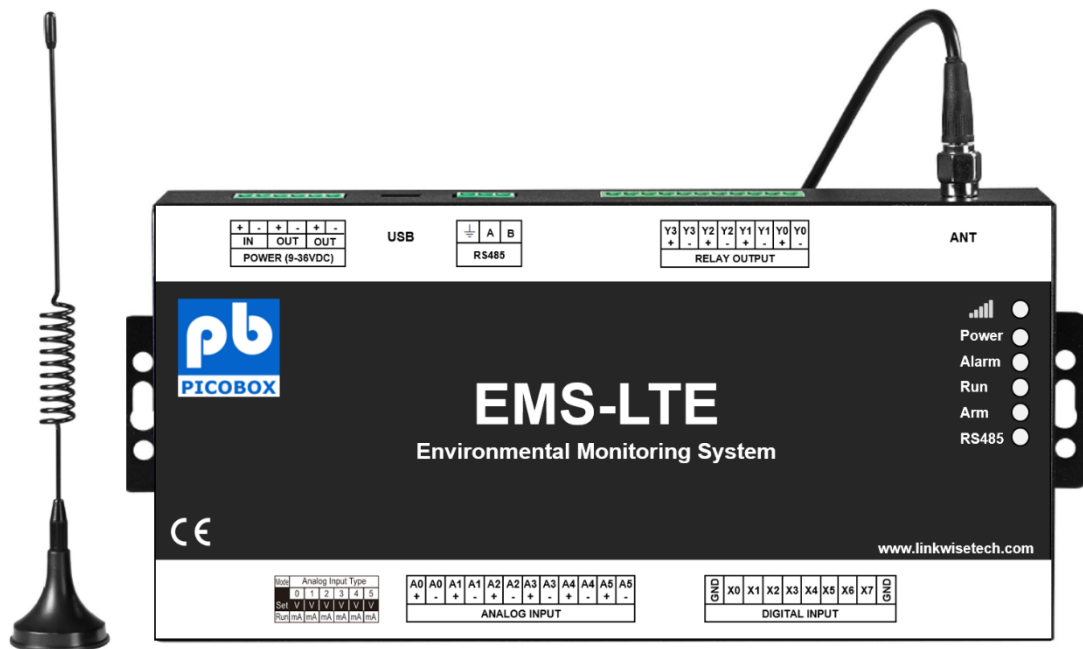


EMS-LTE

Environmental Monitoring System User Manual



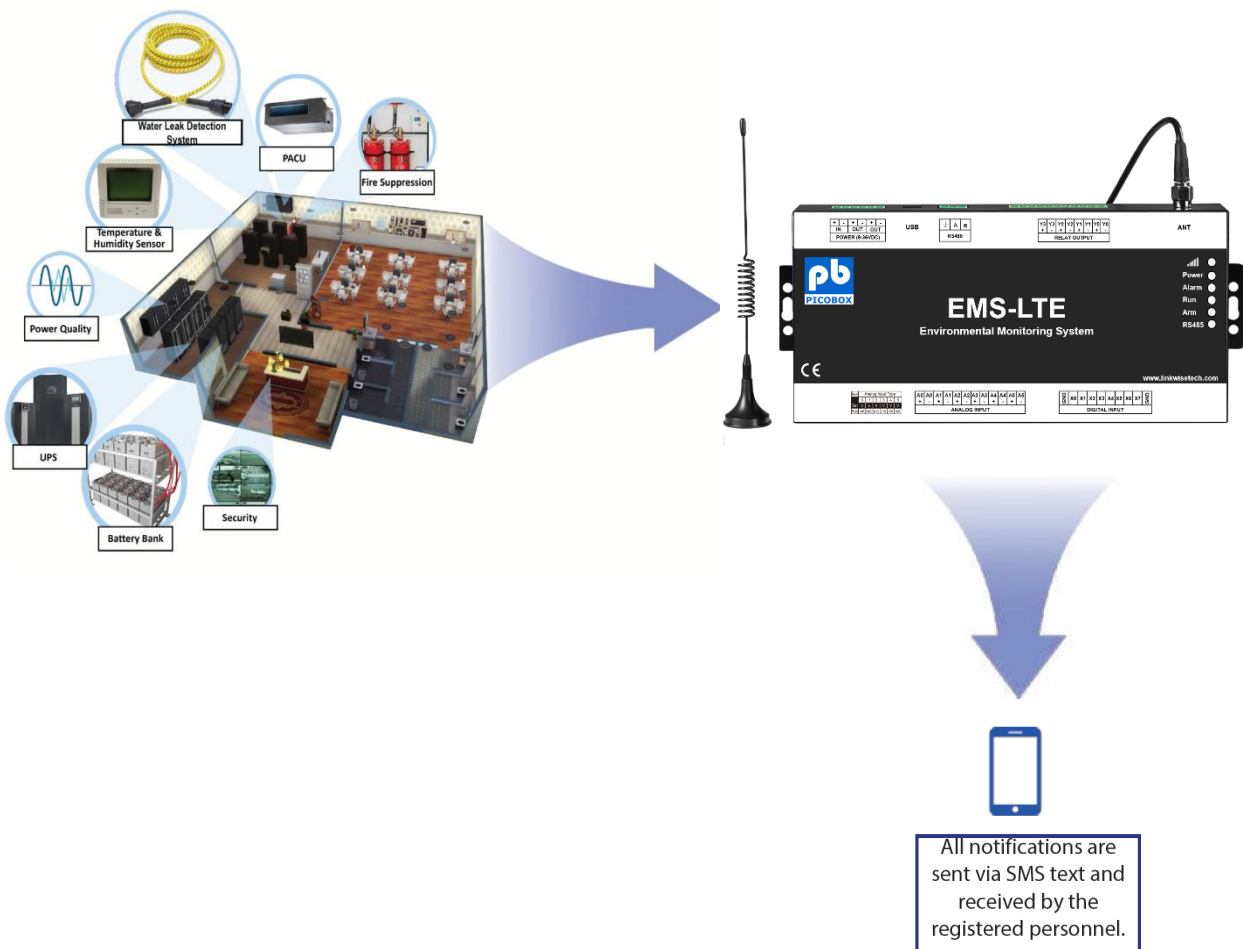
Please read this user manual carefully before using the device.

1. Brief introduction

The EMS-LTE 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 inputs, 4 relay outputs, and RS485 serial port, supports 80/224/320 mapping registers via Modbus RTU protocol. It can monitor and control the I/O ports by SMS, timers and programmed inter-lock events automatically.

The EMS-LTE is design for working in the harsh industrial application environment, widely used in a variety of industrial automation, security monitoring system, automatically measurement and control system, BTS monitoring, remote data acquisition, telemetrically systems, automatically control system. It can be used as a remote switch, remote I/O, remote smart PLC, timer switches.

The EMS-LTE supports data transmission and performs as Modbus Slave over GPRS/3G/4G network and RS485 serial port. Moreover, the EMS-LTE 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.



Typical applications:

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, Access Control System, 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.

Important Safety Instructions

In these safety instructions, the word [device] refers to EMS-LTE and all its accessories.

Read Instructions – Read all the safety and operating instructions before operating the device.

- Retain Instructions – Save the safety and operating instructions for future reference.
- Heed Warnings – Heed all warnings on the device and in the operating instructions.
- Follow Instructions – Follow all operating and maintenance instructions.
- Cleaning – Unplug this device from the wall outlet before cleaning. Wipe the device with a clean soft cloth. If necessary, out a cloth in diluted neutral detergent and wring it well before wiping the device with it. Finally, clean the device with a clean dry cloth. Do not use benzene, thinner or other volatile liquids or pesticides as they may damage the product's finishing. When using chemically treated cleaning cloths, observe their precautions accordingly.
- Accessories – Use only accessories recommended in this manual. Always use specified connection cables. Be careful to connect devices correctly.
- Water and Moisture (Hazard of electric shock) – Do not use the device near water or in rainy or moist situations.
- Ambient Temperature – Do not put this device near a heater.



- Placing or Moving – Do not place this device on an unstable cart, stand, tripod, bracket or table. The device may fall and cause serious damage to itself and serious injury to others. A device and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the device and cart combination to overturn.
- Power Sources – The AC adapter should be operated only from the type of power source indicated on the making label. If you are not sure of the type of power supply to your premises, consult your device dealer or local power company.
- Power Cord Protection – Power cords should be routed so that they are not likely to be walked on, or pinched by items placed upon or against them. Pay particular attention to plugs and the point from which the cords exit the device.
- Overloading – Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- Object and Liquid Entry – Never push objects of any kind into this device through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Be careful not to spill liquid of any kind onto the device.
- Servicing – Do not attempt to service this device yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified personnel. Opening the cover will void your warranty.
- Do not install the device in the following locations as this can cause a fire or electric shock:
 - x Hot locations
 - x Close to a fire
 - x Very humid or dusty locations
 - x Locations exposed to direct sunlight
 - x Locations exposed to salt spray
 - x Close to flammable solvents (alcohol, thinners, etc.)
- If any of the following occurs, immediately switch the device OFF, unplug it from the mains power supply and contact your distributor or agent:
 - x The device emits any smoke, heat, abnormal noise, or unusual odor
 - x A metal object falls into the device
 - x The device is damaged in some way

Do not continue to use the device as this can cause a fire or electric shock.

3. Standard Packing List

EMS-LTE Module; 12VDC Power Adaptor; GSM/3G/4G Antenna; PC Configurator USB Cable

Note: The package does not include any SIM card.

4. Features

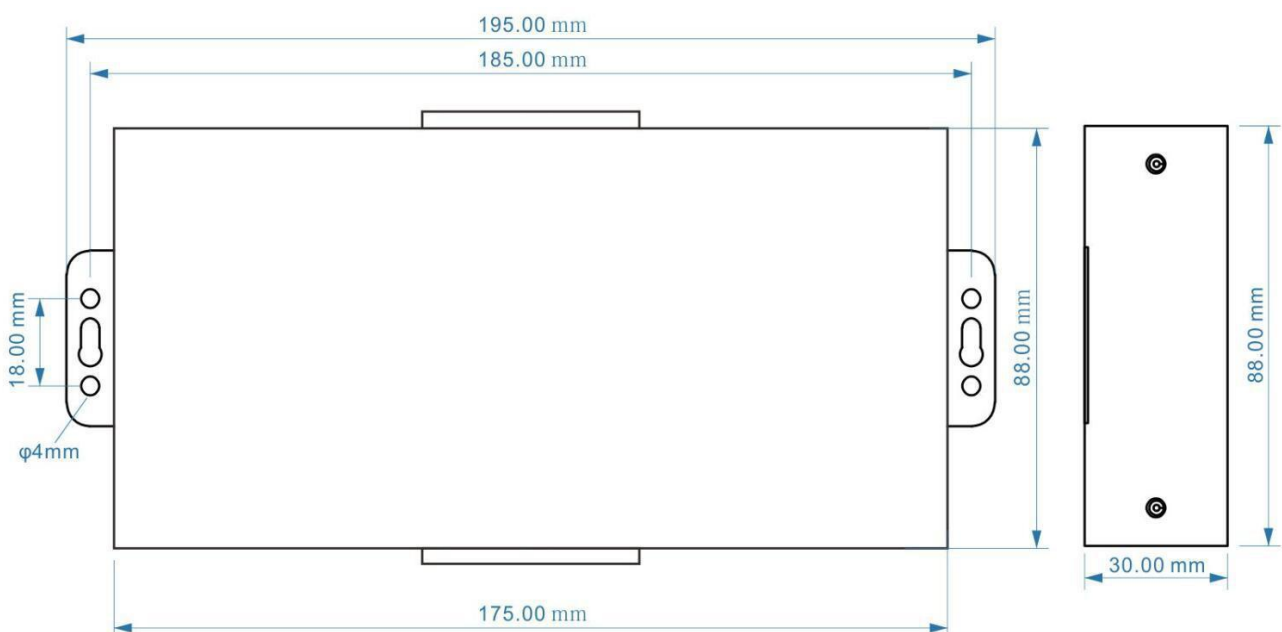
- GSM/GPRS/3G/4G network communication, can be operated from anywhere, no distance limitation;
- Wide range power supply 9~36VDC with over voltage and phase-reversal protection;
- Embedded ARM[®] Cortex[™] -M4 32 Bit RISC Core, 168 MHz inside, RTOS system, reliable performance with in-built watchdog;
- 8 digital inputs, compatibles dry and wet contact. Logic level: 0~0. 5V or short circuit treated as close, +3~30V or open circuits treated as open. DIN0 as a high-speed pulse counter, sampling frequency: 1MHz; DIN1~3 as low-speed pulse counter, anti-shake time can be set 1~2000ms, default 1ms;
- 4 relay output (5A/30VDC, 5A/250VAC), can auto control by timer, alarm-link and remote control by SMS;
- 6 analog inputs, 12bits resolution, supports 0-5V, 0-20mA, 4-20mA output transducers;
- Inbuilt 8G SD card to save up to tens of thousands historical data and events;
- 1 RS485 port support Modbus Master protocol, can extend up to 16 Modbus Slave devices;
- Powerful SMS function: Threshold high SMS alert, SMS set, SMS inquiry, and SMS command;
- Inbuilt 2 DC output for external transducers to save wiring cost;
- 10 SMS Alert for receiving alarm message, and can program to receive specified alarm message.
- Inbuilt inter-lock logic programmer and powerful timer program function;
- Support SMS, dial, GPRS, 3G, 4G network for alert, USB port for configuration and upgrade firmware;
- Using metal shell, protection class IP30. Metal shell and system security isolation, especially suitable for industrial applications in the field;
- L195 * W88 * H30mm, compatible wall installation and DIN35mm industrial rail installation.

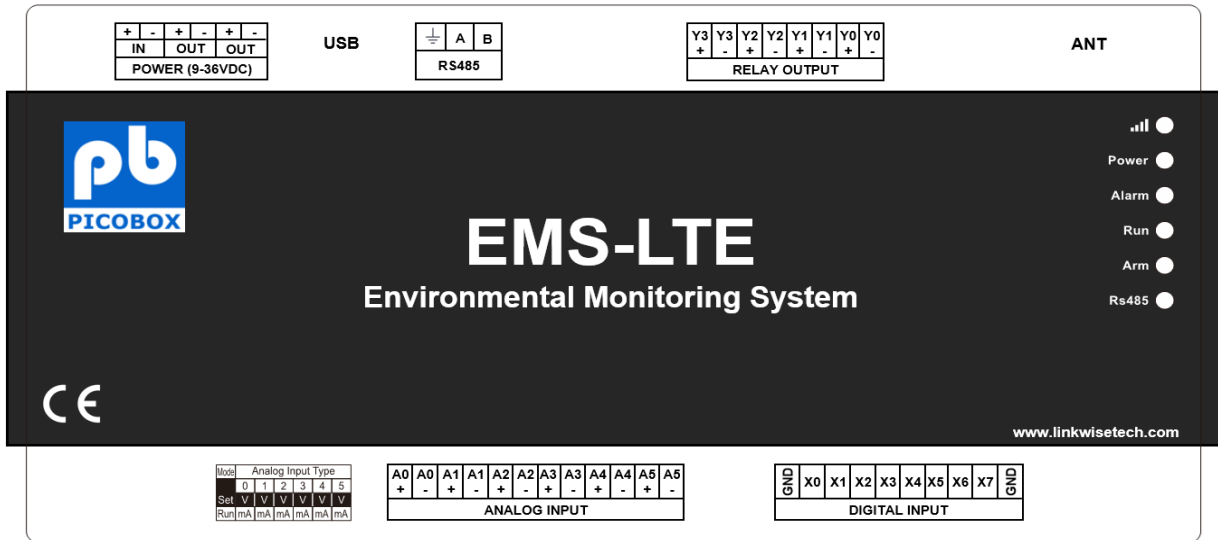
5. Specifications

Item	Reference Scope
DC Power supply	Standard adapter: DC 12V/2A Range 9-36VDC
Power consumption	Standby:12V/50mA; Working Max.: 12V/150mA
GSM Frequency	850/900/1800/1900Mhz
3G/4G	WCDMA/TDD-LTE/FDD-LTE
SIM interface	Supporting 3V and 1.8V SIM Card
External antenna	SMA Antenna interface, 50 Ohm, Gain: 3dB
Serial Interfaces	1 USB Port
Protocols	SMS, GPRS, MQTT, Modbus RTU
RS485	1 RS485
Digital Inputs	8 Digital input, NC/NO type
Analog Inputs	6 Analog Inputs. 12-bit resolution, 0-5V or 0-20mA or 4-20mA;
Relay Outputs	4, Rated: 5A/30VDC,5A/250VAC
Power Outputs	2 Port, for external device;
Extend I/O Tags	Max.320
Memory Capacity	Internal 8G SD card inside, can save the data for 10000events.
Temperature range	-20-+70 °C
Humidity range	Relative humidity 95% (condensation free)
Exterior dimension	195mm*88mm*30mm

6. Physical Layout and Installation Diagram

Control Unit size and physical layout



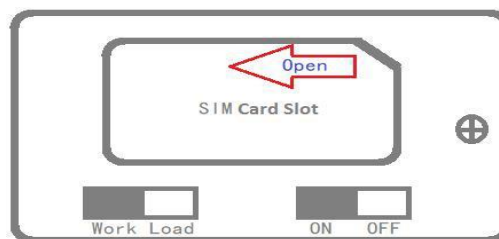


LED Indicator Definition



Power	EMS-LTE status indicator, LED ON when switched EMS-LTE ON
	Cellular network indicator. When 2G register network, off 2 seconds, on 0.5s and so on; When 3G 4G register network, on 2s, off 0.5s... Flicks quickly means data transmission.
Alarm	Alarm Indicator, alarm will ON and flick. Normally is OFF;
Arm	Arm/Disarmed Indicator, Arm is ON, disarmed is OFF.
Run	EMS-LTE running status indicator, ON or OFF stands for EMS-LTE halted, flicks slowly stand for EMS-LTE running.
RS485	When transmitting data by RS485, the LED will flick, otherwise, it is off.

Backside Switch & Button Definition



SIM Card Slot	For SIM Card Installation, only supports 1.8V/3V SIM Card
Power Switch	For switch ON or OFF the EMS-LTE
Upgrade	For upgrade firmware purpose only. Only when upgrade new firmware version will use it
Firmware Switch	otherwise keep it at Work Side all the time.

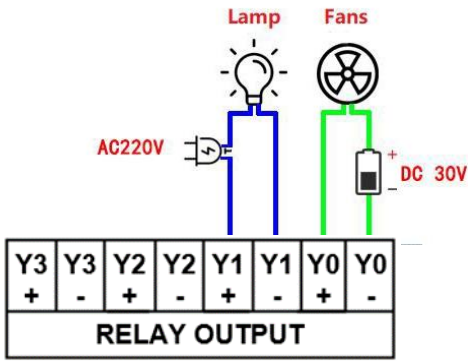


Power Connector Definition																																					
<table border="1"> <tr> <td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td> </tr> <tr> <td colspan="2">IN</td><td colspan="2">OUT</td><td colspan="2">OUT</td> </tr> <tr> <td colspan="6">POWER (9-36VDC)</td> </tr> </table>		+	-	+	-	+	-	IN		OUT		OUT		POWER (9-36VDC)																							
+	-	+	-	+	-																																
IN		OUT		OUT																																	
POWER (9-36VDC)																																					
DC IN+	External DC Power input port, Connect to 1.5A@9~36V DC power, positive electrode.																																				
DC IN-	External DC Power Input port, contact to negative electrode																																				
DC Out+	Power source output port, positive electrode. Provides power from EMS-LTE to external transducers or sensors or detectors. The output current should less than the power from DC IN inputs. If adapter current is 2A, then suggest external transducer current to be less than 1.5A																																				
DC Out -	Power source output port, Negative electrode.																																				
DIP Switch Definition																																					
<table border="1"> <tr> <td>Mode</td><td colspan="6">Analog Input Type</td> </tr> <tr> <td></td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>Set</td><td>V</td><td>V</td><td>V</td><td>V</td><td>V</td><td>V</td> </tr> <tr> <td>Run</td><td>mA</td><td>mA</td><td>mA</td><td>mA</td><td>mA</td><td>mA</td> </tr> </table>		Mode	Analog Input Type							0	1	2	3	4	5	Set	V	V	V	V	V	V	Run	mA	mA	mA	mA	mA	mA								
Mode	Analog Input Type																																				
	0	1	2	3	4	5																															
Set	V	V	V	V	V	V																															
Run	mA	mA	mA	mA	mA	mA																															
SET/RUN	For setting the EMS-LTE Mode is in Configuration Mode or Run mode. Switch it to upside is Set Mode, under this mode, the user can use PC Configurator via USB cable to configure the EMS-LTE Parameters or Read Parameter settings. Switch it to Downside is Run Mode, under this mode, the EMS-LTE is in Running mode. Tips: When device mode changed, need to switch off/on the device.																																				
0/V/mA	The 1 st channel of analog input type switch. If not use this channel, then no matter is upside or downside. Switch it to upside stands for the 1 st analog input should connect to 0~5V voltage output transducer. Switch it to Downside stands for the 1 st analog input should connect to 0~20mA or 4~20mA current output transducer. Tips: The wrong side will cause device can't read the analog value.																																				
1/V/mA~5/V/mA	The 2 nd to 6 th channel of analog input type switch. If not use this channel then no matter is upside or downside. Switch it to upside stands for the related analog input should connect to 0~5V voltage output transducer. Switch it to Downside stands for the related analog input should connect to 0~20mA or 4~20mA current output transducer.																																				
Analog Input Definition																																					
<table border="1"> <tr> <td>A0</td><td>A0</td><td>A1</td><td>A1</td><td>A2</td><td>A2</td><td>A3</td><td>A3</td><td>A4</td><td>A4</td><td>A5</td><td>A5</td> </tr> <tr> <td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td> </tr> <tr> <td colspan="12">ANALOG INPUT</td> </tr> </table>		A0	A0	A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	+	-	+	-	+	-	+	-	+	-	+	-	ANALOG INPUT											
A0	A0	A1	A1	A2	A2	A3	A3	A4	A4	A5	A5																										
+	-	+	-	+	-	+	-	+	-	+	-																										
ANALOG INPUT																																					
Analog inputs, Sampling frequency 200mS, 12bits resolution, supports 0-5V, 0-20mA, 4-20mA output transducers, please refer to abovementioned DIP Switch Definition to connect the correct transducers.																																					
0+/0-	The 1st Channel Analog input. + stands for positive electrode, - stands for negative electrode.																																				

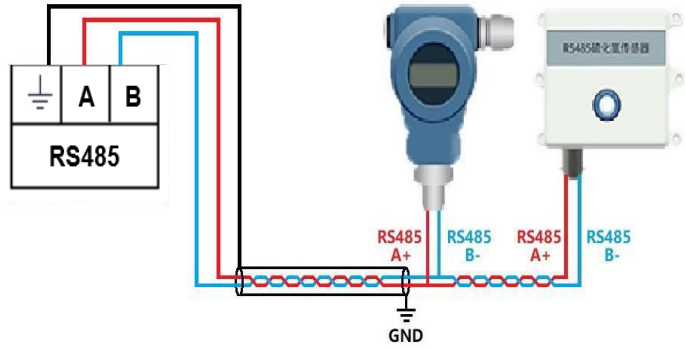
1+/1- ~5+/5-	The 2 nd ~6 th Channel Analog input. + stands for positive electrode, - stands for negative electrode.																								
Digital Input Definition																									
<table border="1" style="margin: auto;"> <tr> <td>GND</td><td>X0</td><td>X1</td><td>X2</td><td>X3</td><td>X4</td><td>X5</td><td>X6</td><td>X7</td><td>GND</td> </tr> <tr> <td colspan="10" style="text-align: center;">DIGITAL INPUT</td> </tr> </table>		GND	X0	X1	X2	X3	X4	X5	X6	X7	GND	DIGITAL INPUT													
GND	X0	X1	X2	X3	X4	X5	X6	X7	GND																
DIGITAL INPUT																									
<i>Dry contact or wet contact, sampling frequency 200mS. Logic level: 0~0.5V or short circuit treated as close, +3~30V or open circuits treated as open. One of the inputs can be used as counter, sampling frequency is 1Mhz, the second input can be used for Arm/Disarm.</i>																									
0	The 1st digital input, positive electrode.																								
1~7	The 2 nd ~8 th digital input, positive electrode.																								
GND	GND for digital inputs, negative electrode.																								
ATN Port Connector Definition																									
ATN	GSM/3G/4G Antenna connector, 50Ohm, SMA male.																								
USB Port Connector Definition																									
USB	USB port, for configuration and upgrading firmware and exporting historical data;																								
Digital Solid Relay Output Connector Definition																									
<table border="1" style="margin: auto;"> <tr> <td>Y3</td><td>Y3</td><td>Y2</td><td>Y2</td><td>Y1</td><td>Y1</td><td>Y0</td><td>Y0</td> </tr> <tr> <td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td><td>+</td><td>-</td> </tr> <tr> <td colspan="8" style="text-align: center;">RELAY OUTPUT</td> </tr> </table>		Y3	Y3	Y2	Y2	Y1	Y1	Y0	Y0	+	-	+	-	+	-	+	-	RELAY OUTPUT							
Y3	Y3	Y2	Y2	Y1	Y1	Y0	Y0																		
+	-	+	-	+	-	+	-																		
RELAY OUTPUT																									
<i>Solid Relay inside for outputs, Rated Capacity: 5A/30VDC,5A/250VAC.</i>																									
0+/0-	The 1st Channel Solid Relay Output. + stands for positive electrode, - stands for negative electrode.																								
1+/1- ~ 3+/3-	The 2 nd ~ 4 th Channel Solid Relay Output. + stands for positive electrode, - stands for negative electrode.																								
RS232/RS485 Ports Definition																									
<table border="1" style="margin: auto;"> <tr> <td>⏏</td><td>A</td><td>B</td> </tr> <tr> <td colspan="3" style="text-align: center;">RS485</td> </tr> </table>		⏏	A	B	RS485																				
⏏	A	B																							
RS485																									
GND	Ground																								
A/B	RS485 A /B																								

7. Wiring

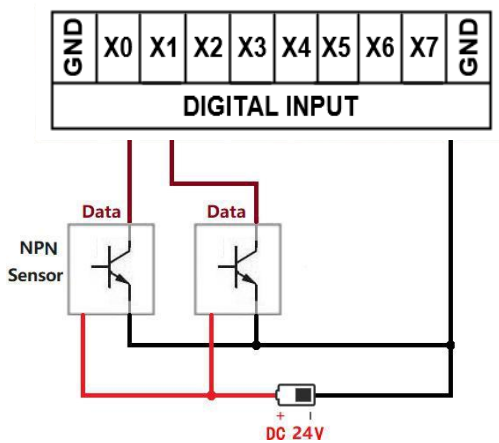
Relay Output



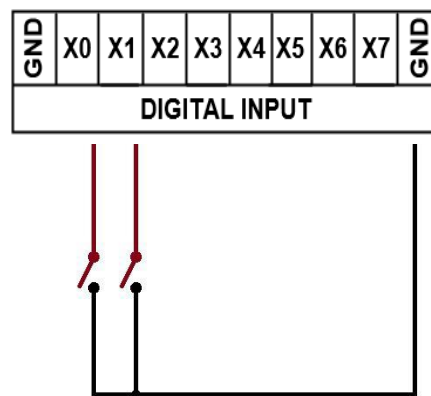
RS485



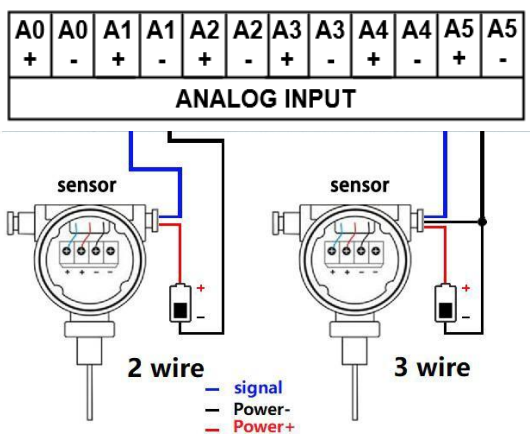
Wet contact input



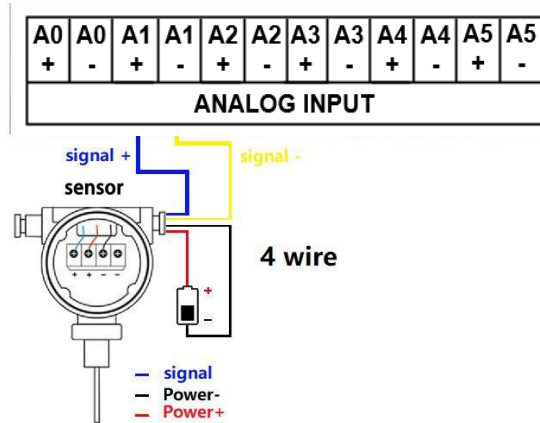
Dry contact input



Analog Input



Analog Input



8. Settings & Operation

The EMS-LTE 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 EMS-LTE 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.

Below is the steps to setup the parameters by PC Configuration, please follow it step by step.



Start to Configure:

Step1:

Install the Configurator

****Please contact your sales representative for the configurator software.**

Step2:

Connection

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

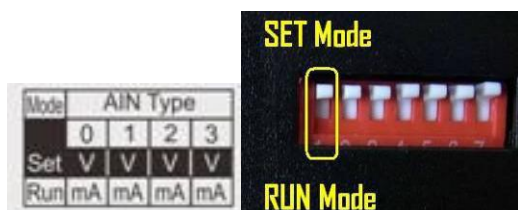
Step3:

Switch the DIP Switch to Setup Mode. (Before Power On the EMS-LTE)

Switch it to upside is Set Mode, under this mode, the user can use PC Configurator via USB cable to configure the EMS-LTE Parameters or Read Parameter settings.

Notice:

Please switch it to Downside after you finished the configurations. Otherwise, the EMS-LTE cannot work properly. The Downside is Run Mode, under this mode; the EMS-LTE is in Running mode.



Step4:

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:

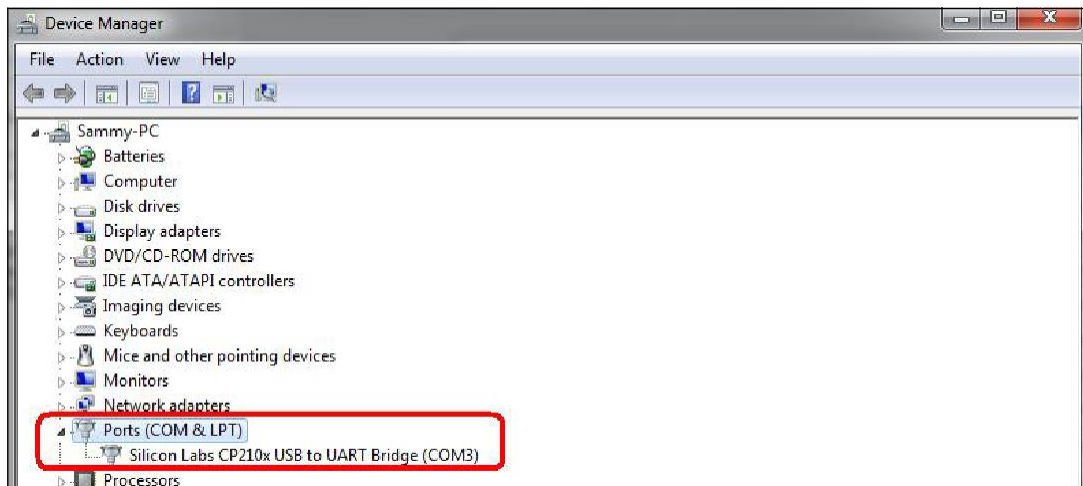
+	-	+	-	+	-
IN		OUT		OUT	
POWER (9-36VDC)					

Step5:

Install USB Driver

****Please contact your sales representative for the USB Driver (CP210x) Driver Installer File**

When install successful, the COM port can be found out at the device manager (Refer to the below photo)

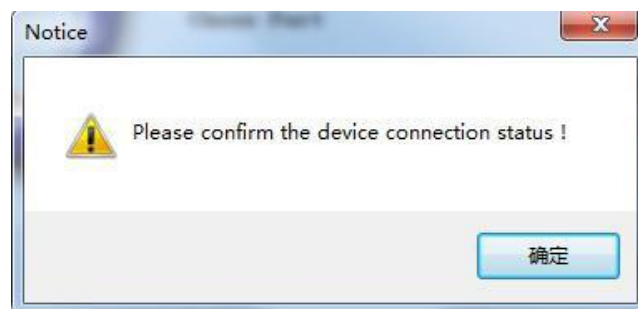
**Step6:** Run the Configurator (Compatible with Windows XP/7/8/10/11)

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 "EMS-LTE Configuration Tool" to run it. Enter the password, default is 1234. Then you can enter the configuration page as below:

**Notice:**

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

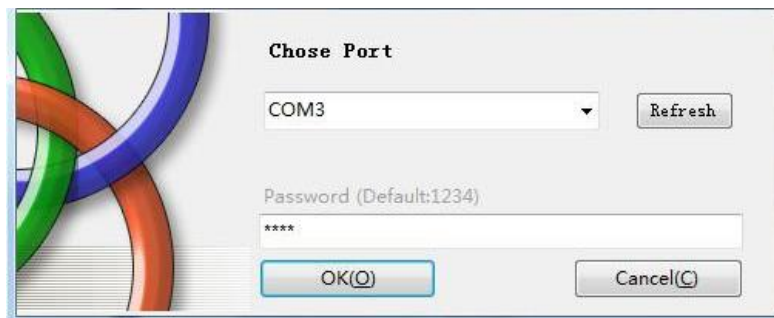


- 1) USB Driver installation failure;
- 2) USB Cable connection is disconnected;
- 3) The DIP Switch in RUN mode, not in SET mode;
- 4) The Upgrade Firmware Switch at Load side, not at Workside.
- 5) Power Switch switched off or DC Power Connection is disconnected.

Step7: 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:



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.



Setting Self-Checking

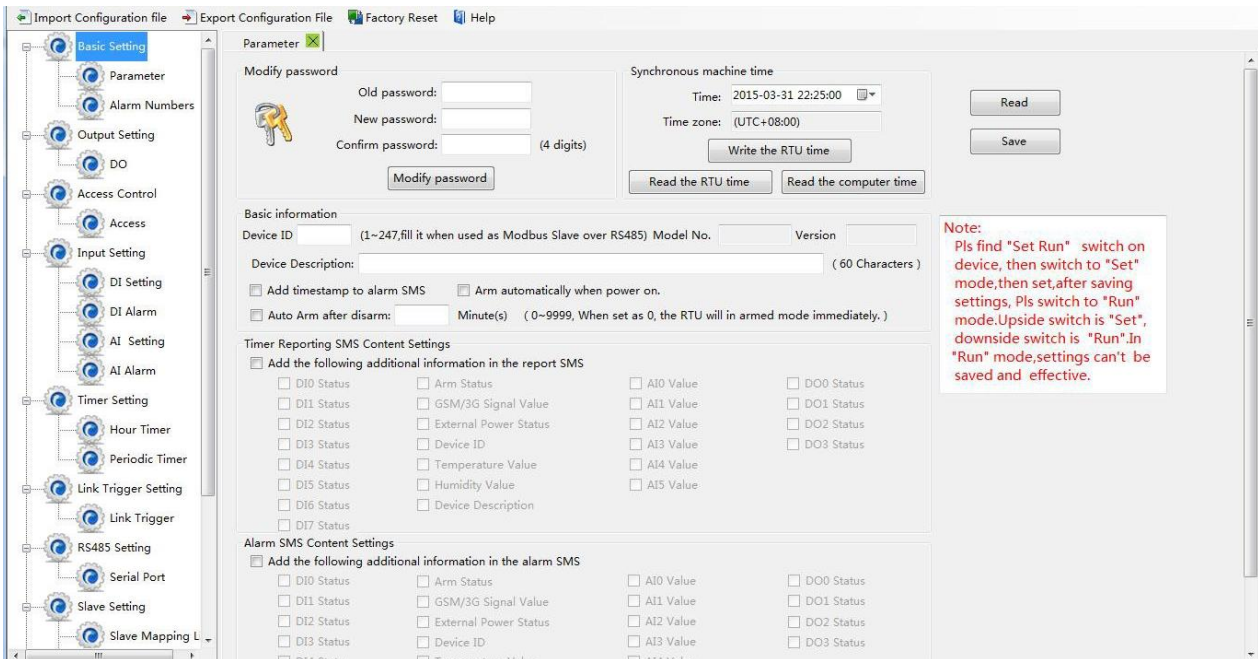
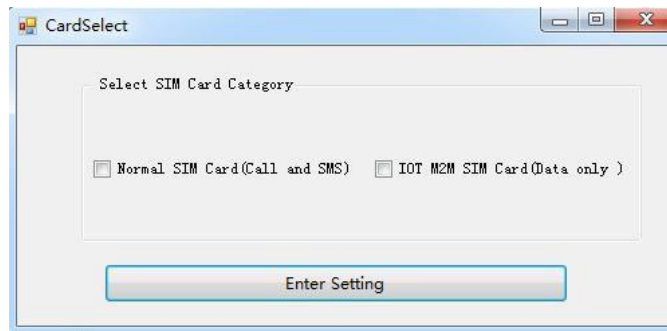
Phenomenon	Possible Reason
Can't enter software	<ol style="list-style-type: none"> 1. USB Driver installation failure; 2. COM Port not correct or USB driver installation failure; 3. Device not enter into setting mode: <ol style="list-style-type: none"> 1) Only power light on, that means the Upgrade Firmware Switch at Load side, not at Work side. Solution: Switch the power switch to OFF---> Upgrade switch to Work side--- > Power switch to ON. 2) Signal light flicks, that means device in working mode. Maybe had not rebooted the device after switch mode switch to Set. (In setting mode, Power light normal ON, Run light flicks, other lights Off.)
After switching panel on, only Power light on, panel can't work	<ol style="list-style-type: none"> 1. The Upgrade Firmware Switch at Load side, not at Work side. Solution: Switch the power switch to OFF---->Upgrade switch to Work side----> Power switch to ON; 2. SD card fallout from the slot. Solution: Shake panel to listen if there is voice or not; 3. In upgrade mode, use upgrade tool erased the firmware.
Can't enter into working mode	<ol style="list-style-type: none"> 1. The Upgrade Firmware Switch at Load side, not at Work side. Solution: Switch the power switch to OFF---->Upgrade switch to Work side----> Power switch to ON; 2. Device in setting mode. Solution: Switch device OFF---->Mode switch to "Run" --->Switch the device on.
Can't find COM Port	<ol style="list-style-type: none"> 1. Have not installed driver; 2. PC system problem cause driver installation failure, can't support Apple OS system. 3. Check USB line, and try other common driver software such as "Drive TheLife".

<p>In working mode, the device not response Modbus command</p>	<p>Have not set the device ID. Solution: In setting mode, set device ID---->Switch the device to Run mode.</p>
<p>After switching panel on, not running according to parameter setting</p>	<p>After parameter setting, although clicked "Save" in every page, but missed the final "Save Setting" in the menu. Solution: Back to Set mode---->Click "Save" Button after setting one Page --->After all page set successfully, click "Save Setting" in the menu.</p>



Configurator software interface and running Select card and enter setting

Note: Please select "Normal SIM Card (Call and SMS)"



Save: Click it to save all of the PC Configurator parameters to the EMS-LTE;

Import Configuration file: Click it to load additional configuration file to the Configurator;

Export Configuration file: Click it to save the present configuration parameters as a profile for next EMS-LTE configuring or backup the parameter settings.

Tips: The import and export configuration file are very useful while you need to program bulks of EMS-LTE with similar parameters. After programmed the first unit then you can export profile to save it, for the second EMS-LTE then you can load profile directly to save you time.

Factory Reset: Click it to recovery the parameters to factory defaults.

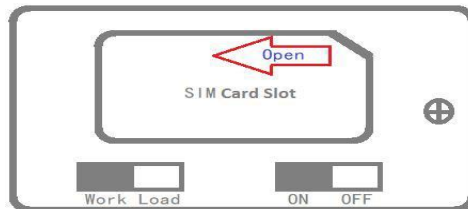
Notice:

1. After setting or revising parameter, need to click the "Save" button of this page, then click "Save Settings" in menu for saving parameters in device.
2. Before EMS-LTE export configuration, 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--->Click the "Save Settings" button in the menu.
4. **Switch the device mode to "Run" as below, otherwise it will not work;**



Upside is Set mode, switch to downside is Run mode. Please set the device in Set mode, and save settings, then switch to Run mode. In Run mode, settings cannot be saved and effective!!!

5. 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.

Synchronous device time: This is to setup the EMS-LTE time for daily report or other timers. After click Write the RTU Time, the EMS-LTE will be synchronous the same time as the PC.

Device ID: Non-necessary. This is mainly for monitoring center to identify the EMS-LTE; If communicate via Modbus protocol, device ID only can be 1~247.

Device description: This is the description of the EMS-LTE, 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 EMS-LTE current time information at the SMS Content.

Arm automatically when Power On: Tick it stands for once the EMS-LTE powered up, the EMS-LTE 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.

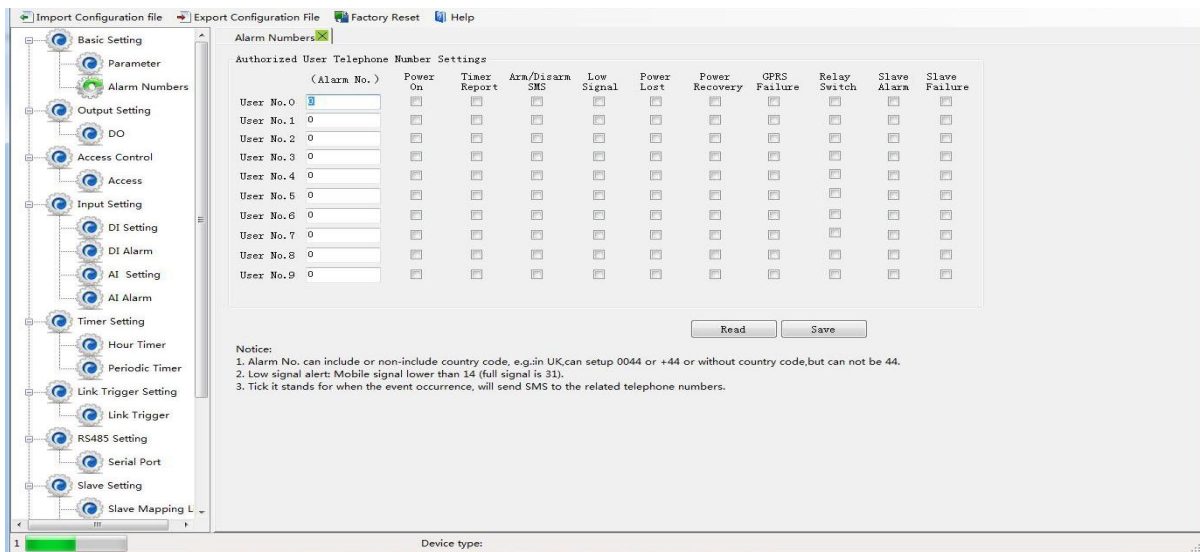


Alarm Number Settings

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" - "Save Settings" button to save it after parameter be written, below pages are the same.



Power On: Tick it stands for while the EMS-LTE powered up, will automatically send SMS to this

number.

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

Arm/Disarm: Tick it stands for Arm or Disarm the EMS-LTE, 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.

GPRS 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 the Digital Solid Relay Output action will send SMS to this number.

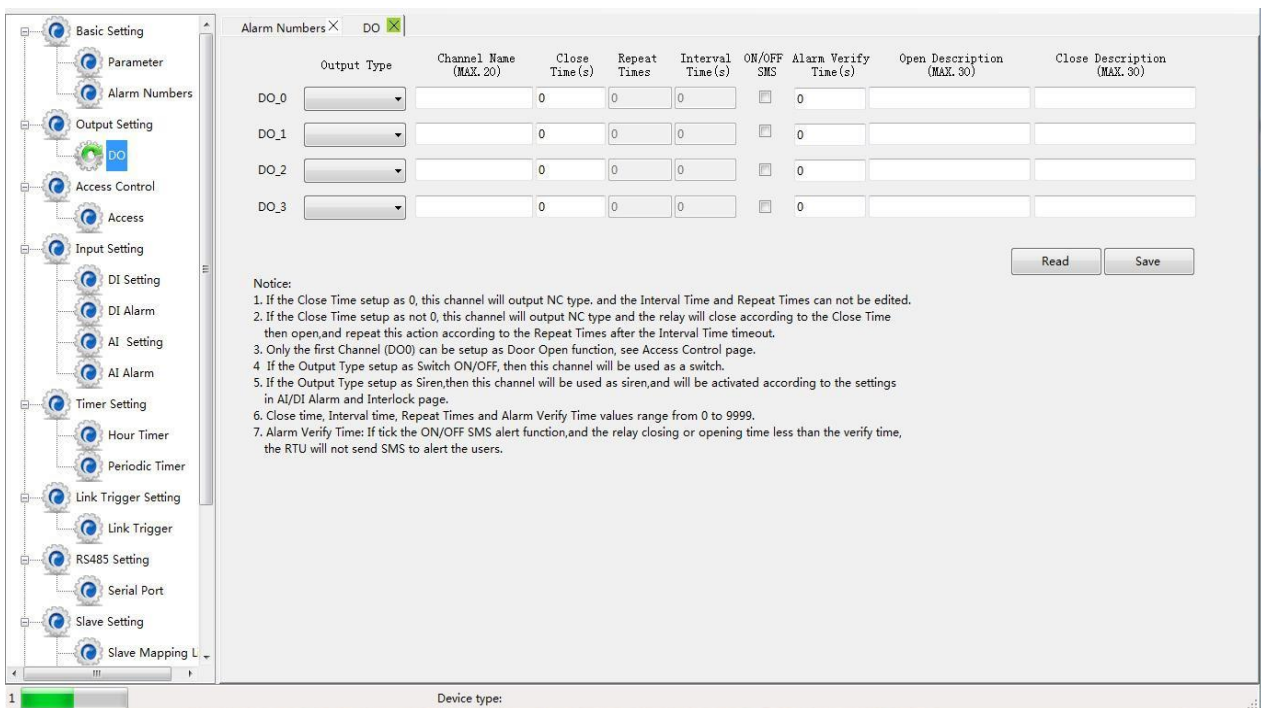
Slave Alarm: Tick it stands for the slave tag triggered will send SMS to this number.

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



Digital Output Relay Output Setting

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.



Output Type	Channel Name (MAX. 20)	Close Time (s)	Repeat Times	Interval Time (s)	ON/OFF SMS	Alarm Verify Time (s)	Open Description (MAX. 30)	Close Description (MAX. 30)
DO_0		0	0	0	<input type="checkbox"/>	0		
DO_1		0	0	0	<input type="checkbox"/>	0		
DO_2		0	0	0	<input type="checkbox"/>	0		
DO_3		0	0	0	<input type="checkbox"/>	0		

Notice:

1. If the Close Time setup as 0, this channel will output NC type, and the Interval Time and Repeat Times can not be edited.
2. If the Close Time setup as not 0, this channel will output NC type and the relay will close according to the Close Time then open, and repeat this action according to the Repeat Times after the Interval Time timeout.
3. Only the first Channel (DO0) can be setup as Door Open function, see Access Control page.
4. If the Output Type setup as Switch ON/OFF, then this channel will be used as a switch.
5. If the Output Type setup as Siren, then this channel will be used as siren, and will be activated according to the settings in AI/DI Alarm and Interlock page.
6. Close time, Interval time, Repeat Times and Alarm Verify Time values range from 0 to 9999.
7. Alarm Verify Time: If tick the ON/OFF SMS alert function, and the relay closing or opening time less than the verify time, the RTU will not send SMS to alert the users.

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.

- 1) **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 EMS-LTE, can open the electric lock directly or output a pulse signal and disarmed the EMS-LTE 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

- 2) **Switch ON/OFF:** For switch on/off device.
- 3) **Siren:** This is for output pulse signal for siren sounds. If setup as Siren, then while the EMS-LTE alarm and ticked the Siren function in AIN or DIN trigger pages, then this channel will execute the setting parameters.

Channel Name: to 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.

Repeat Times: Stands for how many times does this relay should to repeat.

Interval Time: Stands for interval how many seconds then the relay repeats 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;

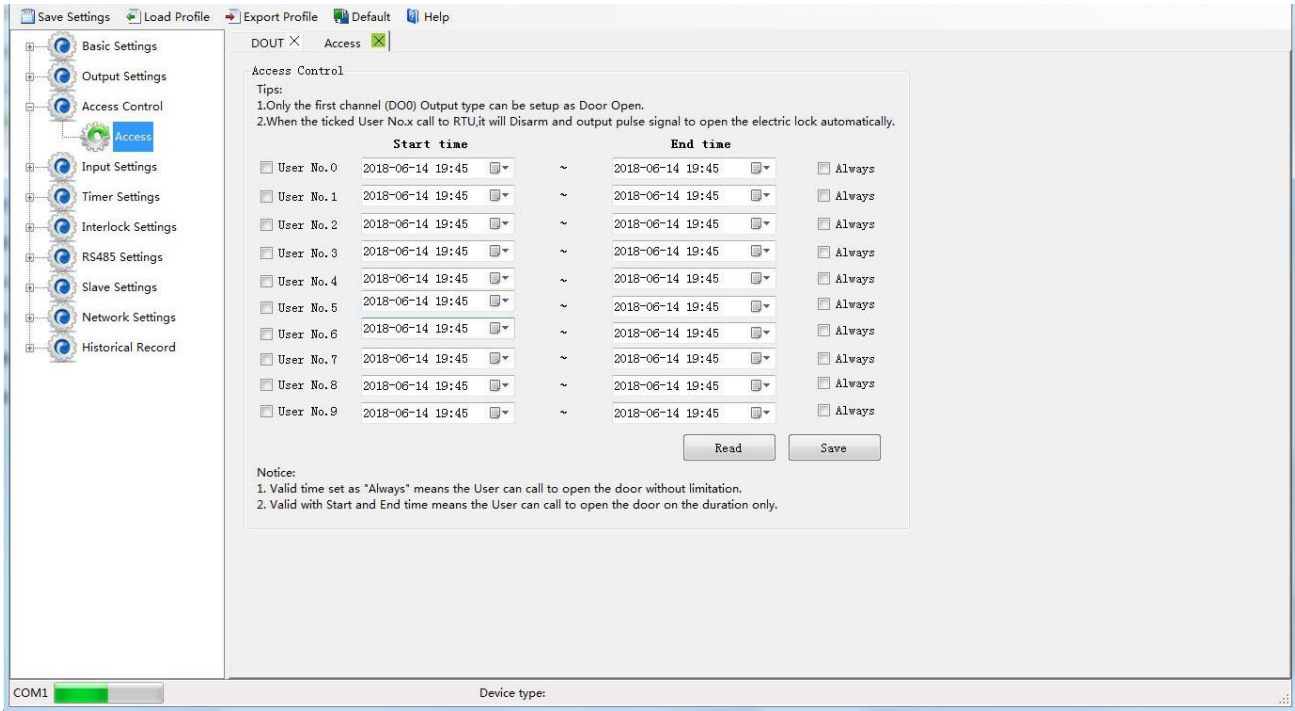


Access Control Setting

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

Only when the output types 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 EMS-LTE to output a pulse output or always close then call again 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 EMS-LTE 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.



Start Time: Stands for from what time this authorized number can dial in to control it.

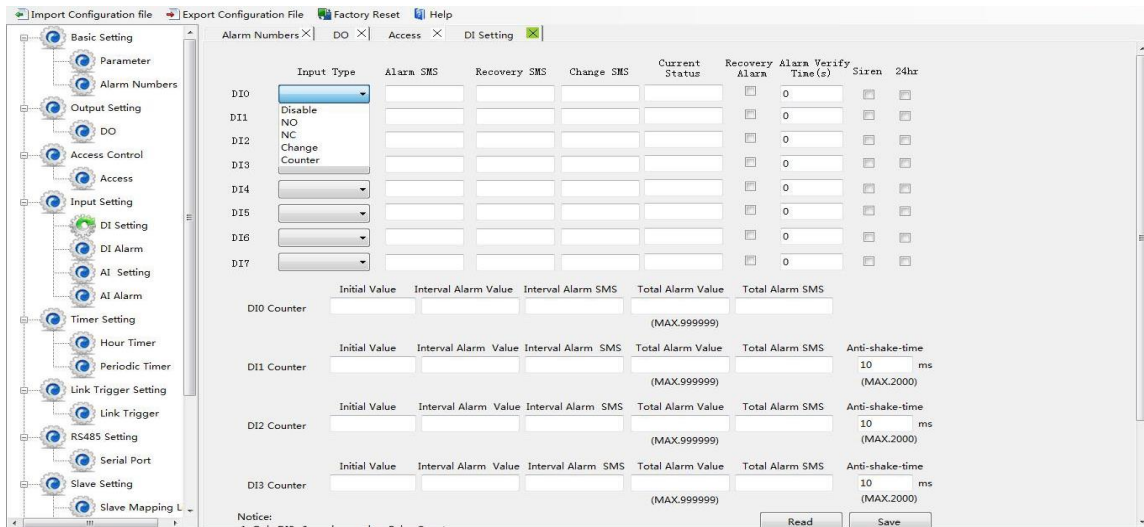
End Time: Stands for till what time this authorized number cannot dial in to control it.

Always: Stands for this authorized number can dial in to control it all the time.



DI Trigger Settings

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





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 as a high-speed pulse counter, sampling frequency: 1MHz; DIN1~3 as low-speed pulse counter, anti-shake time can be set 1~2000ms, default 1ms; 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 EMS-LTE.

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 Verify Time: Stands for when the digital input Close or Open last 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 EMS-LTE is in Arm or Disarmed mode, this digital input triggered will alarm.

Initial Value: When DINO as counter, the value begins to count.

Interval Alarm Value: DINO as counter, under Arm or 24hr status, when counter value arrive "Interval Alarm Value" will send SMS to authorize numbers.

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.

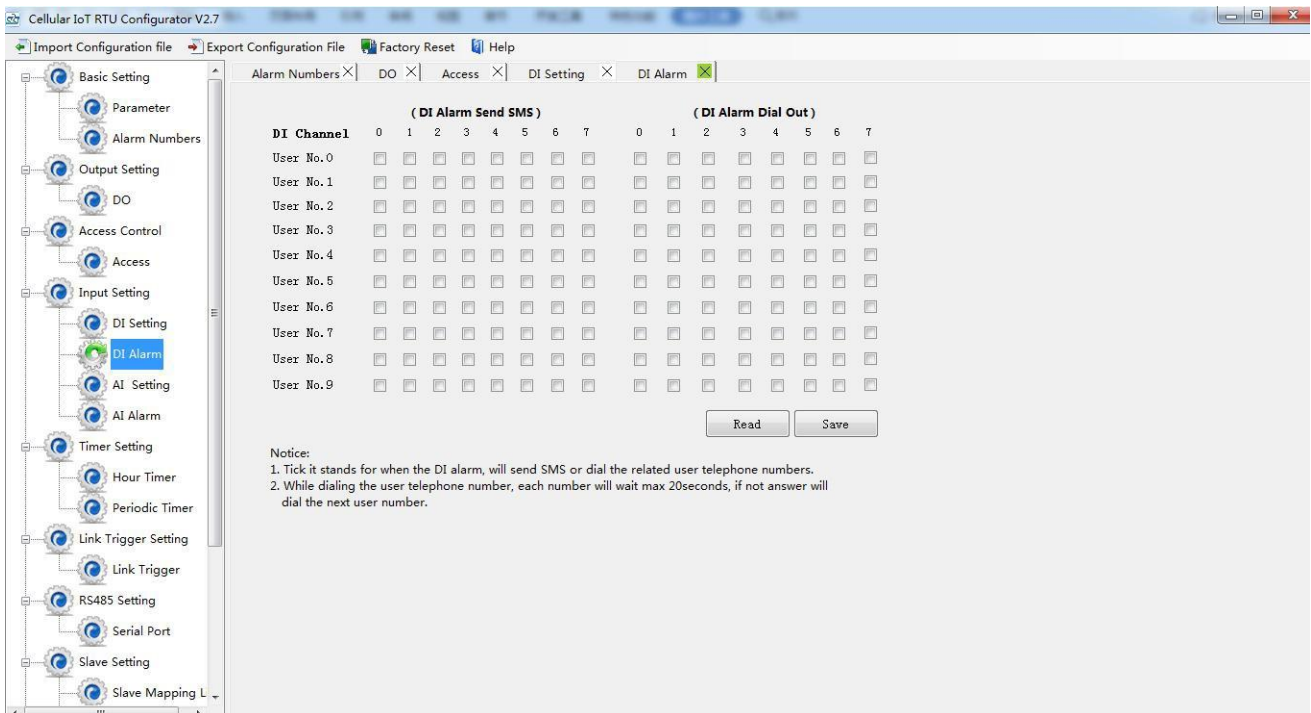
Step Alarm SMS: When step alarm, will send this SMS to authorize number.

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



DI/AI Alarm Settings

This page is for setup while DI/AI 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 DI settings, the AI Alarm Settings is the same:



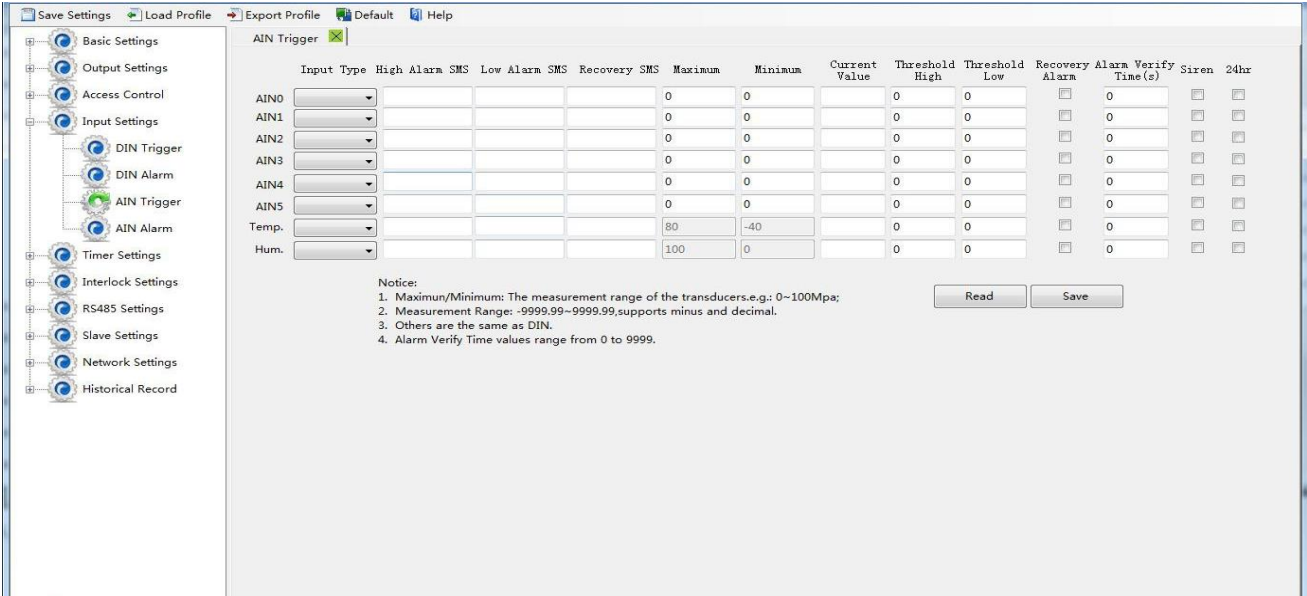
Notice:

Call notification is not the pre-set voicemail notification. When there is an alarm, the EMS-LTE will generate a call to the pre-configured mobile number. The call does not contain any voice. The call will cut-off immediately once the call is pick up.



AI 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, etc.



AIN Trigger	Input Type	High Alarm SMS	Low Alarm SMS	Recovery SMS	Maximum	Minimum	Current Value	Threshold High	Threshold Low	Recovery Alarm	Alarm Verify Time (s)	Siren	24hr
AIN0					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
AIN1					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
AIN2					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
AIN3					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
AIN4					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
AIN5					0	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
Temp.					80	-40		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
Hum.					100	0		0	0	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>

Notice:
 1. Maximum/Minimum: The measurement range of the transducers,e.g.: 0~100Mpa;
 2. Measurement Range: -9999.99~9999.99,supports minus and decimal.
 3. Others are the same as DIN.
 4. Alarm Verify Time values range from 0 to 9999.

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 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 50Celsius degree to alert.

Threshold Low: The low value(reached) need to alarm; Example: set -30Celsius degree to alert.

Recovery Alarm: Tick it stands for when the analog input recovery, will send SMS to the authorized numbers.

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

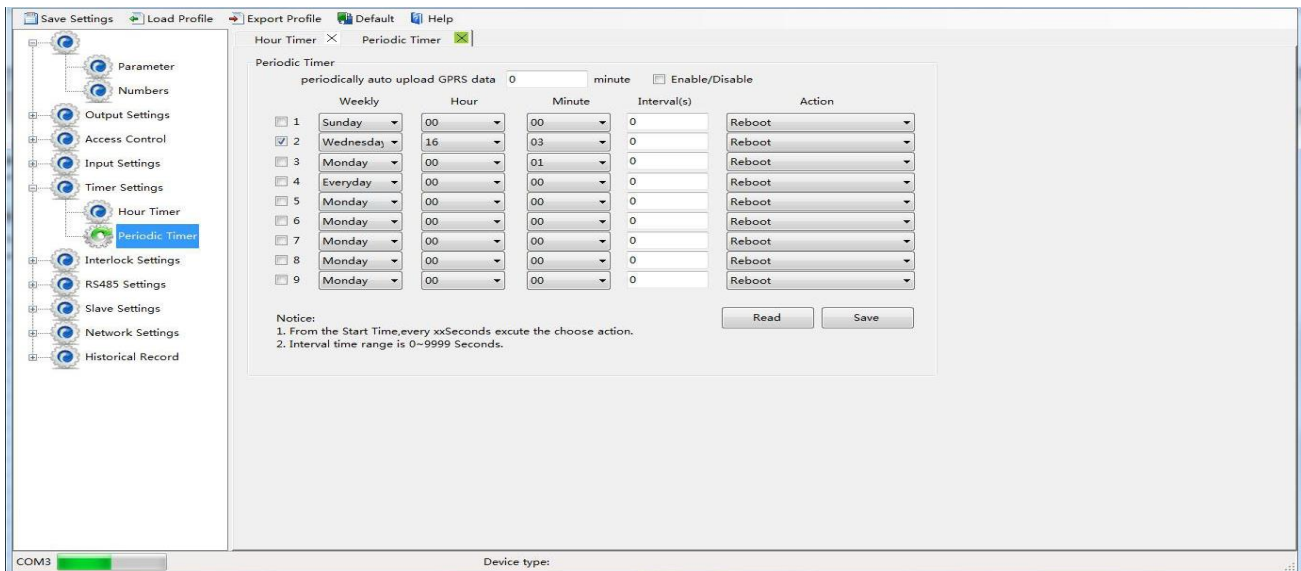
24Hr: Tick it stands for no matter the EMS-LTE is in Arm or Disarmed mode, this input triggered will alarm.



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.

Total can program 10 scheduling events. Tick it stands for enable this timer event:



Reminder:

When GPRS/3G/4G data transmission protocol is Picobox EMS-LTE Protocol, the periodically auto upload default enable and upload every 5 minutes. Tick stands for enable this timer function, otherwise is disable.

Weekly + Hour + Minute: Stands for what day and at what time does the EMS-LTE 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 EMS-LTE 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 EMS-LTE should to execute at the specified time.

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.

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.

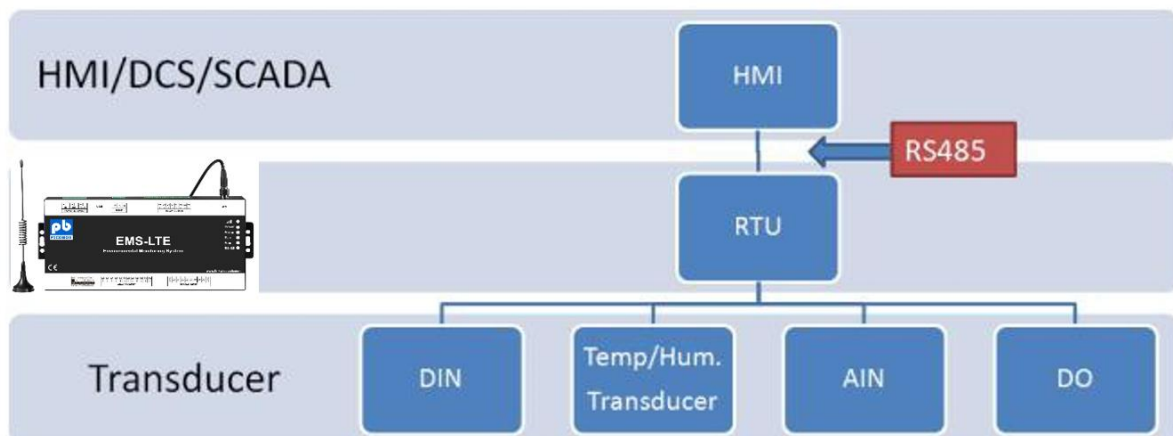
Time out: When RS485 used as Master, after sending command to slave, the longest time waiting for slave data back. If longer than this setting value, will ensure slave no response.

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



Modbus RTU Slave function:

When RS485 as Modbus RTU Slave, can be connected to HMI, SCADA, DCS, PLC... as below:



EMS-LTE I/O Register List and function code:

Read Input Coil (Function Code 02: Read Coil)		
Register Address (Decimal)	Definition	Description
0	RTU DIN0	DIN0 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
1	RTU DIN1	DIN1 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
2	RTU DIN2	DIN2 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
3	RTU DIN3	DIN3 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0



4	RTU DIN4	DIN4 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
5	RTU DIN5	DIN5 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
6	RTU DIN6	DIN6 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0
7	RTU DIN7	DIN7 value, when dry contact, NC=1, NO=0; When wet contract, 0~0.5V=1, 3~24V=0

Read Input Register (Function Code 4: Read Input Register.)			
Register Address (Decimal)	Definition	Data Type	Description
0	RTU AIN0	32 Bit Signed ABCD 1 Byte in Modbus protocol	AIN0 value, real value= AIN0 value/100
2	RTU AIN1		AIN1 value, real value= AIN0 value/100
4	RTU AIN2		AIN2 value, real value= AIN0 value/100
6	RTU AIN3		AIN3 value, real value= AIN0 value/100
8	RTU AIN4		AIN4 value, real value= AIN0 value/100
10	RTU AIN5		AIN5 value, real value= AIN0 value/100
12--13	(reserved, not work)
14	RTU Power	16 Bit Unsigned AB 1 Byte in Modbus protocol	External power voltage, real value= Power value/100
15--23	(reserved, not work)
24	RTU Temperature	16 Bit Signed AB 1 Byte in Modbus protocol	AM2301 Temperature value (*100), real value= Temperature value/100
25	RTU Humidity	16 Bit Signed AB 1 Byte in Modbus protocol	AM2301 Humidity value (*100), real value= Humidity value/100.
26	RTU DINO Count Value	32 Bit Unsigned	This value Enable when DINO as counter mode

Read and Write Holding Coil (Function Code 1, Function Code 5, Function Code 15.)		
Register Address (Decimal)	Definition	Description
0	RTU DO0	DO0 Value, Read/Write, 1=Close, 0=Open
1	RTU DO1	DO1 Value, Read/Write, 1=Close, 0=Open
2	RTU DO2	DO2 Value, Read/Write, 1=Close, 0=Open
3	RTU DO3	DO3 Value, Read/Write, 1=Close, 0=Open
4--63	(Reserved, not work)	

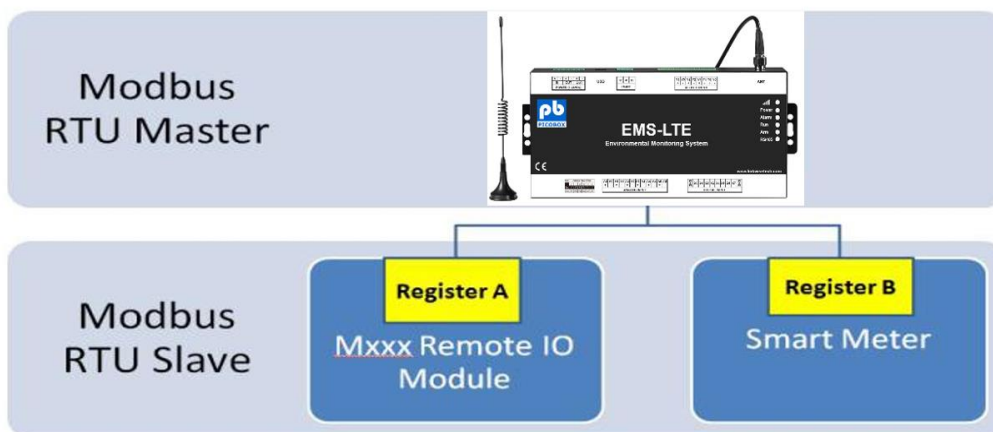
Modbus RTU Master Function

When RS485 as Modbus RTU Master with mapping registers, support max 16 slaves for connecting PLC, Remote I/O data acquisition module, Smart meter, Power monitoring module, Smart transducer, Diesel generator, UPS, Accumulator battery monitoring system, etc. 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.

Adding Slave

(Extend I/O tags or Modbus RTU converter to SMS alarm gate way)

When RS485 as Modbus RTU Master, can extend I/O tags, support max 16 slaves for connecting PLC, Remote I/O data acquisition module, Smart meter, UPS, Power monitoring., etc. When RS485 as Modbus RTU Master, the device will be polling the slaves, read the slave register value to device mapping address and stock them as below. The yellow part is mapping register area.



Slave Mapping list:

This page is for adding, revising and deleting the slaves. Pls read the slaves mapping list first before right click editing start.

No	Slave Address	Data Type	Function	Starting Address Hi-Lo	Registers Quantity	Mapping Address-Start	Mapping Address-End
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

Add Slave
 Editor Slave
 Write Value
 Delete Slave
 Clear Display

Setting Slave

No:

Slave Address (Range 1~254):

Data Type:

Function Code:

Register start address:

Registers Quantity:

Mapping start address:

Slave Address: Stands for the Modbus RTU Slave ID.

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

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

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

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

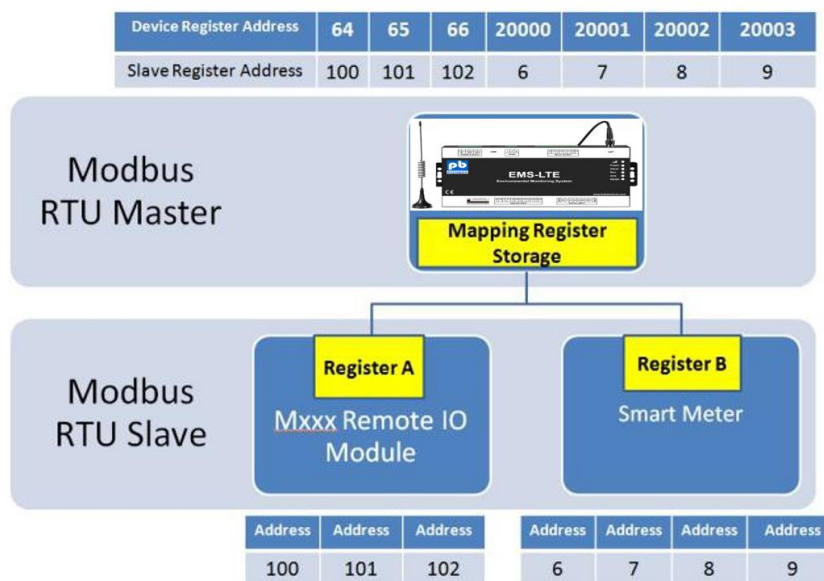
Mapping Address-Start: Stand for mapping the slave start register data to the device start mapping address.

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

The example of Mapping Register as below:

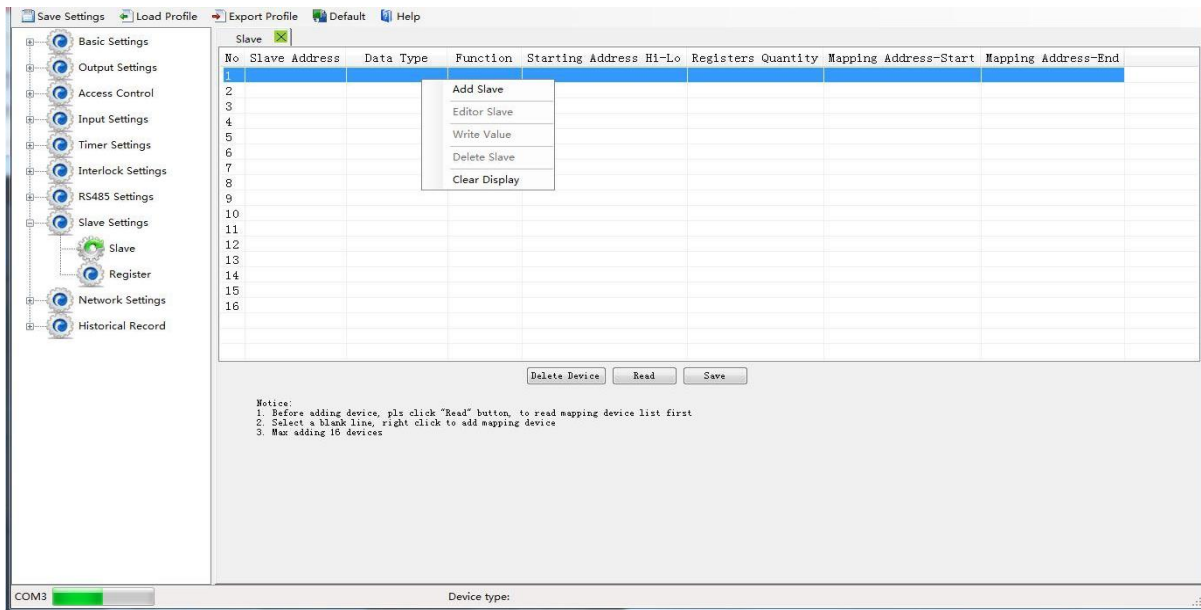
Mxxx remote I/O module, slave register start address is 100, reading data qty is 3, the EMS-LTE mapping register start address is 1; Smart meter slave register start address is 6, reading data qty is 4, the device mapping register start address is 4.

---If so, when reading/writing device register 1~3, actually is reading/writing 100, 101, 102 register of Mxxx remote I/O module; When reading/writing device register 4~7, actually is reading/writing 6~9 register of smart meter.

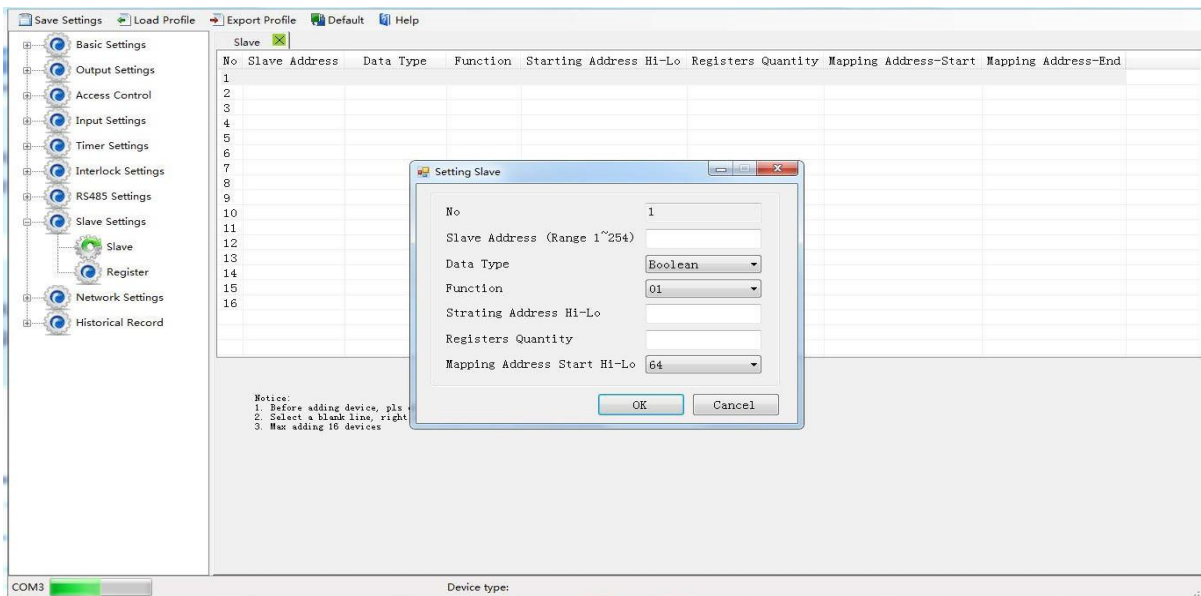


Slave Settings:

- Step1:** Connect the slave to device EMS-LTE RS485 port.
- Step2:** Find the slave port communication parameter and register address from user manual.
- Step3:** Write device RS485 parameter according to slave port communication parameter, pls ensure both parameters 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.
- Step5:** Back to Slave Mapping page as below, right click the line to add.

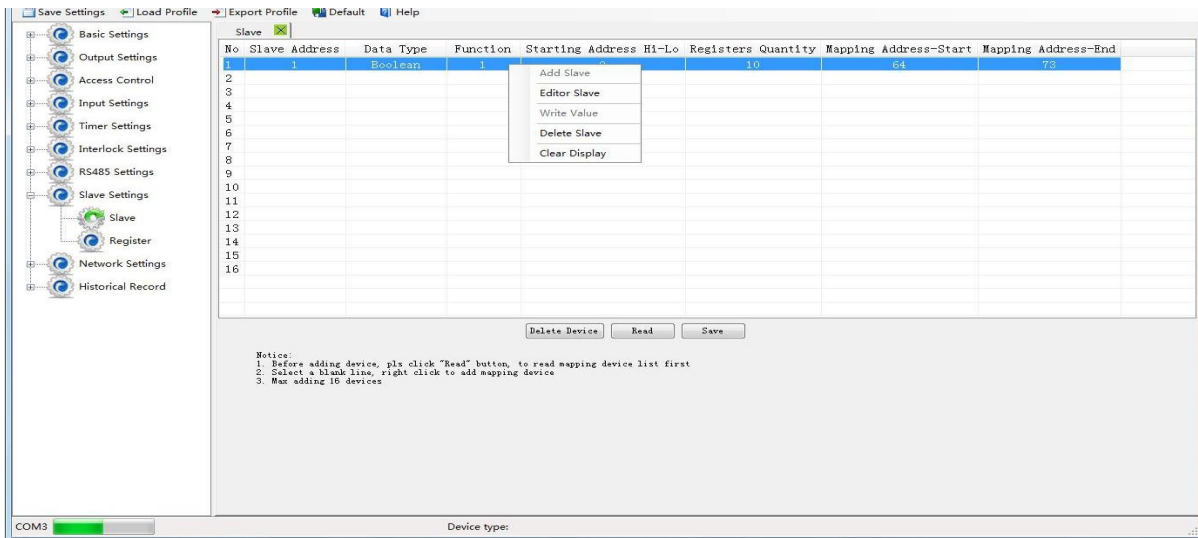


Click Add Slave as below:

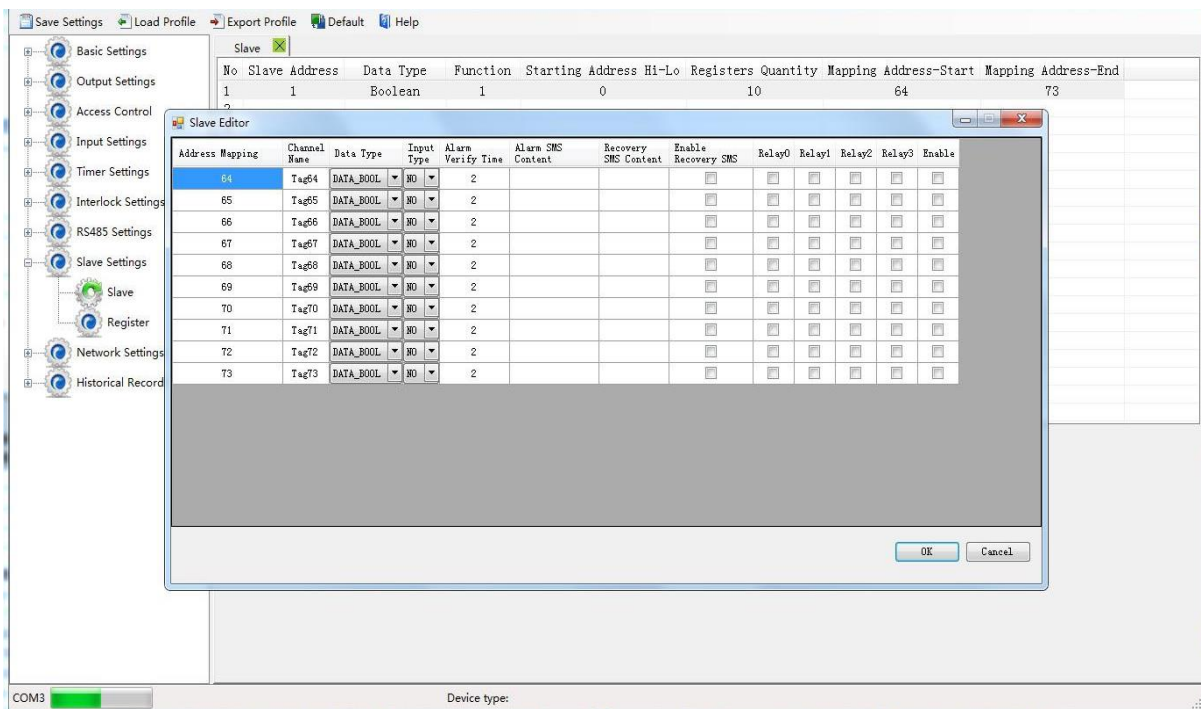


If one slave have multi register, then need to add separately according to register type; For example, Mxxx remote I/O module, with digital and analog inputs, need to add the digital (Boolean) first, then add the analog (16 Bit).

Step6: Right click the line to edit the slave.



Click the "Edit Slave" to list the register according to chosen type (Boolean, 16 Bit, 32 Bit, 64 Bit). Boolean list edit as below:



Address Mapping: Used for device to mapping slave register address.

Channel Name: Setup channel name, alarm/recovery send "channel name + alarm content" to authorize number, need to tick Slave Alarm function in number setting page.

Data Type: Fixed, already chosen when add slave.

Input Type: NO NC optional, default NO. Choose NO: Normal is NO, not alarm when read 0, alarm when read 1; Choose NC: Normal status is NC, not alarm when read 1, alarm when read 0.

Alarm Verify Time: Stands for unnormal value last time more than this value, will send alarm SMS to authorize number.

Alarm SMS Content: When alarm happen, send SMS "channel name + content" to authorize number.

Recovery SMS Content: When alarm recovery, send SMS "channel name + content" to authorize number.

Enable Recovery SMS: Tick it, then can send SMS to authorize number when recovery.

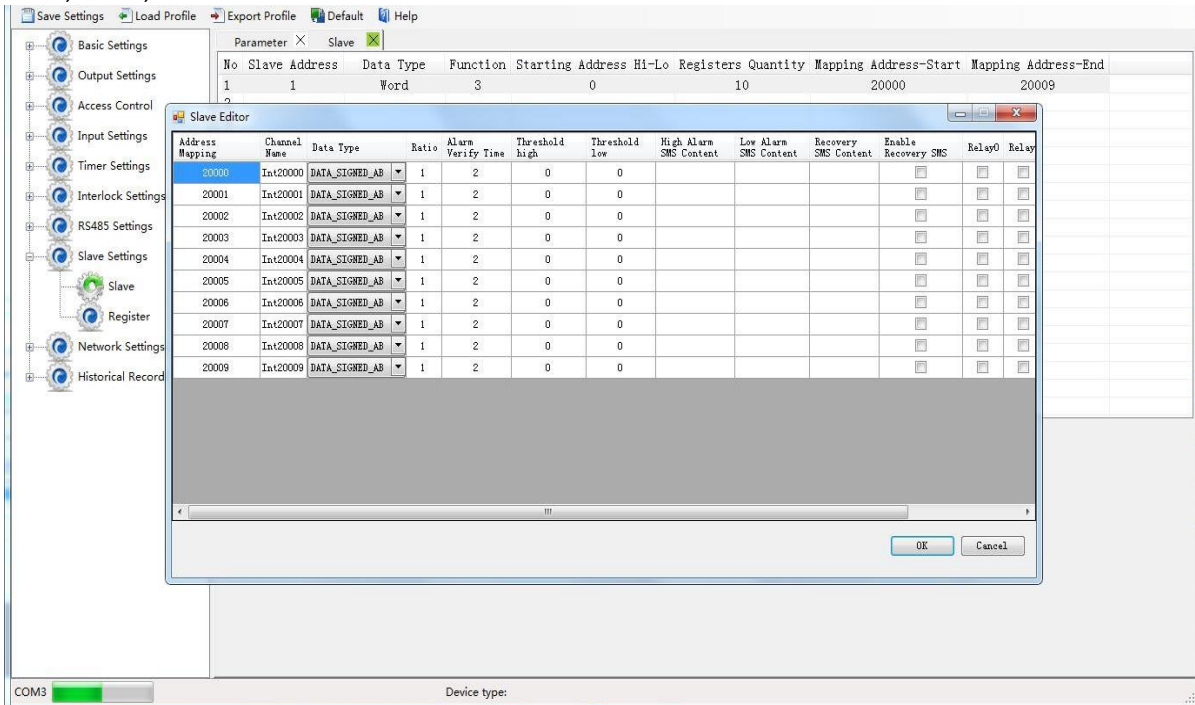
Relay X: X=0~3, unnormal value will alarm-link relative relay.

Enable: Tick it stand for enable alarm function.

Reminder:

If need SMS Alarm function, pls tick Slave Alarm function for authorize number in Number Settings page.

16 Bit, 32 Bit, 64 Bit list edit as below:



The screenshot shows the 'Slave Editor' window with a table of slave register settings. The table has the following columns: Address Mapping, Channel Name, Data Type, Ratio, Alarm Verify Time, Threshold High, Threshold Low, High Alarm SMS Content, Low Alarm SMS Content, Recovery SMS Content, Enable Recovery SMS, Relay0, and Relay. The data rows are as follows:

No	Slave Address	Data Type	Function	Starting Address	Hi-Lo	Registers	Quantity	Mapping	Address-Start	Mapping	Address-End
1	1	Word	3	0		10		20000			20009
2											

The 'Slave Editor' table has the following columns: Address Mapping, Channel Name, Data Type, Ratio, Alarm Verify Time, Threshold High, Threshold Low, High Alarm SMS Content, Low Alarm SMS Content, Recovery SMS Content, Enable Recovery SMS, Relay0, Relay. The data rows are as follows:

Address Mapping	Channel Name	Data Type	Ratio	Alarm Verify Time	Threshold High	Threshold Low	High Alarm SMS Content	Low Alarm SMS Content	Recovery SMS Content	Enable Recovery SMS	Relay0	Relay
20000	Int20000	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20001	Int20001	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20002	Int20002	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20003	Int20003	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20004	Int20004	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20005	Int20005	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20006	Int20006	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20007	Int20007	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20008	Int20008	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20009	Int20009	DATA_SIGNED_AB	1	2	0	0				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Address Mapping: Used for device to mapping slave register address.

Channel Name: Setup channel name, alarm/recovery send "channel name + alarm content" to authorize number, need to tick Slave Alarm function in number setting page.

Data Type: Optional according to slave data type, ABCDEFG stands for sorting data in the slave register.

Ratio: Real value=read register value*ratio.alarm threshold high low value is read register value *ratio. But when GPRS/3G/4G acquisition data will not multiple the ratio.

Threshold High: When new value above higher than this value, will send SMS alarm to authorize number.

Threshold Low: When new value above lower than this value, will send SMS alarm to authorize number.

Alarm Verify Time: Stands for unnormal value last time more than this value, will send alarm SMS to authorize number.

High Alarm SMS Content: When threshold high alarm happen, will send "channel name + this content" to authorize number.

Low Alarm SMS Content: When threshold low alarm happen, will send "channel name + this content" to authorize number.

Recovery SMS Content: When alarm recovery, send SMS "channel name + this content" to authorize number.

Enable Recovery SMS: Tick it, then can send SMS to authorize number when recovery.

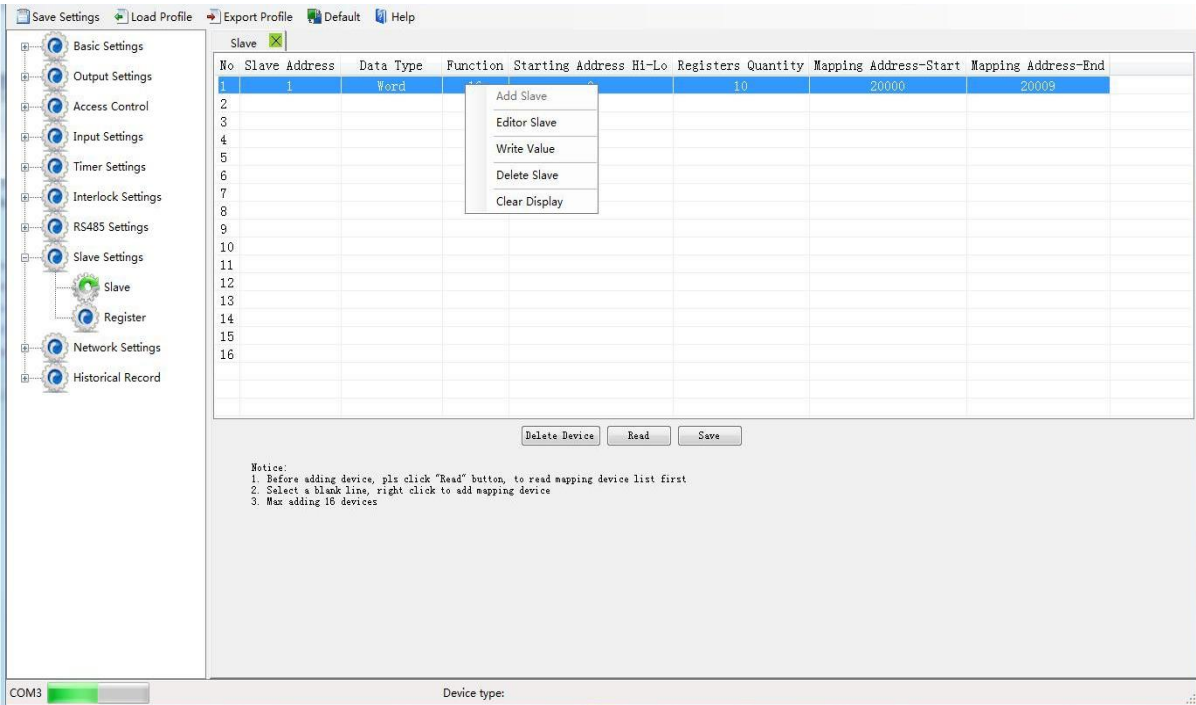
Relay X: X=0~3, unnormal value will alarm-link relative relay.

Enable: Tick it stand for enable alarm function.

Reminder:

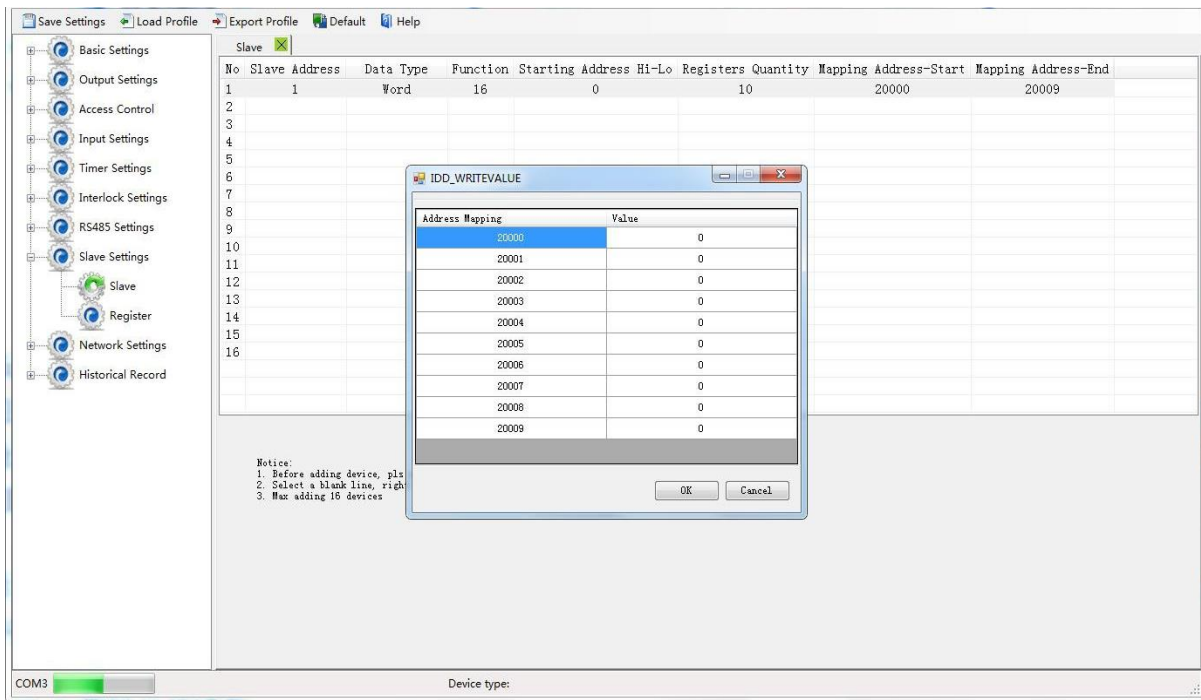
1. If need SMS Alarm function, pls tick Slave Alarm function for authorize number in Number Settings page.
2. When 16 Bit used for extend AIN inputs, can't convert acquisition ADC value to actual one according to range. For example: When Mxxx remote I/O module extend AIN, since Mxxx AIN register value is ADC, then device EMS-LTE read value is also ADC value. But DAM122 AIN value is calculated to actual value according to range, then stored in register, so the value device read, is also calculated value.

When add slave, function code choose 16, then write value page as below:



No	Slave Address	Data Type	Function	Starting Address	Hi-Lo	Registers Quantity	Mapping Address-Start	Mapping Address-End
1	1	Word	16	20000	20009	10	20000	20009
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

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



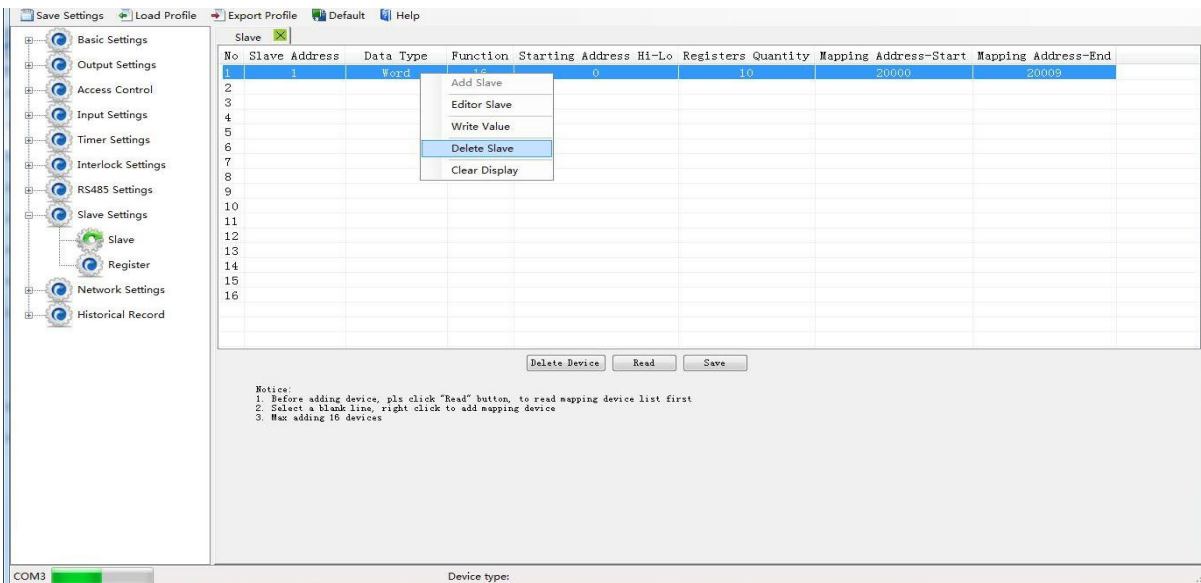
Revise value, click OK, will write the value to slave corresponding register. And can mapping the register to device, read its function code for slave data current status, to check if set successfully or not.

Step7: Click "Save" when operate finished, then click "Save Setting" in the menu, to save parameter to device.



Delete Slave:

Right click the slave which need to delete---->click the "Delete Slave"----> click "Save"---->click the "Save Settings" in the menu as below



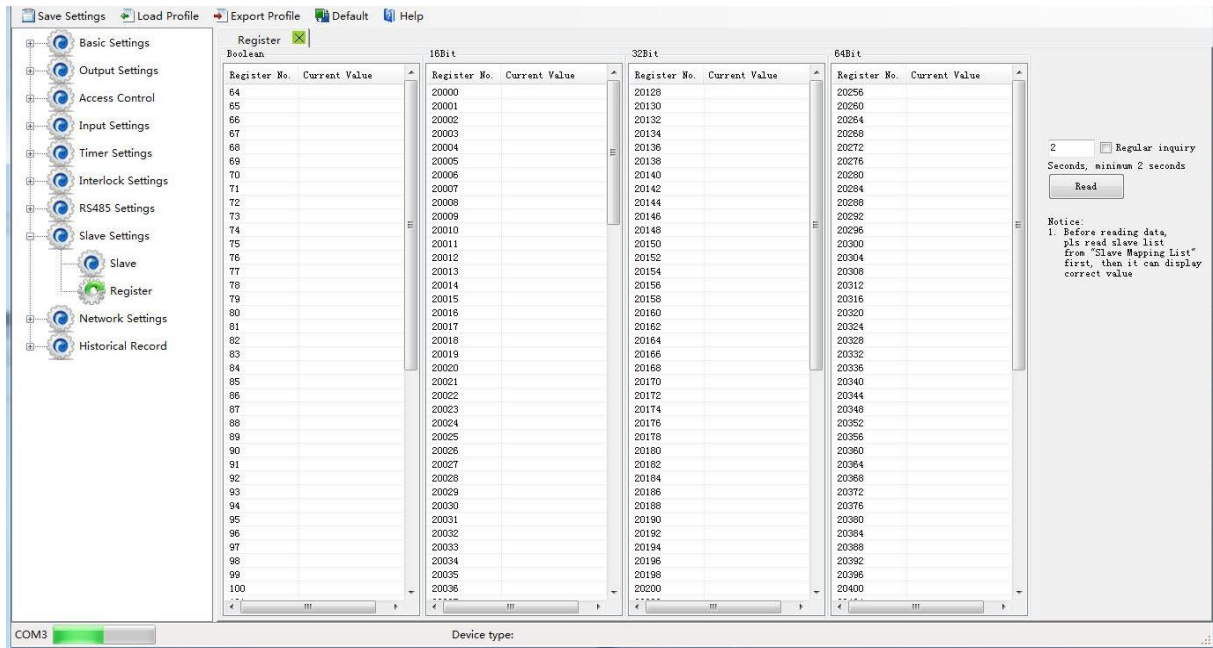


Inquiry Slave Current Value:

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:



Network Settings

This page used for setting device parameters connect to PICOBOX CLOUD via GPRS/3G/4G.

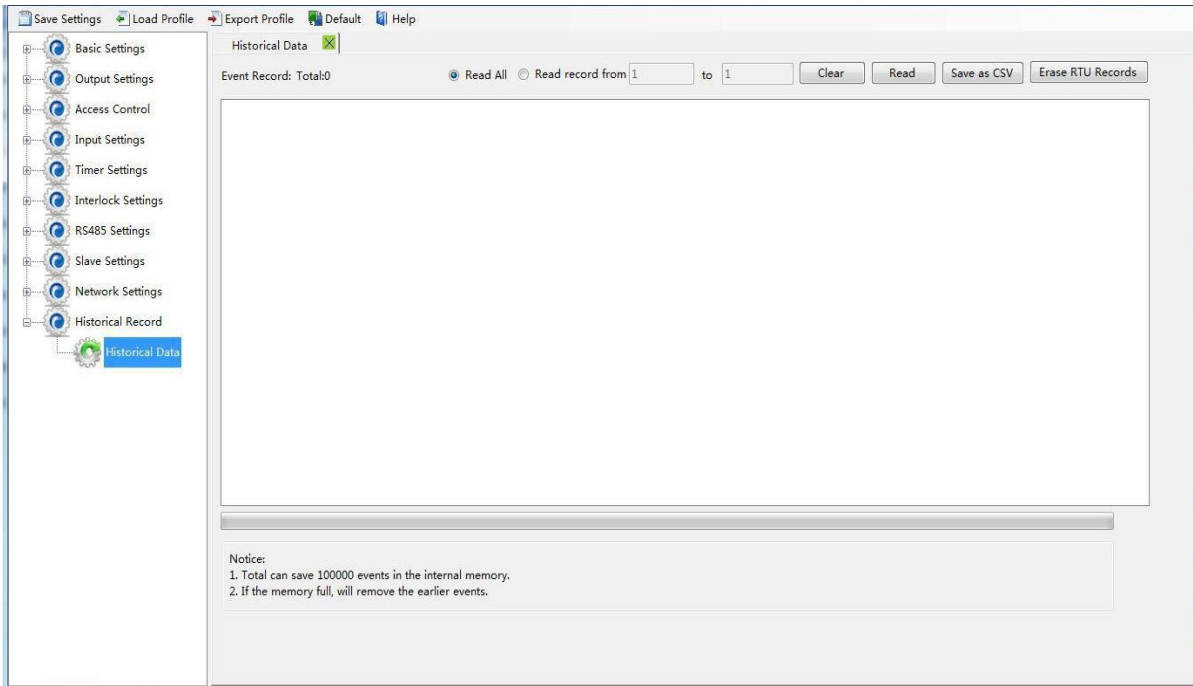
Note: Please contact your sales representative for more information on package and configuration.



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 it full, will automatically remove the earlier records for new records. And can save as CSV format for other purpose usage.



Total: 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.



SMS Command List:

The SMS commands will be used for remote control the EMS-LTE 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, 4digits, default is 1234*

SMS Command	Return SMS Content
Old Password+P+New Password	This is the New Password, please remember it carefully.



4) Arm/Disarm SMS Command

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

5) Set RTU time, format is 2015-05-22 15:20:30W01, the W01 stands for Monday, W07 stands for Sunday.

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

6) Inquiry Current Status SMS Command

SMS Command	Return SMS Content
password+EE	Armed/Disarmed Model: Version: IMEI: GSM Signal Value: External DC Power Goes OFF/ON

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

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

8) Authority User Number to access control: authorized number can dial to disarm and open the door.

SMS Command		Return SMS Content
Setup	Specified access control time: password + B + series number + S + start time + E + endtime Always can access control: password + B + series number + P Notice: Time format is 201505231230, stands for year, month, date, hour, minute.	Tel1: --- Tel2: --- Tel3: 13570810254 Tel4: --- Tel5: ---
Inquiry	password+B	Return all authorized user numbers



Delete	password+B+series number	Return all authorized user numbers
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9) Setup Daily Report time

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

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

12) SMS Control 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>	
Delete DO Name	password+DO+ channel number+DEL	



Switch ON(Close)	password+DOC+ channel number<nnnn> , can close multi channel, till next event trigger or SMS command.	DOx: ON DOy:ON
Switch OFF(Open)	password+DOO+ channel number<nnnn>	DOx: OFF DOy:OFF
Inquiry DO Current Status	password+DOE+ channel number<nnnn>	DOx: ON/OFF DOy:ON/OFF
Inquiry all DO Current Status	password+DOE	DO1: ON/OFF DO2:ON/OFF ---
Time Switch ON (Close)	password+DOLC+ channel number<nnnn> , can close multi-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 time	password+DOT	Pulse Output Time:xxxS
Pulse Output	password+DOP+channel number<nnnn>	No SMS Return

13)Set Server Parameter (Cannot setup DNS by SMS)

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

14)Set GPRS APN/USER NAME/PASSWORD

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

15)GPRS Online

SMS Command	Return SMS Content
password+GPRSONline	GPRS always online

16)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

End of document!

Thank you for purchasing Picobox EMS-LTE