AD2066 IP Modem User Manual
Support 2G/3G/4G Data Transfer Unit



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Applicable Models:

Product Type	Model	Product Name
Standard	AD2066-G	GPRS IP MODEM
	AD2066-C	CDMA IP MODEM
	AD2066-W	WCDMA IP MODEM
	AD2066-E	EVDO IP MODEM
	AD2066-F	FDD-LTE IP MODEM
	AD2066-D	TDD/FDD-LTE IP MODEM
	AD2066-GP	GPS+GPRS IP MODEM
	AD2066-CP	GPS+CDMA IP MODEM
	AD2066-WP	GPS+WCDMA IP MODEM
	AD2066-EP	GPS+EVDO IP MODEM
	AD2066-FP	GPS+FDD-LTE IP MODEM

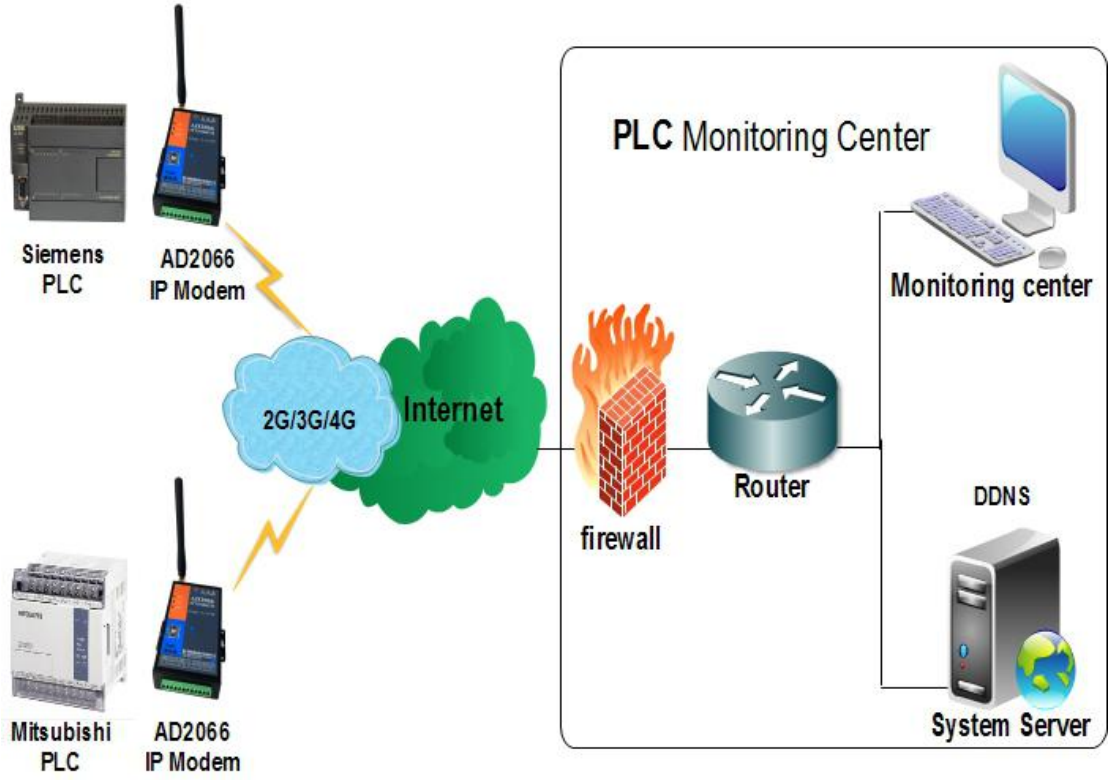
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Chapter 1 Brief Introduction of Product

1.1 General

AD2066 IP MODEM is a kind of cellular terminal device that developed based on 2G/3G/4G technology. It adopts high-powered industrial 32 bits CPU and embedded real time operating system. It supports RS232 and RS485 (or RS422) port that can conveniently and transparently connect one device to a cellular network, allowing you to connect to your existing serial devices with only basic configuration. It has compatible digital I/O channel, ADC and pulse wave output function.
It has been widely used on M2M fields, such as intelligent transportation, smart grid, industrial automation, telemetry, finance, POS, water supply, environment protection, post, weather, and so on.



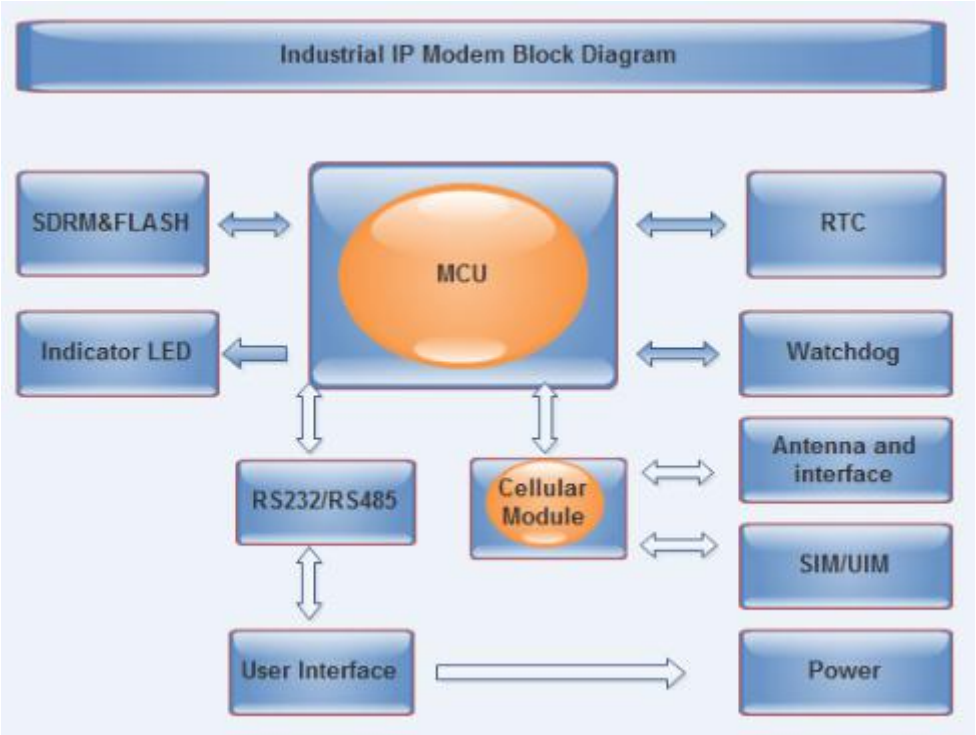
IP MODEM Application Topology

1.2 Product Feature

Items	Contents
Industrial	High-powered industrial cellular module

Design	High-powered industrial 32bits CPU
	Low power consumption design, support multi-sleep and trigger modes
	Housing: iron, providing IP30 protection
	Power range: DC 5~35V
High Reliability	Support hardware and software WDT
	Support auto recovery mechanism, including online detect, auto redial when offline to make it always online
	RS232/RS485/RS422 ports:15KV ESD protection
	SIM/UIM port: 15KV ESD protection
	Power port: reverse-voltage and overvoltage protection
	Antenna port: lightning protection(optional)
Standard and Convenience	Adopt terminal block interface, convenient for industrial application
	Support standard RS232/RS485 ports that can connect to serial devices directly
	Two RS232 interfaces can be customized
	TTL logic level UART interface can be customized
	Support intellectual mode, enter into communication state automatically when powered
	Support several work modes
	Convenient configuration and maintenance interface
High-performance and Security	Support TCP server
	Support double data centers, one main and another backup
	Support multi data centers and it can support 5 data centers at the same time
	Support multi online trigger ways, including SMS, ring and data. Support link disconnection when timeout
	Supply 5 I/O channels, compatible 5 ADC inputs, 3 OC inputs、2 OC outputs(drive capability 20mA)
	Support dynamic domain name(DDNS) and IP access to data center
	Design with standard TCP/IP protocol stack
	Support APN/VPDN

1.3 Block Diagram



1.4 Product Spec

Items		Contents
Hardware System	CPU	Industrial 32 bits CPU
	FLASH	1MB (Extendable to 8MB)
	SDRAM	256KB(Extendable to 1MB)
Interface	Serial	1 RS232 port and 1 RS485(or RS422) port, 15KV ESD protection Data bits: 5, 6 ,7, 8 Stop bits: 1, 1.5(optional), 2 Parity: none, even, odd, space, mark Baud rate: 110~230400 bps
	Antenna	Cellular: Standard SMA female interface, 50 ohm GPS(optional):Standard SMA female interface, 50 ohm
	SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
	Power	Terminal block interface, reverse-voltage and overvoltage protection
	Indicator	“PWR”、”RUN”、”Online”、”GPS”(optional)

Network	Wireless Network	GSM/GPRS/EDGE: 850/900/1800/1900MHz CDMA: 800/1900MHz WCDMA/HSUPA/HSPA+: 850/900/1900/2100MHz CDMA2000 1x/ EVDO Rev. A: 800/1900MHz TD-SCDMA: 1880-1920/2010-2025MHz(A/F) TDD-LTE: Band 38/39/40/41& Band 61/62 FDD-LTE: Band 1/2/3/4/5/7/8/13/17/20/25/28
	PPP Protocol	Support PPP Protocol
	PPP Heartbeat	Maintaining links with the cellular network to prevent forced sleep, to ensure the stability of dial-up link.
	Network Authentication	Support CHAP/PAP Authentication
	TCP Heartbeat	Monitor the server connection
GPS (optional)	Receiver Type	50-channle GPS L1（1575.42MHz）C/A code SBAS: WAAS,EGNOS,MSAS,GAGAN
	Max. update rate	5 Hz
	Accuracy	Position: 2.5m CPE SBAS: 2.0m CPE
	Acquisition	Cold starts: 32S Warm starts: 32S Aided starts: <1S Hot starts: <3S
	Sensitivity	Tracking: -160dBm Reacquisition: -160dBm Cold starts: -146dBm
	Timing accuracy	RMS: 30ns 99%: <60ns Granularity: 21ns
	Time pulse	Configurable, 0.25 to 1000Hz
Power supply	Standard Power	DC 12V/1.5A
	Power range	DC 5~35V
	Communication Current	<100mA (@12VDC)
	Standby Current	<20mA（@12VDC）
	Sleep current	<10mA（@12VDC）

Physical	Dimensions	91x59x23mm
	Weight	175g
Environmental Limits	Operating Temperature	-35~+75ºC(-31~+167℉)
	Storage Temperature	-40~+85ºC (-40~+185℉)
	Operating Humidity	95% (unfreezing)

1.5 Ordering Information

Model	**Choice**	
	Network	**Optional**
AD2066	-G: GPRS -C: CDMA -W: WCDMA -E: EVDO -F: FDD-LTE -D: TDD/FDD-LTE	P: GPS B: BeiDou
Example	AD2066-GP: AD2066 CPRS IP MODEM	

Chapter 2 Installation Introduction

2.1 General

The IP MODEM should be installed correctly to make it work properly.
Warning: Forbid to install the IP MODEM when powered!

2.2 Encasement List

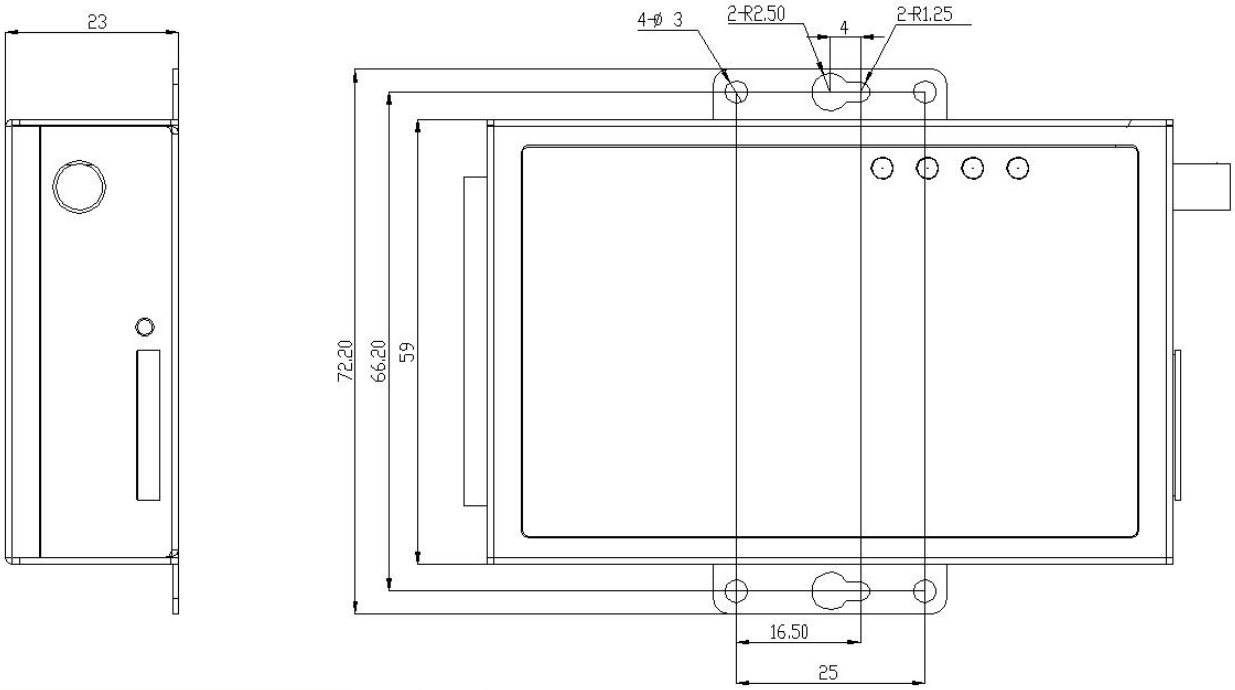
Please take care of you when opening the packing material for future use.

Name	Quantity	Remark

IP MODEM host	1	
Cellular Antenna	1	
Power adapter	1	
RS232 data cable	1	
RS485 data cable	1	Optional
Manual CD	1	
Certification card	1	
Maintenance card	1	
GPS Antenna	1	Optional

2.3 Installation and Cable Connection

Dimension (The fixing piece is detachable): (Unit:mm)



Installation of antenna:



Cellular antenna (Standard)



GPS antenna (Optional)

Screw the SMA male pin of the cellular antenna to the female SMA interface of the modem with sign “ANT”.
Screw the SMA male pin of the GPS antenna to the female SMA interface of the modem with sign “GPS”.
Warning: The cellular antenna and the GPS antenna can not be connected wrongly. And the antennas must be screwed tightly, or the signal quality of antenna will be influenced!

Installation of SIM/UIM card:



Installation of SIM/UIM card

Firstly power off the modem, and press the out button of the SIM/UIM card out with a needle object. Then the SIM/UIM card sheath will flick out at once. Put SIM/UIM card into the card sheath (Pay attention to put the side which has metal point outside), and insert card sheath back to the SIM/UIM card outlet.
Warning: Forbid to install SIM/UIM card when powered!

User Interface Signal Definition

Pin	Signal Name	Default Function	Extensible Function

Number			
1	PWR	Power input anode	N/A
2	PG	Power Ground	N/A
3	RX	RS232 RX	N/A
4	TX	RS232 TX	N/A
5	GND	Power Ground	N/A
6	A	RS485 anode	RS232 DSR/RS422 R+
7	B	RS485 cathode	RS232 RTS/RS422 R-
8	IO1	Digital input/output 0-3.3V	RS232 DTR/RS422 T-/Analog input （0-20mA/ 0-5VDC）/OC input/TTL
9	IO2	Digital input/output 0-3.3V	RS232 DTR/RS422 T-/Analog input （0-20mA/ 0-5VDC）/OC input/TTL
10	IO3	Digital input/output 0-3.3V	RS232 DTR/RS422 T-/Analog input （0-20mA/ 0-5VDC）/OC input
11	IO4	Analog Current input 0-20mA	Digital input/output 0-3.3V /Analog Voltage input （0-5VDC）/OC output(Max drive current 20mA）
12	IO5	Analog Current input 0-20mA	Digital input/output 0-3.3V /Analog Voltage input （0-5VDC）/OC output(Max drive current 20mA）

Installation of cable:



RS232 cable（standard）



RS485 cable（optional）

Ip Modem adopts industrial terminal block interface. Recommend cable is 28-16AWG. The detail description of standard layout adapter and communication cables as is following.

Adapter（Rating Output 12VDC/0.5A）:

Cable Color	Power Output Polarity
Black &White Alternate	Anode
Black	Cathode

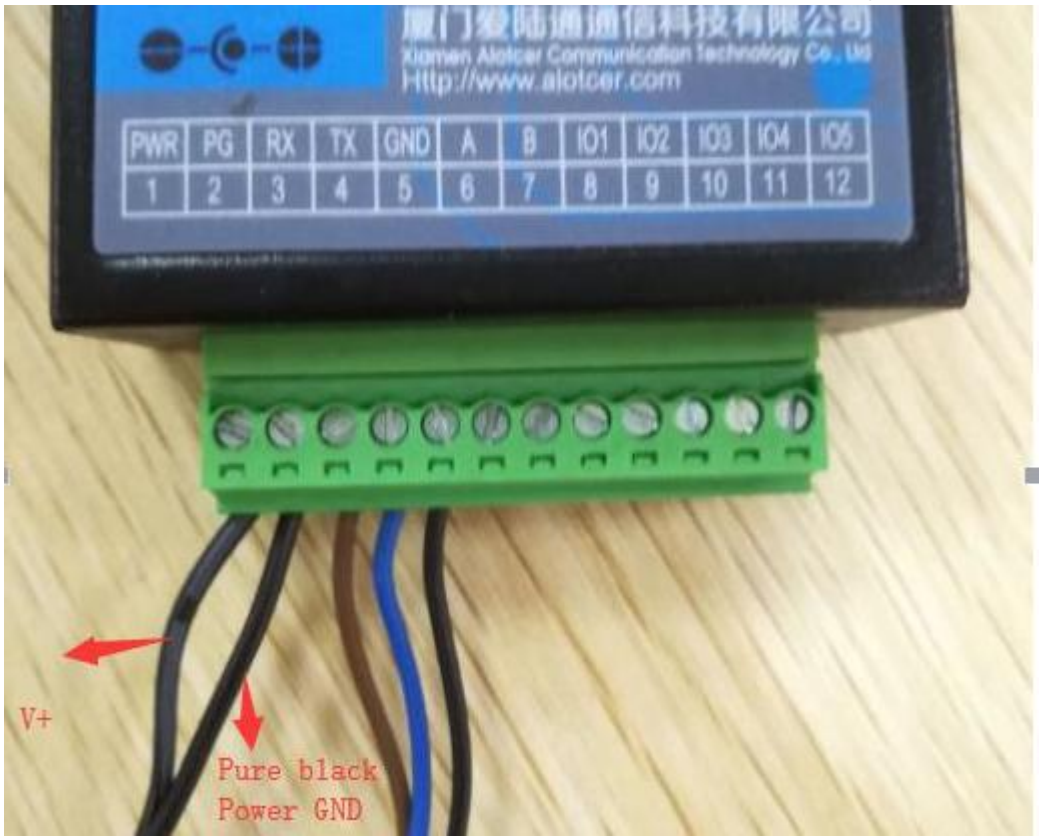
RS232 Cable:

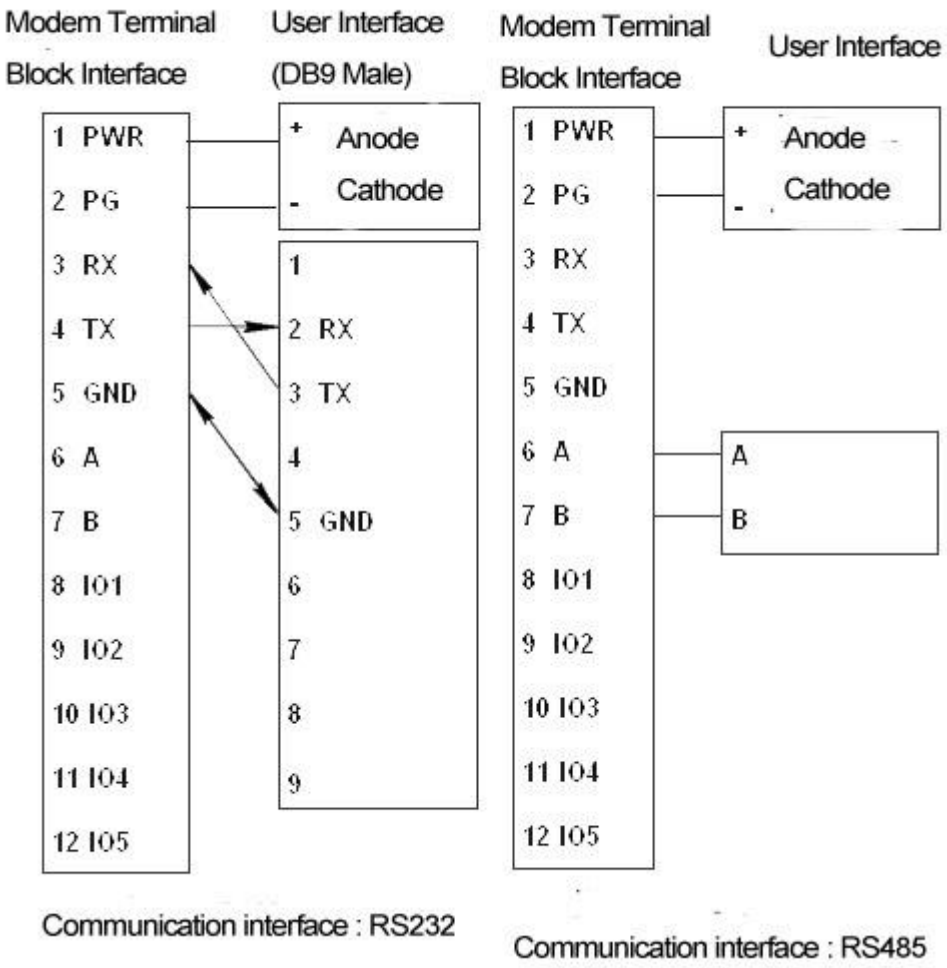
Cable Color	Corresponding DB9-M Pin Number
Blue	Pin 2
Brown	Pin 3
Black	Pin 5

RS485 Cable:

Cable Color	Signal definition
Red	RS485(A)
Black	RS485(B)

Power adapter and communication cable connection chart as following:





2.4 Power



Power adapter (Standard)

The power range of the IP MODEM is DC 5~35V

Warning: When we use other power, please ensure the stability of the power supply (ripple less than 300mV, and the instantaneous voltage does not exceed 35V), and the power supply is above 4W.

We recommend user to use the standard DC 12V/0.5A power adaptor.

2.5 Indicator Lights Introduction

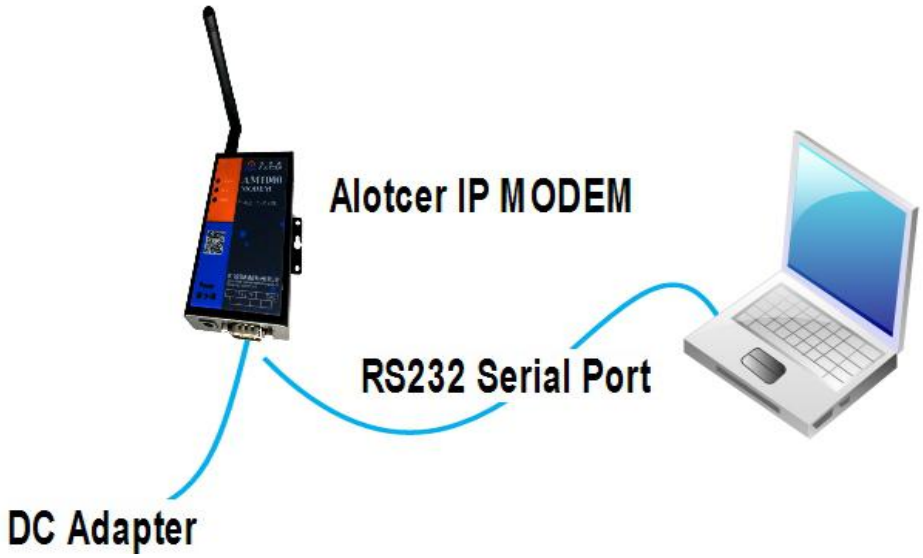
There are three indicator lights: “Power”, “RUN”, “Online”,”GPS”(Optional).

Indicator Light	State	Introduction
Power	ON	IP MODEM is powered on
	OFF	IP MODEM is powered off
RUN	BLINK	Data is communicating
	OFF	No data
Online	ON	IP MODEM has logged on network
	OFF	IP MODEM hasn’t logged on network
GPS	ON	Effective GPS
	OFF	No Effective GPS

Chapter 3 Configuration

3.1 Configuration Connection

Before configuration, please connect the IP MODEM with the configure PC by the supplied RS232 or RS232-485 conversion cable as following.



3.2 Configuration Introduction

There are two ways to configure the IP MODEM:

Configuration software tool: All the settings are configured by the configure tool running on PC.

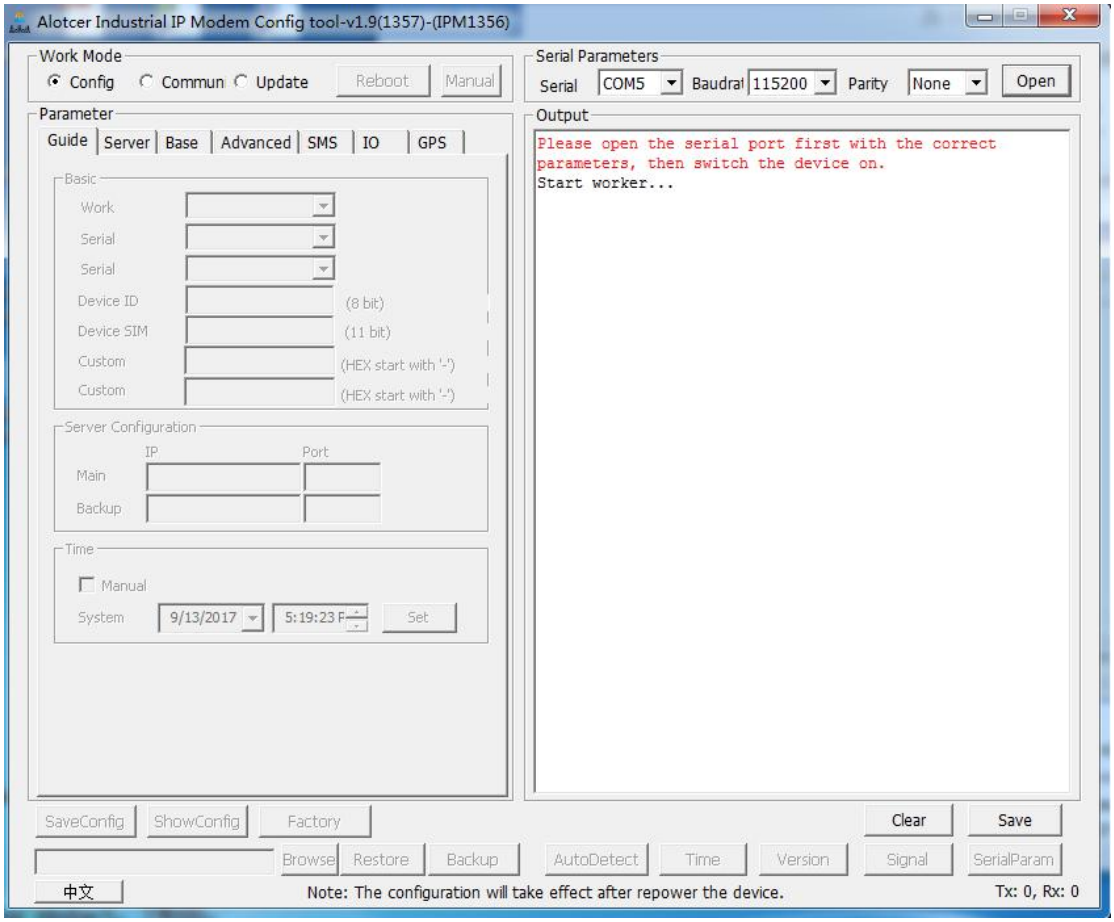
Extended AT command: In this configuration, the user only need to have a serial communication program can configure all the parameters of the digital terminal, such as WINDOWS HyperTerminal, LINUX minicom, putty, etc., or directly by the user's micro controller system on the device.
Note: Before configuration with extended AT command, you should make IP MODEM enter configure state.
The steps how to make IP MODEM enter configure state, please refer to appendix. Each extended AT command should end with a carriage return.

3.3 Run the configure Tool: AR_IPModemConfigTool.exe

After the device is connected with the computer, run the configuration tool and select the corresponding COM port, select 115200 baud rate with no parity (internal system fixed,

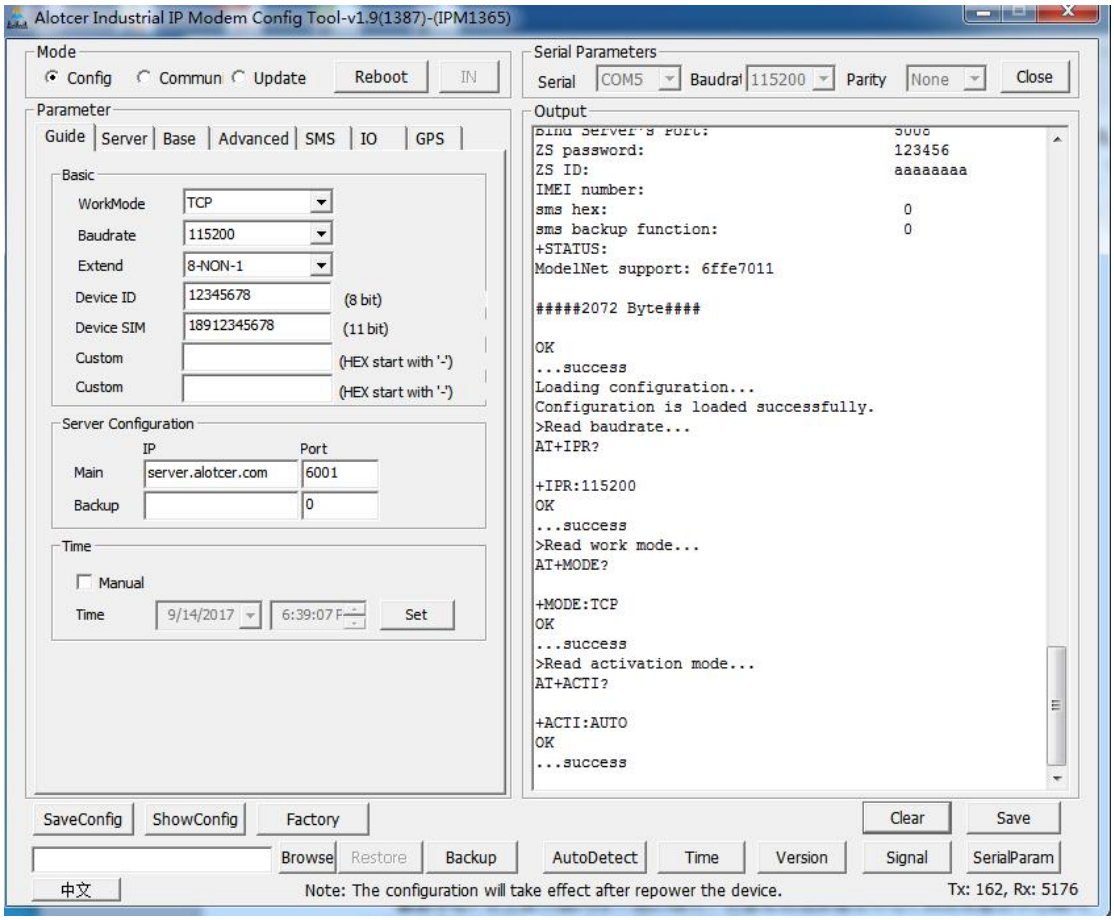
other settings are invalid), and then open the serial port, output information column will give Prompt message:

Please open the serial port first with the correct parameters, then switch the device on.
Start worker...

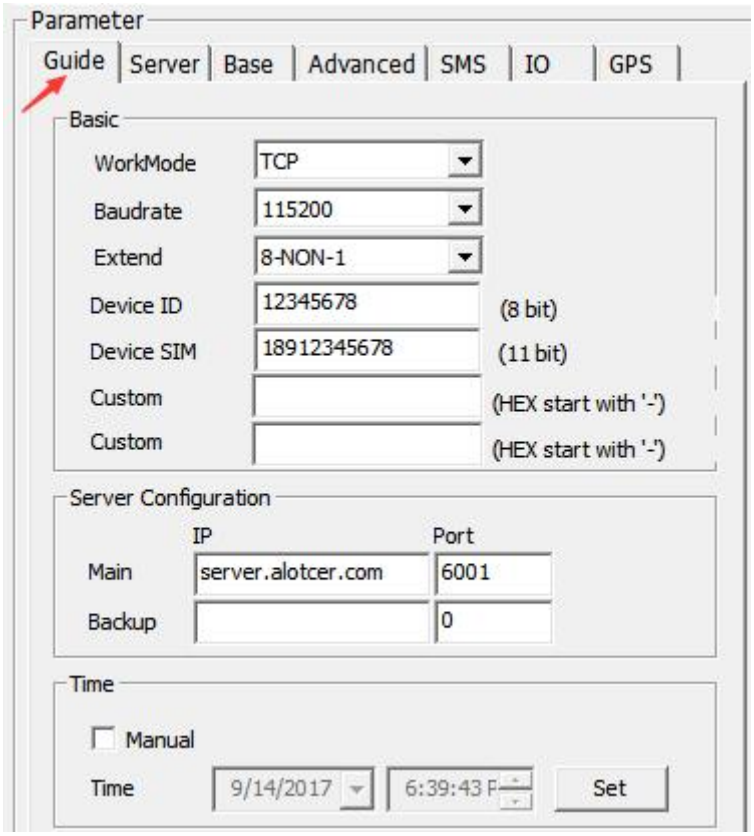


3.4 Re-power IP MODEM

After Re-power IP MODEM, configure tool will enter configure state. At the same time, the software will load current settings. It's ready to configure.



3.5 Guide



Work mode: Select the mode of the device and default is TCP;
Baudrate: Configure the same Baudrate with terminal equipment;
Extend: Configure the same Extend parameter with terminal equipment;
Device ID: Each device with a unique ID that is distinguished and identified;
Device SIM: Number of SIM card inserted into the device. This item can be default and does not affect actual use;
Main center: The server address and port to send the data. If there are no fixed IP addresses, dynamic DNS can be used;
Backup center: When the main server network is blocked, the device will connect to the backup center. Recommend to leave the backup IP and Port for blank.
Time: Update device RTC time;
Test preparation: Firstly to check the data center of the IP address and port,do NAT the port 6001 to intranet IP address on the company router to the test computer, then the DEMO software listen to port 6001, finally run a serial software for data transceiver.
Guide: Default Work Mode is TCP mode, the testing phase connect standard TCP center software, so keep the default configuration. The Serial baudrate and extended parameters configure the same Extend parameter with terminal equipment, the default 115200,8N1. device ID as the device identified if there are multiple simultaneous use settings, SIM card

keep default. Then configure main address and port. Both main center and backup center support dynamic DNS for non fixed IP. Repower the device then wireless data can be sent and received.

3.6 Configuration

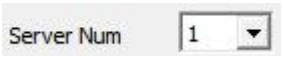
3.6.1 Server Settings

Data Center Number

IP MODEM support two Data Service Center methods to transmit data.

Main and Backup: IP MODEM always tries to connect with the Main. If fails to connect, it will connect with Backup at once

Multi Data Service Center: IP MODEM can connect with at most five at the same time. All the multi DSC can receive the same application data .



If the Server Number is 0,there is no working.

If the Server Number is 1, IP MODEM work in Main and Backup method.

When “Server Number” is greater than 1, IP MODEM works in Multi Data Service Center method.

AT command:

AT+SVRCNT=xxx x is1~5

Note: every AT command is terminated with a enter character.

Main IP+Port:

IP Address and Port of the Main, It’s better to set the port greater than 1024.

Recommend to leave the Backup IP and Port for blank.



AT command of the Main DSC IP address or domain name:

AT+IPAD=xxx

xxx: The IP address or domain name.

AT command of the Main DSC port:

AT+PORT=xxx
xxx: The port value

AT command for Main IP:

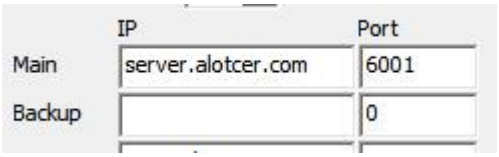
AT+IPAD=xxx xxx is the IP or domain.

AT command for Main Port:

AT+PORT=xxx xxx is the Port

Backup IP+Port:

IP address and port of the Backup



AT command of the Backup DSC IP address or domain

AT+IPSEC=xxx

xxx: The IP address or domain name

AT command of the Backup DSC port

AT+PTSEC=xxx

xxx: The port value

AT command for Backup IP:

AT+IPSEC=xxx xxx is the IP or domain.

AT command for Backup Port:

AT+PTSEC=xxx xxx is the Port

Multi Server Configuration



When “Data Center Number” is greater than 1, this setting is valid. For example， setting the “Data Center Number” as 3, Main Center, 2nd Center, 3rd Center work as these three servers.

AT Command of server 2~5IP or domain:

AT+IPADn=xxx n is 1~4 for server 2 to 5

	xxx is IP or domain
AT Command of server 2~5 port:	
AT+PORTn=xxx	n is 1~4 for server 2 to 5
	xxx is port value

Example:

Set IP address of center 3 as www.alotcer.com, and port 5001, the AT command is as following:

```
AT+IPAD2=www.alotcer.com
AT+PORT2=5001
```

Main and Backup DNS



When the Internet access uses domain name, It's necessary to set DNS server resolving the domain name. When the Server Number is 1, Main and Backup DNS Server is used to resolve the Main and Backup server correspondingly.

AT command of Main DNS server:

AT+DNSSVR=aaa.bbb.ccc.ddd

aaa.bbb.ccc.ddd: The DNS server IP address(must be IP address）.

AT command of Backup DNS server:

AT+DNSSV2=aaa.bbb.ccc.ddd

aaa.bbb.ccc.ddd: the DNS server IP address

Center 2~5 DNS Server

When the IP MODEM work in Multi Data Service Center method and the centers use domain name, 2~5 DNS server is used to resolve center 2~5 correspondingly.

AT command of 2~5 DNS Server

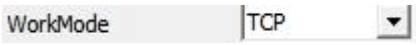
AT+DNSSVRn=aaa.bbb.ccc.ddd

n is 1~4 correspond to center 2~5 DNS server.

aaa.bbb.ccc.ddd is the DNS server IP address

3.6.2 IP MODEM Settings

IP MODEM WorkMode



According to different application requirements, there are several workmode to configure.

APRO: Heartbeat packet with TCP protocol, Data transmission with TCP protocol, heartbeat packet and application data transmission are in the same TCP connection.

Modem: IP MODEM work as a common GPRS MODEM, support SMS, CSD, Dial-up applications.

TCP: User could define registration packages and heart packs, registered packages, heartbeat packages and data communications are all TCP protocols. If the registered packet and heartbeat packet are empty, then transparent.

UDP: Transparent UDP.

HUDPDTCP:Heartbeat packet with UDP protocol, Data transmission with TCP protocol.

HUDPDTCPLONG: Heartbeat packet with UDP protocol, Data transmission with TCP protocol,It can transmit at most 8192 bytes data one time through extra application protocol.

TCPLONG:Heartbeat and Data transmission with TCP protocol, It can transmit at most 8192 bytes data one time through extra application protocol.

UDPTTL: Customize the UDP registration package and the heartbeat package, and the center must correspond to the reply, otherwise the modem will treat the connection is invalid.

TCPSER: TCP server side.

UDPSER:UDP server side.

TELNT:As a telnet client.

HPUDP:UDP protocol for data package, there is a specific format to read and send.

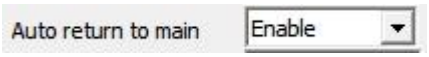
HPTCP: TCP protocol for data package, there is a specific format to read and send.
ZPUDP: UDP protocol for data package, there is a specific format to read and send.
ZPTCP: TCP protocol for data package, there is a specific format to read and send.

AT command:

AT+MODE=xxxx

xxxx: one of the above workmode

Auto Back To Main Server



0 --- Disable
1 --- Enable

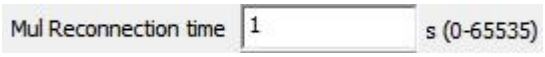
This item is only valid when you set “Server Number” as 1. In this mode, IP MODEM will switch to backup center when main center have problems. If this item is set to 1 , IP MODEM will check whether the main center work fine timely. When it detects the main server work fine, it will return back to the main server at once.

AT Command:

AT+RETMAIN=x

x : 0 or 1

Multi Center Reconnect Interval



This item is valid only when the “Server Number” is greater than 1.
When one of the configured data center lost connection, IP MODEM will try to reconnect after the configured reconnection interval.

AT Command:

AT+MCONTIME=xxx

xxx : reconnect time interval (unit is second)

Device ID



The identity number of IP MODEM, the value should be 8 bytes hex-decimal characters.

AT Command:

AT+IDNT=aabbccdd

aabbccdd: Identity number of IP MODEM

SIM Card No



The phone number of the SIM card .

AT Command:

AT+PHON=xxxxxxxxxx

xxxxxxxxxx: SIM card phone number

Idle Time



When there is no data flow on the serial port.

AT Command:

AT+DTUNORECMINU=xxx

xxx: bytes interval time value（Min）

Custom Register String



This item is only valid when the WorkMode is TCP-CUSTOM. It's the defined register string. It can be empty, the maximum length is 70 bytes.

AT Command:

AT+CONNRGST=xxx

xxx:Defined register string

Custom Heartbeat



This item is only valid when the WorkMode is TCP-CUSTOM. It's the defined heartbeat string, It can be empty, the maximum length is 70 bytes.

AT Command:

AT+LINKRGST=xxx

xxx:Defined heartbeat string

Heartbeat Interval

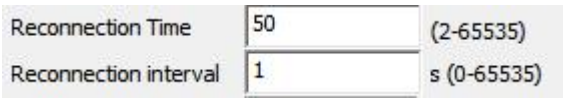
Time interval sent heartbeat packet(second). The work mode associated with all workmode with heartbeat. If the working mode is TCP recommended to set 60 seconds, and if the UDP is recommended set 31 seconds.

AT Command:

AT+POLLTIME=xxx

xxx: Heartbeat packet time interval

Reconnection Time, Reconnection Interval



In normal applications, IP MODEM will always try to connect with the center even if the center has problems or closed. To reduce these unnecessary wireless data flow, you can configure the "Reconnection Time" and "ReconnectionInterval" items. When IP MODEM fail to connect to the center with the configured Retry Time, It will sleep "Reconnect Time Interval" time, then start next retry.

Reconnection TimeAT Command:

AT+RETRY=xxx

xxx:times try to connect to the center

ReconnectionIntervalAT Command:

AT+RDLWT=xxx

xxx: the sleep time until next retry.

Debug Level



Debug information is used to debug software when there is software problem.

0 --- no debug information output
1 --- simple prompt information output
2 --- detail debug information output

AT Command:

AT+DEBUG=x

x : Debug level

Note: Only when there is some problem on the IP MODEM or when u doing test to check the detailed log, it's ok to set this value as 2. In normal applications, this value should set to 0 or 1, the default value is 1.

3.6.3 Serial

Baudrate



110	--- 110 bps
300	--- 300 bps
600	--- 600 bps
1200	--- 1200 bps
2400	--- 2400 bps
4800	--- 4800 bps
9600	--- 9600 bps
14400	--- 14400 bps
19200	--- 19200 bps
38400	--- 38400 bps
56000	--- 56000 bps
57600	--- 57600 bps
115200	--- 115200 bps
230400	--- 230400 bps

AT Command:

AT+IPR=xxx

xxx : Baudrate

Extend

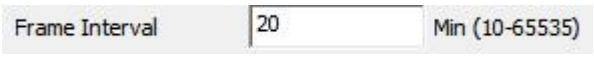
8N1 --- 8 Databit, No parity, 1 Stopbit
8E1 --- 8 Databit, Even parity, 1 Stopbit
8O1 --- 8 Databit, Odd parity, 1 Stopbit

AT Command:

AT+SERMODE=xxx

xxx: Extend

Frame Interval



The time interval used to determine whether the serial data frame transmission has completed, IP MODEM will send the serial data to the center when two bytes transmit time interval larger than this item value.

AT Command:

AT+BYTEINT=xxx

xxx: bytes interval time value（millisecond）

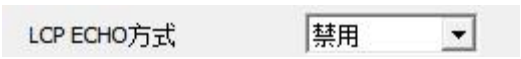
3.6.4 Keep Alive

Keep Mode: Disable, TTL, ICMP, TCPKEEP



AT Command:

AT+EXFUN=xxx xxx: 3~0, 0 means Disable



LCP ECHO

For maintain connections between network measurements and maintain stability of

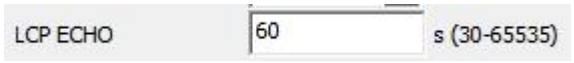
connections



AT Command:

AT+ECHOENABLE=xxx xxx: 1 is Enable，0 is disable

LCP ECHO Interval



AT Command:

AT+ECHOINT=xxx xxx: interval

3.6.5 Advanced

Network



User: Username to login the ISP network.

Password: Password to login the ISP network

APN: Access point name.

Dail Center: Dail center number

AT Command of APN:

AT+APN=xxxx

xxxx: access point name

AT Command of Username:

AT+USERNAME=xxx

xxx: username

AT Command of Password:

AT+PASSWORD=xxx

xxx: password

AT Command of Dail Center:

AT+CENT=xxx

xxx: Dail center number of ISP

SMS Center



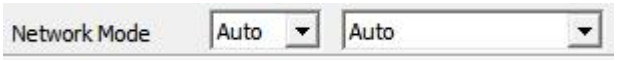
Your local SMS center number

AT Command:

AT+SMSC=xxx

xxx: Local SMS center number

Network Mode



Network Auth: Auto, Chap, PAP.
Network Mode: Auto, Prefer 2G, Force 2G, Force WCDMA, Force LTE

AT Command:

AT+AUTHTYPE=xxx

xxx: AUTHTYPE

AT Command:

AT+NETMODE=xxx

xxx: NETMODE

Online/ Offline Activation



Normally, IP MODEM always keeps online and always be ready for data transmission. But in some circumstances, it's important to reduce wireless data flow. To realize this function,

the software can makes IP MODEM into sleep state in idle time. When there is application data to transmit, IP MODEM can be Activated online ready for data transmission. There are total five methods to make IP MODEM online:

AUTO: IP MODEM always keeps online
SMS-DAEMO: Send a special short message to make IP MODEM online
CONTROLABLE: Make IP MODEM online through a phone call to IP MODEM
DATA-DAEMON: Send special serial data to make IP MODEM online
MIXD-DAEMON: Combination of SMSD, CTRL, DATA. IP MODEM will be online when meet one of these three Activation Mode.

AT Command:

AT+ACTI=xxxx

xxxx: Trigger methods

Activation Phone



This item is only valid when the “Activation Mode” is CONTROLABLE or MIXD-DAEMON. In this Activation Mode, IP MODEM will keeps in idle state until it receives the Activation phone call, then it will connect to the center.

AT Command:

AT+CTRLNO=xxx

xxx : Activation phone number

Activation SMS



This item is valid only when the “Activation Mode” is SMS-DAEMO or MIXD-DAEMON, IP MODEM will keeps in idle state until it receives the Activation SMS. Then it will connect to the center.

AT Command:

AT+SMSDPSWD=xxx

xxx : SMS content to trigger IP MODEM online

Serial Activation On/ Off



This item is valid only when the “Activation Mode” is DATA-DAEMON or MIXD-DAEMON, IP MODEM will keeps in idle state until it receives the Activationon data, then it will connect to the center, It will return to the idle state when receives Activation off data.

AT Command of Data Trigger On Password:

AT+DONPSWD=xxx

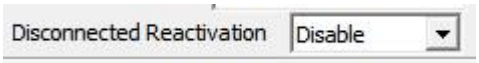
xxx : data trigger on password

AT Command of data trigger off password:

AT+DOFFPSWD=xxx

xxx :data trigger off password

Disconnected Reactivation



When device is activated online, whether to auto get online when network recover.

AT Command of data trigger off password:

AT+ISTRIGMODE=xxx

xxx : value. 0 is Disable/1 is Enable

Optional

Data Escape



0 --- Yes, enable transfer meaning

1 --- No, disable transfer meaning

This item is only valid when the APRO.If this item is set to 0, IP MODEM will transfer meaning to 0xfd and 0xfe. To know detail transfer meaning method, please refer <<IP MODEM Transfer Meaning Explanation In the APRO work mode>>. If this item is set to 1, all the transmission is transparent.

AT Command:

AT+STRAIGHT=x

x:0 or 1

Length of TCP

The maximum transmission unit of TCP packet

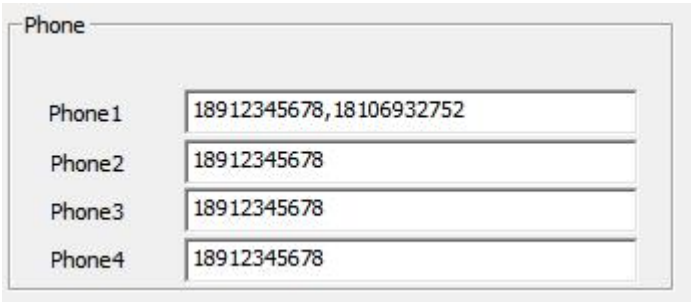


AT Command:

AT+TCPMTU=xxx

xxx : the MTU value

3.6.6 SMS



Phone number: When the IP MODEM receives serial data, if the network connection fails (to set the server number 0 does not belong to the network connection failure), the serial data as the SMS sent to the phone number (SMS backup function). Each group can set up 5 Mobile phone number, each mobile phone numbers separated by commas. Each mobile phone numberlength is no more than 15 digits.

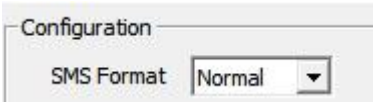
AT command:

AT+PHONEn=xxx n isnumber for the phone 1,2,3,4

xxx is the phone number

Configuration

SMS Format

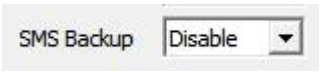


SMS format: General SMS is sent visible characters or Chinese characters, using HEX messages can be sixteen hexadecimal send arbitrary 0x00-0xff, this method is especially suitable for the use of SMS to transmit data to monitor industrial control, industrial control equipment.

AT command:

AT+HEXSMS=x x is 0 or 1 ， 0 is send normal SMS,1 is for HEX

SMS Backup

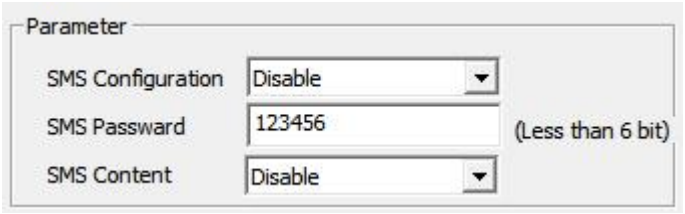


SMS backup function: when the IP MODEM receives serial data, if the network connection fails, the serial data as the message content sent to the end of the mobile phone number (SMS backup function). The control switch is open SMS backup function.

AT command:

AT+OPENSMSBCKP=x 0 off SMSBackup ， 1 Enable SMS backup function

SMS configuration



If the configuration command is more than 140 characters, split it into multiple messages . The format for SMS configuration is as follows:

<Password; Command 1; Command 2>

Password:Consistent with the password in the SMS configuration parameter, this SMS configuration parameter will effect.

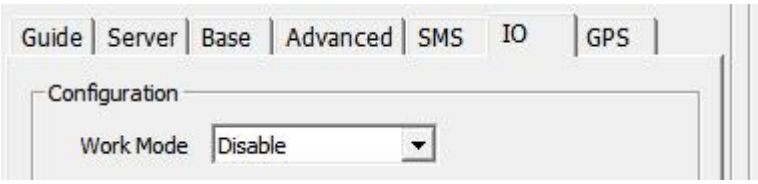
Command: Corresponding AT command removes the AT+, and the remaining command is the command for the SMS configuration parameter. Multiple commands are separated by semicolons.

For example:

<123456;IPAD=120.42.46.98;PORT=5007>

Password is 123456, server ip 120.42.46.98, port 5007.

3.6.7 ModBus for IO

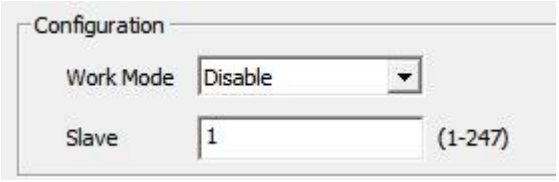


Modbus mode: When the enable MODBUS mode, IP MODEM is online after the identification from the center for MODBUS command, and the data acquisition port is arranged according to the order or content.According to the MODBUS command, the data will be collected and transmitted back to the RTU center. Serial RTU through the serial port with MODBUS RTU protocol, network RTU through the network with MODBUS RTU protocol. At present, don't support the Modbus TCP.

ADC voltage range of 0-5V, current range of 0-20mA, the corresponding conversion value range 0-931.

AT command:

AT+MBMODE=x x is 0 -2， 0 is disable, 1 is Net RTU, 2 is Serial RTU.



Network RTU work Mode.
Slave: Center identificate the Modbus device. The slave in effect to enable RTU mode. The data that not same with slave will be transparent.

AT command:

AT+MBADDRESS=x x is Modbus slave, 1~247.



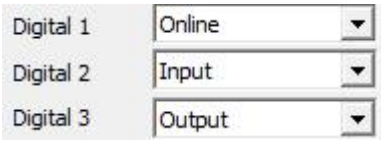
Analog work mode:There are 2 Analog input. IO4 and IO5 is interface 11 and 12.

When the Woke Mode is Serial RTU, Analog is One-Time acquisition,, data acquisition is performed on the corresponding analog port based on the received MODBUS command.

AT command:

AT+ADCMODEn=x n is 1,2 1: interface 11, IO4; 2: interface 12, IO5.

X is 0,1 To set the analog work mode. 0 for not enabled; 1: one-time acquisition.



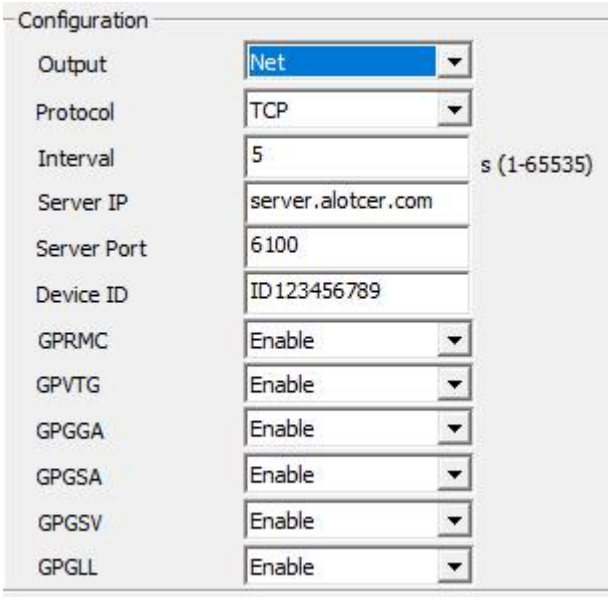
Digital work mode: 3 digital port, IO1, IO2, IO3 for interface 8,9,10. When the corresponding interface set the MODBUS mode to Serial RTU, digital work mode is set to input or output, according to received Modbus command on the digital port for operation. The Digital 1 could be configured to be output 3.3V when the modem is online.

AT command:

AT+DIOWORKMODEn=x n is 1,2,3 1:IO1, interface 8; 2:IO2 , interface 9; 3:IO3, interface 10,

X is 0,1,2,3 To set Digital work mode. 0:Disable; 1:input; 2:output; 3:online.

3.6.8 GPS



Output: To configure the GPS data output to Net or Serial.

AT command:

AT+GPSTRAN=x x is 0,1,2,3 For Disable, Net, Serial, Net and Serial.

Protocol: To configure the GPS transport via network, then configure the protocol.

AT command:

AT+GPSTMOD=x x is 0,1 For TCP, UDP.

Interval: To configure the GPS transport interval.

AT command:

AT+GPSINT=x x is interval to transport gps data.

Server IP: To configure the GPS Transport server IP.

AT command:

AT+GPSAD=x x is server IP.

Server Port: To configure the GPS Transport server Port.

AT command:

AT+GPSPORT=x x is server Port.

GPS data configure:There are 6 kinds of items in the GPS data. One or more of them can be sent to the server according to the needs. Items:GPRMC,GPVTG,GPGGA,GPGSA,GPGSV,GPGLL..

Notice: The GPS data is NMEA0831 format.

AT command:

AT+GPSRMC=x

AT+GPSVTG=x

AT+GPSGGA=x

AT+GPSGSA=x

AT+GPSGSV=x

AT+GPSGLL=x

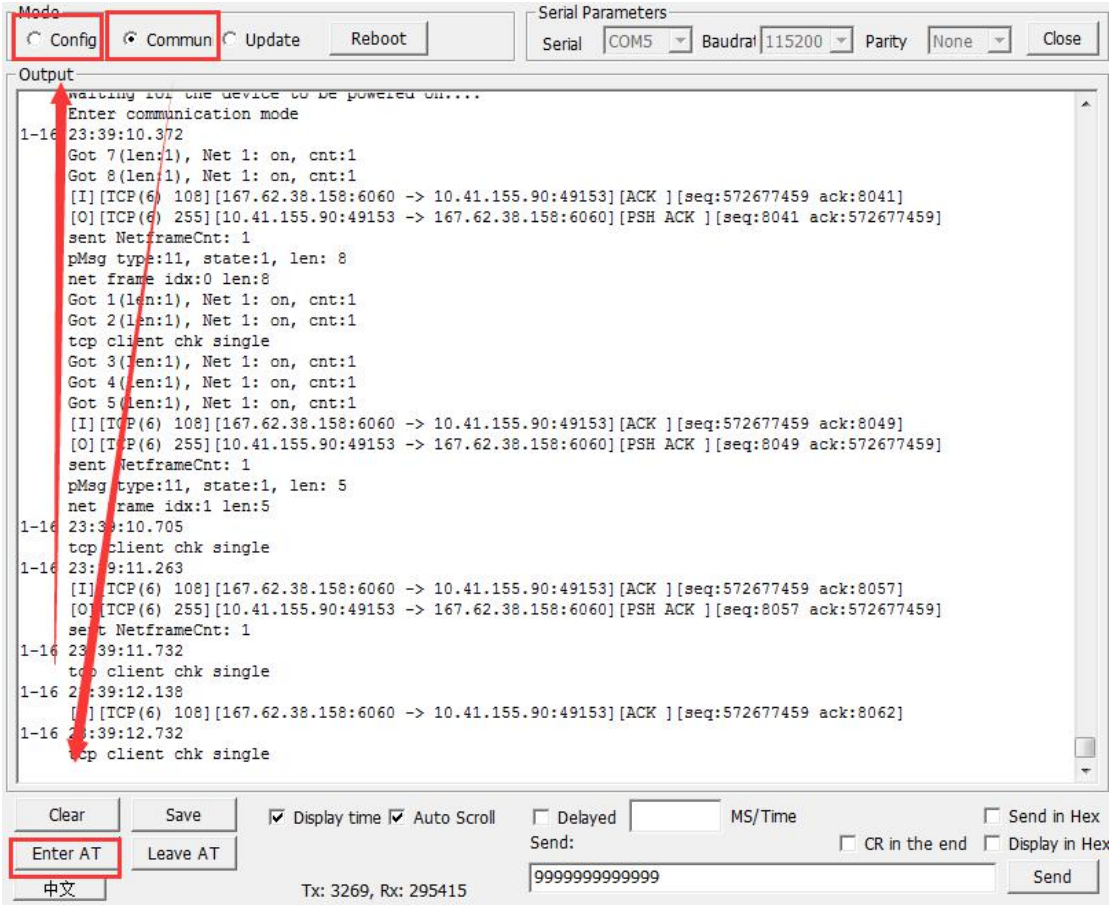
X is 0,1 For Disable or Enable.

3.7 Work Mode Switch



Config: To config the IP Modem.
Commun: To be used as a serial tool, that send and receive the data in the Output box.
Update: To update the IP Modem firmware locally.
Reboot: To reboot the IP Modem when config mode, and it will switch to Commun mode.
Manual: To Config mode when commun mode.

Step: When Commun mode, Click the “Enter AT” button, then change Mode to Config mode by click the “Config”, last Click “Manual”. The modem is still in communication mode and the config mode could be keep 1 minute if no configuration is done.


Mode
Config
Commun
Update
Reboot
Serial Parameters
Serial
COM5
Baudrat
115200
Parity
None
Close
Output
Enter communication mode
1-16 23:39:10.372
Got 7(len:1), Net 1: on, cnt:1
Got 8(len:1), Net 1: on, cnt:1
[I][TCP(6) 108][167.62.38.158:6060 -> 10.41.155.90:49153][ACK][seq:572677459 ack:8041]
[O][TCP(6) 255][10.41.155.90:49153 -> 167.62.38.158:6060][PSH ACK][seq:8041 ack:572677459]
sent NetframeCnt: 1
pMsg type:11, state:1, len: 8
net frame idx:0 len:8
Got 1(len:1), Net 1: on, cnt:1
Got 2(len:1), Net 1: on, cnt:1
tcp client chk single
Got 3(len:1), Net 1: on, cnt:1
Got 4(len:1), Net 1: on, cnt:1
Got 5(len:1), Net 1: on, cnt:1
[I][TCP(6) 108][167.62.38.158:6060 -> 10.41.155.90:49153][ACK][seq:572677459 ack:8049]
[O][TCP(6) 255][10.41.155.90:49153 -> 167.62.38.158:6060][PSH ACK][seq:8049 ack:572677459]
sent NetframeCnt: 1
pMsg type:11, state:1, len: 5
net frame idx:1 len:5
1-16 23:39:10.705
tcp client chk single
1-16 23:39:11.263
[I][TCP(6) 108][167.62.38.158:6060 -> 10.41.155.90:49153][ACK][seq:572677459 ack:8057]
[O][TCP(6) 255][10.41.155.90:49153 -> 167.62.38.158:6060][PSH ACK][seq:8057 ack:572677459]
sent NetframeCnt: 1
1-16 23:39:11.732
tcp client chk single
1-16 23:39:12.138
[I][TCP(6) 108][167.62.38.158:6060 -> 10.41.155.90:49153][ACK][seq:572677459 ack:8062]
1-16 23:39:12.732
tcp client chk single
Clear
Save
Display time
Auto Scroll
Delayed
MS/Time
Send in Hex
Enter AT
Leave AT
Send:
CR in the end
Display in Hex
中文
Tx: 3269, Rx: 295415
9999999999999
Send