

F2X16 V4 Series IP MODEM User Manual	Version	
	V1.0.0	
	Product Name:F2X16 V4	Total page36

F2X16 V4 Series IP MODEM User Manual

This user manual is suitable for the following model:

Modem	Product Type
F2116 V4	GPRS IP MODEM
F2816 V4	LTE IP MODEM
F2C16 V4	Cat1 IP MODEM
F7916 V4	GPS+LTE IP MODEM

Files Revised Record




Date	Version	Remark	Author
2021-07-30	V1.0.0	Original	ZDM

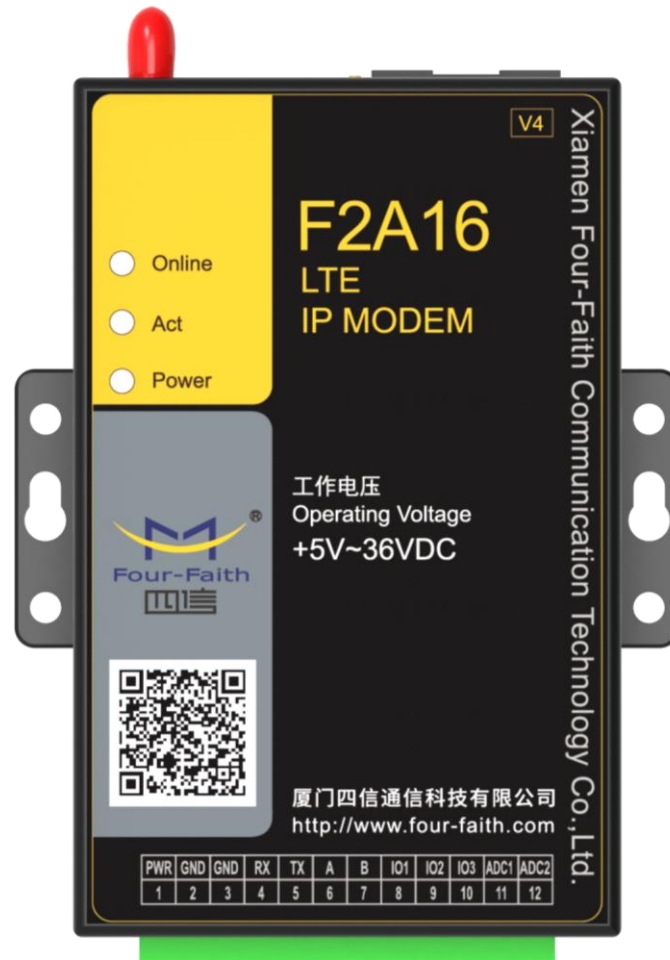
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Note: There may be different components and interfaces in different model, please in kind prevail.

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Chapter 1 Brief Introduction of Product

1.1 General

F2X16 V4 Series IP MODEM is a kind of cellular terminal device that provides data transfer by public cellular network.

It adopts high-powered industrial 32 bits CPU and embedded real time operating system. It supports RS232 and RS485 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 low power consumption design; provides 2 ADC, 3 I/O, be compatible digital I/O channel, ADC, input pulse counter 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. Typical application topology is showed in Figure 1-1.

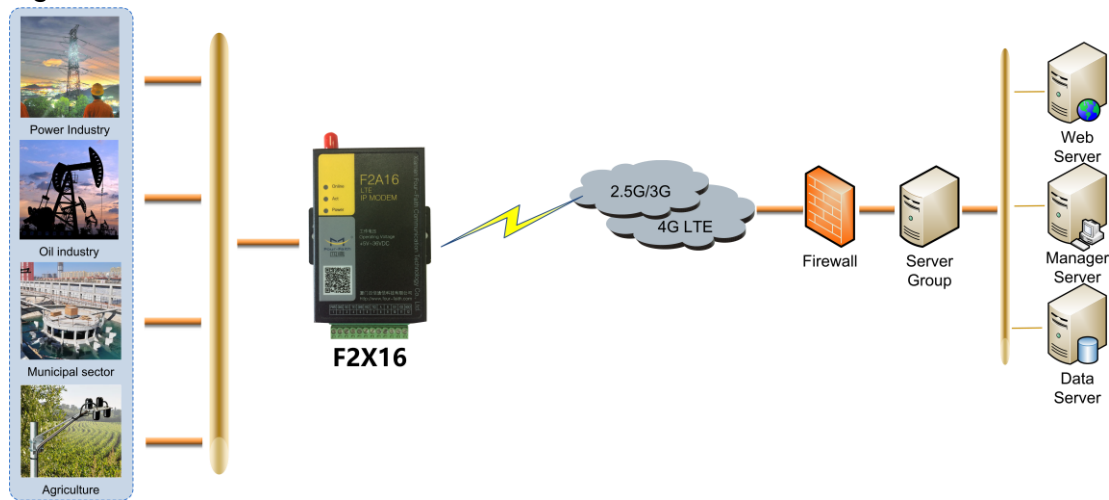


Figure 1-1 IP MODEM Application Topology

1.2 Features and Benefits

Design for Industrial Application

- ◆ High-powered industrial cellular module
- ◆ High-powered industrial 32 bits CPU
- ◆ Support low power consumption mode, including multi-sleep and trigger modes to reduce the power consumption
- ◆ Housing: iron, providing IP30 protection.
- ◆ Power range: DC 5~36V

Stability and Reliability

- ◆ Support hardware and software WDT
- ◆ Support auto recovery mechanism, including online detect, auto redial when offline to make it always online
- ◆ RS232/RS485 port: 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 and RS485(RS422 optional) port that can connect to serial devices directly
- ◆ TTL logic level RS232 interface can be customized
- ◆ Support intellectual mode, enter communication state automatically when powered
- ◆ Provide management software for remote management
- ◆ Support several work modes
- ◆ Convenient configuration and maintenance interface

High-performance

- ◆ Support TCP server and support multi TCP client connection(optional)
- ◆ Support double data centers, one main and another backup
- ◆ Supply 3 I/O channels, can support digital input/output, and can customize to be pulse counting, ADC; 2 ADC channels, can support 4~20mA current input, can customize to support voltage input, DI/O, pulsing counting.
- ◆ 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 domain name and IP address as data center
- ◆ Design with standard TCP/IP protocol stack
- ◆ Support private APN

1.3 Working Principle

The principle chart of the IP MODEM is showed in Figure 1-2:

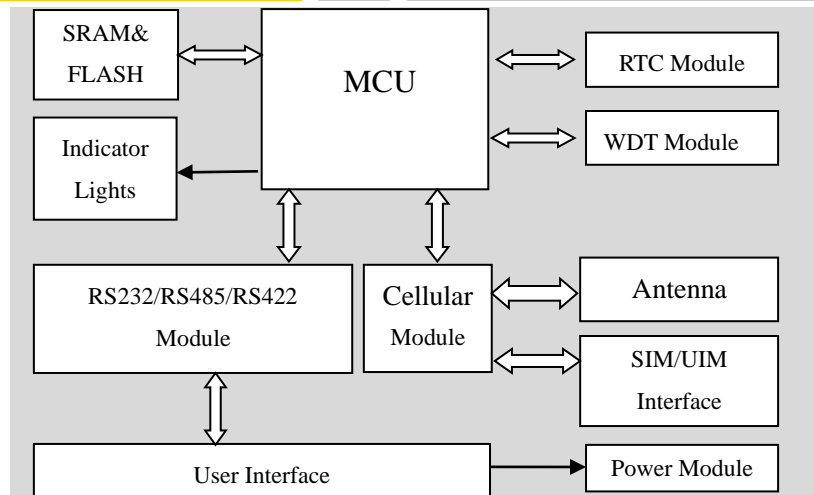


Figure 1-2 IP MODEM Principle Chart

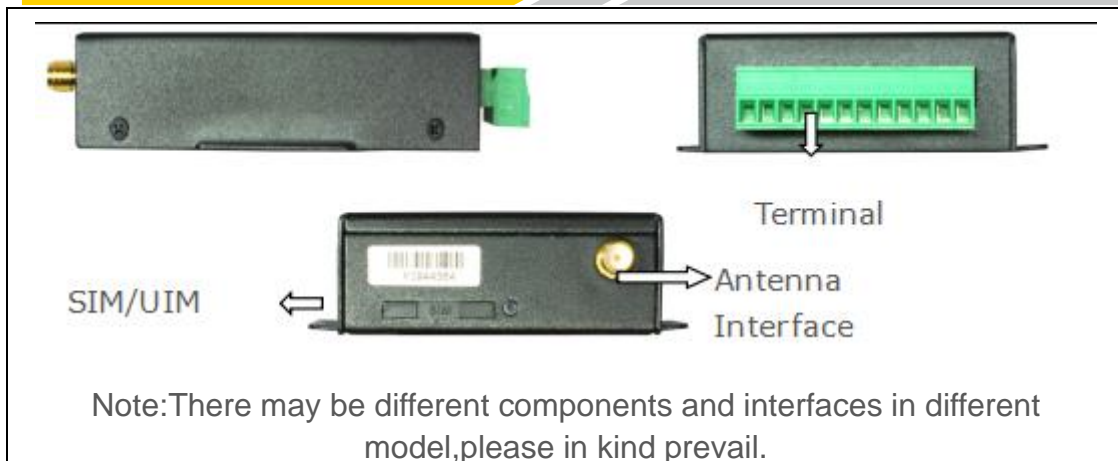
1.4 Specifications

Hardware System

Item	Content
CPU	Industrial 32 bits CPU
FLASH	1MB
SRAM	256KB
ADC	12-bit

Interface

Item	Content
Serial	1 RS232 and 1 RS485, 15KV ESD protection. Data bits: 5, 6, 7, 8 Stop bits: 1, 1.5, 2 Parity: none, even, odd, space, mark Baud rate: 1200~230400 bps
Indicator	"Power", "ACT", "Online"
Antenna	Cellular: Standard SMA female interface, 50 ohm Lighting protection(optional)
SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
Power	Terminal block interface, reverse-voltage and overvoltage protection



Power Input

Item	Content
Standard	DC 12V/0.5A
Power Range	DC 5~36V

Power Consumption (Communication power consumption differs from different modules)

Working Status	Power Consumption
Communication	20~80mA@12VDC
Standby	15~30 mA@12VDC
Sleep	1mA@12VDC

Physical Characteristics

Item	Content
Housing	Iron, providing IP30 protection
Size	91x58.5x22 mm (Antenna and Accessories are not included)
Weight	205g

Others

Item	Content
Operating Temperature	-35~+75°C (-22~+167°F)
Storage Temperature	-40~+85°C (-40~+185°F)
Operating Humidity	95%(Non-condensing)

Chapter 2 Installation Introduction

2.1 General

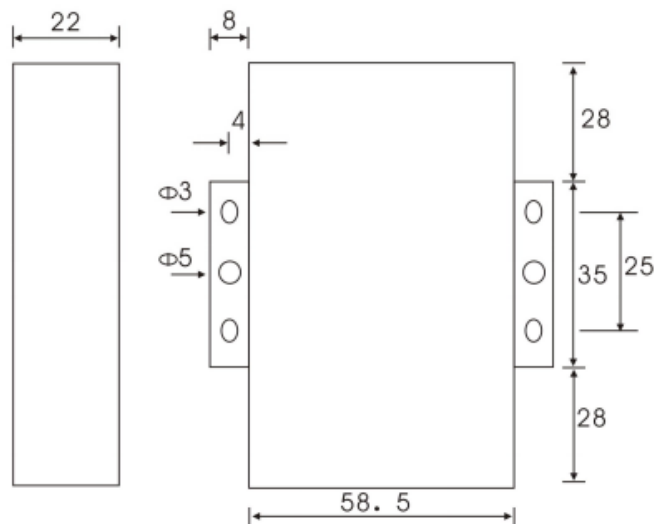
The IP MODEM must be installed correctly to make it work properly.
Warning: Forbid to install the IP MODEM when powered!

2.2 Encasement List

Name	Quantity	Remark
IP MODEM host	1	
Cellular Antenna	1	
Power adapter	1	
RS232 data cable	1	(Or RS485 cable)
Manual CD	1	
Certification card	1	
Maintenance card	1	

2.3 Installation and Cable Connection

Dimension: (unit: mm)



Installation of SIM/UIM card

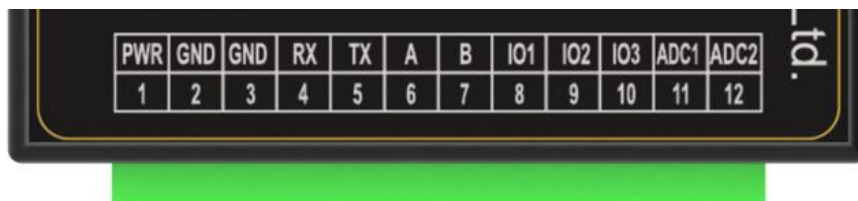
Firstly power off the IP MODEM, and press the button of the SIM/UIM card outlet with a needle object. Then the SIM/UIM card sheath will flick out at once. Put SIM/UIM card into the card sheath (Pay attention to put the side which has metal point outside), and insert card sheath back to the SIM/UIM card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

Installation of antenna

Screw the SMA male pin of the antenna to the female SMA outlet of the IP MODEM tightly. Warning: The antenna must be screwed tightly, or the signal quality of antenna will be influenced!

User Interface Signal Definition

Pin NO.	Name	Function	Extensible Function
1	PWR	Power input anode	N/A
2	GND	Power Ground	N/A
3	GND	System Ground	N/A
4	RX	RS232 RX	N/A
5	TX	RS232 TX	N/A
6	A	RS485 anode	N/A
7	B	RS485 cathode	N/A
8	IO1	GPIO	Reserved compatible pulse wave input counter, ADC, and pulse output
9	IO2	GPIO	Reserved compatible pulse wave input counter, ADC, and pulse output
10	IO3	GPIO	Reserved compatible pulse wave input counter, ADC, and pulse output
11	ADC1	ADC	N/A
12	ADC2	ADC	N/A



Installation of cable

F2X16 V4 adopts industrial terminal block interface, the recommendatory cable is 28-16AWG.

Adapter (Rating Output 12VDC/0.5A)

Cable Color	Power Output Polarity
Black&White	Anode
Black(with letters)	Cathode

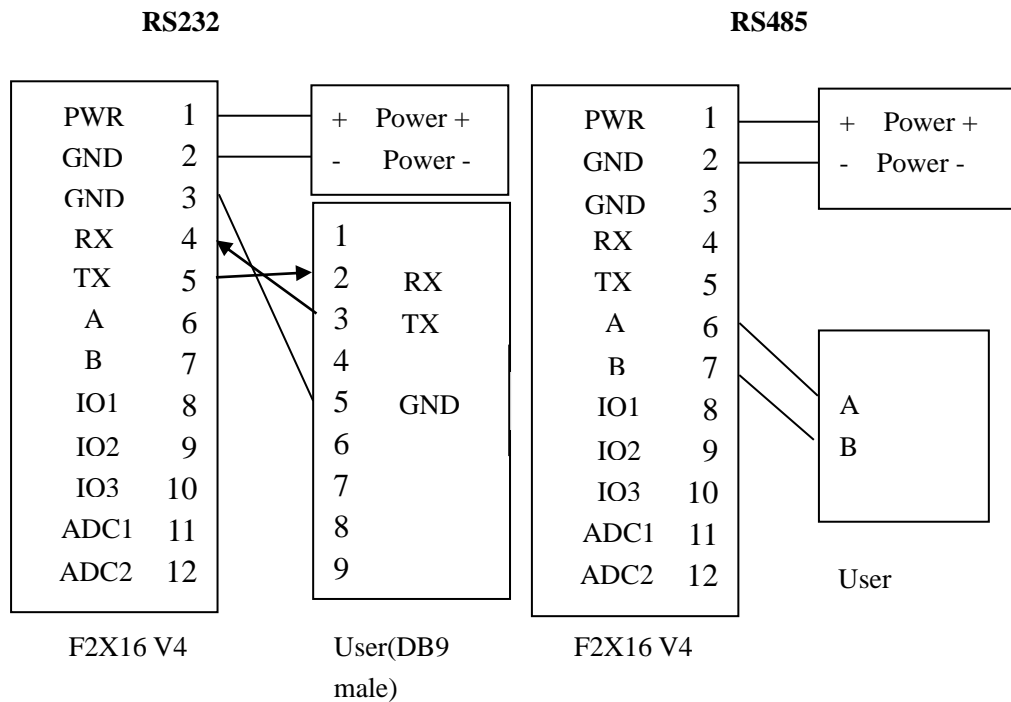
RS232 Cable

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

RS485 Cable(optional)

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

Power adapter and communication cable connection



2.4 Power

The power range of the IP MODEM is DC 5~36V

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

Warning: When we use other power, we should make sure that the power can

supply power above 6W.(Ripple is less than 300mV, and ensure that the instantaneous voltage does not exceed 36V)

2.5 Indicator Lights Introduction

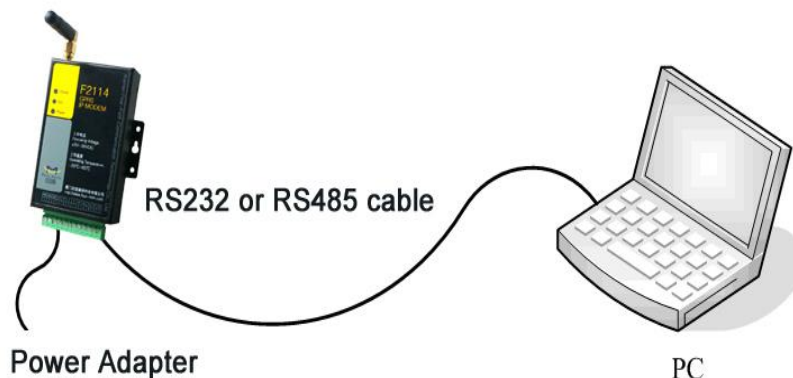
The IP MODEM provides three indicator lights: “Power”, “ACT”, “Online”.

Indicator	Status	Introduction
Power	off	IP MODEM is powered off
	on	IP MODEM is powered on
ACT	off	No data communication
	Blink	Data is communicating
Online	off	IP MODEM hasn't logged on network
	on	IP MODEM has logged on network

Chapter 3 Configuration

3.1 Connection

Before configuration, It's necessary to connect the IP MODEM with the PC by the shipped 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 through the shipped software tool. It's necessary to have one PC to run this tool.

Extended AT command:

All the settings are configured through AT command, so any device with serial port can configure it.

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.

The following describes how to configure IP MODEM with the configure software tool. At the same time, it gives out the corresponding AT command of each configuration item.

3.3 IP Modem’s Parameters Configuration

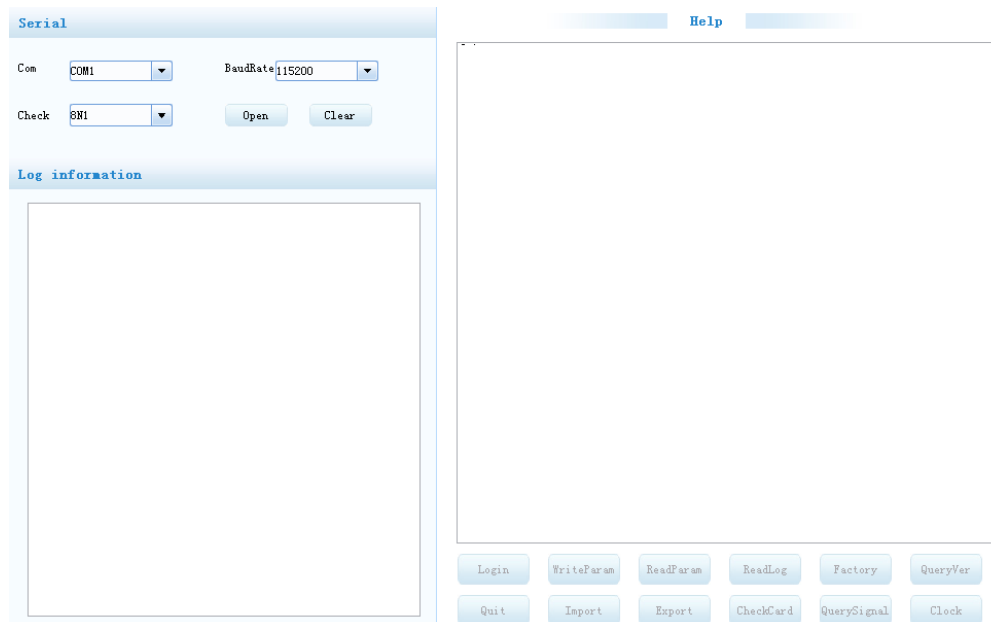
There are data settings in HEX format in the parameters, for the HEX format, the data must be hexadecimal characters, and the number of characters cannot be an odd number.

For example, "12AB" is in the correct format

"12A" format error, the number of characters is odd

"12G" format error, non-hexadecimal character

3.3.1 Run the Configure Tools



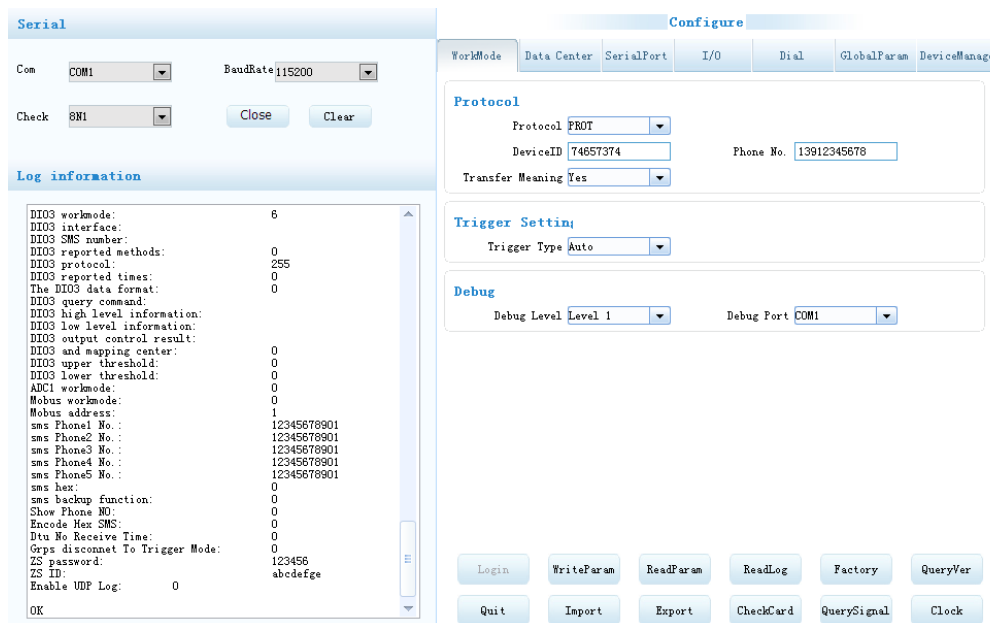
The “Serial” area shows the current serial port settings.

To configure IP MODEM, please choose the correct serial port which connects to IP MODEM, and the baud-rate is 115200 with no parity, then open the serial port. If the button text is “Close”, it shows the serial port now has been opened. If the text is “Open”, you should open the port first.

When the port opened, the “Output Info” column will display:

“Port(COM1) Has Opened, Please Re-Power the IP MODEM, Waiting IP MODEM Enter Configure State...”

3.3.2 Re-Power IP Modem



After Re-power IP MODEM, The configure tool will make it enter configure state.

At the same time, the software will load current settings from IP MODEM and displays on the right configure columns. It's now ready to configure.

Note: To enter configure state for 4G device may need more time. It is about 40 seconds.

3.3.3 Work Mode

3.3.3.1 App protocol

The IP Modem can be configured many communication protocols to adapt for different applications.

Note: The tool will show the reference parameters according to the communication protocols setting.

PROT

It uses TCP Protocol to send or receive data. In this mode, ID and phone number MUST be set.

<div style="border: 1px solid gray; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode <input type="text" value="PROT"/></p> <p>Device ID <input type="text"/> Phone No. <input type="text"/></p> <p>Character Escapes <input type="text"/></p> </div>	
Device ID	ID number for the device. 8 characters
Phone No.	Phone number
Character Escapes	This item is only valid when the Work Mode is PROT. If this item is set to No, IP MODEM will transfer meaning to 0xfd and 0xfe. To know detail transfer meaning method, please refer "IP MODEM Transfer Meaning Explanation In the PROT work mode". If this item is set to Yes, all the transmission is transparent.

DCTCP

This protocol is used in electric power field, with TCP protocol.

<div style="border: 1px solid gray; padding: 5px;"> <p>App Protocol</p> <p>App Protocol <input type="text" value="DCTCP"/></p> <p>Phone No. <input type="text" value="13912345678"/></p> </div>	
PhoneNo.	Phone number

DCUDP

This protocol is used in electric power field, with UDP protocol

<div style="border: 1px solid gray; padding: 5px;"> <p>App Protocol</p> <p>App Protocol <input type="text" value="DCUDP"/></p> <p>Phone No. <input type="text" value="13912345678"/></p> </div>	
PhoneNo.	Phone number

TRNS

The device work as MODEM for sending/receiving SMS, CSD and GPRS dialing.

<div style="border: 1px solid gray; padding: 5px;"> <p>App Protocol</p> <p>App Protocol <input type="text" value="TRNS"/></p> </div>	
---	--

SMSCLI

IP MODEM work as a SMS DTU. All data will send to binding phone number via SMS. The SMS from the binding phone number will send to Serial port.

<div style="border: 1px solid gray; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode <input type="text" value="SMSCLI"/></p> <p>Phone No 1st Group <input type="text" value="12345678901"/></p> <p>Phone No 2nd Group <input type="text" value="12345678901"/></p> <p>Phone No 3rd Group <input type="text" value="12345678901"/></p> <p>Phone No 4th Group <input type="text" value="12345678901"/></p> <p>Phone No 5th Group <input type="text" value="12345678901"/></p> <p>Show Phone Number <input type="text" value="Hide"/> Hex To Text <input type="text" value="Disable"/></p> <p>Send SMS Hex <input type="text" value="Yes"/></p> </div>	
Phone No 1st Group Phone No 2nd Group Phone No 3rd Group Phone No 4th Group Phone No 5th Group	Bind phone number. Max phone number is 5 for one group
Show Phone Number	If send phone number to serial port or not
Hex To Text	If convert HEX data to ASCII data or not
Send SMS Hex	If send SMS with Hex format or not

SMSSER

IP MODEM work as a SMS DTU. All the data paced with special format send to any phone number. The SMS from phone number will send to serial port.

<div style="border: 1px solid gray; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode <input type="text" value="SMSSER"/></p> <p>Show Phone Number <input type="text" value="Hide"/> Hex To Text <input type="text" value="Disable"/></p> <p>Send SMS Hex <input type="text" value="Yes"/></p> </div>	
Show Phone Number	If send phone number to serial port or not
Hex To Text	If convert HEX data to ASCII data or not
Send SMS Hex	If send data with Hex format or not

HTTP

When IP modem connected to the HTTP server address, serial port data will

be packeted with Http format and sent to server.

<div style="border: 1px solid #ccc; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode: <input type="text" value="HTTP"/></p> <p>HTTP Request Mode: <input type="text" value="GET"/></p> <p>Trigger Setting <input type="text" value="POST"/></p> </div>	
HTTP Request Mode	Can select GET and POST Mode

MTCP/MRTU

IP MODEM will convert data from Modbus TCP to modbus RTU when receive data from server,also will convert data from Modbus RTU to Modbus TCP when sending data to server via the serial port in device.

<div style="border: 1px solid #ccc; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode: <input type="text" value="MTCP/MRTU"/></p> <p>Device ID: <input type="text" value="123456"/> Phone No.: <input type="text" value="13912345678"/></p> <p>Character Escapes: <input type="text" value="Yes"/></p> </div>	
Device ID	ID number for the device. 8 characters
Hex To Text	If convert HEX data to ASCII data or not
Send SMS Hex	This item is only valid when the Work Mode is PROT. If this item is set to No, IP MODEM will transfer meaning to 0xfd and 0xfe. To know detail transfer meaning method, please refer "IP MODEM Transfer Meaning Explanation In the PROT work mode". If this item is set to Yes, all the transmission is transparent.

MQTT

IP MODEM will work as MQTT client,when configured and connected to MQTT server,it can communicate with other MQTT client.(you can check the test guide in the appendix.)

Protocol Setting	
Work Mode	MQTT
Client ID:	IamClientID
User Name:	admin
Password:	paulyeah
Receive Topic:	IamRecTopic
Send Topic:	IamSendTopic
KEY:	

Client ID	ID of MQTT client,can be Configured to the required string
User name and password	The username and password of server(if need)
Receive Topic	It should be configured with the send topic of another client
Send Topic	It should be configured with the recieve topic of another client

Custom protocol: Client mode

It support TCP and UDP protocol with custom heart and login packet.

Protocol Setting	
Work Mode	Custom
Device Mode	Client Mode
Protocol	TCP
RegisterHeartbeat	Enable
Data Format	Text
Register Packet	
Register Reply	
Heartbeat Packet	
Heartbeat Reply	

Base Protocol	TCP or UDP
DeviceMode	Client Mode: the IP Modem work as a client.
Login&Heartbeat	Enable: custom login and heart packet Disable: no login and heart packet. The flowing items can be ignored.
Data Format	Text: the flowing items are Text format Hex: the flowing items are Hex format
Login Packet	Login packet
Login Reply	Login packet respond
Heartbeat Packet	Heart packet
Heartbeat Reply	Heartbeat packet respond

Custom protocol: Server mode

It supports TCP and udp server.

<div style="border: 1px solid black; padding: 5px;"> <p>Protocol Setting</p> <p>Work Mode <input type="text" value="Custom"/></p> <p>Device Mode <input type="text" value="Server Mode"/> Protocol <input type="text" value="TCP"/></p> <p>Listen Port <input type="text" value="5001"/></p> </div>	
Base Protocol	TCP or UDP
Listen Port	Listen port for service

3.3.3.2 Trigger mode

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 triggered online ready for data transmission. There are total five methods to make IP MODEM online.

AUTO

IP MODEM always keeps online

<div style="border: 1px solid black; padding: 5px;"> <p>Trigger Setting</p> <p>Trigger Type <input type="text" value="Auto"/></p> </div>

SMSD

Send a special short message to make IP MODEM online.

Any phone number's SMS can wake up IP Modem, if the trigger number is empty. Otherwise only the trigger phone number's SMS can trigger the IP Modem.

<div style="border: 1px solid black; padding: 5px;"> <p>Trigger Setting</p> <p>Trigger Type <input type="text" value="SMSD"/></p> <p>SMS Phone No. <input type="text"/></p> <p>SMS Password <input type="text"/></p> </div>	
SMS Phone No.	Trigger phone number. If it is empty, sms received from any phone no. can trigger the device

SMS Password	The content of SMS to trigger. If it is empty, any content of sms can trigger the device
--------------	--

CTRL

Make IP MODEM online through a phone call to IP MODEM.

Any phone number call can wake up IP Modem, if the trigger number is empty.

Otherwise only the trigger phone number call can trigger the IP Modem.

Note: if the trigger phone was set, the sim card in IP Modem Must have “caller ID display” function.

<div style="border: 1px solid #ccc; padding: 10px;"> <p>Trigger Setting</p> <p>Trigger Type <input type="text" value="CTRL"/></p> <p>CALL Phone No. <input type="text"/></p> </div>	
CALL Phone No.	Trigger phone number

DATA

Send special serial data to make IP MODEM online

<div style="border: 1px solid #ccc; padding: 10px;"> <p>Trigger Setting</p> <p>Trigger Type <input type="text" value="DATA"/></p> <p>Data Trigger On <input type="text" value="don"/> Data Trigger off <input type="text" value="doff"/></p> <p>Trigger Port <input type="text" value="COM1"/> Data Format <input type="text" value="Text"/></p> </div>	
Data Trigger On	If it was empty, any data form serial can trigger the IP Modem. The first frame data will be discarded because the IP modem was in deep sleep state. If it is not empty, only the data matching to the “online data” can trigger the IP Modem.
Data Trigger Off	If it was empty, the IP Modem kept online. If it is not empty, only the data matching to the “offline data” can made the IP Modem offline.
Trigger Port	Set the trigger data source from PORT1 or PORT2
Data Format	Format of the trigger data: Text or HEX

I/O: Sleep and Wake up

Made the IP Modem sleep or wake up via I/O level. If the I/O was in high level or suspend, the IP Modem was sleep. Otherwise, It would trigger the IP Modem wake up.

<p>Trigger Setting</p> <p>Trigger Type <input type="text" value="I/O"/></p> <p>I/O type <input type="text" value="Sleep/Wakeup"/></p> <p>I/O Port <input type="text" value="I/01"/></p>	
Sleep/Wakeup	Made the IP Modem sleep or wake up depended on the I/O state
I/O	Set I/O port to trigger the IP Modem to sleep or wake up

MIXD

The combination of SMSD, CTRL, DATA. IP MODEM will be online when meet one of these three trigger methods.

<p>Trigger Setting</p> <p>Trigger Type <input type="text" value="MIXD"/></p> <p>CALL Phone No. <input type="text"/></p> <p>SMS Phone No. <input type="text"/></p> <p>Data Trigger On <input type="text" value="don"/> Data Trigger off <input type="text" value="doff"/></p> <p>Trigger Port <input type="text" value="COM1"/> Data Format <input type="text" value="Text"/></p> <p>I/01 Control <input type="text" value="ALL"/> I/02 Control <input type="text" value="ALL"/></p> <p>I/03 Control <input type="text" value="ALL"/> SMS Password <input type="text"/></p>	
CALL Phone No.	Any phone number call can wake up IP Modem, if the trigger number is empty. Otherwise only the trigger phone number call can trigger the IP Modem.
SMS Phone No.	Any phone number's SMS can wake up IP Modem, if the trigger number is empty. Otherwise only the trigger phone number's SMS can trigger the IP Modem.
Data Trigger On	Online data
Data Trigger Off	Offline data
Trigger Port	Set the trigger data source from PORT1 or PORT2
Data Format	Format of the trigger data: Text or HEX

3.3.3.3 Debug Level

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

<p>Debug</p> <p>Debug Level <input type="text" value="Level 1"/> Debug Port <input type="text" value="COM1"/></p>	
Debug Level	<p>Close: no debug information output</p> <p>Level 1: simple prompt information output</p> <p>Level 2: detail debug information output</p>
Debug Port	<p>Port 1: debug info send to port 1</p> <p>Port 2: debug info send to port 2</p> <p>485: debug info send to RS485</p>

3.3.3.4 Clear Serial Buffer

When open “clearing Serial buffer” function, serial port data before connecting to the network will not be sent to the center

<p>Other</p> <p>Clear Serial Buffer <input type="text" value="open"/></p>
--

3.4 Data Service Center Settings

Settings on this page are the parameters related to Data Service Center (DSC).

3.4.1 Data Service Center

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

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

Note: If no Backup DSC exists, please configure the Backup DSC same as Main DSC.

Multi Data Service Center:

IP MODEM can connect with at most five DSC at the same time. All the multi DSC can receive the same application data .

Data Service Center Settings

Data Center Number

Main Center Port

Backup Center Port

Main Backup Param	
Reconnect Int. (s)	<input type="text" value="3"/>
Connect Retry Times	<input type="text" value="5"/>
Back To Main Server	<input type="text" value="No"/>
Reconnect Int.(s)	reconnect time interval in second
Connect Retry Times	reconnect times
Back To Main Server	This item is only valid when you set “Data Center 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.

If the Data Center Number is 0,there is no DSC working.

If the Data Center Number is 1, IP MODEM work in Main and Backup DSC method.

When “Data Center Number” is greater than 1, IP MODEM works in Multi Data Service Center method. The back center is invalid. The IP Modem will connect to mult Data Center and transmit data.

Data Service Center Settings

Data Center Number

Main Center Port

2nd Center Port

3rd Center Port

4th Center Port

5th Center Port

3.4.2 Multi-Center Connection Check

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

<p>Multi-Center Connection Param</p> <p>Reconnect Int. (s) <input type="text" value="3"/></p> <p>Connect Retry Times <input type="text" value="5"/></p>	
Reconnect Int.(s)	reconnect time interval in second
Connect Retry Times	reconnect times

3.4.3 ICMP Link Check

ICMP link check send to server a icmp packet and wait reply to check the link status. If the reply is lost, it means that the link may be broken.

<p>ICMP Check</p> <p>ICMP Check <input type="text" value="Enable"/></p> <p>Dest Address <input type="text"/> Check Interval (s) <input type="text" value="60"/></p> <p>Check Times <input type="text" value="5"/></p>	
ICMP Check	Enable or Disable
Dest Address	The destination address of ICMP packet to send
Check Interval(s)	The interval should not be too small. 60 is recommended(in second)
Check Times	>= 3 times

3.5 Serial port

IP MODEM support two individual serial ports, RS232 and RS485. All the three ports can enter configuration state. The default parameters of the port with baudrate 115200, data property 8N1

The data from the three port can bind to Data center.

<p>RS232</p> <p>BaudRate <input type="text" value="115200"/></p> <p>Check <input type="text" value="8N1"/></p> <p>Mapping Center <input type="text" value="ALL"/></p>	
<p>RS485</p> <p>BaudRate <input type="text" value="115200"/></p> <p>Check <input type="text" value="8N1"/></p> <p>Mapping Center <input type="text" value="ALL"/></p>	
RS232	<p>baud: the baud rate of the PORT</p> <p>1200 --- 1200 bps</p> <p>2400 --- 2400 bps</p> <p>4800 --- 4800 bps</p> <p>9600 --- 9600 bps</p> <p>14400 --- 14400 bps</p> <p>19200 --- 19200 bps</p> <p>38400 --- 38400 bps</p> <p>56000 --- 56000 bps</p> <p>57600 --- 57600 bps</p> <p>115200 --- 115200 bps</p> <p>Property: Databit, Parity, Stopbit</p> <p>8N1 --- 8 Databit, No parity, 1 Stopbit</p> <p>8E1 --- 8 Databit, Even parity, 1 Stopbit</p> <p>8O1 --- 8 Databit, Odd parity, 1 Stopbit</p> <p>Bind:</p> <p>Center1: the data from the port send to center 1</p> <p>Center2: the data from the port send to center 3</p> <p>Center3: the data from the port send to center 3</p> <p>Center4: the data from the port send to center 4</p> <p>Center5: the data from the port send to center 5</p> <p>ALL: the data from the port send to all centers</p> <p>Close: send to none</p>
RS485	Same as above

3.6 IO function

IP MODEM support 3 digital I/O and 2 Analog input,can custom data string to query data or trigger IO state.

3.6.1 Digital I/O

<div style="border: 1px solid black; padding: 10px;"> <p>I01</p> <p>I/O1: <input type="text" value="Input"/> Protocol <input type="text" value="Custom"/></p> <p>Port <input type="text" value="ALL"/></p> <p>Report Type <input type="text" value="Query"/> Command <input type="text"/></p> <p>Data Format <input type="text" value="Text"/></p> <p>High Level <input type="text"/> Low Level <input type="text"/></p> </div>	
I/O1	Input:work as digital input port Output:work as digital output port Indication:will output low level when IP Modem connect data center;output high level when disconnect from data center
Port	support COM/GPRS/ SMS
Protocol	Modbus:you can query or control IO status through modbus tcp command Custom:you can custom command to query IO status
Report Type	Query/Time/IO Trigger
Command	Random string
Data Format	Text or Hex
High leve	Status indicator string,when port is high level,will report it to DSC
Low level	Status indicator string,when port is low level,will report it to DSC
IO2	Same as above
IO3	Same as above

3.6.2 Analog Input

ADC1 Setting

ADC

Port

ADC type

Top Limit Low Limit

ADC	Disable or enable ADC
Port	support COM/GPRS/ SMS
ADC type	Electricity:support 4~20MA current input Voltage:support 0~5V,can customize to support 10V/15V
Report Type	Query/Time/IO Trigger
Top Limit	Sensor measurement range upper limit
Low Limit	Sensor measurement range lower limit
ADC2	Same as above

3.7 Dial

3.7.1 PPP Dial

PPP Dial

DialNo QueryNetMode

APN UserName

Password

net mode PPP Auth

DialNo	Network	Dial number	
	GPRS/WCDMA/LTE	*99***1#、*99#、*98*1#	
	CDMA/EVDO	#777	
APN	Network	APN	
	GPRS/WCDMA/LTE	cmnet、uninet	
	CDMA/EVDO	empty	
Username/passw	Network	User name/password	
	GPRS/WCD	empty	

ord	MA/LTE	
	CDMA/EVDO	card/card
PPP Auth	AUTO,PAP and CHAP	
QueryNetMode	Search the network mode for the 4G network	
Net Mode	Net Mode	
	AUTO	
	EVDO	
	WCDMA	
	TD-SCDM	
	A	
	GSM	

3.7.2 PPP Redial

<div style="border: 1px solid #ccc; padding: 10px;"> <p>PPP Re-dial</p> <p>Re-dial Interval (s) <input type="text" value="30"/></p> <p>Dial Retry Times <input type="text" value="2"/></p> </div>	
Re-dial Interval(s)	The interval between ppp dial in second
Dial Retry Times	max times of ppp dial failure

3.7.3 DNS Parameters

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

<div style="border: 1px solid #ccc; padding: 10px;"> <p>DNS Setting</p> <p>Main DNS <input type="text" value="8.8.8.8"/></p> <p>Backup DNS <input type="text" value="8.8.8.8"/></p> </div>	
Main DNS	The DNS server IP address(must be IP address)

Backup DNS	The DNS server IP address(must be IP address)
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3.8 Global Parameters

3.8.1 Data Frame Parameters

<div style="border: 1px solid black; padding: 5px;"> <p>Data Frame Setting</p> <p>Bytes Interval (MS) <input type="text" value="20"/> MTU <input type="text" value="1450"/></p> </div>	
Bytes Interval(MS)	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.(in milliseconds)
MTU	TCP Max packet length

3.8.2 Action for data send fail

When data send to server fail(there are not response from server),IP modem will take a failed action after setting delay.

<div style="border: 1px solid black; padding: 5px;"> <p>Action for Data Send Fail</p> <p>Re-send Int. (MS) <input type="text" value="1000"/> Re-send Times <input type="text"/></p> <p>Failed Action <input type="text" value="Dial Again"/> Delay Before Action <input type="text" value="20"/></p> </div>	
Re-send int	The time interval if re-send fail
Re-Times	The max times of sending data failure
Fail Action	You can decide what action to take if sending data fail,including Dia again ,reconnect,reboot.
Delay before action	The time delay before Modem takes actions if sending data fail

3.8.3 Other Parameters

<div style="border: 1px solid black; padding: 5px;"> <p>Others</p> <p>SMS Center <input type="text"/> Heartbeat Int. (s) <input type="text" value="60"/></p> </div>	
SMS Center	The local SMS center number. It should set according to the local operation.
Heartbeat Int.(s)	Time interval sent heartbeat packet. (in second)

3.9 Device Manage

3.9.1 Device Manage Center Parameters

The IP Modem send device status information to the Device Manage Center. The information include network signal, network status, traffic flow and so on. The Device Manage Center also query and configure the device parameters.

<p>Device Manage Setting</p> <p>Device Manage <input type="text" value="Enable"/> ▼</p> <p>Dev ID For Manage <input type="text"/> Protocol <input type="text" value="TCP"/> ▼</p> <p>Service Address <input type="text" value="120.42.46.98"/> Port <input type="text" value="44002"/></p>	
Device Manage	Enable or Disable
Dev ID For Manage	Device ID for manage center. 8 character
Protocol	TCP or UDP
Service Address	manage center server address
Port	manage center server port

3.9.2 Manage by SMS

Configure the IP Modem by SMS

SMS Manage	
SMS Configure	Enable <input type="button" value="v"/>
Configure Password	<input type="text" value="123456"/>
Manage Phone No	<input type="text"/>
SMS Configure	Enable or Disable
Configure Password	The password for SMS Configure
Manage Phone No.	If it is empty, any number can configure the IP Modem Parameters. Otherwise, only the "Administrator Number" can configure the IP Modem Parameters.

3.10 Operation

Common operations					
<input type="button" value="SIM Check"/>	<input type="button" value="Signal"/>	<input type="button" value="TimeSetting"/>	<input type="button" value="Log"/>	<input type="button" value="Factory"/>	<input type="button" value="Ver Info"/>
<input type="button" value="Reset"/>	<input type="button" value="IMEI"/>				
SIM Check	To check if simcard inserted or install ok?				
Signal	Inquery the signal strength of simcard network				
Time Setting	Synchronize local time				
Log	Read log information of IP Modem				
Factory	Factory the IP Modem's parameters				
Ver Info	Query the version of IP Modem				
Reset	Reset modem to factory				
IMEI	Inquery IMEI of IP Modem				
Factory	Factory the IP Modem's parameters				
Ver Info	Query the version of IP Modem				
Reset	Reset modem to factory				
IMEI	Inquery IMEI of IP Modem				

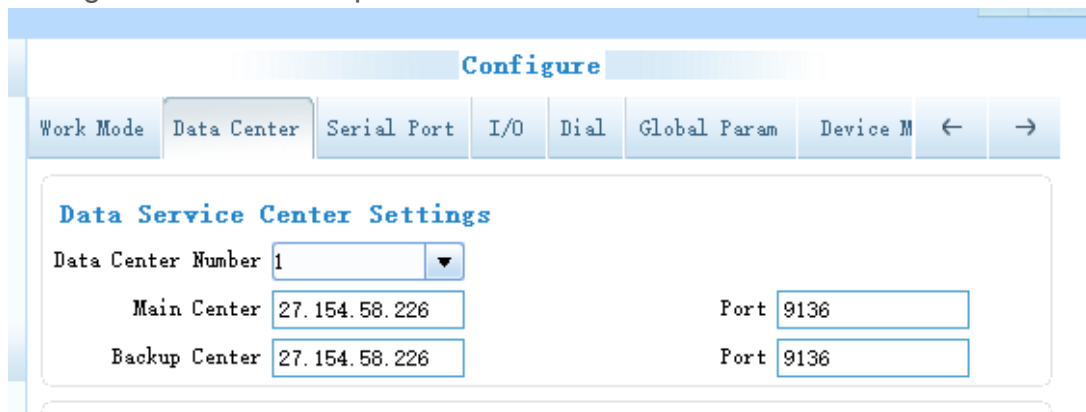
Chapter 4 Application Case

4.1 Modem connect to data center

In this application, the client can communicate with the server side by gprs network.

IP modem configuration

Configure server IP and port:



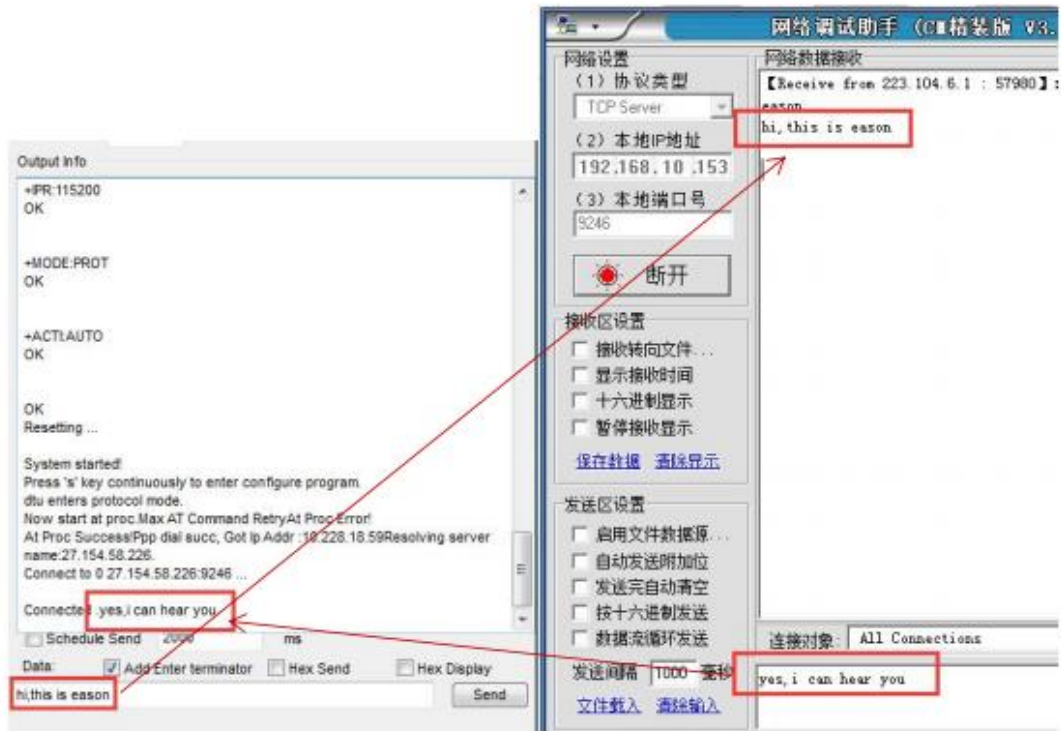
Fill in the APN from your simcard provider:



Repower modem, wait it connected to server.



Then you can send data to test the communication between modem with data sever(here use Netassit software to simulate data server)



4.2 SMS to Configure Modem

You can send SMS to configure modem via mobile phone

Step one

Enable SMS Manage function in modem: set SMS sender's phone number, the password is the one set in the modem.it can be digit or letter.



Step two

Send SMS according to the following format:

The message starts with the symbol '<' and ends with '>' and is without 'AT+'. Example,AT command for the main center is AT+IPAD=120.42.46.98,and the corresponding SMS

configuration should be IPAD=120.42.46.98. Add 'reset' at the end.
SMS format: <123456;IPAD=120.42.46.98;PORT=5007;reset>
If set successfully,you will receive a return SMS with Config OK:

