KING PIGEON™

GSM Controller RTU5011

User Manual

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CONTENTS

I Preface

Thank you for using the GSM Controller RTU5011. You will know well about the functions and operation methods of this product quickly through this User's Manual.
This product is mainly used for remote alarming and control application based on GSM network. Please use it according to the parameters and technical specifications in the User's Manual. Meanwhile, the Notes shall be considered for the usage of radio-control products, especially GSM products. Our Company bears no liability for property loss or bodily injury arising from abnormal or incorrect usage of this product.

RTU5011 standard pack components

			
Host		Serial prot cable RS232	
			
12V AC adapter	GSM antenna	CD	

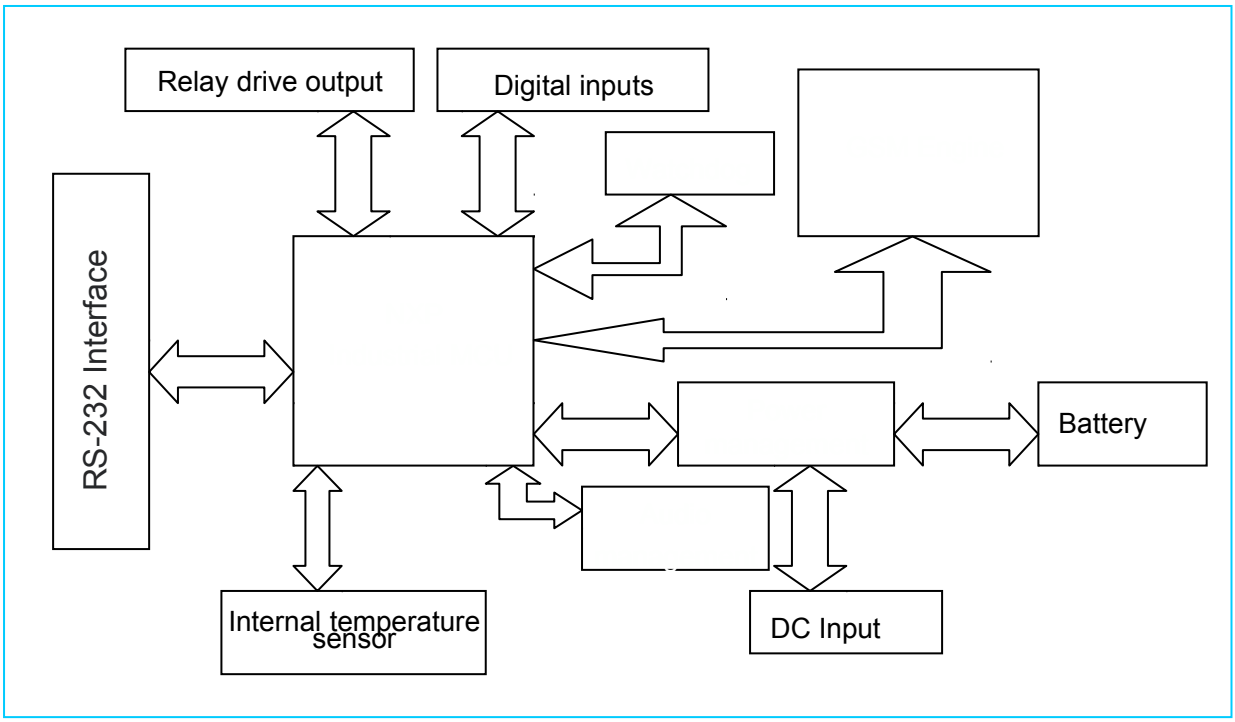
II Introduction

RTU5011 is designed as a cost effective remote control system alert device. It monitors up to 8 dry contacts and 8 drivable relay outputs and 4 AD input. User-defined SMS is sent to pre-configure mobile phone numbers when a pre-defined alarm condition happens.These pre-configured mobile phone numbers can belong to technicians or engineers who are responsible in handling corresponding alarms. With the aid of this GSM Controller, the alarm condition brings attention to in-charge personnel immediately. Besides it allows those mobile phone users to trigger any relay output by using SMS. The output can be connected with alarm indication device, such as alarm, and others.

There is a built-in microprocessor chip running on a real-time operating system. It gives immediate response to any change in both inputs and outputs condition. A GSM modem is embedded in the GSM Controller, user has to subscribe a SIM card for the GSM Controller. The GSM Controller can be installed in any location under GSM coverage.

Features

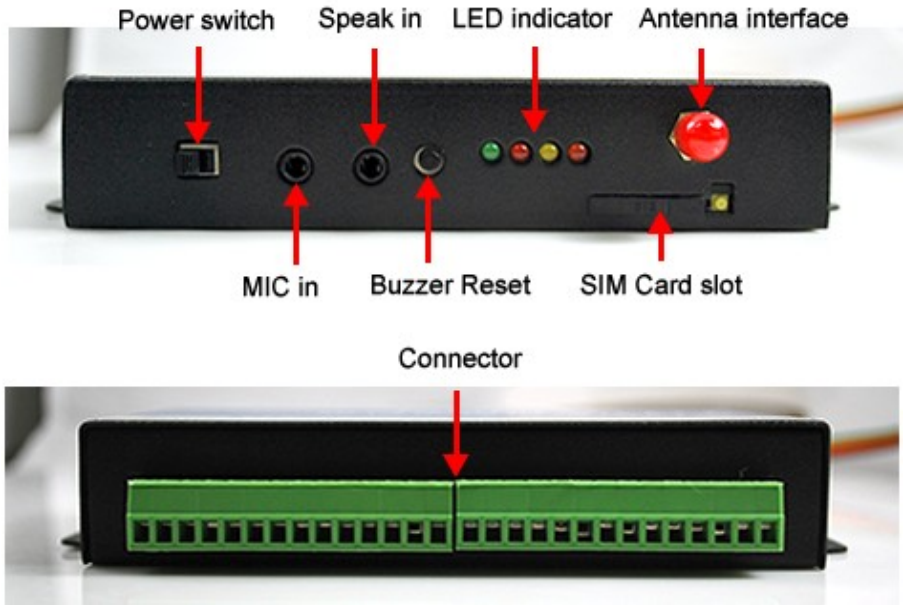
- 8 digital inputs,connect dry contact device
- 8 relay drivable outputs(12V-24V)，drive electricity <0.2A
- 4 Analog input, 0-53 mA，10 precision
- Reliable performance with built-in double watchdog
- Automatic device condition report through SMS every 24 hour interval
- User-defined alarm condition (normally close or open), alarm and recovery SMS message for each alarm point;Supporting drive relay output
- Maximum of 10 mobile phone numbers can be programmable
- Supporting voice monitoring
- Inside temperture sensor (optional)
- Being available for internal battery and providing power cut off alarm (optional)
- Configuration can be done via COM port.



Parameter

Parameter item	Reference scope
DC Power supply	6-28V DC (Standard adapter: DC 12V/1.5A)
Power consumption	12V input Max. 50mA/Average 50mA
Frequency range	Dual-frequency 900/1800 or 900/1800/850/1900
SIM Card	Supporting 3V SIM Card
Antenna	50 Ω SMA Antenna interface
Serial	RS232
Temperature range	-10-+70 °C
Humidity range	Relative humidity 95%
Output drive voltage	Equal to input DC voltage
Output drive power	Drive voltage ≤35V, drive current ≤200mA
On state input current	Max. 0.33mA
Input signal	Dry contact
Exterior dimension	130×80×25mm
Weight	300 g

RTU5011 interface

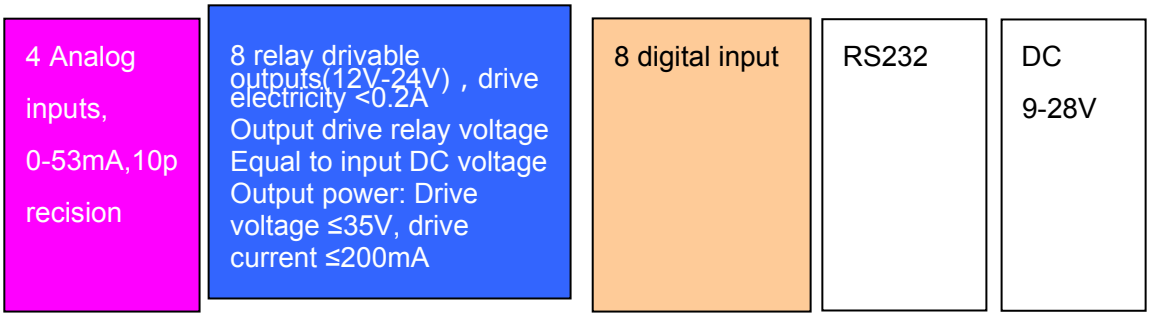


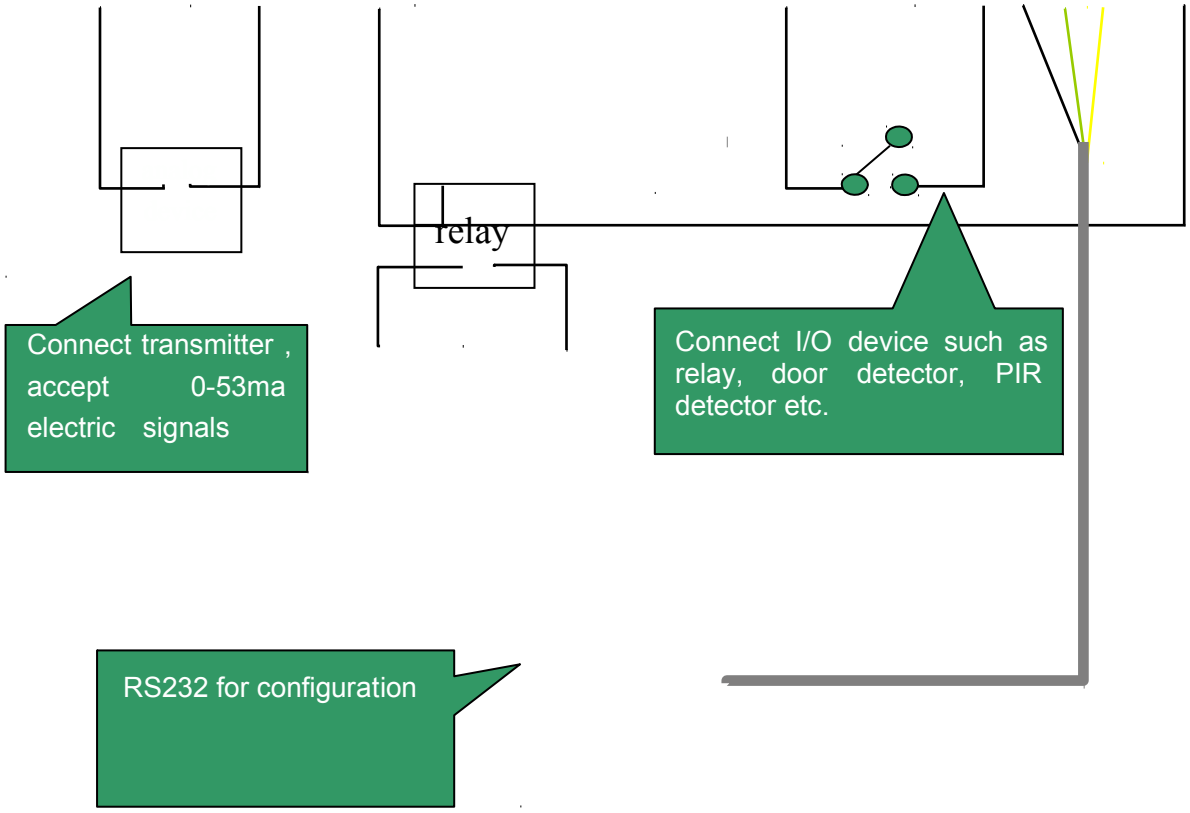
RTU5011 interface

LED indicator discription

Indicator	Status	Indication discription
PWR (Red)	Normally light on	Indicator for power supply, which will be light on when the system is power on
NET (Green)	Flicker	SMS module signal indicator, which will flicker slowly after the system is registered in GSM network
SRV (Yellow)	Light on during handling	It will be light on when the system receives or sends short messages and light off when the handling is over
ACT (Orange)	Flicker	It will flicker periodically when the system is under operation, and the interval time is 6 sec

Connector Description





III Configuration guide of RTU5011

A special parameter configuration software is provided for this product, at the same time, RTU5011 provides a group of SMS commands for the user's remote product configuration and control with sms. See the following for sms command formats:

Category	Format	Description
Configuration	% command + parameter + < CR >	Return to OK or ERROR
Inquiry	% command + ? + < CR >	Return to Result or ERROR

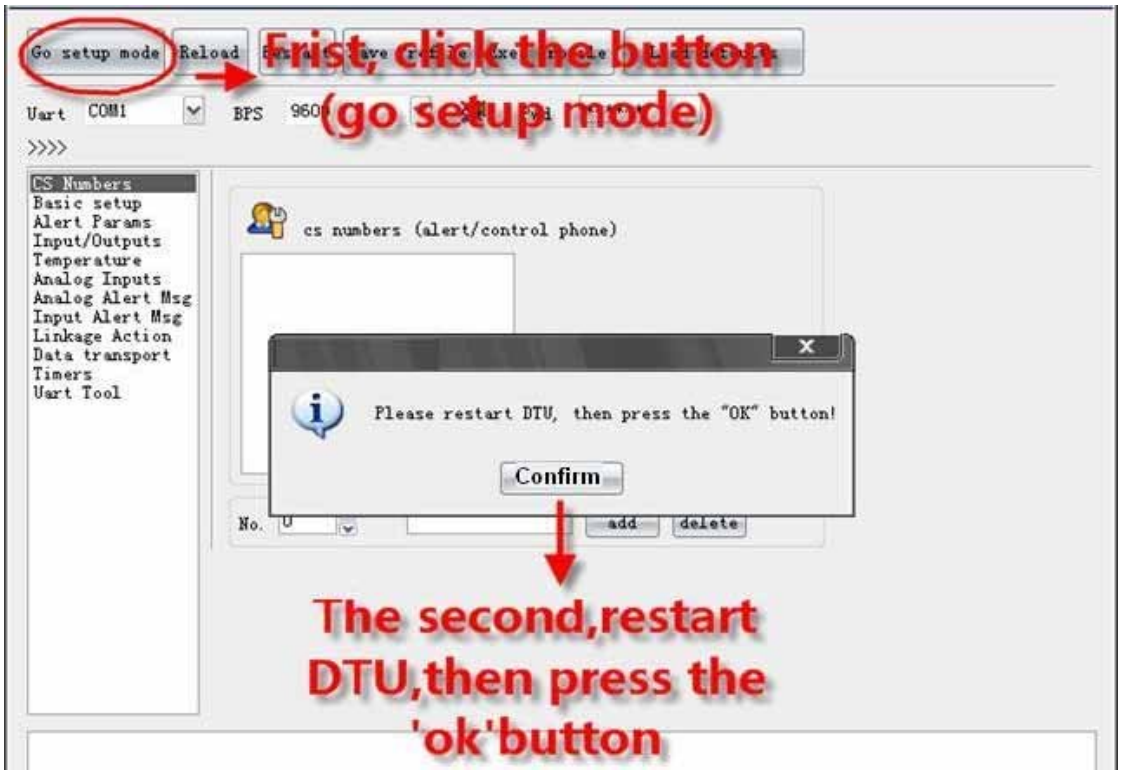
Note

With the commands, the user can execute his configuration through RS232 or sms without using the configuration software. But the point is that when the input command is made through RS232, the "%" has to be input ahead, while if it is send vis sms, no "%" or "< CR >" is needed.

3.1 Access setup mode

Connect RTU5011 with RS232 of the computer and open the configuration software, make RTU5011 access setup mode according to the following figure.

- Note: Please choose the serial port No. and rate correctly, the default communication rate is 9600, default password is "000000"



Definition: Working mode and setup mode

In setup mode,all functions is disabled,only to set parameters.after set,the RTU5011 must be restart to enter working mode.

In working mode,all functions is enabled,the RTU5011 can alarm and control.

- **NOTE**

Access setup mode,the simcard and antenna is no need,but access wording mode,the simcard and antenna is necessary.

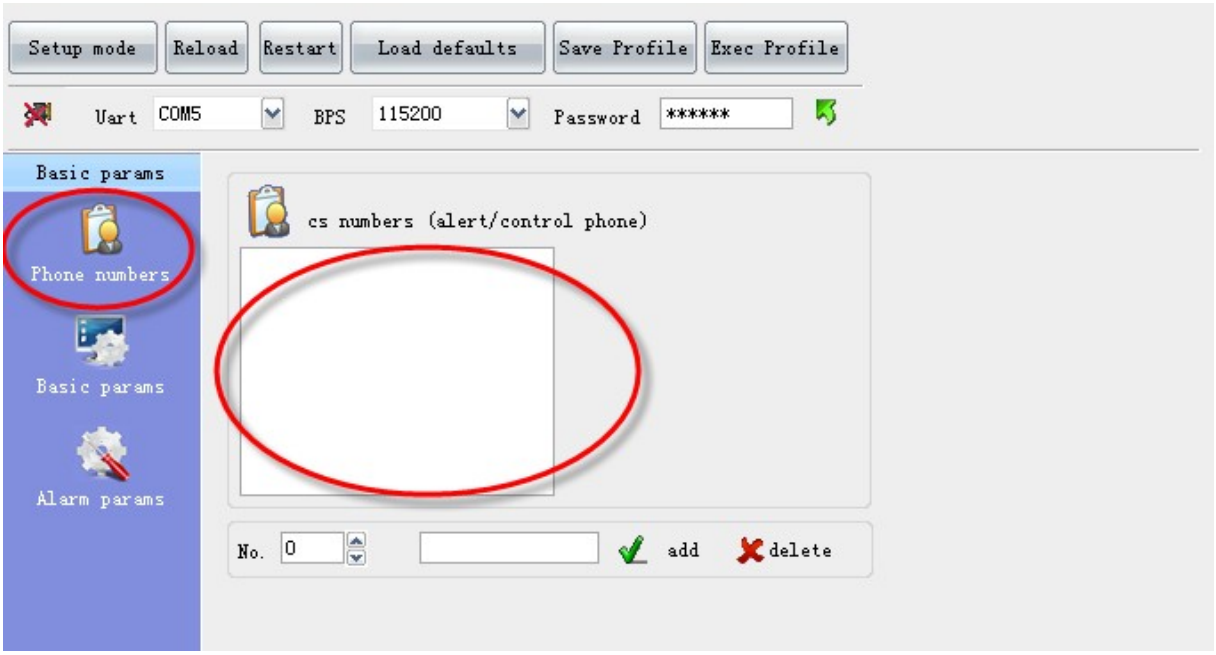
- **How to know current mode:**

Method 1: Check the ACT light, if the ACT light flickers twice per second, that means it is under the setup mode currently; The flicker period of the ACT light can be up to 6 sec under the working mode

Method 2: Check the information from the serial port, if the character string of “dtu come in setup mode” occurs, it means that RTU5011 is under the setup mode.

3.2 Add “CS number”

RTU5011 Under working mode,the “CS number”can send sms commands to control RTU5011 and receive RTU5011 sms(include alarm sms,report sms etc).



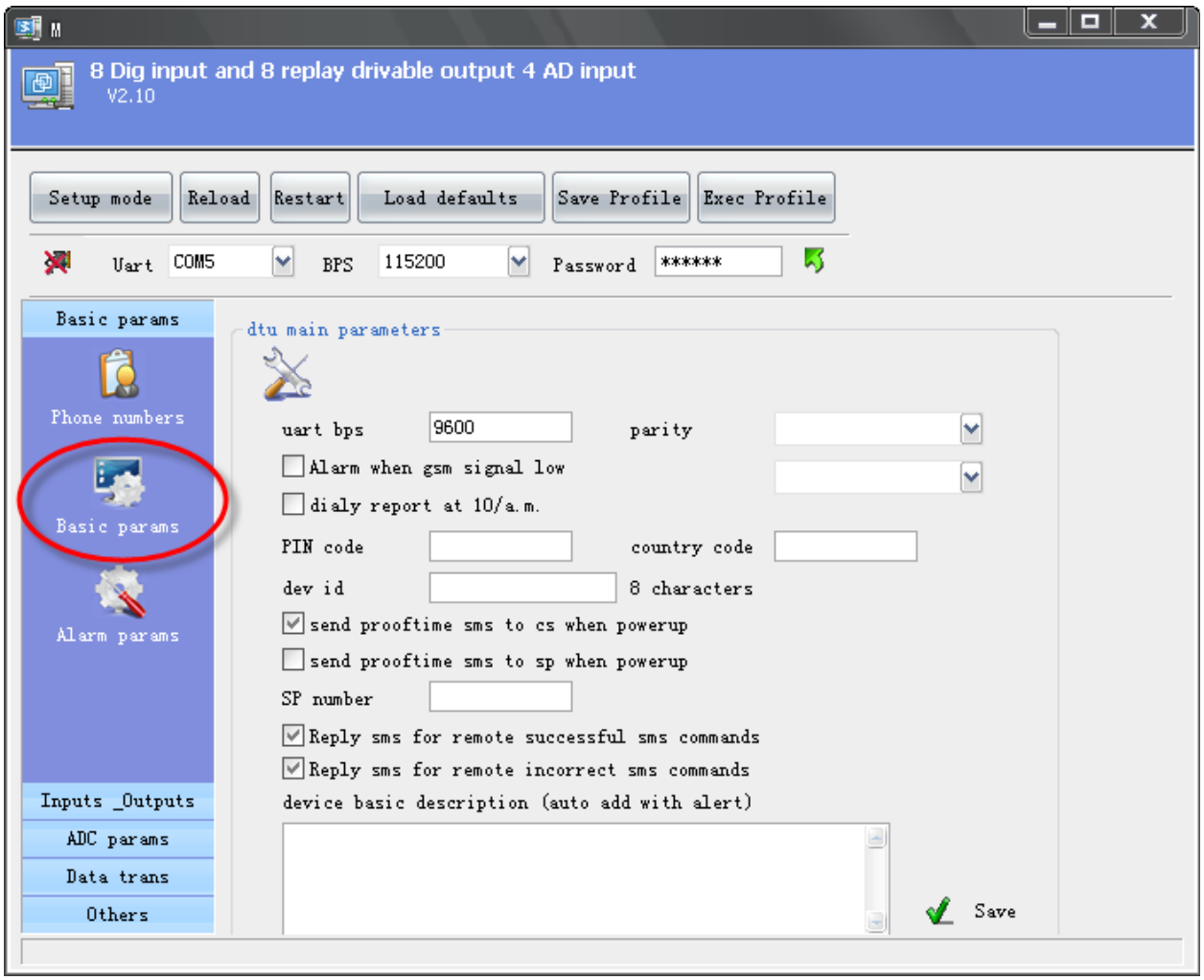
User can set 10 CS numbers, CS0-CS9

When inputs states is changed,RTU5011 will send alarm sms to CS numbers in turn.

Item	commands	value	Remark
CS number	Write number **%CS<n><phone>** Read the one of number **%CS<n>?** Read all number **%CS?** Del number **%CS<n>**	n: 0 to 9 phone: handphone number or null	CS number can control RTU5011 vis sms and receive alarm sms

3.3 Basic parameter configuration

The basic parameters consist of:



Command format for basic setup:

Item	commands	value	Remark
Serial port rate	Write **%UB<Bps>** Read **%UB?**	Bps: 2400-115200	Default is 9600
Serial port parity	Write **%UP<Parity>** Read **%UP?**	Parity: 0-5	Default is none
Device ID	Write **%ID<Str>** Read **%ID?**	Str: 8 characters (ASCII code or null character)	Default is null
Country code	Write **%CC<Code>** Read **%CC?**	Code: Country code	Default is null
Device description	Write	UCS:UCS code	you can add description with RTU50

	%DESC<Ucs> Read **%DESC?**	of description	11(such as install position,user information),the description will show in sms which RTU5011 send to you
Need daily report or not	Write **%DAS<En>** Read **%DAS?**	En: 0 or 1 0: disable 1: enable	Daily report at 10 am
Need alarming or not when GSM signal low	Write **%SIGNALA<En>** Read **%SIGNALA?**	En: 0 or 1 0: disable 1: enable	GSM signal normal range is 18-30，RTU5011 will send alarm sms to user when the value of GSM signal below 9
Update the device's clock by cs number when power up	Write **%PRTCS<En>** Read **%PRTCS?**	En: 0 or 1 0: disable 1: enable	Enable this function,RTU5011 will send sms to CS0 number to request update clock when power up,CS0 number can send any sms to RTU5011 to complete upate clock
Need reply sms for remote successful sms commands	Write **%RPLSUC<En>** Read **%RPLSUC?**	En: 0 or 1 0: disable 1: enable	Enable this function,RTU5011 would reply sms if user have sent correct sms commands.
Need reply sms for remote incorrect sms commands	Write **%RPLERR<En>** Read **%RPLERR?**	En: 0 or 1 0: disable 1: enable	Enable this function,RTU5011 would reply sms if user have sent incorrect sms commands.

1. Device ID

The device ID is a 8-byte ASCII characters which will be showed in the short-message received by CS, for example:

The device ID can be used during the data transmission process. See RTU5011 Data Transmission manual for the detailed data formats.

2. Alarm for GSM signal low

GSM signal normal range is 18-30, RTU5011 will send alarm sms to user when RTU5011's GSM

signal value below 9
The possible reasons of RTU5011 GSM sighal low is:
·RTU5011's GSM antenna is covered with metal box.
·RTU5011 is interfered by other radio device.

3. Update clock

The function of update clock is keeping the time of RTU5011's os(operation system) identical with current time.after update clock,RTU5011 can execute daily report, timing arm or disarm,timing output at correct time.User can send any sms to RTU5011 to complete update clock when RTU5011 power up.

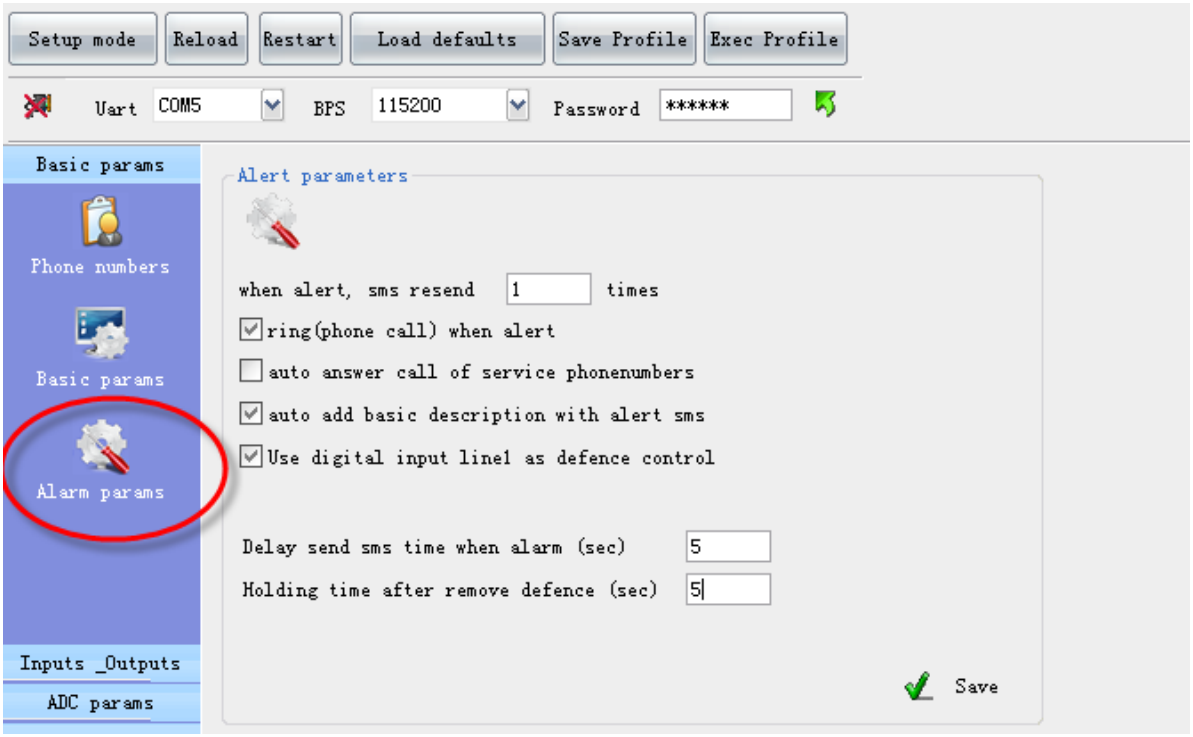
4. Device description

you can add description with RTU5011 (such as install position , user information),the description will show in sms which RTU5011 send to you

5. Daily report

When the daily report function is used, RTU5011 will send a report sms to all CS numbers at 10:00 every morning for reporting current states, through which the user can make sure the normal operation of RTU5011.

3.4 parameters for alarm



1. Ring when alert

enable this option, RTU5011 will give CS number a ring then send sms when input alarm,but RTU5011 have not automatic voice system

2. Auto answer call for service phonenumber

enable this option, RTU5011 can auto answer call for service phonenumber, if MIC and speaker have been connected,user can monitor voice and make voice broadcasting.

3. Auto add basic description with alert sms

enable this option, the description (such as install position , user information) that have been defined by user will show in sms which RTU5011 send to service phonenumber.

4. Use digital input channel 1 as defence control

enable this option, RTU5011 will be in arm mode if digital input 1 is opened and RTU5011 will be in disarm mode if digital input 1 is closed, so user can connect a button to switch mode for arm or disarm service number also can send command to set arm or disarm mode:

Item	commands	value
arm	%BF	
disarm	%CF	

5. Arm delay and disarm delay

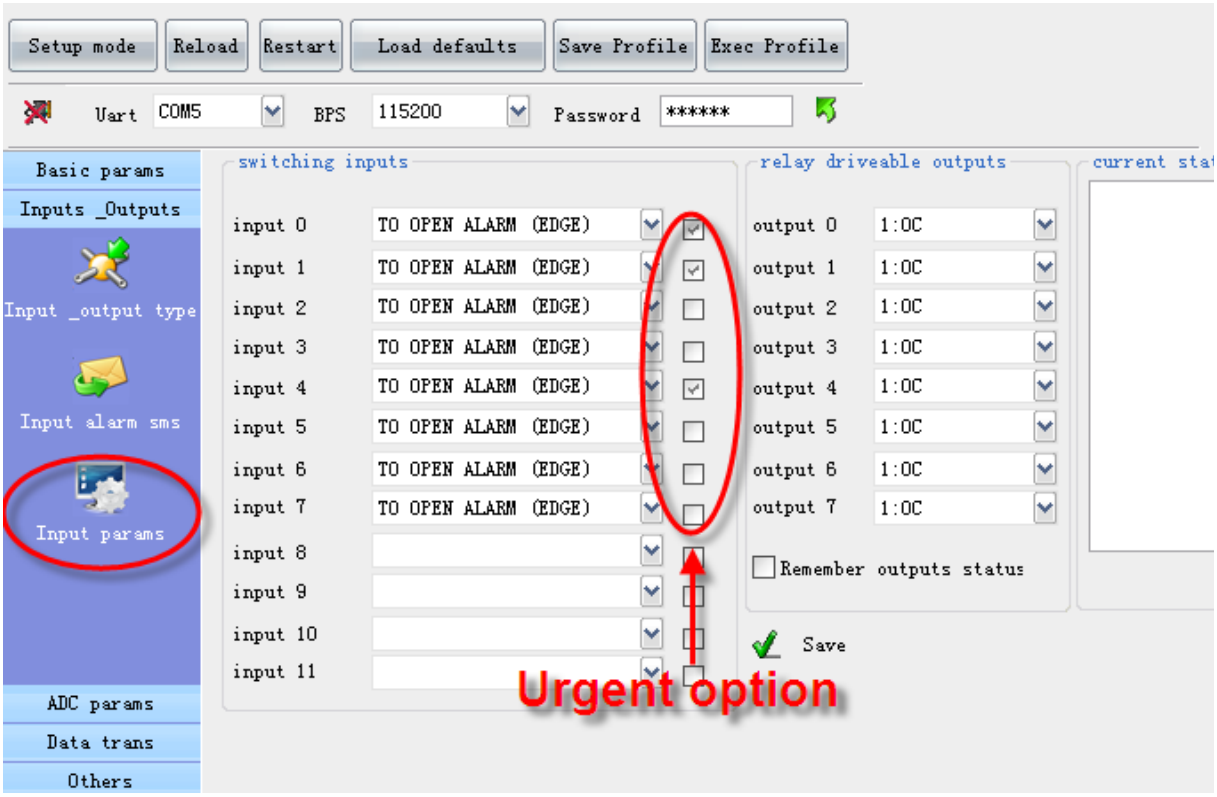
User can define a time for Arm delay, in the time RTU5011 will ignore alarm when input is triggered, In this way, user have a enough time to set RTU5011 in arm mode when user leave the monitor area. User can define a time for disarm delay, in the time RTU5011 will ignore alarm when input is triggered, In this way, user have a enough time to set RTU5011 in disarm mode when user go into the monitor area.

Commands for alarm parameters:

Item	commands	value	Remark
Continuous times for	Write	n: 1-255 (times)	

alarm	**%IOAT<n>** Read **%IOAT?**	
IOAS time	Write **%IOAS<n>** Read **%IOAS?**	n: 0-255 (minute) 0 : disable
IOLS time	Write **%IOLS<n>** Read **%IOLS?**	n: 0-255 (minute) 0 : disable
Need or not ring when alarm	Write **%ARING<En>** Read **%ARING?**	En: 0,1 0: disable 1: enable
Need or not answer for service number	Write **%ASC<En>** Read **%ASC?**	En: 0,1 0: disable 1: enable
Need or not Show description in sms	Write **%AWB<En>** Read **%AWB?**	En: 0,1 0: disable 1: enable
Need or not use input 1 as switch to arm or disarm	Write **%L1DEF<En>** Read **%L1DEF?**	En: 0,1 0: disable 1: enable
Disarm delay	Write **%INDLY<n>** Read **%INDLY?**	n: 0-255 (second) 0: disable
Arm delay	Write **%OUTDLY<n>** Read **%INDLY?**	n: 0-255 (second) 0: disable

3.5 Digital input types



RTU5011 provide 8 digital inputs,input signals can be divided into two types, EDGE_IN (edge triggering) and LEVEL_IN (state triggering).

0	Forbidden
1	Alarm when open contact (EDGE_IN)
2	Alarm for open contact (LEVEL_IN)
3	Alarm when closed contact(EDGE_IN)
5	Alarm for close contact(LEVEL_IN)

Select the type whether to alarm on open/close contact.

There are nuances between EDGE_IN input and LEVEL_IN input.

	LEVEL_IN	EDGE_IN
Trigger alarm	√	√
Recover alarm	√	×
Repeat alarm in triggering status	√	×
Interlock output when alarm	√	√
Interlock output when recovered	√	×

- Note: The alarm and recover sms contents corresponding to different inputs can be defined by the user, see the following sections for the operation method.

“Urgent” option:

RTU5011 provide a “Urgent” option for each digital input, If checked, in any case, the digital input will execute alarm action(send alarm sms, interlock etc) when it is triggered, even RTU5011 is in disarm mode.

Command format for input and output:

Item	commands	value	Remark
Type of input and output	Write **%IOTP<Type str>** Read **%IOTP?**	Typestr: nnnnnnnnxxxxxxxx (nnnnnnnn: eight-digit input type string xxxxxxxx: eight-digit output type string)	Default inputs are all edge_in Default outputs are OC output
Read outputs status	**%IOOS**		
Read inputs status	**%IOIS**		
Disable inputs alarm	Write **%IOIP<nnnnnnnn >** Read **%IOIP?**	nnnnnnnn: one-digit or multidigit numeral	For example,disable input1，command is %IOIP1，disable input0-3,command is %IOIP0123
Enable inputs alarm	Write **%IOIC<nnnnnnnn >** Read **%IOIC?**	nnnnnnnn: one-digit or multidigit numeral	For example,enable input1，command is %IOIC1，enable input0-3,command is %IOIC0123

3.6 Output types

0	diable	
1	relay drivable output	8 relay drivable outputs，drive electricity <0.2A Output drive relay voltage Equal to input DC voltage Output power: Drive voltage ≤35V, drive current ≤200mA
2	HOWL	Choose this type,outputs can connect howl,In arm mode,if alarm,the howl will be screaming for one minute
3	SNAPSHOOT	

Commands format for howl outputs:

Item	commands	value	Remark
howl output	**%BUZEN<En>**	En: 0-1 0: disable 1: enable	

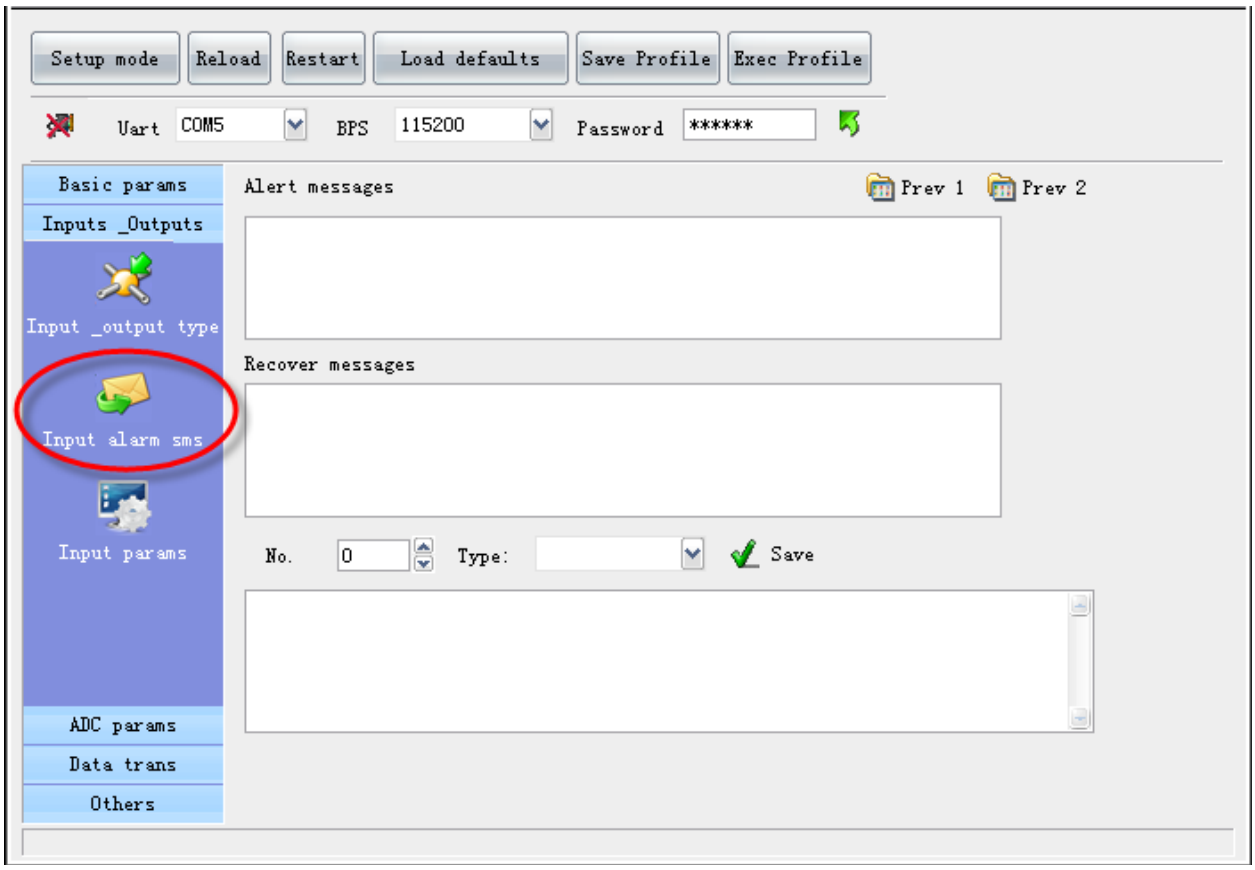
Commands format for control outputs:

Item	commands	value	Remark
Read outputs status	**%IOOS**		
Open output contact	Write **%IOOL<nnnnnnnn>** Read **%IOOL?**	nnnnnnnn: one-digit or multidigit numeral	For example,open all outputs contact command is IOOL01234567
Output 1s pulse	Write **%IOOP<nnnnnnnn>** Read **%IOOP?**	nnnnnnnn: one-digit or multidigit numeral	Drive output open -> close -> open ,drive time is 1.5s
Close output contact	Write **%IOOH<nnnnnnnn>** Read **%IOOH?**		Drive one or several of outputs close
Remember outputs status	Write **%IOOR<En>**	En: 0-1 0: disable 1: enable	

- Note: **Remember outputs status**

RTU5011's outputs default status is open,it is possiable closed during working. after restart,the outputs will be reset,status is open. If checked,outputs can recover the status that before restart.

3.7 Define message contents of digital input alarm and recover



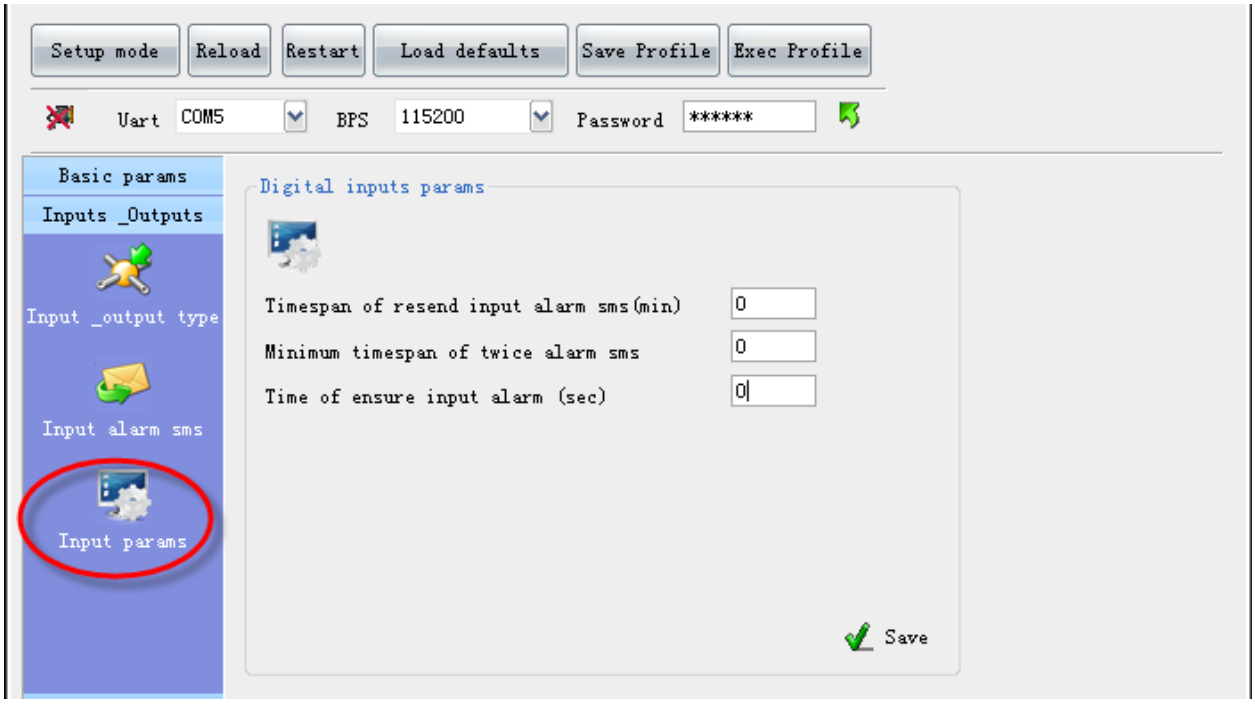
Commands format

Item	commands	value	Remark
Define message contents of on alarm	Write **%S<nn><str>** Read **%S<nn>?**	n:00-07 str:message contents	Define message contents for digital input 0-7
Define message contents of on recover	Write **%S<nn><str>** Read **%S<nn>?**	n:08-15 str:message contents	

NOTE :

A necessary condition for get recover sms is Digital input type is level_in

3.8 Digidal inputs alarm parameters



1. IOLS time :timespan of resend input alarm sms

After executed a alarm action(send alarm sms,interlock etc.) when digital inputs detect alarm signal,if the duration of the alarm signal overrun the IOLS time,RTU5011 will execute a alarm action(send alarm sms, interlock etc.) again. The purpose of setting IOLS time is alarm to user repeatedly at regular intervals during the digital input is triggered by a continues alarm signal. “0” is disable

2. IOAS time : minimum timespan of twice alarm sms

After executed a alarm action(send alarm sms,interlock etc.)when digital inputs detect alarm signal, in the IOAS time , RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) even digital inputs is triggered frequently. The purpose of setting IOAS time is user will not receive many alarm sms in the time during the digital input is triggered by frequent alarm signals. “0” is disable

3. DINDLY time : time of ensure input alarm

RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) in the DINDLY time even digital inputs is triggered, if the duration of the alarm signal overrun the DINDLY time,RTU5011 will execute a alarm action(send alarm sms, interlock etc.) “0” is disable

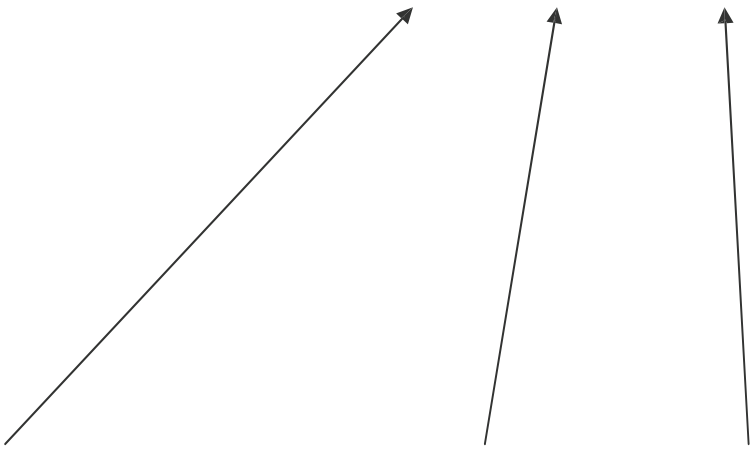
Item	commands	value	Remark
IOLS time	Write **%IOLS<n>** Read **%IOLS?**	n: 0-255 (min) 0: diable	
IOAS time	Write **%IOAS<n>** Read **%IOAS?**	n: 0-255 (min) 0: diable	
DINDLY time	Write **%DINDLY<n>** Read	n: 0-255 (sed) 0: diable	

	%DINDLY?		

3.9 Analog input alarm

RTU5011 provide 4 input channels that can accept 0-53 ma signals.

Analog input is a measurable electrical signal with a defined range that is generated by sensor. User can preset a high and a low level for every AD input,if the input electriacl signal is above the high level or below the low leve,RTU5011 should alarm.user can also send sms command to RTU5011 to remote get current level.



NOTE

“Current” value = input electric current value / (“scale” value / 62) – “base” value

Scale default value is 62, base default value is 0, so the scale and base are assigned to default value,the ”current” value is input electric current.

Example:

User connect a temperature transmitter which output electric current range is 4-20 ma for monitor temperature range is 0℃-50℃, user need get alarm and current temperature value when temperature is above 40℃ or below 10℃

User can preset the values for “high”,”low”,”scale”,”base” are:
High: 40 low: 10
In this case,the function of “scale” is transform electric current value to temperature value when the current value is showed to user.

Algorithm for “scale” and ”base”:
First, need to get the value that a 1am for temperature. (50-0)/(20-4)=3.125
“scale” value is 62/3.125, get 19.84 ”base” value is 4*3.125, get 12.5

“Urgent” option:

RTU5011 provide a “Urgent” option for each AD input, If checked, in any case, the RTU5011 will execute alarm action(send alarm sms, interlock etc) when the AD input is over normal range, even RTU5011 is in disarm mode.

1. AINAS time : minimum timespan of twice alarm sms
After executed a alarm action(send alarm sms,interlock etc.)when AD inputs over normal range, in the AINAS time RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) even AD inputs is over normal range frequently. The purpose of setting AINAS time is user will not receive many alarm sms in the time during the AD input is over normal range frequently. “0” is disable
2. AINLS time :timespan of resend input alarm sms
After executed a alarm action(send alarm sms,interlock etc.) when AD inputs over normal range, if the duration of the alarm signal overrun the AINLS time,RTU5011 will execute a alarm action(send alarm sms, interlock etc.) again. The purpose of setting AINLS time is alarm to user repeatedly at regular intervals during the AD input is in state of over normal range. “0” is disable
3. AINDLY time : time of ensure input alarm
RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) in the AINDLY time even AD inputs is over normal range, if the duration of the alarm signal overrun the AINDLY time,RTU5011 will execute a alarm action(send alarm sms, interlock etc.). “0” is disable

Commands fomat for AD input

Item	commands	value	Remark
Preset low value for AD input at one channel	Write **%AIN<n>L<val>** Read **%AIN<n>L?**	n: 0-3 val: 0-255	Alarm when input signal is below the value
Preset high value for AD input at one channel	Write **%AIN<n>H<val>** Read **%AIN<n>?**	n: 0-3 val: 0-255	Alarm when input signal is above the value
Scale value	Write **%AIN<n>SC<val>** Read **%AIN<n>SC?**	n: 0-3 val: 0-255	
Base value	Write **%AIN<n>ZE<val>** Read **%AIN<n>ZE?**	n: 0-3 val: 0-255	
Query preset rang for AD	**%AIN<n>R**	n: 0-3	

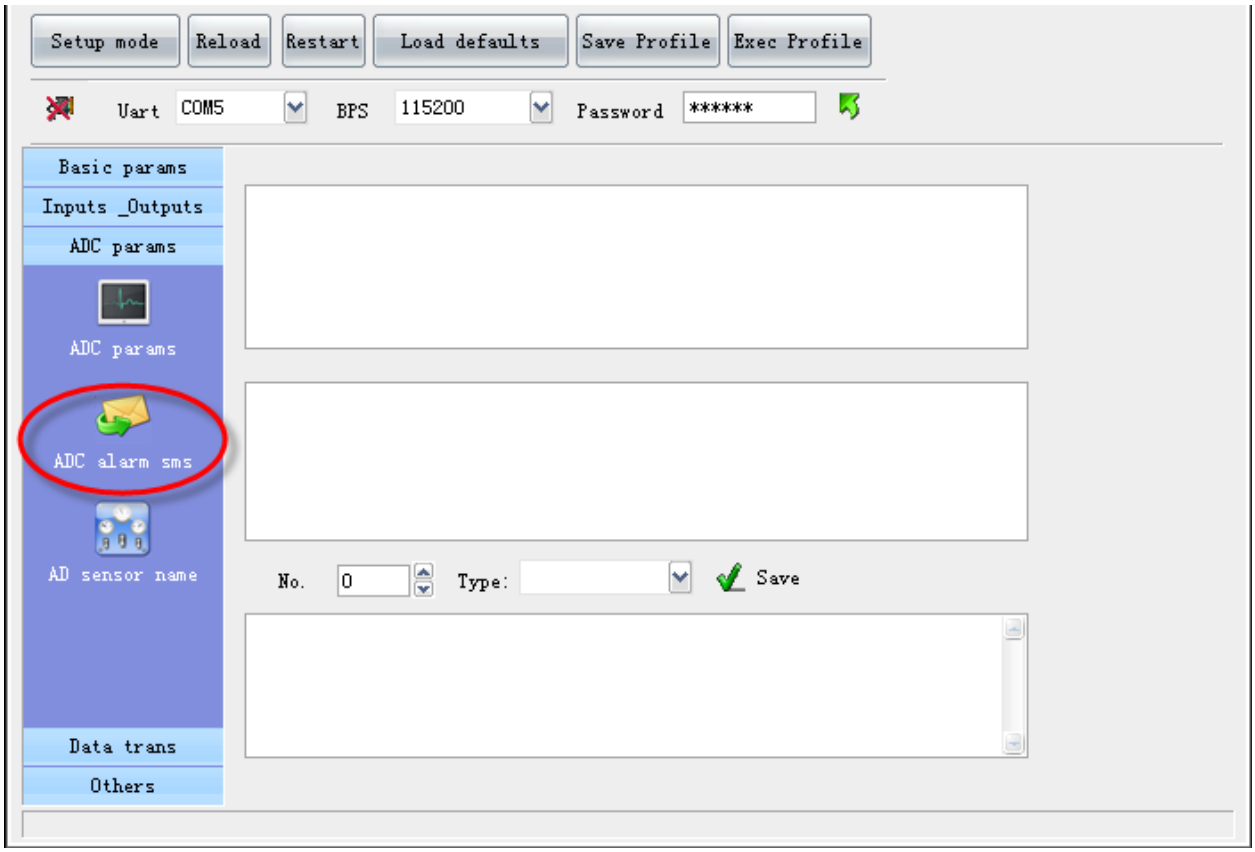
input at one channel		
Query current value for AD input at one channel	**%AIN<n>C**	n: 0-3
Query current value for for AD input	**%ADS**	
Enable AD input alarm	**%AINON<xxxx>**	xxxx: one-digit or multidigit numeral
Disable AD input alarm	**%AINOFF<xxxx>**	xxxx: one-digit or multidigit numeral
AINLS time	Write **%AINLS<n>** Read **%AINLS?**	n: 0-255 (min) 0: diable
AINAS time	Write **%AINAS<n>** Read **%AINAS?**	n: 0-255 (min) 0: diable
AINDLY time	Write **%AINDLY<n>** Read **% AINDLY?**	n: 0-255 (sed) 0: diable

- Note: The alarm and recover sms contents corresponding to different inputs can be defined by the user, see the following sections for the operation method.

Examples configured by commands:

```
%AIN0L20     //preset low value at Channel 0
OK
%AIN0H30     // preset high value at Channel 0
OK
%AIN0R       //query value range at Channel 0
20-30mA
OK
%AIN0C       //query current value at Channel 0
28mA
OK
```

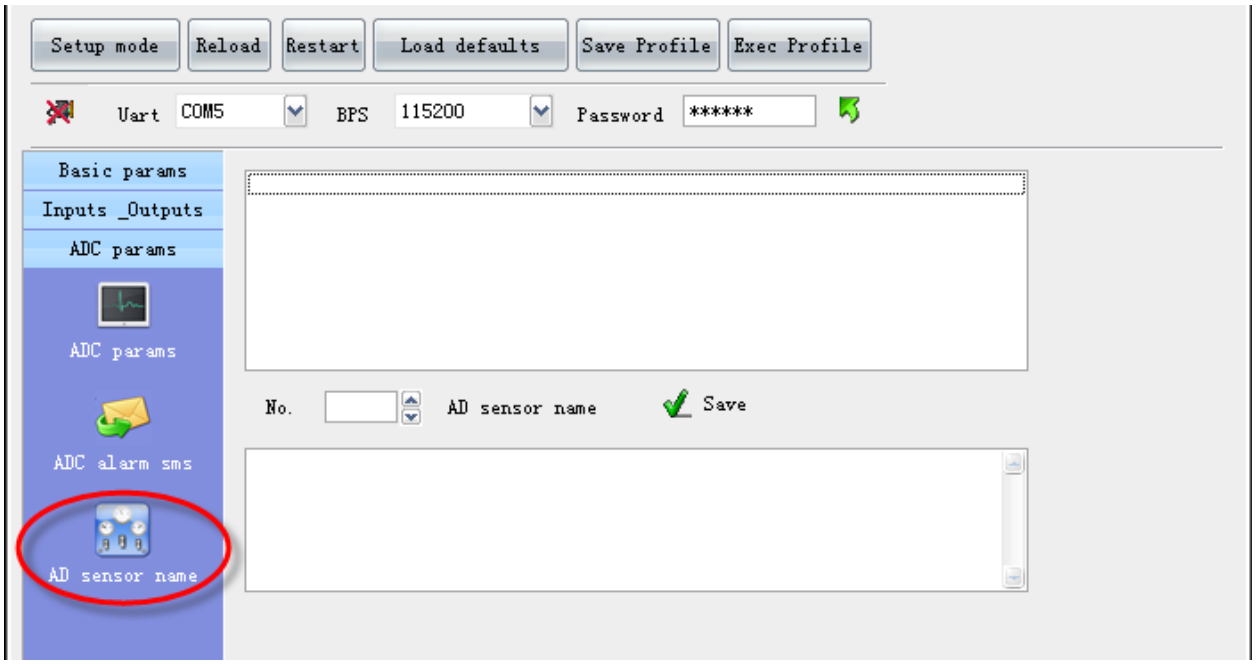
3.10 Define message contents of AD input alarm and recover



Commands fomat for Define message contents of AD input alarm and recover

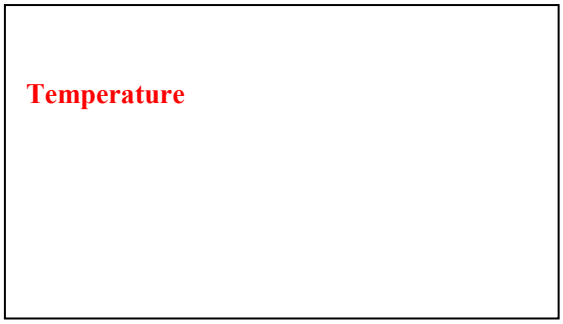
Item	commands	value	Remark
Define message contents of on alarm	Write **%S<nn><str>** Read **%S<nn>?**	n:16-19 str:message contents	Define message contents for AD input 0-3
Define message contents of on recover	Write **%S<nn><str>** Read **%S<nn>?**	n:20-23 str:message contents	

3.11 Setting AD sensor name



User can define a name for each AD channel,this name will add in the sms automatically that RTU5011 send the AD value to users

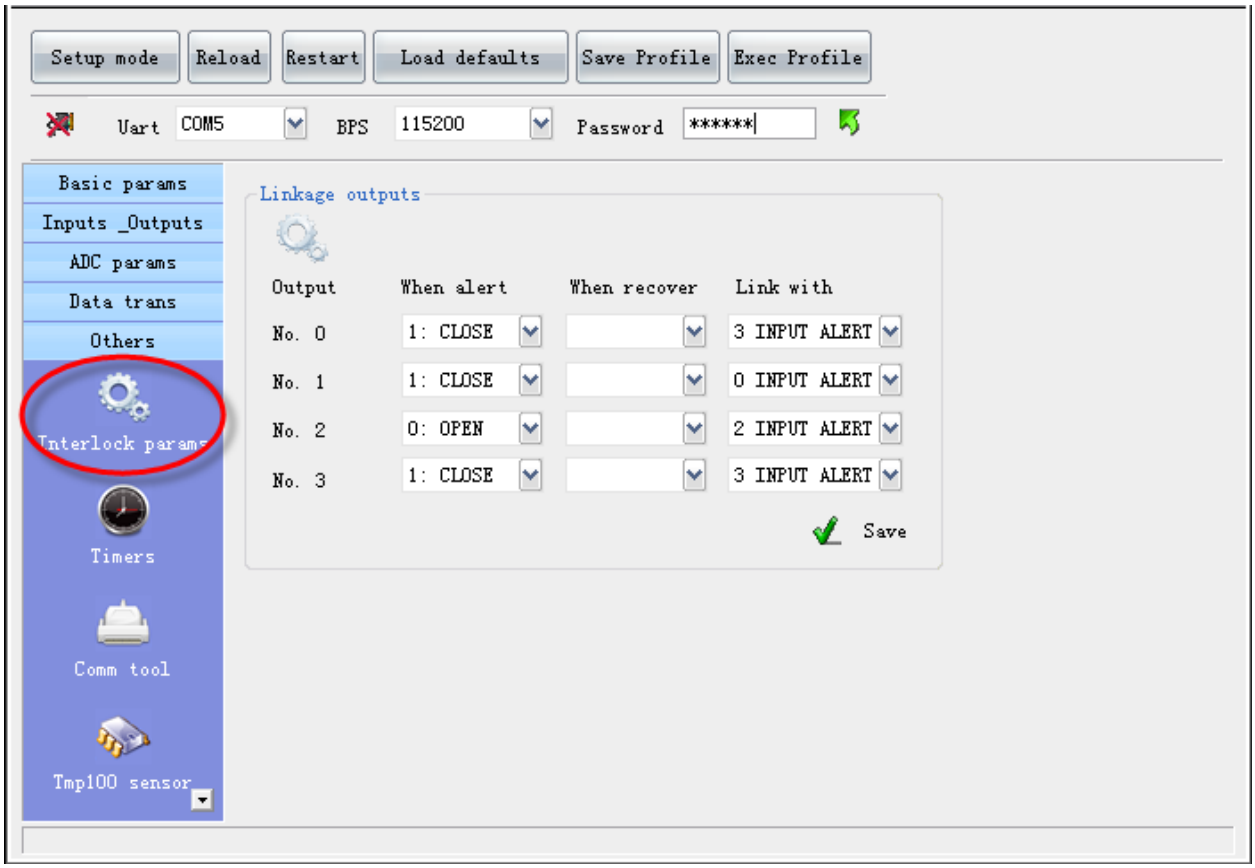
For example,set the AD input 0 channel name is “temperature”,the sms is



Commands fomat for Setting AD sensor name

Item	commands	value	Remark
Define AD sensor name	Write **%A<nn><str>** Read **%A<nn>?**	n:00-03 str:sensor name	

3.12 Interlock outputs



RTU5011's outputs can be interlocked under some internal triggering conditions, which are:

1. Digital inputs alarm
2. Power failure alarm
3. Internal temperature sensor alarm
4. AD inputs alarm
5. Dialing in by CS number

Output0-output3 support interlock, user can configure the relationship of one output with another input condition easily with the configuration software.

Commands fomat for output interlock:

Item	commands	value	Remark
Action of output	Write **%IOOC<nnnnxxxx>** Read **%IOOC?**	nnnn: output 0-3 channel action on alarm by "alarm source" xxxx: output 0-3 channel action on recover by "alarm source"	output 0-3 channel automatically close or open when alarm or recover
Alarm source for output interlock	Write **%IOOA<n><index>** Read **%IOOA?**	n:0-3 Index: the index of "Alarm source"	

Alarm soure include digital input alarm,AD input alarm,power cut off alarm etc.

Alarm source	Index

0 digital input alert	0
1 digital input alert	1
2 digital input alert	2
3 digital input alert	3
4 digital input alert	4
5 digital input alert	5
6 digital input alert	6
7 digital input alert	7
0 AD input alert	8
1 AD input alert	9
2 AD input alert	10
3 AD input alert	11
Interior temperature alert	12
Power cut off alarm	13
Call in by “CS number”	14

3.13 Timers

RTU5011 can automatically execute actions at the time that set by user.
RTU5011’s timers include 6 system timers, 4 system timespan and 2 day timers

- NOTE: before use the timers , user have to update RTU5011’s clock, the method of update clock please see “*Basic parameter configuration”*above

Commands for timers:

Item	commands	value	Remark
Set time and action for System timers	Write **%mtimer<n>,<HH>,<MM>,<action>** Read **%mtimer<n>** ? Read all **%mtimer** ?	n:0-5 HH:0-24 (hour) MM:0-60 (minute) action:0-18	
Set time and action for System timerspan	Write **%mspan<n>,,<action>** Read **%mspan<n>** ? Read all **%mspan** ?	n:0-3 span:0-65535(minute) action:0-18	
Set time and action for day timers	Write **%mday<n>,<day>,<HH>,<MM>,<action>**	n:0-5 day:0-6 (day) HH:0-24 (hour)	

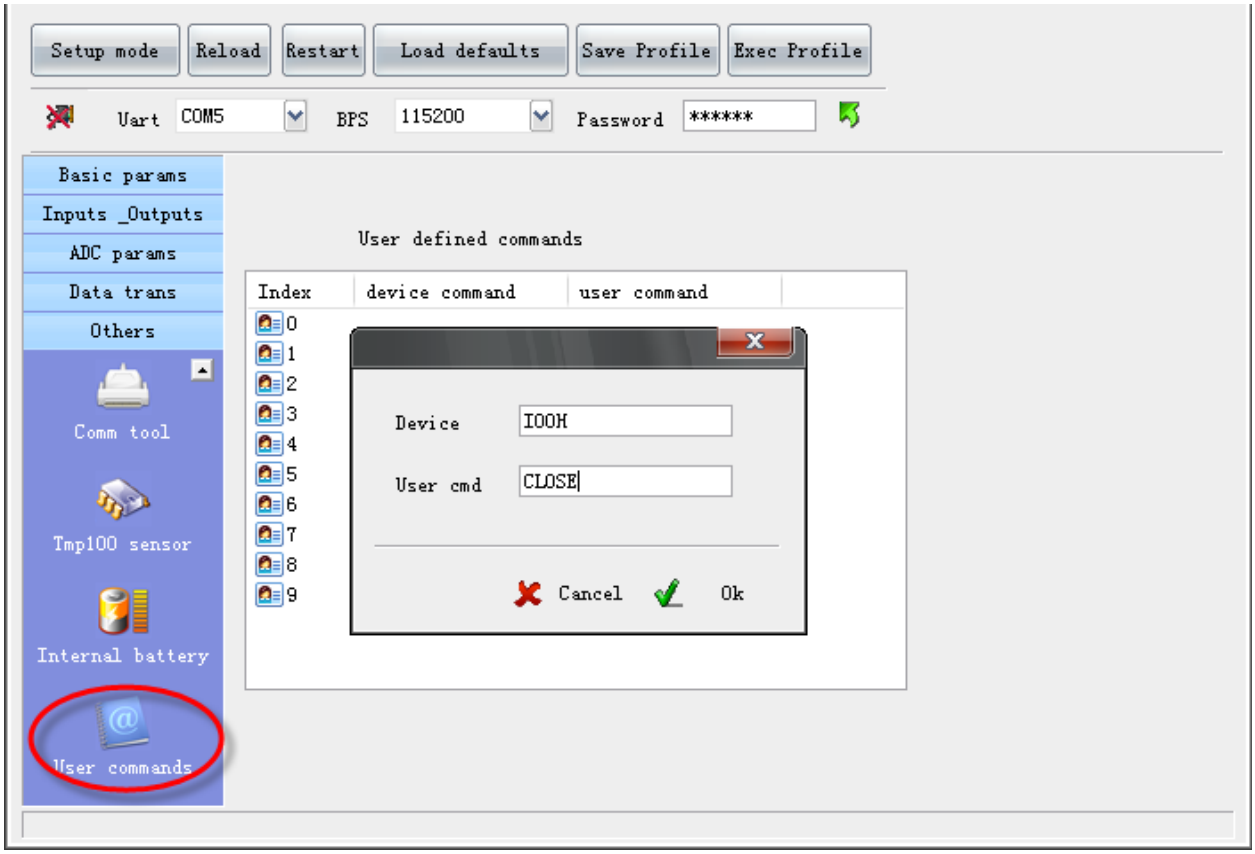
	Read **%mday<n>** ? Read all **%mday** ?	MM:0-60 (minute) action:0-18	

The index of actiom:

Action	Index	Action	Index
none	0	Output 2 open	9
Arm	1	Output 3 open	10
Disarm	2	Output 0 close 1second	11
Output 0 close	3	Output 1 close 1second	12
Output 1 close	4	Output 2 close 1second	13
Output 2 close	5	Output 3 close 1second	14
Output 3 close	6	Snapshot	15
Output 0 open	7	Send daily report	16
Output 1 open	8	Export status by RS232	17
		Trans status by sms	18

3.14 Define users commands

Users can define 10 commands instead of system commands.
For example,user set “close” instead of system command “IOOH”, so user can send “close” to close output

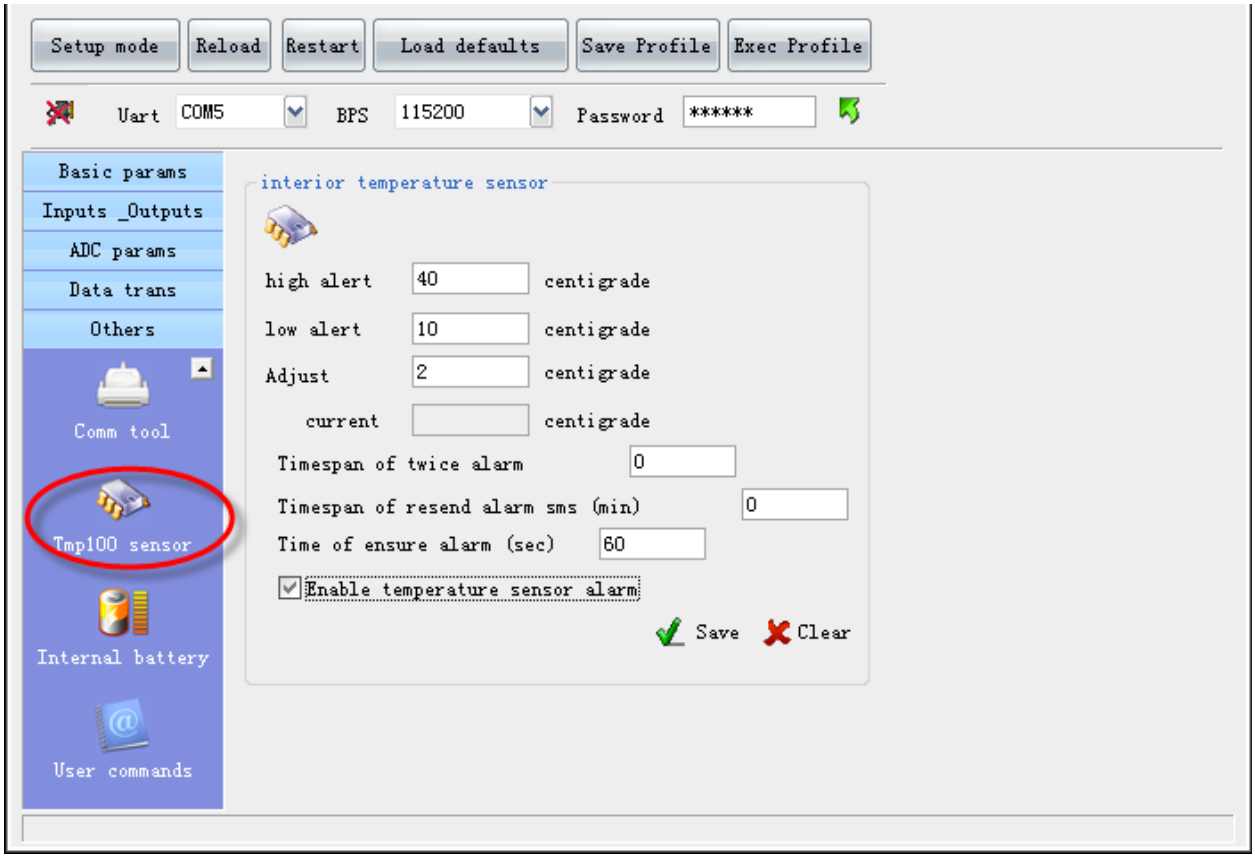


Commands for define commands

Item	commands	value	Remark
System command	Write **%Y<nn><str>** Read **% Y<nn>?**	n:00-09 str:system command	
User command	Write **% U<nn><str>** Read **% U<nn>?**	n:00-09 str:define command	

3.15 Internal temperature sensor (optional function)

The internal temperature senor can be selected for RTU5011. If your product does not support this function, see the next section directly.



User can preset a high and a low temperature value for temperature sensor, if temperature is over normal range, RTU5011 should alarm.user can also send sms command to RTU5011 to remote get current temperature value.

User can set “Adjust” value to calibrating temperature value

1. TMPAS time :timespan of twice alarm

After executed a alarm action(send alarm sms,interlock etc.)when temperature over normal range, RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) in the TMPAS time even temperature over normal range frequently. The purpose of setting TMPAS time is user will not receive many alarm sms in the time during temperature over normal range frequently. “0” is disable

2. TMPRS time : timespan of resend alarm sms

After executed a alarm action(send alarm sms,interlock etc.) when temperature over normal range,if the duration of the alarm signal overrun theTMPRS time,RTU5011 will execut a alarm action(send alarm sms, interlock etc.) again. The purpose of setting TMPRS time is alarm to user repeatedly at regular intervals during temperature is in state of over normal range. “0” is disable

3. TMPDLY time : time of ensure alarm

RTU5011 will not execute any alarm action(send alarm sms,interlock etc.) in the TMPDLY time even digital inputs is triggered, if the duration of the alarm signal overrun the TMPDLY time,RTU5011 will execut a alarm action(send alarm sms, interlock etc.) “0” is disable

Commands format for internal temperature sensor:

Item	commands	Remark
Preset lower limit for temperature range	**%TMPL**	Min. lower limit temperature: -127℃
Preset upper limit for temperature range	**%TMPH**	Max. upper limit temperature: +127℃
Query temperature range	**%TMPR**	

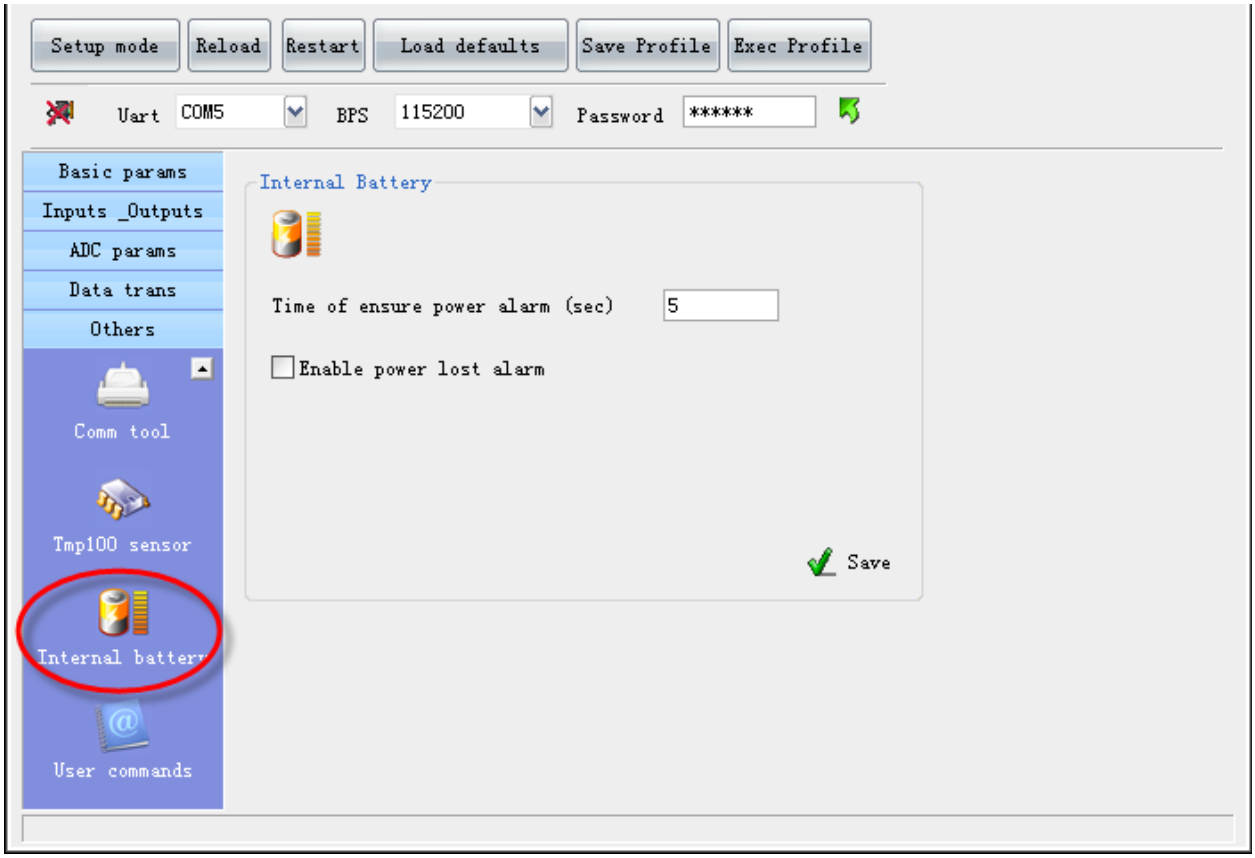
Query current temperature	**%TMPC**	
Disable	**%TMPOFF**	
Enable	**%TMPON**	
Set TMPRS time	**Write** **%TMPRS<n>** **Read** **%TMPRS?**	n: 0-255 minute 0: disable
Set TMPAS time	**Write** **%TMPAS<n>** **Read** **%TMPAS?**	n: 0-255 minute 0: disable
Set TMPDLY time	**Write** **%TMPDLY<n>** **Read** **%TMPDLY?**	n: 0-255 second 0: disable

- Note: The TMP100 temperature sensor from TI Company.It is installed on PCB.
- Note: The sms contents of temperature alarm and recover are not defined by user

3.16 Power cut off alarm (optional function)

The internal battery can be selected for RTU5011. If your product does not support this function, see the next section directly.

Power supply by internal battery when RTU5011 power cut off, and alarm to user



POWDLY time: time of ensure power alarm

Power supply by internal battery when RTU5011 power cut off, in POWDLY time, RTU5011 will not execute any alarm action(send alarm sms,interlock etc.), if the duration of power cut off overrun the POWPDLY time,RTU5011 will execut alarm actions(send alarm sms, interlock etc.) "0" is disable

Commands format for battery:

Item	commands	Remark
Query power supply	**%POW**	
Set POWDLY	**Write** **%POWDLY<n>**	n: 0-255S 0: disable
	Read **%POWDLY?**	

Battery parameter:

- Lithium battery
- Voltage: 3.7V
- Capacity: 900mAh
- Limited voltage for charging 4.2V
- Implementation standard GB/T 18287-2000

Note: The sms contents of power cut off alarm and recover are not defined by user

3.17 Buzzer alarm

A buzzer is installed in the RTU5011. The buzzer will be activated when alarm, which can be stopped by the buzzer reset button on RTU5011 panel, or through sending the command with CS number

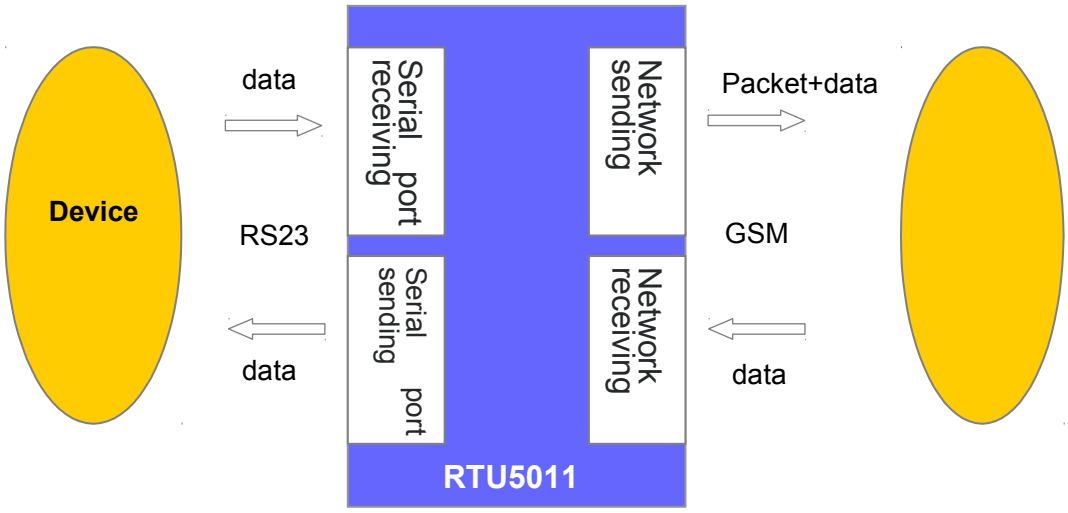
remotely.

Commands for buzzer:

Item	commands	value	Remark
Stop buzzer	**%BUZCLR**		
Start buzzer	**%BUZSET**		
Enable or disable buzzer	**%BUZEN<En>**	En: 0 or 1 0: disable 1: enable	

IV Data transmission

RTU5011 can also provide RS23 data transmission function. See *Data Transmission Function manual*.



Commands for data transmission:

Item	commands	value	Remark
SR number	Write **%SR<n><phone>** Read **%SR<n>** ? Read all **%SR** ?	n:0-9 phone:number	
Data transmission mode	Write **%TM<n>** Read **%TM** ?	n:0-5	
The time of Packet idle span	Write **%OT<n>** Read **%OT** ?	n:120-5000(ms)	

1. Transmission mode:
RTU5011 can provide 5 transmission modes, see Data Transmission Function manual. for the detailed difference among them.
2. The time of Packet idle span
It determines the data package sending time when no new serial port data is received by RTU5011 within a certain time

V Other commands

The following are other applicable commands:

Item	commands	value	Remark
Load default	**%ATF**		
Restart	**%RST**		
Send AT command	**%AT<n>**	n:AT command	

⋆Typical GSM SMS RTU Alarm system applications:

Security Alarm System applications;

Supervision and monitoring alarm systems

Automatic monitoring system;

Vending Machines;

Pumping Stations;

Buildings and Real Estate;

Weather Stations;

River Monitoring and Flood Control;

Transport and Vehicle monitoring;

Oil and gas pipelines;

Corrosion protection

Valve controls;

Wellheads;

Energy saving,street lights control system;

Tanks, levels, temperatures,water leakage applications;

Transformer stations;

Unmanned machine rooms;

Automatic vehicle locations (AVL);

Control room application.etc.

Annex A:

Notes for use of GSM products

Read these brief rules. It will be dangerous or illegal if these rules are broken.

More detailed information about the relevant safety precautions is provided in this User's Manual.

Safety startup

The temporary Power Off function of the startup module shall be considered if the mobile phone is not allowed or the use of it will cause interference or dangerousness.

Interference

All GSM signals of radio modules may be interfered and therefore the performance of positioning module will be interfered.

Power off while refueling

Use of positioning module in petrol filling station is not allowed. The temporary Power Off function of the product shall be considered if it is near fuels or chemicals and the module shall be under Power Off state.

Power Off at blasting site

All relevant rules shall be abided by. No use of positioning module is allowed at blasting site, and it shall be under temporary Power Off state.

Correct usage

Please install this product correctly according to the text. No cover of module is allowed if it is not necessary due to signal blind.

Supporting qualified maintenance service

Only qualified maintainers are allowed for the installation or maintenance of this positioning module.

Waterproofness

Your positioning module is not provided with waterproof performance. Please put it at a dry position and keep it dry.

The end!

Thanks for you use our GSM Alarm System

Warranty Card

Model _____ **Product ID** _____

Date of Purchase_____

Date of Production_____

Maintenance Record

_____

_____

_____

Dealer _____