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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Beilai Technology Co., Ltd

Website: www.iot-solution.com



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
Serial Port	Baud Rate	1200bps-115200bps
	Data Bit	7,8
	Parity Bit	None, Even, Odd
	Stop Bit	1, 2
	Drotostian	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
		WCDMA:B1,B5,B8
	L-E Version	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)		WCDMA:B2,B4,B5
	L-A Version	FDD-LTE:B2,B4,B12
		GSM/EDGE:850,900,1800MHz
		WCDMA:B1,B2,B5,B8
	L-AU VEISION	FDD-LTE:B1,B3,B4,B5,B7,B8,B28
		TDD-LTE:B40
		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		
	DUN Indicator	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		
		if no network communication		
Indiantar	TVD Indicator	Flickering if it's transmitting data, off if no data		
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		
	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	OK	
	Ethernet Port	Standard Modbus TCP/IP	OK	
Smort Motor	COM Port	DLT645-2007	OK	
Smart weter	Ethernet Port	IEC101, IEC104	Ongoing	
BAC pot	COM Port	BACnet MS/TP	OK	
DAChet	Ethernet Port	BACnet/IP	OK	
PLC Brand				
		S7-200 full series PLC	OK	
		S7-200SMART full series PLC	OK	
Siemens	Ethernet Port	S7-200SMART full series PLC	OK	
		S7-300 full series PLC	OK	
		S7-400 full series PLC	OK	
		S7-1200 full series PLC	OK	
		S7-1500 full series PLC	OK	
		FX1S series, FX2N series	OK	
	COM Port	FX3S series, FX3U series, Expansion		
		board RS232/485BD		
Mitsubishi		Q series(Q03UDE, Q04UDEH,	OK	
	Ethornot Dort	Q06UDEH, Q10UDEH, Q13UDEH,		
		Q20UDEH, Q26UDEH, Q002UD), L		
		serials(L02, L26-BT), FX5U serials		
OMRON	COM Port	CJ/CS/CP/CP1H/CP1L serials	ОК	
	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
Sobnoidor	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"
	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				
		Flickering	Device is running normally				
RUN	Device Ruthing	Off	Device is in faulty				
	Alorm	Stead on	Alarm is triggered				
ALARM	Aldini	Off	No alarm				
	Ethernet/4G	Flickering	Ethernet network is working				
	Communication	Stead on	4G network is working				





		Off	No Ethernet or 4G network			
τv	Data transmitting	Flickering	Data is transmitted			
	Data transmitting	Off	No data transmitting			
DV	Data Dagaiving	Flickering	Data is received			
KX	Data Receiving	Off	No data is received			
GPS	CDS Signal	Flickering	GPS signal is received			
	GFS Signal	Off	No GPS signal is received			
		1 LED ON	Weak signal (0-14)			
ul]	4G Signal	2 LED ON	Intermediate Signal (14-22)			
		3 LED ON	Strong signal (22-31)			

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 GPS RUN ALARM	RESET - TX III - RX II
GND B/RX/AIN+ A/TX/AIN+ GND B/RX A/TX GND B/RX A/TX GND B/RX A/TX GND H L	CAN COM2 COM3 COM4
	WAN LAN

RS485(or RS232) & CAN Port						
Ite	em	Description				
	GND	Grounding wire				
	B/RX/AIN-	RS485 data-(B)/ data receiving/				
CON44		Analog input-				
COIVI4	A/TX/AIN+	RS485 data+(A)/ data				
		transmitting/				
		Analog input+				
	GND	Grounding wire				
COM2	B/RX	RS485 data-(B)/ data receiving				
CONIS	A/TX	RS485 data+(A)/ data				
		transmitting				
	GND	Grounding wire				
COM2	B/RX	RS485 data-(B)/ data receiving				
COIVIZ	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	Croon	Stead on	100Mbps mode			
speed	eed		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

(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)	Abou
中文 Help	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 + 0 Pa ? () 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.

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P Search	Clear Impor	t Export	Read Config	J. Write	Config.	() Monitor	Log				(主 中文	? Help	() About
	L110Pro COM1 CMRS485 (M COM2	odbus RTU)											
	Q.7 200			Name		Value		Cloud	Status	Port	Device	Name		Status
	 		Nam	e	BeiLai			MQTT Client	•	COM1	RS485 (Modbus	RTU)		•
-	COM3		Time		14:04:	28 09-27-2022	2	MQTT Client II	•	COM2	s7-200			•
-0	COM4		Mod	el	BL110	Pro		Ali IoT	•	WAN	网口 (Modbus To	CP)		•
-	⊟ LAN		= Vers	on	V1.1.0)		HUAWEI IoT	•					
ė.	⊟wan		4G N	lodule	EC20C	EFILGR06A07	M1G	AWS IoT	•	_				
T '		buc TCD)	IME		86341	8055923288		KingPigeon IoT	•					
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	"A" 4G		ope	ator	NULL									
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-	岱Alarms													
H	Tasks													
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T		iah						Refresh						
	- Modbus R	IU SICP												
	- Modbus T	CP Server												
	→ 🖓 BACnet/IP													
			*											

4.2 Configuration Software Introduction

4.2.1 System Function

BLiiot BeiLai Industrial Gateway www.BLii	iot.com V1.1.3.7						- 0 X
Search Clear Import Export Read	Config. Write C	Config. Monitor Log				中文 H	? () lelp About
白 品 BL110Pro							
E @COM1							
GRS485 (Modbus RTU)							
	-	1 8	1		10		
-Q =7-200	Name	Value	Cloud	Status	Port	Device Name	Status
(U) 200	Name	BeiLai	MQTI Client		COMI	RS485 (Modbus RTU)	
- COM3	lime	14:04:28 09-27-2022	MQTI Client II	•	COM2	s/-200	•
-@COM4	Model	BL110Pro	Ali lo l	•	WAN	则山(Modbus ICP)	•
- Can LAN	Version	V1.1.0	HUAWEI IoT	•	-		
🖻 📾 WAN	4G Module	EC20CEFILGR06A07M1G	AWS IoT	•			
「 「 分 岡口 (Modbus TCP)	IMEI	863418055923288	KingPigeon IoT	•			
((8)) 4G	Signal Strength	12 (Normal:14-31)	KingPigeon Modbus IoT	•			
	operator	NULL	_				
	SIM ICCID	NULL	_				
└─ 𝔇 OpenVPN	SIM Status	Failed					
— 道 Alarms							
Tasks							
			Refresh				
	L						
Modbus TCP Server							

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
	Save all configuration parameters by click "write
Write configuration	configuration". Make sure to click "write configuration" every
while configuration	time after modifying the configuration. The setting will be valid
	after device restarts automatically
	Monitor the value of the data point of the currently connected
Monitor	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
	"OK" means the SIM card is successfully registered, "Failed"
Silvi Status	means it is not registered
King Digeon 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,
юТ	gray means King Pigeon Modbus cloud is not connected.
MOTT Client	Green light means MQTT Client is connected, gray means
	MQTT Client is not connected.
MOTT Client II	Green light means MQTT Client II is connected, gray means
	MQTT Client II is not connected.
	Green light means Alibaba cloud is connected, gray means
	Alibaba is not connected.



	Green light means HUAWEI cloud is connected, gray means						
HUAWEITOT	HUAWEI not connected.						
	Green light means AWS is connected, gray means AWS is						
AWS 101	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.

rch Clear Import Export Read	Config. Write Config. N	Ionitor Log			中文	Help	Ab
—' (A ')4G							
C WW VPN							
└─ � OpenVPN			Advanced Settings				٦.
一位 Alarms	Private Network		letwork Diagnostics	Password			atu
							0
DataServices							0
Pass Through							•
—	Private Network	•		Default Pa	ssword : 12345	6	
- Modbus TCP Server	Keepalive IP		Ping 192.168.1.1	Old Password			
- 🕀 BACnet/IP	NTP Server cn.pool	.ntp.org		New Password			
OPC UA							
E Cloud							
- @ MQTT Client							
- @ MQTT Client II					ОК	Cance	
- 🖓 Ali IoT			1				
- HUAWEI IoT			Refresh				
- @ AWS IoT							
- SkingPigeon IoT							
KingPigeon Modbus IoT							
- Co Advanced Settings							

		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
Mada Salaa	tion	Select from "Collection", "Pass	Collection
wode Selec	lion	through", "Modbus RTU to TCP"	
		Select from "Modbus",	
	Device Brand	"BACnet", "Mitsubishi",	Modbus
		"Siemens","OMRON","DELTA"	
Drotocol	Daviaa Madal	Select slave device according	Modbus RTU
Sottingo	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.





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) Search	Clear	\$₽ Import	Export	Read Config	. Write Config.	() Monitor	() Remote	Log					。 中文	? Help	() About
់ _{ភំរិ} នរ	103Pro			^ Va	riable Name	Address Typ	e Ad	dress	Value	Unit	Data type	Varibale Key	Map Ado	lress	Ratio
¢-@	⊡COM1														
	Lor	Delete													
-ć	LAN														
-6	⊒ WAN														
_0	A ''4G														
	VPN														
	⊕Op .,	enVPN													
	Alarms														
	Tasks														
E	JDataSe	ervices													
	-@Pas	ss Throug	h												
	-@Mo	odbus RTL	J≒TCP												
	-@Mc	odbus TCF	P Server												
	- @BA	Cnet/IP													
	-OOP	C UA													
00	Cloud														
	-OMO	QTT Client	t												
	-OMO	QTT Client	t II												
	-@Ali	IoT													
				~											

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	
	Slava ID	Data Collecting Device Modbus	
Davias	Slave ID	Communication Address	
Device	16-bit Data Type	Select "AB" or "BA"	AB
Fiopenies	22 hit Data Tura	Select "ABCD", "DCBA", "BADC",	
	52-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.



BLIIot BeiLai Industrial Gateway www.BLIIot.co	om V1.1.3.8				ΟX
Search Clear Import Export Read Com	fig. Write Config. Monitor Remote	Log	● 中文	? Help	(i) About
白 鼎 BL103Pro	Variable Name Address Type Add	dress Value Unit Data type Varibale Key	Map Add	ress	Ratio
E-@COM1					
-⊜LAN					
-@WAN					
E-WW VPN					
- OpenVPN		Add			
— 道 设 Alarms		Delete Import Excel File			
		Export Excel File			
DataServices					
—					
—					
- Modbus TCP Server					
- 🕀 BACnet/IP					
GOPC UA					
E-OCloud					
- @ MQTT Client					
- @ MQTT Client II					
-QAli loT					

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Search Clear	Import Expo	ort Read Co	nfig. Write Co	onfig. Monito	r Log					● 中文	? Help	() About
白 நூBL110Pro		-	Variable Name	Address Ty	pe	Address Value	Unit Da	ita type	Varibale Key	Map Ado	dress	Ratio
🗖 🖾 СОМ1												
−ØRS4	485 (Modbus R	.TU)	8	V	ariable	Proportios						
- Dev	vice1			v	anable	rioperties						
🗖 📼 СОМ2												
_⊕s7-2	200		Variable Name	TAG002		Varibale Key	REG002					
—@СОМЗ		E	OCT/DEC/HEX	Decimal	•							
-@COM4			Address Type	01 Coil Status(0x		Address						
-@LAN			0	haal		Add Mumber	1	_				
			Data type	DOOI		Add Number	1					
- O MC	그 (Modbus TCP	P)	Read/Write	Read/Write	•	Ratio	none					
—"Å" 4G			Map Address	5		Variable Unit						
-Ope	enVPN						OK	Cancel				
一党 Alarms		-					(
🗖 🖯 DataSe	ervices											
- @Pas	ss Through											
- @ Mo	odbus RTU≒TCP	,										
-@Mo	dbus TCP Serve	er										

	Variable Properties
ltem	Description
Variable Name	Name of Added Datapoint
Variable Key	The MQTT identifier of the data point, can be filled in arbitrarily.
	Select from "decimal", "octal", "hexadecimal" according to the
OCT/DEC/REX	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"
Patia	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.
OK	Confirm datapoint setting
Cancel	Cancel datapoint setting

) Search	Clear	∲	Export	Read	Config.	Write Config	Monitor	Remote	Log						中文	? Help	() About
⊟́r∰B	L103Pro			^	Vari	able Name	Address Ty	pe Ad	ldress	Value	Unit	Data type		Varibale Key	Map Add	ress	Ratio
ė-	COM1				DO1	01	Coil Status(0x)	0				bool	DO1		0(M.000001)) r	ione
	L _{©M1}	40T			DO2	01	Coil Status(0x)	1				bool	DO2		1(M.000002)) r	ione
					DO3	01	Coil Status(0x)	2				bool	DO3		2(M.000003)) r	ione
					DO4	01	Coil Status(0x)	3				bool	DO4		3(M.000004)) r	ione
					DO5	01	Coil Status(0x)	4				bool	DO5		4(M.000005)) r	ione
H	'Å"4G				DO6	01	Coil Status(0x)	5				bool	D06		5(M.000006)) r	ione
Ē.	VPN				D07	01	Coil Status(0x)	6				bool	DO7		6(M.000007) r	ione
	└── � OpenVPN				DO8	01	Coil Status(0x)	7				bool	DO8		7(M.000008)) r	ione
H	Alarms				DIN1	02	Input Status(1:	x) 0	Add			bool	DIN1		8(M.000009)) r	ione
	Tasks				DIN2	02	Input Status(1	x) 1	Delet			bool	DIN2		9(M.000010)) r	ione
					DIN3	02	Input Status(1	x) 2	Impo	t Excel File		bool	DIN3		10(M.00001	1) r	ione
	gDatase	rvices			DIN4	02	Input Status(1	x) 3	Expor	rt Excel File		bool	DIN4		11(M.00001	2) r	none
	-@Pas	s Throug	h		DIN5	02	Input Status(1	x) 4				bool	DIN5		12(M.00001	3) r	none
	- 🖓 Mo	dbus RTU	J≒TCP		DIN6	02	Input Status(1	x) 5				bool	DIN6		13(M.00001	4) r	none
	—⊕ Mo	dbus TCF	Server		DIN7	02	Input Status(1	x) 6				bool	DIN7		14(M.00001	5) r	none
	- @ BA	Cnet/IP			DIN8	02	Input Status(1	x) 7				bool	DIN8		15(M.00001	6) r	none
	MOP	CUA															
		0 011															
	-@MC	UI Client															
	-@MC	TT Client	Ш														
	- 🖓 Ali	IoT															

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.



Q				1	I			(A)	?	(j)
Search	Clear	Import	Export	Read Config.	Write Config.	Monitor	Log	中文	Help	About
Ġ "ђві	110Pro			Varia	able Name	Address Type	Address Value Unit Data type Varibale Ke	y Map Add	ress	Ratio
		485 (Mor	thus RTU	,						
	LØDe	evice1	businito	,	-					
	⊡сом2					Et	ernet Settings			
	└_@s7	-200				DHCP	Routing Enabled			
-0	©СОМ3			E		IP Addres	192.168.3.1			
-0	□COM4					Subnet Mas	255.255.255.0			
	⊒ WAN	🗆 / Madh	TCD)			MAC Addres	08:00:27:6e:c0:19			
_((A))4G	Ц (Моар	us ice)							
	VPN									
	 	oenVPN					OK Cancel			
	Alarm	s								
-(Tasks									
	DataS	ervices								
	—⊕ Pa	iss Throug	h							
	-ØM	odbus RTL	J≒TCP							
	-ØW	odbus TCP	Server	-						

LAN Port Configuration				
ltem	Description			
DHCP	Green indicates auto IP distribution for LAN is enabled			
	Gray indicates auto IP distribution for LAN is turned off			
Routing	Green indicates routing function is enabled.			
	Gray indicates routing function is turned off			
IP Address	LAN port IP Address			
Subnet mask	LAN Port subnet mask			
MAC Address	LAN port MAC			
ОК	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



Search Clear Import Export Read Config. Write Config. Monitor Remote Log Search Clear Import Export Read Config. Write Config. Monitor Remote Log The Help About The Help A	BLiiot Be	iLai Indu	strial Ga	teway w	ww.BLiiot.com	V1.1.3.8									177	ΟX
Search Clear Import Export Read Config. Write Config. Monitor Remote Log	P				1 A	.		\bigcirc						A	?	(j)
Image: State of the state	Search	Clear	Import	Export	Read Config.	Write Config.	Monitor	Remote	Log					中文	Help	About
B ⊕ ⊕ COM1 Add WAN - %P4G D ⊕ VPN - ⊕ OpenVPN - ⊕ OpenVPN - ⊕ Alarms - ⊕ Tasks D ⊕ DataServices - ⊕ Pass Through - ⊕ Modbus RTU=TCP - ⊕ Modbus TCP Server - ⊕ BACnet/IP - ⊕ OPC UA - ⊕ MQTT Client II - ⊕ MQTT Client II	Б _ф в	103Pro			^ Va	iable Name	Address Typ	e Ado	dress	Value	Unit	Data type	Varibale Key	Map Ad	dress	Ratio
Add WAN - WAG - MyAG - Model - Models RTU=TCP - Models RTU=T	Đ-	⊡COM1														
Image: Second state st	-	⊜ı	Add													
- ^(A) ^A 4G = ^(M) ^A 4G → ^(M) ^A G →	-(WAN														
□ ⊕ OpenVPN □ ⊕ CopenVPN □ ⊕ Tasks □ ⊕ DataServices □ ⊕ Pass Through □ ⊕ Modbus RTU=TCP □ ⊕ Modbus TCP Server □ ⊕ BACnet/IP □ ⊕ OPC UA □ ⊕ MQTT Client □ ⊕ Ali loT □ ⊕ HUAWEI IoT		(Å) ⁴G														
		VPN														
→ 🄅 Alarms → 🕞 Tasks → 💬 DataServices → ④ Pass Through → ④ Modbus RTU=TCP → ④ Modbus RTU=TCP → ④ Modbus TCP Server → ④ BACnet/IP → ④ OPC UA ➡ ● ▲ Cloud → ④ MQTT Client → ④ MQTT Client II → ④ Ali IoT → ④ HUAWEI IoT		_⊕0p	enVPN													
→ Bass → Pass Through → Modbus RTU=TCP → Modbus TCP Server → BACnet/IP → OPC UA ➡ MQTT Client → MQTT Client II → MAUNE IIoT		🖧 Alarms	1													
□ ⊕ Pass Through □ ⊕ Modbus RTU=TCP □ ⊕ Modbus TCP Server □ ⊕ BACnet/IP □ ⊕ OPC UA □ ⊕ MQTT Client □ ⊕ MQTT Client II □ ⊕ Ali IoT □ ⊕ HUAWEI IoT	-(Tasks														
		DataSe	ervices													
		—⊕ Pa	ss Throug	h												
		-⊕Mo	odbus RTU	J≒TCP												
		-⊕Mo	odbus TCF	9 Server												
□ ⊕ OPC UA □ ⊕ Cloud □ ⊕ MQTT Client □ ⊕ MQTT Client II □ ⊕ Ali IoT □ ⊕ HUAWEI IoT		−⊗BA	Cnet/IP													
El-SCloud		-@op	C UA													
		Cloud														
		-@M0	QTT Client													
		-⊗M0	QTT Client	t II												
- HUAWEI IOT		—⊕ Ali	IoT													
		−⊕ни	IAWEI IoT													

BLiiot BeiLai Industrial Gateway www.BLiiot.com V1.1.3.7 - 🛛 🗙 -Pe ? () 0 Search Clear Import Export Read Config. Write Config. Monitor Log 中文 Help About Variable Name 占 ரூBL110Pro Address Type Address Value Map Address Ratio Unit Data type Varibale Key . сом1 Device Information └─�RS485 (Modbus RTU) Device1 Device Name E-@COM2 Device IP └**_**@s7-200 Device Port - ШСОМЗ Device Brand Modbus -@COM4 Device Model MODBUS_TCP • ... -- Calan Device Properties -🗗 🖾 WAN └─── (Modbus TCP) 16-bit Data Type AB 🔹 -"Å"4G 32-bit Data Type ABCD 🔹 Write Function Code 15/16 • └─� OpenVPN 一位Alarms OK Cancel - Tasks DataServices - Pass Through -⊕Modbus RTU≒TCP Modbus TCP Server

LAN Port Device Configuration			
ltem	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"
OK	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.



WAN Port Attribute Configuration			
Item 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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Ė்ஃ₿	L110Pro			Vari	able Name	Address Type		Address	Value	Unit	Data type	Varibale Key	Map Ado	lress	Ratio
¢.	©COM1	ļ.													
	└_@R9	5485 (Mo	dbus RTU)		Dev	vice In	formation	n						
	-OD	evice1				Device Name									
Þ	COM2	2				Device IP									
	└─Øs7	-200				Device Port									
H	COM:	3		=		Device Brand		Modbus		-					
	©COM4	ţ				Device Model		MODBUS_T	СР	•					
H	ل الما ال				- C	Device Properties									
Ð	WAN														
	-0m	□ (Modb	us TCP)			16-bit Data Type		AB							
	' A'' 4G					32-bit Data Type		ABCD							
	VPN					Write Function Code		15/16							
	@0 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	penVPN													
	Cá Alarm	s							ОК	Cancel					
	- Tasks														
	DataS	ervices													
	- OPa	iss Throug	h . Top												
	₩ Ω	oabus RT	DEICP												
	-ØW	odbus TCI	Server	-											

	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 Typo	Select "AB" or "BA", only configure it if Modbus is selected
то-ыі рага туре	as device brand.
22 hit Data Type	Select "ABCD", "DCBA", "BADC" or "CDAB", only configure
52-bit Data Type	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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Search Clear Import Export Read	Config. Write Config. Monitor	中文 Help About
Search Clear Import Export Read	Config. Write Config. Monitor Log Variable Name Address Type Address Value Unit Data type Varibale Key 4G Settings Mainland China does not need to be set. APN User Password OK Cancel	中文 Help About y Map Address Ratio
- 15 Alarms - C3 Tasks D ⇒ DataServices - \$ Pass Through - \$ Modbus RTU=TCP - \$ Modbus TCP Server		
	AC 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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	OPro COM1 ② RS485 (Mod ③ Device1 COM2 ④ \$7-200 COM3 COM4 LAN WAN ④ 阿口 (Modbu 4G VPN ④ OpenVPN Alarms Tasks DataServices ④ Pass Through ④ Modbus RTU	bus RTU IS TCP) ≒TCP) E	ariab Cienable Authenti Encryptic Client C C Compressio	Client/Server IP/Domain Port TCP/UDP TUN/TAP cation Mode User Name Password User Name Ca File ertificate File lient Key File on Algorithm	Client 1194 UDP TUN Password Only AES-256-GCM LZO	• • • • • • • • • • • • • • • • • • •	x type	Varibale Key	Map Add	Iress	Ratio
	LAN WAN - ② 网口 (Modbu 4G VPN - ③ OpenVPN Alarms Tasks DataServices - ④ Pass Through - ④ Modbus RTU	as TCP) ⊐TCP Server		Authenti Encryptic Client C C Compressio	cation Mode	Password Only AES-256-GCM LZO		Ī				

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.					
	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 Koy File	Select File Upload, the key corresponding to the client					
	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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ப் ஆீ	103Pro			^ Por	t Device	Variab	e Name	Alarm Name	High Limit	Low Limit	Alarm Type	Jitter Delay(s	Ala	arm Key
.	⊡COM1													
.	LAN													
.	₩AN													
_9	Å ")4G													
¢.	VPN													
	-@ot	penVPN												
-1	Alarm	S												
-6	Tasks							Add						
	DataS	ervices												
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	└_@s7	-200		Por	t Device	Variab	le Name	Alarm Name	High Lin	nit	Low Limit	Alarm Type	Jitter Delay(s)	Ala	rm Key
							Ala	rms							
	AL AN	1				Ala	rm Trigger	ed Execution Ac	tion		Alarm Reco	very Execution Ac	tion		
						Port E	Device	Write Point	Write Value	Port	Device	Write Point	Write Value		
T	 	,	Alarm Name	2											
- L	(A) 4G		Alarm Key	ALARM	001										
	VPNVPN	Va	riable Name	•	Add										
	-00		High Limi	t											
-	n Alarm		Low Limi	t											
H	Tasks		Alarm Type	Alarm when	closed •										
	@DataS	iL	tter Delay(s) 2											
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	−∅м														
	-@M												DK Cancel		
	-Ø₿/	ACnet/IP													
	-@o	PC UA													
P	Cloud														
	-@M	QTT Client	1												
	-ØM	QTT Client	tΠ												

	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 Dolov	Within alarm acknowledge time, if data recover to normal value,
Jiller 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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白 鼎BL103Pro	^ Port	Device Variable Name	Alarm Name High Limit I	Low Limit Alarm Type	Jitter Delay(s) Alarm Key
œ œCOM1					
⊕ ⊜LAN			Alarms		
⊕ ⊕ WAN		Alarm	Triggered Execution Action	Alarm Recovery Exe	ecution Action
—('A') 4G		Port De	vice Write Point Write Value	Port Device W	rite Point Write Value
	Alarm Name				
└── � OpenVPN	Alarm Key ALARM	1001			
一賞; Alarms	Variable Name DO1	Add			
	High Limit		Add		
DataServices	Low Limit		Delete		
- Pass Throug	Alarm Type Alarm when	closed ~			
- 🕀 Modbus RT	Jitter Delay(s) 2				
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- 🕀 BACnet/IP					
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🖻 ஆ BL103Pro	^	Port Device	Variable Name	Alarm Name	High Limit	Low Limit	۵lar	m Type litt	er Delav(s)	Δla	rm Kev
							Add	Variable Po	int		
				Alarms		Variable Type	Port	Device	Var	iable Nan	ne
			Alarm	Triggered Ever	rution Action	Collection Point	COM1	M140T	DO1		
			Port De	ice Wri	te Point W	Collection Point	COM1	M140T	DO2	- 11	
—"Å"4G			Port Dev	nce wh	te Point W	Collection Point	COM1	M140T	DO3		
D VPN	Alarm Name		Execu	tion Event		Collection Point	COM1	M140T	DO4		
⊖ OpenVPN	Alarm Key	ALARM001				Collection Point	COM1	M140T	DOS		_
一道。Alarms	Variable Name	DO1 Add				Collection Point	COM1	M140T	DO6		_
Tasks	High Limit		Write Point		Add	Collection Point	COM1	M140T	DO7		- 11
	Low Limit		Write Value			Collection Point	COM1	M140T	DO8		- 1
	AL T	AL 1 1 1				Collection Point	COM1	M140T	DIN1		
- Pass Inroug	Alarm Type	Alarm when closed *		OK	Cancel	Collection Point	COM1	M140T	DIN2		- 1
- Modbus RT	Jitter Delay(s)	2				Collection Point	COM1	M140T	DIN3		
- 🖓 Modbus TC						Collection Point	COM1	M140T	DIN4		
- 🕀 BACnet/IP					_	Collection Point	COM1	M140T	DIN5		_
OPC UA						Collection Point	COM1	M140T	DIN6		_
						Collection Point	COM1	M140T	DIN7		
						Collection Point	COM1	M140T	DIN8		
- Owight client								14414		OK	Cancel
- MQ11 Client	H.										
- @Ali loT											
- HUAWEI IoT											
	~										

Event Configuration							
ltem	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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	'Å' ⁾ 4G											
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	Task Plan Configuration							
Item	Description							
Task Name	Name of Task Plan							
System Action	Can set to restart the gateway device regularly. If it is to							
	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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	Variable Name Address Type Address Value Unit Data type Varibale Key Serial Port Settings Collection Protocol Setting Collection Modus RTU=TCP After setting parameters Serial Port Settings Serial Port Settings Serial Port Settings Serial Port Settings Baud 9600 ✓ Data Bits 8 ✓ OK Cancel	Map Add	ress	Ratio



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白 கூBL103Pro 🄶	Variable Name Address Type	Address Value	Unit Data type	Varibale Key	Map Address	Ratio				
-@COM1	Pa	ass Through								
	The configuration on this page w transparent transmission mode.	The configuration on this page will take effect only if the serial port is set to the transparent transmission mode.								
(A) 4G	СОМ	COM1	~							
	TCP Mode	TCP Server	~							
└── ⓒ OpenVPN	Network Interface	WAN	~							
- <u>m</u> Alarms	IP/Domain	192.168.1.196								
	Port	5000								
- DataServices - Pass Through	TCP Client Settings									
	Login Message									
	Login ACK Message									
	Heartbeat Message									
OPC UA	Heartbeat ACK Message									
Cloud	Heartbeat Interval(s)	60								
- I MQTT Client										
- MQTT Client II			OK Canal							
-@Ali IoT			Cancer							

Transparent Transmission Configuration							
Item	Description						
СОМ	For example COM2						
TCP Mode	Select Gateway as "TCP Server" or "TCP Client"						
Notwork Interfece	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						
Dort	If BL110 is used as server, fill in monitoring port						
Poll	If BL110 is used as client, fill in server port						
	Data Package of logging in to server, filled in when the						
Login Message	gateway device acts as a client.						
	Data Package of server response to login, filled in when						
	the gateway device acts as a client.						
Heartheat Message	Heartbeat Data Package to keep connection, filled in						
	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.						
Heartheat 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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	00COM1	1												
	⇔LAN	-												
						Se	erial Port Se	ettings						
	(Å) 4G					Mode Selection	n Modb	us RTU≒TCP	v					
	VPNVPN				Protoc	ol Settings —	Pa	Collection ass Through						
T'	600	penVPN			After	setting param	Mod		p to me gata					
	للله Alarm	s			servio	e=>Modbus	RTU≒TCP to s	et relevant pa	rameters.					
	Tasks													
	DataS	ervices			- Serial F	ort Settings -								
	-@Pa	ass Throug	h			Reveal O.G.	00 4	Data Rite						
	-@M	odbus RTI	J≒TCP			on Rit 1		Darity Rit	None Y					
	-@M	odbus TCI	P Server		3			Parity bit	None .					
	- @ BA	ACnet/IP							OK Cancel					
	-00	PC UA												
e a	Cloud													
	-@M	QTT Client	t											
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	(⁽ Å ⁾⁾ 4G					Modh		Iodbus T(p					
					The	configuration		will take offer	t only if the					
1 T	 	penVPN			seri	al port is set to	o the Modbus	RTU=TCP m	ode.					
	čAlarm	is				COM		COM1	~					
	Tasks					TCP Mode	1	CP Server	~					
		ervices			Net	work Interface		WAN	~					
	-@Pa	ass Throug	gh			Port		5000						
	- OM	lodbus RT	U≒TCP											
	-ØM	lodbus TC	P Server						OK Cancel					
	-@B/	ACnet/IP												
	Loo	PC UA												
_	்Cloud	1												
	-OM	IQTT Clien	t											
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	-ØA	li loT												
	−⊕н	UAWEI Io	г											
				×										

Modbus RTU to Modbus TCP Configuration						
ltem	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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Modbus TCP Server Configuration							
ltem	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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⊟ ஆBL103	3Pro		^ Var	able Name	Address Typ	oe Ada	dress	Value	Unit	Data type	Varibale	Key Map Ado	ress	Ratio
É-enc	COM1		DO1	01 0	Coil Status(0x)	0				bool	DO1	0(M.000001) 1	none
	-M140T		DO2	01 0	Coil Status(0x)	1				bool	DO2	1(M.000002		none
0	ANI		DO3	01 0	oil Status(0x)	2				bool	DO3	2(M.000003)	none
	LAN		DO4	01 0	Coil Status(0x)	3				bool	DO4	3(M.000004)	none
- 🖾 V	WAN		DO5	01 0	oil Status(0x)	4				bool	DO5	4(M.000005		none
-('A') 4	1G		DO6	01 0	Coil Status(0x)	5				bool	DO6	5(M.000006) 1	none
	VPN		DO7	01 0	Coil Status(0x)	6				bool	D07	6(M.000007)	none
			DO8	01 0	oil Status(0x)	7				bool	DO8	7(M.000008)	none
—從A	Alarms		DIN1	02 1	nput Status(1>	<) 0				bool	DIN1	8(M.000009)	none
E.	Facks		DIN2	02 1	nput Status(1)	d) 1				bool	DIN2	9(M.000010)	none
101	Idsks		DIN3	02 1	nput Status(1>	d) 2				bool	DIN3	10(M.00001	1) 1	none
	DataServices		DIN4	02 1	nput Status(1)	<) 3				bool	DIN4	11(M.00001	2) 1	none
	Pass Through	li i	DIN5	02 1	nput Status(1>	<) 4				bool	DIN5	12(M.00001	3) 1	none
-	Modbus RTU	≒TCP	DIN6	02 1	nput Status(1>	<) 5				bool	DIN6	13(M.00001	4) 1	none
	Modbus TCP	Server	DIN7	02 1	nput Status(1)	<) 6				bool	DIN7	14(M.00001	5) 1	none
	BACnet/IP		DIN8	02 1	nput Status(1>	c) 7				bool	DIN8	15(M.00001	6) 1	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					
Fachla	Disabled by default, click the button to enable. Gray: Not					
	enabled, Green: Enabled.					
Network Interface	Select from "WAN" and "LAN"					
Dort	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.					
	Default is "555", the device object instance, if there is also a					
Device ID	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	- ⊕s7-200 - ⊕cOM3 - ⊕COM4 - ⊕MA - ⊕MA - ⊕MD (Modbus TCP) - \$%4G - ⊕ OpenVPN - \$\$ OpenVPN -	* Variable Name	ddress Type Address Value Unit Data tyr OPC UA Port 4840 Anonymous User Password Certificate PrivateKey OK Cancel	pe Varibale Key Map Address	Ratio



Item	Description
Fnabla	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: 5.5.6 View Data with UaExpert

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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	MQTT Client Configuration
ltem	Description
Enable	Green indicates MQTT Client One is enabled
Ellable	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 Identifier of MQTT Connecting message.
	Server uses it to identify Client
Lisor Namo	User Name of MQTT Connecting message.
User Name	Server uses it for ID verification and authorization
Decoword	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.
Subscribo Tonio	Topic of MQTT subscribing message. After subscribing server
	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
(Enable data re-transmission)	once network resumes. Max 100,000 datapoints can be
	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
noints	right, click the right mouse button, click "Add", the data point
points	box will pop up, click the data point, and click OK.
ОК	Confirm MQTT Client One setting
Cancel	Cancel MQTT Client One setting

4.2.11.2 MQTT Client II

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

4.2.11.3 Alibaba Cloud

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	└_ © Ope	nVPN		Enable											
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	DataSer	vices		Authenti	cation Mod	de	evice Secret		-						
	- Pass	Throug	h		Regio	on Ch	ina(Shanghai)		~						
	- Moc	dbus RTU	Js			IP									
	- Moc	dbus TCI	P S€		ProductK	ey									
	- @ BAC	net/IP		()	DeviceNan	ne									
	-O OPC	UA		1	DeviceSecr	et									
	Cloud				CA F	ile									
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	Alibaba Cloud Configuration						
Item	Description						
	Green indicates Alibaba Cloud is enabled						
Enable	Gray indicates Alibaba Cloud is not enabled. Default is						
	disabled						
Authoption	Default is key connection. Select the key or certificate						
Authentication	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.						
ProductKey	Set the same ProductKey as the one in Ali Cloud.						
	See below illustration (Device-Click DeviceSecret to view it)						
DovicoNamo	Set the same DeviceName as the one in Ali Cloud						
DeviceMaine	See below illustration (Device-Click DeviceSecret to view it)						
DoviceSecret	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 Dotopoint	Default is blank box with all datapoints to be uploaded						
Solootion	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.

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Maintenance \lor	+Add Module	Properties	VW8 Custom	VW8	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
Resource Allocation V	<	Properties	VW6 (Custom)	VW6	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
Link Visual 🗸 🗸		Properties	VW4 (Custom)	VW4	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
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		Properties	VW0 (Custom)	VWO	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
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白 _品 BL110Pro	Variable Nam	e Address Type	Address	Value	Unit Data type	Varibale Key	Map Address	Ratio
-COM1	Q0.0	Q	0		bool	Q0	0(M.000001)	none
	Q0.1	Q	0.1		bool	Q1	1(M.000002)	none
(COM2)	Q0.2	Q	0.2		bool	Q2	2(M.000003)	none
	Q0.3	Q	0.3		bool	Q3	3(M.000004)	none
COM4	Q0.4	Q	0.4		bool	Q4	4(M.000005)	none
	Q0.5	Q	0.5		bool	Q5	5(M.000006)	none
S7-200SMART	Q0.6	Q	0.6		bool	Q6	6(M.000007)	none
WAN	Q0.7	Q	0.7		bool	Q7	7(M.000008)	none
	VW0	vw	0		uint16	VW0	0(M.400001)	1
	VW2	vw	2		uint16	VW2	1(M.400002)	1
E COVPN	VW4	vw	4		uint16	VW4	2(M.400003)	1
- OpenVPN	VW6	VW	6		uint16	VW6	3(M.400004)	1
— 岱 Alarms	VW8	vw	8		uint16	VW8	4(M.400005)	1
Tasks		Acres	he de					
DataServices								
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Modbus TCP Server								
BACnet/IP								
OPC UA								
Cloud	,							

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.



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	HUAWEI Cloud Configuration
ltem	Description
Enable	Green indicates HUAWEI Cloud is enabled. Gray indicates HUAWEI Cloud is disabled. Default is disabled
Authentication	Default is key connection. Select the key or certificate according
IP/ Domain Name	Select connecting to HUAWEI Cloud via MQTT to enter console. Click Overview to get server IP address of device connection WHUAWEI CLOUD CONSTRUCTION OF THE Server IP address of device connection WHUAWEI CLOUD CONSTRUCTION OF THE Server IP address of device access and management functions. HUAWEI CLOUD CONSTRUCTION OF THE Server IP rowdes back device access and management functions. HUAWEI CLOUD CONSTRUCTION OF THE Server IP rowdes back device access and management functions. HUAWEI CLOUD CONSTRUCTION OF THE Server IP rowdes back device access and management functions. HUAWEI CLOUD CONSTRUCTION OF THE Server IP rowdes back device access and management functions. HUAWEI CLOUD CONSTRUCTION OF THE SERVER IP REAL SERVER IN THE SERVER INTER IN THE SERVER INTER INTERVIEW IN THE SERVER INT
Port	Decimentation Decime
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	Select 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 • Beijings •
Service ID	Int Platform Products / BL101 BL101 BL101 Products / BL101 Products Devices Products
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



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06	Cloud			Cher	nt Key F						1						
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	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". Wissing Services Search for services, features, marketplace products, and docs [AIL+5] Image: Search for services, features, marketplace products, and docs AWS IoT Image: Search for services, features, marketplace products, and docs [AIL+5] Image: Search for services, features, marketplace products, and docs AWS IoT Image: Search for services, features, marketplace products, and docs [AIL+5] Image: Search for services, features, marketplace products, and docs Monitor: Attivity Image: Search for services, features, marketplace products, and docs Attens - Monitor: Attivity Image: Search for services, features, marketplace products, and docs Actions - Manage: Image: Search for services, features, marketplace products, and docs Actions - Manage: Image: Search for services, features, marketplace products, and docs Actions - Manage: Image: Search for services, features, marketplace products, and docs Actions - Manage: Image: Search for services, features, marketplace products, and docs Actions - Manage: Image: Search for services, features, marketplace products, and docs Connect a device Manage: Image: Search for services, features, marketplace products, and things to get, update, or delete
Port	8883 (Required)
Things	Set Item ARN Image: Image: Things Things Types: Thing groups Billing groups Billing Groups Billing groups Billing Groups Jobs Shadows Tunnets Type
Client ID	Fill in AWS Account ID



	aws Services v	Q Search for servi	ices, features, marketpl	ace products, and docs [/	Alt+S] D &
	AWS IoT	×	WS loT 〉 Things >	BL101	My Account
	Monitor		THING		My Organization
	Activity Onboard		BL101 BLXXX		My Service Quotas My Billing Dashboard
	▼ Manage				My Security Credentials
	Things Types	1	Details	Thing ARN	Sign Out
	Thing groups		Thing groups	A thing Amazon Reso	ource Name uniquely identifies this thing.
CA File	Select File U	pload			
Client certificate file	Select File U	pload			
Client key file	Select File U	pload			
	Topic created	d when c	reating a	rule, topic	name used by MQTT
	to publish me	essages,	click "Ad	d" to fill in	the published topic
	name. Click	Add to cr	eate more	e Publish 1	opics. Select Publish
	Topic and cli	ck Delete	e to delete	e it.	
	aws Services 🔻	Q Search for	services, features, ma	rketplace products, and	docs [Alt+5]
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Pudiish Iodic					
Publish Topic	Greengrass		BL		
Publish Topic	 Greengrass Secure Defend 		BL ENABLED Overview	Descriptio	n
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Uploading cycle	Greengrass Secure Defend F.Act Destinations Test Device Advisor MQTT test client Cycle time of Default is bla Right click th	f data up ank box w e box an	BL ENABLED Overview Tags	Descriptio No descriptio Rule query The source o SELECT • Using SQL vo Default is 3 tapoints to Id to select	n n y statement f the messages you want to process with this rule. FROM tot / tonic arsion 2016-03-23 OS be published t datapoint for
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4.2.11.6 King Pigeon Cloud via MQTT

T

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	rt Read Config. Writ	e Config.	r Remote	Log				●	? Help	(i) About
(Å),4G				Kin	ngPigeo	on loT				
	Enable									
└──						Variable Type Port	Device	V	ariable Na	me
— 泣 Alarms										
	IP/Domain	1883.dt	uip.com							
DataServices	Port	18	83							
- Pass Through	Client ID									
—	User Name	MC	2TT							
- 🖓 Modbus TCP Serve	Password	MQT	TPW							
- 🕀 BACnet/IP	Subscribe Topic									
└─@OPC UA	Publish Topic									
Cloud	Upload Cycle(s)	3	0							
- MQTT Client	Data Retransmission(
- 🕀 MQTT Client II										
—⊕Ali loT										
								1	ОК	Cancel
-OAWS IoT										
🕀 KingPigeon IoT										
G KingPigeon Modbu	is loT									
Advanced Settings	~									

King	Pigeon Cloud via MQTT Configuration
Item	Description
Frable	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
Dubliching Dotonoint	Default is blank box with all datapoints to be published
Soloction	Right click the box and click Add to select datapoint for
Selection	publishing. Click OK to confirm it.
OK	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 List							
Device	default group	*					
Device	BL10x		2				
Link	MQTT	~	?				
Dropping	Custom 👻	60	1				
Sensor	Append	Batch Addition					
	Q0	Switch type (operable 👻	0 (decimal places)	Unit	0	1	Delete
	Q1	Switch type (operable 📼	0 (decimal places)	Unit	0	1	Delete
	Q2	Switch type (operable 👻	0 (decimal places)	Unit	0	1	Delete]
	Q3	Switch type (operable 👻	0 (decimal places)	Unit	0	1	Delete
	Q4	Switch type (operable 👻	0 (decimal places)	Unit	0	1	Delete 1
	Q5	Switch type (operable 👻	0 (decimal places)	Unit	0	3	Delete
	Q6	Switch type (operable 🔝	0 (decimal places)	Unit	0	1	Delete
	Q7	Switch type (operable 👻	0 (decimal places)	Unit	0	1	Delete
	VWO	Numerical Type 🛛 👻	0 (decimal places)	*	0	a	Delete
	VW2	Numerical Type -	0 (decimal places)	1	0	A	Delete
Monitoring Center	► Device List relidension	Numerical Type	0 (decimal places)	个	0	1	Console
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Monitoring Center nk Protocol IP Protocol ITP Protocol B RTU	• Device List revenues	Numycical Type -	0 (decimal places)	*	0	3	Console
Monitoring Center nk Protocol 17P Protocol 8 RTU 8 TCP	• Device List	Numz(cal Type -	0 (decimal places)	*	0	3	Console
Monitoring Center Mk Protocol TP Protocol B RTU B TCP OTT Protocol OTT Protocol DTT Protocol DTT Protocol DTT Protocol	* Device List Recessors	Numerical Type	0 (decimal places)	÷	0	3	Console
Monitoring Center Mk Protocol CTP Protocol B RTU B TCP CTT Protocol CTT Protocol P Protocol P Protocol P Protocol P JSON Protocol	• Device List readmans	Numerical Type	0 (decimal places)	¢ Q Sentor ID. 17	Q 25048	Q. Benor	Console Consol
Monitoring Center Mk Protocol CP Protocol B RTU B TCP COTT Protocol COTT Protocol PP Protocol CCAP P	• Device List readinates	Numerical Type	O (decimal places)	c2 Bencor ID: 17 Read write C2	25048	Bensor Read write 03	Consolo Consol
Monitoring Center Mc Protocol TP Protocol B RTU B TCP OTT Protocol CTT Protocol CTT Protocol CTT Protocol SP-USON Protocol B-07	• Device List Re destands The destands Th	Numerical Type	0 (decimal places)	a Bentor ID 17 Read write (22	0	Bencor Read write Q3	Detete 1 Control 0 0 10 1725049
Monitoring Center Mk Protocol TP Protocol B RTU B TCP GTT Protocol CP Protocol CP Protocol CP Protocol B-07 Protoc	• Device List re: userson a	Numerical Type	0 (decimal places)	Carter Ca	0 2594 Web	Benser Read write 03	Delete 1 constr 1 a3 1 bb: 175549 1
Monitoring Center Ink Protocol Protocol B RTU B TCP CTT Protocol CTT Protocol CTT Protocol S Protocol ADP Protocol Add Protocol Add Protocol Add Protocol Add Protocol Add Protocol	• Device List The unstanded	Numerical Type	0 (decimal places)	C C C C C C C C C C C C C C C C C C C	2594	Bensor Read unte 02	Detete 1 Control 0
Monitoring Center Ink Protocol Protocol B RTU B TCP CTT Protocol CTT Protocol CTT Protocol SP Stotocol J-SON Protocol J-SON Protocol J-SON Protocol J-SON Protocol AP Protocol	CVV4	Numerical Type	0 (decimal places)	C A A A A A A A A A A A A A A A A A A A	0 25948 Webs	Bensor Read write 03	Delete 1 Control Contro Control Control Control Control
Monitoring Center Ink Protocol Protocol B RTU B TCP CTT Protocol CTT Protocol Protocol SP Stotocol J-SON Protocol J-SON Protocol J-SON Protocol J-SON Protocol AP Protocol	Device List re-usersaria Eulerg Parameter Clerg Parameter Q4 Sensor ID: 175599	Numerical Type	0 (decimal places)	C C C C C C C C C C C C C C C C C C C	0 2594 25953	Bensor Read write 03	Delete 1 Control Contro Control Control Control Control
Monitoring Center Ink Protocol Protocol B RTU B TCP CTT Protocol CTT Protocol SP USON Protocol SP USON Protocol SI-GT Protocol SI-GT Protocol AAP Protocol	CVV4	Numerical Type	0 (decimal places)	C C C C C C C C C C C C C C C C C C C	0 25048 25053	Bensor Read write 03	Detete 1 Control Contro Control Control Control Control
Monitoring Center Ink Protocol ITP Protocol B RTU B TCP COT Protocol JCD Protocol JCD Protocol Jco Protocol Jco Protocol Jco Protocol Jco Protocol AP Protocol	Device List rev userson's Entry Parameters Catego	Numerical Type	0 (decimal places)	C C C C C C C C C C C C C C C C C C C	0 25048 25053	Bensor Read write 03 Sensor Read write WWC	Detette Control C
Monitoring Center Ink Protocol ITP Protocol B RTU B TCP Cocol Protocol DP Protocol DP Protocol Set OF Protocol GAAP Protocol GAAP Protocol Cocol DAP Protocol	CVV4 C Device List For usersonice C Device List C Device List C Device List C Device List C Device List C Device List	Numerical Type	0 (decimal places)	Carlor Ca	0 25948 1000 25953	Benor Read write 03 Benor Read write 03 Benor Read write WW	
Monitoring Center Ink Protocol ITP Protocol B RTU B TCP CCAP Protocol SHOT Protocol SHOT Protocol SHOT Protocol SHOT Protocol SHOT Protocol	CVV4 C Device List For usersonice C device List C device List C device Li	Numerical Type	O (decimal places)	Carlor Ca	0 25948 Webs	Benorf Read write 03 Benorf Read write 03 Benorf Read write VWC	



Search Clear Import Export Rea	d Config. Write (Config. Monitor Re	emote				中文 Hel	lp Abou
白 品BL110Pro	Variable Name	Address Type	Address	Value	Unit Data type	Varibale Key	Map Address	Ratio
-@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
() COMIS	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
GST-200SMART	Q0.6	Q	0.6		bool	Q6	5(M.000007)	none
- @ WAN	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
	VW4	VW	4		uint16	VW4	2(M.400003)	1
OpenvPN	VW6	vw	6		uint16	VW6	3(M.400004)	1
-I Alarms	VW8	VW	8		uint16	VW8	4(M.400005)	1
- ⊕ Tasks - ⊕ PataServices - ⊕ Pass Through - ⊕ Modbus RTU=TCP - ⊕ Modbus TCP Server - ⊕ BACnet/IP - ⊕ OPC UA - ⊕ Cloud	MA							

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 BeiLai I	ndustrial Gateway w	vw.BLiiot.co	m V1.1	1.3.8									-	οx
Search Clea	ar Import Export	Read Conf	ig. W	rite Config.	() Monitor	() Remote	Log					中文	? Help	(i) About
"∦" 4G ⊟-™VP 	i N ∂OpenVPN			Enable	Kingl	Pigeon Mo	dbus IoT		1					
−Ť _o Ala	arms		Nam	n					Status	Port	De	evice Name		Status
	sks	Na	me	You can chan	ge the serve	er ad <mark>dress to l</mark>	og in to other	cloud platforms.	•	COM1	M140T			•
E 🖯 Da	taServices	Lin	ne 		IP/Domain	mo	dbus.dtuip.co	m		LAN	\$4/5			•
-6	∂Pass Through	IVIC	idei		Port		6651							
-6	∂Modbus RTU≒TCP	Ve AG	Madula	Mod	hus Station		1			-				
-6	Modbus TCP Server	40 IM	FI		- Massage			_						
-6	BACnet/IP	Sig	nal Stren	LUGI	n wessage					-				
		op	erator	Login AC	K Message									
	JOFCOA	SIN	I ICCID	Heartbea	at Message		Q							
E	bud	SIN	1 Status	Heartbeat AC	K Message		A							
-6	MQTT Client			Heartbeat	t Interval(s)		60							
-6	MQTT Client II													
-6	∂Ali loT							OK Cance	1					
-6	∂HUAWEI IoT		4					Refresh						
-6	AWS IOT													
-6	KingPigeon IoT													
4	KingPigeon Modbus Id	a la												
_{ĝ}Ad	Ivanced 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										



Login Message	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
LUGHTACK 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
ОК	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

Device	default group		~						
Device	BL10x			<u></u>					
Link	MB RTU		-	0					
Dropping	Custom	60		0					
Sensor	Append	Batch Add	tition						
	00	Switch type (op	perable	U (decimal places)		Unit	U	18	Delete
	Q1	Switch type (op	oerable 👻) ~	Unit	0	3	Delete
	Q2	Switch type (op	oerable -	0 (decimal places)) -	Unit	o	3	Delete
	Q3	Switch type (op	perable -	0 (decimal places)	× -	Unit	0	3	Delete
	Q4	Switch type (op	erable -	0 (decimal places)) -	Unit	o	3	Delete
	Q5	Switch type (op	perable -) ~	Unit	0	3	Delete
	Q6	Switch type (op	oerable -	0 (decimal places)) –	Unit	o	3	Delete
	Q7	Switch type (op	perable -	0 (decimal places)) -	Unit	0	3	Delete
	vwo	Numerical Type	e ~	0 (decimal places)	, -	1	o	3	Delete
	2022	Numerical Type		0 (decimal places)	, -	*	0	A	Delete
Monitoring Center nk Protocol CP Protocol TTP Protocol	Device List BL10x	Numerical Type	ettings	0 (decimal places))		0	1	Console –
Monitoring Center nk Protocol :P Protocol :TP Protocol a RTU	Device List	Read write instruction so	ettings Sensor Stave Addres	O (decimal places)	Bias	Data Format	O Dota Bits	Byte Order	Console Console Acquisitio Cycle
Monitoring Center nk Protocol CTP Protocol B RTU B TCP	Device List	Networken Strategy Series Number	ettings Sinsor Addres Q0 1	O (decimal places)	Bias	Cata Format	O Data Bits	Byte Order	Console Console
Nonitoring Center Ink Protocol Protocol a RTU 3 TCP 2 Protocol 2 TCP Protocol 2 TCP Protocol 2 Protocol 2 Protocol 3 CCP 2 Protocol 3 CCP 2 Protocol 3 CCP 3	Device List Device List Device List Device List All Sensors All Sensors	Nemerical Type Read write instruction so Serial Number 1 2	ettings Slave Q0 1 Q1 1	O (decimal places; Function Code 01Read and write v 1 01Read and write v 1	Bias 9 10	A Data Format	Data Bits.	Byte Order	Console Console Acquisitio Cycle 10 10
Mondoning Center nk Protocol CP Protocol CTP Protocol a RTU 2017 Protocol 3P Protocol 3P Protocol 3P Protocol	Device List BL Tox BL Tox Serial Number All Sensors	Read write instruction is serial Number 1 2 3	ettings an ior Addres a0 1 a1 a1 a2 1	O (decimal places) Function Code OlRead and write Olread And Writ	Bias 9	Data Format Data Format Data Format	O Data Bits	Byte Order	Costole Costole Acquisition 10 10 10
Monstoring Center ink Protocol 5P Protocol a rtTU 3 TCP 2TT Protocol 2TT Protocol 5P SION Protocol 5CoAP Protocol 5CoAP Protocol	Device List BL10x BL10x Serial Number Al Sensos	Read write instruction in Serial Number 1 2 3 4	etings etings eting a a a b a b a b a b a b a b a b a b a	C (decimal places) Function Code OrRead and write	Bias 9 10 11	Cata Format Cata Format Int Int Int Int Int Int Int I	O Data Bits	Byte Order	Console Console Acquisition Cycle 10 10 10 10 10
Londonng Center ht Protocol protocol a RTU a TCP aTT Protocol protocol protocol protocol coAP Protocol coAP Protocol sup Protocol sup Protocol	Device List Device List BL 10x Serial Number Al Sensors Interview Interview	Nemerical Type Read write instructors and Senial Number 1 2 3 4 5	ettings	C (decimal places) Function Code Orlead and write v 1	Blas	Data Format Data Source Data Source <t< td=""><td>O Data Bits</td><td>Byte Order</td><td>Deteta Conce Acquisitio Cycle 10 10 10 10 10 10</td></t<>	O Data Bits	Byte Order	Deteta Conce Acquisitio Cycle 10 10 10 10 10 10
Nonliking Center nik Protocol 3P Protocol 3 RTU 3 TCP 2017 Protocol 3P Protocol 3P Protocol 3-07 Protocol 3-07 Protocol 3-07 Protocol	A Bensos	Read write instruction so Serial Number 1 2 3 4 5 6	etings	C (decimal places) Function Code ORead and write v ORead and write v	Bias 9 10 11 12 13 14	Image: Control of Control o	Data Bits	Byte Order	Constant Constant Acquisition 10 10 10 10 10 10 10 10 10 10 10 10 10
Nondering Center ink Protocol CP Protocol B RTU B TCP CTT Protocol CP Protocol CP Protocol SHOT Protocol SHOT Protocol SHOT Protocol SHOT Protocol	Cevice List Cevice List El 10x Cevice List El 10x Cevice List Cevice List	Nemerical Type Read write instruction in Serial Number 1 2 3 4 5 6 6 7	etings	C (decimal places) Function Code OrRead and write	Blas 9 10 11 12 13 14 15	Image: Control Format. Image: Control Format. <t< td=""><td>Data Bits</td><td>Byte Order</td><td>Context Context C</td></t<>	Data Bits	Byte Order	Context C
Nontioning Center ink Protocol pr Protocol a RTU 3 TCP 2TT Protocol 3 Protocol 3 Protocol 3 Protocol 3 HoT Protocol 3 HoT Protocol	Derice List D	Nemerical Type Read write instruction set Seriel Number 1 2 3 4 5 6 7 7 8	ettings	O (decimal places) Function Code 01Read and write	Diss 0 0 10 11 12 13 14 15 16		O Data Bits	Byte Order	Contest Contest Contest Cycle 10 10 10 10 10 10 10 10 10 10 10 10
Konstrong Center nk Protocol Protocol RTP Protocol OTT Protocol Protocol Protocol StoT Protocol AAP Protocol AAP Protocol AAP Protocol	• Device List • Device	Nead write instruction so Seriel Number 1 2 3 4 5 6 7 6 7 6 0 0	ettings	C (decimal places; Function Code OtRead and write	Bise Bise 10 11 12 13 14 15 16 9	Tota Format Ell Elll Ell <	O Deta Bits	Byte Order	Context
Nondoring Center nik Protocol DP Protocol B RTU B TCP 2017 Protocol DP Protocol DP Protocol SI-07 Protocol SI-07 Protocol SI-07 Protocol	Device List D	Primerical Type Read write instruction so Serial Number 1 2 3 4 5 6 7 6 7 6 7 6 7 8 0 10	ettings	O (decimal places) Function Code ORead and write v 0 ORead And w	Das Das 9 10 11 12 13 14 15 15 16 10 11 11 12 13 14 15 15 16 16 16 17 18 19 19 10 10 10 10 10 10 10 10		O Data Bits	Byte Order	Costete Costet Costete Costete Costet Costete Costete Costete Costete Costete Costete Costete Costete Costete Costete Costet Costete Costet Costete Costete Costete
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Search Clear Import Export Re	ad Config. Writ	te Config. Monito	r Remote Log				中文 He	P 1
白品BL110Pro	Variable Na	ame Address T	ype Address	Value	Unit Data ty	pe Varibale Key	Map Address	Ratio
-@COM1	Q0.0	Q	0		bool	Q0	0 M.000001)	none
	Q0.1	Q	0.1		bool	Q1	1 M.000002)	none
- COM2	Q0.2	Q	0.2		bool	Q2	2 M.000003)	none
	Q0.3	Q	0.3		bool	Q3	3 M.000004)	none
-@COM4	Q0.4	Q	0.4		bool	Q4	4 M.000005)	none
	Q0.5	Q	0.5		bool	Q5	5 M.000006)	none
	Q0.6	Q	0.6		bool	Q6	6 M.000007)	none
	Q0.7	Q	0.7		bool	Q7	7 M.000008)	none
_('\$')4G	VW0	vw	0		uint16	VW0	0 M.400001)	1
	VW2	vw	2		uint16	VW2	1 M.400002)	1
	VW4	VW	4		uint16	VW4	2 M.400003)	1
- OpenVPN	VW6	vw	6		uint16	VW6	3 M.400004)	1
- To Alarms	VW8	vw	8		uint16	VW8	4 M.400005)	1
Tasks								
DataServices								
Pass Through								
- Modbus RTU=TCP								
Modbus TCP Server								
- BAChet/IP								
- OPC UA								
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.



Blijot Beil aj Industrial Gateway www.Bl ijot.com V1.1.3.8	3					1.1			- L X
Search Clear Import Export Read Config.	Config. Monitor	Remote					● 中文	? Help	() About
白品 BL103Pro Variable Nam	ne Address Type	Address	Value	Unit	Data type	Varibale Key	Map Ad	dress	Ratio
	Ser	ial Port Settings							
(¼) ⁴ G	Mode Selection	Collection		1					
E WWVPN	- Protocol Settings								
G OpenVPN	Device Brand	Modbus	~						
— 茳ǎ Alarms	Device Model	MODBUS_R1	U v						
DataServices	Serial Port Settings —								
—⊕ Pass Through	Baud 9600	V Data Bit	s 8	~					
—	Stop Bit 1	 Parity B 	t None	~					
			ОК	Cancel					
GOPC UA	. <u></u>								
Cloud									
- @ MQTT Client									
—⊕ Ali 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

BLiiot Be	iLai Indu	strial Ga	teway w	ww.BLiiot.c	om V	.1.3.8											-	- 0 X
) Search	Clear	 Import	Export	Read Cor	nfig.	Write Co	onfig.	() Monitor	Remo	te Lo	g					い。	? Help	(i) About
🖨 🚓 ខា	103Pro			^	Varial	ole Name		Address Ty	rpe	Address	V	/alue	Unit	Data type	Varibale Key	Map /	ddress	Ratio
]																
25	L-@140	DT																
-0	LAN							D	auica Inf				_					
-0	WAN							D	evice Int	ormati	on		_					
_((A ') 4G						1	Device Nam	ne	14	DT							
	VPN					ſ	Device Pr	roperties –										
	└_@0p	enVPN						Slave	ID	1								
-i	Alarms						16.	hit Data Tv	ne	AR.		v						
-0	Tasks						32.	bit Data Tv		ABCI)	v						
	BDataSe	rvices					Mrito E	unction Co	do	15/14	,							
	- @Pas	s Throug	h				write i	unction co		13/1	,							
	-@Mo	dbus RTL	J≒TCP			L						OK	Sec. 1					
	-@Mo	dbus TCF	Server										ancei					
	- @ BA	Cnet/IP																
	-OOP	C UA																
	Cloud																	
	-OMO	QTT Client																
	-@MC	QTT Client	:11															
	-@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

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© Search	Clear	Import	Export	Read	1 Config.	Write Config.	() Monitor	() Remote	Log					(中文)	? Help	About
ப் ஆக	103Pro			^	Var	iable Name	Address Typ	e Ad	dress Value	Unit	Data typ	e Var	ibale Key	Map Ad	dress	Ratio
É-C	⊡COM1				DO1	01 (Coil Status(0x)	0			bool	DO1		0(M.000001	1)	none
	LAM	140T			DO2	01 0	Coil Status(0x)	1			bool	DO2		1(M.000002	2)	none
	DIAN				DO3	01.	5.100 C (0.5	Variablo	Proportion		1.1	000		2(M.000003	3)	none
					DO4			variable	rioperties			_		3(M.000004	4)	none
-6	⊒ÌWAN				DO5									4(M.000005	5)	none
-",	4 °)4G				DO6	Variable Name	DO1		Varibale Ke	y	DO1			5(M.000006	5)	none
	PNVPN				DO7		Destand							6(M.000007	7)	none
	600	DenVPN			DO8	OCT/DEC/HEX	Decima							7(M.000008	3)	none
-1	Alarm	5			DIN1	Address Type	01 Coil Statu	s(0x) ~	Addres	s	0			8(M.000009	9)	none
L C	Tacke	-			DIN2	Data type	bool	~	Add Numbe	r	1			9(M.000010	D)	none
	@Tasks				DIN3									10(M.0000*	11)	none
	JDataS	ervices			DIN4	Read/Write	Read/Wri	te Y	Ratio	>	none			11(M.00001	12)	none
	- @Pa	ss Throug	h		DIN5	Map Address	0		Variable Uni	t		-		12(M.00001	13)	none
	-⊗M	odbus RTU	J≒TCP		DIN6							19		13(M.00001	14)	none
	-ØM	odbus TCF	Server		DIN7									14(M.0000*	15)	none
	-MBA	Cnet/IP			DIN8						OK	Cancel		15(M.00001	16)	none
	-															
	-00	CUA														
티	Cloud															
	-⊕M	QTT Client														
	-ØM	QTT Client	: 11													
	-@AI	i loT														

- (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

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Search	Clear	Import	Export	Read Config.	Write Config.	Monitor	Remote	Log				中文	Help	About
Ġ "₿ВІ	.103Pro			^ Vari	able Name	Address Typ	e Ad	dress Valu	e Unit	Data type	Varibale Key	Map Ad	dress	Ratio
	©COM1													
	∟⊘м	140T												
- 0						F	hornot So	ttings						
-0	WAN						inemet se	tungs						
_((Å ^{®)} 4G					DHCP	Routir	g Enabled						
	VPN					IP Addre	ss 19	2.168.3.1						
	-@0	benVPN				Subnet Ma	sk 255	.255.255.0						
-1	Alarm	s												
H	Tasks					MAC Addre	ss 08:00):27:50:16:ac						
	DataS	ervices												
	-OPa	ss Throug	h Top											
	-ØM	odbus RIU	J≒TCP					OK	Cancel					
	-ØM	odbus ICi	Server											
	- WBA													
		C UA												
	Scioud	OTT Client												
	-OM	OTT Client												
	U.M	Carri Cileni												

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

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Search	Clear	Import	Export	Read Config.	Write Config.	Monitor	Remote	Log						中文	Help	About
⊡ ஃ в	.103Pro			Varia	ble Name Slav	ve ID Ac	dress Type	Address	Valu	ue	Unit	Data type	Varibale Key	Map A	ddress	Ratio
E C		1														
	L-⊗M	140T				De	evice Infor	mation								
	LAN					Device Nam	e	S475								
	-@S4	\$75				Device I	P 19	2.168.3.125								
-0	∰ WAN					Device Por	rt	502								
	A'' 4G					Device Bran	d	Modbus	~							
Þ(VPN					Device Mode	el MO	DBUS_TCP	v							
	<u>∟</u> @0	penVPN			Devic	Properties -										
	Alarm	IS														
-(Tasks				1	6-bit Data Typ	e	AB	~							
00	DataS	ervices			з	2-bit Data Typ	e	ABCD	~							
	-OP	ass Throug	h		Write	Function Coc	le	15/16	~							
	-ØM	lodbus RTU	J≒TCP													
	-ØM	lodbus TCF	Server					OK	Ca	ancel						
	- @B	ACnet/IP														
	600	PC UA														
	Cloud															
	-OM	QTT Client														
	-ØM	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

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De	5		1		-		0							A	?	1
Search Cle	ar Import	Export	Read (Config.	Write Co	onfig. M	onitor	Remote	Log					中文	Help	About
	Pro		^	Varia	ble Name	Slave ID	A	ddress Type	Address	Value	Unit	Data typ	oe Varibale Key	Map A	ddress	Ratio
<u>⊨</u>	DM1			temp		1	04 Inpu	ut Registers(3x) 24			int16	temp	16(M.400	017)	1
6	∂M140T			humidity		1	04 Inpu	ut Registers(3>) 25		_	int16	humidity	17(M.400	0018)	1
	N N			F			Vá	ariable Pro	perties				power	18(M.400	0019)	1
	€ S475															
-@w	AN			Vari	iable Name	te	emp		Varibale Key	4	temp					
-" <u>A</u> "40	3			oc	T/DEC/HEX	Dec	imal	~	Slave ID		1					
	PN			Ad	dress Type	04 Input Re	egisters(3	3x) ×	Address		24					
	DOpenVPN				Data type	int	16	v	Add Number		1					
	arms				Read/Write	Read/	Write	~	Ratio		1					
	ISKS			м	an Address		16		Variable Unit							
E E Da	ataServices			IV.	ap Address		10		variable Unit							
	Pass Through	1														
-6	Modbus RTU	≒TCP									OK	Cancel				
-6	Modbus TCP	Server		-												
-6	BACnet/IP															
6	DOPC UA															
EDCI	oud															
-6	MQTT Client															
-6	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.	3.9		- 🛛 X
			()
Search Clear Import Export Read Config. Wr	te Config. Monitor Remote Log	中文	Help About
Search Clear Import Export Read Config. Wr Grand BL110Pro COM1 COM3 COM4	te Config. Monitor Remote Log ame Address Type Address Value Unit Data type Varibale Key Serial Port Settings Device Brand Siemens Device Model S7_200 Serial Port Settings Baud 9600 V Data Bits 8 Stop Bit 1 V Parity Bit Even V OK Cancel	中文 I Map Addre	Help About ISS Ratio
- ⊕ Modbus RTU=TCP - ⊕ Modbus TCP Server - ⊕ BACnet/IP - ⊕ OPC UA E - € Cloud			

- (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

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	A D	?	(j)
Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文	Help	About
D 슈BL110Pro Variable Name Address Type Address Value Unit Data type Varibale Key	Map Add	ress	Ratio
-@COM1			
Legistress Device Information			
COM3			
EUCOM4			
Generation Generation Control			
- 📾 WAN			
- "A" 4G Device Address 1			
Gen VPN Sector 2015			
- Йо Alarms OK Cancel			
- O'Pass Through			

(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



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白 品 BL110Pro	^ Vari	able Name 🛛 🖌	Address Type	Address	Value U	Jnit Data ty	pe Varibale Key	Map Address	Ratio			
-mcom1	V0	v		0		bool	VO	8(M.000009)	none			
	V1	v		0.1		bool	V1	9(M.000010)	none			
	V2	v		0.2		bool	V2	10(M.000011)	none			
Thread the second	V3	v		0.3		bool	V3	11(M.000012)	none			
-@COM3	V4	v		0.4		bool	V4	12(M.000013)	none			
-COM4	V5	v		0.5		bool	V5	13(M.000014)	none			
	V6	v		0.6		bool	V6	14(M.000015)	none			
S7-200SMART	V7	V		0.7		bool	V7	15(M.000016)	none			
	VW10	vw		10		uint16	VW10	5(M.400006)	1			
-('A') 4G	VW12	Variable Properties 6(M.400007)										
	VW14							7(M.400008)	1			
	VW16							8(M.400009)	1			
OpenVPN	VW18	Variable Na	me	VW10	Varibale K	ey Vi	V10	9(M.400010)	1			
- Î dlarms		OCT/DEC/H	IEX D	ecimal v								
Tasks		Address Ty	/pe	vw v	Addre	ess .	0					
DataServices		0.000		1.110 v	A LL N							
Pass Through		Data tj	/pe u	Jint lo *	Add Numb	ier						
- Modbus RTU≒TCP		Read/W	rite Rea	ad/Write *	Rat	tio	1					
- Modbus TCP Server		Map Addr	ess	5	Variable Ur	nit						
SRAC pot/ID		18										
O operus												
- GODE DA	~						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:

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Search Clear Import Export Read Config. Write Config. Monitor Remote Log	 ・ ・<
ि हो BL110Pro Variable Name Address Type Address Va	alue Unit Data type Varibale Key Map Address Ratio
Ethernet Settings	ed () 1 2.0 2.86 f XK Cancel
Contained and a contract of the second seco	

- (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	e Config. Monitor Remote Log	中文 Help About
白 鼎 BL110Pro	Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
	Device Information	
L-⊗\$7-200	Device Name S7-200SMART	
— то сомз	Device IP 192.168.1.65	
	Device Port 102	
	Device Brand Siemens ~	
S7-200SMART	Device Model S7_200SMART_E ~	
	Device Properties	
- M Alarms		
Tasks		
DataServices	OK Cancel	
Pass Through		
→ Modbus RTU ≒TCP		
- @ BACnet/IP		
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 Export Rea	ad Config.	Write Config.	Monitor R	emote						中文	? Help	About
ப்- நீ BL110Pro	^ Varia	able Name A	ddress Type	Address	Value	Unit	Data type	Va	ribale Key	Map Add	ress	Ratio
- COM1	Q0.0	Q		0			bool	Q0		0(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
	Q0.3	Q		0.3			bool	Q3		3(M.000004	6	none
	Q0.4	Q		0.4			bool	Q4		4(M.000005		none
-@COM4	Q0.5	Q		0.5			bool	Q5		5(M.000006		none
	Q0.6	Q		0.6			bool	Q6		6(M.000007	(none
- ST-200SMART	Q0.7	Q		0.7			bool	Q7		7(M.000008		none
- C WAN	VW0	vw	_	0			uint16	VW0		0(M.400001)		1
(12) 4G	VW2			Variab	le Propertie	s				1(M.400002)		1
	VW4									2(M.400003	6	1
	VW6									3(M.400004	6	1
	VW8	Variable Na	ime	VW0	Variba	le Key	VW	0		4(M.400005		1
— 首 Alarms		OCT/DEC/H	HEX D	ecimal v								
		Address T	vpe	vw ~	Ac	Idress	0					
DataServices			/]							
Pass Through		Data t	ype	uint16 Y	Add Nu	umber	1		_			
		Read/W	rite Rea	ad/Write ~		Ratio	1					
Modbus TCP Server		Map Add	ress	0	Variabl	e Unit						
- @ BACnet/IP		LA .										
							ſ	or	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

BLiiot BeiLai Industrial Gateway www.BL	iiot.com V1.1.3.9		- 🛛 🗙
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白 品BL110Pro	Variable Name Address Type Address Value Unit Data type Varibale Key	Map Addres	s Ratio
E - E COM2 - ⊕ S7-200 - E COM3 - E COM4 E - E LAN - ⊕ S7-200SMART - E WAN - WAN - WAG	Serial Port Settings Mode Selection Collection Protocol Settings Device Brand Mitsubishi Device Model FX3U		
日間VPN 一致OpenVPN 一賞 Alarms 一読 Tasks 日日 DataServices	Baud 9600 v Data Bits 8 v Stop Bit 1 v Parity Bit None v OK Cancel		
→ Pass Through → Modbus RTU=TCP → Modbus TCP Server → BACnet/IP → OPC UA			

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

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		()
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는 냚BL110Pro	ibale Key Map Addre	ss Ratio
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G GenVPN C C C C C C C C C C C C C C C C C C C		
- Ť Alarms		
- Tasks		
⊕Pass Through		
⊗ Modbus RTU≒TCP		
- 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

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Search Clear Import E	xport	Read Config	. Write Config.	Monitor	Remote	Log					中文	Help	About
白		^ Va	riable Name	Address Typ	e Ada	dress	Value Unit	Data type	e	Varibale Key	Map Add	ress	Ratio
СОМ1		YO	Y		0			bool	YO		16(M.00001	7) n	one
L-MFX3U		¥1	Y		1			bool	¥1		17(M.00001	B) r	ione
		Y2	Y		2			bool	Y2		18(M.00001	9) r	ione
		Y3	Y		3			bool	¥3		19(M.00002	0) r	ione
		¥4	۷		4			bool	¥4		20(M.00002	1) r	ione
-@COM3		Y5	Y		5			bool	Y5		21(M.00002	2) r	ione
-@COM4		Y6	Y		6			bool	Y6		22(M.00002	3) r	ione
E CAN		Y7	Y		7			bool	¥7		23(M.00002	4) r	ione
S7-200SMART					Var	iable P	roperties						
—" A ")4G			Variable Nar	ne	Y0		Varibale Key	YO					
E VIN VPN			OCT/DEC/H	EX	Octal	v							
-OpenVPN													
— 賞 Alarms			Address Ty	pe	Y	×	Address	U					
Tasks			Data ty	pe	bool	*	Add Number	1					
DataServices			Read/Wr	ite Rea	ad/Write	¥	Ratio	none					
Pass Through			Map Addre	255	16		Variable Unit						
-⊕Modbus RTU=	TCP		11										
- Modbus TCP S	Server		100						OK	Cancel			
- BACnet/IP						_				cancer			

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:

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- ((C) - ((C) - ((C) - ((C)) -	M4 V S7-200SMAF N V OpenVPN rms	RT			IP Addre Subnet Ma Gatew MAC Addre DN	Auto IP	2.168.1.22 5.255.255. 32.168.1.1 0:27:5b:38 114.114.1 0	4 0 14 K Canc	el					
	ks aServices Pass Throug Modbus RTU Modbus TCF BACnet/IP	h J≒TCP 9 Server												

(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

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С _ф ві С	L110Pro			Va	riable Name	Address T	rpe A	Address	Value	Unit	Data type	Varibale Key	Map Ado	lress	Ratio
	L_@FX	3U				D	evice Info	rmation							
Ð	⊡сом2					Device Nar	ne	FX5U							
	-@\$7	-200				Device	IP	192.168.1.1	12						
-0	©СОМЗ					Device Po	ort	4999							
-0	COM4					Device Bra	nd	Mitsubishi	ÿ						
Đ						Device Mod	lel FX5U_E	BINARYMO	DE_ETH ~						
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	-@M	odbus RTL	J≒TCP												
	-ØM	odbus TCF	9 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:

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Ġ _å в	L110Pro			^	Variable Name	A	Address Type		Address V		Unit	Data typ	e	Varibale Key	y Map Addre		Ratio
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	₩ FX	3U		¥7		Ŷ		/				bool	٧/		25(M.00002	6) n	one
Ē-	∭СОМ2				Variable Properties												
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	COM4				OCT/DEC/HEX	0	ctal	~									
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	L_@S7	-200SMAF	RT		Address Type		Ŷ	-	Add	ress	/						
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(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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Ċ-, ф. ві С	.110Pro IDCOM1	30	asa Isejaa Ali	Vari	able Name	Address Typ	e Ad	ldress	Value	Unit	Data type	Varibale K	Key Map i	Address	Ratio
E-0	COM2					Se	rial Port S	ettings							
English and an	L-@S7	-200			10	Mode Selection	n (Collection		•					
-	OM3	1			Protoc	ol Settings —									
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Ð	LAN C	-200SMA	RT			Device Mode	-I C	CJ/CS/CP	Ŷ						
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(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

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⊑-⊞сомз	Device Name CP1L-L	
	- Device Properties	
ST-200SMART	Device Address 0	
日-		
-('A') 4G	OK Cancel	
E www.vpn		
GenVPN		
- Pass Through		

(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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Ė-@	⊡COM1			CIC	D2.01	CIG	D_BIT	2.0	1			bool	CIO2.01	26(M.0000	27) r	ione
		3U		CIO	02.02	CI	O_BIT	2.0	2			bool	CIO2.02	27(M.0000)28) r	none
							Va	riable Pr	operties							
Ţ	LAST.	-200														
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	Juarase	ervices														
	-@Pas	ss Throug	h													
	-OM0	odbus RTU	J≒TCP													

(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

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 Re	ad Config. Write Config. Monitor Remote	og		●●中文 Help	(i) About
Search Clear Import Export Ro General Constraints of the second of the	d Config. Write Config. Monitor Remote La Variable Name Address Type Address Ethernet Settin DHCP Routing En IP Address 192.16 Subnet Mask 255.255 MAC Address 08:00:279	Og : Value Unit Data type g5 ablea 8.3.1 .255.0 fd:e9:8f OK Cancel	Varibale Key	中文 Help Map Address	About Ratio
	MAKE IIOT				

- (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 Indu	istrial Ga	teway w	ww.BLiiot.com	/1.1.3.9										-	σ×
Search Clear	\$ Import	Export	Read Config.	Write Co	onfig.	() Monitor	() Remote	Log					中文	? Help	(i) About
⊟ ஆBL110Pro			^ Var	iable Name		Address Typ	e Ad	ldress	Value	Unit	Data type	Varibale Key	Map Ado	dress	Ratio
⊡ ©COM1	3U					De	vice Infor	mation							
						Device Name		CP1L-EL							
└ _ @\$7	-200					Device IF	1	92.168.3.15	51						
E @COM3						Device Port	t	9600							
	1L-L				1	Device Brand	I	OMRON	,						
					0	evice Mode		INS_TCP	2						
	-200SMA	RT			Device P	roperties —									
	1L-EL														
- WAN	_														
└_@FX	5U														
-('Å') 4G															
E WN VPN									ОК	Cancel					
-OOp	oenVPN														
-Ťč Alarm	5														
Tasks	- ANTI- MARK														
DataSe	ervices	-													
-@Pa	ss Throug	n	~												

- (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



BLiiot BeiLai Industrial Gateway www.BL	iiot.com V1.1.3.9							- 0 ×
Search Clear Import Export Read	Config. Write Cont	ig. Monitor Re	mote Log				中文 He	lp About
白 品 BL110Pro	Variable Name	Address Type	Address	Value	Unit Data type	Varibale Key	Map Address	Ratio
E-@COM1	CIO0	CIO_BIT	0		bool	CIO0	28(M.000029)	none
C FX3U	CIO15	CIO_BIT	0.15		bool	CIO15	29(M.000030)	none
	D0	D	0		uint16	D0	10(M.400011)	1
	D100	D	100		uint16	D100	11(M.400012)	1
		V	ariable Prope	rties				
ЕСОМЗ								
CP1L-L						_		
-@COM4	Variable Nan	D100	V	aribale Key	D100			
	OCT/DEC/H	X Decimal	*					
\$7-200SMART	Address Tvr	D D	•	Address	100			
L <mark>-</mark> ⊕CP1L-EL						_		
	Data typ	uint16	× Ac	ld Number	1			
	Read/Wri	te Read/Write	v	Ratio	1			
(11) 40	Map Addre	ss 11	Va	riable Unit				
- A'4G								
OpenVPN					OK	Cancel		
—— 🖧 Alarms								
Tasks								
DataServices								
- Pass Through								

- (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)	- 0
Search Clear Import Export Read Config.	Config. Monitor Remote Log	中文 Help Abore
Search Clear Import Export Read Config. Write	e Config. Monitor Remote Log me Address Type Address Value Unit Data type Varibale Key Serial Port Settings Mode Selection Collection ~ Protocol Settings Device Brand DELTA ~ Device Model DELTA_DVP ~ Serial Port Settings Baud 9600 ~ Data Bits 7 ~	中文 Help Abor Map Address Ratio
→ ⊕ FX5U → Ŵ ⁴ 4G ➡ ─ ₩ VPN → © OpenVPN → ☆ Alarms → ঊ Tasks ➡ ➡ DataServices → @ Pass Through	Stop Bit 1 * Panty Bit ven *	

(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

BLiiot BeiLai Industrial Gateway www.BLiiot	.com V1.1.3.9		- 0 ×
		A	?
Search Clear Import Export Read Co	onfig. Write Config. Monitor Remote Log	中文ト	Help About
白 _品 BL110Pro	Variable Name Address Type Address Value Unit Data type Varibale Key	Map Addre	ss Ratio
□-@COM1			
G FX3U			
	Device Information		
General S7-200			
	Device Name DVP-12SA2		
GCP1L-L	our concertopettes		
	Device Address 1		
CP1L-EL			
G FX5U	OK Cancel		
—" A "4G			
OpenVPN			
—————————————————————————————————————			
DataServices			
			all

(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.

BLiiot BeiLai Industrial Gateway www.BLiio	ot.com V1.1.3.9					- 0 ×
Search Clear Import Export Read C	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
E-@COM1	YO	Y	0	bool Y0		30(M.000031) none
G FX3U	DO	D	0	uint16 D0		12(M.400013) 1
— (III) СОМ2		Variab	le Properties			
└─ Ø \$7-200						
— ШСОМЗ	Variable Name	YO	Varibale Key	YO		
CP1L-L	OCT/DEC/HEX	Decimal V				
E-@COM4	Address Tune	v	Address	0		
-ODVP-12SA2	Address Type		Address	0		
	Data type	bool ^v	Add Number	1		
S7-200SMART	Read/Write	Read/Write Y	Ratio	none		
CP1L-EL	Map Address	30	Variable Unit			
E @WAN						
GFX5U				OK Cancel		
(Å) 4G	L	00 0	1.1			
E-WWVPN						
OpenVPN						
—						
						d

(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 V1.0.	www.blilot.com
	mport Configuration File
AWS IOT Cloud Kingpigeon MQTT Kingpigeon Modbus	

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

Name Value Unit Type Address Data type Modbus Maps Address Modbus PLC Address MQTT Flag Enable COM2 COM3 COM4 COM4 COM4 COM4 CoM4 Device Information Device Name ammeter (MAX30) Device Properties Device Properties Postal Address 1 Postal Address 1 Modbus RTU =: Modbus TCP Modbus RTU =: Modbus TCP OK Cancel	5 www.biliot.com
OPC UA O	Name Value Unit Type Address Data type Modbus Maps Address Modbus PLC Address MQTT Flag Enable Ratio Device Information Device Name ammeter (MAX30) Device Properties Postal Address 1 I <t< td=""></t<>

- (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

Device Search RNew Configuration	Import Config	n uration F	ile 💾	Export Configurati	on Filè 🛓	Read Data	a <u>↓</u> Save Da	ta 🚇 Monitoring 📋	Log Ajzi	音 ① A	bout
BL110UA	Name	Value	Unit	Type	Address	Data type	Modbus Mar	Modbus PLC Address	MOTT Flag	Enable	Rat
	A phase voltage			A phase voltage	0	float32	17	400018	REG001	Read-Only	1
COMI	A phase current	t		A phase current	0	float32	19	400020	REG002	Read-Only	1
FX3U	ined active total	e	b	ined active total e	0	float32	21	400022	REG003	Read-Only	1
COM2	I positive active e	en	1 31	se active total en	0	float32	23	400024	REG004	Read-Only Read-Only	1
ammeter (ID:1)	The beave total t					HOULDE	23	400020	ALCOOD .	Read-Only	
- COM3	6	6		Variable	Attrib	utes					
COM4		Va	riable Na	me lase voltage		Variable Ur	sit 🗍				
LAN				(are ready)		Turnable of					
		A	ddress Tj	pe A phase volt	age v	Starting Addre	ss 0				
WAN		Dat	a type In	DB 🔁	Addr	ess Offset In D	8				
" X " 4G			Data tj	/pe float32	, v	Add Numb	er [1				
- 🏚 Alarms And Events		Read	l-Write Tj	pe Read-Only	·	Rat	io [1				
🗟 TaskPlan	Mo	dbus Map	s Addres	ses 17 (0	-2000)	MQTT FI	ag REG006				
DataServices						(Custon	nizable)				
Transparent transmission						OK	Cancel				
Modbus TCP Server											
OPC UA											
H- Cloud											
- MQTT Client One	* I										
MQTT Client Two											
- Ali IOT Cloud											
HUAWELIOT Cloud	* L4										3

- (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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) Search	Clear	so Import	Export	Read Config.	Write Config.	() Monitor	() Remote	Log						中文	? Help	(i) About
	103Pro COM1			Vari	able Name	Address Typ	e Ac	ldress	Value	Unit	Data type	e Vi	aribale Key	Map Ado	lress	Ratio
-6	₩AN					Se	rial Port S	ettings								
_0	A')4G					Aode Selection	n (Collection	Ŷ							
	VPN				- Protoc	ol Settings —										
	 ⊕Op	enVPN				Device Bran	H I	BACnet	v							
-i	Alarms					Device Mode	BA	Cnet/MSTI	P v .							
_p	Tasks															
] DataSe	rvices			- Serial F	ort Settings -										
		s Throug	h			a 1										
	-OMC	dbus RTL	J≒TCP			Baud 384	<u>00 ~ j</u>	Data Bits	5 8	<u> </u>						
	-OMC	dbus TCP	Server			op Bit 1	v	Parity Bit	t None	<u> </u>						
	- MBA	Cnet/IP							OK C							
	-MOP	C UA						L	OK Can	ncei						
	Scloud															
		OTT Client														
	-MMC) TT Client	П													
	-MAII	loT	1297													
	- MHU	AWELLOT														
				v												

(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

BLiiot BeiLai Industrial Gateway www.BLiio	ot.com V1.1.3.8	– 🗆 X
		(1)
Search Clear Import Export Read	Config. Write Config. Monitor Remote Log	中文 Help About
白 品 BL103Pro	Variable Name Address Type Address Value Unit Data type Varibale Key	Map Address Ratio
BACnet MS/TP		
— 📾 WAN	Device Information	
— ^{((A))} 4G	Device Name BACnet MS/TP	
- VPN	Device Properties	
 ⊖ OpenVPN		
— 泣 Alarms	Local MAC 127	
	Device MAC 1	
	Device Address 3001	
→ Modbus RTU+TCP		
	OK	
GODC UA		
Ali loT		

(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:

BLiiot BeiL	ai Indust	rial Gat	eway w	ww.BLiid	ot.com V	/1.1.3.8													-	ΟX
Search	Clear In	nport	Export	Read	Config.	Write Cor	nfig.	() Monitor	Rem) ote	Log							中文	? Help	() About
⊟் ஆீBL1	103Pro			^	Vari	able Name	T	Address Ty	pe	Add	dress	Value	Unit	Data typ	be	Varibale Key		Map Ado	lress	Ratio
	DCOM1				analoginp	out	analo	g-input	_	Ĺ				float32	REGOO)1	20	(M.40002	1) 1	
	BAC	net MS/1	P		binaryinp	ut	binar	y-input		1				bool	REGOO	02	10	(M.00001	1) n	one
-6	aLAN				-											1				
-6	WAN								Varia	ble H	Proper	ties								
-(' <u>A</u>	"4G																			
	Ivpn					Variable Nam	e	analogin	put		Var	ibale Key	RE	EG001						
	_ Open	VPN				OCT/DEC/HE	x	Decimal		•										
—m	Alarms					Address Tur		analog-ing	out.	U.		Address		1						
-57	Tasks					-		analog inp				Address								
E E	3 DataServ	ices				Data typ	e	float32		~	Add	Number		1						
	- M Pass	Through	1			Read/Writ	te	Read/Write	te	~		Ratio		1						
	- Mod	bus RTU	⊐TCP			Map Addres	ss	20			Vari	able Unit								
	- Mod	bus TCP	Server																	
	- 🕅 BACn	net/IP												OK	Cancel					
	MOPC	UA														1				
	Scloud	97653																		
	-ммот	T Client																		
		T Client	Ш																	
	-MAli lo	т																		
				~																

(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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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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(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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- (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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Send command from cloud to control device




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5.5.3 BACnet/IP Configuration

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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.

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H	Tasks			DIN	i.	02 li	nput Status(1x) 3		True		bool	DIN4		11(M.00001	2) n	one
Ð	DataS	ervices		DIN	i	02 li	nput Status(1x) 4		True		bool	DIN5		12(M.00001	3) n	one
	- @Pa	ass Throug	h	DIN	i	02 li	nput Status(1x) 5		True		bool	DIN6		13(M.00001	4) n	one
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	Cloud Cloud M M M	ACnet/IP PC UA QTT Client	t t II														

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

Project			 Tag Name 	• /	Address		Data Type	Scan Rate	Scaling		Description		
BACnet/	P		OPC Quick	ou. Client - 无标题 *			DUL 1	400			-		×
	nalogValue 16		File Edit View	v Tools Help									
Go /	nalogValue_17			💣 💣 😭 👗 🖷	lin ×								
	nalogValue_18		- BACnet	/IP.BL10x.BinaryValue	11 ^	Item ID		/ Data Type	Value	Timestamp	Quality		-
6	inaryValue_0		- BACnet	/IP.BL10x.BinaryValue_	12	BACnet/IP	BL10x.BinaryValue 5.EventState	DWord	0	15:54:08.083	Good		
-60 6	inaryValue_2		- BACnet	/IP.BL10x.BinaryValue_	13	BACnet/IP.	BL10x BinaryValue_5.ObjectIdentifie	er DWord	20971525	15:54:08.083	Good		1
- Go E	inaryValue_3		BACnet	/IP.BL10x.BinaryValue_	14	BACnet/IP.	BL10x BinaryValue_5.ObjectName	String	DO6	15:54:08.083	Good		1
	inaryValue_4		BACnet	/IP.BL10x.binaryValue_ /IP.BL10x.BinaryValue_		BACnet/IP.	BL10x.BinaryValue_5.ObjectType	DWord	5	15:54:08.083	Good		4
	knaryValue_5		- BACost	/IP BL10x BinaryValue	3	BACnet/IP.	BL10x.BinaryValue_5.OutOfService	Boolean	0	15:54:08.083	Good		1
	inaryValue_5		BACost	/IP.BL10x BinaryValue		BACnet/IP.	BL10x BinaryValue_5.PresentValue	Boolean	1	15:54:08.083	Good		
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29/08/2022 15:	54:00	BACnet/IP	1 29/08/2022	15:53:55	Added group T	Data T							
29/08/2022 15:	54:00	BACnet/IP	29/08/2022	15:53:55	Added 54 items	to gr							
29/08/2022 15:	64:00	BACnet/IP	29/08/2022	15:53:55	Added group T	Jata T							
29/08/2022 15:	4:00	BACnet/IP	29/08/2022	15:53:55	Added 54 tem	to gr							
29/09/2022 15:	4.00	BACost/IP	0 29/08/2022	15-53-55	Added 5 tems								
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29/08/2022 15:	5:27	BACnet/IP	1 29/08/2022	15:53:55	Added 4 items	to gro							
29/08/2022 15:	5:53	BACnet/IP	29/08/2022	15:53:55	Added group 'S	imula					1		*
	E-33	RAC nat / IP	Heady									em Count	558

Send Command:

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



i Project	A Tag Name /	Address	Data Type	Scan Rate	Scaling	Description	
Connectivity			500 I	***			
E BL10x	See OPC Quick Client - 无标题*					- 0	×
- AnalogValue_16	File Edit View Tools Help						
AnalogValue_17	🗅 🍅 🖬 🎿 🖄 🚭 🛣 👗 🐚 🕷	a 🗙					
BinaryValue_0	BACnet/IP.BL10x.BinaryValue_11	A Item ID		/ Data Type Val	Timestamp	Quality	1
Dinary Value_1	BACnet/IP.BL10x.BinaryValue_12	BACnet	/IP.BL10x.BinaryValue_5.EventState	DWord 0	15:54:08.083	Good	3
BinaryValue_2	BACnet/IP.BL10x.BinaryValue_13	BACnet	/IP.BL10x.BinaryValue_5.ObjectIdentifie	r DWord 209	71525 15:54:08.083	Good	3
BinaryValue_3	BACnet/IP.BL10x.BinaryValue Syr	nchronous Write			× 183	Good	
BinaryValue 5	BACnet/IP.BL10x.BinaryValue				103	Good	
BinaryValue_6	BACnet/IP.BL10x.BinaryValue	Item ID	Current Value	LUMA UNIA	OK 183	Good	2
BinaryValue_7	BACnet/IP.BL10x.BinaryValue	BACnet/IP BL10x BinaryValu	e 5 PresentValue 1	d d	Apply 183	Good	4
BinaryValue_8	BACnet/IP.BL10x BinaryValue		-				
BinaryValue 10	BACnet/IP.BL10x.BinaryValue				Cancel		
BinaryValue_11	BACnet/IP.BL10x.BinaryValue						
BinaryValue_12	BACnet/IP.BL10x.BinaryValue						
BinaryValue_13	Channel1Statistics						
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Channel1	Date Time						-
1 2 26 a	€ 29/08/2022 15:53:55						
Time Source	15:53:55						
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9/08/2022 15:54:26 BACoet/IP	0 29/08/2022 15:53:55	Added group 'Data T					
9/08/2022 15:55:17 BACnet/IP	0 29/08/2022 15:53:55	Added 11 items to gr					
9/08/2022 15:55:27 BACnet/IP	15:53:55	Added group 'Data T					
3/08/2022 15:55:53 BACnet/IP	15:53:55	Added 12 items to gr					- 8
	29/08/2022 15:53:55	Added 4 items to gro					
9/08/2022 15:56:32 BACnet/IP							

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Ġ. ф. в	L103Pro	^ Variable Name	Address Type	Address	Value	Unit	Data type	Varibale Key	Map Address	Ratio
	III COM1	DO1	01 Coil Status(0x)	0	True		bool	DO1	0(M.000001)	none
		DO2	01 Coil Status(0x)	1	True		bool	DO2	1(M.000002)	none
		DO3	01 Coil Status(0x)	2	True		bool	DO3	2(M.000003)	none
	LAN	DO4	01 Coil Status(0x)	3	True		bool	DO4	3(M.000004)	none
	└─ ۞ \$475	DO5	01 Coil Status(0x)	4	True		bool	DO5	4(M.000005)	none
-0	₩AN	DO6	01 Coil Status(0x)	5	False		bool	DO6	5(M.000006)	none
	(A) ¹ 4G	DO7	01 Coil Status(0x)	6	True		bool	DO7	6(M.000007)	none
-	VPN	DO8	01 Coil Status(0x)	7	False		bool	DO8	7(M.000008)	none
T		DIN1	02 Input Status(1x)	0	True		bool	DIN1	8(M.000009)	none
	& Alarman	DIN2	02 Input Status(1x)	1	True		bool	DIN2	9(M.000010)	none
	Lio Alarms	DIN3	02 Input Status(1x)	2	True		bool	DIN3	10(M.000011)	none
-	-O 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
	- Modbus TCP Server	DIN8	02 Input Status(1x)	7	True		bool	DIN8	15(M.000016)	none
ē	⊖ BACnet/IP ⊖ OPC UA ⊖ Cloud → MOTT Client									

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MQTT Client II



Project	divity		Tag Name		Address	Data Type	Scan Rate	Scaling		Description	
BA	ACnet/IP		OPC Quick C	lient - 无标题 *			***			-	×
e-	AnalogValue	16	File Edit View	Tools Help							
	AnalogValue	17	0 🛎 🖬 💰 (a 🖻 🗙						
	- AnalogValue	_18	BACnet/	IP.BL10x BinaryValue_	.11 ^ Iten	n ID	/ Data Type	Value	Timestamp	Quality	
	Binary Value	1	BACnet/	IP.BL10x.BinaryValue_	12	BACnet/IP.BL10x.BinaryValue 5.EventState	DWord	0	15:54:08.083	Good	
	Binary Value	2	BACnet/	IP.BL10x.BinaryValue_	13	BACnet/IP.BL10x.BinaryValue_5.ObjectIdentifie	er DWord	20971525	15:54:08.083	Good	
	Binary Value_	3	-BACnet/	IP.BL10x.BinaryValue_	.14	BACnet/IP.BL10x.BinaryValue_5.ObjectName	String	DO6	15:54:08.083	Good	
	BinaryValue_	.4	BACnet/	IP.BL10x.BinaryValue_	.15	BACnet/IP.BL10x.BinaryValue_5.ObjectType	DWord	5	15:54:08.083	Good	
	BinaryValue	e_5	BACost/	IP.BL Tox.binaryvalue_ IP.BL Tox.binaryvalue_		BACnet/IP BI 10x BinaryValue 5 OutOfService	Boolean	0	15:54:08.083	Good	
	BinaryValue_	6	BACoet/	IP BL 10x BinaryValue		BACnet/IP.BL10x.BinaryValue_5.PresentValue	Boolean	0	15:59:59.735	Good	
-	BinaryValue_ BinaryValue_	8 9	BACnet	/IP.BL10x.BinaryVa IP.BL10x.BinaryValue_ IP.BL10x.BinaryValue	alue_5 _6 7	onoriet/in.ior.ruitoinayvalue_u.utatusnaga	word	0	10.04.00.000	0000	
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5.5.5 OPC UA Configuration

BLiiot BeiLai Industrial Gateway www.Bl	liot.com V1.1.3.8							_	σx
Search Clear Import Export Read	d Config. Write Co	onfig. Monitor Remo	ote Log					? Help	(i) About
白 品 BL103Pro									
				-					
		OP	CUA	_					
	Name	Enable			Status	Port	Device Name		Status
└─@\$475	Name				•	COM1	M140T		•
- 🖾 WAN	Time	Port	4840		•	LAN	\$475		•
—(` A`)4G	Model		4040		•				
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	operator	Certificate							
E BDataservices	SIM ICCID	PrivateKey							
-@Pass Through	SIM Status								
—									
—			OK Can	cel					
- 🕀 BACnet/IP									
- OPC UA			Re	fresh					
F-OCloud									
QMOTT Client II									

- (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

BLIIOT

(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

RI IINT

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.

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	A (?	(j)
Search Clear Import Export Read Config. Write Config. Monitor Remote Log	中文He	elp A	About
白品BL103Pro MQTT Client			
⊘ M140T Variable Type Port Device	Variable Nar	me	
EI- LAN IP/Domain test.mosquitto.org			
-			us
Client ID BL10x_MQTT			
_(Å) 4G User Name BL10x_MQTT			
Password BL10x_MQTT			
OpenVPN X.509			
一資 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	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.

BLiiot BeiLai Ind	dustrial Gat	eway wi	ww.BLiiot.com	V1.1.3.8									-	σX
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⊟_நூBL103Pro ⊟-;;cOM) 11 //140T													
				Name	Valu			Cloud	Status	Port	Dev	ice Name		Status
-@s	475		Name	В	eiLai Gateway		MQTT Cli	ent		COM1	M140T			•
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	openviri		IMEI	8	861805229426	6	KingPige	on IoT	•					
- <u>Ti</u> ç Alarr	ns		Signa	Strength 1) (Normal:14-31)	KingPige	on Modbus IoT	•					
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5.5.8 View and Send Command with MQTT.fx

Edit Connection Profiles	2		– 🗆 X
	Profile Name	MQTT Server	
	Profile Type	MQTT Broker	
MQTT Server	MOTT Broker Profile Settings		
»	Broker Address	test.mosquitto.org	
	Broker Por	1883	
	Client ID	MQTT_FX_Client_test	Generate
	General User Credentials	SSL/TLS Proxy LWT	
	Lines Marga		
	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



WQTT.fx - 1.7.1	– 🗆 X
File Extras Help	
MQTT Selver	Connect Disconnect
Publish Subscribe Scripts Broker Statu	5 Log
date	Subscribe
date Dump Messages Mute Ur subscribe	date 1 QoS 0
	date
Topics Collector (0) Scan Stop of	Qc50 {"sensorDatas":[{"flag":"GPS","lat":"0.0000","lng":"0.0000"},{"flag":"Y0","switch er":0},{"flag":Y1","switcher":0},{"flag":Y2","switcher":1},{"flag":Y3","switch er":0},{"flag":Y4","switcher":0},{"flag":Y5","switcher":0},{"flag":Y6","switch er":0},{"flag":Y1","switcher":1},{"flag":Y5","switcher":0},{"flag":D1","value":0}, {"flag":D2","value":0},{"flag":D6","value":0},{"flag":D1","value":0},{"flag":O1","switcher":0},{"flag":Q0","switcher":0},{"flag":Q0","switcher":0},{"flag":Q0","switcher":0},{"flag":Q1","switcher":0},{"flag":"NMS","value":0},{"f
	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			-	•
Publish Subscribe Scripts Broker Status Log				
» down v Publish QoSD Q	051 Qo52	Retained		0°*
<pre>sensorDatas": { switcher":1, "fig:""//" idown":"down" } </pre>				



MQTT.fx - 1.7.1		- 🗆	×
File Extras Help			
MQTT Server	Connect Disconnect		
-			
Publish Subscribe Scripts Broker Statu	s Log		
<pre>} to topic down (QoS 0, Retained: false) 2021-08-04 17:48:35,908 INFO MqttFX Cli 2021-08-04 17:48:43,698 INFO MqttFX Cli 2021-08-04 17:48:41,631 INFO BrokerConn 2021-08-04 17:48:41,632 INFO ScriptsCor 2021-08-04 17:48:41,632 INFO ScriptsCor 2021-08-04 17:48:41,642 INFO ScriptsCor 2021-08-04 17:48:41,642 INFO ScriptsCor 2021-08-04 17:48:41,643 INFO ScriptsCor 2021-08-04 17:48:41,643 INFO ScriptsCor 2021-08-04 17:48:41,643 INFO ScriptsCor 2021-08-04 17:50:04,047 INFO ScriptsCor 2021-08-04 17:50:04,047 INFO BrokerConn 2021-08-04 17:50:06,047 INFO ScriptsCor 2021-08-04 17:50:07,784 INFO MqttFX Cli 2021-08-04 17:50:26,190 INFO MqttFX Cli 2021-08-04 17:50:26,191 INFO MqttFX Cli 2021-08-04 17:50:26,</pre>	<pre>entModel : messageArrived() with topic: date entModel : messageArrived() added: message #2 to topic 'dat ectorController : onDisconnect entModel : rebuildMessagesList() troller : Clear console. troller : Cancel script excution. troller : Clear console. troller : Clear console. troller : Clear console. troller : Clear console. etorController : onConnect troller : Clear console. entModel : MqttClient with ID MQTT_FX_Client_test assigned. entModel : session present: false introller : addRecentSubscriptionTopic entModel : attempt to addRecentSubscriptionTopic entModel : sucessfully subscribed to topic date (QoS 0) entModel : messageArrived() with topic: date entModel : messageArrived() with topic: date entModel : sucessfully published message {</pre>	e' ities.Top e'	ica459
MQTT.fx - 1.7.1		- 🗆	×
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MQTT Server	Terret Disconnect	1	• •
Publish Subscribe Scripts Broker Statu	s Log		
date	Subscribe QoS1 QoS2 A	utoscroll	0,**
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			QoS 0
	date		3 QoS 0
	date		4
			Q05 0
Tania Callestar (0)			
Topics Collector (U) Scan Stop	date	Г	1

QoS 0 04-08-2021 17:50:18.64218381 prDatas":[{"flag "Y4","switcher":0; :Y7","switcher":0,{"f 0},{"flag": :0},{"flag" switch ":0}, lue {"f ue":0 "flag {"flag":"D2 :0},{ +Lag Lag":"D6"," :0].{ "D6","value "switcher": e":0},{"fl :0},{"flag flag :01 'D7 value switch :11. {"fla "value" Payload decoded by Plain Text Decoder

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WQTT.fx - 1.7.1		×
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date 6	date	1 QoS 0
Denig Historiger Histor (Historiger	date	2 QoS 0
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	date	4 QoS 0
	date	QoS 0
	date	6 QoS 0
Topics Collector (0) Scan Stop Or		
	date 04-08-2021 17:50:38.64238894	2 QoS 0
	<pre>{"sensorDatas":[{"flag":"GPS","lat":"0.0000","lng":"0.0000"},{"flag":"Y0","su her":0},{"flag":"Y1","switcher":0},{"flag":"Y2","switcher":0},{"flag":"Y3"," cher":0},{"flag":"Y1","switcher":1},{"flag":"Y5","switcher":0},{"flag":"Y6", tcher":0},{"flag":"D1","switcher":1},{"flag":"D0","value":0},{"flag":"D1","va ":0},{"flag":"D2","value":0},{"flag":"D3","value":0},{"flag":"D4","value":0}, lag:"D5","value":0},{"flag":"D6","value":0},{"flag":"D4","value":0},{"flag":"D4","value":0},{"flag":"D4","switcher":1},{"flag":"D4","switcher":0},{"flag":"D4","switcher":0},{"flag":"D4","switcher":1},{"flag":"D4","switcher":0},{"flag":"D4","switcher":1},{"flag":"D4","switcher":0},{"flag":"D4","switcher</pre>	vitc swit alue ,{"f :"Q0 ":"Q g":" g":"
	Payload decoded by Plain Text Decoder	17

5.5.9 Alibaba Cloud Configuration

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← Public Instance		IoT Platform / De	vices / Devices	/ Device Details						
Devices	^	~ 	Offline							
Products		Products	Wiew			DeviceSecret	*****	*** View		
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Groups		Device Informa	ation Topic	Device Certificate Copy	1				os	Tasl
Jobs		Device Informat	ion	ProductKey	Сору					
CA Certificate		Product Name	BL10	DeviceName	Сору				legio	'n
Rules	~	Node Type	Devic	DeviceSecret		Сору			Authe	enticatic
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Resource Allocation	~	Created At	-	\checkmark Introduction to the uniqu	e-certificate-per-device and unique-certifica	ite-per-product mo	odes		.ast C	Online
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Documentation and Too	ols	More Device Inf	ormation							
		SDK Language	-		Version				Mode	ule Man



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	Enable								
└─�OpenVPN					Variable Type Port	Device	Variable Nam	ne	
— 👸 Alarms									Status
	Authentication Mode	Device Secret	~						•
DataServices	Region	China(Shanghai)	~						•
—⊕Pass Throu	IP								
—⊕ Modbus R	ProductKey								
—⊕ Modbus T	DeviceName	BL10x-							
- 🕀 BACnet/IP	DeviceSecret								
⊗opc ua	CA File								
E & Cloud	Client Certificate File								
-@MQTT Clie	Client Key File								
-@MQTT Clie	Upload Cycle(s)	30							
Ali loT									
- 🕀 HUAWEI Id							OK	ancel	
- 🖓 AWS IoT							ON C	uncer	
—	n IoT								
└─ 𝔅 KingPigeor	Modbus IoT								
-{ô}Advanced Setti	ngs 🗸								

(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.



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		Services		Time	17	30:33 08/29/202	2	MQTT Client II	•	LAN	S475		•
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	-ØN	lodbus RTU	J≒TCP	4G Mo	dule EC	200SCNAAR01A	09M16	AWS IoT	•				
	-ØM	lodbus TCF	Server	IMEI	86	3618052294261		KingPigeon IoT	•				
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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 Clear Import Export Rea	d Config. Write Co	onfig. Monitor Re	mote Log					中文 He	elp Abou
白 品 BL110Pro	Variable Name	Address Type	Address	Value	Unit	Data type	Varibale Key	Map Address	Ratio
- — () СОМ1	Q0.0	Q	0			bool	Q0.0	31(M.000032)	none
	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	Q	0.3			bool	Q0.3	34(M.000035)	none
<u></u> ⊕\$7-200	Q0.4	Q	0.4			bool	Q0.4	35(M.000036)	none
	Q0.5	Q	0.5			bool	Q0.5	36(M.000037)	none
CP1L-L	Q0.6	Q	0.6			bool	Q0.6	37(M.000038)	none
E-COM4	Q0.7	Q	0.7			bool	Q0.7	38(M.000039)	none
DVP-12SA2	VW0	VW	0			uint16	VW0	13(M.400014)	1
	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
E WAN							_ /		
G FX5U									
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W Alarma									
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Beilai Technology Co., Ltd



← Public Instance	IoT Platform / Devices / Prod	ucts / Product Details / Define	Feature				
Devices ^	← Edit Draft						
Products	Product Name BL10x-密钥			ProductKey	у Сору		
Devices	You are editing a draft. You read the second sec	need to click Publish to apply the TSL	model.				
Groups	Import TSL Model	Version History 🗸					
Jobs	Enter a module nar Q +	Default Module					
CA Certificate		Add Standard Feature Ad	ld Self-defined Feature				
Rules ~	Default Module	Feature Type	Feature Name(all)	Identifier 14	Data Type	Data Definition	Actions
Maintenance V Resource Allocation V	+Add Module	Properties	VW8 Custom	VW8	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
Link Analytics 🗅	<	Properties	VW6 Custom	VW6	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
Link Visual V		Properties	VW4 (Custom)	VW4	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
Documentation and Tools		Properties	VW2 Custom	VW2	Int32	Value Range: -2147483648 ~ 214748 3647	Edit Delete
		Properties	VW0 Custam	VW0	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 1 - 五	Edit Delete
F Feedback	Release online Back						

Data received in Alibaba Cloud is as below:

😑 C-J Alibaba C	loud	🛱 Workbench China (Shi	inghai) Y		Q Sea	chExper	ses Tickets ICP En	terprise Support App 🖂 🌡) 77 🕐 en 🌘
← Public Instance		IoT Platform / Devices / Devic	es / Device Details						
Devices Products	^	← BL10x-miya Products BL10x-密閉	O Online		[DeviceSecret View	1		
Devices		ProductKey a1oVeEkKXW Device Information Top	v Copy ic List TSL Data	Device Shadow Manage Fil	es Device Log On	ine Debug Groups Task			
Jobs		Status Events Invol	te Service						
CA Certificate	~	Enter a module name Q	Enter a property name of Property identifier	Property Name	Data Type	Update Time	Updated Value	Expected Value	Actions
Maintenance	Y)		D0	D0	int	Aug 12, 2021, 20:05:18.78	30	8	View Data
Resource Allocation	~		D1	D1	int	Aug 12, 2021, 20:05:18.78	0	2	View Data
Link Analytics			D2	D2	int	Aug 12, 2021, 20:05:18.78	0	8	View Data
Documentation and Too	le .		D3	D3	int	Aug 12, 2021, 20:05:18.78	0	×	View Data
Documentation and 100	13		D4	D4	int	Aug 12, 2021, 20:05:18.78	0	*	View Data
			D5	DS	int	Aug 12, 2021, 20:05:18.78	0	æ	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
(E) Feedback			Q0	Q0	bool	Aug 12, 2021, 20:05:18.78	1 (开)	1 (开)	View Data



= CJ Alibaba Cloud	🛱 Workbench	China (Shanghai) 🗸		Q Search	Expense	is Tickets ICP	Enterprise Support App Ed ()	₩ (1) E
← Public Instance		D7	D7	int	Aug 12, 2021, 20:07:49:676	10	*	View Data
Devices ^		Q0	Q0	bool	Aug 12, 2021, 20:07:49.676	1 (开)	1 (开)	View Data
Products		QI	Q1	bool	Aug 12, 2021, 20:07:49.676	o (关)	8	View Data
Devices		02	Q2	bool	Aug 12, 2021, 20:07:49.676	0 (关)	9	View Data
Groups		Q3	Q3	bool	Aug 12, 2021, 20:07:49.676	0 (关)		View Data
Jobs		Q4	Q4	bool	Aug 12, 2021, 20:07:49:676	0 (95)	ė.	View Data
CA Certificate		QS	Q5	bool	Aug 12, 2021, 20:07:49:676	0(关)		View
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Resource Allocation				hard		1.000	1 (33)	View
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Link Visual \sim		VWO	VW0	int	Aug 12, 2021, 20:07:49.676	10		Data
Documentation and Tools		VW2	VW2	int	Aug 12, 2021, 20:07:49.676	0	÷.	Data
		VW4	VW4	int	Aug 12, 2021, 20:07:49:676	0		Data
		VW6	VW6	int	Aug 12, 2021, 20:07:49.676	0	4	View Data
		vwa	VW8	int	Aug 12, 2021, 20:07:49.676	8	*	View Data
		NO	YO	bool	Aug 12, 2021, 20:07:49.676	0 (关)	1 (开)	View Data
El Feedback		NT	ν1	bool	Aug 12, 2021, 20:07:49:676	0 (0)	8	View Data
C-J Alibaba Cloud Fublic Instance	A Workbench	China (Shanghai) 🛩	QJ	Q	SearchAug 12, 2021, 20:08:19	Expenses Ticket	s ICP Enterprise Support App	EI Q IN () EN View Data
Devices ^		Q4	Q4	bool	Aug 12, 2021, 20:06:15	9.968 0 (关)	~	View Data
Products		Q5	Q5	bool	Aug 12, 2021, 20:08:15	9.988 0 (关)	1	View Data
Devices		Q6	Q6	bool				View
Groups					Aug 12, 2021, 20:08:19	988 0(关)		Data
Jobs		07		bad	Aug 12, 2021, 20:08:15	9.968 0(笑)	- 1(#)	Data
		Q7	Q7	bool	Aug 12, 2021, 20:08:11 Aug 12, 2021, 20:08:15	9,968 0 (英) 9,968 1 (开)	- 1(开)	Data View Data View
CA Certificate		Q7 Y0	Q7 Y0	bool	Aug 12, 2021, 2008:11 Aug 12, 2021, 2008:15 Aug 12, 2021, 2008:15	9.968 0 (美) 9.968 1 (开) 9.968 0 (美)	- 1 (मि) 1 (मि)	Data View Data View Data
CA Certificate Rules ~		Q7 Y0 Y1	Q7 Y0 Y1	bool bool bool	Aug 12, 2021, 2008;1 Aug 12, 2021, 2008;1 Aug 12, 2021, 2008;10 Aug 12, 2021, 2008;10	9.968 0 (关) 2.968 1 (开) 2.988 0 (关) 2.988 0 (关)	- 1 (H) 1 (H) -	Data View Data View Data View Data
CA Certificate Rules V Maintenance Resource Allocation V		97 90 91 92	Q7 Y0 Y1 Y2	bool bool bool	Aug 12, 2021, 2008, 10 Aug 12, 2021, 2008, 10 Aug 12, 2021, 2008, 10 Aug 12, 2021, 2008, 10 Aug 12, 2021, 2008, 10	2,968 0(逆) 2,968 1(円) 2,968 0(逆) 2,968 0(0) 2,968 1(1)	1 (में) 1 (में) -	Data View Data View Data 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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(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.

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5.5.12 View and Send Command in HUAWEI Cloud

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8	IoTDA Instances					DO6	Integer	Readable.Writable	Сору	Edit Delete
۲	Documentation	°°				D07	Integer	Readable, Writable	Сору	Edit Delete
	API Explorer	°°				DO8	Integer	Readable.Writable	Сору	Edit Delete
	IoT Device Provisioning	d ⁰				DIN1	Integer	Readable, Writable	Сору	Edit Delete
	Forum for help	e ^o				DIN2	Integer	Readable.Writable	Сору	Edit Delete
					10 Add	Total Records: 16 < Command mand Name	1 2 >	Response Parameteris	s Operation	
					M140	下发	D01,D02,D03,D04,	D04,D05,D06,D07,D08	Copy Edit	Delete
					10	▼ Total Records: 1 <	1 >			

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

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Ġ _å в	L103Pro			^	Vari	able Name		Address Typ	be A	ddress	Value	Unit	Data type	V	aribale Key	Map Ado	lress	Ratio
É-C	COM1				DO1		01 C	oil Status(0x)	0				bool	DO1		0(M.000001) r	ione
	LOM	140T			DO2		01 C	oil Status(0x)	1				bool	DO2		1(M.000002) r	ione
		HUT			DO3		01 C	oil Status(0x)	2				bool	DO3		2(M.000003) r	ione
먹					DO4		01 C	oil Status(0x)	3				bool	DO4		3(M.000004) r	ione
	<u></u> —⊕\$4	75			DO5		01 C	oil Status(0x)	4				bool	DO5		4(M.000005) r	ione
	₩AN				DO6		01 C	oil Status(0x)	5				bool	DO6		5(M.000006) r	ione
	(Å) 4G				DO7		01 C	oil Status(0x)	6				bool	D07		6(M.000007) r	ione
	VPNVPN				DO8		01 C	oil Status(0x)	7				bool	DO8		7(M.000008) r	ione
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		•			DIN3		02 Ir	nput Status(1>	<) 2				bool	DIN3		10(M.00001	1) r	ione
H	Tasks				DIN4		02 Ir	nput Status(1>	<) 3				bool	DIN4		11(M.00001	2) r	ione
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	Cloud	Cnet/IP PC UA QTT Client QTT Client	:	~														

Data received in HUAWEI Cloud:





Send command from HUAWEI Cloud Add command to be sent



HLAND	HUAWEI CLOUD	ନି Cons	ole 🛛 Beijing4	٠							More English	-	بر פ
Ξ	IoT Device Access		Model Definition	Online Debugging	Topic N	lanagement							
0	Basic Change		Add Service	Import from Library	Import fro	m Local	Import from Excel				Learn Abou	t Product Model	s Export
707	Overview		Service List	⊕ C	Servi	ce ID M140T	Service Type M140T	Description			Mo	lify Service D	elete Service
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\odot	Storage Management		т.			DO2		Integer	Readable,Writable		Сору	Edit Delete	в
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0	Resource Spaces					DO5		Integer	Readable,Writable		Copy	Edit Delet	a
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\oplus	Documentation	°°				D07		Integer	Readable,Writable		Сору	Edit Delet	a
	API Explorer	°				DO8		Integer	Readable,Writable		Сору	Edit Delet	a
	IoT Device Provisioning	e la				DIN1		Integer	Readable,Writable		Сору	Edit Delet	e
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					10 Add Comm	Total Re Command nand Name	cords: 16 < 1 2	Command Parameters	Response F	9arameters	Operation	Delate	
					M140	「下发		D01,D02,D03,D04,D04,D05,	D06,D07,D08		Copy Edit	Delete	

Command to send data

Take the DO2 of M140T as an example

	HUAWEI CLOUD 👘 🎧	Console V Boijing4 ·				
≡	IoT Device Access	All Devices / Device Details				
٢	2	Overview Commands Device	Shadow Mes	ssage Trace Maintenance Child Devices Tags		
	Basic Change Default	If the product that the device belongs t command delivery.	Deliver Cor	mmand	× es support synchronous command	delivery, and NB-IoT devices support asynchronous
0	Overview Products	Synchronous Command Deliv	For synchr commman	ronously delivered command, device should send response within 20 seconds after the d is sent. Otherwise, the status of this commands will be set as 'Timed Our'. Learn more		Deliver Command
0	All Devices	Asynchronous Command Del	* Command	M140T M140T下波		Deliver Command
4	Groups Software/Firmware Upgrades	Queued Commands Historical C	DOZ	e autoreet type. en	10ame	O Advanced Search Y C
&	Device CA Certificates	Status 🖓 Command Na	D03 D04	Parameter type: int Parameter type: int	by Platform	Delivered
0	Rules * Storage Management		DO4	Paraméter type, int		
	O&M Now		DO5	Paramotor type; int		
	Resource Spaces		DO6	Parameter type: int		
	Documentation dP		D07	Parameter type: Int		@
	API Explorer d ⁰	-	DO8	Parameter type: Int		
	IoT Device Provisioning of			OK Can	cel	
	Forum for help of					

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



	HUAWEI CLOUD		le 🗣 Belijing4 🔹					
Ξ	IoT Device Access		M140T	D01	Read-only,Writable	0		
0				D02	Read-only,Writable	0		
6	Basic Chang	e)		D03	Read-only,Writable	1		
,000,		-		DD4	Read-only,Writable	11		
0	Overview			DOS	Read-only,Writable	1		
0	Products			DO6	Read-only,Writable	0		
6	All Devices	•		D07	Read-only,Writable	1		
\odot	Groups			DO8	Read-only,Writable	0		
4	Software/Firmware			DIN1	Read-only,Writable	9 <u>1</u>		
O	Device CA			DIN2	Read-only,Writable			
ය	Certificates			DIN3	Read-only,Writable			
٥	Rules			DIN4	Read-only,Writable	1		
	Storage Management	2		DIN5	Read-only,Writable	12		
	Resource Spaces			DING	Read-only,Writable	(t)		
	IoTDA Instances			DIN7	Read-only,Writable	1 I		0
	Documentation	æ		DIN8	Read-only,Writable	1		0
	API Explorer	°	S475	temp	Read-only	2790		
	IoT Device Provisioning	æ		humidity	Read-only	6400		
	Forum for help	e ⁰		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 \	/1.1.3.8						-	· O X
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				AWS IoT					
一〇 OpenVPN 一賞 Alarms	Enable			Variable Type	Port	Device	Variable Na	ne	Status
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- Modbus F	Thing								
- 🖓 Modbus 1	Client ID								
—⊗BACnet/IF	CA File	AmazonRootCA1.pem							
└─@OPC UA	Client Certificate File	-certificate.pem.cr	t						
Cloud	Client Key File	private.pem.key							
-@MQTT Clie	Publish Topic	10t/topic 1	dd Delete						
	opious species								
- S AWS IoT	۹						ОК	Cancel	
-	n loT								
└─ ூ KingPigeo	n Modbus IoT								
-{ô}Advanced Set	tings 🗸								

(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".

BLIIOT

```
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.



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

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	4 ")4G			^												
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	└──�OpenV	PN 🔽) Enable													
-i	Alarms									Cloud	Status	Port		Device Name		Status
-6	Tasks	v	ou can c	hange the ser	ver ad	dress to log in to o	ther cloud pla	atforms.	MQTT C	lient	•	COM1	M140T			•
DE	DataService	es		IP/Domai	n	modbus.dtui	p.com	_	MQTT C	lient II	•	LAN	S475			•
	- Pass Th	nrou		Por	+	6651		-		LIAT	•					
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- (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 Typ	pe –	(decimal places)	~ ^	18	J Delete	N		
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	Q5	Switch type (c	operable 👻	(decimal places)	- Unit	18	Delete	12		
	Q6	Switch type (c	operable 👻	(decimal places)	- Unit	18	Delete	12		
	Q7	Switch type (c	operable 👻	(decimal places)	Unit	18	Delete	12		
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	VW2	Numerical Typ	pe –	(decimal places)	*	18	Delete	2		
	VW4	Numerical Typ	pe 🤟	(decimal places)	~	18	J Delete	2		
	VW6	Numerical Typ	pe 👻	(decimal places)	* 1	18	Delete	2		
	VW8	Numerical Typ	pe 🚽	(decimal places)	* 1	18	1 Delete	N		
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UDP Protocol TCP JSON Protocol CTCAP Protocol CCAP CCA	I Gateway www.B			03 1 04 1 05 1 07 1 070 1 071 1 071 1 071 1 071 1 071 1 071 1 071 1 071 1 072 1	018ead and write 018ead and write 018ead and write 018ead and write 018ead and write 038ead and write	w 12 w 13 w 15 w 16 w 13 w 17 w 17 w 17 w 17 w 17 w 17 w 17	List vye Data type bool Q0,2 bool Q0,3 bool Q0,4 bool Q0,5 bool Q0	Varibale Key	Colomatic Electronic Electronic Total Electronic Total Electronic Electronic Total Electronic Electronictronic Electronic Electronic Electronictronic	10 10 10 10 10 10 10 10 10 10

CP1L-L	Q0.6	Q	0.6	bool	Q0.6	37(M.000038)	none
	Q0.7	Q	0.7	bool	Q0.7	38(M.000039)	none
	VW0	VW	0	uint16	VW0	13(M.400014)	1
	VW2	VW	2	uint16	VW2	14(M.400015)	1
	VW4	VW	4	uint16	VW4	15(M.400016)	1
4-@ \$7-200SMART	VW6	vw	6	uint16	VW6	16(M.400017)	1
CP1L-EL	VW8	vw	8	uint16	VW8	17(M.400018)	1
G m WAN G FX5U - ⁽ ₩) ¹ 4G D m VPN - ⁽ ₩) ² OpenVPN - ⁽ ₩) ² Alarms - ⁽ ™) ² Tasks D DataServices							

Collected data value is as below:



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

				Console C	і 🙆 в
Device name /iD	BL10x Serial Nu	mber: (
All Equipment Alarm 00 Unline	P Y0	Connected Updated:2021/08/13 17:13:06	OFF	AlmQ	RT Curve
◆ 联认组 ▲ <u>新</u> ² BL10x	0/4 Y1	Connected Updated 2021/08/13 17:13:06	OFF	AlmQ	RT Curve
£ ⁵ 8265	A Y2	Connected		AimQ	RT Curve
✓ <u>№</u> RTU5022	10-1002300 1 Y3	Connected	OFF	AlmQ	RT Curve
	 ID:1602306 Y4 	Updated:2021/08/13 17:13:06			DT Comm
BL10x	0 Y5	Updated 2021/08/13 17 13:06		Auro	KI CUIVE
正 D225-三頭MQTT	UD-1602308	Updated 2021/08/13 17:13:06	OFF	AimQ	RT Curve
EL10K-S7-200SMART	ID: 1602309	Updated 2021/08/13 17:13:06	OFF	AlmQ	RT Curve
5 BL102-S7-200MQTT-1	V7 ID:1602310	Q Connected Updated:2021/08/13 17:13:06		AlmQ	RT Curve
∑ BL102-S7-200MQTT-2	D0 ID:1602311		10.0000 🛧 🛩	AlmQ	RT Curve
S272 (modbus TCP)	D1 10:1602312	Connected Updated:2021/08/13 17:13:08	0.0000 🛧 🛩	AlmQ	RT Curve
9272 (MQTT)	L				
E BL(Modbus RTU)					
Monitoring Center				Console D Ch En	glish 🙆
Device name //D	BL10x- Serial Numbe	r succession			808
All Equipment Alarm 0 Unline 20	D2 ID 1602313	Connected Updated 2021/08/13 17:14:43	0.0000 🛧 🛩	AlmQ RT CurveG	Hist Query
 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	D3	Connected	0.0000 🛧 🛩	AlmQ RT CurveG	Hist Query
▲ BL 100 ▲ \$285		Connected	0.0000 🛧 🛩	AlmQ RT Curve⊝	Hist Query
★ RTU5022	D5	Connected	0 0000 🚓 🛩	Alm⊖ RT Curve⊂	Hist Quer
♥ \$282 ♥ BL 1/14	DE 10:1602316	Updated 2021/08/13 17:14:43	0.0000 + *	AlmO PT Current	Hirt Our
₩ BL10x	0 ID.1602317	Updated:2021/08/13 17:14:43	10.0000	Nine Nicorec	This Query
	ID:1602318	Updaled:2021/08/13 17:14:43	10.0000 🛧 🛩	AlmQ RT Curves	Hist Quer
EL10x-MQTT	ID.1602319	Updated:2021/08/13 17:14:41		AlmQ RT CurveG	Hist Query
<u>∑</u> [€] BL102-87-200MQTT-1	Q1 ID:1602320	Genected Updated:2021/08/13 17:14:41	OFF	AlmQ RT CurveG	Hist Quer
∑ ^c BL102-S7-200MQTT-2 ∑ ^c S275	Q2 ID:1602321	Gonnected Updated 2021/08/13 17:14:41	OFF	AlmQ RT CurveG	Hist Quer
5272 (modbus TCP)	Q3 ID:1602322	© Connected Updated:2021/08/13 17:14:41	OFF	AlmQ RT Curve	Hist Quer
S272 (MQTT)					
S BL(Modbus RTU)	-				
∑ [≤] BLMQTT1					
all according					
Monitoring Center				Console 🗘 🖉 Englis	h 🌚
Device name /ID Q	BL10x-JE Serial Number.	Carrier Course		8	0 2
All Equipment Alarm 🚺 Unline 🜌	Q4 ID:1602323	🖵 connected Updated 2021-08-13 17:16:16	OFF	Alm⊕ RT Curve⊙	Hist Query
► BL1Dx	Q5 ID:1602324	⊊ connected Updated.2021-08-13 17:16:16	OFF	AlmQ. RT Curve@	Hist Query
<u>1</u> \$265	Q6 ID:1602325	Connected Updated:2021-08-13 17:16:16	OPF	AImQ RT Curve®	Hist Query
Series 122	Q7 ID 1602326	Q connected Updated 2021-08-13 17 16 16		AlmQ RT Curve	Hist Query
↓ > BL 1/14	UD:1602327	🖵 connected Updated 2021-08-13 17:16:08	20.0000 🛧 🛩	AlmQ RT Curve®	Hist Query
BL10x BL10x	VW2	G connected Updated:2021-06-13 17:16:06	0.0000 🛧 🛩	AlmQ RT Curve©	Hist Query
SEL10X-S7-200SMART	VW4		0.0000 🛧 🛩	AlmQ RT Curve@	Hist Query
EL 10x-MGTT	1 VW6	Connected	0.0000 🛧 🛩	AlmQ RT Curve⊙	Hist Query
SE 102-57-200MQ11-1 ∑ ⁶ BL102-57-200MQ1T-2	10 1002300 1 VW8	vysettett zez r+uo+ ra r7-16.06	8.0000 🛧 🛩	Almo RT Curves	Hist Query
<u>∑</u> ^c 8276	ID:1602331	updated 2021-08-13 17.16.08		And a second	and a second second
5272 (modbus TCP)					
∑ ^C BL(Mothus RTU)					
∑ BLMOTT					
ELMGITT					

Send command from cloud



Monitoring Center				
Device name /ID 🔍	BL10x-	e (1000-000-000-000-000-000-000-000-000-00		
All Equipment Alarm 🚺 Unline 20	Q4 ID:1602323	Genected Updated 2021-08-13 17 19 49		
✓ \$63.68 0/3 ≤ ⁶ 81.10x	Q5 ID:1602324	🖵 connected Updated 2021-08-13 17 19 49		
<u>1</u> \$265	Q6 ID:1602325	🖵 connected Updated 2021-08-13 17:19:49		
5282	Q7 1D:1602326	☐ connected Updated 2021-08-13 17:19:49		
✓ BL 1/14	VW0 ID:1602327	😨 connected Updated.2021-08-13 17:19:40	20.0000 🛧 🕶	
E BL10x2001 ∑ 0225-Ξ#MOTT	VW2 ID:1602328	Connected Updated 2021-08-13 17:19:40	0.0000 🛧 🛩	
E BL10x-S7-2005MART	VW4 ID:1602329	☐ connected Updated.2021-08-13 17 19.40	Data Dissemination — 🖾 🗙	
5 BL102-MOTT 5 BL102-57-200MQTT-1	VW6 ID:1602330	☐ connected Updated 2021-08-13 17 19 40		
E BL102-57-200MQTT-2	VW8	connected Updated:2021-06-13 17 19:40		
<u>∑</u> ^C 8275 <u>∑</u> ^C 8272 (modbus TCP)			Confirm	
9272 (MOTT)				
5 ^C BL(Modbus RTU)				
E BLMQTT1				

				C
Device name //D	BL10x- Serial Numbe	r. Contractoriation as		
All Equipment Alarm O Unline 20	Q4 ID:1602323	🖵 connected Updated:2021-08-13 17:21:35	OFF	
✓ 默认组 0/小	Q5 ID:1602324		OFF	
► <u>S265</u>	Q6 ID:1602325		OFF	
 RTU5022 \$282 	Q7 ID:1602326	☐ connected Updated:2021-08-13 17:21.35		
* BL 1/14	U 10:1602327	🖵 connected Updated:2021-08-13 17:21:36	10.0000 🛧 🛩	
▲ BL10x	VW2 ID:1602328		0.0000 🛧 🕶	
5 BL10x-S7-200SMART	VW4 ID:1602329		0.0000 🛧 🛩	
5 BL10x-MOTT 5 BL102-S7-200MQTT-1	VW6 ID:1602330	🖵 connected Updated:2021-08-13 17:21:36	0.0000 🛧 🛩	
5 BL102-S7-200MQTT-2	VW8 ID:1602331	connected Updated:2021-08-13 17:21:36	8.0000 🛧 🛩	
<u>∑</u> ^C S275 <u>∑</u> ^C S272 (modbus TCP)				

E BLMQTT

5.5.17 King Pigeon Cloud via MQTT

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	Ð
Search Clear Import Export Read Config. Write Config. Monitor Remote Log 中文 Help	About
- KingPigeon IoT	
Endele	
Variable Type Port Device Variable Name	
- Ži Alarm	Status
Tasks IP/Domain 1883.dtuip.com	•
DataS Port 1883	•
- ⊕ Pa Client ID	
- S M User Name MQTT	
- C M Password MQTTPW	
- 🏵 BA Subscribe Topic /+	
CO Publish Topic	
Cloud Upload Cycle(s) 30	
- ⊕ M Data Retransmission)	
-@M	
- Q HI OK Cancel	
- & KingPigeon IoT	
Cy KingPigeon Modbus Io1	
42)Advanced Settings	

- (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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	₩ ⁹ 4G ■VPN └─⊖OO	penVPN			Na	me	Value		1	Claud	Status	Port	Dev	ice Name		Statur
	Tacks			N	ame	BeiLai	Gateway		MQTT C	lient	0	COM1	M140T	lee Huine		
		ondese		Ti	me	19:32:3	33 08/29/2022	2	MQTT C	lient II	•	LAN	S475			•
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	-ØM	lodbus TCF	Server	IN	IEI	868618	8052294261		KingPige	on IoT	•					
	-ØB/	ACnet/IP		Si	gnal Stre	ength 19 (No	ormal:14-31)		KingPige	on Modbus IoT	•					
	600	PC UA		or	erator	NULL										
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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

	Numerical Type 🔍	4 (decimal places)	-	\uparrow	18	1	Delete	7
D5	Numerical Type 👻	4 (decimal places)	*	个	18	1	Delete	7
D6	Numerical Type	4 (decimal places)	-	个	18	1	Delete	7
D7	Numerical Type -	4 (decimal places)	-	个	18	1	Delete	2
Q0	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	15
Q1	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	1
Q2	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	15
Q3	Switch type (operable ~	0 (decimal places)	-	Unit	18	1	Delete	2
Q4	Switch type (operable 👻	0 (decimal places)	-	Unit	18	1	Delete	15
Q5	Switch type (operable 👻	0 (decimal places)	-	Unit	18	J	Delete	1
Q6	Switch type (operable 👻	0 (decimal places)		Unit	18	1	Delete	12
Q7	Switch type (operable 👻	0 (decimal places)	*	Unit	18	J	Delete	12
vwq	Numerical Type	4 (decimal places)	-	个	18	1	Delete	7
VW2	Numerical Type	4 (decimal places)	-	个	18	J	Delete	2
VW4	Numerical Type	4 (decimal places)	•	\uparrow	18	1	Delete	2
VW6	Numerical Type 👻	4 (decimal places)	-		18	1	Delete	2
VW8	Numerical Type	4 (decimal places)		\uparrow	18	1	Delete	7
22.54632,113.3025	914 Q							



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



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白 品BL110Pro	^ Va	iable Name	Address Type	Address	Value	Unit	Data type	1	/aribale Key	Map Add	ress	Ratio
- COM1	Q0.0	Q		0			bool	Q0.0		31(M.000032	2) r	ione
	Q0.1	Q		0.1			bool	Q0.1		32(M.000033	l) r	ione
	Q0.2	Q		0.2			bool	Q0.2		33(M.000034	1) r	ione
	Q0.3	Q		0.3			bool	Q0.3		34(M.000035	i) r	ione
₩\$7-200	Q0.4	Q		0.4			bool	Q0.4		35(M.000036	5) r	ione
	Q0.5	Q		0.5			bool	Q0.5		36(M.000037	7) r	ione
CP1L-L	Q0.6	Q		0.6			bool	Q0.6		37(M.000038	8) r	ione
E COM4	Q0.7	Q		0.7			bool	Q0.7		38(M.000039	9) r	ione
GDVP-12SA2	VW0	vw		0			uint16	VW0		13(M.400014	l) 1	
	VW2	vw		2			uint16	VW2		14(M.400015	i) 1	
	VW4	vw		4			uint16	VW4		15(M.400016	5) 1	
GS7-200SMARI	VW6	vw		6			uint16	VW6		16(M.400017	") 1	
└─�CP1L-EL	VW8	VW		8			uint16	VW8		17(M.400018	8) 1	
C WAN												
G FX5U												
_('A') 4G												
- WWVPN												
OpenVPN												
DataServices	~											

Collected data value is as below:

M2	Monitoring Cente	e l					Console L	1 🕼 English
⊚	Device name //D) Q	BL10	-MQTT Serial Number				80
	Equipment Alarm 0	Unline 19	1	DB5687 DBX0.0 ID 1586724	무 Unconnected Updated 2021/08/12 15:21:03	OFF	AlmQ	RT Curve⊙ Hist
• <u>-</u>	SKIALE BL10x	0/4	1	Y0 ID:1602384	🖵 Connected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve© Hist
1	5265		1	Y1 ID:1602385	Connected Updated 2021/08/13 17:41:24	OFF	AlmQ	RT Curve® Hist
0	RTU5022 8282		1	Y2 ID:1602386	Connected Updated 2021/08/13 17:41:24		AlmQ	RT Curve© Hist
<u></u>	BL	2/14	1	Y3 ID:1602387	Connected Updated:2021/08/13 17:41:24	OFF	AlmQ	RT Curve Hist
1	BL10x-2000		1	Y4 ID:1602388	Connected Updated 2021/08/13 17 41:24		AlmQ	RT Curve® Hist
E	BL101-S7-200SMART		1	Y5 ID:1602389	Connected Updated 2021/08/13 17 41:24	OFF	AimQ	RT Curve Hist
2	BL10x-MQTT		1	Y6 ID:1602390	☐ Connected Updated 2021/08/13 17:41:24	OFF	AlmO	RT Curve@ Hist
2	с BL102-S7-200МQTT-2		a	Y7 ID:1602391	Connected Updated 2021/08/13 17 41 24		AmQ	RT Curve : Hist
<u>5</u> 52	c 5275		a	D0	Connected	10.0000 🛧 🛩	AlmQ	RT Curve⊛ Hist
	S272 (MQTT)							
<u>5</u>	BL(Modbus RTU)							
<u></u>	C BLMQTT							
5	BLMQTT1							
	·							



2 Monitoring Center				Console 💭 🕫 English
Device name /ID 🔍	BL10x-MQTT Serial Nun	nber:		B (
All Equipment Alarm 📴 Unline 19	D1	Q Connected Updated 2021/08/13 17:43:26	0.0000 🛧 🛩	Alm⊖ RT Curve⊙ His
✓ 款込道 35 ⁵ 80.10x	D2	Connected	0.0000 🛧 🛩	AlmQ RT Curve⊙ His
∑ ^c \$265	D3 ID 1602395	Connected Updated 2021/08/13 17:43 26	0.0000 🛧 🛩	AlmQ RT Curve@ His
£ RTU5022 ∰ 5282	D4 ID:1602396	Connected Updated 2021/08/13 17 43 26	0.0000 🛧 🛩	AlmQ RT Curve(C His
✓ BL 2/14	D5 10:1602397	Connected	0.0000 🛧 🛩	Alm⊖ RT Curve⊙ His
S BL10x	D6 10.1602398	Cannected Updated 2021/08/13 17 43 26	0.0000 🛧 🛩	AlmQ RT Curve® His
E BL10x-S7-200SMART	D7 ID:1602399	Connected Updated 2021/08/13 17 43 26	10.0000 🛧 🛩	AlmQ RT Curve© His
5 BL10x-MQTT	Q0 ID:1602400	Connected Updated 2021/08/13 17 43 26		AlmQ RT Curve® His
5 BL102-57-200MQTT-2	Q1	Connected Lindated 2021/08/13 17:43:26	OFF	AlmQ RT Curve@ His
S275 S275 S272 Insoftwar TCP)	Q2	Connected	OFF	AlmQ RT Curve© His
5272 (MQTT)	- HE TONE HE	openetical new restrictor		
EL(Mothus RTU)				
E BLMQTT				
E BLMOTT1				
E BLMOTTI				

Device name /ID Q	BL10x-MQTT Serial Num	iber: Ellowool: IV		
Equipment Alarm 0 Unline 19	Q3 ID:1602403	Connected	OFF	AlmQ
RtiAte D/A	Q4 ID:1602404	Connected Updated:2021/08/13 17:45:30	OFF	AlmQ
\$ \$265	Q5 ID:1602405	Connected Updated:2021/08/13 17.45.30	OFF	AimQ
87U5022 5282	Q6 ID:1602406	☐ Connected Updated:2021/08/13 17:45:30	OFF	AlmQ
BL 2/14	Q7 ID:1602407	Q Connected Updated:2021/08/13 17:45:30		AimQ
SBL10x	VW0 ID:1602408	☐ Connected Updated 2021/08/13 17:45:30	10.0000 🛧 🛩	AimQ
SBL10x-S7-200SMART	VW2 ID:1602409	Connected Updated 2021/08/13 17:45:30	0.0000 🛧 🛩	AlmQ
BL102-S7-200MQTT-1	VW4 ID:1602410	Connected Updated:2021/08/13 17:45:30	0.0000 🛧 🛩	AlmQ
BL102-S7-200MQTT-2	VW6		0.0000 🛧 🛩	AlmQ
S275 S272 (modbus TCP)	VW8 ID:1602412	Connected Updated 2021/08/13 17:45:30	8.0000 🛧 🛩	AlmQ
\$272 (MQTT)				
EL(Modbus RTU)				
BLMQTT				

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



Monitoring Center					
	Q B	L10x-MQTT Serial Number.			
All Equipment Alarm	Unline	DB5687.DBX0.0 ID 1586724	Q Unconnected Updated 2021/08/12 15:21:03	OFF	AlmQ
✓ 默认组 至 ^c 8L10x	0/4	Y0 ID:1602384	☐ connected Updated:2021-08-13 17:48:32	OFF	AlmQ
<u>∑</u> ^c \$265		Y1 ID 1502385	Connected	OFF	AlmQ
£ RTU5022		1 Y2	♀ connected		AlmQ
 ✓ S282 ✓ BL 	2/14	 ID:1602386 Y3 	Updated.2021-08-13 17 48 32 ♀ connected		Alm D
EL10x-300		0 Y4	Updated:2021-08-13 <mark>-17:45:22</mark> 〇 connected	×	2011Q
E D225 MATT		ID: 1602388	Updated:2021-08-1: Are you sure to operat	e the device switch?	AlmQ
E BL10x-S7-200SMART		V5 ID:1602389	Gence Cance Cance	Determine	AlmQ
EL 102-57-200MQTT-1		Y6 ID: 1602390	♀ connected Updated:2021-08-13 17:48:32	OFF	AlmQ
E 81.102-57-200MQTT-2		Y7 ID: 1602391	♀ connected Updated 2021-08-13 17:48:32		AlmQ
5 8275		D0	Connected	10.0000 🛧 🛩	AlmQ
S272 (MQTT)		10,1002332	. optiskou.zoz. (1997-19, 17, 49, 52		
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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
        },
        {
        }
    }
}
```

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```
//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
           }
    ],
   "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


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//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
- 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":
[
{
```

{

```
"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

Beilai Technology Co., Ltd. Website: www.iot-solution.com