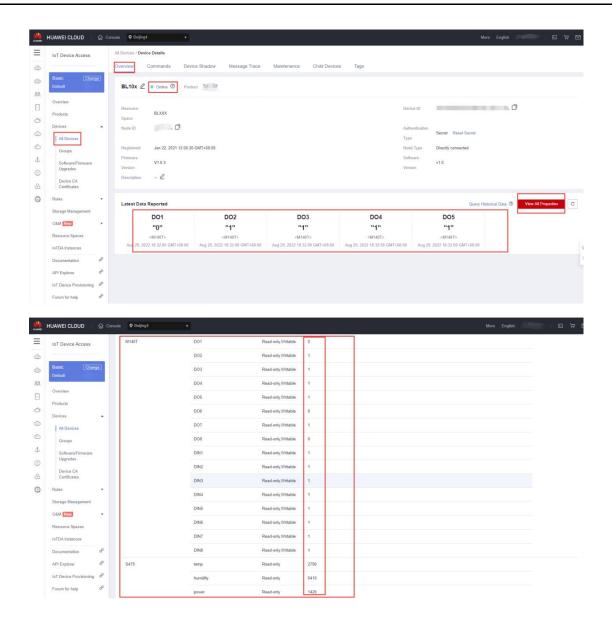
HUAWEI CLOUI) G Con	ote Q Bsijing4	•						More English		i 🖸 jä
IoT Device Acc	ess	Model Definition	Online Debugging	Topic Ma	inagement						
Basic	Change	Add Service	Import from Library	Import from	Local Import from Excel				Learn About F	Product Models	Export
		Service List	⊕ C	Service	e ID M140T Service Type M140T	Description			Modif	y Service D	slete Service
Overview											
Products		M140T		Add P	Property Batch Deletion						
Devices	*	S475			Property Name	Data Type	Access Mode	Description	Operati	ion	
Rules	-				D01	Integer	Readable.Writable		Copy	Edit Delete	
Storage Manager	ment	.т			D02	Integer	Readable,Writable		Copy	Edit Delete	
O&M New					DO3	Integer	Readable, Writable		Copy	Edit Delete	
					D04	Integer	Readable,Writable		Сору	Edit Delete	
Resource Space					DO5	Integer	Readable,Writable		Copy	Edit Delete	
IoTDA Instances					DO6	Integer	Readable,Writable		Сору	Edit Delete	
Documentation	d ⁰				D07	Integer	Readable, Writable		Copy	Edit Delete	
API Explorer	°0				D08	Integer	Readable,Writable		Сору	Edit Delete	
IoT Device Provis	sioning d ^o				DIN1	Integer	Readable,Writable		Copy	Edit Delete	
Forum for help	_o o				DIN2	Integer	Readable,Writable		Copy	Edit Delete	
					Total Records: 16 < 1 2	> Command Parameters	Response Pa	rameters	Operation		
				M140T7	745	D01.D02.D03.D04.D04.D0			Copy Edit D		

The property name is the variable label identifier on the configuration software

earch Clear Import Export Re	ad Config. Write C		mote Log				中文 He	
🗄 🖧 BL103Pro	^ Variable Name	Address Type	Address	Value	Unit Data type		Map Address	Ratio
E-@COM1	DO1	01 Coil Status(0x)	0		bool	DO1	0(M.000001)	none
L	DO2	01 Coil Status(0x)	1		bool	DO2	1(M.000002)	none
	DO3	01 Coil Status(0x)	2		bool	DO3	2(M.000003)	none
G\$475	DO4	01 Coil Status(0x)	3		bool	DO4	3(M.000004)	none
	DO5	01 Coil Status(0x)	4		bool	DO5	4(M.000005)	none
🖾 WAN	DO6	01 Coil Status(0x)	5		bool	DO6	5(M.000006)	none
—(` Å)'4G	D07	01 Coil Status(0x)	6		bool	D07	6(M.000007)	none
- VPN	DO8	01 Coil Status(0x)	7		bool	DO8	7(M.000008)	none
└── � OpenVPN	DIN1	02 Input Status(1x)	0		bool	DIN1	8(M.000009)	none
— č Alarms	DIN2	02 Input Status(1x)	1		bool	DIN2	9(M.000010)	none
	DIN3	02 Input Status(1x)	2		bool	DIN3	10(M.000011)	none
	DIN4	02 Input Status(1x)	3		bool	DIN4	11(M.000012)	none
DataServices	DIN5	02 Input Status(1x)	4		bool	DIN5	12(M.000013)	none
Pass Through	DIN6	02 Input Status(1x)	5		bool	DIN6	13(M.000014)	none
—	DIN7	02 Input Status(1x)	6		bool	DIN7	14(M.000015)	none
- Modbus TCP Server	DIN8	02 Input Status(1x)	7		bool	DIN8	15(M.000016)	none
- 🕀 BACnet/IP								
OPC UA								
E තCloud								
TT								
- MQTT Client								
- @ MQTT Client II								

Data received in HUAWEI Cloud:





Send command from HUAWEI Cloud

Add command to be sent



IoT Device A	ccess	Model Definition	Online Debugging	Topic Management			
Basic	Change	Add Service	Import from Library	Import from Local Import from	m Excel		Learn About Product Models Expor
Default		Service List	⊕ C	Service ID M140T Service Ty	vpe M140T Description		Modify Service Delete Service
Products		M140T		Add Property Batch I	Deletion		
Devices		S475		Property Name	Data Type	Access Mode Description	Operation
Rules				D01	Integer	Readable, Writable	Copy Edit Delete
Storage Mana	nement	Τ.		DO2	Integer	Readable,Writable	Copy Edit Delete
O&M New	,			DO3	Integer	Readable, Writable	Copy Edit Delete
				D04	Integer	Readable,Writable	Copy Edit Delete
Resource Spa	ces			D05	Integer	Readable, Writable	Copy Edit Delete
IoTDA Instance	es			DO6	Integer	Readable, Writable	Copy Edit Delete
Documentation	n d			D07	Integer	Readable,Writable	Copy Edit Delete
API Explorer	ď	ε		D08	Integer	Readable, Writable	Copy Edit Delete
IoT Device Pro	visioning			DIN1	Integer	Readable, Writable	Copy Edit Delete
Forum for help	ď			DIN2	Integer	Readable,Writable	Copy Edit Delete
				10 Total Records: 16 Add Command Command Name	Command Parameters	Response Parameters	Operation
				M140T下发	DO1.DO2.DO3.DO4.DO4.DO5		Copy Edit Delete

Command to send data

Take the DO2 of M140T as an example

	HUAWEI CLOUD 👘 🎧	Consola 🔍 Boijing4 🔹		
■ @	IoT Device Access	All Devices / Device Details Overview Commands Device	Shadow Message Trace Maintenance Child Devices Tags	
@ 	Basic Change Default	If the product that the device belongs t command delivery.	Deliver Command	× es support synchronous command delivery, and NB-IoT devices support asynchronous
0	Overview Products Devices	Synchronous Command Delly Note: Historical record goery is not availab	For synchronously delivered command, device should send response within 20 seconds after the command is sent. Otherwise, the status of this commands will be set as "Timed Our. Learn more	Deliver Command
() () () () () () () () () () () () () (All Devices Groups Software/Firmware Upgrades	Asynchronous Command Dei Queued Commands Historical C	Command M140T M140T F2 O Parameter type: int D02 0	Delver Command
0 & 0	Device CA Certificates Rules	Status 🖓 Command Na	D03 Parameter type let D04 Parameter type let D04 Parameter type let D04 Parameter type let	Insee Q Advanced Search V C by Platform Delivered
	Storage Management O&M Now - Resource Spaces		D05 Parameter type: int D06 Parameter type: int	
	IoTDA Instances		D07 Parameter type: Int D08 Parameter type: Int	
	API Explorer d ^p IoT Device Provisioning d ^p Forum for help d ^p		C OK	Cancel

Check whether the DO2 data has changed in the device shadow, from the original "1" to "0".



HUAWEI CLOUD	Console • Beijing4	•			ore English	
IoT Device Access	M140T	D01	Read-only,Writable	0		
		D02	Read-only,Writable	0		
Basic Change Default		DO3	Read-only,Writable	1		
		DO4	Read-only,Writable	1		
Overview		DO5	Read-only, Writable	i.		
Products		DOG	Read-only.Writable	0		
Devices	*	D07	Read-only,Writable	1		
All Devices		DOS		0		
Groups			Read-only,Writable			
Software/Firmware Upgrades		DIN1	Read-only,Writable	1		
Device CA		DIN2	Read-only,Writable	1		
Certificates		DIN3	Read-only.Writable	5		
Rules		DIN4	Read-only,Writable	1		
Storage Management		DIN5	Read-only,Writable	1:		
O&M Now Resource Spaces	*	DING	Read-only,Writable	ř.		
IoTDA Instances		DIN7	Read-only.Writable	i l		
Documentation	8	DINS	Read-only.Writable	1		
API Explorer	d ⁰ \$475	temp	Read-only	2790		
IoT Device Provisioning	d ^o	humidity	Read-only	6400		
Forum for help	æ	power	Read-only	1419		

5.5.13 AWS Cloud Configuration

AWS supports publishing multiple topics. Configuration is the same as that of configuring multiple service ID of HUAWEI Cloud. Below example is configuring single topic with all datapoints to be published.

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.8	σx
	(j)
Search Clear Import Export Read Config. Write Config. Monitor Remote Log 中文 Help	About
- (Å) 4G	
AWS Io1	
- Open/RNI Cable	
Variable Type Port Device Variable Name	Status
- To Tasks	•
P/Domain -ats.iot.us-east-1.amazonaws.com	•
OPass Throu Port 8883	
→ Modbus R Thing	
← Q Modbus T Client ID	
CA File AmazonRootCA1.pem	
OPC UA Client Certificate File -certificate.pem.crt	
Client Key File private.pem.key	
→ MQTT Clie Publish Topic iot/topic ✓ Add Delete	
Upload Cycle(s) 30	
→ MingPigeon IoT	
- 🖉 KingPigeon Modbus IoT	
(3) Advanced Settings	

(1) Double-click "Amazon IoT" to enter configuration box. (2) Click the Enable button to enable Amazon Cloud. Default: off. Gray: disabled Green: enabled. (3) IP/domain: Fill in the terminal node, enter the console, and click "Interaction" of "Thing" to view. (4) Port: 8883. (5) Thing: Fill in the ARN, and click "Details" of "Thing" to view the ARN. (6) Client ID: fill in the account ID and view it in the user information. (7) CA file: Select the root certificate file to upload. (8) Client certificate file: Select the client certificate file to upload. (9) Client key file: Select the client key file to upload. (10) Publish topic: the topic created when creating the rule, the topic name used by MQTT to publish the message, click "Add" to fill in the publishing topic name. You can fill in multiple publishing topics, select a publishing topic, and click "Delete" to delete the selected topic. For example: the topic viewed in the

"rule" of "action" is "iot/topic", so fill in"iot/topic".

```
Rule query statement
The source of the messages you want to process with this rule.
SELECT * FROM 'iot/topic'
```

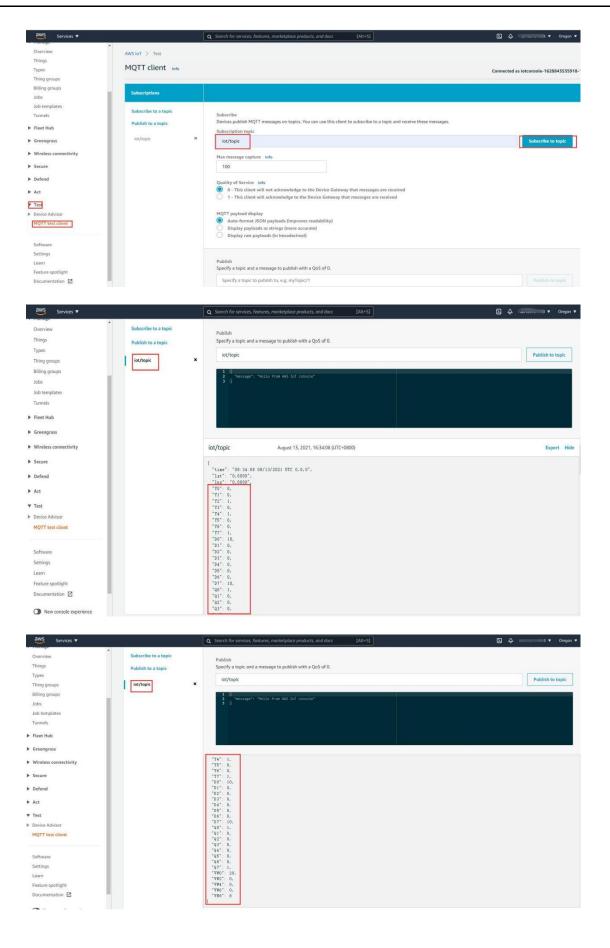
(11) Upload cycle: The interval for regular data release, the default is 30S. (12) Select data point upload: select the data point to be uploaded in the box on the right side of the configuration box, the default is blank means all upload. (13) Click "OK" to confirm the configuration of Amazon Cloud. (14) Click "Write Configuration", and Amazon Cloud will be enabled after the gateway device restarts. Re-open the configuration software to log in to the device, and on the basic information page, you can see that the "Amazon Cloud Online Status" indicator light is green, indicating that the Amazon cloud is connected. The rightmost shows the online status of the slave device.

Search Clear Import Export Reac	d Config. Write (Config. Monitor Remo	te Log			P 中文	? Help	() Abou
– ⁽ ∰ ¹ 4G ⊡- ⁽ ∰ VPN – ⊕ OpenVPN			10		1			
— 潢 Alarms	Name	Value BeiLai Gateway	Cloud MQTT Client	Status	Port COM1	Device Name M140T	_	Status
Tasks	Time	18:51:15 08/29/2022	MQTT Client II	•	LAN	\$475		-
DataServices	Model	BL103Pro	Ali IoT	•	LAIN	3473		-
- 🕀 Pass Through	Version	V1.1.3	HUAWEI IoT					
—	4G Module	EC200SCNAAR01A09M16	AWS IOT					
- 🕀 Modbus TCP Server	IMEI	868618052294261	KingPigeon IoT					
	Signal Strength	19 (Normal:14-31)	KingPigeon Modbus IoT	•				
- OPC UA	operator	NULL						
E & Cloud	SIM ICCID	NULL						
Client	SIM Status	Failed						
- MQTT Client II								
- @Ali IoT								
			Refresh					
- O AWS IOT								
—⊗KingPigeon IoT								
└─� KingPigeon Modbus IoT								
Advanced Settings								

5.5.14 View and Send Command in AWS Cloud

Login to AWS, click Act, click Test and select subscription topic "iot/topic" to view messages published by BL110 gateway





5.5.15 King Pigeon Cloud via Modbus

Clear Import	Export Read Config.	Write Config. Monitor Remo	te Log			● ●●	? (Help Ab
_('A') 4G	^					2000 LEAS	
C-WWVPN	KingPige	eon Modbus IoT					
— 賞 Alarms			Cloud	Status	Port	Device Name	Statu
	You can change the server ad	dress to log in to other cloud platforms.	MQTT Client		COM1	M140T	•
De DataServices	IP/Domain	modbus.dtuip.com	MQTT Client II	•	LAN	S475	•
			Ali loT				
- Modbus R1	Port	6651	HUAWEI IoT	•	_		
	Modbus Station	1	AWS IoT	•			
- 🕀 Modbus T(Login Message		KingPigeon IoT	۲	_		
—⊕ BACnet/IP	Login ACK Message		KingPigeon Modbus IoT	•	_		
GOPC UA	Heartbeat Message	Q					
Cloud	Heartbeat ACK Message	A					
- @ MQTT Clier	Heartbeat Interval(s)	60					
- @ MQTT Clier							
- 🖓 Ali loT							
- HUAWEI IO		OK Cancel	Refresh				
- @ AWS IoT			Kerresn				
- @KingPigeon	InT						
KingPigeon	Modbus IoT						

- (1) Double click KingPigeon Modbus IoT to enter configuration window
- (2) Click Enable to enable(green) King Pigeon cloud via Modbus. Default is disabled (Gray)
- (3) Server IP/Domain Name: modbus.dtuip.com. (Automatic filling in default)
- (4) Server Port: 6651 (Automatic filling in default)
- (5) Modbus Station: Set Gateway BL110 Modbus communication address
- (6) Login Message: Input device serial number issued by King Pigeon.
- (7) Login ACK Message: Not necessary for King Pigeon cloud connection
- (8) Heartbeat Message: Q (Automatic filling in default)
- (9) Heartbeat ACK Message: A(Automatic filling in default)
- (10) Heartbeat Interval: Set cycle time of sending Heartbeat message. Default is 60s
- (11) Click OK to confirm the configuration.
- (12) Click Write Configuration. Gateway will restart and King Pigeon Cloud via Modbus is enabled successfully. Open configuration software and login device. King Pigeon cloud via Modbus connection status can be viewed from basic information. Green indicates device is connected King Pigeon cloud via Modbus. Slave devices connection status can be viewed from the right box.

5.5.16 View Data in King Pigeon Cloud via Modbus

Configure datapoint in cloud like below picture. First create datapoint, then enter connection setting and put datapoint Modbus ID, function code, address, data format, byte sequence and collecting cycle. Modbus address in King Pigeon cloud and configuration software is deviated by 1. For example, datapoint VW0 of PLC S7-200SMART in configuration software is 8, then put 9 in cloud. Sensor names in cloud can be different from those in configuration software



← Device List											
								• •			
	D4	Numerical Type	-	4 (decimal places)	-	^	18		elete K		
	D5	Numerical Type	-	4 (decimal places)		1	18		elete		
	D6	Numerical Type	-	4 (decimal places)		个	18	8	elete		
	D7	Numerical Type	-	4 (decimal places)	-	\uparrow	18	8	elete 💦		
	QO	Switch type (open	able -	0 (decimal places)		Unit	18	1	alete		
	Q1	Switch type (open	able 👻	0 (decimal places)		Unit	18	1	alete 💦		
	Q2	Switch type (open	able -	0 (decimal places)	-	Unit	18	-	elete 💦		
	Q3	Switch type (oper-	able -	0 (decimal places)	-	Unit	18		elete N		
	Q4	Switch type (open			-	Unit	18		slete K		
	Q5	Switch type (open					18		alete		
				0 (decimal places)		Unit					
	Q6	Switch type (open		0 (decimal places)	~	Unit	18		alete		
	Q7	Switch type (open	able 👻	0 (decimal places)	~	Unit	18		elete		
	VW0	Numerical Type	~ .	4 (decimal places)	-	^	18	1	elete 💦		
	VW2	Numerical Type	· ·	4 (decimal places)	-	\uparrow	18	8	elete 💦		
	VW4	Numerical Type	-	4 (decimal places)	-	\uparrow	18	1	siete 💦		
	VW6	Numerical Type	-	4 (decimal places)	-	^	18	8	elete		
	VW8	Numerical Type	-	(decimal places)	-	^	18		alete		
								•			
Position Monitoring Cent	22.54632,113.982914		9							c	onsole D
Link Protocol	← Device List		Read write in	struction settings	_						- 🛛 ×
TCP Protocol			in the fit	- 90							
HTTP Protocol		BL10x-	77	Q0 1		01Read and write	- 9	bit			10
	5	< ⊂	78	01 1		01Read and write	- 10	bit			10
MB RTU	China China	i)									
MB TCP		Serial Number C6AL	79	Q2 1		01Read and write	- 11	tol.			10
MQTT Protocol	All Senso	rs	80	Q3 1		01Read and write	- 12	bit			10
UDP Protocol		_									
TCP JSON Protocol			81	04		01Read and write	- 13	bil			10
CTCoAP Protocol			82	Q5 1		01Read and write	- 14	bit			10
NB-IoT Protocol											
CoAP Protocol		Ŧ	83	Q6 1		01Read and write	- 15	bit			10
			84	Q7 1		01Read and write	- 16	bit			10
	Re	ad write instruction settings	85	VW0. 1	-	03Read and write	- 9	460-480	n Signed N 🔝		10
			05	110.		CONCESS BILL HILLE		TOT OBSID	rogies n -		10
		0	86	VW2 1		03Read and write	- 11	16Positio	n Signed N 🔝		10
		il	87	VW4 1		03Read and write	- 13	16Positio	n Signed N 👻		10
		۲									_
		魁信0/1/-4	88	VW6 1		03Read and write	- 15	16Positio	n Signed N 👻		10
	Tran a	nly be a number Write In	89	VW8 1		03Read and write	- 17	16Positio	n Signed N 👻		10
) 🚊 🕠		t 🖌		:,I ()		:1			:1		- 0 ×
	ort Export Read	Config. Write Co Variable Name	-		te Lo Address	-	Unit	Data tuno	Varibale Key		Ip About Ratio
BL110Pro	4.00	Q0.0	Q	aress Type 0		value	Unit	Data type bool	Q0.0	Map Address 31(M.000032)	none
- COM1		Q0.1	Q	0.				bool	Q0.1	32(M.000033)	none
G −⊕ FX3U		Q0.2	Q	0.				bool	Q0.2	33(M.000034)	none
I COM2		Q0.3	Q	0.				bool	Q0.3	34(M.000035)	none
_⊕\$7-200		Q0.4	Q	0.				bool	Q0.4	35(M.000036)	none
- ШСОМЗ		Q0.5	Q	0.				bool	Q0.5	36(M.000037)	none
GCP1L-L		Q0.6	Q	0.				bool	Q0.6	37(M.000038)	none
		Q0.7	Q	0.				bool	Q0.7	38(M.000039)	none
Contract of the second	42	VW0	vw	0				uint16	VW0	13(M.400014)	1
GDVP-12S	AZ	VW2	vw	2				uint16	VW2	14(M.400015)	1
		VW4	vw	4				uint16	VW4	15(M.400016)	1
🗇 S7-200SI	MART	VW6	vw	6				uint16	VW6	16(M.400017)	1
CP1L-EL	OFFICE OF	VW8	vw	8				uint16	VW8	17(M.400018)	1
⁽ ∰ 4G ∃- └Ლ VPN ⓒ OpenVPI	N										
1.	7										
— 岱 Alarms											
- Tacka											

Collected data value is as below:

Tasks



Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110

Device name /il		BL10x Serial Nun	ber Caran D				
All Equipment Alarm	Unline 20	V0 ID:1602303	Connected Updated 2021/08/13 17:13:06	OFF		AlmQ	RT C
✓ 默认组 至 ^c BL10x	0/4	UD:1602304	Connected Updated:2021/08/13 17:13:06	OFF		AlmQ	RT C
<u>Σ</u> ^{<} S265		Y2 ID:1602305	⊊ Connected			AimQ	RT C
E RTU5022	-	1 Y3	Updated 2021/08/13 17:13:06	OFF		AlmQ	RTC
 ✓ S282 ✓ BL 	1/14	0 Y4	Updated 2021/08/13 17:13:06				
BL10x	1/19	ID:1602307	Updaled:2021/08/13 17 13:06			AlmQ	RTC
D225-Ξ₩MQTT		V5 ID:1602308	Connected Updated 2021/08/13 17:13:06	OFF		AlmQ	RTC
5 BL10x-S7-200SMART		Y6 ID:1602309	Connected Updated 2021/08/13 17:13:06	OFF		AlmQ	RTC
E BL102-S7-200MQTT-1		V7 ID:1602310	Connected Updated:2021/08/13 17:13:06			AlmQ	RTO
E BL102-87-200MQTT-2		D0 ID:1602311	Connected Updated 2021/08/13 17:13:08	10.0000 🛧 🛩		AlmQ	RTO
<u>⊥</u> ^{<} 8275	-	D 1	- Connected	0.0000 🛧 🛩		AlmQ	RTO
S272 (modbus TCP) S272 (MQTT)	-	ID:1602312	Updated 2021/08/13 17:13:08	0.0000 10 -		Patrice	NI S
E BL(Modbus RTU)							
E BLMQTT							
E BLMOTT1							
Monitoring Center) <i>(C</i>) Enç	a state of
Device name /ID	Q BI	L10x- Serial Number	No. All Control of A		Console C		giisii 🖪 ©
All Equipment Alarm 🧧		02	⊊ Connected	0.0000 🛧 🛩	Almo	RT Curve	
✓ 默认组	0/4	D: 1602313	Updated:2021/08/13 17:14:43				
<u>∑</u> ^C BL10x		ID:1602314	Updated:2021/08/13 17:14:43	0.0000 🛧 🛩	AlmQ	RT Curve©	
<u>⊾</u> [€] 8265 <u>⊾</u> [€] RTU5022		ID:1602315	Updated:2021/08/13 17:14:43	0.0000 🛧 🛩	AlmO	RT Curve	Hist
👌 S282		D5 ID:1602316		0.0000 🛧 🛩	AlmQ	RT Curve®	Hist
V BL	1/14	D6 ID:1602317	Gennected Updated:2021/08/13 17:14:43	0.0000 🛧 🛩	AlmQ	RT Curve	Hist
BL10x () 」 「 D225-三変MDTT		D7 ID: 1602318	Gonnected Updated:2021/08/13 17:14:43	10.0000 🛧 🛩	AimQ	RT Curve©	; Hist
E BL10x-S7-2005MART		Q0 ID:1602319	Connected Updated:2021/08/13 17:14:41		AlmQ	RT Curve®	Hist
SE BL10x-MQTT SE BL102-87-200MQTT-1		Q1 ID:1602320	Connected Updated:2021/08/13-17:14:41	OFF	AlmQ	RT Curve	Hist
EL 102-57-200MQTT-2		1 02	- Connected	OFF	AlmQ	RT Curve	Hist
<u>∑</u> ^C 8275		D:1602321	Updated:2021/08/13 17:14:41				
5272 (modbus TCP)		ID:1602322	Updated:2021/08/13 17:14:41	OFF	AlmQ	RT Curve®	HIST
S272 (MGTT)							
<u>∑</u> [€] BLMGTT							
E BLMQTT1							
Monitoring Center					Console Q		n 6
Device name /ID	Q, BL1	10x- Serial Number			· · · · · · · · · · · · · · · · · · ·	5 45 - 55 - 5	0
ill Equipment Alarm 🚺 🛛	Unline 🛛	Q4	⊊ connected	OFF	Almo	RT Curve	
✓ 默认组	N 10	Q5	Updated 2021-08-13 17:16:16			RT Curve©	
<u>∑</u> ^{<} BL10x <u>∑</u> ^{<} S265	6	ID:1602324 Q6	Updated:2021-08-13 17:16:16	OFF			
2 RTU5022	J	ID:1602325	Updated 2021-08-13 17:16:16	OFF	AlmQ	RT Curve©	Hist Qu
👌 S282	1	Q7 ID:1602326	G connected Updated 2021-08-13 17:16:16		AlmQ	RT Curve	Hist Qu
BL	1/14	VW0 ID:1602327	Generated Updated 2021-08-13 17:16:08	20.0000 🛧 🛩	AimQ	RT Curve®	Hist Qu
SE BL10x	1	VW2 ID:1602328	G connected Updated:2021-08-13 17:16:08	0.0000 🛧 🛩	AlmQ	RT Curve	Hist Qu
E BL10x-S7-200SMART	1	VW4		0.0000 🛧 🛩	AlmQ	RT Curve®	Hist Qu
E BL 10x-MQTT	0	VW6	♀ connected	0.0000 🛧 🛩	AlmQ	RT Curve®	Hist Qu
E ^C BL102-S7-200MQTT-1 E ^C BL102-S7-200MQTT-2	6	VW8	Updated 2021-08-13 17:16:08	8.0000 🛧 🛩		RT Curve©	
<u>∑^C</u> 5275	8	ID:1602331	Updated 2021-08-13 17:16:08	0.0000 m T	AmQ	In curved	une QU
S272 (mothus TCP)							
S272 (MQTT)							
EC BL(Modbus RTU)							
Set BL(Modbus RTU) Set BLMQTT							

Send command from cloud



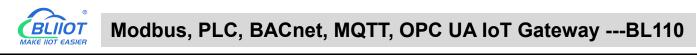
2011 Monitoring Center						
Device name /ID	2, ві	.10x-100 Serial Numbe	r. (1877-1887-1996)			
All Equipment Alarm	-	Q4 ID:1602323	Gennected			
✓ 款认组 0 ≦ BL10x	Va	Q5 ID:1602324	♀ connected Updated 2021-08-13 17:19:49			
<u>1</u> \$265		Q6 1D: 1602325	connected Updated.2021-08-13 17:19:49			
▲ RTU5622 ★ \$282		Q7 ID:1602326	♀ connected Updated 2021-06-13 17:19:49			
✓ BL 1/		VW0 ID:1602327	connected Updated:2021-08-13 17:19:40	20	0.0000 🛧 🕶	
SL10x.3		VW2 ID: 1602328	Connected Updated 2021-08-13 17:19:40	0.	0000 🛧 🛩	
5 BL104-S7-2005MART		VW4 ID 1602329	connected Updated:2021-08-13 17:19:40	Data Dissemination	- 🛛 ×	
55 BL10x-MOTT 55 BL102-57-200MQTT-1		VW6 ID:1602330	🖵 connected Updated:2021-08-13 17:19:40			
5 BL102-S7-200MQTT-2		VW8 ID:1602331	Q connected Updated:2021-06-13 17:19:40			
∑ ^C 5275 ∑ ^C 5272 (modbus TCP)				Cor	firm Cancel	
S272 (MQTT)						
EL(Modbus RTU)						
E BLMQTT1						

Device name /ID	Q B	L10x- Serial Numb	er Chinasconstantis	
		Q4 ID:1602323	connected Updated:2021-08-13 17:21:35	OFF
默认组 6 BL10x	0/4	Q5 ID:1602324	早 connected Updated:2021-08-13 17:21:35	OFF
\$265		Q6 ID:1602325	connected Updated:2021-08-13 17:21:35	OFF
S282		Q7 ID:1602326	connected Updated:2021-08-13 17:21:35	
BL	1/14	U:1602327	connected Updated:2021-08-13 17:21:36	10.0000 🛧 🛩
BL10x-		U:1602328	🖵 connected Updated:2021-08-13:17:21:36	0.0000 🛧 🕶
C BL10x-S7-200SMART		VW4 ID:1602329	Generated Updated:2021-08-13 17:21:36	0.0000 🛧 🛩
E BL10x-MQTT BL102-S7-200MQTT-1		U: 1602330	connected Updated 2021-08-13 17:21:36	0.0000 🛧 🛩
BL102-S7-200MQTT-2		VW8 ID:1602331	Connected Updated:2021-08-13 17:21:36	8.0000 🛧 🛩

5.5.17 King Pigeon Cloud via MQTT

-('A')4G		Kingl	vigeon IoT				
	Enable						
-@ot			Variable Type	Port	Device	Variable Name	
—							Statu
	IP/Domain	1883.dtuip.com					•
🗆 🖯 DataSe	Port	1883					•
—⊕ Pa	Client ID						
-@M(User Name	MQTT					
-@M	Password	MQTTPW					
— (\$) BA	Subscribe Topic	/+					
-Øot	Publish Topic						
Cloud	Upload Cycle(s)	30					
-@M(Data Retransmission						
-@M							
-@Ali							
-@H(OK Cancel	
- (\$) AV							

- (1) Double click King Pigeon IoT to enter configuration box
- (2) Click Enable to enable(green) King Pigeon cloud connection via MQTT. Default is disabled(gray)
- (3) Server IP/Domain Name: 1883.dtuip.com(Automatic filling in default)
- (4) Server Port: 1883 (Automatic filling in default)
- (5) Client ID: Input device serial number issued by King Pigeon
- (6) User Name: MQTT (Automatic filling in default)
- (7) Password: MQTTPW(Automatic filling in default)
- (8) Subscribe Topic: Input device serial number/+ issued by King Pigeon
- (9) Publish Topic: Input device serial number issued by King Pigeon.
- (10) Automatic Data Upload Cycle: Cycle time of uploading data. In default it's 30s
- (11)MQTT Data Retransmission: Click it to enable(green) offline data retransmission once network resumes.
- (12) Datapoint Uploading Selection: Select the datapoint to upload in the right box. In default it's blank with all datapoints to be uploaded
- (13) Click OK to confirm King Pigeon Cloud via MQTT configuration
- (14) Click Save Data. Gateway will restart and King Pigeon Cloud via MQTT is configured successfully. Open configuration software and login the device. King Pigeon Cloud connection status via MQTT can be viewed from basic information. Green indicates King Pigeon cloud via MQTT is connected. Slave device connection status can be viewed from the right box.



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								?
earch Clear Import Export Reac	Config. Write	Config. Monitor	Remote	Log			中文	Help Ab
-(Å)4G								
☐ ☐ OpenVPN								
一位 Alarms	Name	Value		Cloud	Status	Port	Device Name	Statu
	Name	BeiLai Gateway	N	AQTT Client		COM1	M140T	•
	Time	19:32:33 08/29/2022	N	/IQTT Client II	•	LAN	S475	•
	Model	BL103Pro	A	di loT		L		
- Pass Through	Version	V1.1.3	F	IUAWEI IoT	•			
—	4G Module	EC200SCNAAR01A09	9M16 A	WS IoT	•			
- Modbus TCP Server	IMEI	868618052294261	ĸ	lingPigeon IoT	•			
- 🕞 BACnet/IP	Signal Strength	19 (Normal:14-31)	ĸ	ingPigeon Modbus IoT				
OPC UA	operator	NULL						
	SIM ICCID	NULL						
- MQTT Client	SIM Status	Failed						
- MQTT Client II								
-⊕Ali loT								
				Refresh				
- @ AWS IoT				I	.)			
- KingPigeon IoT								
KingPigeon Modbus IoT								
Containing ingeoint modubus ion								

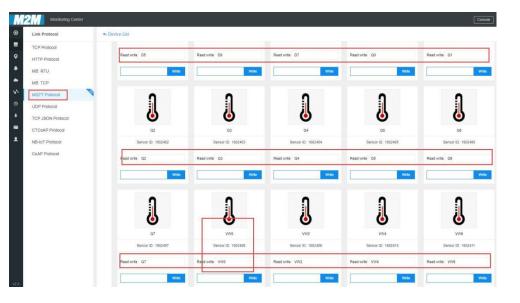
5.5.18 View Data in King Pigeon Cloud via MQTT

Create datapoint in cloud first. Set datapoint mark is the same as MQTT flag in configuration software. Below is example of some datapoint configuration. For example, MQTT flag of datapoint VW0 in configuration software is VW0, then set read-write mark VW0 in King Pigeon cloud

D4	Numerical Type	4 (decimal places)	-	\uparrow	18	J	Delete	7
D5	Numerical Type 👻	4 (decimal places)	~	^	18	1	Delete	N
D6	Numerical Type 👻	4 (decimal places)	-	^	18	1	Delete	~
D7	Numerical Type 👻	4 (decimal places)	-	^	18	1	Delete	~
QO	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	5
Q1	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	17
Q2	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	15
Q3	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	27
Q4	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	5
Q5	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	15
Q6	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	No.
Q7	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	15
VWQ	Numerical Type 👻	4 (decimal places)	-	个	18	1	Delete	~
VW2	Numerical Type 👻	4 (decimal places)		个	18	1	Delete	7
VW4	Numerical Type 👻	4 (decimal places)		1	18	1	Delete	~
VW6	Numerical Type 👻	4 (decimal places)	~	^	18	1	Delete	N
VW8	Numerical Type 🚽	4 (decimal places)		^	18	a	Delete	~



Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110



Search Clear Import Export F	Read Config. Write	Config. Monitor	Remote Log				中文 Hel	
🗄 👬 BL110Pro	Variable Nan	31		Value Unit	Data type		Map Address	Ratio
— ———————————————————————————————————	Q0.0	Q	0		bool	Q0.0	31(M.000032)	none
G G FX3U	Q0.1	Q	0.1		bool	Q0.1	32(M.000033)	none
	Q0.2	Q	0.2		bool	Q0.2	33(M.000034)	none
 □	Q0.3 Q0.4	Q	0.3		bool	Q0.3	34(M.000035) 35(M.000036)	none
	Q0.4	Q	0.4		bool	Q0.4	36(M.000037)	none
T	Q0.6	Q	0.5		bool	Q0.6	37(M.000038)	none
GCP1L-L	Q0.7	Q	0.7		bool	Q0.7	38(M.000039)	none
E COM4	ivwo	vw	0		uint16	VW0	13(M.400014)	1
DVP-12SA2	VW2	VW	2		uint16	VW2	14(M.400015)	1
	VW4	vw	4		uint16	VW4	15(M.400016)	1
S7-200SMART	VW6	vw	6		uint16	VW6	16(M.400017)	1
CP1L-EL	VW8	vw	8		uint16	VW8	17(M.400018)	1
G Tasks D DataServices								

Collected data value is as below:

Device name /ID	BL10x-MQTT Serial Nu	mber			B
All Equipment Alarm 🧧 Unline 🚺	DB5687 DBX0.0 ID:1586724	☐ Unconnected Updated.2021/08/12 15:21:03	OFF	AlmQ	RT Curve⊙ I
✓ 默认组 0. ≦ ^C BL10x	Y0 ID:1602384	Connected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve©
<u>5</u> 5265	¥1 ID:1602385	Connected Updated 2021/08/13 17:41:24	OFF	AlmQ	RT Curve®
RTU5022 \$282	¥2 ID:1602386	Connected Updated 2021/08/13 17:41:24		AlmQ	RT Curve⊙ H
BL 2/1	14 Y3 ID:1602387	Connected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve©
BL10x-3U00	¥4 ID:1602388	Connected Updated:2021/08/13 17:41:24		AlmQ	RT Curve®
BL10x-97-2005MART	¥5 ID:1602389	Gonnected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve®
BL10x-MQTT BL102-S7-200MQTT-1	¥6 ID:1602390	Gennected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve⊙ F
BL102-S7-200MQTT-2	¥7 ID:1602391	Gonnected Updated:2021/08/13 17:41:24		AlmQ	RT Curve E
S275 S272 (modbus TCP)	D0 ID:1602392	Connected Updated:2021/08/13 17 41 24	10.0000 🛧 🛩	AlmQ	RT Curve⊙ H
S272 (MQTT)					
BL(Modbus RTU)					
E BLMQTT					
E BLMQTT1					



Device name /ID Q	BL10x-MQTT Serial Nurr	ber. Carrowani Star		6
Equipment Alarm O Unline 19	D1	Connected Updated 2021/08/13 17:43:26	0.0000 🛧 🛩	AlmQ RT Curve© Hi
Rille 0/2	D2 1D:1602394		0.0000 🛧 🛩	A/mQ RT Curve⊙ Hi
\$ \$265	D3 ID.1602395	☐ Connected Updated:2021/08/13 17 43:26	0.0000 🛧 🛩	AlmQ RT Curve H
RTU5022 8282	D4 ID: 1602396	Connected Updated 2021/08/13 17.43.26	0.0000 🛧 🛩	AlmQ RT Curve® Hi
BL 2/14	D5 ID:1602397	Connected Updated:2021/08/13 17:43:26	0.0000 🛧 🛩	Alm⊉ RT Curve⊙ Hi
BL10x	D6 ID:1602398	Connected Updated:2021/08/13 17:43:26	0.0000 🛧 🛩	AlmQ RT Curve⊝ Hi
BL10x-S7-200SMART	D7 ID: 1602399	Gennected Updated 2021/08/13 17:43:26	10.0000 🛧 🛩	AlmQ RT Curve Hi
BL10x-MQTT	Q0 ID:1602400	早 Connected Updated:2021/08/13 17:43:26		AlmQ RT Curve⊙ H
8L102-S7-200MQTT-2	Q1 ID:1602401	Connected Updated 2021/08/13 17:43:26	OFF	AlmQ RT Curve Hi
 \$275 \$272 (modbus TCP) 	Q2 ID: 1602402	G Connected Updated 2021/08/13 17:43:26	OFF	AlmQ RT Curve Hi
\$272 (MQTT)				
EL(Modbus RTU)				
SIMOTT				

Device name /ID 🔍	BL10x-MQTT Serial Num	iber: Sillowould Pv		
All Equipment Alarm 0 Unline 19	Q3 ID:1602403	Geneeted Updated 2021/08/13 17:45:30	OFF	Air
✓ 就込道 0/1 - ≦ 8L10x	Q4 ID:1602404	Connected Updated 2021/08/13 17:45:30	OFF	Air
<u>\$</u> \$265	Q5 ID:1602405	Connected Updated:2021/08/13 17:45:30	OFF	Air
S282	06 ID:1602406	Gonnected Updated:2021/08/13 17:45:30	OFF	Air
BL 2/14	Q7 ID:1602407	Q Connected Updated:2021/08/13 17:45:30		Air
SL10x-ⅢIII D225-E=ISMOTT	U:1602408	Gennected Updated 2021/08/13 17:45:30	10.0000 🛧 🛩	Air
E BL10x-S7-200SMART	0 vw2 ID:1602409	Geneeted Updated 2021/08/13 17:45:30	0.0000 🛧 🛩	Air
EL10X-MQTT	VW4 ID:1602410	Connected Updated:2021/08/13 17:45:30	0.0000 🛧 🛩	Air
E 8L102-S7-200MQTT-2	U:1602411	Connected Updated 2021/08/13 17:45:30	0.0000 🛧 🛩	Air
5275 S272 (modbus TCP)	U:1602412	Connected Updated 2021/08/13 17:45:30	8.0000 🛧 🛩	Air
S272 (MOTT)				
E BL(Modbus RTU)				
E BLMQTT				

Send command from cloud, below is example of controlling FX3U datapoint Y6



AlmQ AlmQ AlmQ AlmQ AlmQ AlmQ
AlmQ AlmQ AlmQ
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AlmQ AlmQ AlmQ
AlmQ AlmQ AlmQ AlmQ
AlmQ AlmQ AlmQ AlmQ AlmQ

5.5.19 King Pigeon MQTT Data Format

The "KingPigeon" JSON data format of MQTT Client and MQTT Client II is the same as that of King Pigeon MQTT. The details are as follows

(1) Valid Load Data Format in device Publishing messages

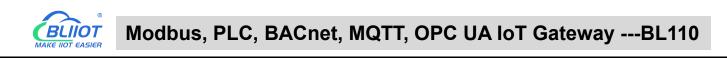
```
Publish Topic: Serial Number (Configured publish topic)
{
    "sensorDatas": [
    {
        //Boolean value
        "flag": "REG001", //Read-write identification mark
        "switcher": 0 //Data Type and Value
        },
        {
        //Numeric Type
    }
}
```



```
"flag": "REG005", //Read-Write identification mark
             "value": 3 //Data Type and Value
        }
         {
           //4G Module signal value
             "flag": " signal strength ", //Read and write identifiers, fixed and cannot
be modified
             "value": 28 //data type and value
           }
           //GPS positioning
           "flag": "GPS", //GPS logo
           "lat": "224.1377", //Latitude data
           "lng": "113.4791" //longitude data
           }
    1,
   "state":"alarm", //Alarm mark(Set Alarm Event in configuration software. Once
alarm is trigger, this mark will appear. It's not included in scheduled automatically
uploaded data)
   "state":"recovery", //Alarm recovery mark (Only appear when there's alarm
recovery. It's not included in scheduled automatically uploaded data)
   "gateway indentify": "Beilai" //Gateway name identifier, upload gateway name
    "time": "1622700769", //Time mark, it's time stamp of data uploading
    "addTime": "2021-06-03 06:12:49" //Time mark, it's time of device data uploading
    "retransmit":"enable" //Retransmission mark, MQTT historical data (Only appear
when there's historical data retransmission. It's not included in scheduled
automatically uploaded data)
  }
```

Note:

//Read-Wrtie Mark: character is "flag", followed by " MQTT identifier of data point", it's the MQTT mark set in configuration software when adding datapoint. It can be customized



Search	Clear	∲ Import	Export	Read	Config.	Write C	Config.	() Monito	r Rem		Log						小 中文	? Help	() Abou
ᆸ _쁐 BL	.103Pro			^		ble Name		Address T	1997 - Carlos	Add	lress	Value	Unit	Data ty	1245	Varibale Key	Map Add		Ratio
	⊡COM1				DO1			oil Status(0x						bool	DO1		0(M.000001		none
	LOM	140T			DO2		01 0	oil Status(0>	t)					bool	DO2		(M.000002		none
Ē	⊒)LAN							Variable	Proper	ties					DO3		2(M.000003		none
	LOGS	76												-	DO4		3(M.000004		none
		,, 5									_			-	DO5		4(M.000005		none
-	∃ WAN			V	ariab <mark>l</mark> e Nam	e	DO1		Var	ibale I	Key	DOI			DO6		5(M.000006		none
	Å ")4G			c	CT/DEC/HE	x	Decimal	~						-	DO7		5(M.000007		none
Þ	VPN				Address Typ	. 01/	Coil Statu	(0.)		Addr		0			DO8 DIN1		7(M.000008		none
	-00	penVPN			Address Typ		oli statu	s(UX) *		Addr	ress	U		_	DIN1		B(M.000009		none
-i	Alarm	s			Data typ	e	bool	~	Add	Num	ber	1			DIN2 DIN3		9(M.000010	e:	none
-6	Tasks				Read/Writ	e f	lead/Writ	e v		Ra	atio	none			DIN3			1000	none
]DataS				Map Addres		0			able L					DIN4		11(M.00001 12(M.00001		none
	-	iss Throug			Map Addres	55	0		vari	able u	Jhit				DING		13(M.00001		none
															DIN7		14(M.00001		none
		odbus RTl										Γ	ОК	Cancel	DIN8		15(M.00001		none
	-ØM	odbus TCF	Server												Dirto			0)	Ione
	-@B/	ACnet/IP																	
	600	PC UA																	
Ē	Cloud																		
- T	- MM	QTT Client																	
		QTT Client																	

//Data Type and Value:

- 1) Boolean data: character is "switcher", followed by "0" or "1"(0 represents open, 1 represents close)
- 2) Numeric Data: character is "value", followed by actual value
- 3) GPS positioning data: GPS latitude character is "lat", followed by "specific value" GPS longitude character is "lng" followed by "specific value"

//Alarm, Recover mark, character is "state", followed by "alarm" or "recovery"(alarm represents alarm data, recovery represents alarm recovery data)

//Gateway name identification: the character is "gateway_indentify", followed by "gateway name".

//Time mark: character is "time", followed by actually data uploading timestamp

//Time mark, character is "addtime", followed by "gateway time"

//Retransmission mark: character is "retransmit", followed by "enable"

Offline collected data will be temporarily saved in gateway device. Once network resmues, the data will be retransmitted. Use "retransmit" mark for historical data (MQTT Data Retransmission must be enabled in configuration software)

(2) Valid Load Data Format in device Subscribing messages

Subscribe Topic: Serial Number/+ (Subscribe topic set in configuration software) (King Pigeon cloud message publishing topic is "serial number/sensor ID", thus wildcard "/+" must be added for device Subscribing Topic so that cloud can publishing data for controlling)

```
"sensorDatas":
[
```

{

Modbus, PLC, BACnet, MQTT, OPC UA IoT Gateway ---BL110

```
"sensorsId": 211267, // cloud sensor ID
"switcher":1, //Data Type and Value
"flag":"REG001" //Read-Write Mark
}
{
    //Send Numerical
    "sensorsId": 160239, //Platform Sensor ID
    "value":"10", //data type and value
    "flag":"REG001" //Read and write identification
    }
],
"down":"down" //Cloud downlink message mark
}
```

Note:

//cloud sensor ID: character is "sensorsID", followed by ID (automatically generated by cloud. Not necessary if it's self-built cloud)

//Data Type and Value:

- Boolean Data: character is "switcher", followed by "0" or "1" (0 represents open, 1 represents close)
- 2) Numeric Data: character is "value", followed by "actual value"

//Read-Write Mark: character is "flag", followed by "datapoint MQTT flag"

//Cloud Downlink Message Mark: character is "down", followed by "down", representing cloud downlink data.

Note: Boolean data will not have double quotation mark, numeric data will have double quotation mark.

6 Firmware Upgrading

Please contact BLIIoT if it's necessary to upgrade firmware for any new requirements.

This gateway supports upgrading firmware via configuration software. Click About in configuration software, click Firmware Upgrade, select update folder and click OK to confirm. Once upgrading is completed, a prompt box will pop up. Click it to confirm. Contact technical support to get update folder.

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7 Warranty Term

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.

8 Technical Support

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