# AD2000 IP Modem User Manual
# Support 2G/3G/4G Data Transfer Unit




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**Applicable Models：**

| Product Type | Model | Product Name |
|---|---|---|
| **Standard** | AD2000-G | GPRS IP MODEM |
| | AD2000-C | CDMA IP MODEM |
| | AD2000-W | WCDMA IP MODEM |
| | AD2000-E | EVDO IP MODEM |
| | AD2000-D | TDD/FDD-LTE IP MODEM |
| | AD2000-GP | GPS+GPRS IP MODEM |
| | AD2000-CP | GPS+CDMA IP MODEM |
| | AD2000-WP | GPS+WCDMA IP MODEM |
| | AD2000-EP | GPS+EVDO IP MODEM |
| | AD2000-DP | GPS+TDD/FDD-LTE IP MODEM |

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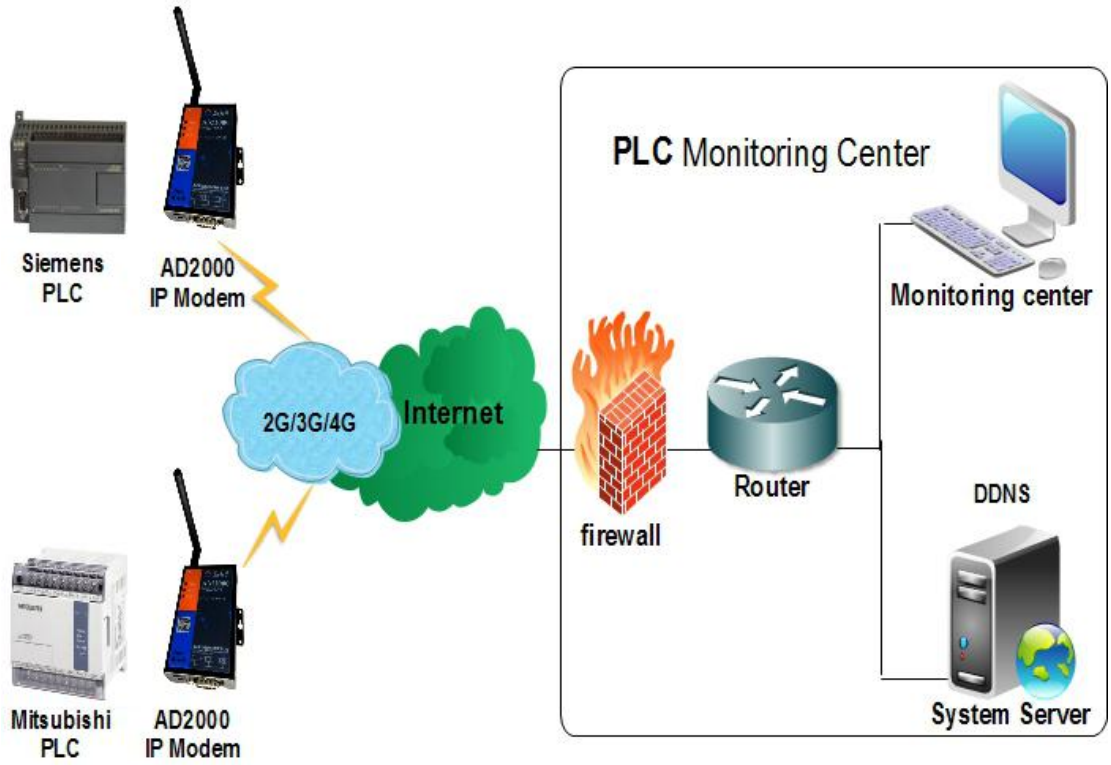
# Chapter 1 Brief Introduction of Product

## 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 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.



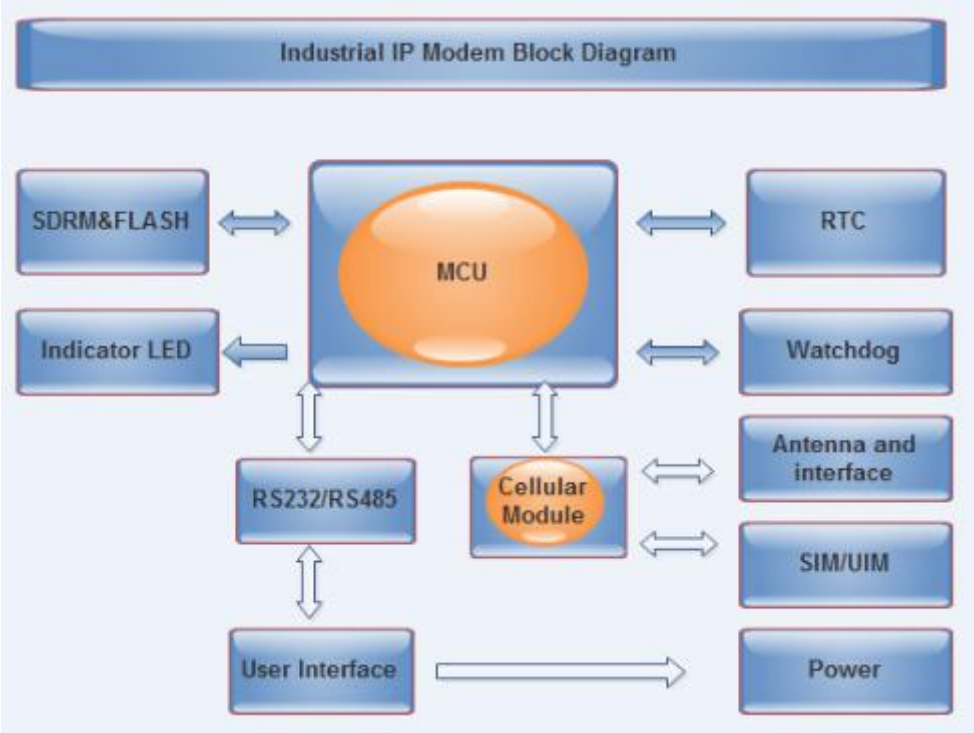

**IP MODEM Application Topology**

## 1.2 Product Feature

| Items | Contents |
|---|---|
| **Industrial Design** | High-powered industrial cellular module |
| | 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** | Support hardware and software WDT |

| | |
|---|---|
| **Reliability** | 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** | Support standard RS232/RS485 ports that can connect to serial devices directly |
| | 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 |
| | 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<br>Data bits: 5, 6 ,7, 8<br>Stop bits: 1, 1.5(optional), 2<br>Parity: none, even, odd, space, mark |

| | | |
|---|---|---|
| | | Baud rate: 110~230400 bps |
| | Antenna | Cellular: Standard SMA female interface, 50 ohm<br>GPS(optional):Standard SMA female interface, 50 ohm |
| | SIM/UIM | Standard 3V/1.8V user card interface, 15KV ESD protection |
| | Power | Standard 3-PIN power jack, reverse-voltage and over voltage protection |
| | Indicator | “PWR”、”RUN”、”Online”、”GPS”(optional) |
| **Network** | Wireless Network | GSM/GPRS/EDGE: 850/900/1800/1900MHz<br>CDMA: 800/1900MHz<br>WCDMA/HSUPA/HSPA+: 850/900/1900/2100MHz<br>CDMA2000 1x/ EVDO Rev. A: 800/1900MHz<br>TD-SCDMA: 1880-1920/2010-2025MHz(A/F)<br>TDD-LTE: Band 38/39/40/41& Band 61/62<br>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<br>GPS L1（1575.42MHz）C/A code<br>SBAS: WAAS,EGNOS,MSAS,GAGAN |

| | | |
|---|---|---|
| | Max. update rate | 5 Hz |
| | Accuracy | Position: 2.5m CPE<br>SBAS: 2.0m CPE |
| | Acquisition | Cold starts: 32S<br>Warm starts: 32S<br>Aided starts: <1S<br>Hot starts: <3S |
| | Sensitivity | Tracking: -160dBm<br>Reacquisition: -160dBm<br>Cold starts: -146dBm |
| | Timing accuracy | RMS: 30ns<br>99%: <60ns<br>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** |
| AD2000 | -G: GPRS<br>-C: CDMA<br>-W: WCDMA<br>-E: EVDO<br>-F: FDD-LTE<br>-D: TDD/FDD-LTE | P: GPS<br>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!

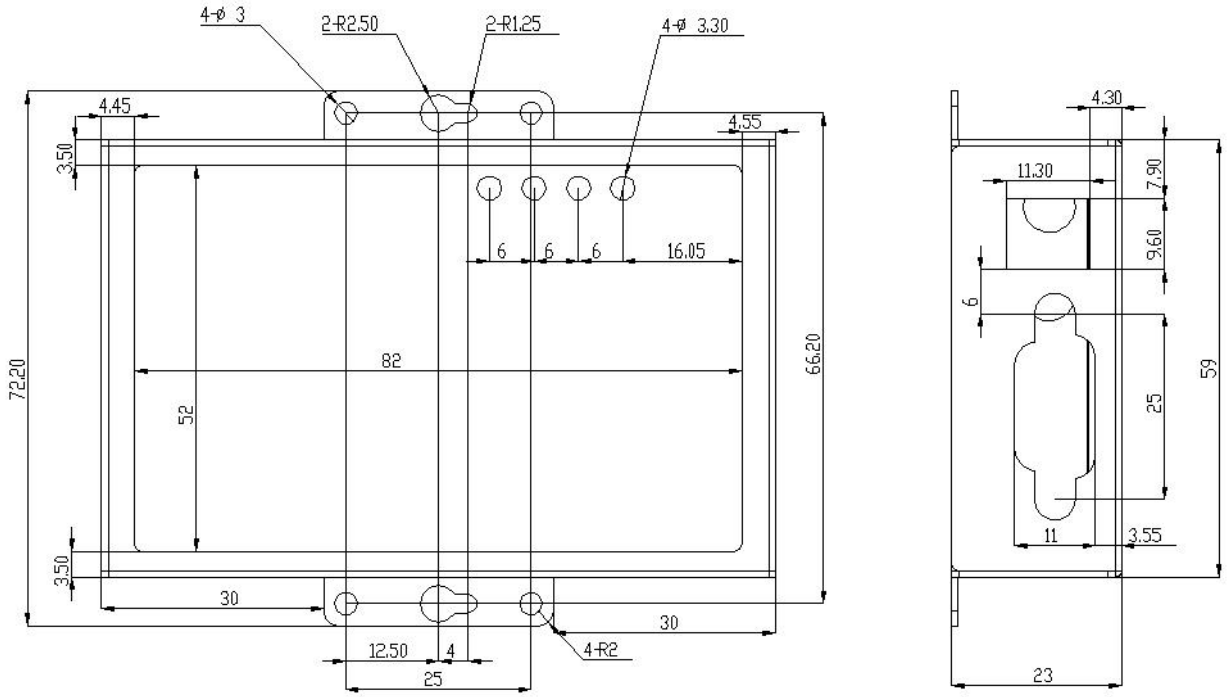
## 2.2 Encasement List

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

| Name | Quantity | Remark |
|---|---|---|
| IP MODEM host | 1 | |
| Cellular Antenna（SMA Male） | 1 | |
| Power adapter | 1 | |
| RS232 data cable | 1 | |
| RS485 data cable | 1 | Optional |
| Manual CD | 1 | Optional |
| 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!

### DB9 Interface Signal Definition

| Pin Number | Signal Name | Default Function | Extensible Function |
|---|---|---|---|
| 1 | N/A | N/A | RS232 DCD/UART RX |
| 2 | RX | RS232 RX | N/A |
| 3 | TX | RS232 TX | N/A |
| 4 | N/A | N/A | RS232 DTR/UART TX |
| 5 | GND | RS232 GND | N/A |

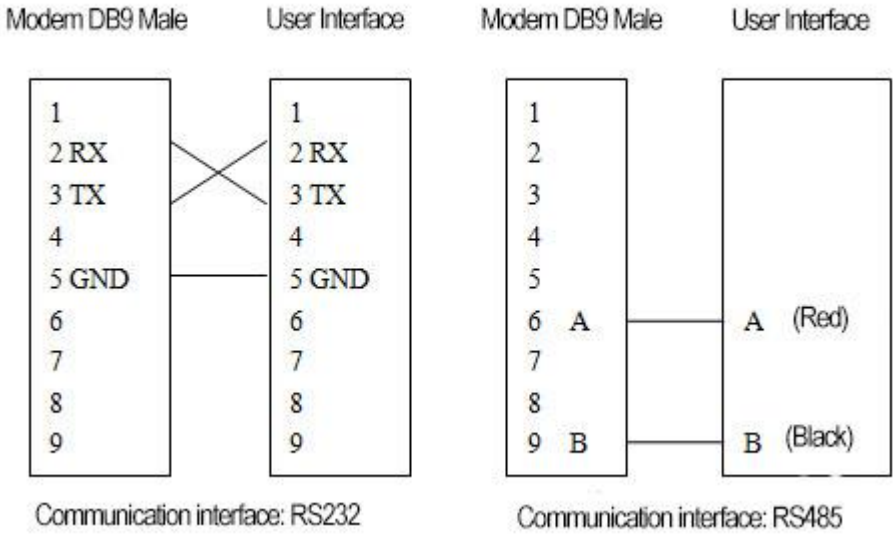
| | | | |
|---|---|---|---|
| 6 | A | RS485 anode | RS232 DSR/RS422 R+ |
| 7 | N/A | N/A | RS232 RTS/RS422 R- |
| 8 | N/A | N/A | RS232 CTS/RS422 T- |
| 9 | B | RS485 cathode | RS232 RI/RS422 T+ |

**Installation of cable:**



**RS232 cable（standard）**

Ip Modem adopts industrial DB9 Female interface. The cables as is 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

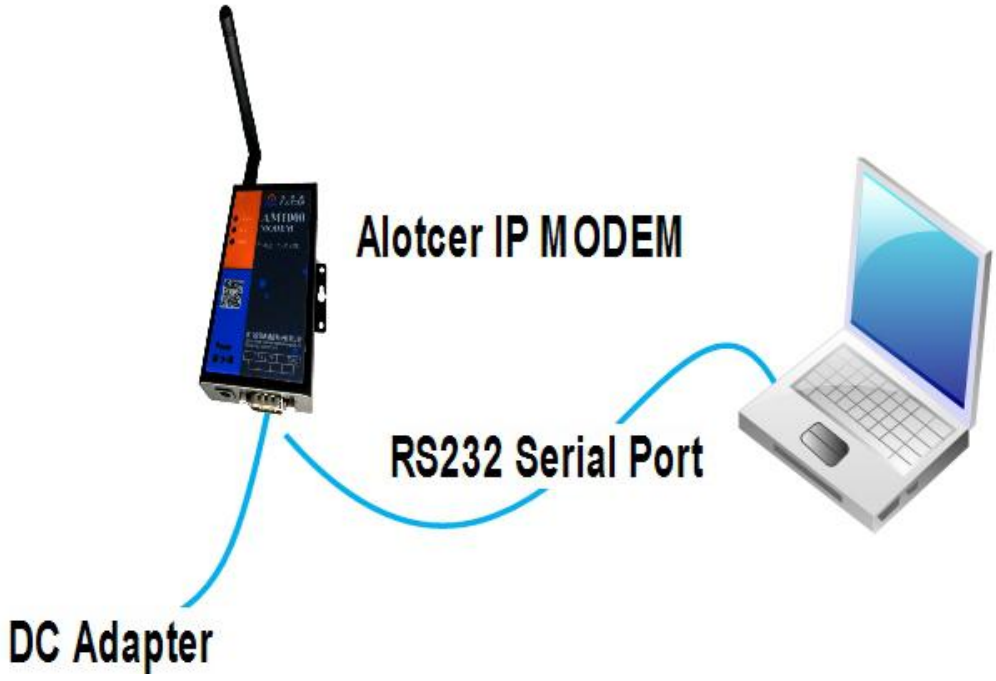
There are three indicator lights: “Power”, “RUN”, “Online”,”GPS”(Optional).

| 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.

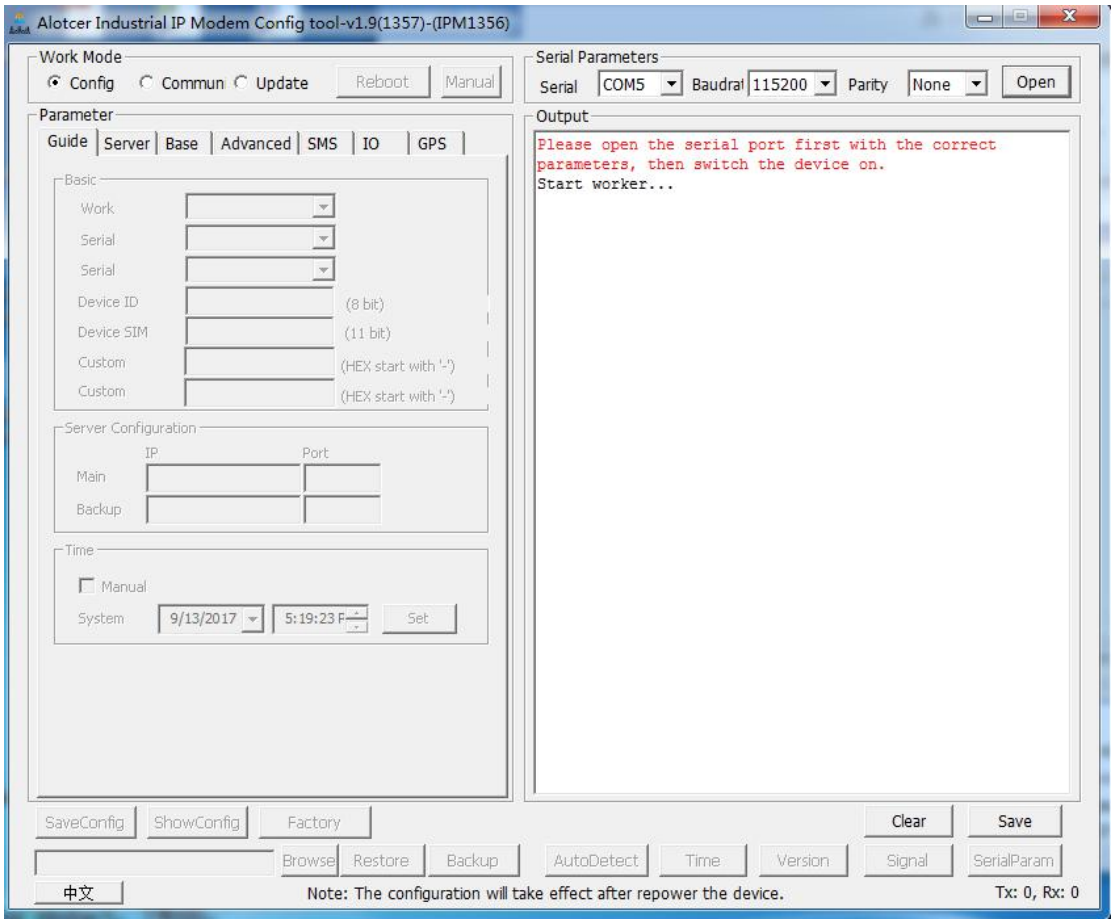
The steps how to make IP MODEM enter configure state, please refer to appendix. Each extended AT command should end with a carriage return.

## 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:

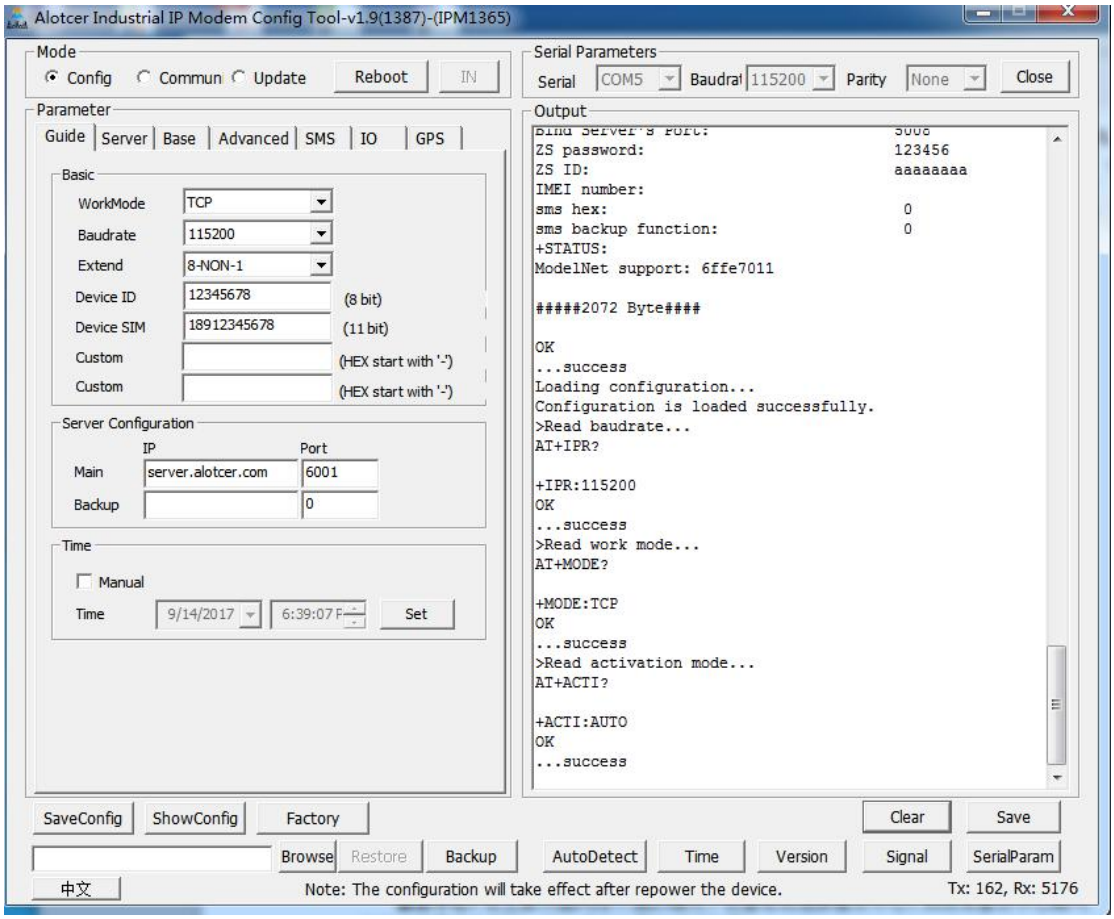
Please open the serial port first with the correct parameters, then switch the device on.

Start worker...

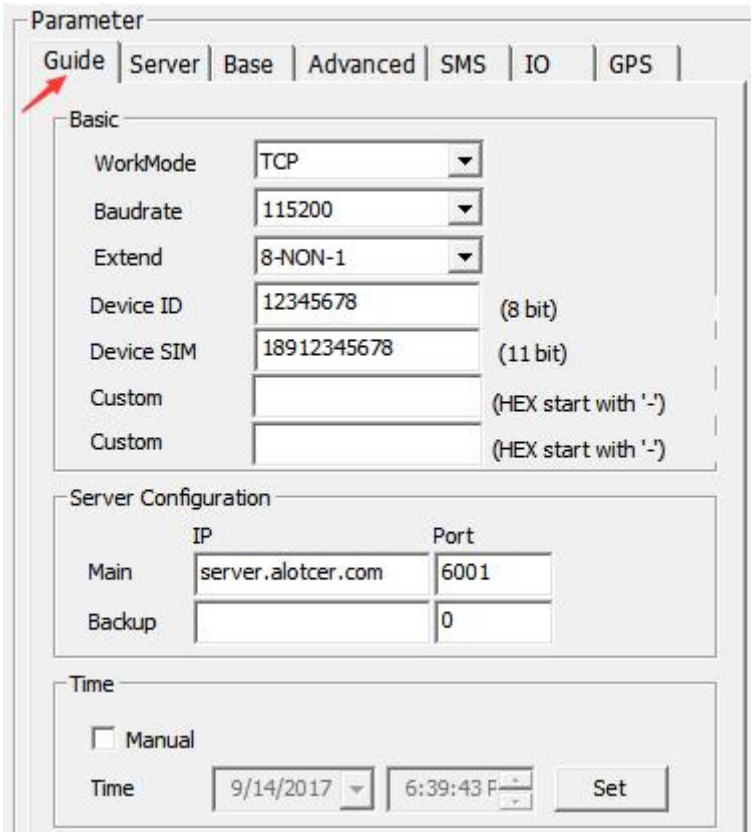



## 3.4 Re-power IP MODEM

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.


Alotcer Industrial IP Modem Config Tool-v1.9(1387)-(IPM1365)
Mode
Config
Commun
Update
Reboot
IN
Serial Parameters
Serial
COM5
Baudrat
115200
Parity
None
Close
Parameter
Guide
Server
Base
Advanced
SMS
IO
GPS
Basic
WorkMode
TCP
Baudrate
115200
Extend
8-NON-1
Device ID
12345678
(8 bit)
Device SIM
18912345678
(11 bit)
Custom
(HEX start with '-')
Custom
(HEX start with '-')
Server Configuration
IP
Port
Main
server.alotcer.com
6001
Backup
0
Time
Manual
Time
9/14/2017
6:39:07 P
Set
Output
ZS password: 123456
ZS ID: aaaaaaaa
IMEI number:
sms hex: 0
sms backup function: 0
+STATUS:
ModelNet support: 6ffe7011
#####2072 Byte####
OK
...success
Loading configuration...
Configuration is loaded successfully.
>Read baudrate...
AT+IPR?
+IPR:115200
OK
...success
>Read work mode...
AT+MODE?
+MODE:TCP
OK
...success
>Read activation mode...
AT+ACTI?
+ACTI:AUTO
OK
...success
SaveConfig
ShowConfig
Factory
Clear
Save
Browse
Restore
Backup
AutoDetect
Time
Version
Signal
SerialParam
中文
Note: The configuration will take effect after repower the device.
Tx: 162, Rx: 5176

## 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

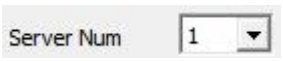
### 3.6.1 Server Settings

**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:

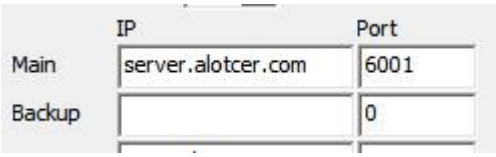
AT+IPAD=xxx xxx is the IP or domain.

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

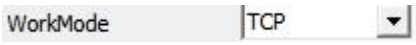
AT+DNSSVRn=aaa.bbb.ccc.ddd

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.

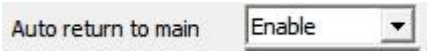
**ZPTCP**: TCP protocol for data package, there is a specific format to read and send.

AT command:

AT+MODE=xxxx

xxxx: one of the above workmode

**Auto Back To Main Server**




0 --- Disable

1 --- Enable

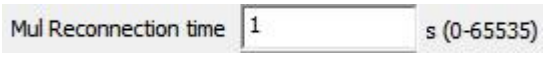
This item is only valid when you set “Server Number” as 1. In this mode, IP MODEM will switch to backup center when main center have problems. If this item is set to 1 , IP MODEM will check whether the main center work fine timely. When it detects the main server work fine, it will return back to the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

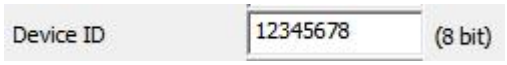
When one of the configured data center lost connection, IP MODEM will try to reconnect after the configured reconnection interval.

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**

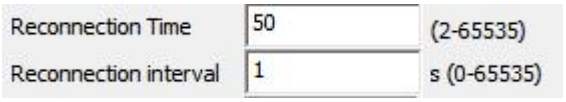
Time interval sent heartbeat packet(second). The work mode associated with all workmode with heartbeat. If the working mode is TCP recommended to set 60 seconds, and if the UDP is recommended set 31 seconds.

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.

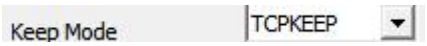
AT Command:

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**

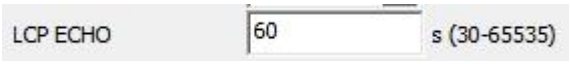
For maintain connections between network measurements and maintain stability of connections




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**



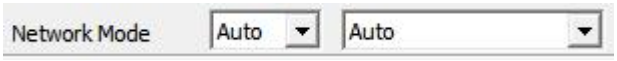

Your local SMS center number

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

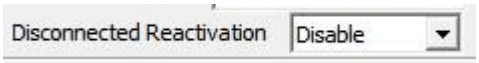
xxx : data trigger on password

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

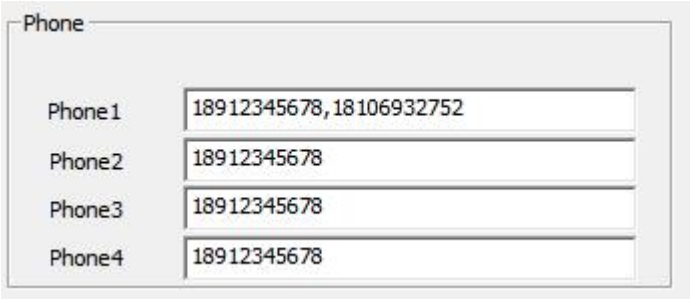



AT Command:

AT+TCPMTU=xxx

xxx : the MTU value

### 3.6.6 SMS



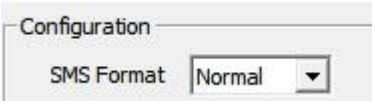

Phone number: When the IP MODEM receives serial data, if the network connection fails (to set the server number 0 does not belong to the network connection failure), the serial data as the SMS sent to the phone number (SMS backup function). Each group can set up 5 Mobile phone number, each mobile phone 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**

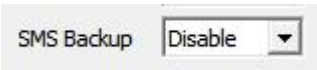



SMS format: General SMS is sent visible characters or Chinese characters, using HEX messages can be sixteen hexadecimal send arbitrary 0x00-0xff, this method is especially suitable for the use of SMS to transmit data to monitor industrial control, industrial control equipment.

AT command:

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

**SMS Backup**

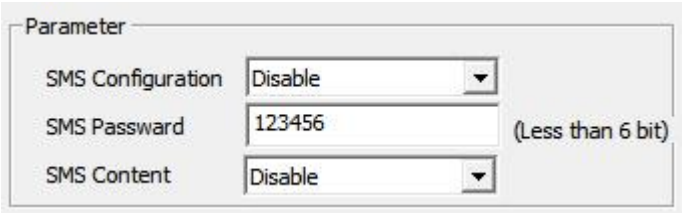



SMS backup function: when the IP MODEM receives serial data, if the network connection fails, the serial data as the message content sent to the end of the mobile phone number (SMS backup function ). The control switch is open SMS backup function.

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.

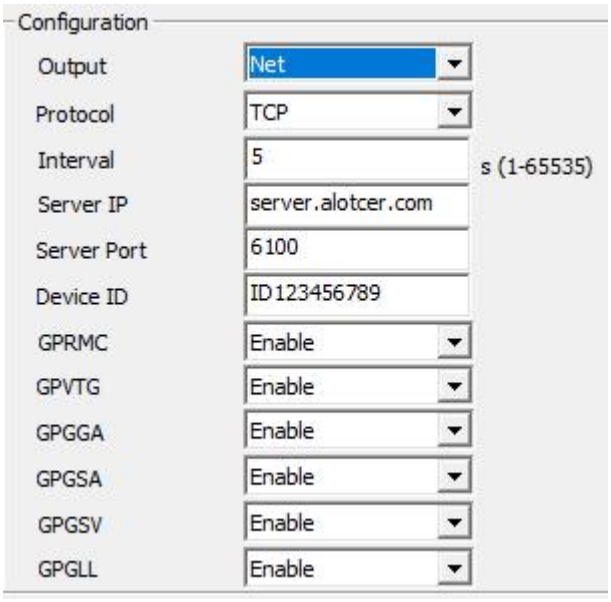
Command: Corresponding AT command removes the AT+, and the remaining command is the command for the SMS configuration parameter. Multiple commands are separated by semicolons.

For example:

<123456;IPAD=120.42.46.98;PORT=5007>

Password is 123456, server ip 120.42.46.98, port 5007.

### 3.6.7 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

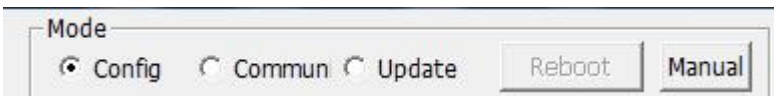
AT+GPSGSA=x

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.

