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F1X03 Series User Manual

The user manual is suitable for the following model:

| Model | Product Type |
|-------|----------------|
| F1003 | GSM MODEM |
| F1103 | GPRS MODEM |
| F1203 | CDMA MODEM |
| F1303 | EDGE MODEM |
| F1403 | WCDMA MODEM |
| F1503 | TD-SCDMA MODEM |
| F1603 | EVDO MODEM |



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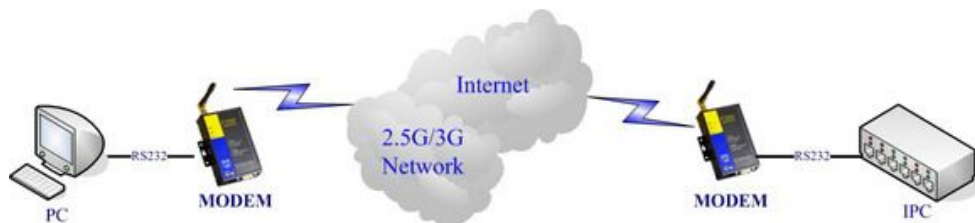
Chapter 1 Brief Introduction of Product

1.1 General

F1X03 series MODEM is a kind of cellular terminal device that provides SMS, dial-up and CSD function by public cellular network.

It adopts high-powered industrial cellular module and supports RS232 port that can conveniently connect one device to a cellular network, allowing you to connect to your existing serial device.

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.



1.2 Features and Benefits

Design for Industrial Application

- ◆ High-powered industrial cellular module
- ◆ Housing: iron, providing IP30 protection
- ◆ Power range: DC 5~35V

Stability and Reliability

- ◆ RS232 port: 15KV ESD protection
- ◆ SIM/UM port: 15KV ESD protection
- ◆ Power port: reverse-voltage and overvoltage protection
- ◆ Antenna port: lightning protection(optional)

Standard and Convenience

- ◆ Support standard RS232 port that can connect to a serial device directly
- ◆ Provide dial-up software that can make it always online
- ◆ Provide SMS tool software
- ◆ Support standard AT command

High-performance

- ◆ Support SMS
- ◆ Support dial-up (Except F1003)
- ◆ CSD function(F1003/F1103)

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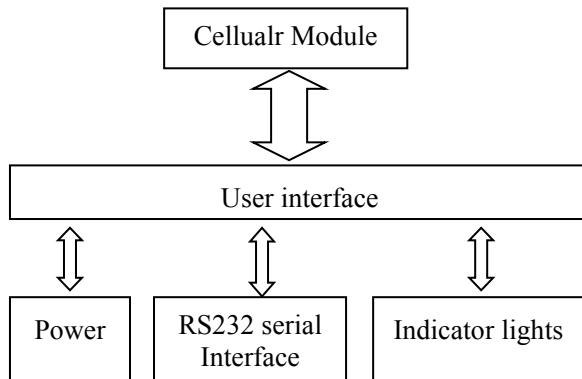
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- ◆ Support APN/VPDN (Except F1003)

1.3 Working Principle

The principle chart of the MODEM is as following:



1.4 Specifications

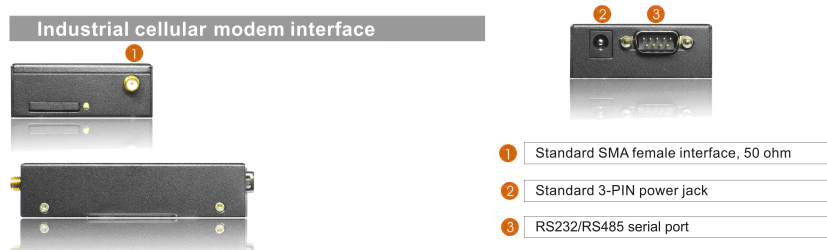
Cellular Specification

| Standard and Band | Bandwidth | TX power | RX sensitivity |
|--|--------------|---|----------------|
| F1003 GSM MODEM | | | |
| EGSM900/GSM1800MHz, GSM850/900/1800/1900MHz(optional) Compliant to GSM phase 2/2+ | 14.4Kbps CSD | GSM850/900: <33dBm GSM1800/1900 : <30dBm | <-107dBm |
| F1103 GPRS MODEM | | | |
| EGSM900/GSM1800MHz, GSM850/900/1800/1900MHz(optional) Compliant to GSM phase 2/2+ GPRS class 10, class 12(optional) | 85.6Kbps | GSM850/900: <33dBm GSM1800/1900 : <30dBm | <-107dBm |
| F1203 CDMA MODEM | | | |
| CDMA2000 1xRTT 800MHz, 800/1900MHz(optional),450MHz(optional) | 153.6Kbps | <30dBm | <-104dBm |
| F1303 EDGE MODEM | | | |
| GSM850/900/1800/1900MHz GPRS/EDGE Class 12 | 236.8Kbps | GSM850/900: <33dBm | <-106dBm |

| | | | |
|--|---|----------------|----------|
| | | GSM1800/1900 : | |
| | | <30dBm | |
| F1403 WCDMA MODEM | | | |
| UMTS/WCDMA/HSDPA/HSUPA 850/1900/2100MHz, 850/900/1900/2100MHz(optional) GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12 | HSUPA:5.76Mbps(Upl oad speed)/ HSDPA:7.2Mbps(Down load speed) UMTS:384Kbps (DL/UL) | <24dBm | <-109dBm |
| F1503 TD-SCDMA MODEM | | | |
| TD-SCDMA/HSDPA/HSUPA 1880-1920/2010-2025MHz GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12 | Download speed:2.8Mbps, upload speed:2.2Mbps | <24dBm | <-108dBm |
| F1603 EVDO MODEM | | | |
| CDMA2000 1X EVDO Rev A 800MHz,800/1900MHz(optional), 450MHz (optional) CDMA2000 1X RTT, IS-95 A/B | Download speed:3.1Mbps, upload speed:1.8Mbps | <23dBm | <-104dBm |

Interface Type

| Item | Content |
|-----------|---|
| Serial | 1 RS232 port, 15KV ESD protection Data bits: 5, 6, 7, 8 Stop bits: 1, 1.5, 2 Parity: none, even, odd, space, mark Baud rate: 110~230400 bps |
| Indicator | "Power", "ACT", "Online" |
| Antenna | Standard SMA female interface, 50 ohm, lightning protection(optional) |
| SIM/UIIM | Standard 3V/1.8V user card interface, 15KV ESD protection |
| Power | Standard 3-PIN power jack, reverse-voltage and overvoltage protection |



Power Input

| Item | Content |
|------|---------|
|------|---------|

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| | |
|----------------|--------------|
| Standard Power | DC 12V/0.5A |
| Power Range | DC 5~35V |
| Consumption | <200mA (12V) |

Physical Characteristics

| Item | Content |
|------------|---------------------------------|
| Housing | Iron, providing IP30 protection |
| Dimensions | 91x58.5x22 mm |
| Weight | 195g |

Environmental Limits

| Item | Content |
|--------------------------------|------------------------|
| Operating Temperature | -25~+65°C (-13~+149°F) |
| Extended Operating Temperature | -30~+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 MODEM must be installed correctly to make it work properly.

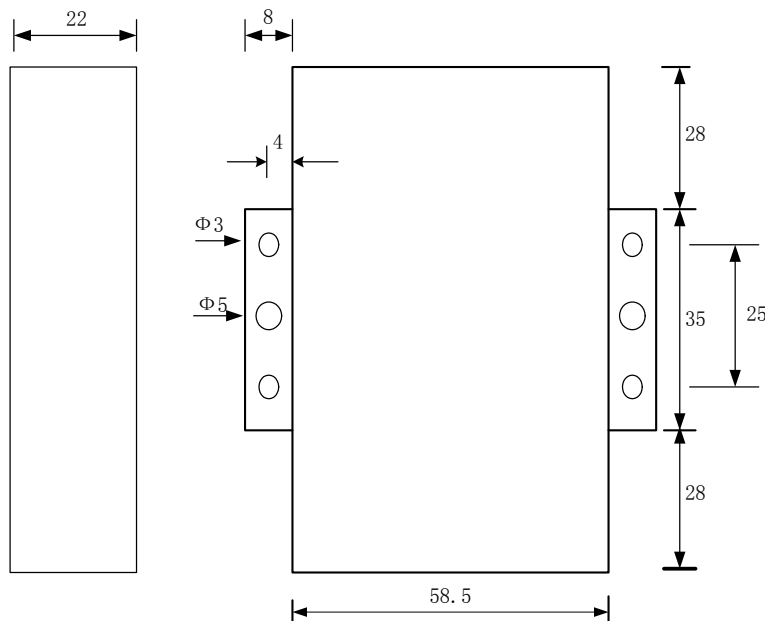
Warning: Forbid to install the MODEM when powered!

2.2 Encasement List

| Name | Quantity | Remark |
|--------------------|----------|--------|
| MODEM host | 1 | |
| Antenna | 1 | |
| Power adapter | 1 | |
| RS232 data cable | 1 | |
| Manual CD | 1 | |
| Certification card | 1 | |
| Maintenance card | 1 | |

2.3 Installation and Cable Connection

Dimension: (unit: mm)



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Installation of SIM/UIM card:

Firstly power off the MODEM, and press the out 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!

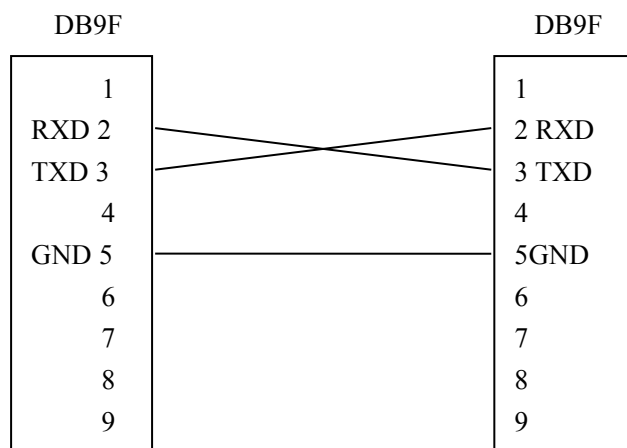
Installation of antenna:

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

Installation of cable:

Insert DB9F end of the RS232 data cable into the DB9M interface of MODEM, and connect the other end with user's device.

The signal connection of the RS232 data cable is as follows:



RS232 data cable

2.4 Power

The power range of the MODEM is 5~35V.

Warning: When we use other power, we should make sure that the power can supply power above 4W.

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

2.5 Indicator Lights Introduction

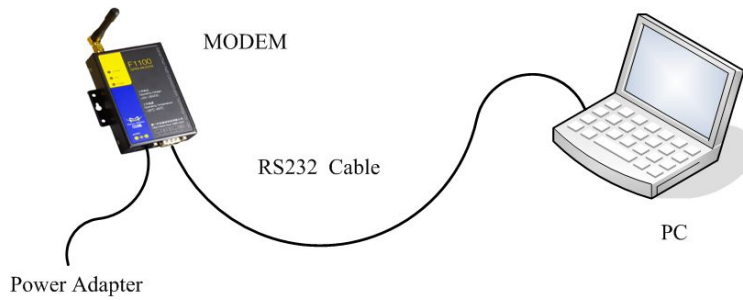
The MODEM provides three indicator lights: “Power”, “ACT”, “Online”.

| Indicator Light | State | Introduction |
|-----------------|--------------|--------------------------------|
| Power | ON | MODEM is powered on |
| | OFF | MODEM is powered off |
| ACT | BLINK | Data is communicating |
| | OFF | No data |
| Online | ON/ BLINK | MODEM has logged on network |
| | OFF | MODEM hasn't logged on network |

Chapter 3 Dial-Up Settings

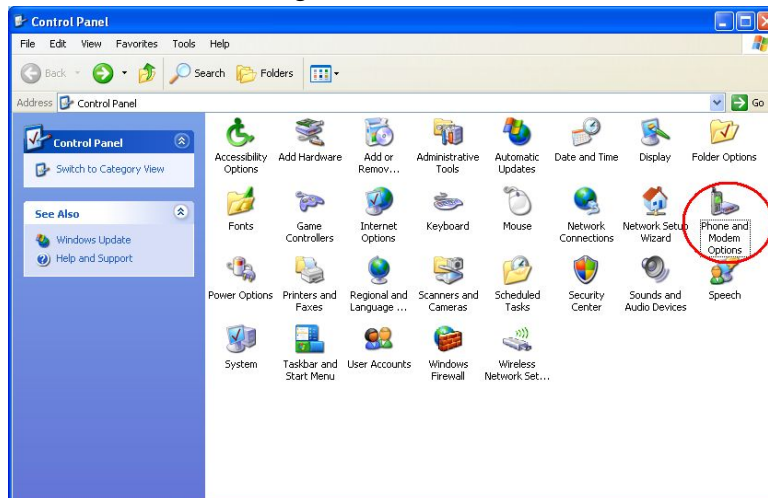
3.1 MODEM Connection

Connect Modem and PC with the shipped RS-232 cable as following:

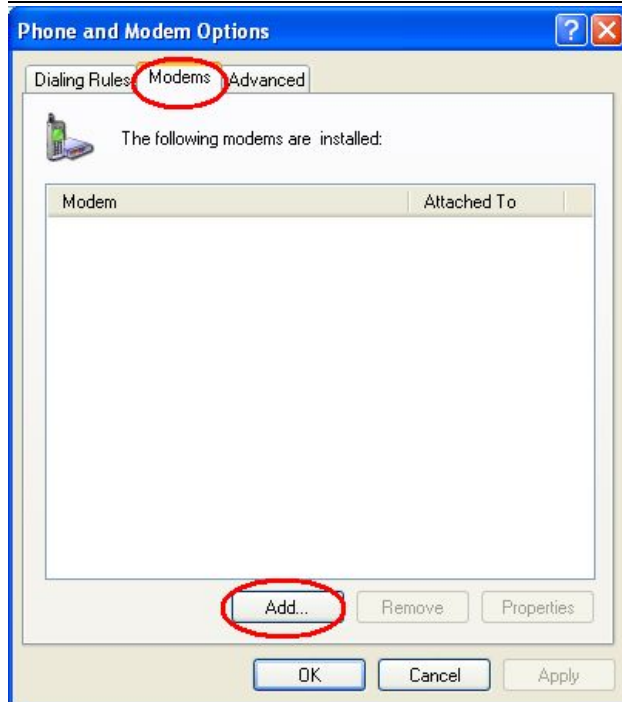


3.2 Dial-Up Settings

1. Press “start” → “Settings” → “Control Panel”, Double click “Phone and Modem Options”



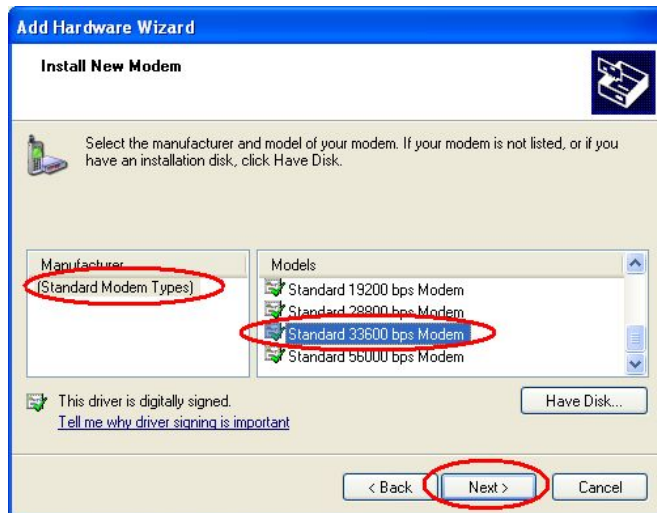
2. Choose “Modems”, Press “Add” button



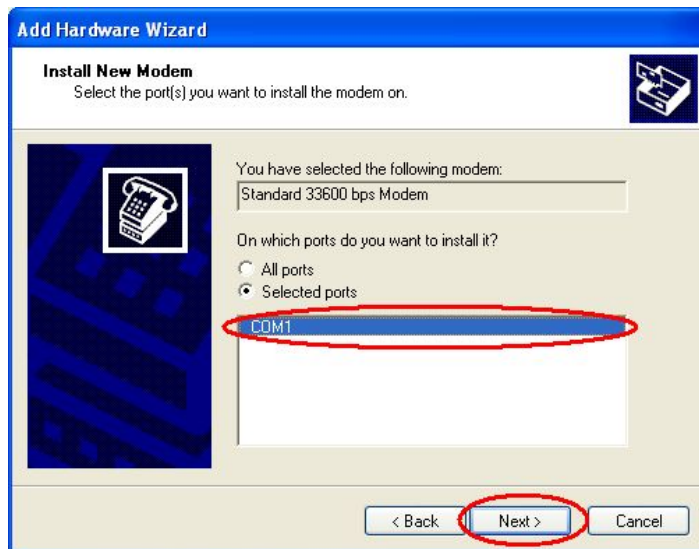
3. Choose “Don’t detect my modem;I will select it from a list”, and click “Next”



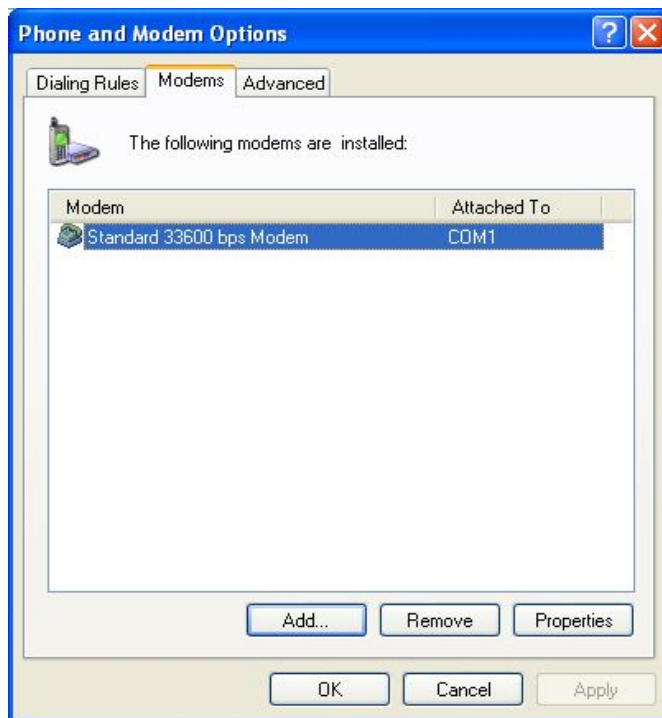
4. Manufacture choose ”Standard Modem Types”, Models choose “Standard 33600 bps Modem”, click “Next” button



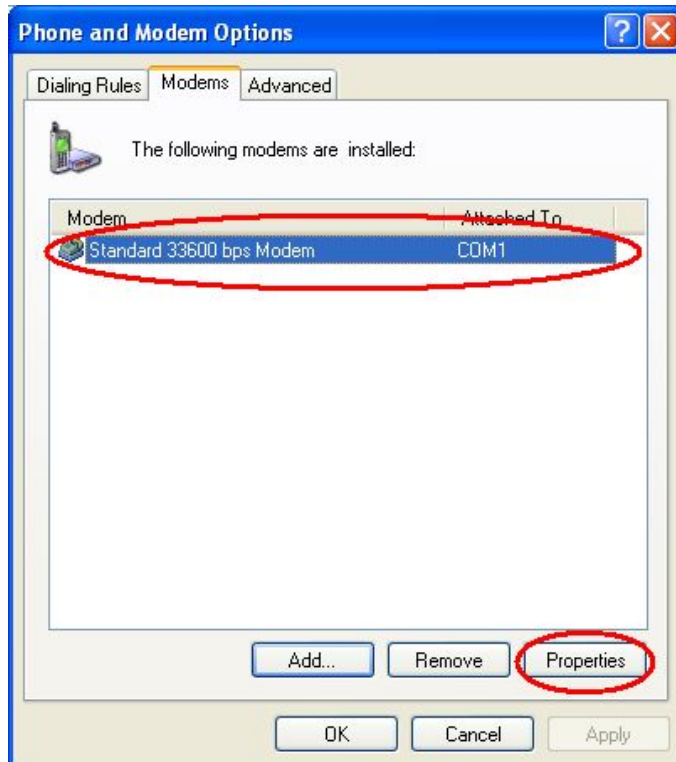
5. “Selected ports” choose the actual COM port which connects to Modem, click “Next” button.



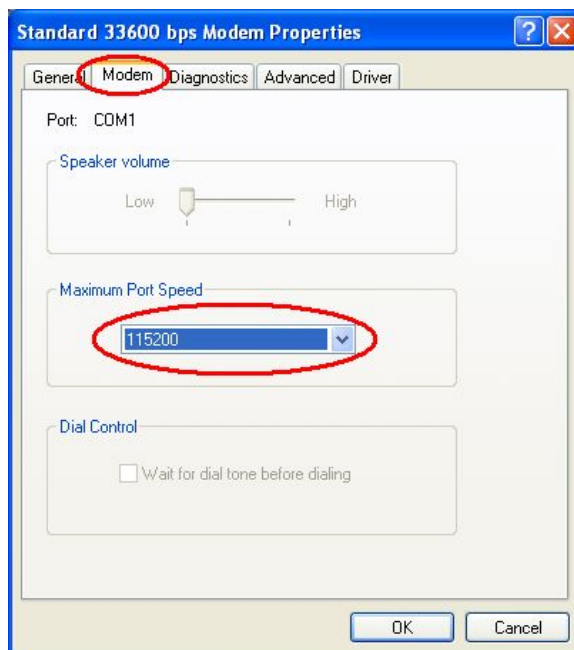
6. click “Finish” button, return back to “Modems” page



7. Choose the modem you have just installed, click “properties“ button to configure the modem driver



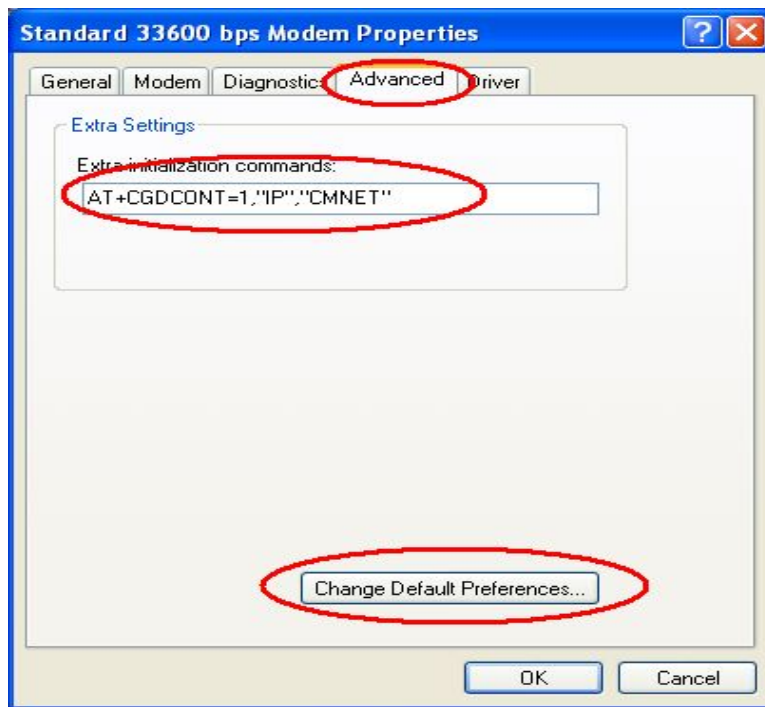
8. Choose “Modem” page, set Maximum Port Speed as 115200.



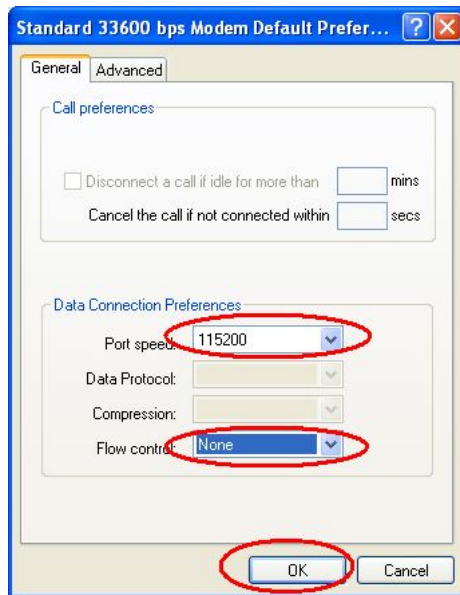
9. Choose “Advanced” page, input Extra Initialization commands: AT+CGDCONT=1,”IP”,”CMNET” , CMNET is the Access Point Name(APN) of China, please replace it with your own APN name, click “Change Default Preferences” button

note:

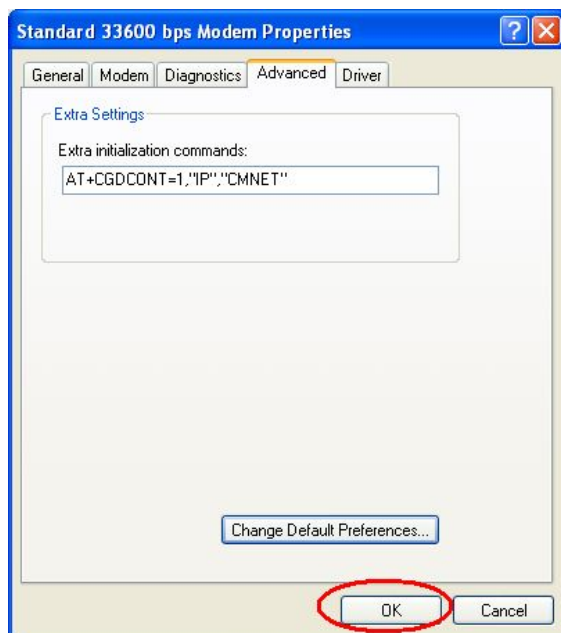
| | |
|---------------|-----------------------------|
| product model | Extraitntiahzation commands |
| F1103 | AT+CGDCONT=1,"IP","CMNET" |
| F1203 | null |
| F1303 | AT+CGDCONT=1,"IP","CMNET" |
| F1403 | AT+CGDCONT=1,"IP","3GNET" |
| F1503 | AT+CGDCONT=1,"IP","CMNET" |
| F1603 | null |

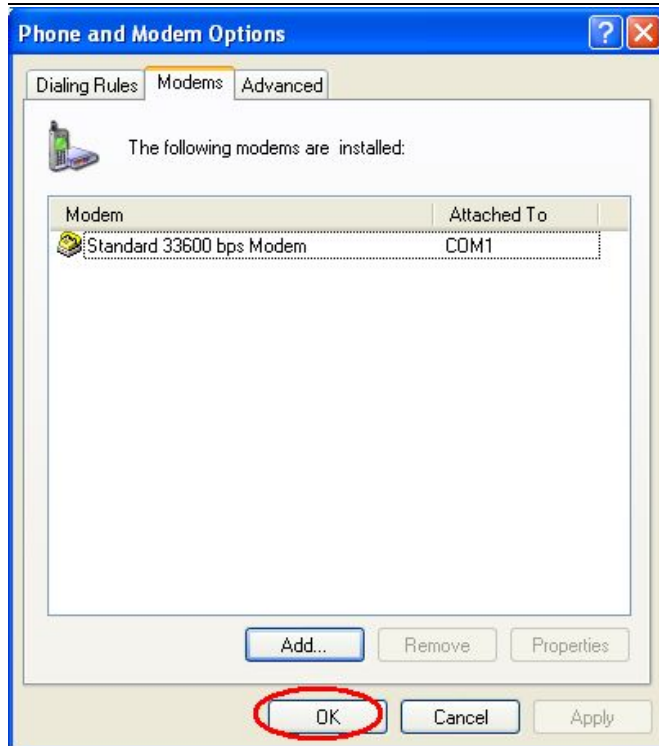


10. "Port Speed" choose 115200, "Flow control" choose None, click "OK" button.

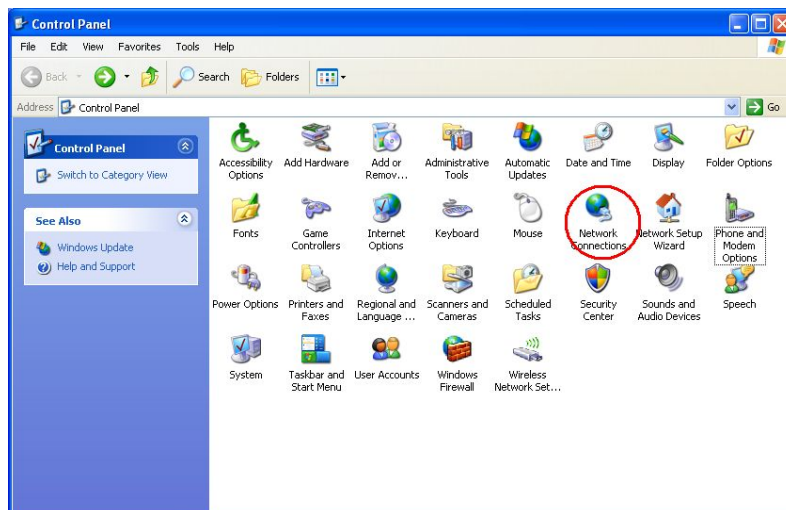


11. On the “Advanced” page, click “OK” button return to “Phone and Modems” page, click “OK” button to finish the Modem driver installation

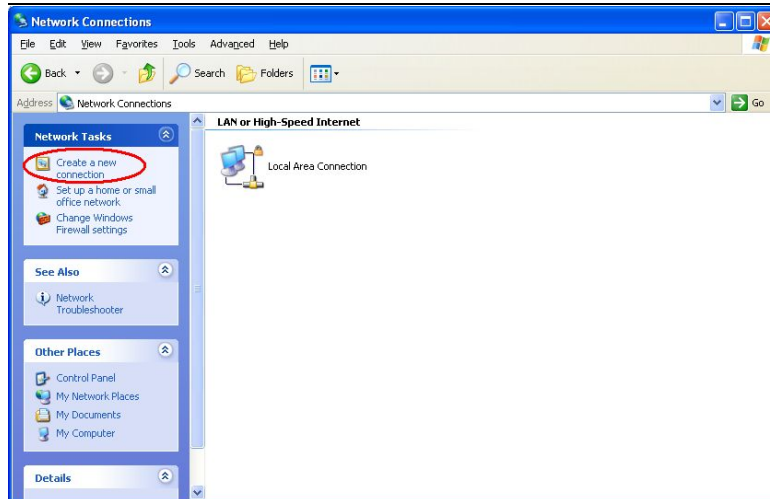




12. Finish installing Modem driver, It's necessary to install the Dial-Up connection. Open "Control Panel", double click "Network connections"



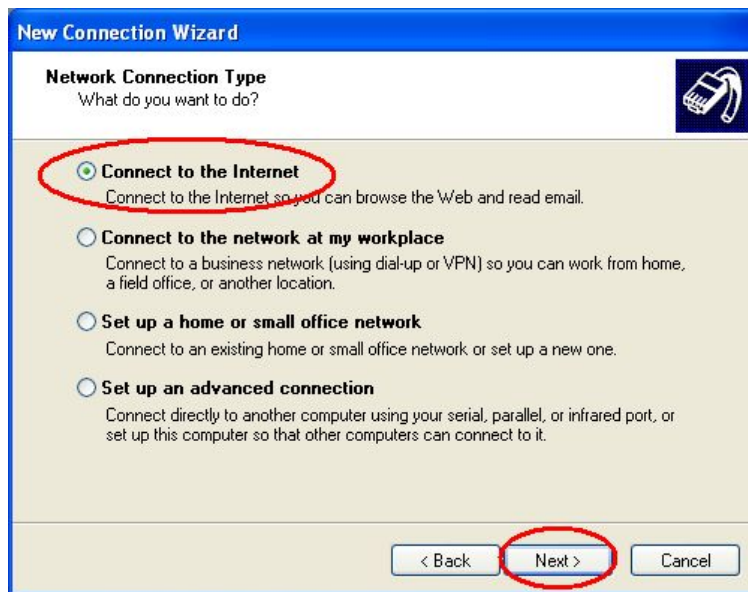
13. Click "Create a new connection" to start creating a new Dial-Up connection.



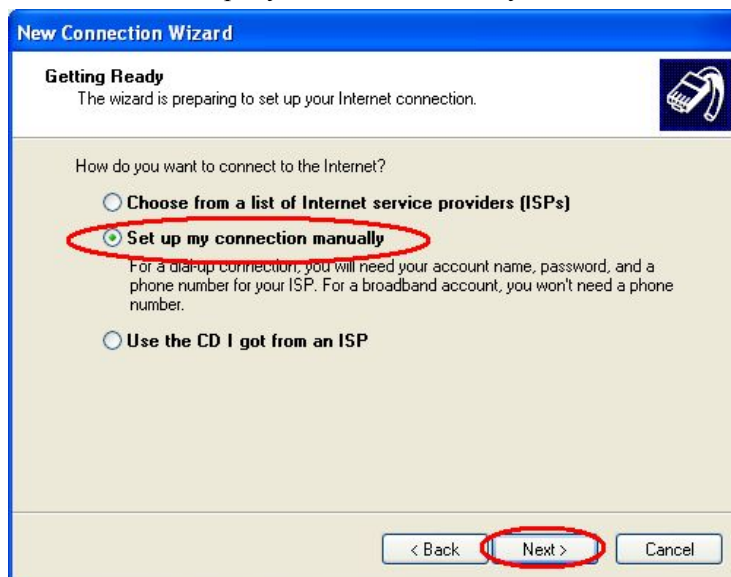
14. Click “Next” button



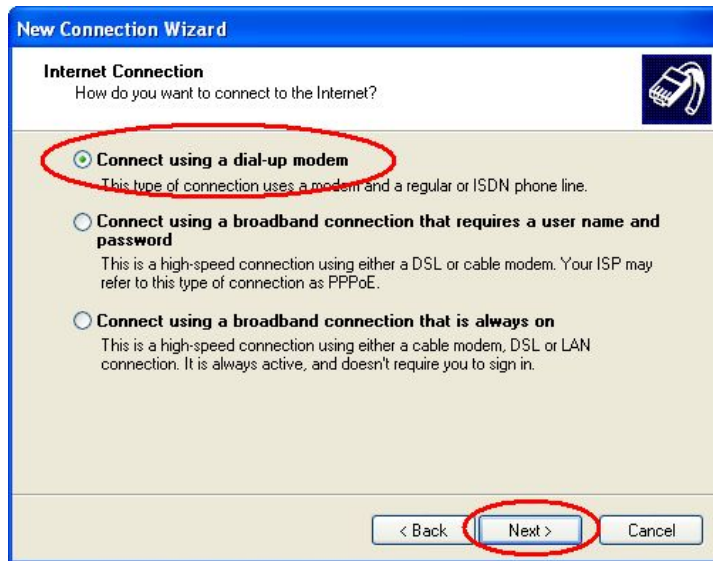
15. Choose “Connect to the Internet”, click “Next” button



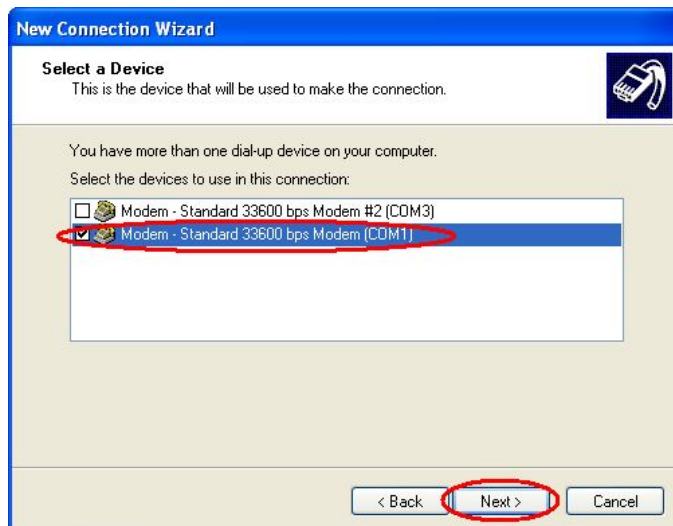
16. Choose “Set up my connection manually”, click “Next”



17. Choose “Connect using a dial-up modem”, click “Next”



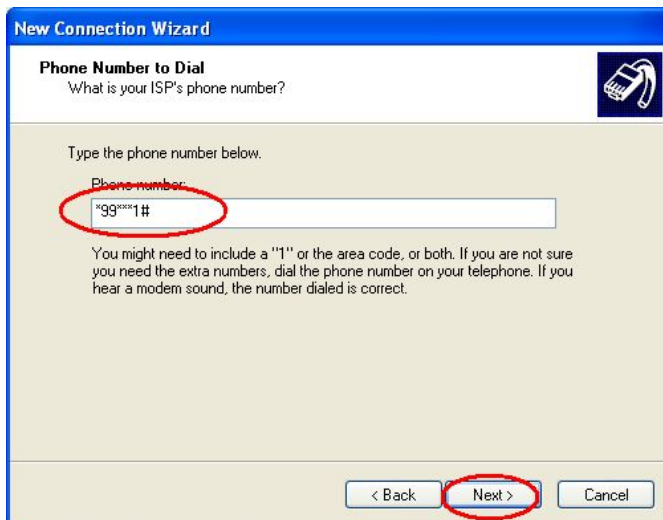
18. Choose the Modem driver installed just now, click “Next” button



19. Input the ISP Name , click “Next” button



20. Input the access number of your ISP. In China, It is *99***1#. Click “Next” button.



Note:

| Product model | Type the phone number below |
|---------------|-----------------------------|
| F1103 | *99***1# |
| F1203 | #777 |
| F1303 | *99***1# |
| F1403 | *99# |
| F1503 | *98*1# |
| F1603 | #777 |

21. Input the username and password. In china they are both null. Click “Next”.



22. Choose “Add a shortcut to this connection to my desktop”, click “Finish” button.



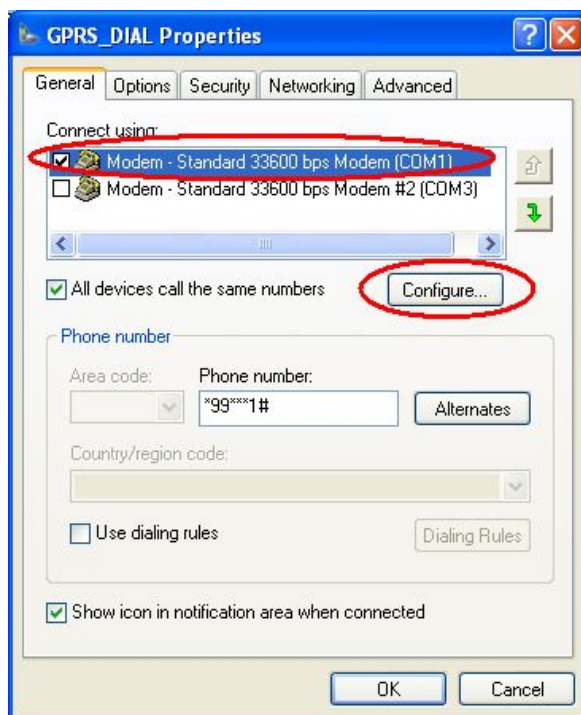
23. Double click the Dial-Up shortcut on your desktop to run Dial-Up program.



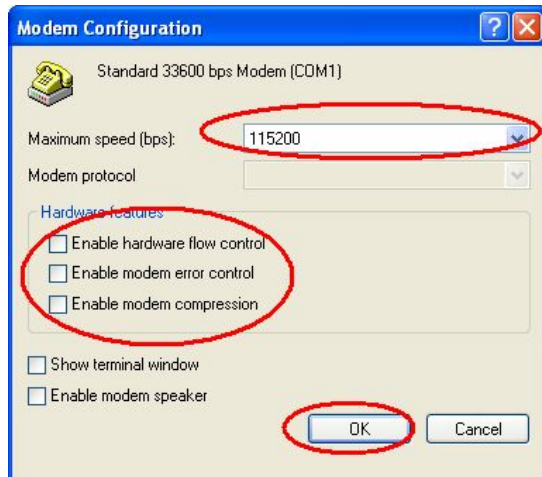
24. Click the “Properties” button of the Dial-Up program



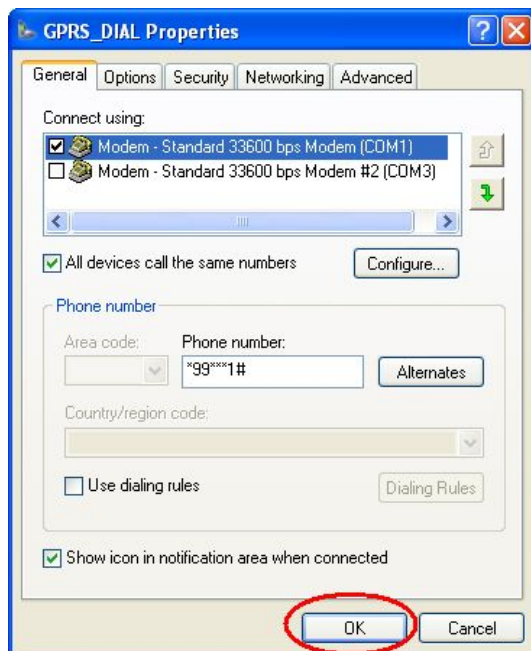
25. Choose the Modem driver installed before, Click “Configure” button



26. Set “Maximum Speed [bps]” as 115200, set Hardware features as following, click “OK” button




27. Click “OK” button to finish Dial-Up program configuration



28. Click “Dial” button to start dial

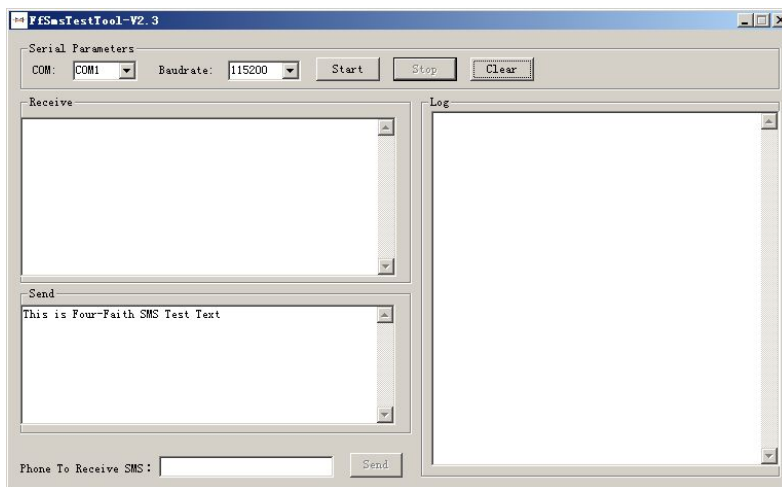


29. When dial success, There is a connection icon  on the right of your taskbar.

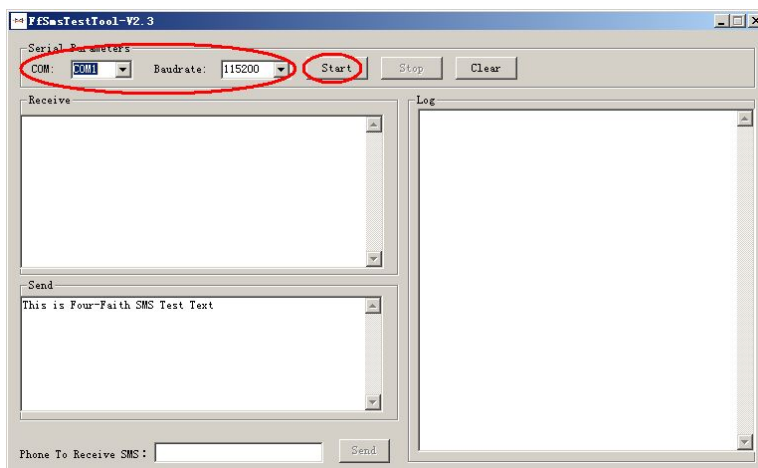
Chapter 4 SMS Test

Modem can also be used to send and receive SMS (Short Message Service) except setting up dial-up connection. To simplify customer program, we supply a DLL(Dynamic Link Library) and sample program source code, all the SMS operations can be processed through simple API functions. The following describes how to test the SMS function.

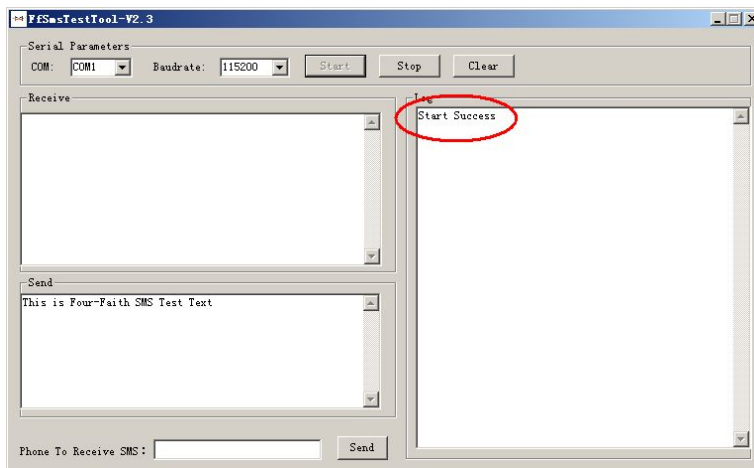
1. Connect PC and Modem with the shipped RS-232 cable and power on Modem, The connection diagram please refer chapter 3.1
2. Run FfSmsTestTool-En.exe



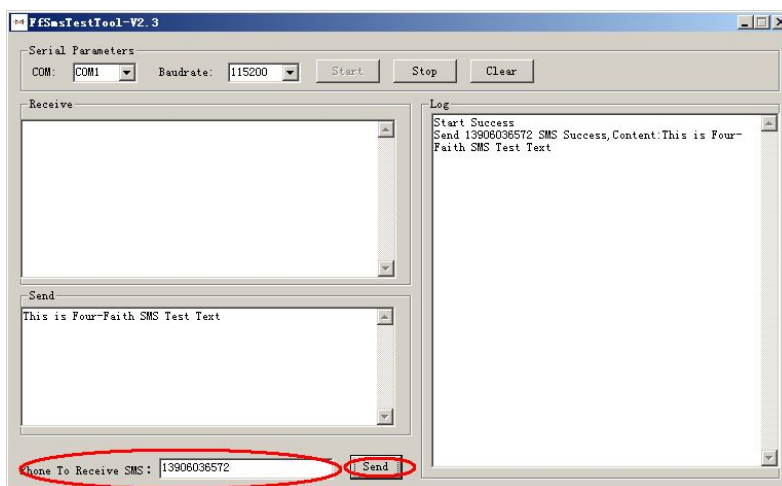
3. Choose the COM port which connect to MODEM, baud rate is 15200, click “Start” button



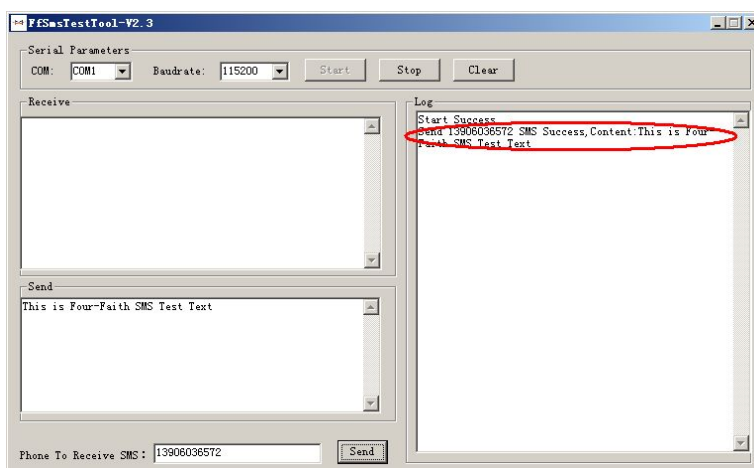
4. The tool will initiate Modem after clicking the “Start” button, If initiate success, the log column will show “Start Success”, It’s now ready for sending and receiving SMS.



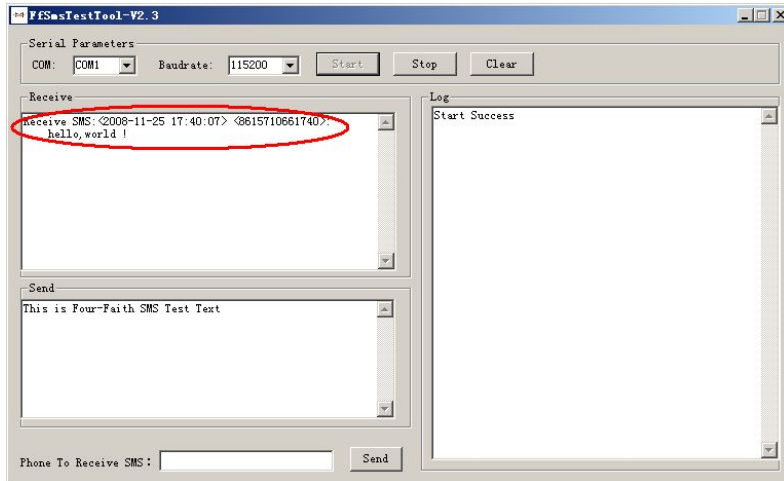
5. Input the phone to receive this test SMS, click “Send” button



6. The result state will display in the Log column



7. When received SMS, It will display in the receive column



8. Complete SMS test.

Chapter 5 Appendix

The following steps describe how to setup Windows XP Hyper Terminal and send AT command to modem with it.

1. Press “Start”→”Programs”→”Accessories”→”Communications”→”Hyper Terminal”

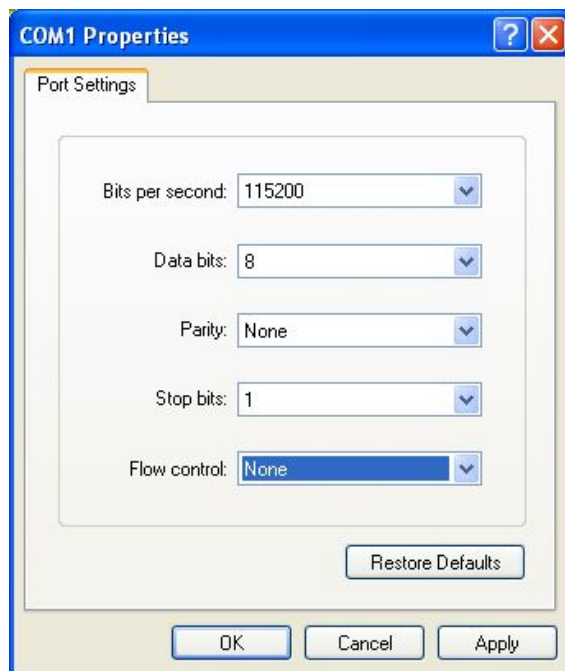


2. Input connection name, choose “OK”
3. Choose the correct COM port which connects to modem, choose “OK”

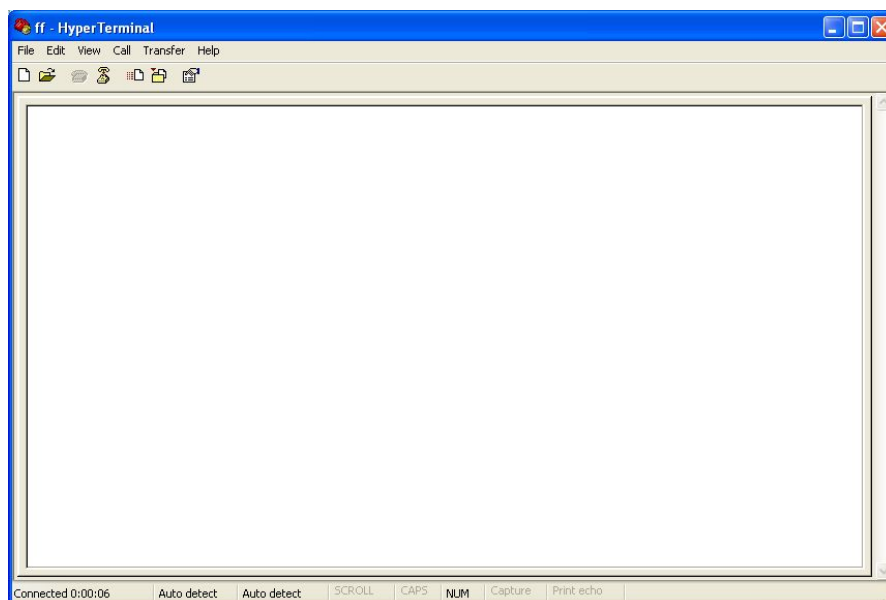


4. Configure the serial port parameters as following, choose “OK”

Bits per second: 115200
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None



5. Complete Hyper Terminal operation, It runs as following



6. Type “AT” in the blank of Hyper Terminal and press “Enter”, the modem will return “ok”.