GSM 3G 4G LTE Cellular IoT Gateway



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S475 S475E User Manual

Ver 1.6.4

Date Issued: 2020-09-21 King Pigeon Hi-Tech. Co., Ltd.

www.IOT-Solution.com



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UPGRADE HISTORY

DATE	CONFIGURATOR	FIRMWARE	HARDWARE	DESCRIPTION
DATE	VERSION	VERSION	VERSION	DESCRIPTION
2018.10.25	V1.0	V25	V 1.3	First edition
2019 03 18	V1.0	V25	V 1 3	Modified the start address of the 32-bit map
2013.03.10	V1.0	V25	V 1.5	register in Appendix C
2019 04 09	V1 1	V26	1/1.2	Network port and cellular add MQTT
2013.04.05	VIII	V20	V1.5	connection to cloud platform
2019.04.20	V1.2	V27	V1.3	Adding S475 E Series Products
2010 08 15	1/1 2	1/20	1/1 2	Adding the function of Ethernet as Modbus
2019.08.15	V1.3	V28	0 V1.3	TCP master
				1.Modified Cellular network Settings default
2019.9.23	V1.3	V28	V1.3	parameter
				2.Adding MQTT protocol instruction
2020.3.13	V1.4.2	V31	V1.4.1	1.Add DIN1-3 pulse counter features
2020.04.09	V1.4.2	V31	V1.4.1	Revised MQTT data release format
2020.7.29	V1.5	V31	V1.4.1	Remove supports SDK
				1.Modify wiring diagram
2020.09.18	V1.6.3	V31	V1.4.1	2.Modify MQTT settings and reissue
				instructions
2020.9.21	V1.6.4			Modify SMS command error

Model List

	GSMBG								Мар	ping Regi	sters	
Model	4G	Ethernet	DIN	PT100	Relay	T&H	SD Card	Pooloon	16 Di+	20 Di+		RS485
				11100				DOOlean	TO-DII	32-DIL	04-DIL	Port
S475	\checkmark	\checkmark	8	6	4	1	8G	64	128	64	64	2
S475E	×	\checkmark	8	6	4	1	8G	64	128	64	64	2
	 Default version is GSM/GPRS module inside. Pls check the slave devices' register quantity and data type, then choose the right model of S475/S475E 											
Notice	according	according to the mapping registers in the model list.										
	3.For 3G	WCDMA, 4	G LTI	E version,	please te	ell our s	ales where	e would you	u like to use	e them.		
	4.The S475E series has no communication module, so it can't call and SMS to alarm.											



1. Brief introduction

The Cellular IoT Gateway S475/S475E is an industrial class, high reliability, high stability, and programmable Remote Terminal Unit (RTU). It embedded 32-Bit High Performance Microprocessor MCU, inbuilt industrial Cellular module. It provides 8 digital inputs, 6 analog (ultra high 24 bit resolution) or PT100 Resistance Temperature Detector (RTD) inputs, 4 relay outputs, 1 ambient sensor input for monitoring onsitetemperature and humidity, 1 Ethernet RJ45 port for connect internet WAN or LAN, and 2 RS485 serial port, supports 320 IO tags via Modbus RTU protocol. It can monitoring and operates the I/O ports by SMS, APP, Web Server, internet, timers and programmed inter-lock events automatically.

The Cellular IoT Modbus Gateway S475/S475E inbuilt TCP/IP protocol stack make it suitable for internet of things (IoT)

applications, it can be operated easily by the provided cloud, app, and web server, or integrated to your IoT applications via Ethernet or the TCP/UDP protocol, or integrated to SCADA systems by standard Modbus TCP

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protocol, too. This is very useful if you need remote control onsite devices with low cost solution.

The Cellular IoT Modbus Gateway S475/S475E supports 2 RS485 ports, which can be used as Modbus RTU Master and Slave at the same time and supports transparent data transmission . The Cellular IoT Modbus RTU can be used as Modbus RTU Master to reading smart meters, I/O modules, PLC, and converts to SMS alert once triggered the threshold value, or transmit data to remote server over GPRS/3G/4Gnetwork.

Typically applications:

The Cellular IoT Modbus Gateway S475/S475E is designed for working in the harsh industrial application environment, widely used in a variety of industrial automation:

BTS Monitoring, Security Alarm System applications, Supervision and monitoring alarm systems, Automatic monitoring system, Vending Machines security protection, Pumping Stations, Tanks, Oil or Water levels, Buildings and Real Estate, Weather Stations, River Monitoring and Flood Control, Oil and gas pipelines, Corrosion protection, Temperatures, water leakage applications, Wellheads, boat, vehicle, Energy saving, street lights control system, Valve controls, Transformer stations, Unmanned machine rooms, Control room application, Automation System, M2M, etc.

2.Safety Directions



Safe Startup

Do not use the unit when using GSM/3G/4G equipment is prohibited or might bring disturbance or danger.

Interference

All wireless equipment might interfere network signals of the unit and influence its performance.

3. Standard Packing List

Gateway X1; AC/DC Adaptor X1; GSM/3G/4G Antenna X1;User Manual X1(QR code download link); PC Configurator X1(QR code download link) .

Note: The package does not include any SIM card.

Optional: 35mm Standard DIN rail fixed Bracket





4. Features and Specification

4. 1 Mainly Features

- SSM/GPRS/3G/4G network communication, can be operated from anywhere, no distance limitation;
- Quad band 850/900/1800/1900Mhz GSM GPRS Module inside,3G/4GModules are optional;
- Modular design, can easily upgrade the cellular module if network upgrade;
- Embedded ARM[®] Cortex[™]-M4 32 Bit RISC Core, 168 MHz inside, RTOS system, reliable performance with in-built watchdog;
- Wide range power supply 9~36VDC with over voltage and phase-reversal protection;
- 8 digital inputs, compatible dry and wet contact, DINO can be used as high speed pulse counter max 1MHz,DIN1-3 can be used as low speed pulse counter max 1KHz.DIN1 can arm and disarm ;
- 6 analog inputs, 24bit resolution, compatibles 0/4~20mA, 0~5V, can change to PT100 Resistance Temperature
 Detectors;
- > 4 relay output (5A/30VDC, 5A/250VAC), compatibles pulse outputs;
- 1 temperature & humidity sensor input for monitoring onsite environment, the sensor model is AM2301,
 Measures temperature from -40-80°C,0.5°C accuracy, Relative Humidity from 0-99RH%, accuracy is 3%;
- Inbuilt inter-lock logic programmer and powerful timer program function;
- Resend the data while communication failure and alert to users by SMS;
- Embedded TCP/IP protocol stack, support TCP/UDP, Modbus TCP, Modbus RTU over TCP, KingPigeon IoT RTU protocol and transparent transmission function, support self-defined handshake protocol active connecting server and automatically reconnect the server function after connection failure;
- > Built-in TCP listening port, can be used as a TCP server, supports up to 5 terminal accesses;
- > With dual SIM interface: SIM card 1 active, SIM 2 standby mode, improve communication quality;
- Supports RJ45 Ethernet port for connect internet;
- > 2 RS485 port, supports Modbus RTU Master and Slave, can be used to extend I/O ports or meters;
- Supports SMS Alert when I/O triggered or recovery, and external power lost or recovery;
- Provides 1 channel 9~36VDC power source output for external device, saving wiring cost;
- Up to 10 SMS Alert and dial numbers, can program to receive specified alarm message,10 authorized numbers can switch on/off device with a free charge call at the specified time;
- Inbuilt 8G SD card to save up to 100000 historical data and events;
- Inbuilt large capacity automatically rechargeable backup battery;
- Using metal shell, protection class IP30. Metal shell and system security isolation, especially suitable for industrial applications in the field;
- > L70 * W87 * H52mm, compatible wall installation and DIN35mm industrial rail installation.



4. 2 Specifications

ltem	Reference Scope
DC Power supply	Standard adapter: DC 12V/2A Range 9-36VDC
Power consumption	Standby:12V/130mA; Working Max.: 12V/500mA
GSM Frequency	850/900/1800/1900Mhz
3G/4G	Optional: WCDMA/TDD-LTE/FDD-LTE
TCP/IP stack	TCP,UDP
SIM interface	Dual SIM Card, supporting 3V and 1.8V SIM Card
External antenna	SMA Antenna interface, 50 Ohm, Gain: 3dB
Serial Interfaces	1 USB Port
Protocols	SMS, GPRS UDP,TCP,MQTT, Modbus RTU, Modbus TCP and more equipment protocols can be added according to requirements.
Ethernet	1 RJ45 Ethernet port for connect internet.
RS485	2 RS485, Support Transparent transmission and Modbus RTU Slave, Modbus RTU Master.
Digital Inputs	8 Digital input, NC/NO type, wet /dry contact .DINO can be used as high speed pulse counter max 1MHz,DIN1-3 can be used as low speed pulse counter max 1KHz.DIN1 can arm and disarm.
Analog Inputs	6 Analog Inputs. 24 bit resolution, 0-5V or 0-20mA or 4-20mA;
Temp.&Hum Inputs	Temperature range: -40°C to +80°C, Humidity Range: 0~100%RH;
Relay Outputs	4, Rated: 5A/30VDC,5A/250VAC
Power Outputs	1 Port, for external device;
Extend I/O tags	Max.320
Memory Capacity	Internal 8G SD card inside, can save the data for 100000events.
Backup Battery	3.7V 900mAH
Temperature range	-20°C ~ +70 °C
Humidity range	Relative humidity 95% (condensation free)
Exterior dimension	70mm*87mm*52mm
Net Weight	350g



5. Physical Layout and Installation Diagram

5.1 Control Unit size



5.2 Interface definition



S/N	Function	Description
1	GND	Negative electrode
2	DATA	Temp/humi data
3	VCC	Temp/humi Power



S/N	Function	Description
4	GND	GND
5	DO0+	1st relay output +
6	DO0-	1st relay output -
7	DO1+	2nd relay output +
8	D01-	2nd relay output -
9	DO2+	3rd relay output +
10	DO2-	3rd relay output -
11	DO3+	4th relay output +
12	DO3-	4th relay output -
13	GND	GND
14	GND	GND
15	DINO	1st digital input
16	DIN1	2nd digital input
17	DIN2	3rd digital input
18	DIN3	4th digital input
19	DIN4	5th digital input
20	DIN5	6th digital input
21	DIN6	7th digital input
22	DIN7	8th digital input
23	GND	GND







S/N	Function	Description
24	GND	GND
25	485_1 B	485_1 B data-
26	485_1 A	485_1 A data+
27	GND	GND for input
28	485_2 B	485_2 B data-
29	485_2 A	485_2 A data+
30	DC_OUT -	Power output negative electrode
31	DC_OUT +	Power output port, positive electrode
32	DC_IN -	Power input negative electrode.
33	DC_IN +	Power input positive electrode.





S/N	Function	Description
34	AIN3+	4th analog input +
35	AIN3-	4th analog input -
36	AIN4+	5th analog input +
37	AIN4-	5th analog input -
38	AIN5+	6th analog input +
39	AIN5-	6th analog input -
40	AIN0+	1st analog input +
41	AIN0-	1st analog input -
42	AIN1+	2nd analog input +
43	AIN1-	2nd analog input -
44	AIN2+	3rd analog input +
45	AIN2-	3rd analog input -





S/N	Description
1	1st analog input switch
2	2nd analog input switch
3	3rd analog input switch
4	4th analog input switch
5	5th analog input switch
6	6th analog input switch

Note:

Switch to ON (down side), stands for "4-20mA" type; Switch to OFF (up side), stands for "0-5V" type.

5.3 LED Indicator Definition





	LED Indicator Definition
	Cellular network indicator. When 2G register network, off 2 seconds, on 0.2s and
att	so on; When 3G 4G register network, on 2s, off 0.2s
	When light off, stands for communication is abnormal.
Power	RTU status indicator, LED ON when switched RTU on
Alarm	Alarm Indicator, alarm will ON and flick. Normally is OFF;
Dum	RTU running status indicator, ON or OFF stands for RTU halted, flicks slowly stands for RTU
Kuli	is running.
Status	Arm/Disarmed Indicator, Arm is ON, disarmed is OFF.
RS485-1	When transmitting data by RS485, the LED will flick, otherwise, it is off.
RS485-2	When transmitting data by RS485, the LED will flick, otherwise, it is off.



	Switch & Button Definition
	L 2 3 4 5 6 NI DIP
Power Switch	For switch ON/OFF the RTU
Upgrade Eirmware Switch	For upgrade firmware purpose only. Only when upgrade new firmware version will use it, otherwise keep it at Work Side all the time.
	SIM Card Slot
Dual SIM Card Slot	For SIM Card Installation, supports 3V/1.8V Nano SIM Card. Note:Turn off the device when insert or remove the SIM card.
	Ethernet Connector Definition(only for S47X)
Ethernet	Rate indicator(green): Light ON stands for 100Mbps:OFE stands for 10Mbps

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	Link indicator(yellow):Light ON stands for connected;OFF stands for disconnect;									
	Flick stands for transmitting data.									
	ATN Port Connector Definition									
ATN	GSM/3G/4G Antenna connector, 500hm, SMA male.									
	USB Port Connector Definition									
USB	USB port, for configuration and upgrading firmware and exporting historical data;									

IS/GPRS/3G/4G

Cellular IoT Gateway

6. Settings&Operation

The Cellular IoT Gateway is user-friendly design, The user can setup it or export historic data by the PC Configuration through USB cable, and upgrade firmware by USB port. The Cellular IoT Gateway also can be configured some basically parameters by SMS Commands, please refer to SMS Command List.

- Tips!
- 1) Please insert the SIM Card firstly, and install the GSM/3G/4G Antenna, please power on to check the LEDs status according to above mentioned LED Definitions, keep switch on it during the programming.
- 2) Download the software from this link: http://rtu-m2m.com/Download/Software/CP210x_Windows7_8_10_Drivers.zip. Below is the steps to setup the parameters by PC Configuration, please follow it step by step.

6.1 Start to Configure

Step1: Install the Configuration software

The Configuration software link:

http://rtu-m2m.com/Download/Software/CP210x_Windows7_8_10_Drivers.zip, then installs it on the computer.

Step2: Connection

Please insert the SIM Card, and install the GSM/3G/4G Antenna.

Step3: Connect the Gateway to the PC by USB cable. And connect the external DC Power to DC Power Ports, Power on, and switch on the device, see below:

9-	-36V
D	C IN
-	+

Step4: Install USB Driver

Install the USB Driver to the computer from the CD firstly. When successful, it can be found out at the device manager of the XP or Windows 7 or Win8/Win10, please see the below photo. Also, the driver for different OS can be downloaded from Silicon Laboratories, Inc. http://www.silabs.com , the model is CP210x.



🚔 Device Manager	
File Action View Help	
🔺 🛁 Sammy-PC	
Batteries	
⊳	
Disk drives	
🖌 🛼 Display adapters	
DVD/CD-ROM drives	
De ATA/ATAPI controllers	
Imaging devices	
Keyboards	
Mice and other pointing devices	
Monitors	
Network adapters	
Ports (COM & LPT)	
Silicon Labs CP210x USB to UART Bridge (COM3)	
Processors	

Step5: Run the Configuration software (Compatible with Windows XP/7/8/10)

Tips: In some computer, it required download net framework 4.0 while installation, then please click "Yes" to go to Microsoft website to download this service pack.

Please click S47X configuration software to run it. Enter the password, default is 1234. Then you can enter the configuration page as below:

<u>a</u>		
	Choose Port	
	COM1	- Refresh
	Password (Default:1234)	

	OK(<u>O</u>)	Cancel(<u>C</u>)

Select Sim card type and click"Enter Setting", after successful login, the software interface is shown in the following figure:

dSelect	
Select SIM Card Category	
Normal SIM Card(Call and SMS)	📃 IDT M2M SIM Card(Data only)
Enter Se	tting

Select the card type of S475 device, the SIM card that supports SMS and phone calls, please select "Normal SIM card", and the SIM card with only data function, please select "IoT M2M SIM card", select "IoT M2M SIM card" and configure The software will disable all functions related to SMS and phone calls. If the device is S475E, please select "IoT M2M SIM Card".

Notice:

If display the below windows, then means the RTU connect to the PC failure. The reasons are below:





- *1)* USB Driver installation failure;
- 2) USB Cable connection is disconnected;
- *3)* The Upgrade Firmware Switch at Load side, not at Work side.
- 4) Power Switch switched off or DC Power Connection is disconnected.

Step6: Choose the correct "COM port" in device manager above, enter the password(default is 1234),click the "OK" to connect and start to program

Details please check the picture as below:

ब्रि		
	Choose Port	
	COM3	▼ Refresh
	Password (Default:1234)	

	OK(<u>O</u>)	Cancel(<u>C</u>)

Tips: If not connect successfully, will not enter into next step. Pls check if USB connect well, or COM port and password correct or not.

6.2 Setting Self-checking

Phenomenon	Possible Reason							
Can't enter software	1. USB Driver installation failure;							
	2. COM Port not correct or USB driver installation failure;							
	1. The Upgrade Firmware Switch at Load side, not at Work side.							
After quitching panel on	Solution: Switch the power switch to OFF>Upgrade switch to Work side>							
After switching panel on,	Power switch to ON;							
only Power light on, panel	2. SD card fall out from the slot.							
can t work	Solution: Shake panel to listen if there is voice or not;							
	3. In upgrade mode, use upgrade tool erased the firmware.							
Can't ontor into working	1. The Upgrade Firmware Switch at Load side, not at Work side.							
Can't enter into working	Solution: Switch the power switch to OFF>Upgrade switch to Work side>							
mode	Power switch to ON;							
	1. Have not installed driver;							
Can't find COM Port	2. PC system problem cause driver installation failure, can't support Apple OS							
	system.							

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	3. Check USB line, and try other common driver software such as "Drive The Life".
In working mode, the	Have not set the device ID.
device not response the	Solution: In setting mode, set device ID>Switch the device to Run mode.
Modbus command	
After switching panel on,	After parameter setting, forget to click "Save" button in the menu.
not running according to	Solution: Back to Set mode>Click "Save" Button after setting one page in the
parameter setting	menu.

6.3 Configuration software interface and running

Basic Setting	Parameter 🔀						
Parameter Alarm Numbers Dutput Setting Access Control nput Setting fimer Setting	Modify password Old pass New pass Confirm pas Basic information Device ID	sword: sword: isword: Modify 7,fill it when used as Modbus Sla	Synchronous mach Time: 20 Re Wr Rei	ine time 19-07-25 10:00:(~ id the RTU time te the RTU time id the computer 25475-RTU Version 2EA34	Read		
ogic Trigger Setting	Device Description:		(60 Characters) SN	869141045751395	Save		
	✓ Add timestamp to ala	arm SMS 🗹 Arm automatically w	/hen power on.				
RS485 Setting	Auto Arm after disarr	m 1 Minute(s) (0~9999,	When set as 0, the RTU	vill in armed mode immediat	tel		
RS485 Setting	Auto Arm after disar	m 1 Minute(s) (0~9999, '	When set as 0, the RTU v	vill in armed mode immediat	tel		
RS485 Setting Slave Setting Cloud Platform Setting	Auto Arm after disari Timer Reporting SMS Cou Add the following add DI0 Status	m 1 Minute(s) (0~9999, ' Intent Settings Iditional information in the report	When set as 0, the RTU s	vill in armed mode immediat	tel		
RS485 Setting Slave Setting Cloud Platform Setting	Auto Arm after disan Timer Reporting SMS Col Add the following add DI0 Status DI1 Status	m 1 Minute(s) (0~9999, ' Intent Settings Iditional information in the report Arm Status GSM/3G Signal Value	When set as 0, the RTU v SMS Allo Value	vill in armed mode immediat	tel		
IS485 Setting lave Setting Cloud Platform Setting listorical Record	Auto Arm after disan Timer Reporting SMS Cou Add the following ad DI0 Status DI1 Status DI2 Status	m 1 Minute(s) (0~9999, ntent Settings Iditional information in the report Arm Status GSM/3G Signal Value External Power Status	When set as 0, the RTU v SMS Al0 Value Al1 Value Al2 Value	vill in armed mode immediat	tel		
485 Setting ave Setting bud Platform Setting storical Record	Auto Arm after disari Timer Reporting SMS Coi Add the following ad DI0 Status DI1 Status DI2 Status DI3 Status	m 1 Minute(s) (0~9999, Intent Settings Iditional information in the report Arm Status GSM/3G Signal Value External Power Status Device ID	When set as 0, the RTU v SMS All Value All Value Al2 Value Al3 Value	 DO0 Status DO1 Status DO2 Status DO2 Status DO2 Status 	tel		
5485 Setting ave Setting oud Platform Setting istorical Record	Auto Arm after disan Timer Reporting SMS Cou dd the following ad DIO Status DI1 Status D12 Status D13 Status D13 Status D14 Status	m 1 Minute(s) (0-9999, ' Intent Settings Iditional information in the report Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value	When set as 0, the RTU to SMS AIO Value AI1 Value AI2 Value AI3 Value AI4 Value	vill in armed mode immediat DO0 Status DO1 Status DO2 Status DO3 Status	kel		
S485 Setting lave Setting loud Platform Setting listorical Record	 ✓ Auto Arm after disan Timer Reporting SMS Cor Add the following ad DI0 Status DI1 Status DI2 Status DI3 Status DI3 Status DI4 Status DI5 Status 	m 1 Minute(s) (0-9999, ' intent Settings didtional information in the report Arm Status SSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value	When set as 0, the RTU to s SMS Allo Value Al1 Value Al2 Value Al4 Value Al4 Value Al5 Value	 ill in armed mode immediat DO0 Status DO1 Status DO2 Status DO2 Status DO3 Status 	sel		
S485 Setting lave Setting loud Platform Setting istorical Record	 ✓ Auto Arm after disart Timer Reporting SMS Co △ Add the following ad △ DI0 Status △ DI0 Status △ DI1 Status △ DI3 Status △ DI3 Status △ DI3 Status △ DI4 Status △ DI5 Status △ DI5 Status △ DI6 Status △ DI6 Status 	Iminute(s) (0-9999, ' Intent Settings I Iditional information in the report Arm Status SSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	When set as 0, the RTU to s SMS All Value Al2 Value Al3 Value Al4 Value Al5 Value	ill in armed mode immediat DO0 Status D01 Status D02 Status D03 Status	kel		
S5485 Setting Slave Setting Cloud Platform Setting 4istorical Record	 ✓ Auto Arm after disari Timer Reporting SMS Con △ Add the following ad ○ D10 Status ○ D10 Status ○ D12 Status ○ D13 Status ○ D14 Status ○ D15 Status ○ D15 Status ○ D16 Status ○ D16 Status ○ D17 Status 	I Minute(s) (0-9999, ' Intent Settings I Iditional information in the report Arm Status GSM/3G Signal Value External Power Status Device D Temperature Value Humidity Value Device Description	When set as 0, the RTU to SMS All Value All Value All Value All Value All Value All Value All Value	 ill in armed mode immediat D00 Status D01 Status D02 Status D03 Status 	iel		
S485 Setting Slave Setting Cloud Platform Setting Historical Record	 ✓ Auto Arm after disart Timer Reporting SMS Co. △ Add the following ad △ Di Status 	m 1 Minute(s) (0-9999, ' Iditional information in the report Arm Status GSM/3G Signal Value External Power Status Device D Temperature Value Humidity Value Device Description	When set as 0, the RTU of SMS All Value All Value All Value All Value All Value All Value All Value	 ill in armed mode immediat DO0 Status DO1 Status DO1 Status DO2 Status DO3 Status 	iel		
IS485 Setting Ilave Setting Iloud Platform Setting fistorical Record	✓ Auto Arm after disan Timer Reporting SMS Co Add the following ad DIO Status DI1 Status DI2 Status DI3 Status DI3 Status DI5 Status DI5 Status DI5 Status DI7 Status Alarm SMS Content Settin Add the following add	m 1 Minute(s) (0-9999, ' Intent Settings Iditional information in the report Arm Status SSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description gs ditional information in the alarm 3	When set as 0, the RTU of SMS A10 Value A11 Value A12 Value A13 Value A14 Value A15 Value SMS	vill in armed mode immediat	kel		
S485 Setting lave Setting loud Platform Setting listorical Record	 ✓ Auto Arm after disari Timer Reporting SMS Co △ Add the following ad △ DI0 Status △ DI0 Status △ DI3 Status △ DI3 Status △ DI4 Status △ DI4 Status △ DI5 Status △ DI6 Status △ DI6 Status 	I Minute(s) (0-9999, ' Iditional information in the report Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description gs ditional information in the alarm 1	When set as 0, the RTU v SMS AID Value AIT Value SMS AID Value	vill in armed mode immediat	iel		
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Load Profile: Click it to load additional Profile to the PC Configurator;

Export Profile: Click it to save the present configuration parameters as a profile for next RTU configuration or backup the parameter settings.

Tips: The Load Profile and Export Profile is very useful while you need to program bulks of RTU with similar parameters. After programmed the first unit then you can export profile to save it, for the second RTU then you can load profile directly to save you time.

Default: Click it to recovery the parameters to factory defaults.

Notice:

1. After setting or revising parameter, need to click the "Save" button of this page for saving parameters in device

- 2. Before export profile, need to read Slaves configuration details first, to avoid Slaves information
- missing.
- 3.Easy way to revise parameter: Open parameter setting page---->Click "Read" button to get device current value ---->Revise and click "Save" button in the menu.
- 4. Reboot the device, switch the Power Switch to OFF, then switch it to ON, the device will enter into normal running mode after that.



Basic Settings

Reminder: Please click the "Read" for previous parameter before starting to set.

Import Configuration file Exp	December No.	Factory Reset 🛛 🖉 Help					
Basic Setting Parameter Alarm Numbers Output Setting Access Control Input Setting Timer Setting Go Logic Trigger Setting	Modify password Old pu New pu Confirm pu Basic information Device ID 1 (1-2) Device Description:	sssword:	Synchronous mad Time: 2 Re W Re ve over RS485) Model N (60 Characters) S	hine time 019-07-25 10:00:(~ ad the RTU time inte the RTU time ad the computer 10.5475-RTU Version 2EA34 N 869141045751395	Read Save		
RS485 Setting	Auto Arm after disa	rm 1 Minute(s) (0~9999,	When set as 0, the RTU	will in armed mode immediatel			
Slave Setting Cloud Platform Setting Cloud Platform Setting Historical Record	Timer Reporting SMS C Add the following a DI0 Status DI1 Status DI2 Status DI3 Status DI4 Status DI5 Status DI5 Status DI5 Status	ontent Settings dditional information in the repor Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	t SMS Al0 Value Al1 Value Al2 Value Al3 Value Al4 Value Al5 Value	DOU Status DOI Status DO2 Status DO3 Status			
	Alarm SMS Content Sett Add the following a DIO Status DI1 Status DI2 Status DI3 Status DI3 Status DI5 Status DI5 Status DI5 Status	ings dditional information in the alarm Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	SMS Allo Value Al1 Value Al2 Value Al3 Value Al4 Value Al5 Value	DO0 Status DO1 Status DO2 Status DO3 Status			

Modify Password: This is for modifying the RTU's Password, default is 1234.

Synchronous machine time: This is to setup the RTU's time for daily report or other timers. After click Write the RTU Time, the RTU will be synchronous the same time as the PC. If connect to King Pigeon Cloud Server, no need this step.

Device ID: Non-necessary. This is mainly for monitoring center to identify the RTU;

If communicate via Modbus protocol, device ID only can be 1~247.

Device Description: This is the description of the RTU, e.g.: installation address, usage instructions and so on.

Add Timestamp to alarm SMS: Tick it stands for while alarm occurrence, the Alarm SMS will include the RTU'S current time information.

Arm automatically when power on: Tick it stands for once the RTU powered up, the RTU will enter into Arm Mode automatically.

Auto arm after disarmed: Fill the timeout to enter into Armed Mode automatically after

disarmed operation. This is useful for security protection applications.

Tips:

Arm: Under this mode, any alarm occurrence will send SMS and dial the authorized numbers immediately, and execute the programmed I/O outputs.

Disarmed: Under this mode, alarm occurrence will not send SMS & dial the authorized numbers.

Timer Reporting SMS Content Settings: Tick the related items to add its value/status to the Timer report SMS contents.

Alarm SMS Content Settings: Ticks the related items to add its value/status to the Alarm SMS Contents.

SN:S475 is IMEI number,S475E is null.



Number Settings

This is to setup the Authorized User Telephone Numbers to receive the Alarm SMS or dial. Tick it stands for while the related event alarm occurrence will send SMS to this number.

Reminder:

Please remember that click "Save" button to save it after parameter be written, below pages are the same.

S475-RTU Cellular IoT RTU Config	gurator V1.4.2												 	_	٥	×
🕨 Import Configuration file 🛛 🚽 E	xport Configuration File	e 📲 Factory Res	et [🗐 H	lelp												
e Basic Setting	$_{\sf Parameter}$ $ imes$	Alarm Numbers	\mathbf{X}													
Parameter	Authorized Use	er Telephone Num	ber Settin	gs												
Alarm Numbers		(Alarm No.)	Power On	Timer Report	Arm/Disar SMS	m Low Signal	Power Lost	Power Recovery	Cellular network Failure	Relay Switch	Slave Alarm	Slave Failure				
Output Setting	User No.0				\checkmark			\checkmark								
Access Control	User No.1			\checkmark												
Input Setting	User No.2			\checkmark												
Timer Setting	User No.3			\checkmark												
logic Trigger Setting	User No.4			\checkmark												
	User No.5			\checkmark												
KS485 Setting	User No.6			\checkmark												
Slave Setting	User No.7			\checkmark												
Cloud Platform Setting	User No.8			\square												
Historical Record	User No.9															
									Read		Save					
	Notice: 1. Alarm No. can 2. Low signal ale 3. Tick it stands i	include or non-in rt: Mobile signal la for when the event	clude cou ower than : occurren	ntry code 14 (full si ce, will se	, e.g.:in Uk ignal is 31) nd SMS to	ζcan setup l. the relate	0044 or d telepho	+44 or wit	hout count rs.	ry code,bi	ut can not	be 44.				
ОМЗ			De	evice type	:S475-RTU	1										

Power On: Tick it stands for while the RTU powered up, will automatically send SMS to this number,

include device model, version, description, IMEI, status, signal value etc....

Timer Report: Tick it stands for Timer report SMS will send to this number.

Arm/Disarm SMS: Tick it stands for Arm or Disarm the RTU, will send SMS to this number.

Low Signal: Tick it stands for while GSM/3G/4G Network signal strength lower than 14 will send SMS to this number.

Power Lost: Tick it stands for while external DC Power loss will send SMS to this number.

Power Recovery: Tick it stands for while external DC Power recovery, will send SMS to this number.

Cellular network Failure: Tick it stands for while GPRS connection re-try 3 times and still failure will send SMS to this number.

Relay Switch: Tick it stands for while relay is activated, will send SMS to this number.

Slave Alarm: Tick it stands for the salve tag triggered will send SMS to this number.

Slave Failure: Tick it stands for when slave communication failure alarm verify time arrive, will send SMS to this number.

Relay Output (DOUT) Settings

This page is to setup the output parameters and definite the output usages, the outputs will be used in the Interlock Page for programmable logic events.

KING PIGE	rator V1.4.2	ion File	M/SN		GP	RS/	/3(C	G/4(ellu	G Ular I o	d t Gat	ew a	ay • ×
Basic Setting Output Setting	Parameter DO_0 DO_1 DO_2 DO_3 Notice: 1. If the 2. If the then c 3. Only 14 If the 5. If the in Al/I 6. Close 7. Alarm the RT	Alarm Nur Output Type Switch on/c \ Switch on/c	mbers X DO X Channel Name (MAX.20) as 0, this channel wi as not 0, this channel is action according i 200) can be setup as p as Switch ON/OFF, be child off SMS ale As to alert the users	Close Time(S) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Repeat Times 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Interval Time(S)	ON/OFF SMS constructions constru	Alarm ACK Time(S) 0	Open Description (MAX.30)	Close Description (MAX.30)		
COM3			Device	type:S475-R	TU							

Output Type: Support 3 output types. The user can choose the output type for the relay outputs, includes Open Door, Switch ON/OFF, Siren. The relay 2 and 3 only used for Switch ON/OFF; Relay 0 can option as Open Door and Switch ON/OFF; Relay 1 can option as Siren and Switch ON/OFF.

 Open Door: Only the first Channel(DO0) can be setup as Open Door, use it for electric lock. If setup as Open Door, then the authorized number calls in RTU, can open the electric Lock directly or output a pulse signal and disarmed the RTU directly. See Access Control page about the authorized number.

Notice:

If relay 0 used for Open Door, then can't be action as normal Switch ON/OFF.

Application:

When RTU installed in generator room, many workers out and in, not convenience and safe for everyone taking keys. This function can authorize the person to remotely control the door and disarm the device within appointed time, avoid fault anti-thief alert. After worker maintenance the generator room, can touch the inside Arm/Disarm switch button to arm device, DIN2 can do this.

- 2) Switch ON/OFF: For switch on/off device, can be used as a normal timed event, linkage event, and SMS control.
- **3) Siren:** This is for output pulse signal for siren sounds, If setup as Siren, then while the RTU alarm and ticked the Siren function in AIN or DIN trigger pages, then this channel will execute the setting parameters.

Channel Name: Setup the Output Channel name, e.g.: Pump or Motor and so on, in order to identify it in SMS Contents.

Open Description: Stands for when the Relay Open, send what SMS to the authorized numbers; Close Description: Stands for when the Relay Close, send what SMS to the authorized numbers. Close Time: Stands for the relay close and last time, default 0 second, means always close. KING PIGEON

GSM/SMS/GPRS/3G/4G Cellular Iot Gateway

Repeat Times: Stands for how many times does this relay should to repeat.
Interval Time: Stands for interval how many seconds then the relay repeat the action again.
Match with "Repeat Times" can work as pulse output, unit: second.
ON/OFF SMS: Tick it stands for while the Recovery action, will also send SMS to the authorized numbers;

Access Control Settings

This page is for setting which authorized number at what time can dial to the RTU and let the first channel (DO0) output a pulse output.

Only when the output type of the first channel (DO0) setup as **Open Door** can dial to control it. It is very useful for serviceman dial to open the electric lock door and disarmed at specified time of the Room. Also this function can be used as authorized number dial in the RTU to output a pulse output or always close then call again to open the relay at specified time. In this condition, please setup the output type of DO0 as **Open Door**, and setup other parameters correctly, and remember to setup the **Auto Arm after Disarmed** time as 0 to keep the RTU in Armed Mode if required.

Tick the box ahead the User No. stands for enable the first Authorized number can dial in to let the first channel (DO0) output a pulse output.

Basic Setting Output Setting Access Control Tip:: Access Control Color Information Color Information Output Setting Access Control Tip:: Color Information Color Information Output Setting Output Setting Color Information Color Information Output Setting Output	Import Configuration file Expo	ort Configuration File	Pactory Reset	чер					
User No.9 2000-01-01 00:00 ~ 2000-01-01 00:00 ~ Always Read Save Notice: 1. Valid time set as "Always" means the User can call to open the door without limitation. 2. Valid time set as "Always" means the User can call to open the door without limitation.	 Import Configuration file Expc Basic Setting Output Setting Access Control Access Input Setting Cloud Platform Setting Cloud Platform Setting Cloud Platform Setting Cloud Platform Setting Historical Record 	Access Control Tips: 1.Only the first of 2.When the ticke User No.0 User No.1 User No.2 User No.3 User No.4 User No.5 User No.6 User No.7 User No.8 User No.9 Notice: 1. Valid time set 2. Valid time set	Image: Alarm Numbers Image: Al	Help D Access can be setup as D will Disarm and out V ~ V	Cor Open. Itput pulse signal to open End time 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 2000-01-01 00:00 Real the door without limitatic	the electric l	lock automatically. Always Always Always Always Always Always Always Always Always Always Always Always Save		

Start Time: Stands for from what time this authorized number can dial in to control it.End Time: Stands for till what time this authorized number cannot dial in to control it.Always: Stands for this authorized number can dial in to control it all the time.

DIN Trigger Settings

This page is for setting the digital input alarm conditions and usages.



🗟 S475-RTU Cellular IoT RTU Configurator V1.4	4.2														-	٥	\times
Import Configuration file	igurati	on File	📲 Factory	Reset [🗿 I	lelp												
Basic Setting	meter	\times	Alarm Num	oers× DC	→ × Acces	s ×	DI Setting 🔀								^		^
Output Setting Access Control		Input	Гуре А	larm SMS	Recovery	SMS	Change SMS	Current Status	Recovery Alarm	Alarm ACK Time(S)	Siren	24hr					
D Input Setting	010	NO	~					Open		2							
	011	NO	~					Open		2							
Disetting	012	NO	~					Open		2							
DI Alarm D	013	NO	~					Open		2							
AI Setting D	014	NO	~					Open		2							
Al Alarm D	015	NO	~					Open		2							
Timer Setting	016	NO	~					Open		2							
Logic Trigger Setting	017	NO	~					Open		2							
RS485 Setting																	
			Initial Va	ue Interv	al Alarm Value	Interv	val Alarm SMS	Total Ala	rm Value	Total Alarm S	MS						
slave setting	DIOCo	unter	0	0				0									
Cloud Platform Setting				(№	AX.999999)			(MAX.	999999)								
i Historical Record			Instal Ma	us Inton	al Alarm Valua	Inter	val Alassa CMC	Total Ala	rm Valuo	Total Alarm S	MC						
	DI1Co	untor	niuai va		ai Alarini Value	men	ai Alarm Sivis		ini value	TOtal Alarmi 5	1113		Anti-shake tin	ne			
			0	(M	AX.999999)			(MAX.	999999)				(MAX.65535)			
			Initial Va	ue Interv	al Alarm Value	Interv	val Alarm SMS	Total Ala	rm Value	Total Alarm S	MS		Anti-shake tin	ne			
I I I I I I I I I I I I I I I I I I I	DI2Co	unter	0	0				0					1	ms			
					AX.999999)			(MAX.					(MAX.65535				
			Initial Va	ue Interv	al Alarm Value	Interv	val Alarm SMS	Total Ala	rm Value	Total Alarm S	MS		Anti-shake tin	ne			
	DI3Co	unter	0	0				0					1	ms			~
сомз				D	evice type:S47	5-RTU											

Input Type: The user can choose the input type for related channel. Includes: Counter, Arm/Disarm, NC, NO, Change and Disabled.

- 1) **Disabled:** Not use this channel.
- 2) NC: For connecting Normal close type detector, open will alarm.
- 3) NO: For connecting normal open type detector, close will alarm.
- 4) Change: For connecting normal open or normal close type detector, once the status changed, will be treated as alarm.
- 5) Counter: DINO can be used as high speed pulse counter max 1MHz,DIN1-3 can be used as low speed pulse counter max 1KHz.DIN1 can arm and disarm. Need to tick up the Pulse Counter box to setup initial value and interval alarm value and total alarm value. E.g.: contact a PIR sensor to count how many people pass through the ATM machine and so on.
- 6) Arm/Disarm: Only the Second Channel (DIN1) can be used as Arm/Disarm Switch. For connecting a pulse output type switch to Arm or Disarmed the RTU.

Alarm SMS: Under Arm or 24h status, once triggered will send this SMS content to authorized numbers. Recovery SMS: Under Arm or 24h status, if tick the "Recovery Alarm", when triggered digital input recovery normal will send this SMS content to authorize number.

Change SMS: Under Arm or 24hr status, only when digital input choose "Change" type, once action will send this SMS to authorize number.

Current Status: Stands for input's current status.

Alarm ACK Time: Stands for when the digital input Close or Open lasted time more than this value, will be treated as a true alarm, if less than this value, then will not alarm.

Siren: Tick it stands for while this digital input triggering, the DO that output type was setup as Siren will execute its output parameters.

24Hr: Tick it stands for no matter the RTU is in Arm or Disarmed mode, this digital input triggered will alarm.

Initial Value: When DIN0-DIN3 as counter, the value begin to count.

Step Alarm Value: DIN0 -DIN3 as counter, under Arm or 24hr status, when counter value arrive



"Step Alarm Value" will send SMS to authorize number.

Total Alarm Value: When counter value arrive "Total Alarm Value", will automatically refresh it

to "Initial Value". Under Arm or 24hr status, will call and SMS to authorize number.

Step Alarm SMS: When step alarm, will send this SMS to authorize number.

Total Alarm SMS: When arrive total max value, will send this SMS to authorize number.

Anti-shake time: Unit is ms, default is 1, which means the maximum pulse sampling frequency is 1KHz.Pulse sampling frequency = 1000 / anti-shake time, such as 1ms corresponds to 1000Hz, 10ms corresponds to 100Hz, 100ms corresponds to 10Hz, 1000ms corresponds to 1Hz

DIN/AIN Alarm Settings

This page is for setup while DIN/AIN alarm, send SMS & Dial to which authorized numbers. Tick it stands for enable to send SMS or dial the related authorized number, see below page is for DIN settings, the AIN Alarm Settings is the same:

tting	Parameter ×	Alarm	Numl	oers >		DO	×I	Acce	ess ×	DIS	etting	×	DI	Alarm	X						
etting			(DI Ala	ırm S	end	SMS)					(DI A	larm	Dial C	Dut)						
ontrol	DI Channel	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7				
ting	User No.0	\checkmark	\checkmark	\square	\checkmark	\checkmark	\checkmark		\square	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark					
	User No.1	\checkmark	\checkmark	\square	\checkmark	\checkmark	\checkmark		\square	\checkmark	\checkmark	\checkmark	\checkmark		\square	\checkmark					
etting	User No.2	\checkmark				\checkmark							\checkmark			\square					
larm	User No.3	\checkmark				\checkmark				\leq			\checkmark			\leq					
etting	User No.4	\checkmark			$\mathbf{\nabla}$	\checkmark				\checkmark			\checkmark			\leq					
arm	User No.5	\checkmark			$\mathbf{\nabla}$	\checkmark				\checkmark			\checkmark			\leq					
ng	User No.6	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\square	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark					
an Catting	User No.7	\checkmark				\checkmark							\checkmark			\leq					
ger Setting	User No.8	\checkmark	\square	\square	\square	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark		\square	\checkmark					
ing	User No.9	\checkmark	\square	\square	\square	\checkmark	\checkmark	\square	\square	\square	\square	\square	\checkmark	\checkmark	\square	\checkmark	\checkmark				
ng												_									
form Setting													Read			Save					
Record	1. Tick it stan. 2. While dialin dial the nex	ds for whi ig the user t user nur	en the r tele mber	e DI a	larm, e nui	will s	send S	MS (or dial th	e relat	ed use ix 20se	r telep conds,	hone , if not	numbe answ	ers. er will						

AIN Trigger Settings

This page is to setup the analog input alarm conditions and analog input parameter. AIN can be used for monitoring temperature, current, voltage, power factor, water level, pressure, environment, wind speed... And also one channel temperature and humidity transducer can be connected as below:





Import Configuration file Expo	rt Config	uration File	Factory Reset	🚺 Help	A	a cantan - N		X	. Cattion .	z]					
Basic Setting Output Setting	Param	eter A	Alarm Numbers A		Access Al L	i setting 2		Current	Threshold	Threshold	Recover	y Alarm ACK			
Access Control	Temp.	Disable ~	High Alarm SMS	Low Alarm SM	S Recovery SMS	Maximum 80	Minimum	Value 0	High	Low	Alarm	Time(S)	Siren	24hr	
Input Setting	Hum.	Disable v	· []		1	100	0	0	0	0		2			
DI Setting	AIO	Disable 🗸	·			0	0	0	0	0		2			
DI Alarm	AI1	Disable 🗸	· [0	0	0	0	0		2			
	AI2	Disable ~	·			0	0	0	0	0]	2			
Al Alarm	AI3	Disable 🗸	·			0	0	0	0	0		2			
Timer Setting	AI4	Disable ~	,			0	0	0	0	0		2			
B Logic Trigger Setting	A15	Disable 🗸	•			0	0	0	0	0		2			
Slave Setting Slave Setting Cloud Platform Setting Historical Record	1. 2. 3. 4. 5.	Pls find the if sensor i Maximun/I Measurem Others are Alarm Veri	V/mA switch on d s 4-20mA,then swit winimum: The mea ent Range: -9999.9 the same as DI. fy Time values range Time values range the same as DI.	evice ,and switc ch to mAif sem surement range 19~9999.99,supp ge from 0 to 99	h to V or mA acc sor is 0-5V,then 5 of the transduce ports minus and 6 99.	oding to you witch to V rs.e.g.: 0~10 decimal.	r sensor ou	tput,switch tc	∋ V or mA.eg	. Re	ad	Save			
				Device typ	e:S475-RTU										

Input Type: The user can choose the input type for related channel. Includes: Disable, 0~5V, 0~20mA,

- 4~20mA.
 - 1) Disabled: Not use this channel.
 - 2) 0~5V: For connecting transducers that output voltage 0~5V. Please remember to switch the related channel DIP switch to V side, see DIP Switch Definitions.
 - 3) **0~20mA:** For connecting transducers that output current 0~20mA, Please remember to switch the related channel DIP switch to A side, see **DIP Switch Definitions**.
 - **4) 4~20mA**: For connecting For connecting transducers that output current 0~20mA, Please remember to switch the related channel DIP switch to A side, see **DIP Switch Definitions**.
 - 5) **Temperature and Humidity:** Enable/Disable support. Only accept AMS230x series sensor, the temperature maximum is 80, minimum is -40, and Humidity maximum is 100, minimum is 0, cannot change them.

High Alarm SMS: Under Arm or 24h status, once current value higher than threshold high value will send this SMS content to authorized numbers.

Low Alarm SMS: Under Arm or 24h status, once current value lower than threshold low value will send this SMS content to authorized numbers.

Recovery SMS: Under Arm or 24h status, if tick the "Recovery Alarm", when current value recovery normal will send this SMS content to authorize number.

Maximum: The transducer's maximum measure range. E.g.:100 Celsius degree. Usually it can be found out at the transducer's specification.

Minimum: The transducer's minimum measure range. E.g : -50 Celsius degree. Usually it can be found out at the transducer's specification.

Current Value: Stands for input's current value of the transducers.

Threshold High: The high value(reached) need to alarm; Example: set 40Celsius degree to alert.
 Threshold Low: The low value(reached) need to alarm; Example: set -10Celsius degree to alert.
 Recovery Alarm: Tick it stands for when the analog input recovery, will send SMS to the authorized numbers.

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Siren: Tick it stands for while this input triggering, the DO that output type was setup as **Siren** will execute the its output parameters.

24Hr: Tick it stands for no matter the RTU is in Arm or Disarmed mode, this input triggered will alarm.

Timer Settings

This page is for setup hour timer and periodically timer, it is useful for scheduling when to execute what action automatically or it with repeat this action according to the interval time. Tick it stands for enable this timer event:

🗟 S475-RTU Cellular IoT RTU Configura	tor V1.4.2							– 0 ×
🖷 Import Configuration file 🛛 🚽 Expo	rt Configurat	ion File 🛛 📲 Facto	ory Reset 🛛 🚺 Help					
 S475-RTU Cellular IoT RTU Configura Import Configuration file Expo Basic Setting Output Setting Access Control Input Setting Access Control Input Setting Court Setting 	tor V1.4.2 rt Configurati Parameter Periodic T 1 2 3 4 5 6 7 8 9 Notice 1. Fror 2. Inte	ion File Pacto Alarm Nu imer Weekly Everyday ~ Sunday ~ Sund	Hour O > 09 ~ 0 > 00 ~ 0 ~ 0 > <td>Access × Minute 38 ~ 00 ~</td> <td>DI Setting ×</td> <td>DI Alarm X Action Save Historical Data Reboot Save</td> <td>Al Alarm X Hour Timer X</td> <td>Periodic Timer</td>	Access × Minute 38 ~ 00 ~	DI Setting ×	DI Alarm X Action Save Historical Data Reboot Save	Al Alarm X Hour Timer X	Periodic Timer
				- hand 475 BTU				
COM3			Devic	e type:S475-RTU				

Weekly+Hour+Minute: Stands for what day and at what time does the RTU should start to

execute the action and interval how many seconds then repeat to execute the action.

Interval: Stands for interval how many seconds does the RTU should repeat to execute the action.

If setup it as 0, then this event will not be repeated.

Action: Stands for what action does the RTU should to execute at the specified time.

Question: Have set the timer SMS report, but finally not get the SMS. **Solution:** Have no ticked the "Timer Reporting SMS Content" in first Basic Parameter Settings page.

Interlock Settings

This page is for setup if what happen, then what action does the RTU should execute, it is a programmable logic events. Total can program up to 40 logic events for automatically control purposes.

Style. Fill Cellular for RTU Cellular for RTU Cellular for Resca Import Configuration file in Export Configuration file i		GSM/SMS/GPRS/3G/4G Cellular Iot Gateway
Device traceS475-PTU	Sd75-RTU Cellular IoT RTU Configurator VI.4.2 Import Configuration file Import Configuration file Basic Setting Output Setting Output Setting Ocigic Trigger Oc	or File Watchory Reset: W Help Access X DI Setting X DI Alarm X AI Setting X AI Alarm X Hour Timer X Periodic Timer X Logic Trigger X M Reboot Add Delete Action Action Clear Note: Max 40 Link Trigger events. Read Save

Event: Stands for if this occurrence.

Action: Stands for then what action does the RTU should execute.

RS485 Serial Port Settings

This page is for setup the serial port parameters. Over the RS485, the S475 RTU can be used as Modbus RTU Slave, Modbus RTU Master and transparent transmission.

🗟 S475-RTU Cellular IoT RTU Config	urator V1.4.2	- 0 X
🖷 Import Configuration file 🛛 🚽 Ex	xport Configuration File 🛛 📲 Factory Reset 🛛 🖉 Help	
Basic Setting	DO \times Access \times DI Setting \times DI Alarm \times	Al Setting X Al Alarm X Hour Timer X Periodic Timer X Logic Trigger X Serial Port 🛛 💌
Output Setting		
Access Control	RS485 Channel 1	
Input Setting	Baud Rate 9600	Scan Rate 200 (200~65535mS)
Timer Setting	Data Bit 8	Timeout 200 (200~65535mS)
Element Logic Trigger Setting	Parity Bit none ~	Slave Error ACK Time 60 (0~65535S)
RS485 Setting	Stop Bit 1	
Serial Port	RS485 Channel 2	Nation
Image: Slave Setting	Mode Close ~	1. Scan Rate can't less than 200mS.
Cloud Platform Setting	Baud Rate 9600 V	 Imeout can't less than 200ms. Slave Error ACK Time: Stands for Slave no response
Historical Record	Data Bit 8	longer than ACK time, will send SMS to authorized phone numbers.
	Parity Bit none ~	Read Save
	Stop Bit 1	
сомз	Device type:S475-RTI	U

Modbus RTU Master: Stands for the RS485 used for Modbus RTU Master.

Modbus RTU Slave: Stands for the RS485 used for Modbus RTU Slave, and the "Scan rate", "Time out" and "Slave failure verify time " of Master function will be disable.



Transparent Transmission: The RS485 will transparently transmit serial data without any protocol.
 It can convert serial port data into IP data or convert it into serial port data through IP data, and then transmit data through wired or wireless network to realize transparent data transmission.
 Baud Rate: 1200/2400/4800/9600/19200/38400/57600/115200 optional.

Data Bit: 8 bit.

Parity Bit: None, Even and Odd optional.

Stop Bit: 1 or 2 stop bit optional.

Scan Rate: When RS485 used as Master, the interval time between two polling command.

Time out: When RS485 used as Master, after sending command to slave, the longest time waiting for slave data back. If longer than this setting value, will ensure slave no response.

Slave Error ACK time: When RS485 used as Master, if no response time between Master and Slave longer than this value, will send SMS to authorize number.

Slave Settings

This page is for adding, revising and deleting the slaves. When used as Modbus RTU master, slave data mapping can be added to local register. When editing a slave, just select a row and right click to complete the delete, add, modify parameters, etc.

Note:When adding a slave, first read the list of slaves that have been mapped to prevent the new slave covering the added slave device.

Import Configuration file Extension Disport Configuration file Extension Disport Configuration file States Setting Disport Configuration file Disport Configuration Setting Bister Stating Addit. Mapping Register Educt Mapping Register Educt Mapping Register Configuration Configurat	🗟 S475-RTU Cellular IoT RTU Configu	rator V1.4.2							- 0	×
Image: Setting Di Alarm X Al Setting X Al Alarm X Hour Timer X Depic Trigger X Serial Port X Slave mapping List X (Mapping Register City) Imapping Register City, Mapping Register Starting Addr. Mapping Register Starting Addr. Mapping Register City, Mapping Register Starting Addr. Mapping Register City, Mapping Register Starting Addr. Mapping Register Starting Addr. Mapping Register City, Mapping Register Starting Addr. Mapping Register Starting Addr. Mapping Register Starting Addr. Mapping Register Starting Addr. Mapping Register City, Mapping Register City, Mapping Register City, Mapping Register City, City, City, City, City, City, City, City, City, C	🔄 Import Configuration file 🛛 🚽 Exp	oort Configuration File	Nactory Rese	t 🚺 Help						
Output Setting Save Serial Number Save Address Data Type Modbus Function Code Register Starting Addr. Mapping Register End Address Access Control 1		DI Alarm 🛛 🗚	l Setting \times	Al Alarm \times	Hour Timer 🛛 Pe	riodic Timer 🛛 Log	ic Trigger 🛛 Serial	Port 🛛 Slave mapping List	×	• •
Access Control hput Setting Control Trigger Setting State mapping Katasis Control Raterom Setting Control Raterom Seting Control Raterom Setting Control Raterom	Output Setting	Slave Serial Number	Slave Address	Data Type	Modbus Function Code	Register Starting Addr.	Mapping Register Qty.	Mapping Register Starting Addr.	Mapping Register	End / ^
Input Setting Timer Setting Cologic Trigger Setting Stare mapping Liv Stare mapping Liv Cloud Platform Setting Hittorical Record Hittorical Record Notice: Delete Read Save Notice: N	Access Control	2								
Timer Setting Logic Trigger Setting Stave Rs485 Setting Slave Setting Mapping Register Historical Record Motice: Ledet Save Notice: Ledet Save		3 4								
Logic Trigger Setting R S485 Setting Save Setting Save Setting Mapping Register Mapping Register Historical Record Historical Record Machine Setting Machine Setting Mapping device dist first Save Notice: 1. Before adding device, pls click: "Read" buttor, to read mapping device list first Save Notice: 1. Before adding device, pls click: "Read" buttor, to read mapping device list first Save Notice: 1. Before adding device list click: "Read" buttor, to read mapping device list first Save Notice: 1. Before adding device list first Save Notice: 1. Before adding device list first Save Notice: 1. Before adding device Save Notice: Save	Timer Setting	5								
RS48S Setting Slave mapping Lik Mapping Register Cloud Platform Setting Historical Record Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices	B Logic Trigger Setting	6 7								
Slave Setting Slave Setting Mapping Register Cloud Platform Setting Historical Record Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices	RS485 Setting	8								
Save mapping Lit 0 Mapping Register 12 G Cloud Platform Setting Historical Record 16 16 16 17 16 18 10 19 16 10 16 10 16 11 16 12 10 10 16 11 16 12 10 11 16 12 10 10 10 11 10 12 10 13 10 14 10 15 10 16 10 17 10 18 10 19 10 10 10 11 10 12 10 13 10 14 10 15 10 16 10 17 10 18 10	Slave Setting	9								
Mapping Register 12 Cloud Platform Setting 14 Historical Record 15 Delete Read Save Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices	Slave mapping List	11								
Cloud Platform Setting Historical Record 13 14 15 16 16 17 18 10 10 10 11 12 13 14 15 16 17 18 10 10 11 10 11 10 11 12 13 14 16 17 18 19 10 10 11 11 11 12 13 13 14 16 11 11 12 12 13 14 13 13 14 14 15 16 17 18 19 19 10 10 10 11 11 12 13 14 14 <	Mapping Register	12								
Historical Record	Claud Disting Catting	13								
Historical Record 16 C Delete Read Save Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices	Cloud Platform Setting	15								
Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices	Historical Record	16								~
Delete Read Save Notice: 1. Before adding device, pls click "Read" button, to read mapping device list first 2. Select a blank line, right click to add mapping device 3. Max adding 16 devices		<								>
		Notice: 1. Before addi 2. Select a bla 3. Max adding	ng device, pls click nk line, right click 16 devices	ik "Read" butto to add mappin	Delete n, to read mapping device g device	Read Save				
20M3 Device type:S475-RTU	СОМЗ			Device ty	pe:S475-RTU					

Channel Port	RS485-1 👻
Slave Serial Number	1
Slave Address (Range 1~254)	
Data Type	Boolean 🔻 OK
Modbus Function Code	01 Cancel
Register Starting Addr.	
Mapping Register Qty.	
Mapping Register Starting Addr.	64 🔹
Mapping Register Starting Addr. s: legister Starting Addr. : In Slave, fro	64 • • • • • • • • • • • • • • • • • • •

 Mapping Register Qty. : How many registers in slave need to mapping to RTU.
 Mapping Register Starting Addr. : In RTU, from which register address used to save the mapping register address value. No need to setup the end register address, the RTU will automatically calculate it according to mapping register Qty.
 The Data Type and Modbus Function Code of the mapping registers must be the same, otherwise, please setup separately.

Channel Port: The communication way of the slave connected to the RTU.

Slave Serial Number: The number of slave.

Slave Address: Stands for the Modbus RTU Slave ID.

Data Type: Stand for "Boolean", "16 Bit", "32 Bit", "64 Bit".

Modbus Function Code: Stand for Modbus RTU protocol function code, command for slave reading and writing.

Register Starting Address: The starting register address for slave data reading and writing.

Mapping Register Quantity: How many data quantity need to read, used for mapping to device register address.

Mapping Address Starting Address: Stand for mapping the slave starting register data to local device start mapping address.

Mapping Address End Address: Calculate the end mapping address according to start address and reading Data quantity.

Register Settings

Click "Register" page to real time check slave current value.

Reminder:

Before reading data, pls read slave list from "Slave Mapping List" first, then can check slave current value in "Register" page:



🗟 S475-RTU Cellular IoT RTU Configur	ator V1.4.2				- 0 ×
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Basic Setting	Al Setting \times Al Alarm \times Boolean	Hour Timer X Periodic Timer X	K Logic Trigger X Serial Port 32Bit	∑ Slave mapping List X Ma 64Bit	pping Register 🗙 🔹 🕨
Output Setting	Register No. Current Value	Register No. Current Value	Register No. Current Value ^	Register No. Current Value	
Access Control	64	20000	20128	20256	Tick it stands for
	65	20001	20130	20260	 automatically poll slaves, interval time
Input Setting	66	20002	20132	20264	
Timer Setting	67	20003	20134	20268	2 Seconds, minimum
*	68	20004	20136	20272	
Logic Trigger Setting	69	20005	20138	20276	Read
RS485 Setting	70	20006	20140	20280	
1 X	71	20007	20142	20284	Madaa
Slave Setting	72	20008	20144	20288	1. Please go to [Slave]
	73	20009	20146	20292	page, click [Read] button to
	74	20010	20148	20296	read out slave list firstly;
Mapping Register	75	20011	20150	20300	2.Click the [Read] button at
Cloud Platform Setting	76	20012	20152	20304	otherwise, the value will be
1 💥	77	20013	20154	20308	incorrect.
Historical Record	78	20014	20156	20312	
	79	20015	20158	20316	
	80	20016	20160	20320	
	81	20017	20162	20324	
	82	20018	20164	20328	
	83	20019	20166	20332	
	84	20020	20168	20336	
	85	20021	20170	20340	
	86	20022	20172	20344	
	87	20023	20174	20348	
	88	20024	20176	20352	
	89	20025	20178	20356	
	90	20026	20180	20360	
	91 ~	20027	20182	20364 ~	
	< >	< >	< >	< >	
СОМЗ		Device type:S475-RTU			

Cellular network Settings

This page is to configure the function parameters of the device to connect the Internet. The rich automatic handshake login message, self defined heartbeat message and logout mechanism, enable the device to be quickly compatible with a variety of third-party upper computer system. This device can communicate 2-way with the monitoring software or cloud platform in the Internet through GPRS/3G/4G wireless cellular network.

1) Modbus RTU Protocol: Modbus RTU over TCP, communication with upper computer system. For example, connect to <u>www.my-m2m.com</u> cloud server. Domain: modbus.dtuip.com, Port: 6651.

2) Modbus TCP Protocol: Communication with upper computer system via modbus TCP. For example, connect to <u>www.my-m2m.com</u> cloud server. Domain: modbus.dtuip.com, Port: 6655.

3) King Pigeon IoT RTU protocol: Communication with upper computer system via King Pigeon IoT protocol on TCP. The advantage is that when the device is abnormal, the data can be sent to the host computer immediately, instead of waiting for the host computer to ask for a response. For example, connect to www.rtu-m2m.com cloud platform.



🗟 S475-RTU Cellular IoT RTU Configurat	tor V1.4.2											-	٥	×
🔄 Import Configuration file 🛛 🚽 Expo	rt Configuration File 🛛 🐺 Fa	actory Res	et 🧃	Help										
Basic Setting	Al Alarm 🔀 Hour Ti	mer ×	Perio	odic Timer \times	Logic Trig	ger ×∣ s	Serial Port	×) sla	ave mapping List	× Mappin	g Register $ imes$	Cellular network	\mathbf{X}	4 >
Output Setting	Connect KPIIOT		Conr	nect my-m2m	Conne	ct other IOT s	server							
Access Control	Cellular Network Settings													
. Input Setting	Communication Protocol	Disable		~		Server 1 I	P/DNS	modbusrtu	u.kprtu.com	(Max60)				
Timer Setting	Protocol	ТСР		~		Server Lis	ten Port	4000	(0-65535)					
Logic Trigger Setting	SIM1 Access Point Name	•			(Max60)	Server 2 I	P/DNS			(Max60)				
RS485 Setting	SIM1 APN User Nam	e			(Max60)	Server Li	sten Port	0	(0-65535)					
	SIM1 APN Passsword	<u> </u>			(Max60)									
Slave Setting	SIM2 Access Point Name	•			(Max60)									
Cloud Platform Setting	SIM2 APN User Nam	e			(Max60)									
Cellular network	SIM2 APN Passsword	H			(Max60)									
Ethernet settings							MQTT Set	ttings						
	Login Packets	ASCII	~ 8	69141045751395	50	(Max60)	Subsc	ribe Topic						
	Login ACK Packets	ASCII				(Max60)	Pub	lish Topic						
	Logout Packets	ASCII	~			(Max60)	MQT	T Client ID						
	Heartbeat Packets	ASCII	~ re	eq		(Max60)	MQTT U	Jser Name						
	Heartbeat ACK Packets	ASCII	~ re	es		(Max60)	MQTT	Password						
	Heartbeat Interval	60	(1	1-9999S)			Autor	matic data u	upload cycle 60	S				
	Retransmission Times	3	~ (1	1-9)			MQTT	Data retran	smission 🗌 ENABL	E/DISABLE				
	Login Message Strategy	Send Onc	e Whe	n Login Server	~		Tips: C	Only use MC	QTT Protocol requir	e to setup.				
	FAQ for set	tings plea	se ref	er to [Help] men	u			Rear	d	Save				
								Reat	<u> </u>	5410				
СОМЗ				Device type:S47	5-RTU									

Cellular Data: "Disable", "Modbus RTU protocol", "IoT RTU protocol" or "Modbus TCP protocol" optional. **Protocol:** TCP or UDP optional.

Access Point Name: APN, GSM operator provide.

APN User Name: User Name, GSM operator provide.

APN Password: Network password, GSM operator provide.

Sever 1/2 IP/Domain: Server IP address or DNS.

Server Port: Stands for the server's port.

Server Strategy: Only support "Prefer server 1" function, no "Both connection" now. When server 1 disconnect, will connect to server 2 automatically.

Login Packets: Server register handshake protocol package. When transparent transmission or Modbus protocol, this item used for device ID, provided by cloud. Contact King Pigeon sales if need to connect to King Pigeon <u>www.my-m2m.com</u> cloud server.

Login ACK Packets: Once set, device need response within 10 seconds after device send login message, otherwise it will continue sending login message according to "Reconnection Times", still not response will offline once time, then try to reconnect, according to "Server Offline 3 Times, Device Reconnection Time". Logout Packets: Once server send to device, device will be offline.

Heartbeat Packets: Heartbeat content to avoid network offline.

Heartbeat ACK Packets: Once set, device need response within 6 seconds after device send heartbeat message, otherwise it will continue send login message according to "Reconnection Times", still not response will offline once time, then try to reconnect, according to "Server Offline 3 Times, Device Reconnection Time". Heartbeat Interval: Network keep online heartbeat interval time.

Retransmission Times: After setting heartbeat and login message, if server no response, the times which server will send data.

Login Message Strategy: "Send Once When Login Server", "Plus It In Front Of Every Packet", "Both Of Them" optional. "Plus It In Front Of Every Packet" when data transmission.

MQTT Setting

Subscribe Topic: S375/S175/S375 subscribe to receive topics Publish Topic: S375/S175/S375 released themes

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GSM/SMS/GPRS/3G/4G Cellular lot Gateway

MQTT Client ID: The device ID that needs to be subscribed after connecting to the cloud platform through the MQTT protocol. After subscribed, the device will send message to the users. this item used for device ID, provided by cloud. Contact King Pigeon sales if need to connect www.my-m2m.com cloud server. **MQTT User Name:** User accounts using the MQTT protocol.

MQTT Password: User password using the MQTT protocol.

Ethernet Settings

S475-RTU Cellular IoT RTU Configura Import Configuration file Fixoo	ator V1.4.2	- 0 ×
Basic Setting	Periodic Timer X Logic Trigger X Serial Port	rt X Slave mapping List X Mapping Register X Cellular network X Ethernet settings 🗙
Output Setting		
Access Control		
Input Setting		Senial device RTU Samer
Timer Setting	Local Settings	Communication Settings
Logic Trigger Setting	 Get IP Address Automatically Use The IP Address Below 	Ethernet State Open v Connection Mode TCP v
RS485 Setting	Device IP 0.0.0.0	Communication Protocol Disable v Local Listening Port (MODBUS TCP Support) 502
Slave Setting	Subnet Mask 0.0.0.0	
Cloud Platform Setting	Gateway 0.0.0.0	Advanced Settings
	DNS 0.0.0.0	MOTT Data retransmissio
Cellular network	MAC address 04-02-35-A1-3A-6E	
Ethernet settings	Conver Cottings	
Historical Record	Server 1 IP/Domain modbusrtu.kprtu.com	(Max60) Port 4000 (0-65535) Server 2 IP/Domain (Max60) Port 0 (0-65535)
	Login/Logout Packets Settings	(May60) (May60)
	Asch V	(Maxoo) HeartDeat Packets ASCII V
	Login ACK Packets ASCII V	Heartbeat ACK Packets ASCII V (Max60)
	Logout Packets ASCII V	(Max60) Heartbeat Interval 60 (1-9999S)
	Ethernet Slave Settings	MQTT Settings
	IP1 0.0.0.0 Port 0	0 (0-65535) Subscribe Topic
	IP2 0.0.0.0 Port 0	0 (0-65535) Publish Topic Read
	IP3 0.0.0.0 Port 0	0 (0-65535) MQTT Client ID
	IP4 0.0.0.0 Port 0	0 (0-65535) MQTT User Name Save
	IP5 0.0.0.0 Port 0	0 (0-65535) MQTT Password
		Automatic data upload cycle 60 S
COM3	Device type:S4	

Get IP address Automatically:Tick it stands for: the device automatically obtains the IP address in the LAN. Only when the router in the LAN allows the dynamic allocation of IP addresses can be used.

Use The IP Address Below: Tick it stands for the user setup a fixed IP address for the module.

01) Communication Settings

Ethernet State: Open or Close optional.

Communication Protocol: "Disable", "Modbus RTU protocol", "IoT RTU protocol" or "Modbus TCP protocol" optional.

Connection Mode:TCP or UDP optional.

Local Listening Port: it can be used to set a port number to listen to the visitor's data, the default is 502.

02) Advanced Settings

Retransmission Times: After setting heartbeat and login message, if server no response, the times of server resend data.

Server Response Timeout, Device Re-connect Interval Time: Connecting server fail for 3 times, then the interval time of next time reconnecting.

03) Server Settings

Server IP/DNS:Server IP address or DNS. Port: Stands for the server's port.



Reminder:

Server 1 is primary server, server 2 is backup server; connecting server 1 first; if it is not successfully in 50 seconds, will connect to server 2 automatically; can't "both connect" at a time.

04) Login/Logout Packets Settings

Login Packets: Server register handshake protocol packet. When transparent transmission or Modbus protocol, this item used for identification device ID, provided by cloud. Contact King Pigeon sales if need to connect www.my-m2m.com cloud platform.

Login ACK Packets: Once set, device need response within 10 seconds after device send login message, otherwise it will continue sending login message according to "Reconnection Times", still not response will offline once time, then try to reconnect, according to "Server Offline 3 Times, Device Reconnection Time". Logout Packets: Once server send to device, device will be offline.

05) Heartbeat Settings

Heartbeat Packets: Heartbeat content to avoid network offline.

Heartbeat ACK Packets: Once set, device need response within 6 seconds after device send heartbeat message, otherwise it will continue sending login message according to "Reconnection Times", still not response will offline once time, then try to reconnect, according to "Server Offline 3 Times, Device Reconnection Time".

Heartbeat Interval: Network keep online heartbeat interval time.

06) Ethernet Slave Settings

IP: The IP address of Modbus slave. Port: The port of Modbus slave.

07) MQTT Settings

Subscribe Topic: S375/S175/S375 subscribe to receive topics

Publish Topic: S375/S175/S375 released themes

MQTT Client ID: The device ID that needs to be subscribed after connecting to the cloud platform through the MQTT protocol. After subscribed, the device will send message to the users. this item used for device ID, provided by cloud.Contact King Pigeon sales if need to connect www.my-m2m.com cloud server.

MQTT User Name: User accounts using the MQTT protocol.

MQTT Password: User password using the MQTT protocol.

Automatic data upload cycle:Default is 60s

MQTT data retransmission: When the network is disconnected, the data will be stored, and the data will be reissued to the server after coming to the network

Historical Record

The device inbuilt 8G SD card, store alarm and historical records. For saving historical records, need to set the saving historical records interval time in "Periodically Timer" page.

For historical record, once full, will automatically remove the earlier records for new records. And can save as CS format for other purpose usage.



🗟 S475-RTU Cellular IoT RTU Config	gurator V1.4.2					- 0	×
Import Configuration file	xport Configuration File 🛛 📲 Factory Reset	🗐 Help				_1	
Basic Setting	Logic Trigger × Serial Port ×	Slave mapping List × Mapping Regi	ter × Cellular net	work × Ethernet	settings × Histor	ical Data 🔀	-
Output Setting	Event Record: Total:520	Read All O Read record from 1	to 1	Clear Re	ad Save as CSV	Erase RTU Records	
- Access Control							
Timer Setting							
Logic Trigger Setting							
DC405 Catting							
KS465 Setung							
Slave Setting							
Cloud Platform Setting							
Historical Record							
Historical Data							
	Notice:						
	1. Total can save 100000 events in the i	nternal memory.					
	2. If the memory full, will remove the ea	nilei events.					
СОМЗ		Device type:S475-RTU					

Event Recode: Display device current historical records qty, "Read All" or "Read Record from xx to xx" optional.

Clear: Clear the screen.

Read: Read historical records.

Save as CSV: Historical records export as CSV file.

Erase RTU Records: Click this button will erase all device historical records, be careful.

7.Configuration and Reset

The Load Profile and Export Profile is very useful while you need to program bulks of RTU with similar parameters. The "Default" function can reset the device to factory default status.

7.1 Export Profile

Click "Export Profile" button----> chose the path and input the name to save.



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S475-RTU Cellular IoT RTU Configu	or V1.4.2		- 0 ×
Import Configuration file Exp	: Configuration File 📲 Factory Reset 📓 Help		
Bacic Setting Parameter Alarm Numbers Doutput Setting Doutput Setting Doutput Setting	Parameter X Modify password: Old password: New password: Confirm password: Modify Modify Rev Rev Rev Rev Rev Rev Rev Rev	ine time 119-07-25 10:00x(♀ ad the RTU time ite the RTU time ad the computer	
	Basic information Device ID 1 (1~247, fill it when used as Modbus Slave over RS485) Model No	S475-RTU Version 2EA34 Read	
Logic Trigger Setting	Device Description: (60 Characters) SN Add timestamp to alarm SMS Arm automatically when power on.	869141045751395 Save	
B-RS485 Setting	Auto Arm after disarm Minute(s) (0~9999, When set as 0, the RTU v Time Base disa CMC Control Schliger	vill in armed mode immediatel	
Slave Setting	Add the following additional information in the report SMS		
Historical Record	DIO Status Arm Status Alto Value DI1 Status GSM/3G Signal Value Al1 Value	DO0 Status DO1 Status	
	DI2 Status External Power Status A12 Value DI3 Status Device ID A13 Value DI4 Status A14 Value	DO2 Status DO3 Status	
	DIS Status Humidity Value AIS Value DIS Status Device Description		
	Alarm SMS Content Settings Add the following additional information in the alarm SMS		
	DIO Status Arm Status All Value DII Status GSM/3G Signal Value All Value DI2 Status Esternal Power Status Al2 Value	DO0 Status DO1 Status DO2 Status	
	DIS Status Device ID AI3 Value DIS Status Temperature Value AI4 Value DIS Status Humidity Value AI5 Value	DO3 Status	
	DI7 Status		

Then it will display as below after a moment:

Information	×
CSV file C:\Users\dadajuan	n\Desktop\123 saved
	确定

7.2 Load Profile

Click "Load Profile" button----> chose the file which need to load.



]基本设置 - Windows 照片查	着器	ini made unter	Contractor of the local division of the loca	C. Monade March		
文件(F) ▼ 打印(P) ▼ 电子	邮件(E) 刻录(U) ▼ 打开(O) ▼					
S475-RTU Cellula	r IoT RTU Configurator V1.4.2					- o ×
Import Configur	ration file 🚽 Export Configuration File 📲	Factory Reset 🛛 🗐 Help				
⊫() Basic Se	Parameter 🔀					
Pa Al	arameter Modify password Old larm Numbers Rew New	password:	Synchronous mach Time: 20 Re	ine time 19-07-25 10:00:(🗸 ad the RTU time		Í
Output !	Setting	password: (4 digits)	Wr	ite the RTU time		
B-Cess (Control	Modify	Re	ad the computer		
H Constant Se	etting Basic information					
	Device ID 1 (1~	247, fill it when used as Modbus Sla	ve over RS485) Model N	5475-RTU Version 2EA34	Read	
illimer si	Device Description:		(60 Characters) St	869141045751395		
🗷 🕡 Logic Tr	rigger Setting 🛛 Add timestamp to	alarm SMS 🗹 Arm automatically v	when power on.		Save	
⊕	Setting 🛛 🗹 Auto Arm after di	sarm 1 Minute(s) (0~9999,	When set as 0, the RTU	vill in armed mode immediate		
Generation Cloud Plant	Atform Setting Timer Reporting SMS	Content Settings additional information in the report Arm Status GSM/3G Signal Value	t SMS	DO0 Status DO1 Status		
	D13 Status D13 Status D14 Status D15 Status D15 Status D16 Status	External Power Status Device ID Temperature Value Humidity Value Device Description	AI2 Value AI3 Value AI4 Value AI5 Value	DO2 Status DO3 Status		
	Alarm SMS Content St Add the following D10 Status D13 Status D13 Status D13 Status D15 Status D15 Status D15 Status D16 Status	ettings additional information in the alarm Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	SMS All Value All Value Al2 Value Al3 Value Al4 Value Al5 Value	DO0 Status DO1 Status DO2 Status DO3 Status		

Then it will display as below after a moment:



7.3 Reset

When device is on, connect the PC configuration software, click the "Default" button on software to reset. It will restore all parameters of the device to the factory default initial value.Please contact King Pigeon sales if forget password,website <u>www.iot-solution.com</u>.



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8. Connection and Application

8.1 Wire Connection

8.1.1 Power wire connection:



8.1.2 DC output



8.1.3 RS485

S47X supports two RS485 ports for communication, connection as below:


GSM/SMS/GPRS/3G/4G Cellular Iot Gateway

8.1.4 Temperature/Humidity input

S47X supports one channel temperature and humidity input for sensor AM230X as below:



DO



DIN

Dry contact:



Wet contact:





AIN

Internal interface principle:



2 Wire wiring





3 Wiring



8.2 Quickly Verify Device Communication Function

Connect power supply to the device then switch on the device, run the configuration software, and log in. In "Basic Settings" page, click [Read the RTU Time] > [Write the RTU Time] to write the correct time to the device.Choose [Arm automatically when power on]. Then click the [Save]. As below:



Parameter Alarm Numbers Output Setting Access Control Input Setting	Modify password Old password: New password: Confirm password: Modify Basic information	(4 digits) Synchronous mad (4 digits) Re	ine time 119-07-25 10:00:(v ad the RTU time ite the RTU time ad the computer		
C Timer Setting	Device ID 1 (1~247,fill it when used as N Device Description:	Modbus Slave over RS485) Model N (60 Characters) SI omatically when power on. (0~9999 When set as 0, the RTU)	N 869141045751395	Read	
Could Platform Setting Could Platform Setting Cloud Platform Setting	Timer Reporting SMS Content Settings Add the following additional information in D10 Status Arm Status D11 Status Status D12 Status External Power D13 Status D14 Status D15 Status D15 Status D16 Status D15 Status D16 Status D16 Status D16 Status D17 Status	n the report SMS Allo Value Value Allo Value tion	DO0 Status DO1 Status DO2 Status DO3 Status		
	Alarm SMS Content Settings Add the following additional information in DIO Status DI1 Status DI2 Status External Power DI3 Status Every ID DI4 Status DI4 Status DI4 Status DI5 Status DI5 Status DI5 Status DI6 Status DI7 Status	h the alarm SMS AIO Value Value AIT Value Status AI2 Value AI2 Value alue AI4 Value AI5 Value	DO0 Status DO1 Status DO2 Status DO3 Status		

In "Numbers" page, enter the phone number used to receive the alarm, choose the options according to request, such as power on, power lost....then click [Save], as below:

S475-RTU Cellular IoT RTU Configurator V1.4	4.2	- โ ป	le.									_	-	٥	×
Basic Setting Parar	meter X Alarm Numbers		ip												
	thorized User Telephone Numb	per Setting	s												
Alarm Numbers	(Alarm No.)	Power On	Timer / Report	Arm/Disarn SMS	n Low Signal	Power Lost	Power Recovery	Cellular network	Relay Switch	Slave Alarm	Slave Failure				
Output Setting	Jser No.0	\checkmark	\checkmark				\checkmark								
Access Control	Jser No.1		\checkmark												
Input Setting U	Jser No.2		\checkmark												
Timer Setting	Jser No.3		\checkmark												
U Logic Trigger Setting	Jser No.4		\checkmark												
U	Jser No.5		\checkmark												
RS485 Setting	Jser No.6		\checkmark												
	Jser No.7		\checkmark												
Cloud Platform Setting	Jser No.8		\checkmark												
Historical Record	Jser No.9														
								Read		Save					
Noti 1. Al. 2. Lo 3. Tic	ce: arm No. can include or non-inc w signal alert: Mobile signal lo ck it stands for when the event	lude count wer than 1 occurrence	try code, 4 (full sig e, will sen	e.g.:in UK, ınal is 31). ıd SMS to	can setup the relate	0044 or d telephc	+44 or wit	hout count rs.	ry code,br	ut can not	be 44.				
СОМЗ		Dev	vice type:	\$475-RTU											

Then switch off the device, insert sim card, switch on the device. after the device register network successfully, the phone number can receive SMS sent by the device. If you cut off the device power, the phone number will receive power failure SMS sent by the device.... That shows the device work normally.



8.3 Modbus RTU Slave Application

Device support Modbus RTU slave function, can be connected to HMI, SCADA, DCS, MES system. It can be used for fieldbus data acquisition, remote SMS alarm, remote dial alarm and GPRS/3G/4G to cloud...

For example, when device as Modbus RTU slave, connect to HMI as below:

- (1) Connect device to HMI via RS485 port, set HMI RS485 port parameter;
- (2) In "Basic Parameter Settings" page, set "Device ID", range is 1~247 in Modbus protocol as below:

Cellular IoT RTU Configurator V1.3	L. THEN IN AN AN AT AN PALM MALE INAN	Cannon and
🛋 Load Profile 🛛 🖣 Export Profile	📲 Default 🛛 📓 Help	
Basic Settings	Parameter 🔀	
Parameter	Modify password Synchronous machine time	
Numbers	Old password: Time: 2019-07-25 10:00:00 □▼ New password: Read the RTU time	
	Confirm password: (4 digits)	
Access Control	Medify paramet	
⊕ Input Settings	Modbus Device ID, range is 1 ² 247	
	Basic information when used for Modbus protocol	
	Device Description: (60 Characters)	Read
RS485 Settings	Add timestamp to alarm SMS Arm automatically when power on.	Save
Slave Settings	Auto Arm after disarm: Minute(s) (0~9999, When set as 0, the RTU will in armed mode immediately.)	
Network Settings	Timer Reporting SMS Content Settings	
Cellular network	Add the following additional information in the report SMS DIN0 Status Arm Status DIN0 Status DO0 Status	

(3) In "Serial Port" setting page, set device parameter as below:

A) RS485 used as "Modbus RTU Slave";

B) Baud Rate, Data Bit, Parity Bit, Stop Bit setting should be corresponding with HMI, otherwise

communication will be failure. If multiple Masters, all Masters parameter should corresponding with device;

C) No need set: "Scan Rate", "Time Out", "Slave Fault Verify Time";

D) Click "Save" button.

Cellular IoT RTU Configurator V1.3	L. 1208 18 48 42 81 48 75	CB MELT INKS
🗧 Load Profile 🛛 🚽 Export Profile	The baud rate is	s same with Master
Basic Settings	Parameter × Serial Port ×	
Parameter	F	Please ignore it since it is used
Numbers	RS485 Channel 1	when device as Master
Output Settings	Mode 🗨	Scan Rate 200 (200~65525mS)
Access Control	Baud Rate 🗸 🗸	Timeout 200 (200~65335mS)
Access control	Data Bit	Slave Error ACK Time 60 (0~655355)
	Stop Bit	
Ilmer Settings		
Interlock Settings	RS485 Channel 2	Notice:
RS485 Settings	Mode 🔹	1. Scan Rate can't less than 200mS.
Serial Port	Baud Rate 9600 💌	 a. Slave Error ACK Time: Stands for Slave no response
	Data Bit	longer than ACK time, will send SMS to authorized phone numbers.
Network Settings	Parity Bit	Read Save
Historical Record	Stop Bit	
Historical Data		

(4) In HMI configuration software, set the Modbus RTU Register address of device. Refer to ["S47X reigister"];
(5) Switch the device on, enter into working mode, device running according parameter setting.

8.3.1 Read device digital output DO value

The DO register address of the relay included in the device belongs to the retaining coil and the address is 0-3. See Appendix B for details.

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	01H	Read the hold coil, function code 01
Register Starting Address	2	00 00H	Range: 0000H-0003H
Read Register Qty	2	00 04H	Range: 0001H-0004H
16 CRC Verify	2	3D C9H	CRC0 CRC1 low byte in front, high behind

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H device, consistent with download data
Function Code	1	01H	Read the hold coil
Return Bytes Qty	1	01H	Return data length
Returning Data	1	02H	Data returned
16 CRC Verify	2	D0 49H	CRC0 CRC1 low byte in front, high behind

Example: Read 2 DO states, device address 1,then,

Server Send: 01 01 00 00 00 04 3D C9

01= Device address; 01= Read Relay DO function code;00 00= Register starting address; 00 04= Continuous reading of 2 DO data; 3D C9= CRC verify.

Device Answer: 01 01 01 02 DO 49

01= Device address; 01= Read relay function code; 01=Return data bytes Qty; 02=The returned data is converted into binary: 0000 0010, 4 bits high 0000 is useless, and 4 bits low 0010 corresponds to DO3, DO2, DO1 and DO0 respectively(values are as follows) ; DO 49=CRC Verify.

DO3	DO2	DO1	DO0
0	0	1	0
Disconnect	Disconnect	Closure	Disconnect

If you want to read the state of a DO or several DO states, you only need to modify the "DO register start address" and "the number of read registers", then recalculate the CRC, and the returned data is parsed according to the above description.

8.3.2 Control device digital output DO status

1) Control 1 channel device DO output

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	05H	Write single holding coil type, function code 05
DO Register Address	2	00 00H	Range: 0000H-0003H
Active	2	FF 00H	This value: FF 00H or 00 00H, FF 00H= Close relay, 00 00H= Open relay
16CRC Verify	2	8C 3AH	CRC0 CRC1 low byte in front, high behind

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	05H	Write single holding coil type
DO Register Address	2	00 00H	Range: 0000H-0003H
Active	2	FF 00H	This value: FF 00H or 00 00H, FF 00H= Already actived close relay, 00 00H= Already actived open relay
16CRC Verify	2	8C 3AH	CRC0 CRC1 low byte in front, high behind

Example: Control relay DO0 close, then:

Server send: 01 05 00 00 FF 00 8C 3A

01=Device address;05= Control single relay command;00 00=Relay DO0 address;FF 00=DO0 close;8C 3A=CRC verify.

Device answer: 01 05 00 00 FF 00 8C 3A

01=Device address;05=Control single relay command;00 00=Relay DO0 address;FF 00= Active DO0 close;8C 3A=CRC verify.

If single control other relay outputs, only need to change "DO Register Address" and "Active", calculate CRC verify again.

2) Multiple control DO outputs Master Send Data Format:

Data Description Content **Bytes** (H: HEX) **Device Address** 1 01H 01H Device, Range: 1-247, according to setting address 0FH Write multi holding coil, function code 15 Function Code 1 2 00 00H Range: 0000-0003, stands for DO0-DO3 **DO Starting**



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Register Address								
Control Relay Qty	2	00 04H	Qty: 0-4					
Write Byte Qty	1	01H	Write 1 byte, since device only 4DO, use 4 binary can do it					
Writing Data	1	OFH	OFH stands for 4 DO status, high 4 byte invalid, low 4 byte Fconverter to binary as belowDO3(bit3)DO2 (bit2)DO1 (bit1)DO1 (bit0)1111Active closeActive closeActive close1= Active close, 0= Active open					
16CRC Verify	2	7E 92H	CRC0 CRC1 low byte in front, high behind					

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	OFH	Write multi holding coil type
DO Register	1	00.001	Parase 0000 0002 stands for DO0 DO2
Address	T	00000	
Active	1	00 04H	Range:0001H-0004H, stands for already actived relays
16CRC Verify	2	54 08H	CRC0 CRC1 low byte in front, high behind

Example: Close device 4 DO at same time, then:

Server send: 01 0F 00 00 00 04 01 0F 7E 92

01= Device address; 0F= Control multi relay; 00 00= Relay DO0 starting address; 00 04= Control 4 relays; 01= Send data qty; 0F= Data sent converter to binary 0000 1111 high 4 byte invalid, low 4 byte 1111 sort to match DO3 DO2 DO1 DO0, 1 stands for close relay, 7E 92 CRC verify.

DO3	DO2	DO1	DO0	
0	0	1	0	
close	close	close	close	

Device answer: 01 0F 00 00 00 04 54 08

01= Device address; 0F= Control multi relay; 00 00= Relay DO0 starting address; 00 04= Actived 4 relays; 54 08 CRC verify.

If need to control multi relays at same time, only need to change "Relay Starting Address", "Control Relay Qty", "Write Data" and calculate "CRC Verify" again.

8.3.3 Read Device DIN Status

Master Send Data Format:



Content	Bytes	Data (H: HEX)	Description	
Device Address	1	01H	01H Device, Range: 1-247, according to setting address	
Function Code	1	02H	02 read input coil DIN status	
DIN Register	2		Paper 0000H 0007H stands for DINO DINZ	
Address	2	00.00H	Range. 0000H-0007H, stands for Divo-Div7	
Read DIN	n	00.084	Papers 0001H 0008H Paad at of DIN status	
Register Qty	2	00.08H	Range: 0001H-0008H,Read qty of DIN status	
16CRC Verify	2	79 CCH	CRC0 CRC1 low byte in front, high behind	

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	02H	read input coil DIN status
Return Bytes Qty	1	01H	Return data length
Returning Data	1	OFH	Return DIN data, stands for DIN7-DIN0 status
16CRC Verify	2	E1 C8H	CRC0 CRC1 low byte in front, high behind

Example: Inquiry device 8 DIN data at same time, then:

Server send: 01 02 00 00 00 08 79 CC

01= Device address; 02= Inquiry DIN status; 00 00= DIN Starting address; 00 08= Serial reading 8 DIN status; 79 CC = CRC verify.

Device answer: 01 02 01 0F E1 8C

01= Device address; 02= Inquiry DIN status; 01= Returning data bytes qty; 0F DIN status, every byte stands for one DIN status, OF converter to binary 0000 1111 from high to low byte, stands for DIN7-DIN0 status, 0= Open, 1= Close.

DIN7	DIN6	DIN5	DIN4	DIN3	DIN2	DIN1	DIN0
0	0	0	0	1	1	1	1
Open	Open	Open	Open	Close	Close	Close	Close

E1 8C: 16 byte CRC verify.

If need to inquiry multi DIN status, only need to change "DIN Starting Address", "Reading DIN Register Qty", calculate CRC verify again.

8.3.4 Read device AIN DIN pulse count value, tempe&humi value, external power voltage value

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	04H	04 read input register
			One address can read 2 bytes.
Register			AIN address range: 0000-000BH, One AIN data take two address,
Starting	2	00 00H	temperature address: 0018H, humidity address: 0019H, DIN1 count
Address			value address: 001A, 001B
			External power voltage address: 000E _o
Read Register	2	00.101	Read qty of input register, read AINO to DINO count value address,
Qty	2	UU ICH	total 28 register, 0000H to 0001BH.
16CRC Verify	2	F1 C3H	CRC0 CRC1 low byte in front, high behind

Master Send Data Format:

Receiver Return Data Format:

Content	Bvtes	Data	Description		
		(H: HEX)			
Device Address	1	01H	01H Device, Range: 1-247, according to setting		
Device Address	Ľ	011	address		
Function Code	1	04H	04 read input register		
Data Bytes	1	0411	Deturn data longth		
Range	T	048			
		00 00 00 E7 00 00 00 DD			
		00 00 00 DD 00 00 00 DC			
		00 00 00 DE 00 00 00 DF			
		00 00 00 00 04 C6 01 9A			
Returning Data	38	00 00 00 01 00 01 00 01	Return Temperature&Humidity Value		
		00 01 00 01 00 01 00 01			
		0B 36 1B E4 00 00 00 0B			
16CRC Verify	2	A9 3CH	CRC0 CRC1 low byte in front, high behind		

Example: Inquiry device 6AIN temperature, humidity, external power voltageand DINO count value at same time, then:

Server send: 01 04 00 00 00 1C F1 C3

01H= Device address; 04= Read input register value; 00 00= Starting address(For the detailed address, please refer to "(c.) Input Register Type in Appendix B Local Register); 00 1C= Serial reading 28 input register value; F1 C3: CRC verify.

 Device answer:
 01 04 38 00 00 00 E7 00 00 00 DD 00 00 00 DD 00 00 00 DC 00 00 00 DE 00 00 00 DF 00 00 00 00

 04 C6 01 9A 00 00 00 01 00 01 00 01 00 01 00 01 00 01 00 01 0B 36 1B E4 00 00 00 0B A9 3C

01= Device address; 04= Input register value;

38: Return data bity,00 00 00 E7 00 00 00 DD 00 00 00 DD 00 00 00 DC 00 00 00 DE 00 00 00 DF 00 00 00 04 C6 01 9A 00 00 00 01 00 01 00 01 00 01 00 01 00 01 00 01 08 36 1B E4 00 00 00 0B, detail as follows:

AIN	AIN0	AIN1	AIN2	AIN3	AIN4	AIN5
Receiving	00 00	00 00	00 00	00 00	00 00	00 00
Data	00 E7	00 DD	00 DD	00 DC	00 DE	00 DF
Decimal	104	207	0	0	0	0
Value	194	207	0	0	0	0
Real Value	1.94	2.07	0	0	0	0

Other	External	Tomororoturo	Liunaiditu	DIN0 Count	
Value	Power Voltage	remperature	Humaity	Value	
Receiving	04.06	00.26	1D E4	00 00 00 0B	
Data	04 00	06.30	ID C4		
Decimal	1222	2070	7140	11	
Value	1222	2870	/140		
Real Value	12.22V	28.7°C	71.4%RH	11 times	

A93C:CRC verify.

8.4 Modbus RTU Master Application

When RS485 as Modbus RTU Master, can extend I/O tags, support slaves for connecting Remote I/O data acquisition module, Smart meter, Power monitoring module, Smart transducer...; Can mapping register value from Slave to Master, these registers' can be setup high or low threshold value, and NC/NO type, moreover, can enable to send SMS to users once alarm occurrence by the registers if required. Also can remote control Slaves by writing coil.

Mapping Register Table and function code:

Reminder:

Use this function code when connect to Modbus RTU/Modbus TCP upper computer via GPRS/3G/4G (Device as Modbus RTU Slave). Stands for when Cloud communication with S47X, the S47X is Modbus RTU Slave of Cloud Server.
 When device connect to Modbus RTU/Modbus TCP upper computer via GPRS/3G/4G (Device as Modbus RTU Slave). The I/O of S47X itself refer to "Modbus RTU Slave Application" above.

For example, when device as Modbus RTU master, as below:

Step1: Connect the slave to device RS485 port.

Step2: Find the salve port communication parameter and register address from user manual.

Step3: Write device RS485 parameter according to slave port communication parameter, pls ensure both parameter are same, others communication failure, refer to "port setting" part.



Step4: Set RS485 port as Modbus RTU Master, then set polling and time out parameter, refer to "port setting" part.

Serial Port Setting:

In "Serial Port" setting page, choose RS485 port as "Modbus RTU Master". Baud Rate, Data Bit, Parity Bit and Stop Bit parameter need to be same as connected device; Scan Rate, Time Out and Slave Failure Verify Time can be set as default:

) 🗟 S272-RTU Cellular IoT RTU Configu	rator V1.4.2		×
Import Configuration file → Exp Import Configuration file → Exp	rator V1.4.2 ort Configuration File Tactory Reset Thelp Parameter Serial Port S RS485 Channel 1 Mode ModBus KTU Master Baud Rate 9600 Data Bit 8 Parity Bit none Stop Bit 1 RS485 Channel 2 Mode Close Baud Rate 9600 Data Bit 8 Parity Bit none	v Scan Rate 200 (200~65535mS) v Scan Rate 200 (200~65535mS) v Slave Error ACK Time 60 (0~65535S) v Notice: 1. Scan Rate can't less than 200mS. v Slave Error ACK Time Sthan 200mS. v Slave Error ACK Time: Stands for Slave no response longer than ACK time, will send SIMS to authorized phone numbers. Read	×
Cloud Platform Settin Historical Record	Mode Close Baud Rate 9600 Data Bit 8 Parity Bit none Stop Bit 1	Notice: 1. Scan Rate can't less than 200mS. 2. Timeout can't less than 200mS. 3. Slave Error ACK Time: Stands for Slave no response longer than ACK time, will send SMS to authorized phone numbers. Read	
COM5	Devic	ice type:S272-RTU	0%

Step5: Back to Slave Mapping page as below, right click the line to add.



<u>e</u>

COM3

GSM/SMS/GPRS/3G/4G Cellular Iot Gateway

o ×

Mapping Register End

• •

×

Basic Setting	DI Alarm 🔀 🗛	l Setting 🛛 🖂	Al Alarm 🗙	Hour Timer 🛛 Pe	riodic Timer 🛛 Log	ic Trigger 🛛 Serial	Port × Slave mapping
Output Setting	Slave Serial Number	Slave Address	Data Type	Modbus Function Code	Register Starting Addr.	Mapping Register Qty.	Mapping Register Starting A
Access Control	2						
Input Setting	3						
input setting	4						
Timer Setting	5						
Logic Trigger Setting	6						
RS485 Setting	8						
no too ootang	9						
Slave Setting	10						
Slave mapping List	11						
	12						
Mapping Register	13						
Cloud Platform Setting	14						
	15						
Historical Record	16						
	< C						
				Delete	Read Save		

Device type:S475-RTU

Click Add Slave as below:

!! 9	etting Slave						
	~						
	Channel Port	RS485-1 🔻					
	Slave Serial Number	1					
	Slave Address (Range 1~254)						
	Data Type	Boolean 👻	ОК				
	Modbus Function Code	01 🔹	Cancel				
	Register Starting Addr.						
	Mapping Register Qty.						
	Mapping Register Starting Addr.	64 🔹					
	 Mapping Register Starting Addr. Tips: 1. Register Starting Addr. : In Slave, from which register address starting to mapping to RTU, no need to setup the end register address, the RTU will automatically calculate it according to mapping register Qty. 2. Mapping Register Qty. : How many registers in slave need to mapping to RTU. 3. Mapping Register Starting Addr. : In RTU, from which register address used to save the mapping register address value. No need to setup the end register address, the RTU will automatically calculate it according to mapping register address used to save the mapping register address value. No need to setup the end register address, the RTU will automatically calculate it according to mapping register Qty. 4. The Data Type and Modbus Function Code of the mapping registers must be the same, otherwise, please setup separately. 						

If one slave have multi register, then need to add seperately according to register type; For exmaple, Mxxx



remote I/O module, with digital and analog inputs, need to add the digital(Boolean) first, then add the analog(16 Bit).

Step6: Right click the line to edit the slave.



Click the "Editor Slave" to set channel name, alarm SMS content, recovery SMS content and relay active etc. as below:

- Slave Editor										
Address Mapping	Channel Name	Data Type		Input Type		Alarm Verify Time	Alarm SMS Content	Recovery SMS Content	Enable Recovery SMS	Enable
64	Tag64	DATA_BOOL	•	NO	•	2				
65	Tag65	DATA_BOOL	•	NO	•	2				
66	Tag66	DATA_BOOL	•	NO	•	2				
67	Tag67	DATA_BOOL	•	NO	•	2				
68	Tag68	DATA_BOOL	•	NO	•	2				

Step7: Restart the device, enter into working mode, device running according parameter setting, include alarm SMS and call. If set the network communication function, then can remote transmit data to cloud server via GPRS/3G/4G.

Reminder:

After adding slaves, device switched off/on to restart is necessary.

8.4.1 Read Boolean Mapping Address Data

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	01H	Read holding coil type, function code 01
Boolean Register	2	00 40H	Range: 0040H-007FH, address refer to ["Slave

Master Send Data Format:



Starting Address			Mapping Register Address"] at manual bottom
Read Register Qty	2	00 0AH	Range: 0001H-0040H, total 64 address for Boolean mapping
16 CRC Verify	2	BD D9H	CRC0 CRC1 low byte in front, high byte in behind

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	01H	Read holding coil
Return Byte Length	1	02H	Return Data Length
Returning Data	2	73 01H	
16CRC Verify	2	5D 0CH	CRC0 CRC1 low byte in front, high behind

Example: Start from address 64, read 10 Boolean mapping data value, then:

Server send: 01 01 00 40 00 0A BD D9

01= Device address; 01= Read holding coil; 00 40=Read Boolean data start from address 64; 00 0A = Serial to read 10 Boolean status;

BD D9= CRC verify.

Device answer: 01 01 02 73 01 5D 0C

01= Device address; 01= Read holding coil; 02= Return Byte Length; 73 01= Return 10 Boolean status. High byte stands for low address data, low address stands for high address. According to Modbus protocol, fix 73 01H real value to be 01 73H, converter to Binary as below:

Register mapping address	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid	73	72
Value	0	0	0	0	0	0	0	1
Register mapping address	71	70	69	68	67	66	65	64
Value	0	1	1	1	0	0	1	1

The address value higher than 10 digits will be seen as invalid. 5D OC =CRC verify.

8.4.2 Modify Boolean Mapping Address Data

If control slave's relay status which connected to RS485, need to add slave in salve list of configurator. Write command 15 for mapping, when mapping address value modified, will write to RS485 matched slave address. **Master Send Data Format:**

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	05H	Write single holding coil, function code 05H
Boolean Mapping	2	00.4011	Range: 00 40H-00 7FH, address refer to ["Slave
Register Address	2	00 40H	Mapping Register Address"] at manual bottom

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Write value	2	FF 00H	This value: FF 00H or 00 00H, FF 00H stands for write 1;
write value	2		00 00H stands for write 0
16 CRC Verify	2	8D EEH	CRC0 CRC1 low byte in front, high behind

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	05H	Write single holding coil
Boolean Mapping	2	00.40H	Range: 00/0H-007EH
Register Address	2	00 4011	
Write value	2	FF 00U	This value: FF 00H or 00 00H. FF 00H stands for write
write value		FF 0011	1,00 00H stands for write 0.
16 CRC Verify	2	8D EEH	CRC0 CRC1 low byte in front, high behind

Example: Modify Boolean mapping address 64 status, modify to 1, then:

Server send: 01 05 00 40 FF 00 8D EE

01= Device address; 05= Write Boolean value; 00 40=The mapping address which need to revise;

FF 00 = Write 1; 8D EE = 16 Bit CRC verify.

Device answer: 01 05 00 40 FF 00 8D EE

01= Device address; 05= Write Boolean value; 00 40= The mapping address which need to write;

FF 00= Write 1; 8D EE = 16 Bit CRC verify.

If need multi modify, pls check function 15 of Modbus protocol.

8.4.3 Read Data Type Mapping Address Data

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	03H	Read holding register, function code 03
Mapping Register Starting Address	2	4E 20H	One address can read 2 bytes. Mapping data type address range, refer to ["Slave Mapping Register <u>Address"]</u> at manual bottom.
Read Mapping Register Qty	2	00 0AH	Read input register qty.
16 CRC Verify	2	3D 2FH	CRC0 CRC1 low byte in front, high behind

Content By	Bytes	Data (H: HEX)	Description
------------	-------	------------------	-------------



Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	03H	Read holding coil
Range Data Bytes	1	14H	One address can read 2 bytes
	20	00 14 00 1E 00	
Doturning Doto		28 00 32 00 4B	Deturning Date
Returning Data		00 41 00 0A 00	Returning Data
		25 00 14 00 2AH	
16 CRC Verify	2	FB 34H	CRC0 CRC1 low byte in front, high behind

Example: Mapping address start from 20000, read 10 address data, then:

Server send: 01 03 4E 20 00 0A D3 2F

01= Device address; 03= Read holding register; 4E 20=Mapping register starting address, current is Decimal data 20000; 00 0A = Read 10 register value;

D3 2F = 16 Bit CRC verify.

Device answer: 01 03 14 00 14 00 1E 00 28 00 32 00 4B 00 41 00 0A 00 25 00 14 00 2A FB 34

01= Device address; 03= Read holding register; 14= Returning 20 byte; 00 14 00 1E 00 28 00 32 00 4B 00 41 00 0A 00 25 00 14 00 2A = Returning data.

Register Mapping	20000	20001	20002	20003	2000/	20005	20006	20007	20008	20009
Address	20000	20000 20001	20002	20005	20004	20005	20000	20007	20008	20009
Value	00 14	00 1E	00 28	00 32	00 4B	00 41	00 0A	00 25	00 14	00 2A

FB 34 = 16 Bit CRC verify.

8.4.4 Modify Data Type Mapping Address Data

If need to revise slave data which RS485 connected, need to add slave in salve list of configurator. Write command 16 for mapping, when mapping address value modified, will write to RS485 matched slave address. If address 20000 mapping slave data type is Signed Int, sort AB.

Content	Bytes	Data (H: HEX)	Description
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	06H	Write single holding register, function code 06
Mapping Register Address	2	4E 20H	Address range: 4E 20H-50 1CH. Mapping data type address range, refer to ["Slave Mapping Register <u>Address"</u>] at manual bottom.
Write Data	2	00 64H	Data writing value is Decimal data 100
16 CRC Verify	2	9E C3H	CRC0 CRC1 low byte in front, high behind

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description	
Device Address	1	01H	01H Device, according to the data Master send	



Function Code	1	06H	Write single holding register
Mapping Register Address	2	4E 20H	Address range: 4E20H-501CH, mapping data type address range.
Write Data	2	00 64H	Write 100 successfully
16 CRC Verify	2	9E C3H	CRC0 CRC1 low byte in front, high behind

Example: If address 20000 mapping slave data type is Signed Int, sort AB, modify mapping address 20000 register to 100, then:

Server send: 01 06 4E 20 00 64 9E C3

01= Device address; 06= Modify single holding register value; 4E 20=Modify address 20000 register value; 00 64 = Write Decimal value 100;

9E C3 = 16 Bit CRC verify.

Device answer: 01 06 4E 20 00 64 9E C3

01= Device address; 06= Modify single holding register value; 4E 20= R Modify address 20000 register value; 00 64= Modify to Decimal value 100.

9E C3 = 16 Bit CRC verify.

If need to modify multi data type mapping address, pls check function code 16 in Modbus protocol.

8.5 Modbus TCP Master Application

When Ethernet as Modbus TCP master, can extend I/O tags, support slaves for connecting Remote I/O data acquisition module, Smart meter, Power monitoring module, Smart transducer... Can mapping register value from Slave to Master, these registers' can be setup high or low threshold value, and NC/NO type, moreover, can enable to send SMS to users once alarm occurrence by the registers if required. Also can remote control Slaves by writing coil.

For example, when device as Modbus TCP master, as below:

1)Ethernet Setting:

In "Ethernet Settings" page, choose correct slave IP and port, click "save" to add, support up to 5 Ethernet slave.



🗟 S375-RTU Cellular IoT RTU Configurator V1.4.2				- 🗆 X		
Import Configuration file	Pactory Reset 🛛 🗐 Help					
Basic Setting Parameter ×	Ethernet settings			8		
Timer Setting			ТСРАЮР	v		
B-Cogic Trigger Setting		Serial device RTU	Rester Server			
RS485 Settings Local Settings		Communication Settings				
B	Get IP Address Automatically Use The IP Address Below	Ethernet State	Open Connection Mode	TCP ~		
Cloud Platform Setting Devic	IP 0.0.0.0	Communication Protoco	I Modbus RTU Prote Local Listening Port (MODBUS TCP Support)	502		
Cellular network Subnet	Mask 0.0.0.0					
Ga Ga	eway 0.0.0.0	Advanced Settings				
	DNS 0.0.0.0		MOTT Data retransmissio			
Historical Record MAC ad	dress 04-02-35-55-EE-C0	Retransmission Times		L/DISABLE		
Server Setting: Server 1 IP/D Login/Logout Login ACK Logout Ethernet Slave IP1 192: IP2 0.0.0 IP3 0.0.0 IP4 0.0.0	main modbusrtu.kprtu.com (1) ackets Settings ackets ASCII > ackets ASCII > ackets ASCII > B8.1.124 Port 8 0 Port 0 0 Port 0 0 Port 0 0 Port 0	Max60) Port 4000 (0-6533 (Max60) (Max60) (Max60) (Max60) (0-65535) (0-65535) (0-65535) (0-65535) (0-65535) (0-65535)	15) Server 2 IP/Domain (Max60) F Heartbeat Settings Heartbeat Packets ASCII >	Port 0 (0-65535) (Max60) (Max60) Read Save		
COM5	Device type:S3	75-RTU				

2)Slave Setting:

In "Slave" page, right click the line to add, as below:

Cellular IoT RTU Configurator V1.3	to make to			to race was		-		Cannon andre o	
🕘 Load Profile 🛛 Export Profile	🍓 Default 🛛 🚺 Help								
Basic Settings	Parameter ×	Serial Port 🛛 🗙	Slave 🗙						
1 × ~	Slave Serial Number	Slave Address	Data Type	Modbus Function Code	Register !	Starting Addr.	Mapping Register Qty.	Mapping Register Starting Addr.	Mapping Register End Adc
Parameter	1				_				
Numbers	2					Add Slave			
Output Settings	3					Editor Slave			
Supur settings	4					Write Value			
Access Control	5					Delete Slave			
Input Settings	6					01 01 1			
1 × 1	/					Clear Displa	У		
Imer Settings	9								
Interlock Settings	10								
RS485 Settings	11								
	12								
Serial Port	13								
Slave Settings	14								
and the state of t	15								
Siave	16								
Register	•								•
Network Settings				Delete	Read	Save			
×									
Historical Record	Notice: 1. Refore addi	ing device, pla clic	Pead' butto	n to read mapping device	liet firet				
Historical Data	2. Select a bla	nk line, right click	to add mappir	ig device	inse mae				
	3. Max adding	16 devices							
COM1			Device ty	pe:					

Click Add Slave as below:



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Channel Port	Ethernet I 🗸						
Slave Serial Number	1						
Slave Address (Range 1~254)	1						
Data Type	Boolean \checkmark	ОК					
Modbus Function Code	01 ~	Cancel					
Register Starting Addr.	0						
Mapping Register Qty.	5						
Mapping Register Starting Addr.	64 ~						
Mapping Register Starting Addr. 64 Tips: 1. Register Starting Addr. : In Slave, from which register address starting to mapping to RTU, no need to setup the end register address, the RTU will automatically calculate it according to mapping register Qty. 2. Mapping Register Qty. : How many registers in slave need to mapping to RTU. 3. Mapping Register Starting Addr. : In RTU, from which register address used to save the mapping register address value. No need to setup the end register address used to save the RTU will automatically calculate it according to mapping register Qty. 4. The Data Type and Modbus Function Code of the mapping registers must be the							

If one slave have multi register, then need to add seperately according to register type; For exmaple, Mxxx remote I/O module, with digital and analog inputs, need to add the digital(Boolean) first, then add the analog(16 Bit).

Right click the line to edit the slave.

Cellular IoT RTU Configurator V1.3									- 0 - X
🐔 Load Profile 🖷 Export Profile 📲 D	Default 📓 Help								
Basic Settings	Parameter ×	Serial Port 🛛 🚿	Slave 🗙						
	Slave Serial Number	Slave Address	Data Type	Modbus Function Code	Register Starting Addr.	Mapping Register Qty.	Mapping Register Starting Addr.	Mapping Register End Addr.	Channel Port
Parameter	1	1	Boolean	1	Add Steen	1	64	64	1
Numbers	2				And State				
Output Settings	3				Editor Slave				
1 ×	4				Write Value				
Access Control	5				Delete Slave				
Input Settings	7				Clear Display				
Timer Settings	8								
I 💥	9								
Interlock Settings	10								
B-(@) R5485 Settings	11								
Serial Port	12								
	13								
Slave Settings	15								
	16								
Register									
Network Settings									
- G Historical Record									
Historical Data									
502				Delete	Read Save				
	Notice:	and a loss of a dis-	i madi kama	a da anad manalan darlar	Tab Free				
	2. Select a bla	nk line, right click	to add mappin	ig device	197 1126				
	3. Max adding	16 devices		-					

Click the "Editor Slave" to set channel name, alarm SMS content, recovery SMS content and relay active etc. as



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below:

Address Mapping	Channel Name	Data Type	Input Type		Alarm Verify Time	Alarm SMS Content	Recovery SMS Content	Enable Recovery SMS	Enable
64	Tag64	DATA_BOOL	NO	-	2				
65	Tag65	DATA_BOOL	NO	•	2				
66	Tag66	DATA_BOOL	NO	•	2				
67	Tag67	DATA_BOOL	NO	•	2				
68	Tag68	DATA_BOOL	NO	•	2				

Reminder:

After adding slaves, device switched off/on to restart is necessary.

8.5.1 Read Boolean Mapping Address Data

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Transaction ID	Transaction ID 2 00.00H		Identification of Modbus requests/responses
hansaction ib	2	00 0011	transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	01H	Read holding coil type, function code 01
Boolean Register	2	00.404	Range: 0040H-007FH, address refer to ["Slave
Starting Address	2	00 40 8	Mapping Register Address"] at manual bottom
Read Register Qty	2	00 0AH	Range: 0001H-0004H

Receiver Return Data Format:

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00.00H	Identification of Modbus requests/responses
Transaction ib	-	00 0011	transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 05H	The length of subsequent data
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	01H	Read holding coil type, function code 01
Return Data Length	1	02H	Range: 0000H-0003H
Returning Data	2	73 01H	

Example: Start from address 64, read 10 Boolean mapping data value, then:

Server send: 00 00 00 00 00 06 01 01 00 40 00 0A

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of



subsequent data; 01= Device address;01 = Read holding coil; 00 00 = Read Boolean data start from address 64; 00 0A = Serial to read 10 Boolean status;

Device answer: 00 00 00 00 00 00 05 01 01 02 73 01

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 05 = The length of subsequent data; 01= Device address; 01 = The function code of reading Boolean; 02= Return Data Length; 73 01= Return 10 Boolean status. High byte stands for low address data, low address stands for high address. According to Modbus protocol, fix 73 01H real value to be 01 73H, converter to Binary as below:

Register mapping address	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid	73	72
Value	0	0	0	0	0	0	0	1
Register mapping address	71	70	69	68	67	66	65	64
Value	0	1	1	1	0	0	1	1

The address value higher than 10 digits will be seen as invalid.

8.5.2 Modify Boolean Mapping Address Data

If control slave's relay status which connected to Ethernet, need to add slave in salve list of configurator. Write command 15 for mapping, when mapping address value modified, will write to Ethernet matched slave address.

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00 00H	Identification of Modbus requests/responses transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	05H	Write single holding coil, function code 05H
Boolean Mapping	2	00.4011	Range: 00 40H-00 7FH, address refer to ["S47X
Register Address	2	00 40H	Mapping Register Address"] at manual bottom
Write value	2	FF 00H	This value: FF 00H or 00 00H, FF 00H stands for write 1; 00 00H stands for write 0

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00 00H	Identification of Modbus requests/responses transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data



Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	05H	Write single holding coil
Boolean Mapping	2	00.4011	Range: 00 40H-00 7FH, address refer to [" S47X
Register Address	2	00 40H	Mapping Register Address"] at manual bottom
M/rite value	2	55.0011	This value: FF 00H or 00 00H. FF 00H stands for write
write value	Z	FF UUH	1,00 00H stands for write 0.

Example: Modify Boolean mapping address 64 status, modify to 1, then:

Server send: 00 00 00 00 00 06 01 05 00 40 FF 00

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of subsequent data; 01= Device address; 05= Write holding coil; 00 40=The mapping address which need to revise; FF 00 = Write 1;

Device answer: 00 02 00 00 00 06 01 05 00 40 FF 00

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of subsequent data;01= Device address; 05= Write holding coil; 00 40= The mapping address which need to write; FF 00= Write 1;

If need multiple modify, pls check function 15 of Modbus protocol.

8.5.3 Read Data Type Mapping Address Data

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00 00H	Identification of Modbus requests/responses transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	03H	Read holding register, function code 03
Mapping Register Starting Address	2	4E 20H	One address can read 2 bytes. Mapping data type address range, refer to ["Slave Mapping Register <u>Address"]</u> at manual bottom.
Read Mapping Register Qty	2	00 0AH	Read input register qty.

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00 00H	Identification of Modbus requests/responses
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 17H	The length of subsequent data
Device Address	1	01H	01H Device, according to the data Master send



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Cellular IoT Gateway

Function Code	1	03H	Read holding register
Range Data Bytes	1	14H	One address can read 2 bytes
		00 14 00 1E 00	
Returning Data	20	28 00 32 00 4B	Determine Dete
		00 41 00 0A 00	Returning Data
		25 00 14 00 2AH	

Example: Mapping address start from 20000, read 10 address data, then:

Server send: 00 00 00 00 00 06 01 03 4E 20 00 0A

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of subsequent data; 01= Device address; 03= Read holding register ; 4E 20=Mapping register starting address, current is Decimal data 20000; 00 0A = Read 10 register value;

Device answer: 00 00 00 00 00 17 01 03 14 00 14 00 1E 00 28 00 32 00 4B 00 41 00 0A 00 25 00 14 00 2A

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 17 = The length of subsequent data;01= Device address; 03= Read holding register; 14= Returning 20 byte; 00 14 00 1E 00 28 00 32 00 4B 00 41 00 0A 00 25 00 14 00 2A = Returning data.

Register Mapping	20000	20001	20002	20003	2000/	20005	20006	20007	20008	20000
Address	20000	20001	20002	20003	20004	20005	20000	20007	20008	20005
Value	00 14	00 1E	00 28	00 32	00 4B	00 41	00 0A	00 25	00 14	00 2A

8.5.4 Modify Data Type Mapping Address Data

If need to revise slave data which Ethernet connected, need to add slave in salve list of configurator. Write command 16 for mapping, when mapping address value modified, will write to Ethernet matched slave address.

If address 20000 mapping slave data type is Signed Int, sort AB.

Master Send Data Format:

Content	Bytes	Data (H: HEX)	Description
Transaction ID	2	00 00H	Identification of Modbus requests/responses transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data
Device Address	1	01H	01H Device, Range: 1-247, according to setting address
Function Code	1	06H	Write single holding register, function code 06
Mapping Register Address	2	4E 20H	Address range: 4E 20H-50 1CH. Mapping data type address range, refer to ["Slave Mapping Register Address"] at manual bottom.
Write Data	2	00 64H	Data writing value is Decimal data 100

Content	Bytes	Data (H: HEX)	Description
---------	-------	------------------	-------------

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Transaction ID	2	00.00H	Identification of Modbus requests/responses
Hansaction ib	2	00 0011	transactions
Protocol Identifier	2	00 00H	00 00: Modbus protocol
Data Length	2	00 06H	The length of subsequent data
Device Address	1	01H	01H Device, according to the data Master send
Function Code	1	06H	Write single holding register
Mapping Register	2	45 2011	Address range: 4E20H-501CH, mapping data
Address	Z	4E 20H	type address range.
Write Data	2	00 64H	Write 100 successfully

Example: If address 20000 mapping slave data type is Signed Int, sort AB, modify mapping address 20000 register to 100, then:

Server send: 00 00 00 00 00 06 01 06 4E 20 00 64

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of subsequent data; 01= Device address; 06= Modify single holding register value; 4E 20=Modify address 20000 register value; 00 64 = Write Decimal value 100;

Device answer: 00 00 00 00 00 00 06 01 06 4E 20 00 64

00 00= Transaction ID; 00 00 = Protocol Identifier,00 00 stands for Modbus protocol; 00 06 = The length of subsequent data; 01= Device address; 06= Modify single holding register value; 4E 20= R Modify address 20000 register value; 00 64= Modify to Decimal value 100.

If need to modify multiple data type mapping address, pls check function code 16 in Modbus protocol.

8.6 Transparent Transmission DTU Application

Device can support data transparent transmission: DTU function. Could server transmit data to device via GPRS/3G/4G, device will transfer the data to RS485 port directly without deal with. Once device receive data from RS485, also transmit to cloud server directly via GPRS/3G/4G. When device RS485 port no need mapping slave, or connect to others which is not standard Modbus RTU protocol, then can choose transparent transmission as below:

(1) Items connect to device via RS485, set RS485 port parameter;

(2) Basic setting page to set device ID;



S475-RTU Cellular IoT RTU Configurator V1.4.2

• Import Configuration file • Expo	rt Configuration File 📲 Factory Reset 🔞 Help		
Basic Setting	Parameter 🔀		
Parameter	Modify password	Synchronous machine time	^
Parameter	Old password:	Time: 2019-07-25 10:00:(~	
Alarm Numbers	New password:	Read the RTU time	
Qutput Setting	Confirm password: (4 digits)	Write the DTU time	
		white the KTO time	
Access Control	Modity	Read the computer	
	Basic information		
Timer Setting	Device ID 1 (1~247,fill it when used as Modbus Slav	ve over RS485) Model No. S475-RTU Version 2EA34	Read
	Device Description:	(60 Characters) SN 869141045751395	
E	🗹 Add timestamp to alarm SMS 🗹 Arm automatically w	when power on.	Save
RS485 Setting	Auto Arm after disarm 1 Minute(s) (0~9999,	When set as 0, the RTU will in armed mode immediate	
Slave Setting	Timer Reporting SMS Content Settings		
	Add the following additional information in the report	t SMS	
Cloud Platform Setting	DIO Status Arm Status	Al0 Value DO0 Status	
Historical Record	DI1 Status GSM/3G Signal Value	All Value DO1 Status	
- Contraction of the Contraction	DI2 Status External Power Status	Al2 Value DO2 Status	
	DIA Status Device ID	AIS Value DOS Status	
	DI4 Status Temperature Value	AI4 Value	
	DI5 Status Humidity Value	Al5 Value	
	DI6 Status Device Description		
	DI7 Status		
	Alarm SMS Content Settings		
	Add the following additional information in the alarm	SMS	
	DIO Status Arm Status	Al0 Value DO0 Status	
	DI1 Status GSM/3G Signal Value	Al1 Value DO1 Status	
	DI2 Status External Power Status	Al2 Value DO2 Status	
	DI3 Status Device ID	AI3 Value DO3 Status	
	DI4 Status Temperature Value	AI4 Value	
	DI5 Status Humidity Value	AI5 Value	
	DI6 Status Device Description		
	DI7 Status		
			Ý
COM3	Device type:S47	75-RTU	

(3) In "Serial Port" setting page, device parameter as below:

🖄 S375-RTU Cellular IoT RTU Configurator V1.4.2						
諅 Import Configuration file 🛛 🐳 Exp	port Configuration File 🛛 📲 Factory Reset 🛛 🗐 Help					
Basic Setting	Parameter X Ethernet settings X Serial Port 🗙					
Parameter						
Alarm Numbers	RS485 Channel 1					
Access Control	Baud Rate 9600 V	Scan Rate 200 (200~65535mS)				
Timer Setting	Data Bit 8	Timeout 200 (200~65535mS)				
Eugic Trigger Setting	Parity Bit v	Slave Error ACK Time 60 (0~65535S)				
RS485 Settings	Stop Bit 1					
Serial Port	R\$485 Channel 2					

A) Choose RS485 as "Transparent Transmission";

B) Baud Rate, Data Bit, Parity Bit, Stop Bit setting should be corresponding with items, otherwise

communication will be failure. If multiple items, all items parameter should corresponding with device;

C) No need set: "Scan Rate", "Time Out", "Slave Fault Verify Time";

D) Click "Save" button.

Reminder:

The device ID which connect to RS485 can't be same with S475's device ID.

8.7 Device connect to cloud Application

Device can connect to cloud and SCADA via GPRS/3G/4G network or Ethernet, also can connect to clients own server and King Pigeon www.My-M2M.com cloud server. King Pigeon my-m2m.com cloud as sample below: King Pigeon my m2m cloud support Modbus TCP, cloud configuration, wechat alarm function, welcomed editable function.

(1) In "Basic Parameter" setting page, set device ID, range 1~247 in Modbus RTU protocol as below:



Basic Setting	Parameter 🗙					
Parameter Alarm Numbers Output Setting Access Control Input Setting	Modify password Old pu New pu Confirm pu Basic information	assword: assword: assword: (4 digits) Modify	Synchronous mach Time: 20 Re Wr	ine time 119-07-25 10:00:(V ad the RTU time ite the RTU time ad the computer		
Timer Setting	Device ID 1 (1~2	47,fill it when used as Modbus Slav	ve over RS485) Model N	o. S475-RTU Version 2EA34	Read	
Logic Trigger Setting	Device Description:	alarm SMS 🗸 Arm automatically w	(60 Characters) SN	869141045751395	Save	
RS485 Setting	Auto Arm after disa	rrm 1 Minute(s) (0~9999,	When set as 0, the RTU	will in armed mode immediatel		
Slave Setting	Timer Reporting SMS C	ontent Settings	CMC			
Cloud Platform Setting	DI0 Status	Arm Status	AI0 Value	DO0 Status		
Historical Record	DI1 Status DI2 Status DI3 Status DI4 Status DI5 Status DI5 Status DI5 Status DI7 Status	GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	Al1 Value Al2 Value Al3 Value Al4 Value Al5 Value	DO1 Status DO2 Status DO3 Status		
	Alarm SMS Content Set	ings				
	Add the following a D10 Status D11 Status D12 Status D13 Status D14 Status D15 Status D15 Status D16 Status	dditional intormation in the alarm Arm Status GSM/3G Signal Value External Power Status Device ID Temperature Value Humidity Value Device Description	Al0 Value Al1 Value Al2 Value Al2 Value Al3 Value Al3 Value Al4 Value Al5 Value	DO0 Status DO1 Status DO2 Status DO3 Status		

(2) In "Cellular network" setting page, set parameter as below:

When Communication Data as "Modbus RTU Protocol", then server IP/DNS should be: modbus.dtuip.com, port is 6651, pls contact King Pigeon Sales for "Login Message Writing";

S375-RTU Cellular IoT RTU Configurator V1.4.2						- 0	×	
💽 Import Configuration file 🚽 Export Configuration File	Factory	Reset	🗐 Help					
Basic Setting	Parameter X Ethernet settings X Serial Port X Cellular network 🛛							
Parameter Connect KP	ЮТ	Co	onnect my-m2m	Conne	ect other IOT server			
Alarm Numbers Cellular Network Set	ings							
Access Control Communication Prote	col Mo	dbus RT	U Protoco 🗸		Server 1 IP/DNS	modbusrtu.kprtu.com (Max60)		
Finer Setting	ol TCP	P	~		Server Listen Port	4000 (0-65535)		
SIM1 Access	ame	eter a	accordin	g to	Server 2 IP/DNS	(Max60)		
SIM1 APN User			c	(Max60)	Server Listen Port	(0-65535)		
SIM1 APN Pass	word	ieee	15	(Max60)				
SIM2 Access Point	lame			(Max60)				
Slave Setting				(Max60)		Only support"Primary Server		
Slave mapping List SIM2 APN Pass	word			(Max60)		1 Secondary Server		
Mapping Register Pls fill in the l	gin mess	sage (dev	ice ID of cloud), and click	save			
Cloud Platform Setting	ts ASCI	II ~			(Max60)	2"now,when server 1		
Cellular network Login ACK Pack	ets ASCI	II ~			(Max60)	connecting failure then		
Ethernet settings Logout Pack	ASCI	II ~			(Max60)			
Historical Record Heartbeat Pack	ets ASCI	II V	req		(Max60)	connect to backup 2.		
Heartbeat ACK Pack	ets ASCI	II ~	res		(Max60)			
B Heartbeat Inter	al 60		(1-9999S)					
Retransmission Ti	nes 3	~	(1-9)					
Login Message Strat	gy Send	d Once W	hen Login Server	~				
M FAQ fo	FAQ for settings please refer to [Help] menu							
						Kead Save		
·								
COM5			Device type:S37	5-RTU				

(3) Click "Save Settings" in the menu, then switch device off.

- (4) Switch the device on, enter into working mode, then Slave and Master I/O can connect to network.
- (5) Need enter MQTT parameter when choose MQTT protocol. (For details, refer to 12.MQTT Flag and Cloud



Platform on page 69)

9. Device SMS Command

1. The default Password is <u>1234</u>.

2. The unit cannot support PIN Code Protected SIM Card.

3. You can program the GSM unit with SMS commands using your phone.

4. Remember that commands must be <u>CAPITAL LETTERS</u>. It is PWD not pwd, CAP not Cap etc. Don't add

spaces or any other character.

5. In some GSM operators they use different SMS parameter; the units can't return the SMS confirmation in some gsm operators, but it can performance the functions correctly. Also, you can try to add the country code

For example:

E.g.: the country code is <u>0086</u>, or <u>+86</u>.

The user cell phone number is <u>13600000000</u> and has been assigned as a SMS Alert number, the simcard number in the panel is <u>13512345678</u>.

When you setup the number as the authorized number, please setup as 008613600000000 or +8613600000000. Not 13600000000.

before the number, see the below settings:

6. If the password is correct but the command is incorrect, the device will return: <u>SMS Format Error, Please</u> <u>check Caps Lock in Command!</u> So please check the Command, or add the country code before the telephone number or check the input is in ENGLISH INPUT METHOD and CAPS LOCK. If password incorrect then will not any response SMS.

7. Once the Unit received the SMS Command, will return SMS to confirmation, if no SMS return, please check your command or resend again.

8. The SMS commands that you will certainly use in the GSM units are the following:

SMS Commands For Program and Operation the S47X

SMS Command List:

The SMS commands will be used for remote control the RTU are below:

1) Commands error return SMS

Event	Return SMS Content		
Any incorrect Command	SMS Format Error, Please check Caps Lock in Command!		
2) External DC Status			
Event	Return SMS Content		
External DC goes off	External DC Power Goes OFF		
External DC Power Goes ON	External DC Power Goes ON		
3) Modify Password, 4 digits, default is 1234			
SMS Command	Return SMS Content		
Old Password+P+New Password	This is the New Password, please remember it carefully.		
4) Reboot			
SMS Command	Return SMS Content		
Password+Reboot			



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5) Arm/Disarm SMS Command

SMS Command		Return SMS Content
Arm	password+AA	Armed
Disarm	password+BB	Disarmed

6) Set RTU time, format is 1234D2018-01-01T15:00:00W01, the W01 stands for Monday.

SMS Command	Return SMS Content
password+Dxxxx-xx-xxTxx: xx: xxWxx	xxxx(Y)XX(M)XX(D)xx(H)X(M)xx(W)

7) Inquiry Current Status SMS Command

SMS Command	Return SMS Content
password+EE	Armed/Disarmed
	Model:S475
	Version:2CV25
	IMEI:8645xxxxxxxxxx
	GSM Signal Value:25
	External DC Power Goes OFF/ON

8) Setup 10 User number (Alarm Number & Access Control Number), max 21 digits. (Return 0~4 or 5~9 separately while setting.)

	SMS Command	Return SMS Content
Setup	password+A+series number+T+tel number	Tel1:
		Tel2:
	Notice:	Tel3: 13570810254
	Series number = 0~9	Tel4:
		Tel5:
Inquiry	password+A	Return all numbers
Delete	password+A+series number	Return 0~4 or 5~9 numbers.

9) Setup Daily Report time

	SMS Command	Return SMS Content
Setup	password+DR+series number+T+time	Daily SMS Report at: xx:xx
	Notice:	
	Series number =0~9, e.g.: 1234DR1T12:30	
Inquiry	password+DR	
Delete	password+DRDEL	

10) Inquiry DIN Status

	SMS Command	Return SMS Content
Inquiry Status	password+DINE	DIN1:Open/Close
		DIN2: Open/Close

11) Set Digital Output

	SMS Command	Return SMS Content
Set DO Name	password+DO+channel number+T	DOx:xxxx
Inquiry DO Name	password+DO+ channel number <nnnn></nnnn>	
Delete DO Name	password+DO+ channel number+DEL	
Switch ON(Close)	password+DOC+ channel number <nnnn> , can close multi</nnnn>	DOx: ON
	channel, till next event trigger or SMS command.	DOy:ON
Switch OFF(Open)	password+DOO+ channel number <nnnn></nnnn>	DOx: OFF

		DOy:OFF
Inquiry DO Current	password+DOE+ channel number <nnnn></nnnn>	DOx: ON/OFF
Status		DOy:ON/OFF
Inquiry all DO Current	password+DOE	DO1: ON/OFF
Status		DO2:ON/OFF
Time Switch ON	password+DOLC+ channel number <nnnn> , can close multi</nnnn>	
(Close)	channel, till time setting in configurator software finished.	
Set Pulse Output time	password+DOT+xxx (3 digital, unit is seconds)	Pulse Output Time:xxxS
Inquiry pulse output	password+DOT	Pulse Output Time:xxxS
time		
Pulse Ouput	password+DOP+channel number <nnnn></nnnn>	No SMS Return

12) Setup AIN

	SMS Command	Return SMS Content
Set Threshold	password+AINR+channel number+Lxxx+Hxxx	AINx: Low:xxx,High:xxx.
Inquiry Threshold	password+AINR+ channel number <nnnnnnn></nnnnnnn>	AINx: Low:xxx, High:xxx.
		AINy: Low:xxx, High:xxx.
Delete Threshold	password+AINR+ channel number+DEL	
Set AIN measurement	password+AINM+ channel number+Lxxx+Hxxx	AINx: Min:xxx,Max:xxx
range		
Inquiry measurement	password+AINM+ channel number <nnnnnnnn></nnnnnnnn>	AINx: Min:xxx, Max:xxx.
range		AlNy: Min:xxx, Max:xxx.
Delete measurement	password+AINM+channel number+DEL	
range		
Inquiry AIN Current	password+AINE+channel number <nnnnnnnn></nnnnnnnn>	AINx: xxxx ,+【Normal/Higher/Lower】
Value		
Inquiry All AIN Current	password+AINE	AIN0: xxxx ,+【Normal/Higher/Lower】
Value		AIN1: xxxx ,+【Normal/Higher/Lower】

13) Set Server Parameter(Can not setup DNS by SMS)

SMS Command		Return SMS Content
Set Server IP	password+IP+ IP address+P+Com port	Server:
		Port:
Inquiry	password+IP	Server:
		Port:
Delete	password+IPDEL	Server:
		Port:0

14) Set GPRS APN/USER NAME/PASSWORD

SMS Command		Return SMS Content
Set	password+AP+apn+#+username+#+user password	APN:
Inquiry	password+AP	User Name:
Delete	password+APDEL	Password:

15) GPRS Online

SMS Command	Return SMS Content
password+GPRSonline	GPRS always online



 16) Delete Historical Data

 SMS Command
 Return SMS Content

 SMS Command
 Delete all historical records

 Delete all historical records

 Delete all historical records

 Clear/Inquiry Pulse Counter Value

 SMS Command
 Return SMS Content

 Clear Pulse Counter Value
 password+DINOCLR
 Clear Successfully

 Inquiry Pulse Counter Value
 password+PR
 Counter Current Value: XX

10. S47X Register Address

Tips: All address in S47X Register Table displayed as Decimal data.

Read &Wri	Read &Write Holding Coil (Function Code 01, Function Code 05, Function Code 15.)					
Register Address (Decimal)	Definition	Data Type	Description			
0	DO0	Bool				
1	D01	Bool	1:Relay close			
2	DO2	Bool	2:Relay open			
3	DO3	Bool				

	Read input Coil (Function Code 02:Read coil.)				
Register Address (Decimal)	Definition	Data Type	Description		
0	DINO	Bool			
1	DIN1	Bool			
2	DIN2	Bool	when dry contact,		
3	DIN3	Bool	When wet contract,		
4	DIN4	Bool	0~0.5V=1, 3~24V=0		
5	DIN5	Bool			
6	DIN6	Bool			
7	DIN7	Bool			

	Read input Register (Function Code 04:Read input register.)				
Register Address (Decimal)	Definition	Description			
0-1	AINO	32 Bit int	Y=X/100		
2-3	AIN1	32 Bit int	Y=X/100		
4-5	AIN2	32 Bit int	Y=X/100		
6-7	AIN3	32 Bit int	Y=X/100		
8-9	AIN4	32 Bit int	Y=X/100		
10-11	AIN5	32 Bit int	Y=X/100		

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12-13	(reserved, not work)		
14	Power voltage	16 Bit int	Y=X/100
15-23	(reserved, not work)		
24	Temperature	16 Bit int	Y=X/100
25	Humidity	16 Bit int	Y=X/100
26-27	DINO count value	32 Bit iunint	This value Enable when
20 27			DIN0 as counter mode
28-20	DIN1 count value	32 Bit unint	This value Enable when
20-25	Divi count value		DIN1 as counter mode
20.21		22 Dit upint	This value Enable when
30-31 DIN2 count value		52 bit unint	DIN2 as counter mode
27.22	DIN2 count value	22 Rit unint	This value Enable when
52-55		32 BIT UNIN	DIN3 as counter mode

Tips: In description, the parameter definition as below:

Y= Real value; X=The value stored in register;

"Y=X/100" means "Real value= Current value stored in register/100"

Read &Wr	Read &Write Holding Coil (Function Code 03 Function Code 06, Function Code 16.)					
Register Address (Decimal)	Definition	Data Type	Description			
90 (bit0)	DI0 clear	Bool				
90 (bit0)	DI1 clear	Bool	Write 1 to clear the DI			
90 (bit0)	DI2 clear	Bool	Count value			
90 (bit0)	DI3 clear	Bool				

11. Slave Mapping Register Address

Boolean Slave Register Assignment Table

Holding Coil (Function Code 01, Function Code 05, Function Code 15.)				
Boolean Register Address (Decimal)	Definition	Flag (MOTT)	Description	
64	Boolean 64	REG64	Boolean type, slave mapping address, can mapping slave input coil and holding coil status.	
65	Boolean 65	REG65	Same as above	
	64 data similar as above		Same as above	
127	Boolean 127	REG127	Same as above	

16 Bit Slave Register Assignment Table

Read a	Read and Write Holding Register (Function Code 03, Function Code 06, Function Code 16)				
16 Bit Register	Definition	Flag	Data Type	Description	



Address		(MQTT)		
(Decimal)				
20000	16 Bit data 20000	REG20000	Sort AB, its data type according to slave mapping data type	According to configurator set mapping rules, this address will sort slave mapping data to AB, stock in this address, for cloud easy reading together, can mapping slave inputting and holding register.
20001	16 Bit data 20001	REG20001	Same as above	Same as above
20002	16 Bit data 20002	REG20002	Same as above	Same as above
	128 data similar as above		Same as above	Same as above
20127	16 Bit data 20127	REG20127	Same as above	Same as above

32 Bit Slave Register Assignment Table

	Holding Register					
32 Bit Register Address (Decimal)	Definition	Flag (MQTT)	Data Type	Description		
20128	32 Bit data 20128	REG20128	Sort ABCD, its data type according to slave mapping data type	According to configurator set mapping rules, this address will sort slave mapping data to ABCD, stock in this address, for cloud easy reading together, can mapping slave inputting and holding register.		
20130	32 Bit data 20130	REG20130	Same as above	Same as above		
20132	32 Bit data 20132	REG20132	Same as above	Same as above		
	64 data similar as above		Same as above	Same as above		
20254	32 Bit data 20254	REG20254	Same as above	Same as above		

64 Bit Slave Register Assignment Table

	Holding Register					
64 Bit Register Address (Decimal)	Definition	Flag (MQTT)	Data Type	Description		
20256	64 Bit data 20256	REG20256	Sort ABCDEFGH, its data type according	According to configurator set mapping rules, this address will sort slave		



			to slave mapping	mapping data to ABCDEFGH, stock in this
			data type	address, for cloud easy reading together,
				can mapping slave inputting and holding
				register.
20260	64 Bit data	DECODOCO	Sama as abovo	Sama as above
20260	20260	REG20260	Same as above	Same as above
20264	64 Bit data	DEC20264	Como os obous	Como os abava
20264	20264	REG20264	Same as above	Same as above
	60 data			
	similar as		Same as above	Same as above
	above			
205.00	64 Bit data	DEC 20500	Como os obous	Como os abava
20508	20508	KEG20508	Same as above	Same as above

12. MQTT Flag and Cloud Platform

Introduction to mqtt

MQTT is a client-server based message publish/subscribe transfer protocol. The MQTT protocol is lightweight, simple, open, and easy to implement. These characteristics make it applicable to a wide range. In many cases, including restricted environments, such as: machine-to-machine (M2M) communication and Internet of Things (IoT). It has been widely used in communication sensors via satellite links, occasionally dialed medicaldevices, smart homes, and some miniaturized devices. The MQTT protocol runs on TCP/IP or other network protocols and provides orderly, lossless, bidirectional connections.

Implementation principle of mqtt

There are three kinds of identities in the MQTT protocol: publisher (Publish), broker (Broker) (server), and subscriber (Subscribe). Among them, the publisher and subscriber of the message are both clients, the message broker is the server, and the message publisher can also be a subscriber. Take S475/S475E connected to King Pigeon cloud 2.0 platform as an example:

When the equipment releases IIO point data:



When the customer controls the equipment:





Client configuration

Parameter X Slave mapping Lit X Cellular network Connect CPIIOT Connect my-m2m Connect Other IOT server Cellular Network Stettings Connect CPIIOT Connect my-m2m Connect Other IOT server Cellular Network Stettings Connect CPIIOT Connect my-m2m Connect Other IOT server Cellular Network Stettings Connect CPIIOT Connect my-m2m Connect Other IOT server Cellular Network Stettings Connect CPIIOT Connect my-m2m Connect Other IOT server Cellular Network Stettings Server 19/DNS methods Server 19/DNS methods Server 19/DNS methods Server 19/DNS (Max60) Ser	×
Parameter	
Caluar Numbers Caluar Numbers Caluar Numbers Silvar Numbers Caluar Num Numbers Silvar Nu	
Image: Control Communication Protocol WQTT Protocol WQTT Protocol Server 1 (PQ) (NN medit Anipic Som (Madd) Image: Control Image: Control <td></td>	
Protocol TCP Server Listen Port 1883 (0-45535) Image: Comparison of Com	
Color Trigger Setting SIM1 Across Point Name (Max60) Server 2 IP(DNS (Max60) Server 2 IP(DNS (Max60) Server Listen Port (0.65535) (0.65535) (0.65535) (0.65535) (0.65535) (0.65535) (0.65535) (Max60) (Ma	
Image: State Stetting: SIM1 APN Users Name (Madd0) Server Listen Port 0 (0-65535) Image: State Stetling: SIM2 ARVs Password (Madd0) (0-65535) Image: State Stetling: SIM2 Arvs Password (Madd0) (0-65535) Image: Image: Sime Stetling: (Madd0) (Madd0) (0-65535) Image: Image	
Owner Service SIM1 APA Passesond (Max60) Owner Service Sim2 Access Point Name (Max60) Owner Service (Max60) (Max60) Owner Service (Max60) (Max60) Owner Service (Max60) (Max60) Owner Service (Max60) (Max60)	
Control Port SIM2 Access Point Name (Max40) Image: Control Port SIM2 Access Point Name (Max40) Image: Control Port SIM2 APN Pessword (Max40) Image: Control Port SIM2 APN Pessword (Max40) Image: Control Port SIM2 APN Pessword (Max40)	
0 Steve String (Max60) 0 Steve mapping List SIM2 APN Password (Max60) 0 Steve mapping List SIM2 APN Password (Max60)	
(Max60) (Max60) (Mar60) (Mor10 Register	
Mapping Register MOTT Settings	
Coud Parlorm Setting Subscribe Topic, InveAMA400YC0RX8227 Dublish Topic, InveAMA40YC0RX8227 Dublish Topic, InveAMA40YC0RX8227 Dublish Topic, InveAMA40YC0RX8227 MQTT Clear LD SNAMA480YC0RX827 MQTT Clear LD SNAMA480YC0RX827 MQTT Parlor Name, MQTT MTT Parlor Name, MQTT MTT Parlor Name, MQTT Tipt: Only use MQTT Protocol require to setup.	
FAQ for asttings please refer to [Mulp] mans Read Save	
COMS Device type:S375-RTU	

- 1) Communication protocol: MQTT protocol
- 2) Server IP domain name: King Pigeon Cloud 2.0 default:mqtt.dtuip.com
- 3) Port: Broker Server Port number (King Pigeon Cloud 2.0 default:1883).
- 4) Subscription topic: Client subscribe topic (King Pigeon cloud 2.0 default: serial number/+)
- 5) Publish topic: Device publish data topic (King Pigeon cloud 2.0 default: serial number/+).

6) Mqtt client ID: the unique identification, which can be serial number, device ID, or IMEI code (KingPigeon Cloud 2.0 default is serial number)

7) Mqtt user name: Device's account on the broker server (King Pigeon Cloud 2.0 default is MQTT)

8) Mqtt password:Password of device's account on the broker server(King Pigeon Cloud 2.0 default is MQTTPW)

After the configuration is completed, the client will initiate a connection to the server:

Connect: the client sends a connect message request to the server;

Connack: the server responds to a connack confirmation message, indicating that the connection is successful;

After the client establishes a connection, it is a long connection, and the client can publish or subscribe messages on the server;

Take devices and customers' mobile phones as clients

After the device publishes the topic on the proxy server, customers can view the data through subscription. That is, the device is the publisher, and the customer's mobile phone is the subscriber.

Similarly, users can control the device by publishing topics through the mqtt server. That is, the user is the publisher and the device is the subscriber.

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```
Payload data format in equipment release message
Publish Topic: MQTT client ID (filled in configuration software)
{
         "sensorDatas":
         ſ
             {
                  "flag":"DI1",
                                         Read write identification
                  "switcher":1
                                         Data type and value
             },
              {
                  "flag":"AI1",
                  "value":10.00
              },
              {
                  "flag":"REG64",
                  "switcher":0
             },
              {
                  "flag":"REG20000",
                  "value":1.00
             }
         ],
         "time":"1591841863",
         //Time stamp (When power on, first time connection no time stamp, later
    connectionshave time stamp)
         "state":"alarm",
        //Alarm and recovery identification (only for alarm or recovery data, but nottimly
report)
         "retransmit":"enable"
        //Historical data identification (only for re-transmission of historical data, but not
for real-time data)
```

Note:

Read / write identifier: the character is "flag", followed by "read / write ID representing IO data point"

Data type and value: it can be divided into:

- 1. Switch data: the character is "switcher", followed by "0" or "1" (0 for open, 1 for closed)
- 2. Numerical data: the character is "value", followed by "specific value"

Time identification: the character is "time", followed by "specific reporting time stamp"

Alarm and recovery identification: the character is "state", followed by "alarm" or "recovery" (alarm represents alarm data and recovery represents recovery data)

Historical data identifier: character "retransmit", followed by "enable"
GSM/SMS/GPRS/3G/4G Cellular Iot Gateway

The data collected during the network disconnection will be temporarily stored in the device, and will be redistributed when the network is restored. The "retransmit" field is used to identify the historical data.(it is necessary to check enable mqtt data supplementary transmission function in the configuration software)

Payload data format in device subscription message

(The topic of the King Pigeon 2.0 platform downstream publish message is called "device serial number/sensor ID", so the device subscribe topic needs to add the wildcard "/+" in order toreceive the data sent by the platform to achieve control)Subscribe topic: device serial number /+(corresponding to the data filled in the subscribe topic item on the configuration software)

```
{
    "sensorDatas":
    [
        {
            "sensorsId": 211267, //Platform sensor ID
            "switcher":1, //Data type and value
            "flag":"DO1" //Read write identification
        }
    ],
    "down":"down" Platform downlink message identification
}
```

Note:

Platform sensor ID: character is "sensorid", followed by ID number (ID is automatically generated by platform)

Data type and value: it can be divided into:

- 1. Switch data: the character is "switcher", followed by "0" or "1" (0 for open, 1 for closed)
- 2. Numerical data: the character is "value", followed by "specific value"

Read / write identifier: the character is "flag", followed by "read / write ID representing IO data point"

Platform downlink message identification: the character is "down", followed by "down", which means that this is the platform downlink data.

Device	I/O	data	point	read	and	write	flag
DUNCU	- · ·	unu	Pome				

Data name	Read write flag	Data type	Description	
DO	DOx	Switcher	0 is open, 1 is closed	
DI	DIx	Switcher	0 is open, 1 is closed	
AI	AIx	Value	True value = original value	
Temperature	TEMP	Value	True value = original value	
Humidity	HUMI	Value	True value = original value	
External power voltage	EXTPWR	Value	True value = original value	
DI0 pulse count value	COUNT	Value	True value = original value	
DI1 pulse count value	COUNT1	Value	True value = original value	
DI2 pulse count value	COUNT2	Value	True value = original value	
DI3 pulse count value	COUNT3	Value	True value = original value	



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Note:

"DOX" means: DO0, DO1, DO2, DO3; "Dix" means: DI0, DI1, DI 2, DI3, DI4, DI5, DI6, DI7; "AIX" means: AI0, AI1, AI2, AI3, AI4, AI5.

Expand IO data point read and write flag

Data name	Read write flag	Data type	Description
Boolean data	REG64~REG127	Switcher	According to the slave register
			data definition
16 bit data type	REG20000~REG20127	Value	According to the slave register
			data definition
32 bit data type	REG20128~REG20254	Value	According to the slave register
			data definition
64 bit data type	REG20256~REG20508	Value	According to the slave register
			data definition

Note:

Expand IO read and write ID to "REGx" (x is the mapping register address, please check the detailed addressAppendix C ModbusExpand IO data pointmappingregister address

13. Upgrade Firmware

The device supports upgrade firmware via USB port directly. If you required upgrade, please contact us to discuss and modify the firmware according to you requirements, we can provide the upgraded firmware to you to upgrade them.

14. Cellular Module Upgrade

The device adopt modular structure design, when user local Gsm operator upgrade network, no need to replace the whole hardware, only need to replace inbuilt communication module, easily upgrade Gsm to 3G, or 3G to 4G network.



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Cellular Module Upgrade

Users can easily upgrade GSM (or 3G) to 3G/4G, NB-IoT or 5G network.

No need to replace whole device again when local network upgrade, only pick Gsm module out, put a 3G/4G module in, then device can support 3G/4G.



15. Warranty

1) This system is warranted to be free of defects in material and workmanship for one year.

2) This warranty does not extend to any defect, malfunction or failure caused by abuse or misuse by the Operating Instructions. In no event shall the manufacturer be liable for any alarm system altered by purchasers

The End! Any questions please help to contact us feel free. <u>Http://www.IOT-Solution.com</u>