

F2X14-E IP Modem User Manual	Document Version	Confidential
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F2X14-E IP Modem User Manual

The user manual is suitable for the following model:

Model	Product Type
F2114-E	GPRS IP MODEM
F2814-E	FDD LTE IP MODEM



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Product appearance



目录

Chapter1 Introduction of Product.....	7
1.1 General.....	7
1.2 Product Features.....	7
1.3 Product Specification.....	8
Chapter 2 Installation.....	11
2.1 General.....	11
2.2 Encasement List.....	11
2.3 Installation and Cable Connection.....	11
2.4 Power introduction.....	12
2.5 Indicator.....	12
2.6 PIN Definition.....	13
2.7 PIN level description of LED status.....	15
Chapter 3 Configuration.....	17
3.1 Interface specification.....	17
3.2 Configuration options.....	20
3.2.1 “Local serial port Settings”.....	20
3.2.2 “Local serial port 2 Settings”.....	20
3.2.3 “DTU Working mode Setting”.....	20
3.2.4 “GPRS dial parameter setting”.....	21
3.2.5 “Support platform related Settings”.....	21
3.2.6 “Enterprise gateway related Settings”.....	22
3.2.7 “Multi IP data center”.....	22
3.2.8 “Multi connection strategy”.....	22
3.2.9 “Other configuration”.....	23
3.2.10 “ Related settings of network management platform”.....	23

3.2.11 “Administrator login Settings”	23
3.2.12 “ICMP parameter setting”	23
3.2.13 “User-defined UDP frame format”	23
3.3 Read/Write configuration.....	24
3.4 Modification configuration.....	25
Chapter 4 Use Description.....	26
4.1 Working mode description.....	26
4.1.1 DC mode.....	26
4.2 Connection mode description.....	26
4.2.1 Long connection mode.....	26
4.2.2 Short connection mode.....	27
4.3 Check system and connection status.....	27
4.4 Remote upgrade.....	28
4.5 Local serial upgrade.....	29
Chapter 5 Test.....	30
5.1 DC Test.....	30
5.1.1 DCUDP mode.....	30
5.1.2 DCTCP mode test.....	33
Appendix 1 FAQ.....	34

Chapter1 Introduction of Product

1.1 General

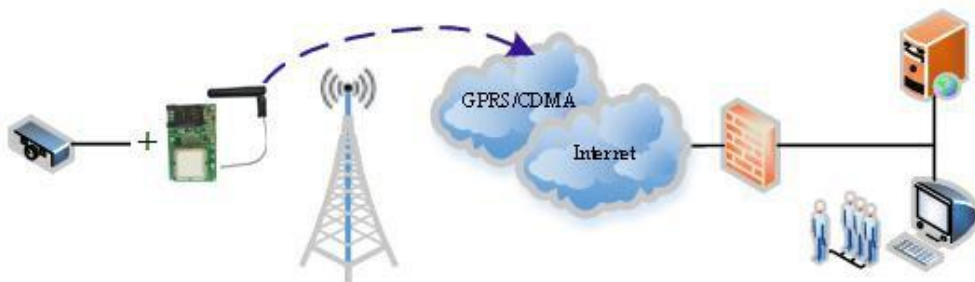
F2X14-E IP Modem is a kind of cellular terminal device that provides data transfer function by GPRS/WCDMA/EVDO/LTE network.

It adopts high-powered industrial 32 bits CPU and embedded real time operating system., it is dual serial port design, supports TTL interface which can be embedded into devices directly and realize data transmission transparently. It also has low power consumption states.

It has been widely used on M2M fields, such as intelligent substation, intelligent distribution network, smart electricity meters, intelligent interactive terminal, intelligent scheduling, intelligent home appliances, intelligent electricity building, power grids for smart cities, intelligent power generation system, smart grids (Such as new energy storage systems)and so on.

Application system topology

Network diagram is showing as below, customization is accepted.



1.2 Product Features

Design for Industrial Application

- ◆ High-powered industrial cellular module
- ◆ High-powered industrial 32 bits CPU
- ◆ Low power consumption design, to reduce the power dissipation in the most way
- ◆ Power range: DC 3.6~9V
- ◆ Operating temperature-40~75℃

Stability and Reliability

- ◆ Support hardware and software WDT
- ◆ Support auto recovery mechanism, including online detect, auto redial when offline to make it always online

- ◆ SIM/UIM port: 15KV ESD protection
- ◆ Power port: reverse-voltage and overvoltage protection
- ◆ Few connectors, with good seismic performance

Standard and Convenience

- ◆ Standard TTL interface which can be embedded into devices directly
- ◆ Support intellectual mode, enter into communication state automatically when power is on
- ◆ Provide management software for remote management (Optional)
- ◆ Support a variety of working mode which make it easy and flexible to use
- ◆ Convenient configuration and maintenance interface
- ◆ Support the serial update, remote update, can export the serial log
- ◆ Embedded installation, fast fixing, conveniently and quickly

High-performance

- ◆ Support TCP server and support 4 TCP client connection (optional)
- ◆ Support protocol conversion between ModBus and RTU/TCP (optional)
- ◆ Support dual data center backup transmission and multiple data center synchronous transmission (5 data centers)
- ◆ Support multi data centers and it can support 1-5 data centers at the same time
- ◆ Support protocol conversion between 101 and 104 (optional)
- ◆ Support standard TCP/UDP protocol, support data transfer transparently
- ◆ Support login security authentication
- ◆ Multiple indicator lights that can indicate a variety of system states
- ◆ Reading device status in real-time by serial ports, such as IMEI, SIM card status, IP address, signal value and so on

1.3 Product Specification

Wireless parameters

Item	Content
F2114-E GPRS IP MODEM	
Standard and Band	GSM850/EGSM900/DCS1800/PCS1900
Bandwidth	Maximum downward speed: 85.6kbps Maximum upward speed: 42.8kbps
TX power	GSM850/EGSM900: Class 4 (2W) DCS1800/PCS1900: Class 1 (1W)
RX sensitivity	<-107dBm
F2814-E FDD LTE IP MODEM	

Standard and Band	LTE FDD 2600/2100/1800/900/800MHz, 700/1700/2100MHz (Optional) DC-HSPA+/HSPA+/HSDPA/HSUPA/UMTS 850/900/2100MHz 800/850/1900/2100MHz (Optional) EDGE/GPRS/GSM 850/900/1800/1900MHz GPRS CLASS 10 EDGE CLASS 12
Bandwidth	LTE FDD: Download speed 100Mbps, Upload speed 50Mbps
TX power	DC-HSPA+: Download speed 42Mbps, Upload speed 5.76 Mbps HSPA+ : Download speed 21Mbps , Upload speed 5.76 Mbps HSDPA : Download speed 7.2Mbps , HSUPA : Upload speed 5.76Mbps UMTS : 384Kbps
RX sensitivity	<23dBm
Standard and Band	<-97dBm

Interface type

Item	Content
SDI	Num.of ports: 2 Port 1: TTL Port 2: TTL Serial port type : 2×20PIN 1.27 pitch female header Stop bits: 1 、 2 Parity: none, even, odd Baud rate: 300~115200bps
Antenna	IPEX connector, 50 ohm
SIM/UIM	Standard clamshell socket interface, support 1.8V/3V SIM/UIM card, 15KV ESD protection
Indicator	Power、SIM card、Operation、network state

Power supply

Item	Content
Standard power	DC 5V
Operation Voltage	DC 3.6~9V

Consumption

Item	Content
Communication	70mA@5V 100mA@3.6V
Standby	30mA@5V 55mA@3.6V

Physical Characteristics

Item	Content
Installation	Embedded
Dimension	60x38x12mm
weight	About 8g

Other parameters

Item	Content
Working temperature	-40~+75°C (-40~+167°F)
Storage temperature	-40~+85°C (-40~+185°F)
relative humidity	95% ((unfreezing)

Chapter 2 Installation

2.1 General

F2X14-E must be installed correctly to make it work properly. Generally, the installation of equipment must be conducted under the direction of qualified engineers authorized by the company.

➤ **Warning:**

Forbid to install the IP MODEM when powered!

2.2 Encasement List

For transport safely, proper packaging IP MODEM is usually required. Please take good care of the packing materials when you unpack, so that they can be used for future transportation.

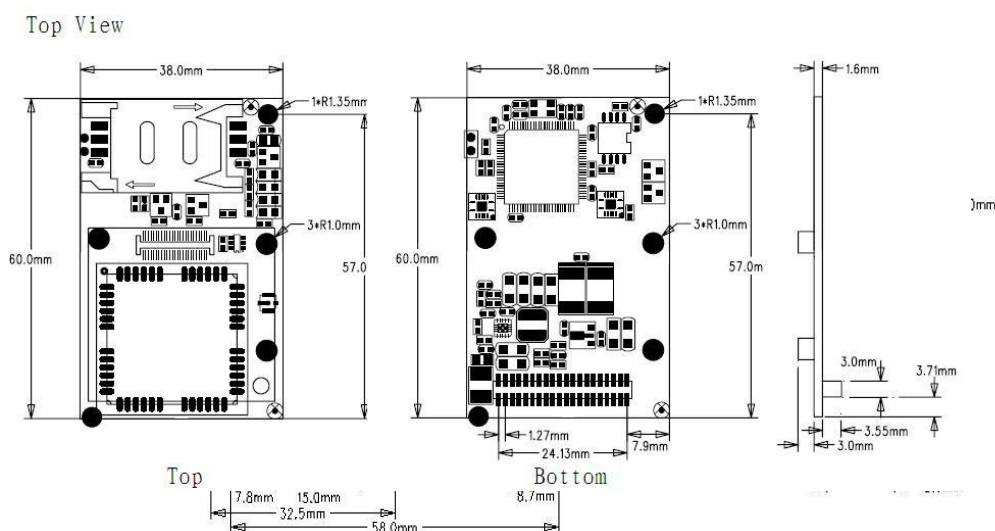
IP MODEM include below components:

- ✧ IP MODEM host : 1 pcs(According to customer's order)
 - ✧ User manual:1 pcs
 - ✧ Rod antenna:1 pcs (IPEX connector)
- (Note:The antenna may have been assembled to the host during packaging, please check it !)

2.3 Installation and Cable Connection

IP MODEM mainboard has 1 mounting holes with the diameter of 2.7mm, which are easy to fix to the user's equipment

Product size (Unit: mm)



(Note:The components and their position on the PCB board will change slightly with the version upgrade, please refer to the actual product.)

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Page 11 of 31

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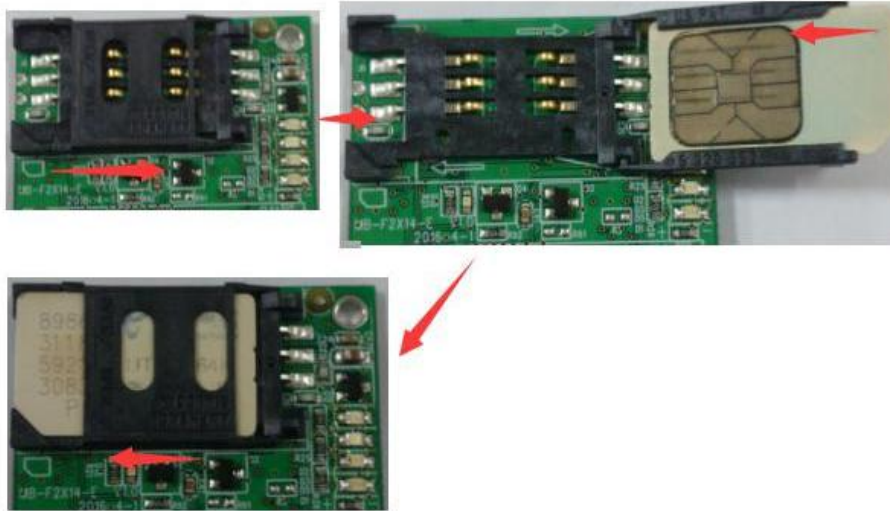
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Antenna and SIM card installation:

IP MODEM antenna interface is for IPEX connector. Buckle the IPEX male head of the antenna to the antenna interface of IP MODEM, and make sure that the connection is good, so as not to affect the signal quality.

When the SIM card is installed or removed, follow the icon on the device that indicate the direction of installation, make sure the SIM card's metal interface is facing down so that it is in full contact with the socket and be fastened.

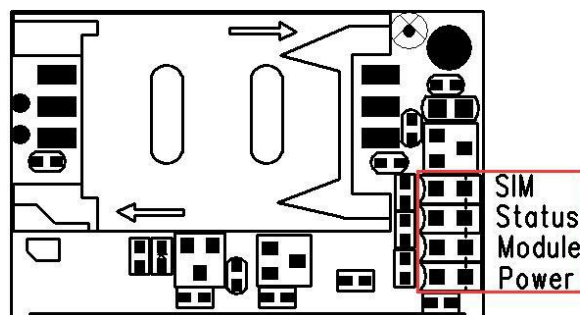


2.4 Power introduction

Usually, IP MODEM was embedded to the mainboard of the device. In order to adapt to the complex application environment and improve the stability of the system, IP MODEM adopts advanced power technology. It can use DC 3.6-9V to power IP MODEM directly. 5VDC/200mA is recommended. When power IP MODEM, must ensure power stability. (Ripple is less than 100mV, and make sure instantaneous voltage does not exceed 12V), and ensure that the power supply is greater than 1W.

2.5 Indicator

IP MODEM provides four indicators, definition showing as below: Power, Module, Status, SIM



States of indicators is as follows:

Through display of indicator light , the user can see the system and connection status

No.	Power	SIM	Status	Module	Definition
	Power	SIM Card	Operation	Network	
1	ON	X	Flash slowly	X	Module is initializing
2	ON	X	Flash slowly	Flash quickly	Dialing
3	ON	Flash alternately		X	System dialing is successful, but centers are not connected
4	ON	Flash in the same time		X	System dialing is successful and centers are connected
Note:					
1."ON" means LED always bright, hold for at least 3 seconds ;					
2."OFF" means LED always off, hold for at least 3 seconds ;					
3."Flash slowly" means flash frequency is about 1 /S;					
4."Flash quickly" means flash frequency is about 1 /200ms;					
5."X" means any status					

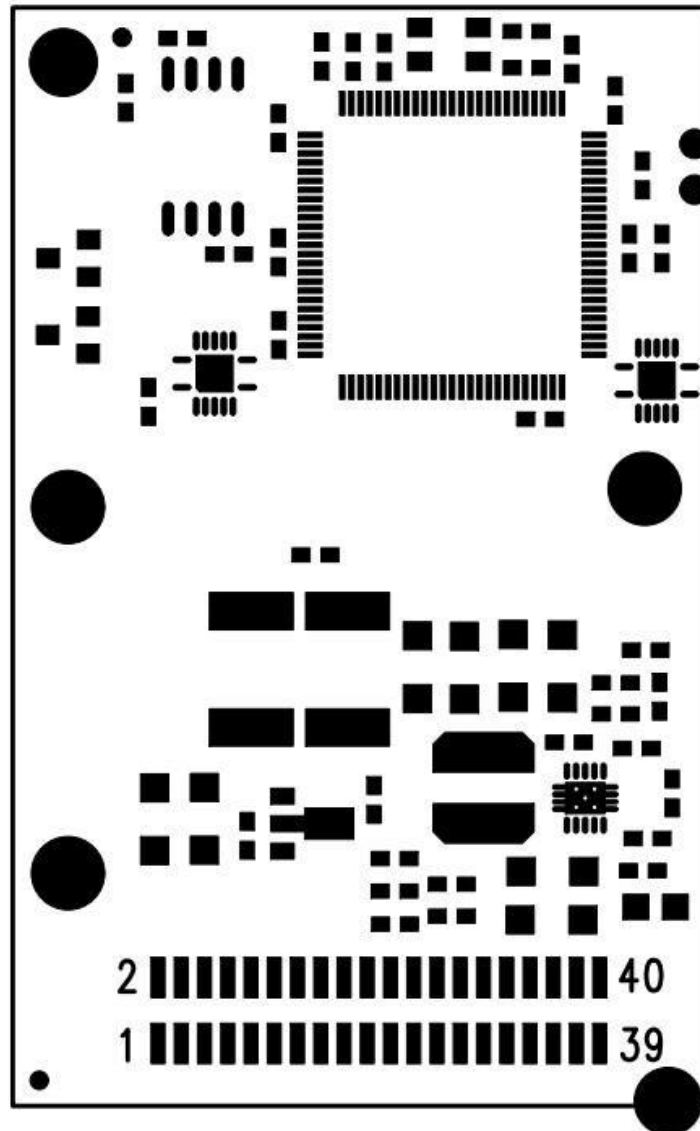
2.6 PIN Definition

Details of each pin definition of IP MODEM are shown in the following table:

PIN NO.	Name	Description	Remark
1,2,3,4	NC	NO Connection	Dangling pin
5	GPIO1	Input	Pull-up inside VIH>=2.0 VIL<=0.8
6	GPIO2		
7	GPIO3	Output	VOH>=2.5 VOL<=0.5
8	GPIO4		
9	CSQ1	Output, indicate strength of wireless singal	(1)CSQ<10: CSQ1=1,CSQ2=0,CSQ3=0,
10	CSQ3		(2)10<=CSQ<20: CSQ1=1,CSQ2=1,CSQ3=0,
11	CSQ2		(3)CSQ>=20: CSQ1=1,CSQ2=1,CSQ3=1
12	RST	MCU Reset	Low-level is valid Time>=100ms VIH>=2.0 VIL<=0.8
13,14	GND	Signal (power) ground	SIM card interface, compatible with 1.8V/3.0V
15	SIMDATA	SIM Data	
16	SIMRST	SIM Reset	

17	SIMVCC	SIM Power	
18	SIMCLK	SIM Clock	
19,20	GND	Signal (power) ground	
21	SLC	IIC Clock signal	IIC Interface VIH>=2.0 VIL<=0.8 VOH>=2.5 VOL<=0.5
22	SDA	IIC Data signal	
23	GND	Signal (power) ground	
24	AI0	Analog signal input	Input voltage range:0V~3.3V
25	TXD2	Serial port 2: Send data	3.3V TTL level VOH>=2.5 VOL<=0.5
26	Online	Output, indicate the module is online	Low-level (Default) High-level (After GPRS is online) VOH>=2.5 VOL<=0.5
27	LED_MODULE	Output, indicate module status	See table in section 2.7
28	RXD2	Serial port 2: Receive data	3.3V TTL level VIH>=2.0 VIL<=0.8
29	LED_SIM	Output , indicate SIM card status	See table in section 2.7
30	LED_STATUS	Output, indicate Modem operation status	See table in section 2.7
31	TXD1	Serial port 1: Send data	3.3V TTL level VOH>=2.5 VOL<=0.5
32	RXD1	Serial port 1: Receive data	3.3V TTL level VIH>=2.0 VIL<=0.8
33,34,35,36	GND	Signal (power) ground	
37,38,39,40	Power supply V+	POWER	DC 3.6~9V

IP MODEM 2×20 PIN female header sequence is showing as below (Bottom):



Bottom view of IP MODEM

2.7 PIN level description of LED status

Except 4 LEDs of IP MODEM, network, running status, and SIM indication are extracted through pin, customers can choose them according to their own needs. The output levels for each state are shown in the following table:

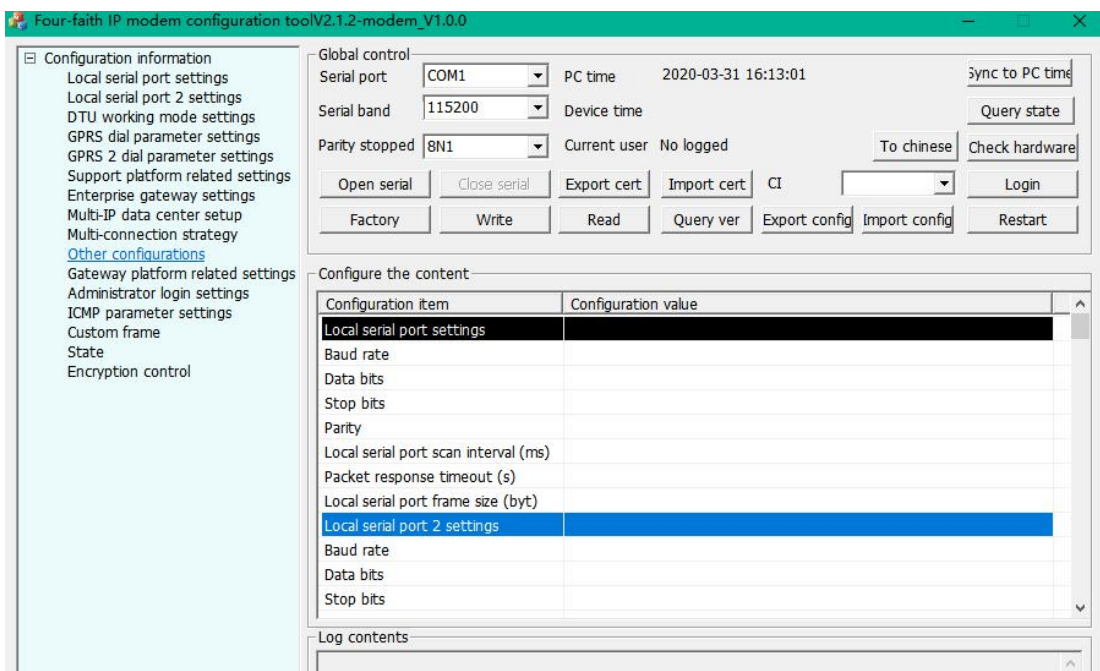
No.	LED_SIM	LED_Status	LED_Module	Definition
	SIM Card	Operation	Network	
1	X	High-low level alternate slowly	X	The module is initializing
2	X	High-low level alternate slowly	High-low level alternate quickly	Dialing
3	LED_SIM/LED_Status Output High-low level alternatively		X	System dialing is successful, but centers are not connected
4	LED_SIM/LED_Status Output high-low level synchronously		X	System dialing is successful and centers are connected
Note: 1.High level output hold for at least 3 seconds; 2.Low level output hold for at least 3 seconds; 3. Alternate slowly means 1 times/S; 4.Alternate quickly means 1times/200mS 5.“X”means any level				

Chapter 3 Configuration

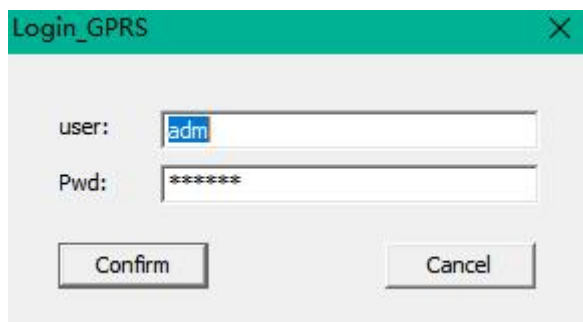
3.1 Interface specification

Open configuration tool -"F2x14d_Soft15031718.exe" , use RS232 to TTL serial port line connect F2X14-E to computer, power on, after chosing right serial configuration parameters, the serial port can be used for system parameter configuration (Note: The configuration page can be entered with baudrates of 115200 and 8N1 in the first 3 seconds after booting)

Open configuration tool -"F2x14d_Soft15031718.exe" , showing as below:



Open the configuration tool, after chosing right serial port parameter, checking the hardware first, if hardware is normal, click the login dialog box, input user name and password, showing as below:



After this step, click "Confirm", upon successful login, the user will have the appropriate level of permissions, system parameters can be set within this permission, showing as below:

```
Log contents
serial port[COM27],[115200]Open the success!
send:55 AA 55 AA 03 00 00 11 65
receive:AA 55 AA 55 03 00 09 81 2A 00 05 30 0C 08 00 00 E0 00
Hardware works well.
The device is not logged in, please log in...
send:55 AA 55 AA 05 00 11 81 10 00 03 61 64 6D 81 11 00 06 31 32 33 34 35 36 1F 44
receive:AA 55 AA 55 05 00 01 01 23 00
Administrator login successful
```

If you do not log in at the beginning, you can click "Cancel", and then you can click the login button to log in at any time. After logging in, the original login button becomes log out, and users can also click log out to cancel their login.

(Note: The initial administrator user name is adm , and password is 123456, the initial normal user username is guest and the password is 123456. User names and passwords are case sensitive.)

The interface is described as follows:

1、Parameters such as serial port, baud rate and parity bit can be selected in the "overall control" option of the interface. The configuration software has the function of automatically identifying the available serial ports of the current PC, these serial ports are listed in the "select serial port " (Please be patient when you click this item because it is slow to automatically identify the currently available serial port), please select the serial port that was connected to F2X14-E, and chose right parameter which be used. Check the "auto" option, configuration software can automatically detect the parameters that match the communication.

2、After chosing right serial port, click "Download configuration"、"Read configuration" to write/read confuguration infomation. Moreover, click "Export configuartion file" can export configuration information from the configurator to a text file for saving, click"Import configuration file" can import the saved configuration information file into the configuration program.

3、The information window at the bottom of the interface displays the operation performed and whether the operation was successful.

4、"Sync to PC time" can set the device's system time to the PC's current time, after this step, the configuration software will automatically set the current PC time to the device, the "overall control" bar also displays the time of the current device, and it automatically reads the device time once a minute.

5、“Query version” can query the device version. The system version will display in the status bar above the configuration software if it query successfully.

6、Click the tree menu on the left of the screen, the information window in the middle of the interface will display the configuration information under the tree menu, especially click the level 1 tree menu. All the configuration information is displayed in the information window, where you can view all the configuration information through the drop-down scroll bar.

3.2 Configuration options

The configuration content of each configuration is described below

3.2.1 “Local serial port Settings”

Serial port baud rate: 1200、2400、4800、9600、14400、19200、38400、57600、115200(bps) (Option) ;

Serial port data bits: 8

Serial port stop bits: 1 、 1.5 、 2 (Option)

Serial port parity bits: None/odd/Even

Local serial port scan interval (100 ms):10 (Default)

Packet response timeout (seconds): 5 (Default)

Local serial port frame size (bytes): 1024 (Default),set optionally, Range: (10~1024)

3.2.2 “Local serial port 2 Settings”

Serial port baud rate: 1200、2400、4800、9600、14400、19200、38400、57600、115200(bps) ;

Serial port data bits: 8

Serial port stop bits: 1 、 1.5 、 2 (Option)

Serial port parity bits: None/odd/Even

Local serial port scan interval (100 ms):10 (Default)

Packet response timeout (seconds): 5 (Default)

Local serial port frame size (bytes): 1024 (Default) ; set optionally; Range: (10~1024)

Note: 1、 Local serial port is usually used for configuration. Local serial port 2 is used to transfer data and support configuration function.

2 、 For data ports, changes can be made through the software version.

3.2.3 “DTU Working mode Setting”

Whether to connect the support platform: Yes or No(If chose “No”, the item "Support platform related Settings" is invalid, do not need to set it. In general, choose "No", to use the WMMP protocol, you need to choose "Yes").

Connection mode: Long connection or short connection (In the “long connection” mode, real-time online, reconnection automatically if it break up; only in the "short connection" mode, there are phone activation, local data activation, timing activation).

Phone Activation: Open or close the phone activation (In general, select "Open") ,in short connection mode, activate the network if any calls come in.

SMS activation: Open or close SMS activation, in short connection mode, if a DM or WMMP message is received, the network will be activated

Local data activation: Open or close local data activation.(In general, select "Open"),in short connection mode, if the local serial port has data, the network will be activated.

Timing activation interval (minutes): According to this time, the timer starts when entering the sleep mode, and when the time is up, the network will be reconnected to realize the timing activation function. Range : 0 ~ 1440.

Timing offline interval (minutes): According to this time ,the network will be unblocked and restarted,value is 0 means the time is infinite .(Generally fill in 0, range: 0~60).

Whether the data flow and business flow are separated: Yes.

Note: In the state of short connection, open at least one activation mode.

3.2.4 “GPRS dial parameter setting”

GPRS/CDMA dial number: A dialing number for accessing a mobile network

Access point name (APN) : This is required when accessing a mobile network

GPRS/CDMA dial user name: A user name is required when dialing into a mobile network.

GPRS/CDMA dial password: A password is required for dial-up access to a mobile network

PPP heartbeat interval (Seconds): Time interval of heartbeat pack in PPP layer, input range: 0~9999

Redial interval (seconds): The interval between redialing after PPP disconnection, input range: 0~3600

Maximum number of redial: Restart the system after several consecutive dialing failures, input range: 0~10

Please refer to local rule of GPRS/CDMA network dial parameters

3.2.5 “Support platform related Settings”

This bar option is only valid if "Whether connect to support platform or not" in "DTU working mode Settings" is set to "yes"

Support platform equipment number: Device number identification required in the WMMP protocol;

Support platform gateway: Need to fill in the IP address and port number of the WMMP center;

Support platform connection mode: Only support UDP;

Support platform heartbeat interval (seconds): Heartbeat interval associated with the WMMP protocol only, range: 4~3600

SMS center number: SMS center number which is needed, in Xiamen is 8613800592500

SMS alarm number (SMS data number): SMS registration, binding, alarm number that WMMP protocol requires.

3.2.6 “Enterprise gateway related Settings”

DTU device number: The user set it to identify DTU

Enterprise Gateway: Need to fill in IP address ,port number and domain name of center(if IP and domain name are filled in at the same time, IP shall prevail)

Enterprise gateway connection mode: TCP、UDP、DCTCP、DCUDP (Option)

Maximum number of retransmission allowed for transmission failure: 0 (TCP protocol retransmission automatically) .

Enterprise gateway heartbeat interval (minutes): Time interval of heartbeat pack, range: 1~60

DNS IP1: 0.0.0.0 or fill in private domain name resolution server address

DNS IP2: 0.0.0.0

3.2.7 “Multi IP data center”

When chose multi centers mode, fill in the IP address, port number and connection mode of extension 1 enterprise gateway ~ extension 4 enterprise gateway, leave blank for single center mode.

Note: In the case of multi-center setting, please fill in the IP and port of each center correctly. In the case of non-multi-center setting, please set all non-center IP and port to zero.

3.2.8 “Multi connection strategy”

Minimum reconnection interval (seconds): The minimum interval in TCP between failed connections and reconnections.

Maximum reconnection interval (seconds): The maximum interval in TCP between failed connections and reconnections.

Polling mode (Y/N) : In multicenter mode, select multicenter connections for polling or concurrent mode, input “Y”or”y” indicate using polling mode, all other inputs indicate using concurrent mode.

TCP serve port/UDP source port: Listen on the port when it as TCP Server (Fill in 0 indicate close TCP/UDP function).

For the polling mode, datas will be sent in sequence according to the number of configuration centers. Once the data is sent successfully, it is no longer sent to the next center.

For concurrent mode, datas will be sent to all the centers according to the number of configuration centers.

3.2.9 “Other configuration”

Maximum number of login: Default 10.

Remote telnet or not: Default NO.

Debug mode or not: Yes or No (Chose “Yes”, you can see the run logs through the serial port tool), This parameter takes effect immediately upon completion of configuration.

3.2.10 “ Related settings of network management platform”

Serial No.: A kind of number that the gateway platform can identify the device, 15-bit string (Factory defined, can not be modified).

Working mode: Only SMS mode, SMS plus IP mode or disabled.

List of trust Numbers: Only receive user SMS of trust list, if the list is empty, SMS from any user can be accepted.

Device number: Device identification of gateway platform (Factory defined, can not be modified).

Gateway platform address: IP address and port number of gateway platform.

Gateway platform heartbeat interval (seconds): Heartbeat interval of gateway platform, range: 30~600.

3.2.11 “Administrator login Settings”

Administrator login account: Administrator Name Settings for administrator.

Administrator login password: Administrator password Settings.

Ordinary user login account: Name Settings for ordinary users.

Ordinary user login password: Password Settings for ordinary users.

3.2.12 “ICMP parameter setting”

ICMP detection of the host: Check whether the PPP connection is normal or not, fill in the IP address.

ICMP maximum number of lost packets: Redialing if no network packets were received after sending ICMP several times.

Network spare interval (seconds): Send the ICMP probe package after that time no network packets have been received. Input range: 30~3600.

3.2.13 “User-defined UDP frame format”

UDP frame type: ASCII type or HEX type, ASCII type use ASCII character, HEX type use HEX character.

UDP login frame: For the enterprise gateway connection mode is pure UDP.

UDP login response frame: For the enterprise gateway connection mode is pure UDP.

UDP heartbeat frame: For the enterprise gateway connection mode is pure UDP.

UDP heartbeat response frame: For the enterprise gateway connection mode is pure UDP.

UDP drop out frame: For the enterprise gateway connection mode is pure UDP.

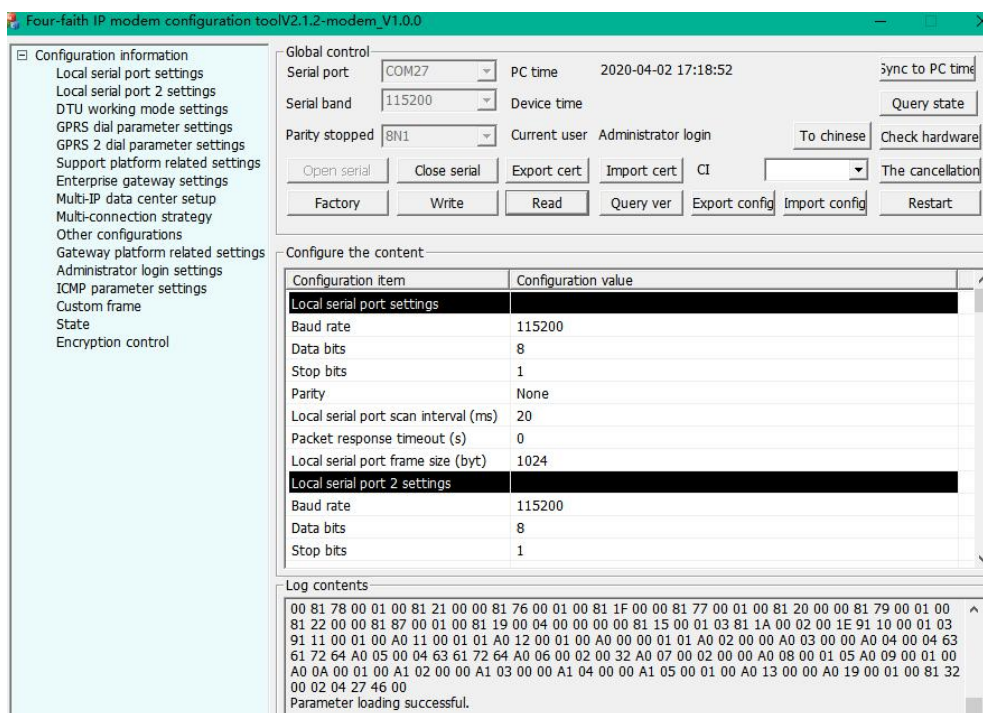
UDP drop out and response frame: For the enterprise gateway connection mode is pure UDP.

Note: This configuration is only valid if the enterprise gateway connection is pure UDP, the login frame and the login response frame must be configured at the same time, as well as other frames.

The purpose is to enable the enterprise gateway to know about the state of the bottom device in real time.

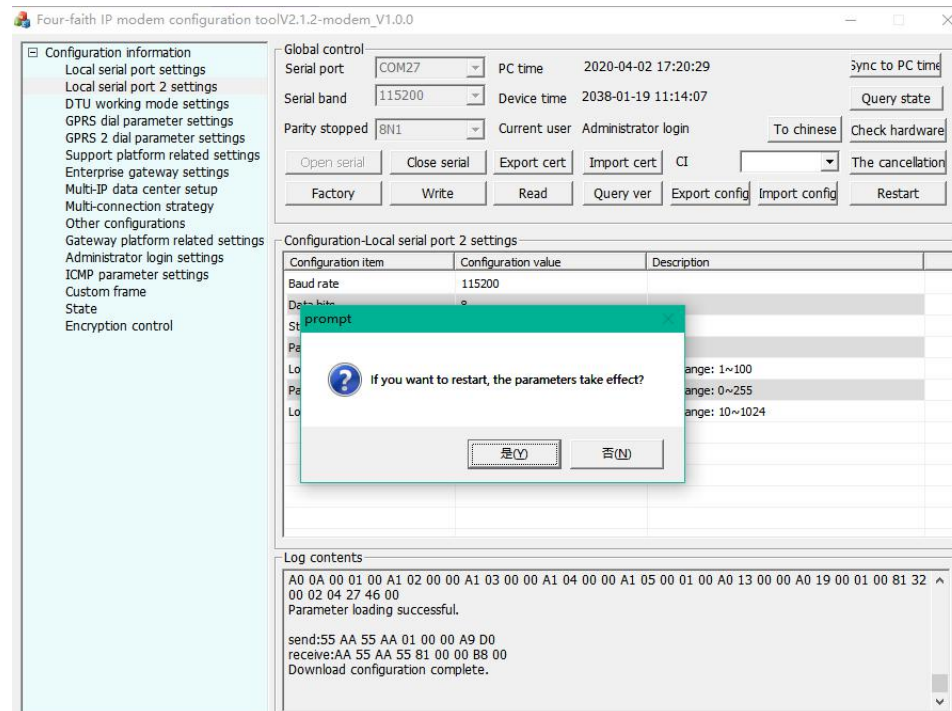
3.3 Read/Write configuration

Click "Read" when the power-on hardware detection is normal and you log in as the administrator, the configuration parameters in the device can be read to the configuration software interface display, at this point, you can view the parameter configuration of the item. If read successfully, "Parameter loading successfully " will be displayed in the log contents information bar, showing as below:



Similarly, the download configuration also needs hardware detection is normal and log in as an administrator, after the user has set the parameters, click "Download configuration", if this step is successful, "Download configuration successfully " will be displayed in the log contents information bar, a prompt dialog box will pop up at the same time, asks if you

need to restart for the parameter to take effect immediately or for the next restart to take effect, showing as below:



3.4 Modification configuration

When you need to modify the configuration, you can read the original configuration, modify the corresponding configuration parameters and then write configuration to modify the required parameters. Or you can export and save the configuration information on the first write to the configuration. When you need to modify the configuration, enter the save file, then modify the corresponding configuration parameters, and then write the configuration. There is a default configuration when ex-factory, users only need to read the configuration, modify the corresponding parameters, and then write the configuration.

Chapter 4 Use Description

The prerequisites for the system to work :

- 1、Normal power supply.
- 2、Insert a valid SIM card, support data service.
- 3、GPRS signal is required.
- 4、Correct parameter configuration of the system, such as the IP address and port number of the data center to be accessed by the system, working mode, etc.

Operating principle: Dialing GPRS after power on, after dialing the IP successfully ,register and connect with the data center(The data center is that the "IP address" and "port number" of the enterprise gateway configured for the system), after successful registration, the data transmission between the bottom device and the data center can be realized.

Function: As a communication bridge between the bottom equipment and the data center(Such as RTU、 PLC etc.), the data sent by the bottom device to the serial port is encapsulated into network packets and sent to the data center and he data from the data center can also be sent to the bottom device through the serial port.

4.1 Working mode description

4.1.1 DC mode

When chose DC mode as system work mode, must operate private center software that use DC protocol. Run the software, listen for a service port, after the system on power , it will eventually be able to achieve data communication between the system and the central port.

4.2 Connection mode description

4.2.1 Long connection mode

Set the relevant parameter as:

Whether to connect the support platform: NO

Connection mode: Long

Phone Activation: Open or Close

Local data activation: Open or Close

Timing activation interval(Minutes): 0

Timing off-line interval(Minutes): 0

In this connection mode, online in real time, if the line is disconnected, it will dial again

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Page 26 of 34

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automatically. After receiving serial port data, forward to the center. If no serial port data needs to be transmitted, heartbeat packets will be sent to the center on a regular basis according to the set parameters to keep this link unblocked in real time.

4.2.2 Short connection mode

Set the relevant parameter as:

Whether to connect the support platform: NO

Connection mode: Short

Phone activation: Open or Close

SMS activation: Open or Close

Local data activation: Open or Close

Timing activation interval(Minutes):0-1440 (Chose 0 indicate activate immediately, means do not enter sleep mode)

Timing off-line interval(Minutes): 1~60

Note: In this connection mode, at least one of the three activation modes must be on.

In this connection mode, users can control when to connect and when to disconnect.

For example, set "Timing off-line interval=55"、"Timing activate interval=600"、"Phone activation=open"、"Local data activation=close", after networking, it will automatically log off and enter the waiting activation state after 5 minutes without data transmission in the serial port, in this state, you can use calling to make it works, or it will connect to network automatically after waiting 600 minutes. Therefore, users can call the network works at any time as needed, or activate networking regularly, or set to when the bottom device has data(Any data) to send, it will send data to the serial port to activate network transmission. But note that, it takes some time to connect to the center after the activation packet is sent(Within 20 seconds), the serial port cache size is 4K, if the data during this period is less than 4K, the data will be sent after connecting to the center, data exceeding 4K will be discarded.

4.3 Check system and connection status

Users can see the current working status of the system through the system indicator light, there are definitions that indicator lights of the system when the system is running, showing as below:

Sheet 1: status light description

No.	Power	Module	SIM	Status	Definition
	Power	Network	SIM Card	Operation	
1	ON	X	Flash alternately		Module is on and at AT state
2	ON	X	OFF	Flash slowly	Initialize the module by AT command
3	ON	Flash quickly	OFF	Flash slowly	Dialing
4	ON	X	Flash slowly	OFF	Waiting for activation (short connection mode)
5	ON	X	Flash alternately		System dialing is successful, the module is in data mode but the centers are not connected
6	ON	X	Flash synchronously		APP is normal, MP is normal, WMMP is normal
<p>Note:</p> <p>1."ON" means LED always bright, hold for at least 3 seconds ;</p> <p>2."OFF" means LED always off, hold for at least 3 seconds ;</p> <p>3."Flash slowly" means flash frequency is about 1 /S.</p> <p>If the center doesn't open, it was defaulted to be normal state.</p>					

4.4 Remote upgrade

If you need to upgrade the program remotely, please contact us to get the version number of the upgraded software and the address of the server where the upgraded software is located.

Command: RMTUPGRADE=aa,b,cc,ip,port,ver

Function: upgrade.

Parameter meaning: aa: The properties of the upgrade. The first function "a" is the function to be extended, default 0. And when the second "a" is "0", it represents an application upgrade, when it is "1", represents an upgrade of the BOOT program.

b: Upgrade mode. 0 is TCP connection, 1 is UDPconnection.

cc: Number of window. Value: 1-16。The larger the value, the faster the upgrade, so TCP is recommended to be 16, UDP is recommended to be 4 (The UDP mechanism causes the larger the value, the slower it is)。

ip: The IP address of the software which is to be upgraded

port: The server port number of the software which is to be upgraded

ver: Software version that needs to be upgraded

For example:

<123456; RMTUPGRADE=00,0,16,120.42.46.98,9991, F2X64-STANDARD-V1-0-1>

Command: STPUPGRADE

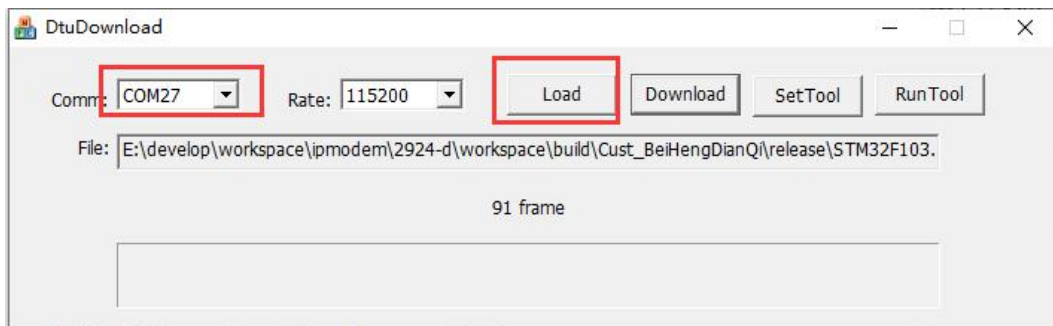
Function: Cancel this upgrade

Parameter: None.

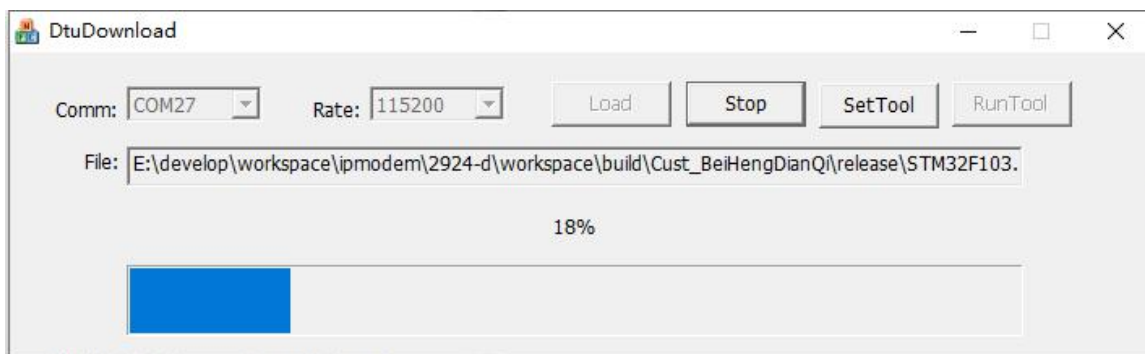
For example: <123456;STPUPGRADE>

4.5 Local serial upgrade

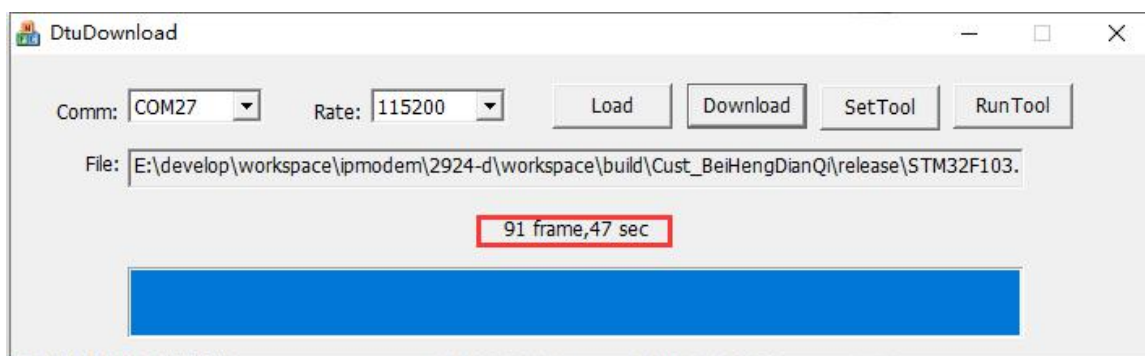
1、Open “DTUDownLoad.exe” (multiplex download tool) what our company provide. Chose upgrade program file, use RS232 serial port line to connect F2X14-E to PC. Do not power F2X14-E, showing as below:



2、Power F2X14-E now, it will start upgrading, showing as below:



When the upgrade is complete, the red box showing as below will be displayed in the interface:



4、Close download tool, restart the device.

Chapter 5 Test

In this section, we will introduce how to test., check whether the device can work or not. We suggest that for first-time users, test the device before using it. There are three conditions before your test:

- 1、A computer with Internet access, run the test software-"F2X14D_DC.exe" on this computer, in order to listen for a certain TCP/UDP port for communication.
- 2、Use RS232 serial port line to connect the device to the computer.
- 3、A SIM card that has already open data service.

5.1 DC Test

5.1.1 DCUDP mode

Open "F2X14D_DC.exe", showing as below:



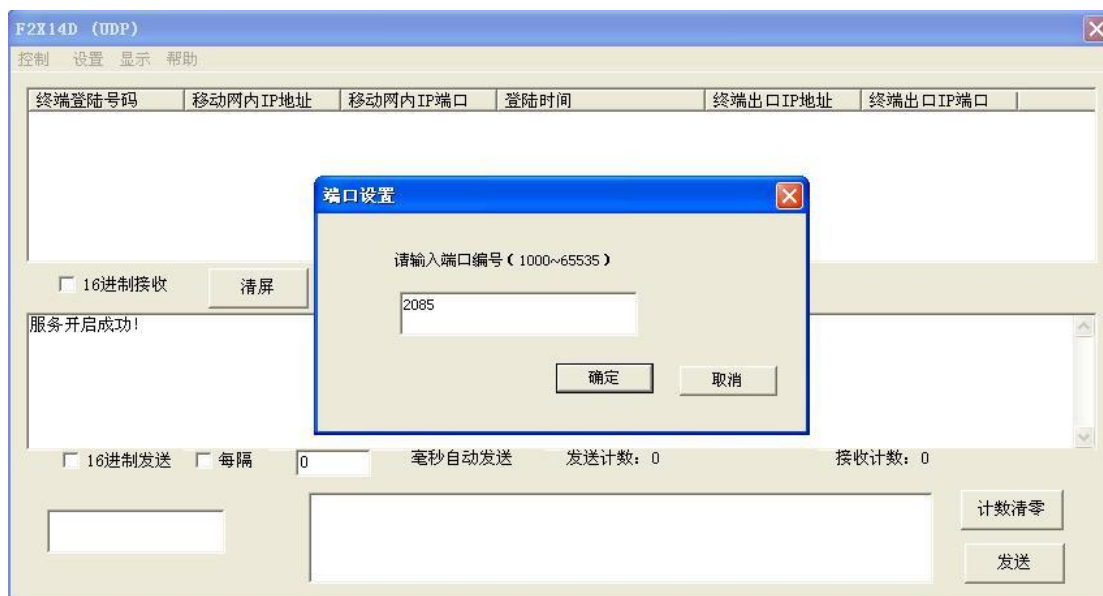
Working mode must be configured to DCUDP. Connect terminal device's port (Such as PLC, we use a computer simulate it here.) to F2X14-E's port, after it, power up them all.

- 1、Click "UDP" to enter DCUDP mode:



- 2、The default listener port is 1203. You can modify it by the menu"Setting"->"Setting"

port”, fill in the port number that you need. Click”OK”, showing as below:



At this momnet, it has already open listen service, if you want to close it , click “Control”->“Close service” button to stop listening on the port. If you want to open it again, click “Control”->“Start service” button to start listening on the port.

3、When the device connect to data center successfully, local device number, login time, corresponding IP information will list in the window, showing as below:



4、You can test communication with data center now. Data that data center received will show up in infomation window. Data that data center send will received by the other side device. We use a computer to connect serial port to simulate it here(You can use super terminal or other terminal software, we use a serial tool here.)

Input data in serial port tool, these data will send to data center. Showing as below:



Data can be sent to the specified port through the center software:

Select the device number you want to send from the list, local device number will be displayed in the corresponding window at the bottom, and input data in the bottom of the right window, click "Send" button, data will be sent out by software, showing as below:



Data sent by the center to the corresponding device will display in serial port tool, showing as below:

5.1.2 DCTCP mode test

Open test tool -“F2X14D_DC.exe”, click “TCP” to enter TCP mode:



“F2X14D_DC.exe” will work on TCP mode, at this moment, you can start test if you config the device to DCTCO mode. Test steps is similar to UDP mode.

Appendix 1 FAQ

Question 1: The power light doesn't work

Solution: Please check whether power supply is normal or not, the polarity is correct or not.

Question 2: Can't set F2X14-E

Solution: Please check serial port cable, and check whether the serial port of PC is normal or not, the selected port of the software is correct or not.

Question 3: After F2X14-E power on, it can't connect to the remote server

Solution:

(1) Check parameter of F2X14-E is right or not;

(2) Check SIM card is inserted correctly or not, make sure the SIM card is not stopped (Can be tested by dialing the card number);

(3) If the remote data server is within the LAN, check that firewall port mapping Settings are correct or not;

Question 4: Unable to transmit data to field control equipment when connect to server data manager

Solution:

(1) Please check that the cable is connected correctly, TXD、RXD、GND are right or not, if use RS-232 to communicate, whether use three wire communication mode.

(2) Check communication parameters are right or not, such as baudrate, parity etc.

Question 5: Can't upgrade by serial port

Solution: Please check serial port cable, and check serial port of PC is normal or not, the selected port of the software is correct or not.