	Version	
M240 V4 Series IP	V1.0.0	
MODEM User Manual	Product Name:M240 V4	Total
		page36

# M240 V4 Series IP MODEM User Manual

This user manual is suitable for the following model:

Modem	Product Type	
M240-G V4	GPRS IP MODEM	
M240-L V4	CAT4 LTE IP MODEM	
M240-L1 V4	Cat1 IP MODEM	
M240-LG V4	GPS+LTE IP MODEM	



Xiamen Yifan Communication Technology Co., Ltd.

Add: Floor 14th, No.370, Chengyi Street, Jimei District, XiaMen, China Zip Code: 361000 Tel: +86 592-6101492 Fax: +86 592-5222813 http://www.yifanwireless.com

# **Files Revised Record**

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

## **Copyright Notice**

All contents in the files are protected by copyright law, and all copyrights are reserved by Xiamen Yifan Communication Technology Co., Ltd.

Without written permission, all commercial use of the files from Yifan are forbidden, such as copy, distribute, reproduce the files, etc., but non-commercial purpose, downloaded or printed by individual (all files shall be not revised, and the copyright and other proprietorship notice shall be reserved) are welcome.

### **Trademark Notice**

Yifan and Yeacomm are all registered trademarks of Xiamen Yifan Communication Technology Co., Ltd., illegal use of the name of Yifan, trademarks and other marks of Yifan is forbidden, unless written permission is authorized in advance.



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

# Contents

Chapter 1 Brief Introduction of Product
1.1General6
1.2 Features and Benefits7
1.3 Working Principle
1.4 Specifications
Chapter 2 Installation Introduction
2.1 General10
2.2 Encasement List
2.3 Installation and Cable Connection10
2.4 Power
2.5 Indicator Lights Introduction
Chapter 3 Configuration
3.1 Connection14
3.2 Configuration Introduction14
3.3 IP Modem's Parameters Configuration15
3.3.1 Run the Configure Tools15
3.3.2 Re-Power IP Modem
3.3.3 Work Mode16
3.4 Data Service Center Settings
3.5 Serial port
3.6 IO function
3.7 Dial
3.8 Global Parameters
3.9 Device Manage
3.10 Operation
Chapter 4 Application Case
4.1 Modem connect to data center
4.2 SMS to Configure Modem

# **Chapter 1 Brief Introduction of Product**

# 1.1General

M240 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.

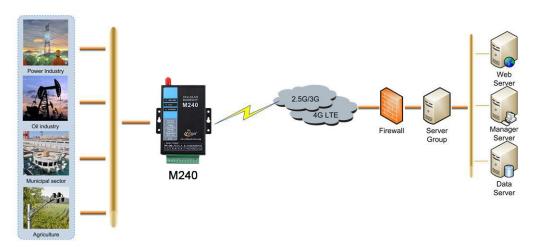


Figure 1-1 IP MODEM Application Topology

# **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)

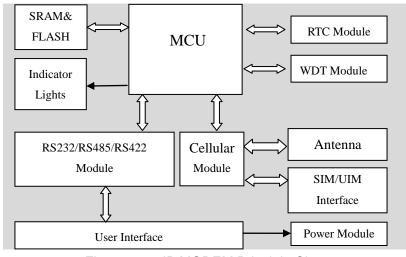
### **Standard and Convenience**

- 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 5 I/O channels, support 3 digital input/output(can customize to be pulse counting) and 2 ADC channels (4~20mA current input, can customize to support voltage input).
- 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**

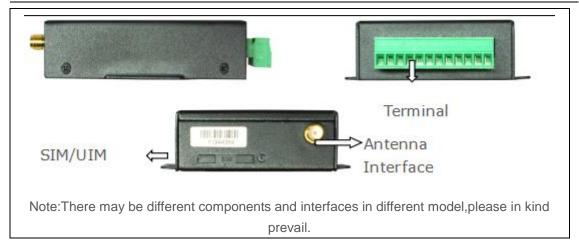
# Hardware System

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		

M240 V4 Series IP MODEM User Manual



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

# **Chapter 2 Installation Introduction**

# 2.1 General

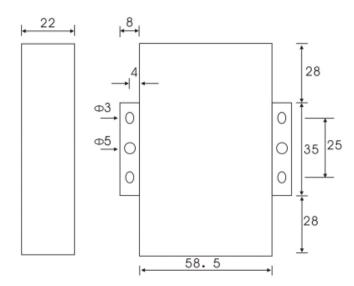
The IP MODEM must be installed correctly to make it work properly. Warning: Forbid to install the IP MODEM when powered!

# 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.

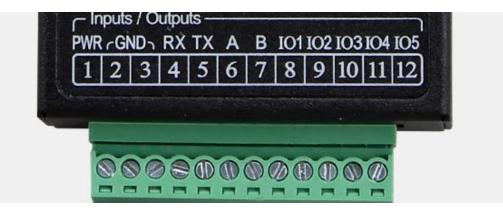
Warning: Forbid to install SIM/UIM card when powered!

# 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!

Pin NO.	Name	Function	Extensible Function
1	PWR	Power input	N/A
		anode	
2	GND	Power Ground	N/A
3	GND	System Ground	N/A
4	RX	RS232 RX	N/A
5	ТΧ	RS232 TX	N/A
6	А	RS485 anode	N/A
7	В	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

# **User Interface Signal Definition**



Add: Floor14,A06building,No.370, ChengyiStreet, JimeiDistrict,Xiamen, China.Web:www.yifanwireless.comHotline:+865926101492Fax:+865925222813

# Installation of cable

M240 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				

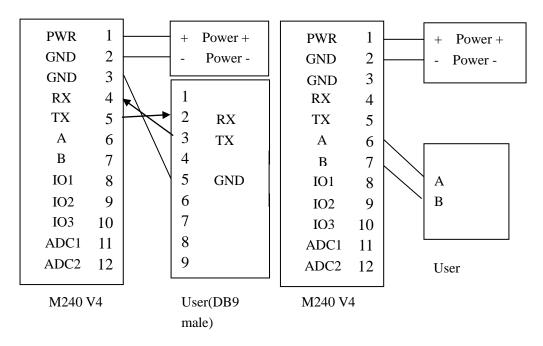
## **RS485** Cable(optional)

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

### Power adapter and communication cable connection

RS232

```
RS485
```



# 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

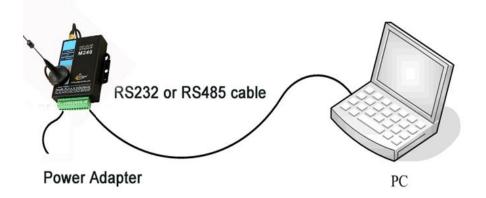
Indicator	Status	Introduction			
Power	off	IP MODEM is powered off			
	on	IP MODEM is powered on			
ACT	off	No data communication			
	Blink	Data is communicating			
Online	off	IP MODEM hasn't logged on network			
	on	IP MODEM has logged on network			

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

# **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

Serial	Help
Com DOM1 V BaudRate115200 V Check 8N1 V Open Clear	
Log information	
	Login WriteParam ReadParam ReadLog Factory QueryVer Quit Import Export CheckCard QuerySignal Clock

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

erial				Co	nfigure			
om COM1 💌 J	BaudRate 115200 💌	WorkMode	Data Center	SerialPort	I/0	Dial	GlobalParam	DeviceManag
heck 8N1 💌	Close Clear	Protoc	ol Protocol PROT DeviceID 7465	7374	Pho	one No. 1391	2345678	
og information		Transf	er Meaning Yes	-				
DIO3 workmode: DIO3 interface: DIO3 SMS number: DIO3 reported methods: DIO3 protocol:	6 0 255		o <b>r Settin</b> ≰ igger Type Auto	•				
DIO3 reported times: The DIO3 data format: DIO3 query command: DIO3 high level information: DIO3 low level information:	0 0	Debug	ebug Level Level	. 1 💌	Debu	ng Port COM1	•	
DIO3 output control result: DIO3 and mapping center: DIO3 upper threshold: DIO3 lower threshold: ADC1 workmode: Mobus workmode: Mobus address: sms Phone2 No.: sms Phone2 No.: sms Phone3 No.: sms Phone4 No.:	0 1 123456778901 123456778901 123456778901 123456778901 123456778901 0 2456778901							
Show Phone NO: Encode Hex SMS: Dtu No Receive Time: Grps disconnet To Trigger Mode: ZS password: ZS ID: Enable UDP Log: 0	0 0 0 123456 abcdefge	E Logi	n WritePa	ram ReadPa	ram R	leadLog	Factory	QueryVer
ок		- Qui	t Impor	t Expo	ct Ch	eckCard	QuerySignal	Clock

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.

Protocol Setting					
Work Mode PROT					
Device ID	Phone No.				
Character Escapes					
Device ID	ID number for the device. 8 characters				
Phone No.	Phone number				
Character This item is only valid when the Work Mode is PROT. If this item is					
Escapes	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.

App Protocol App Protocol Phone No.	DCTCP -
PhoneNo.	Phone number

#### DCUDP

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

App Protocol App Protocol Phone No.	DCVDP - 13912345678	
PhoneNo.	Phone number	

# TRNS

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

Арр	Protocol				
	App Protocol	TRNS	-		

# SMSCLI

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

17 / 35

٦

Add:	Floor	14, A06	building,	No. 370, C	hengyi	Street, Jimei	Dis	trict,	Xiamen, China.
Web:	www.yi	fanwirel	ess.com	Hotline:	+86 592	2 6101492	Fax:	+86 59	2 5222813

SMS from the binding phone number will send to Serial port.

Protocol Setting							
Work Mode SMSCI							
Phone No 1st Group 1234	2345678901						
Phone No 2nd Group 12345678901							
Phone No 3rd Group 12345678901							
Phone No 4th Group 12345678901							
Phone No 5th Group 1234	5678901						
Show Phone Number Hide 💌 Hex To Text Disable 💌							
Send SMS Hex Yes	•						
Pone No 1st Group	Bind phone number. Max phone number is 5 for one group						
Pone No 2nd Group							
Pone No 3rd Group							
Pone No 4th Group							
Pone No 5th 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.

<b>Protocol Setting</b> Work Mode SMSSE Show Phone Number Hide Send SMS Hex Ves	R  T Hex To Text Disable T
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.

[			
Protocol Setti	ing		
Work Mode	HTTP	-	]
HTTP Request Mode:	GET	-	
	GET		
Trigger Settin	POST		
HTTP Request Mode	e Can	select (	GET and POST Mode

### MTCP/MRTU

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

Protocol Settin	g
Work Mode M	ICP/MRTU -
Device ID 1	23456 Phone No. 13912345678
Character Escapes Ve	
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 Setti	ng		
Work Mode	MQTT 🗾		
Client ID:	IamClientID		
User Name:	admin		
Password:	paulyeah		
Receive Topic:	IamRecTopic		
Send Topic:	IamSendTopic		
KEY :			
1			
Client ID	ID of MQTT client, can be Configured to the required string		
User name and	The usename and password of server(if need)		

password	
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

Γ

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

Protocol Setti	
Work Mode	Custom
Device Mode	Client Mode 💌 Protocol TCP 💌
Register <u>H</u> eartbeat	Enable 🔽
Data Format	Text
Register Packet	Register Reply
Heartbeat Packet	Heartbeat Reply
Ъ	/
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.

Protocol Settin Work Mode Cu Device Mode Se Listen Port 5	erver Mode 💌 Protocol TCP 🔽
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

rigger Settin;
pe Auto 👻

#### 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.

Trigger Setting		
Trigger Type SM	ISD	
SMS Phone No.		
SMS Password		
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.

Trigger Setting Trigger Type CT CALL Phone No.	RL	
CALL Phone No.	Trigger phone number	

#### DATA

Send special serial data to make IP MODEM online

Trigger Setting Trigger Type D	
Data Trigger On d	on Data Trigger off doff
Trigger Port C	DM1 💌 Data Format Text 💌
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

M240 V4 Series IP MODEM User Manual

# 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.

Trigger Setting	5	
Trigger Type	/0 🗸	
I/O type Sleep/Wakeup 🔻		
I/O Port I/O1 💌		
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

Add:

Web:

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

Trigger Type MIXD	-	
CALL Phone No.		SMS Phone No.
Data Trigger On don		Data Trigger off doff
Trigger Port COM1	-	Data Format Text 🗨
I/01 Control ALL	-	I/02 Control ALL
I/03 Control ALL	-	SMS Password

Floor	14, A06	building,	No. 370, Cl	nengyi	Street, Jimei	Dist	rict,	Xiamen, China.
www.yi	fanwirel	ess.com	Hotline:	+86 592	2 6101492	Fax:	+86 59	2 5222813

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.

Debug Debug Level 1   Debug Port COM1		
	Close: no debug information output	
Debug Level	Level 1: simple prompt information output	
	Level 2: detail debug information output	
	Port 1: debug info send to port 1	
Debug Port	Port 2: debug info send to port 2	
	485: debug info send to RS485	

#### 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

# 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	1 🔹		
Main Center	120. 42. 46. 98	Port	19000
Backup Center	www.four=faith.)	Port	80

Lain Backup ParamReconnect Int. (s) 3Connect Retry Times 5Back To Main Server 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 mulit Data Center and transmit data.

Data Service Center Settin	ngs
Data Center Number 5	
Main Center 120, 42, 46, 98	Port 19000
2nd Center 120, 42, 46, 98	Port 19001
3rd Center 120, 42, 46, 98	Port 19002
4th Center 120.42.46.98	Port 19003
5th Center 120.42.46.98	Port 19004

# 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

Iuil-Center Connection Param         Reconnect Int. (s) 3         Connect Retry Times 5		
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.

ICTP Check ICMP Check Er Dest Address Check Times 5	Check Interval (s) 60
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

RS232	
Bau	dRate 115200 🗸
	Check 8N1
Mapping C	
mapping c	
RS485	
Bau	dRate 115200 🔽
(	Check 8N1
Mapping C	enter ALL 👻
L	
	baud: the baud rate of the PORT
	1200 1200 bps
RS232	2400 2400 bps 4800 4800 bps
N3232	9600 9600 bps
	14400 14400 bps
	19200 19200 bps
	38400 38400 bps
	56000 56000 bps
	57600 57600 bps
	115200 115200 bps
	Dranautu, Datakit Daritu Otankit
	Property: Databit, Parity, Stopbit 8N1 8 Databit, No parity, 1 Stopbit
	8E1 8 Databit, Even parity, 1 Stopbit
	801 8 Databit, Odd parity, 1 Stopbit
	Bind:
	Center1: the data from the port send to center 1
	Center2: the data from the port send to center 3
	Center3: the data from the port send to center 3
	Center4: the data from the port send to center 4
	Center5: the data from the port send to center 5
	ALL: the data from the port send to all centers

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

	Close: send to none
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

· · · · · · · · · · · · · · · · · · ·			
101			
I/01:	Input	- Protocol	Custom 💌
Port	ALL	•	
Report Type	Query	- Command	
Data Format	Text	•	
High Level		Low Level	
·			
I/01	•	digital input port	
	Output:work as	s 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 ca	n 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 A	DC	
Port G	PRS 🗾	
ADC type v	oltage 5V 💌	
Top Limit (	) Low Limit O	
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 *	99#		QueryNetMode WCDMA	
APN 3	ignet		UserName	
Password			PPP Auth AUTO	-
net mode A	UTTO 🔽			
DialNo	Network		Dial number	
	GPRS/WCDN	/IA/LTE	*99***1#、*99#、*98*1#	÷
	CDMA/EVDO	)	#777	
APN	Network	APN		
	GPRS/WCDN	/IA/ cmn	et, uninet	
	LTE			
	CDMA/EVDO	emp	ty	
	Network	User	name/password	
Username/password	GPRS/WCDN	/IA/ emp	ty	
	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-SCDMA	
	CDMA	
	GSM	

# 3.7.2 PPP Redial

<b>PPP Re-dial</b> Re-dial Interval(s) 3 Dial Retry Times 2	
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.

DWS Setting	
Main DNS 8 Backup DNS 8	
Main DNS	The DNS server IP address(must be IP address)
Backup DNS	The DNS server IP address(must be IP address)

# **3.8 Global Parameters**

### 3.8.1 Data Frame Parameters

Data Frame Sett: Bytes Interval (MS) 20	
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.

7		
Action for Data Send Fail		
Re-send Int. (MS) 1	000 Re-send Times	
Failed Action Di	al Again 🔽 Delay Before Action 20	
ь		
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

Others	
SMS Center	Heartbeat Int. (s) 60
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.

Device Tanage Se Device Manage Ena				
Dev ID For Manage		Protocol	TCP	
Service Address 120	), 42, 46, 98	Port	44002	
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

SES Eanage	
SMS Configure Ena	ble 🔽
Configure Password 123	3456
Manage Phone No	
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 oper	ations		
SIM Check	Signal TimeSetting Log Factory Ver Info		
Reset	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:

				Confi						
ork Mode	Data Center	Ser	ial Port	I/0	Dial	Global	Param	Device M	←	$\rightarrow$
Data Se	ervice Ce	nter	Setting	ţs						
	ervice Cen er Number 1	nter	Setting	ţs						
Data Cento	_		-	វុន			Port 9	136		

Fill in the APN from your simcard provider:

	(	Config	ure				
Data Center	Serial Port	I/0	Dial	Global Param	Device M	←	$\rightarrow$
al							
DialNo *99	#			QueryNetMode			
APN 3gn	et			UserName			
Password				PPP Auth A	UTO	-	
net mode AUTO	) 🔽						
	al DialNo *99 APN 3gn Password	Data Center Serial Port al DialNo *99# APN 3gnet Password	Data Center Serial Port I/O al DialNo *99# APN 3gnet Password	al DialNo *99# APN 3gnet Password	Data Center Serial Port I/O Dial Global Param al DialNo *99# QueryNetMode APN 3gnet UserName Password PPP Auth A	Data Center Serial Port I/O Dial Global Param Device M al DialNo *99# QueryNetMode APN 3gnet UserName Password PPP Auth AUTO	Data Center Serial Port I/O Dial Global Param Device M ← al DialNo *99# QueryNetMode APN 3gnet UserName Password PPP Auth AUTO ▼

Repower modem, wait it connected to server.

Press 's' key continuously to enter con dtu enters protocol mode. Now start at proc.Max AT Command R At Proc. Success/Ppo dial succ. Got lp	letryAt Proc Error!	
name:27.154.58.226. Connect to 0 27.154.58.226:9246		111
Connected		-
Cohodulo Cond 2000	- min	

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

Add:	Floor	14, A06	building,	No. 370, Cl	nengyi	Street, Jimei	Dist	rict,	Xiamen, China.
Web:	www.yi	fanwirel	ess.com	Hotline:	+86 592	2 6101492	Fax:	+86 59	2 5222813

			网络调试助手	CLASE W VS.
		网络设置 (1)协议类型 TCP Server +	网络数据接收 【Receive from 223.	104.6.1 : 57980]
		(2)本地IP地址	hi, this is eason	
hutput info		192.168.10.153	7	
+PR-115200 DK	2	(3) 本地端口号 9246		
MODE:PROT DK		●断开		
ACTLAUTO		接收区设置		
ок		<ul> <li>「 接收转向文件</li> <li>「 显示接收时间</li> </ul>		
OK Resetting		「十六进制显示」		
System started		保存許援 清除显示		
Press 's' key continuously to enter configure program. dtu enters protocol mode.		HALL STORE		
Now start at proc.Max AT Command RetryAt Proc.Error At Proc.SuccessPpp dial succ. Got to Addr. 18 228 18 59Resolving server		发送区设置 「 启用文件数据源		
name:27.154.58.226.		「 自动发送明加位		
Connect to 0 27.154.58.226.9246	8	「 发送完自动清空		
Connected yes, I can hear you		「 按十六语制发送		
Schedule Send 2000 ms		厂 数据流循环发送	连接对象: All Cor	mections
Data: 📝 Add Enter terminator 📄 Hex Send 📰 Hex Display		发送间隔 1000 亮砂	yes, i can hear you	
this is eason Sent	±	文件载入 酒路输入	yes, to the new you	

# 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.

SES Eanage		
SMS Configure E	Inable	Ŧ
Configure Password 1	123456	
Manage Phone No 1	13395014835	

#### 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 succesfully, you will receive a return SMS with Config OK:

送达	< <u>123456</u> ;IPAD= <u>192.168.10.162</u> ;POR T= <u>42002</u> ;reset>
AT+IP	AD=192.168.10.162:
Config	ok
AT+PC	DRT=42002:
Config	ok
AT+res	set:
Config	ok