# Industrial Tri-band 3G Modem
# GTM-201-3GWA Series

# User Manual

## Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

## Warning

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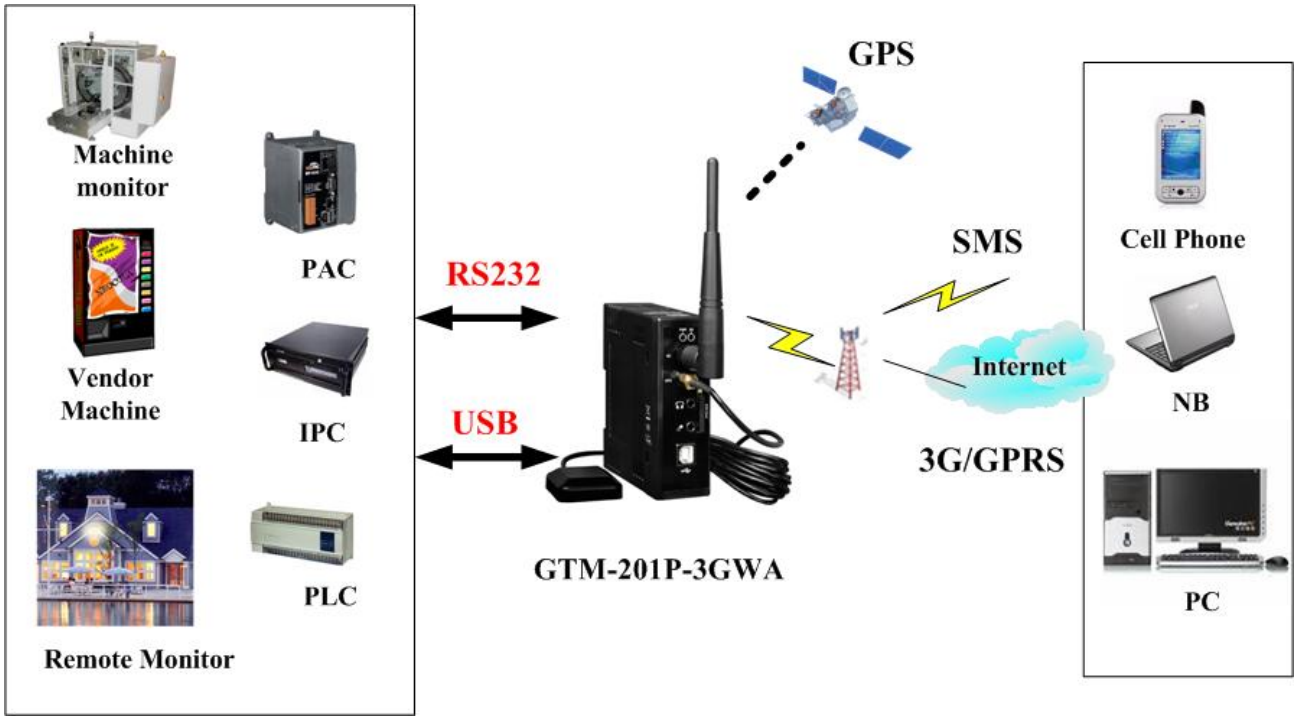
# Table of Contents

# Chapter 1 Introduction

The GTM-201-3GWA is a industrial Tri-band 3G and Quad-band GSM modem with RS-232 and USB interfaces that work at frequencies of UMTS 2100 / 1900 / 850 MHz and GSM 850 / 900 / 1800 / 1900 MHz. The modems utilize the 3G or GPRS network to transfer data. The features of GTM-201-3GWA allows a variety of PLC and PC applications to take advantage of SMS, 3G and GPRS connectivity. The voice interface allows the modem to be also applied to alarm systems with sounds.



# Chapter 2 Hardware Specifications

## 2.1 GTM-201-3GWA Series

| | |
|---|---|
|  |  |
| **GTM-201-3GWA** | **GTM-201P-3GWA** |

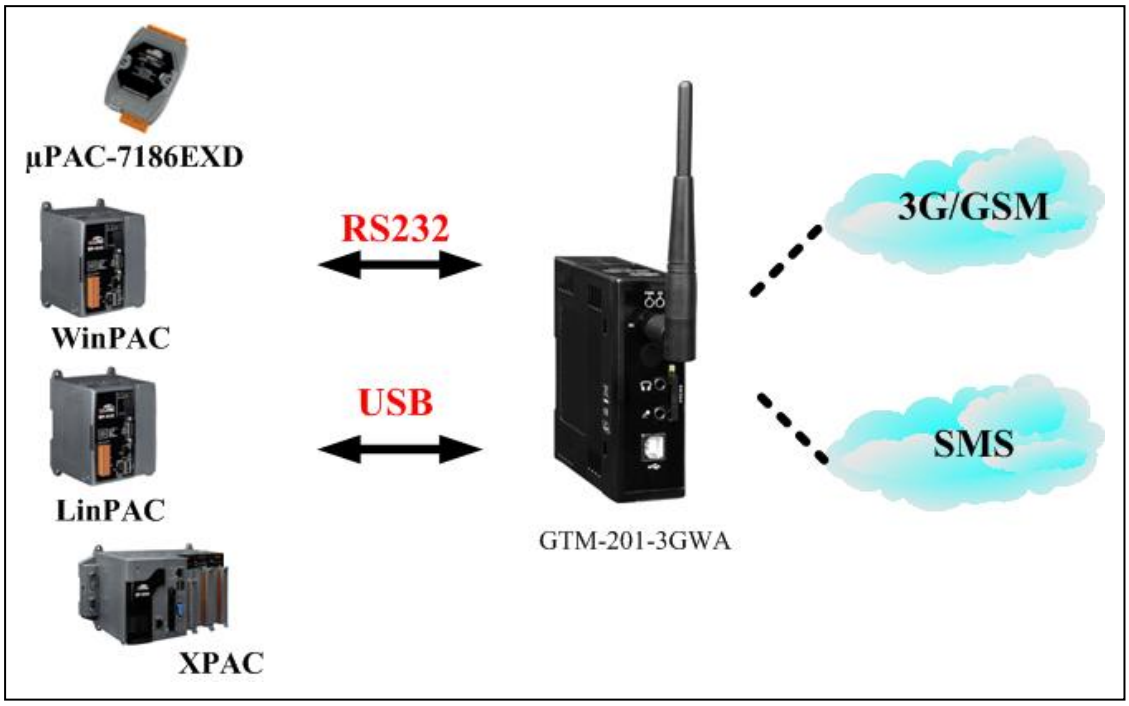
## 2.2 GTM-201-3GWA Specifications

| Item | GTM-201-3GWA | GTM-201P-3GWA |
|---|---|---|
| **3G System** | | |
| Frequency Band | UMTS : 2100/1900/850 MHz | |
| Data Transmission | UMTS / HSDPA / HSUPA<br>Downlink transfer: Max. 7.2Mbps; Uplink transfer: Max 5.76Mbps | |
| **GSM / GPRS System** | | |
| Frequency Band | GSM : 850/900/1800/1900 MHz | |
| GPRS connectivity | GPRS class 12/10; GPRS station class B | |
| DATA GPRS | Downlink transfer: Max. 85.6 kbps; Uplink transfer: Max 42.8kbps | |
| CSD | Up to 14.4 kbps | |
| Coding Schemes | CS 1, CS 2, CS 3, CS 4 | |
| **SMS** | | |
| SMS | MT, MO, CB, Text and PDU mode | |
| **GPS System** | | |
| Support Channels | - | 32 |
| Protocol Support | - | NMEA 0183 |
| **Comm. Interface** | | |
| COM ports | TxD,RxD,GND | |
| COM Port Baud Rate | 9600 bps ~ 115200 bps | |
| USB | USB 2.0 (high speed) | |
| USB Driver support | Windows 98 / 2000 / XP / Vista / 7<br>LinPAC (Linux kernel 2.6) | |
| **LED Indicators** | | |
| Power | Red | |
| 3G/GSM | Green | |
| **Power** | | |
| Protection | Power reverse polarity protection | |
| Frame Ground Protection | ESD, Surge, EFT, Hi-Pot | |
| Required Supply Voltage | +10 $V_{DC}$ ~ +30 $V_{DC}$ | |
| Power Consumption | Idle: 25 mA @ 24 $V_{DC}$ ; Data Link: 100 ~ 400 mA (peak) @ 24 $V_{DC}$ | |
| Connection | 8-Pin 3.5 mm Removable Terminal Block | |
| **Reset Input** | | |
| Input Type | Isolated, 3750 $V_{rms}$ | |
| On Voltage Level | +3.5 $V_{DC}$ ~ +30$V_{DC}$ | |
| Off Voltage Level | +1 $V_{DC}$ max. | |
| Input Impedance | 3 kΩ , 0.25W | |
| **Mechanical** | | |
| Casing | Plastic | |
| Flammability | UL 94V-0 materials | |
| Dimensions (W x L x H) | 33 mm x 87 mm x 107 mm | |
| Installation | DIN-Rail | |
| **Environment** | | |
| Operation Temp. | -25℃ to 75℃ | |
| Storage Temp | -40℃ to 80℃ | |
| Humidity | 5~95% non-condensing | |

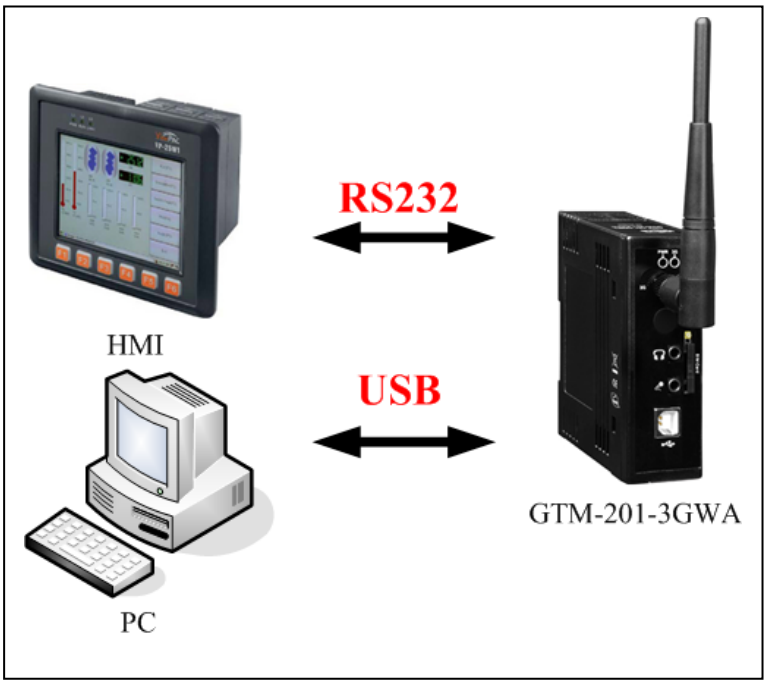
**Note1: The default baud rate is 115200 bps.**

# Chapter 3 Application architecture

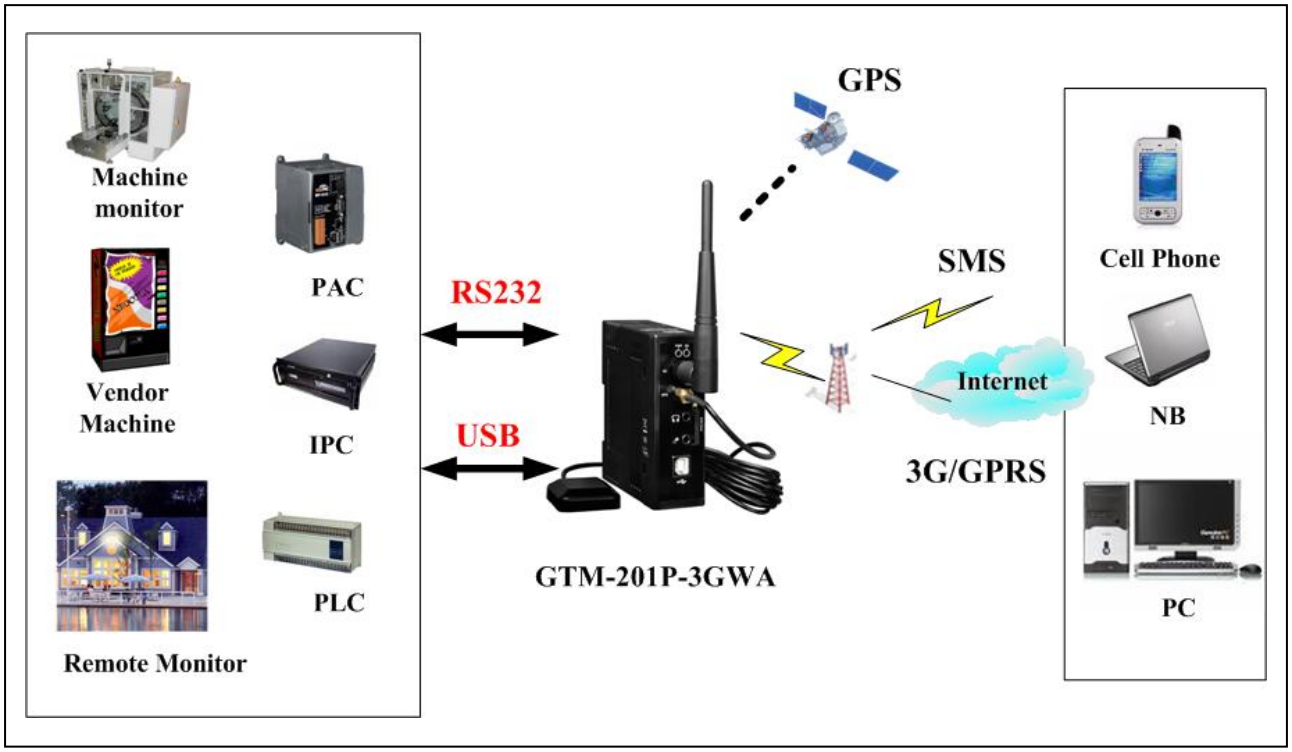
## 3.1 Application 1




## 3.2 Application 2

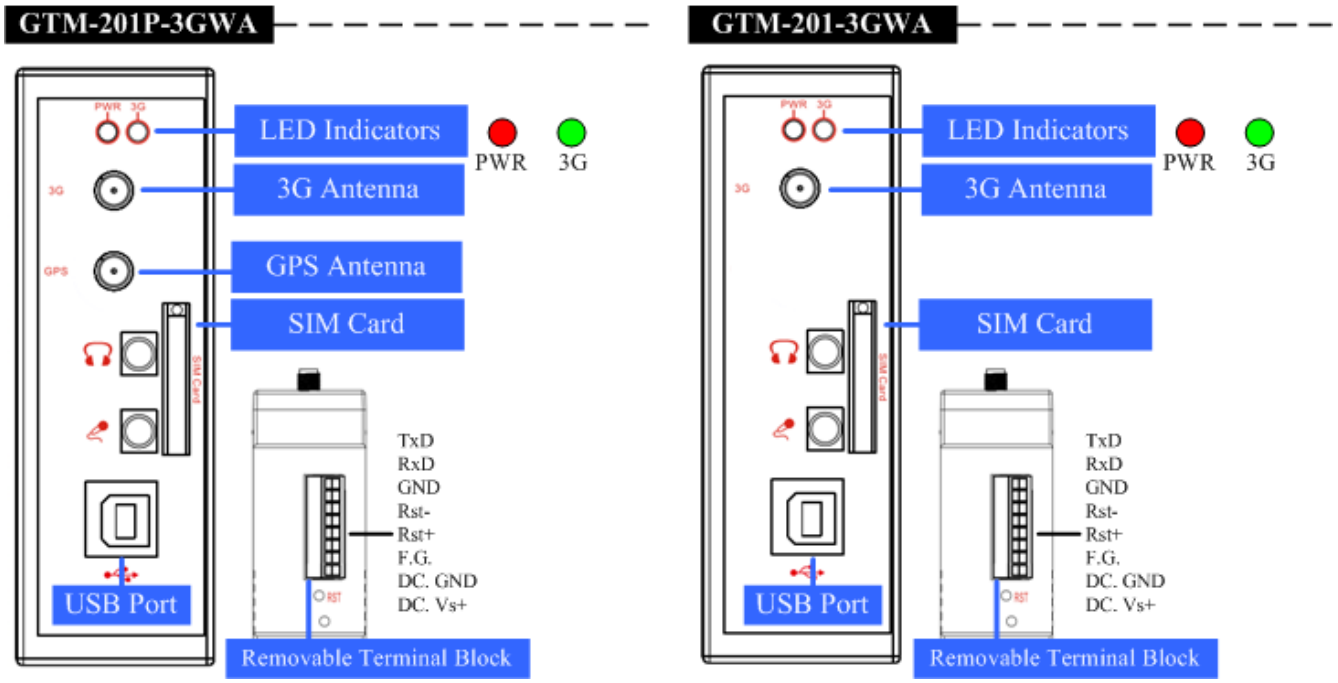


## 3.3 Application 3

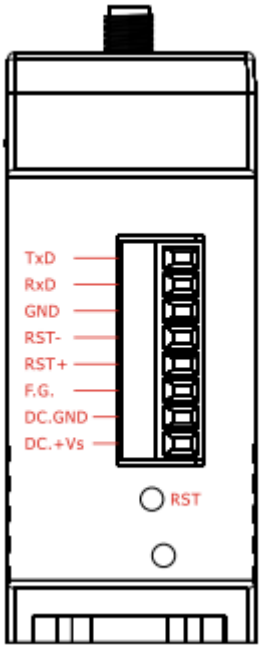


# Chapter 4 Hardware Appearance

## 4.1 View of the GTM-201-3GWA Panel



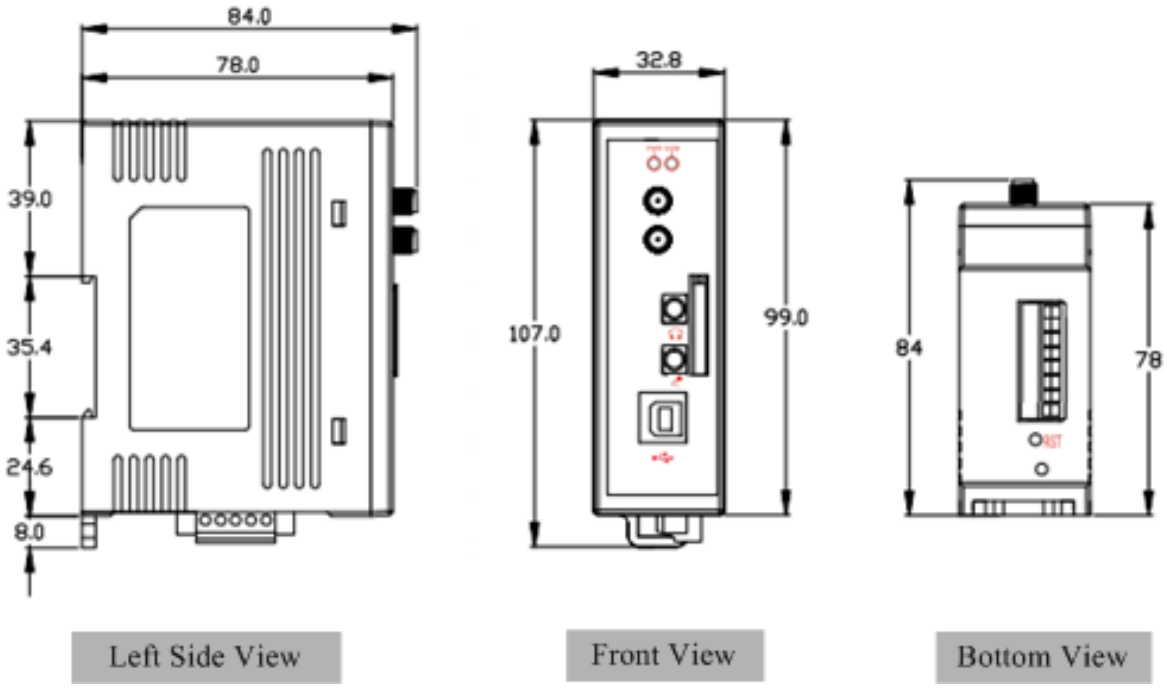
## 4.2 Pin Assignments




| | |
|---|---|
| RS-232 | TxD |
| | RxD |
| | GND |
| RESET | RST- |
| | RST+ |
| Frame Ground | F.G. |
| Power Input: +10 ~ 30$V_{DC}$ | DC.GND |
| | DC.+VS |

## 4.3 Hardware Dimensions

### ➢ GTM-201-3GWA / GTM-201P-3GWA




Unit : mm

## 4.4 LED indicators


There are two LED indicators to help users to judge the various conditions of GTM-201-3GWA. The description is as follows：

PWR(Red)：The PWR LED can indicate the status of Power module.

| Power normal | Power fail |
|---|---|
| Always on | Always off |

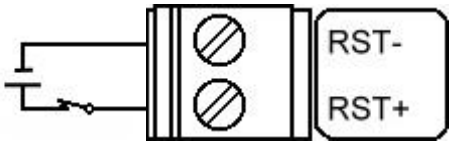
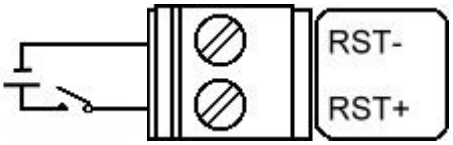
3G (Green)：The modem LED can indicate the status of GSM module.

| Modem normal | Modem fail | Data transmit |
|---|---|---|
| Blanking (800 ms) | Off<br>On | Blanking(200 ms) |

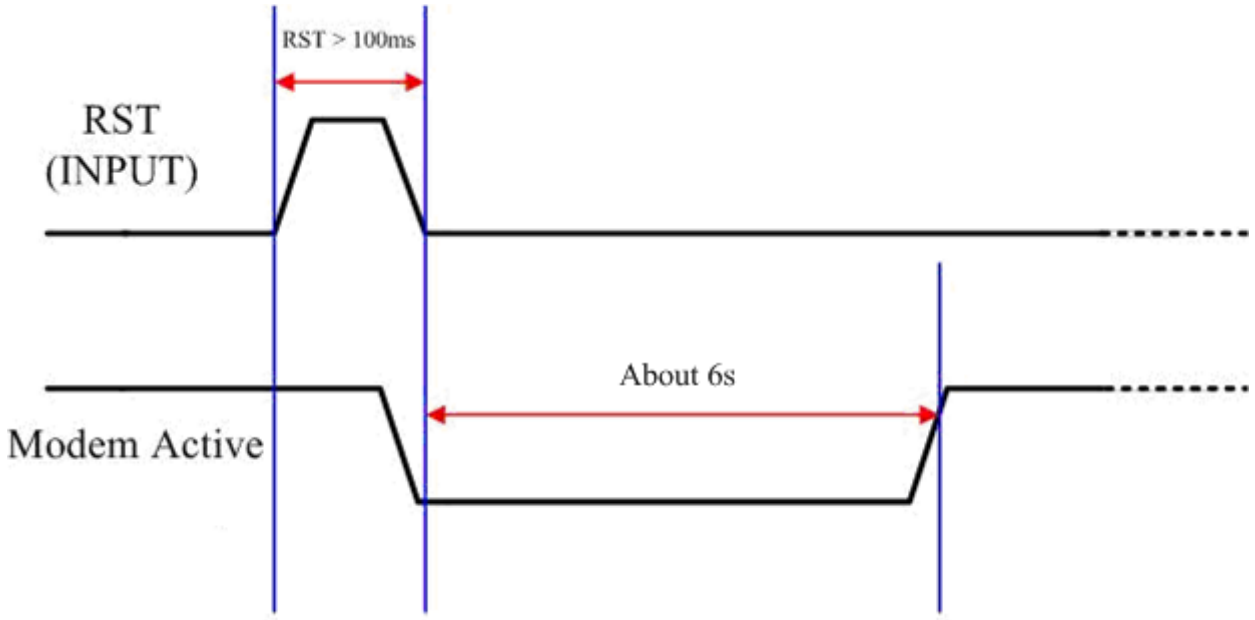
# Chapter 5 Hardware Wire Connection

## 5.1 Reset Wire Connection

### ➢ Reset Wire Connection

| Input Type | Reset State ON | Reset State OFF |
|---|---|---|
| Reset Input |  |  |

| Reset Input | |
|---|---|
| **ON** Voltage Level | +3.5 $V_{DC}$ ~ +30 $V_{DC}$ |
| **OFF** Voltage Level | +1 $V_{DC}$ max. |




Timing of restarting the modem

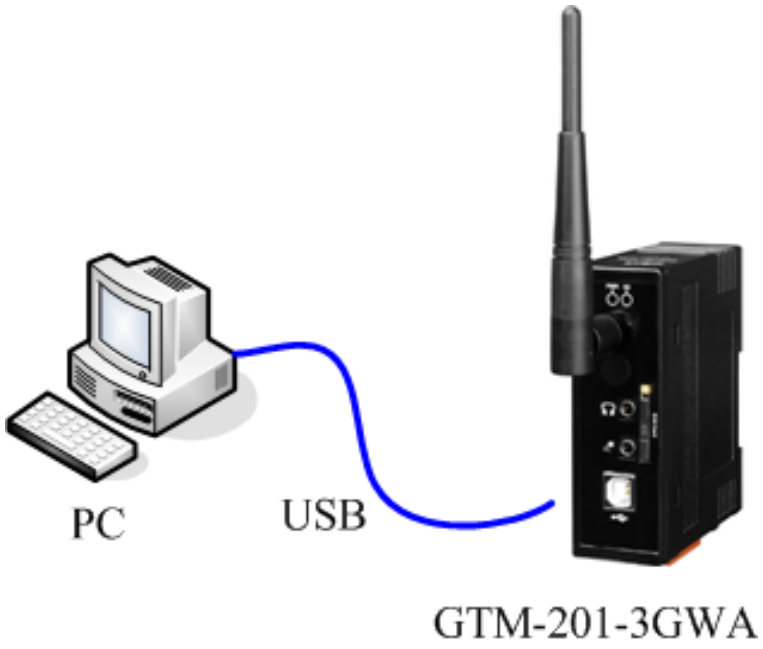
## 5.2 3G/GPS Installation

### ➢ SIM card Installation

### ➢ 3G/GPS Antenna Installation

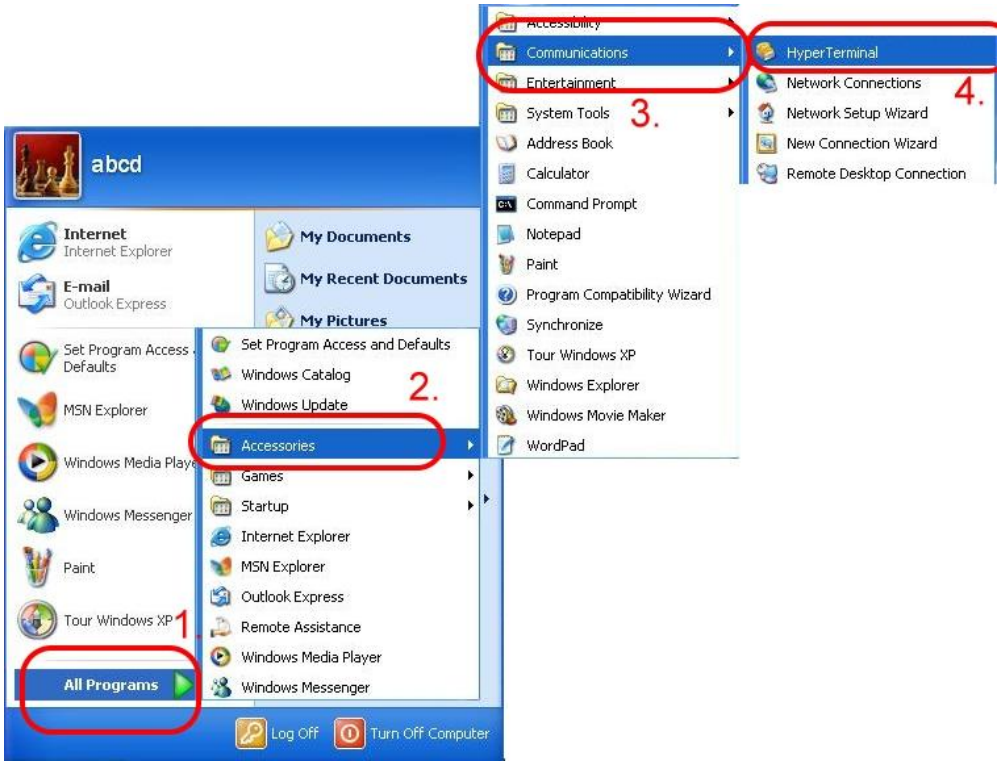
## 5.3 Quick Test

- **Hardware installation :**



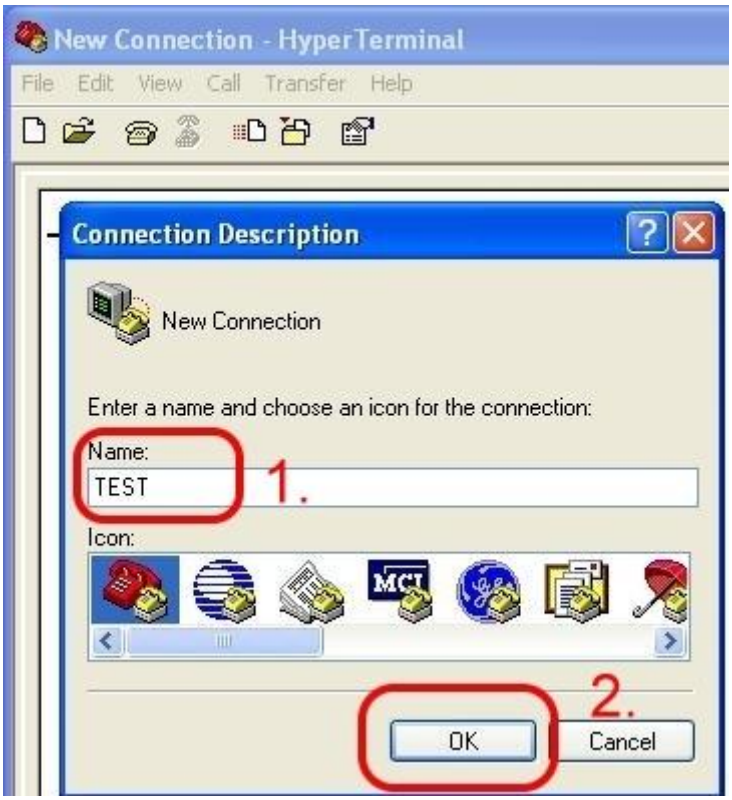
## ➢ Software Installation: (Hyper Terminal)

Step1. Start → All Programs → Accessories → Communications → Hyper Terminal




Step2. If these is a pop-up form that “Default Telent Program?”, please select “Yes”

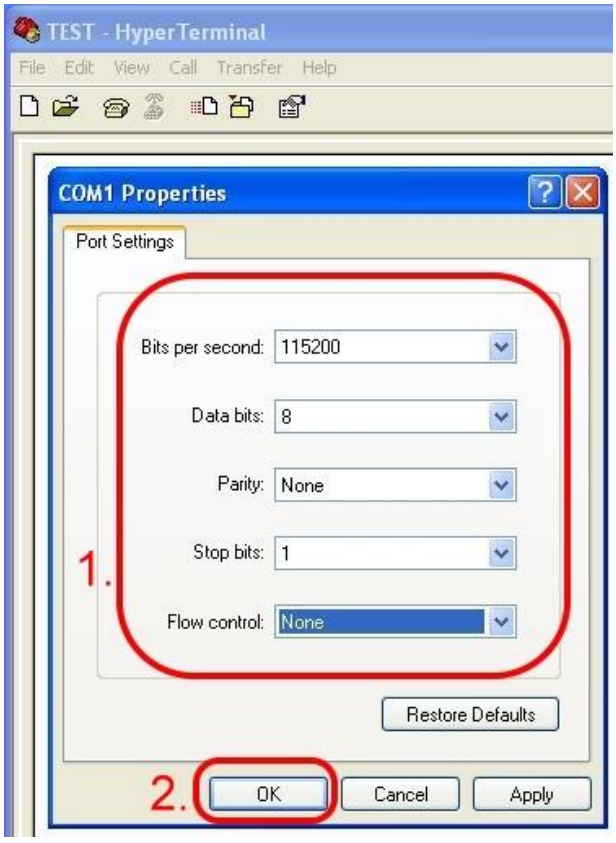
Step3. Input new connection name → Click “OK”




Step4. Select your PC serial port → Click “OK”

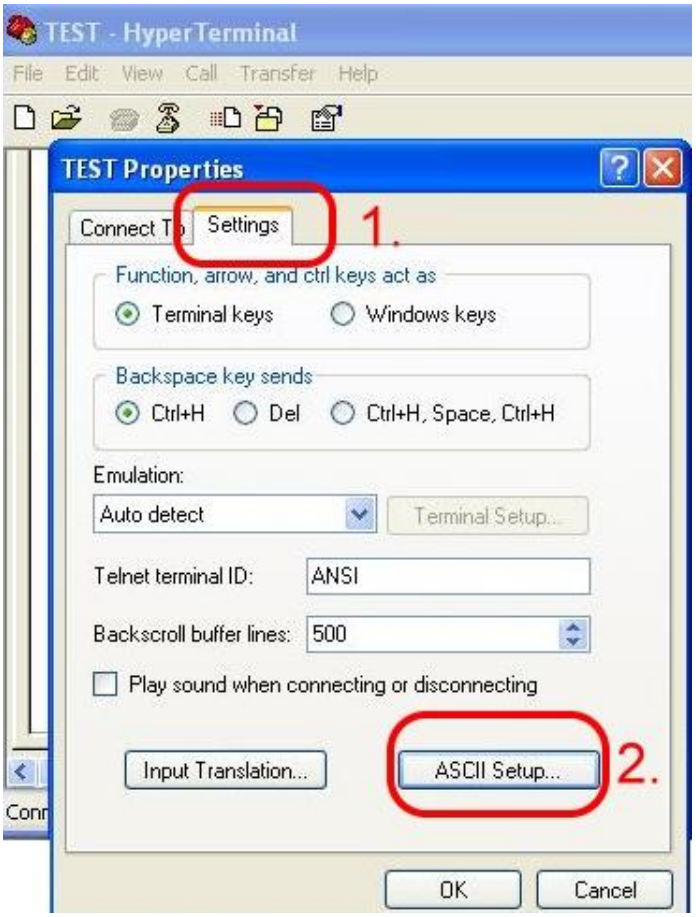
Step5. Please refer to the following settings

| | |
|---|---|
| Bits per second | 115200 |
| Data bits | 8 |
| Parity | None |
| Stop bits | 1 |
| Flow control | None **(Note)** |

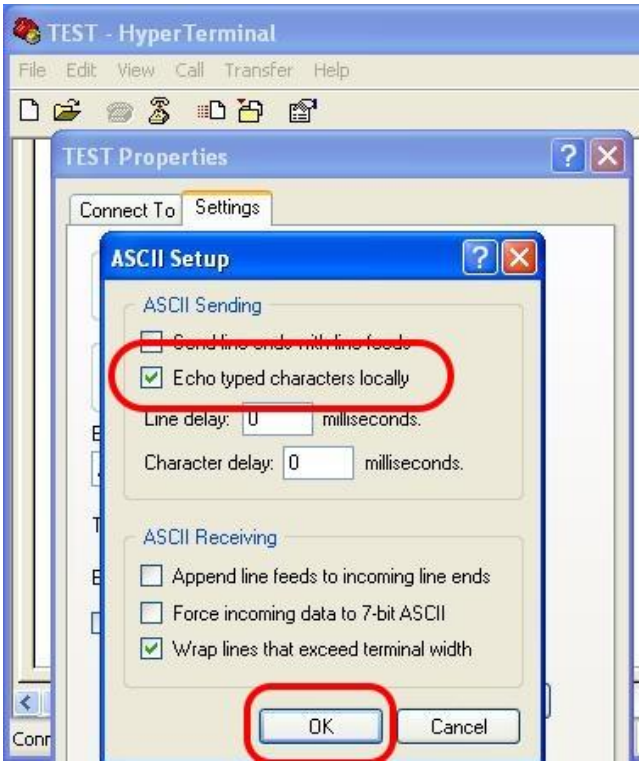



Step6. File → Properties

Step7. Settings → Click “ASCII Setup…”




Step8. Select “Echo typed character locally” → OK



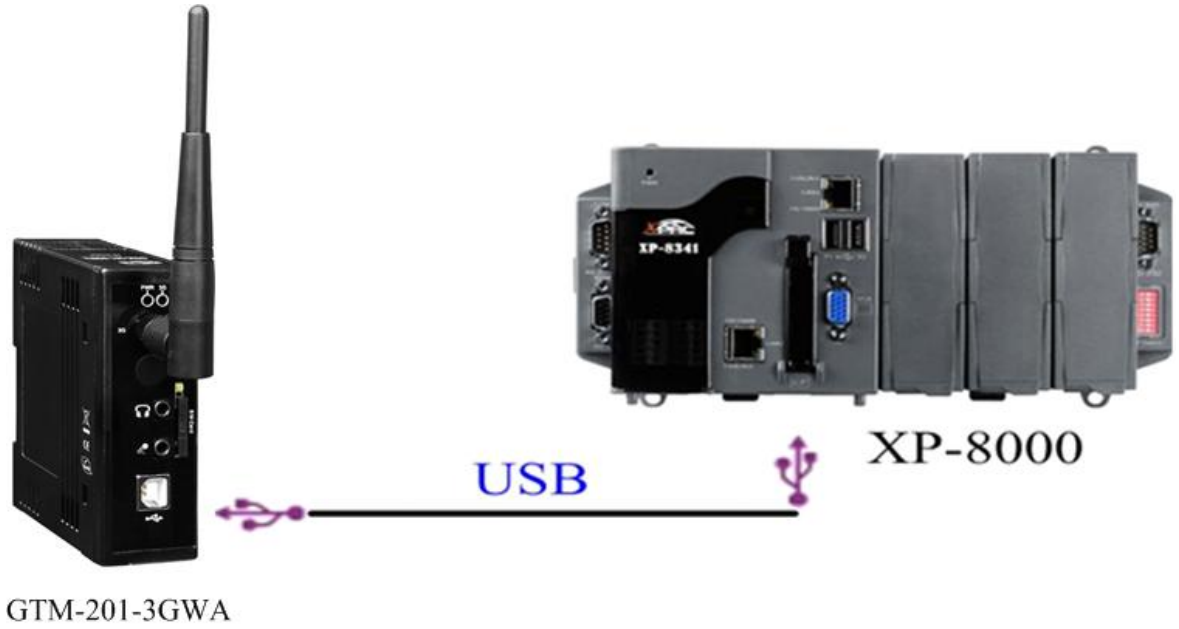
Step9. Input “AT” and press “Enter”, then you will receive “AT OK”

# Chapter 6 GPRS connection

## 6.1 XPAC – 8000 (Microsoft Windows XP)

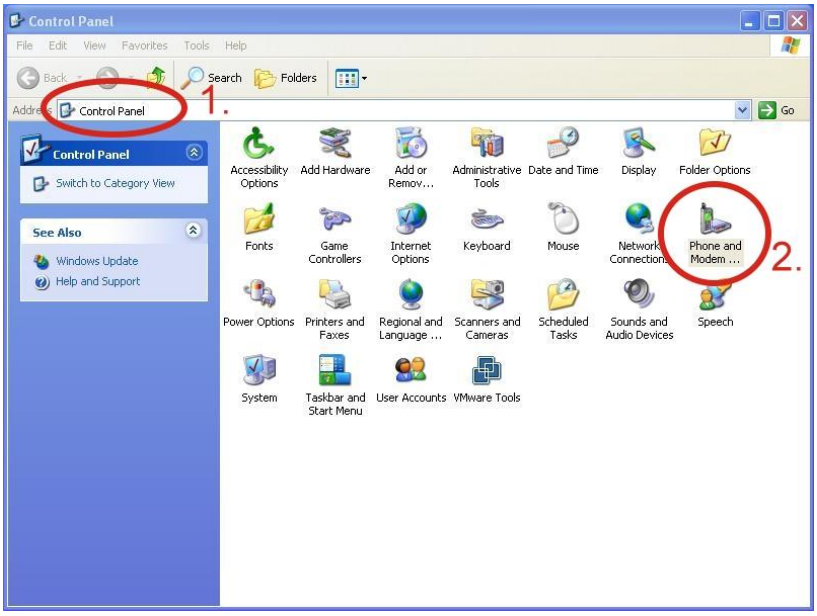
#### 6.1.1.1 GTM-201-3GWA Hardware requirement

1) GTM-201-3GWA (Please install USB driver first)
2) XPAC-8000
3) USB Cable

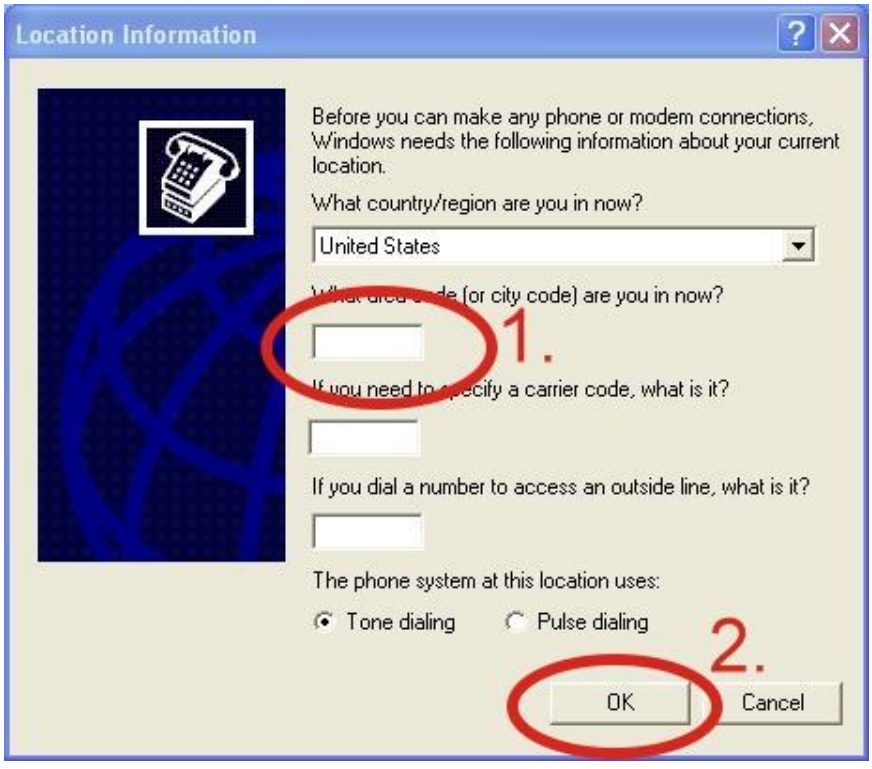


### 6.1.2.1 Create a new modem connection

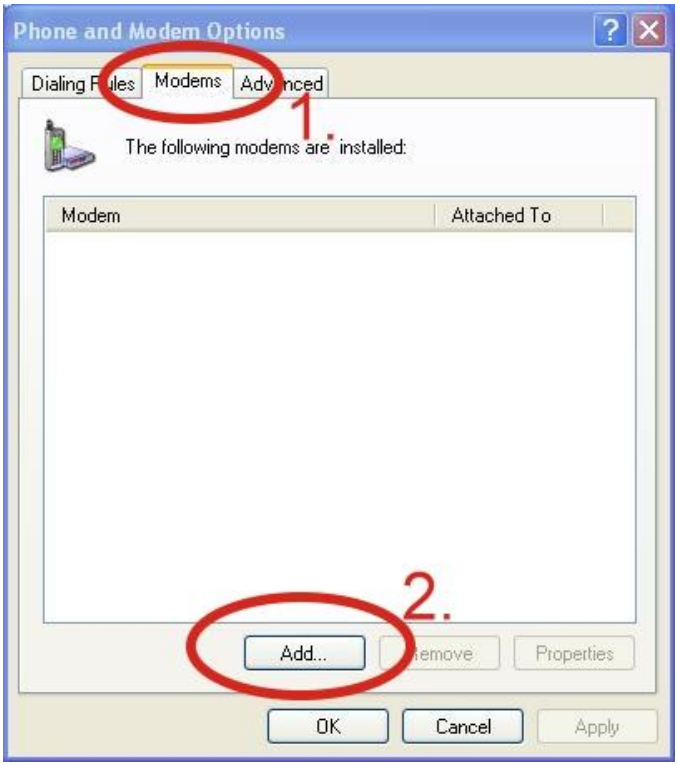
Step1. Control Panel → Double-click “Phone and Modem Options”




Step2. Set the area code for the first time → Click “OK”



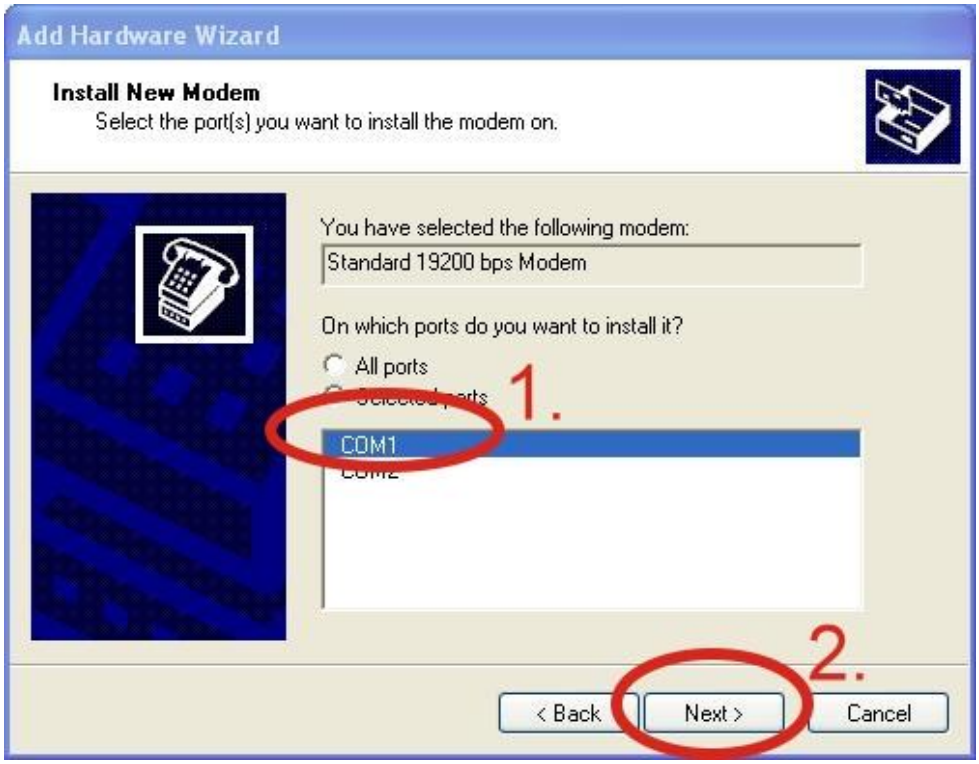
Step3. Control Panel → Double-click “Phone and Modem Options” → Modem → Click “Add”




Step4. Select “Don’t detect my modem; I will select it from a list.” → Click “Next”

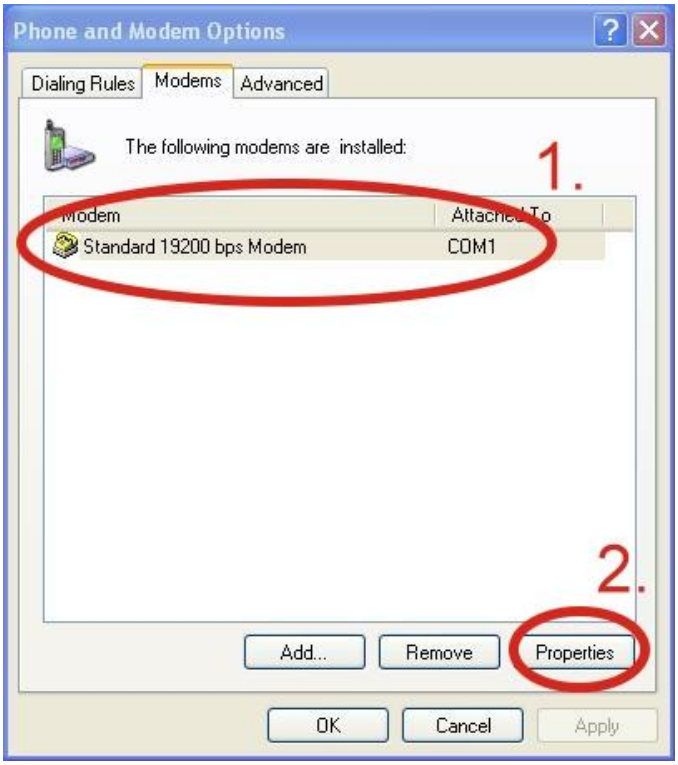
Step5. Select ”Standard Modem Types” → Select “Standard 19200 bps Modem” → Click “Next”


Step6. Select your COM Port to connect to the modem → Click “Next”

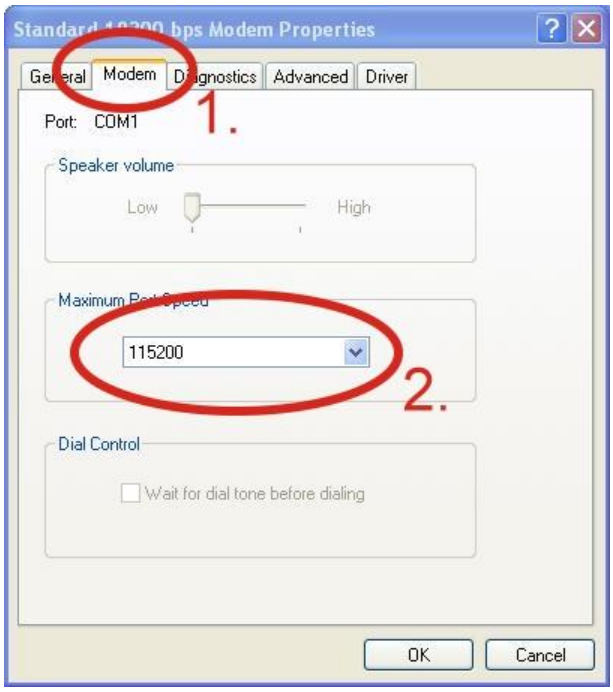


Step7. Click “Finish” to finish the install new modem.


Step8. Control Panel → Double-click “Phone and Modem Options” → Modem → Select “Standard 19200 bps Modem” → Click “Properties”



Step9. Control Panel → Double-click “Phone and Modem Options” → Modem → Select “Standard 19200 bps Modem” → Click “Properties” → Modem → Maximum Port Speed → 115200

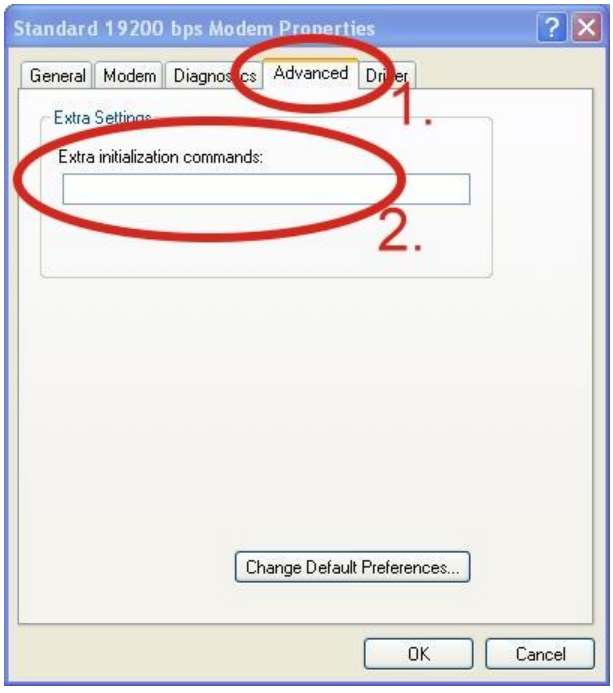



Step10. Advanced → Extra initialization commands:

Note: GPRS’s APN must be provided from your Telecom. CO., LTD.

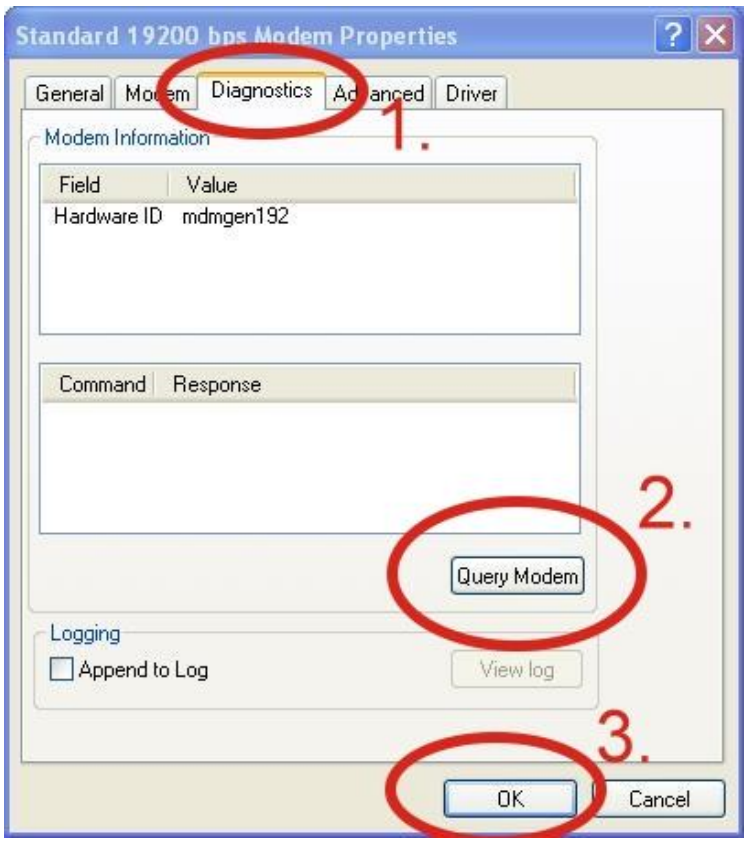
For example in Taiwan: AT+CGDCONT=1,”IP”,”INTERNET”

For example in China: AT+CGDCONT=1,”IP”,” CMNET”

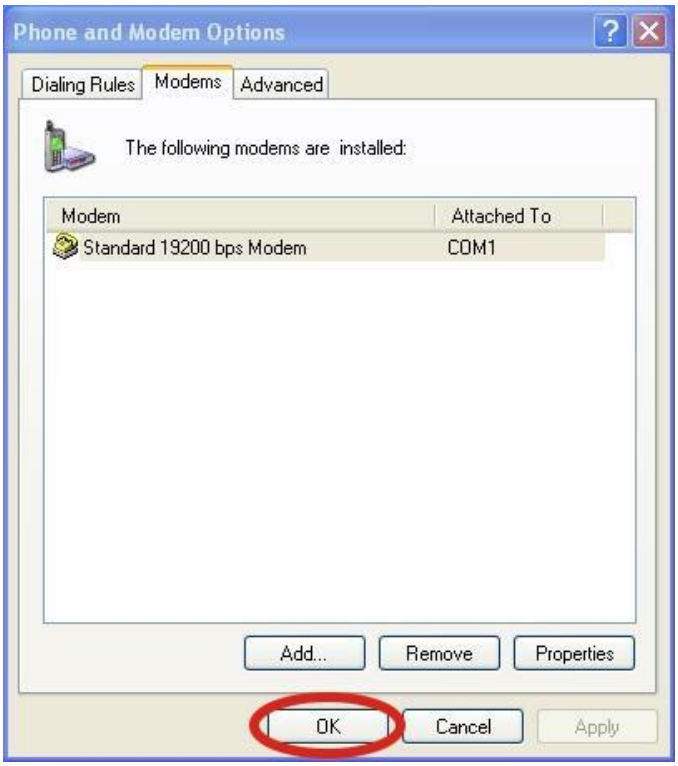


Step11. Diagnostics → Query Modem →Click “OK”

Note: If user queries modem that gets a Error, Please try again.

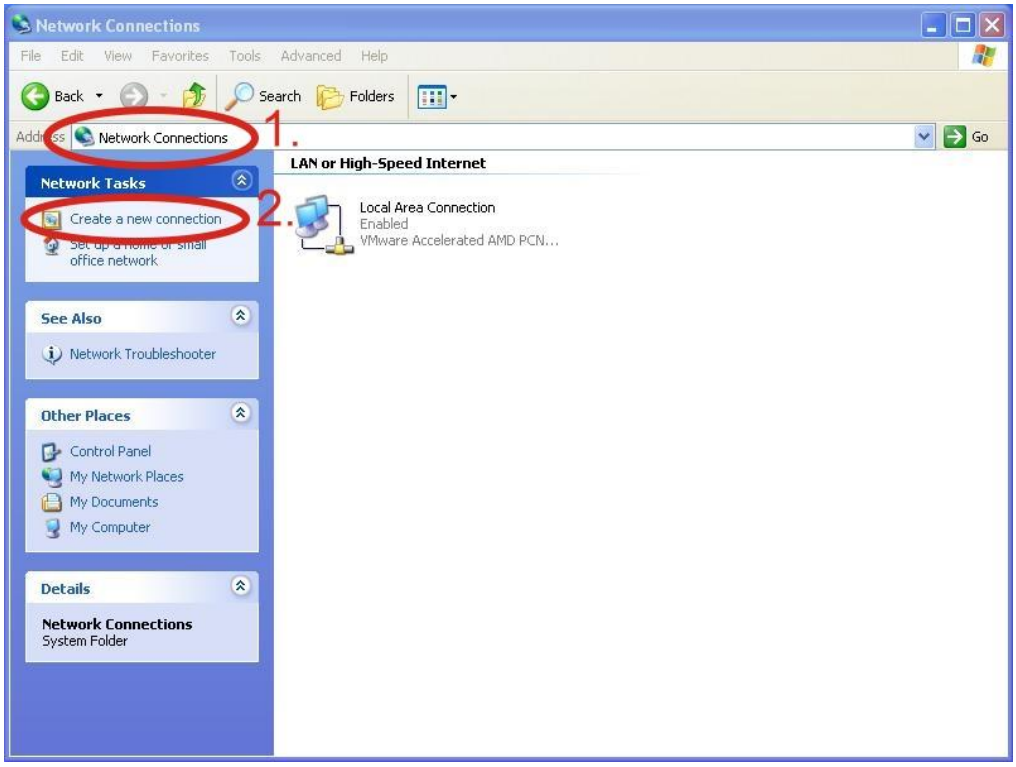



Step12. Click “OK”



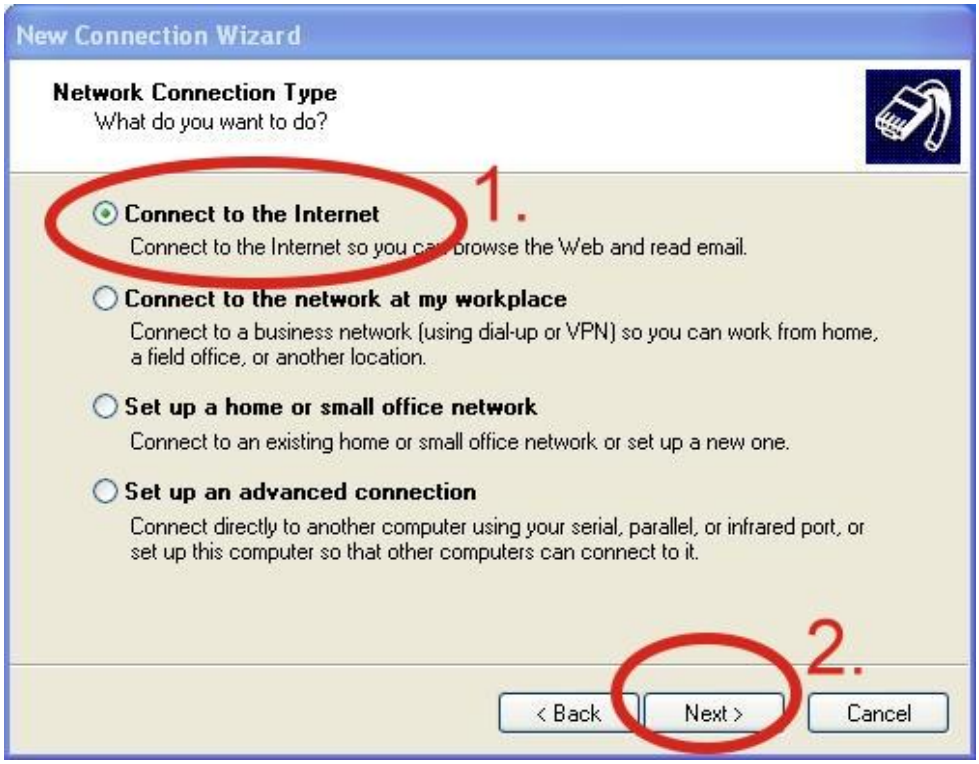
### 6.1.2.2 Create a new dial-up and networking connection

Step1. Control Panel → Network Connections → Click “Create a new connection”

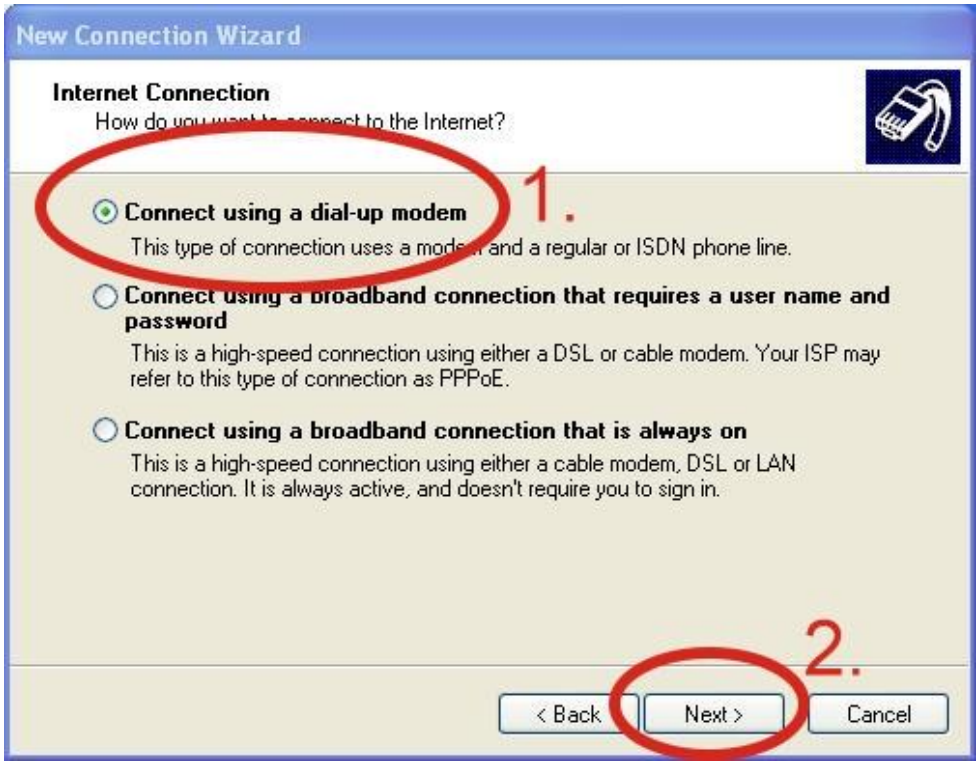



Step2. Click “Next”

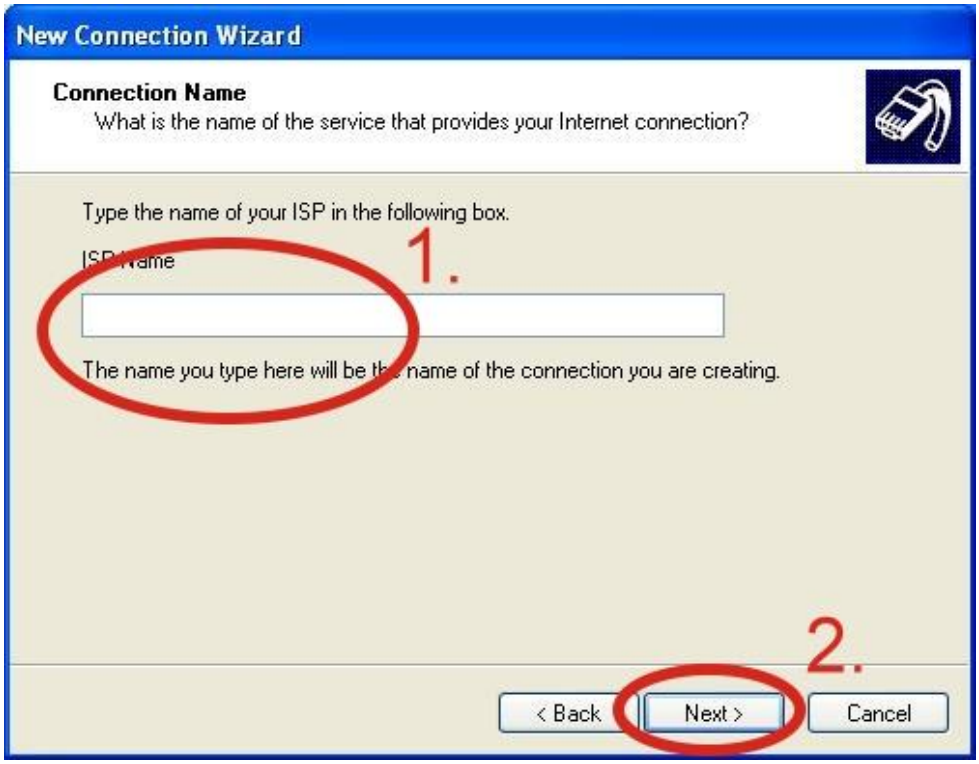
Step3. Select “Connect to the Internet” → Click “Next”




Step4. Select “Connect using a dial-up modem” → Click “Next”



Step5. ISP Name → Your GPRS's name → Click "Next"



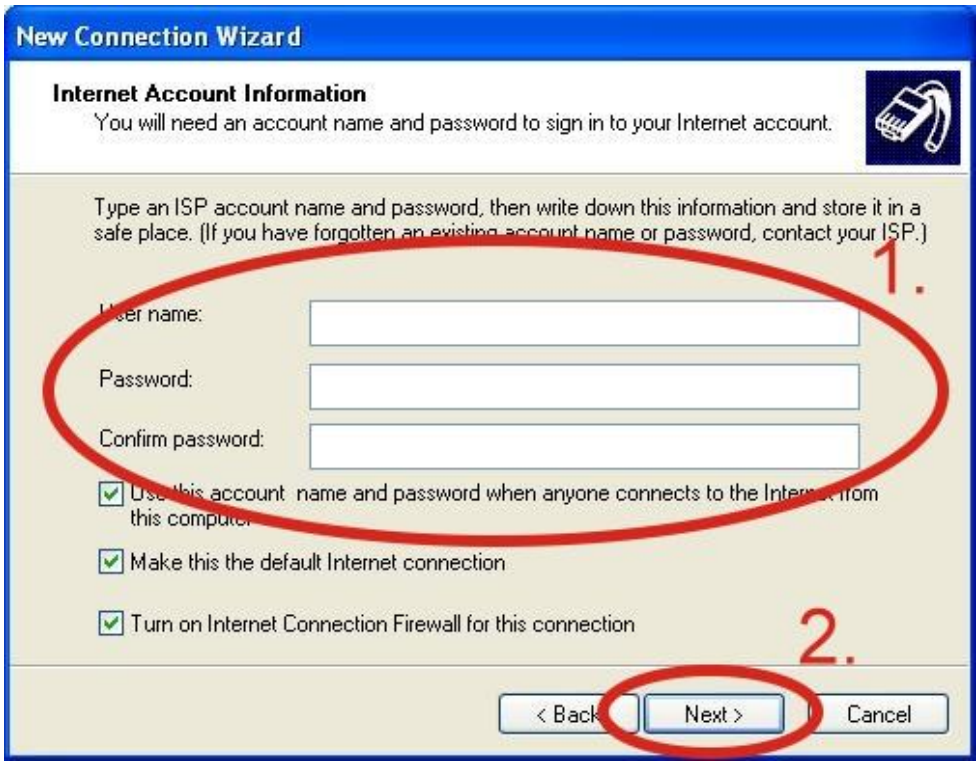

Step6. Phone Number: → Click "Next"

Note: Phone Number must be provided from your Telecom. CO., LTD.

For example in Taiwan: *99***1#

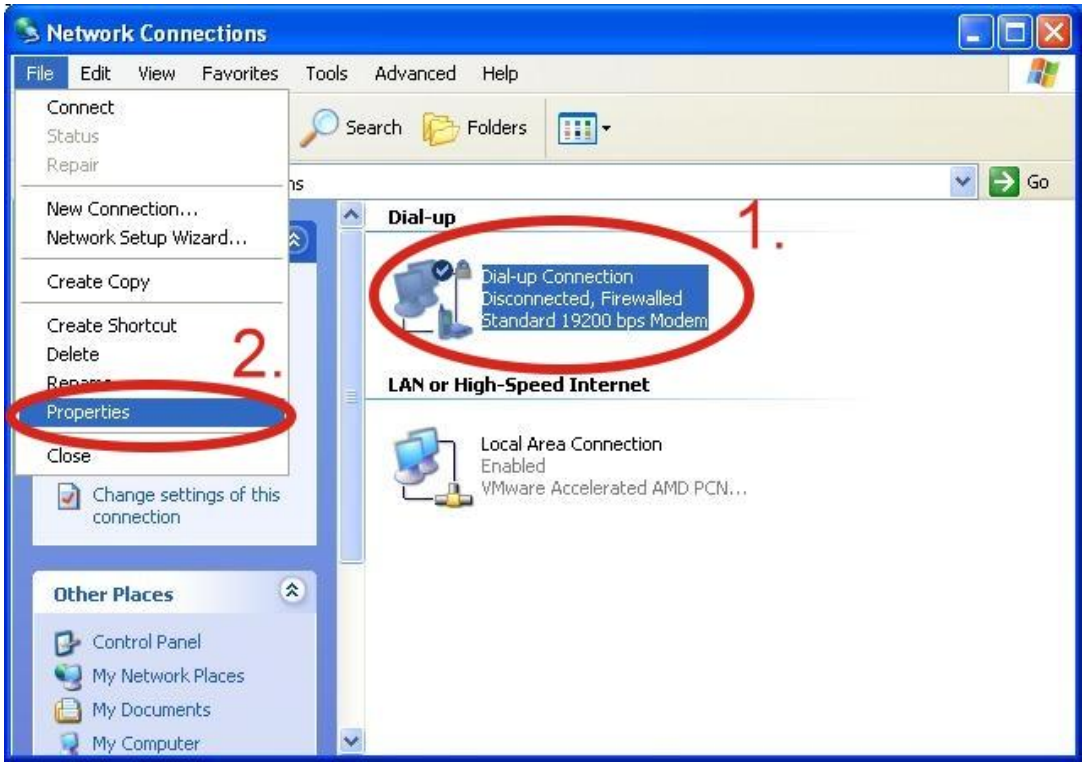
Step7. GPRS's User name and GPRS's Password → Click "Next"

Note: GPRS's User name and GPRS's Password must be provided from your Telecom. CO., LTD.




Step8. Click "Finish"

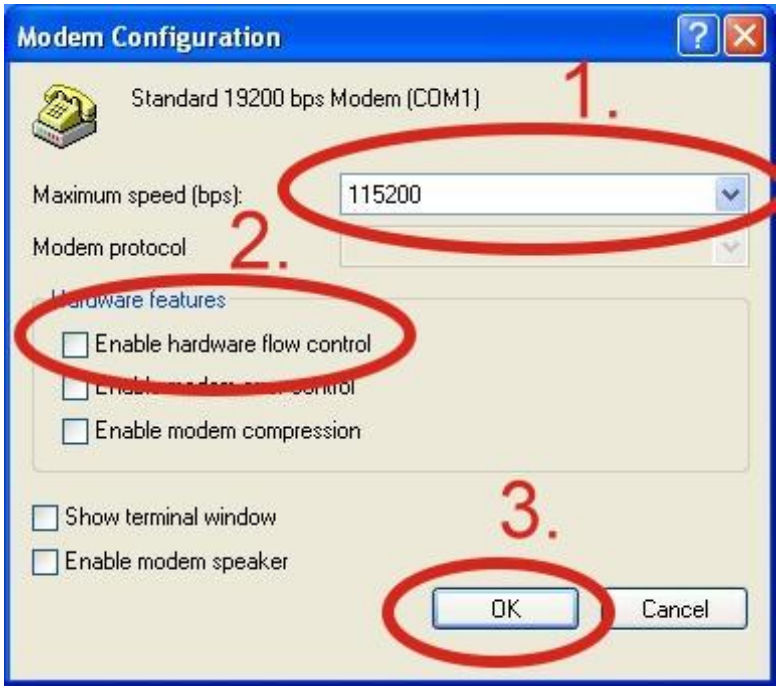
Step9. Control Panel → Network Connections → Click “Your GPRS’s name” → File → Properties



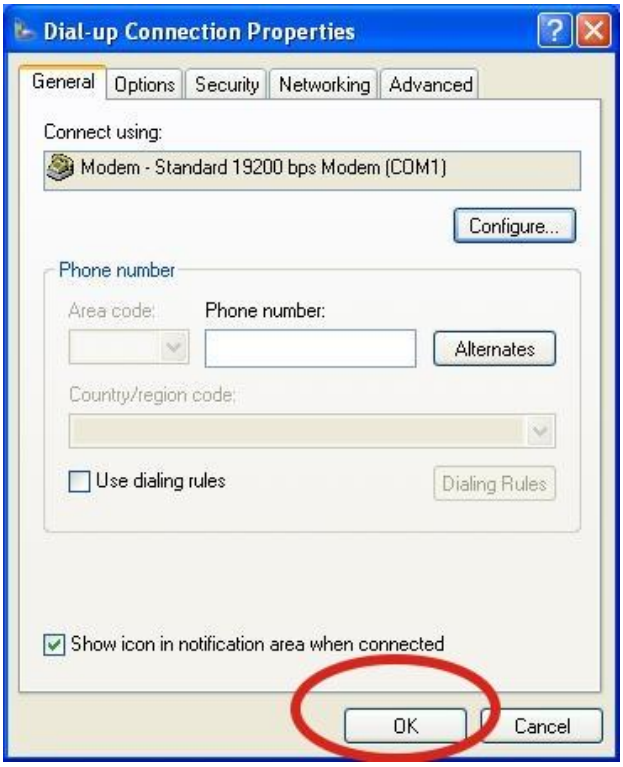

Step10. General → Select”Standard 19200 bps Modem” → Click “Configure”

Step11. Maximum speed(bps) → Select ”115200” → disable “Enable hardware flow control “**(Note)** → Click “OK”

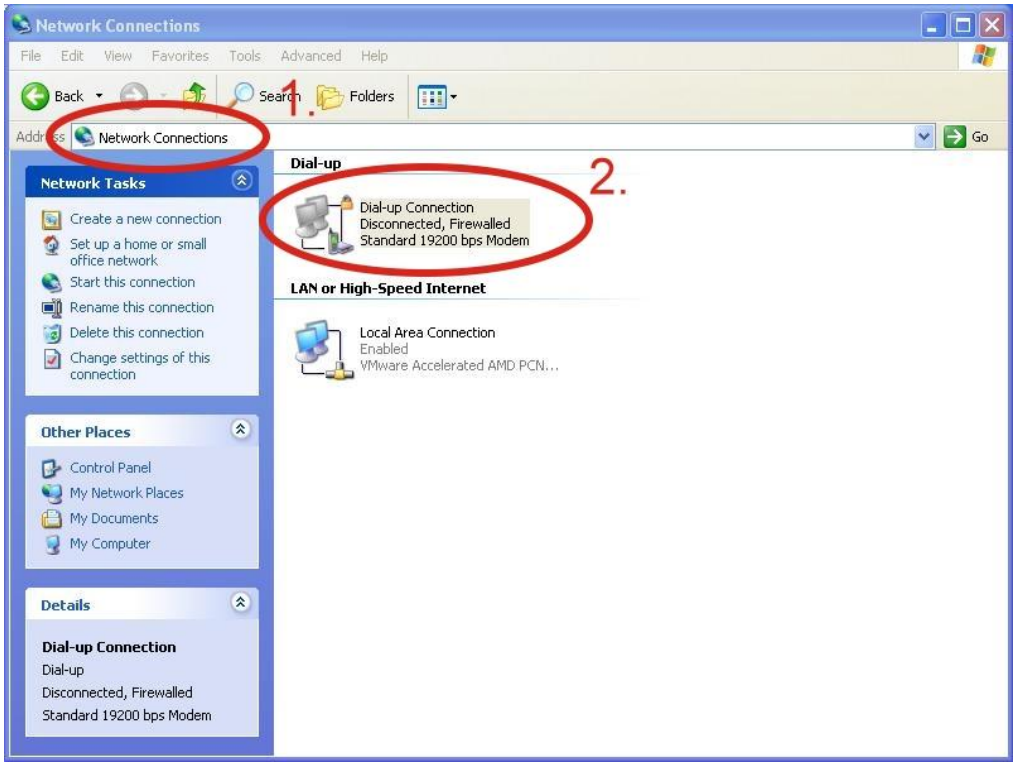
**Note： Please don’t select “Enable hardware flow control”**



Step12. Click “OK”



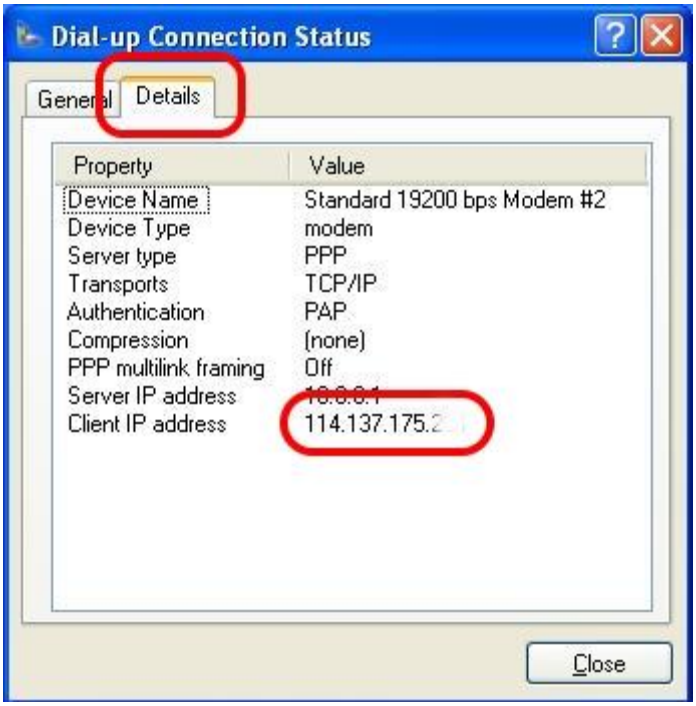

Step13. Control Panel → Network Connections → Double-Click “Your GPRS’s name”



Step14. Click “Dial”


Step15. If you connect to internet successfully, your toolbar have new logo

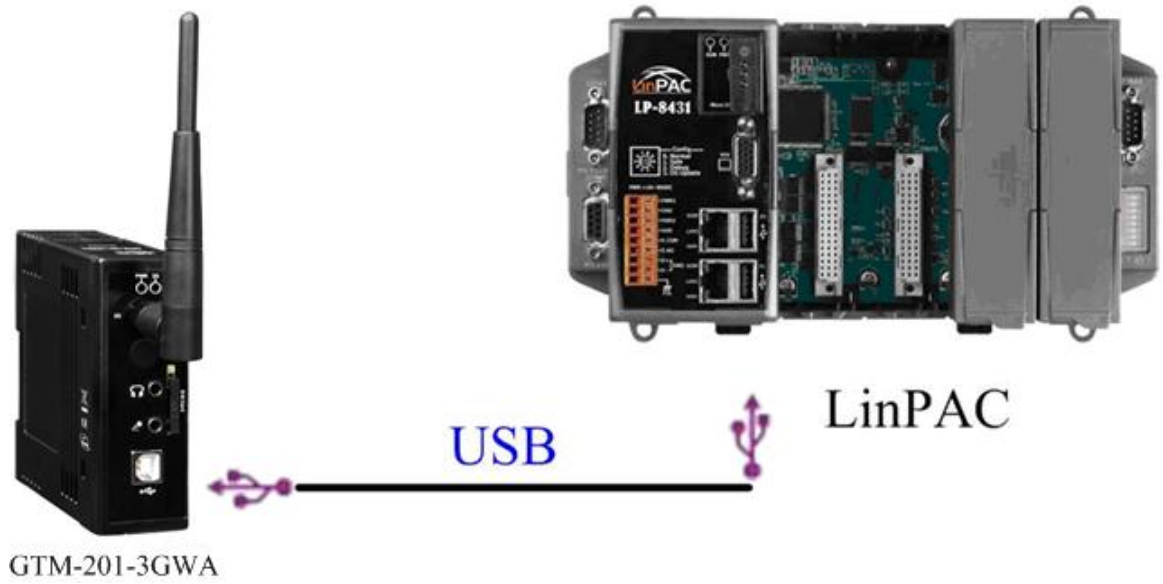

Step16. You can Double-Click the new logo → Click “Details” → Get your IP address



# 6.2 LinPAC – 8000 (Linux)

### 6.2.1.1 GTM-201-3GWA Hardware requirement

1) GTM-201-3GWA
2) LinPAC-8000
3) USB Cable



### 6.2.2.1 How to dial-up

Step1. Download the last version OS, and update it.

LinPAC-8x4x: ftp://ftp.icpdas.com/pub/cd/linpac/napdos/lp-8x4x/os_image/

LinPAC-5x3x: ftp://ftp.icpdas.com/pub/cd/linpac/napdos/lp-5000/lp-5x3x/OS_image/

LinPAC-5x4x: ftp://ftp.icpdas.com/pub/cd/linpac/napdos/lp-5000/lp-5x3x/OS_image/

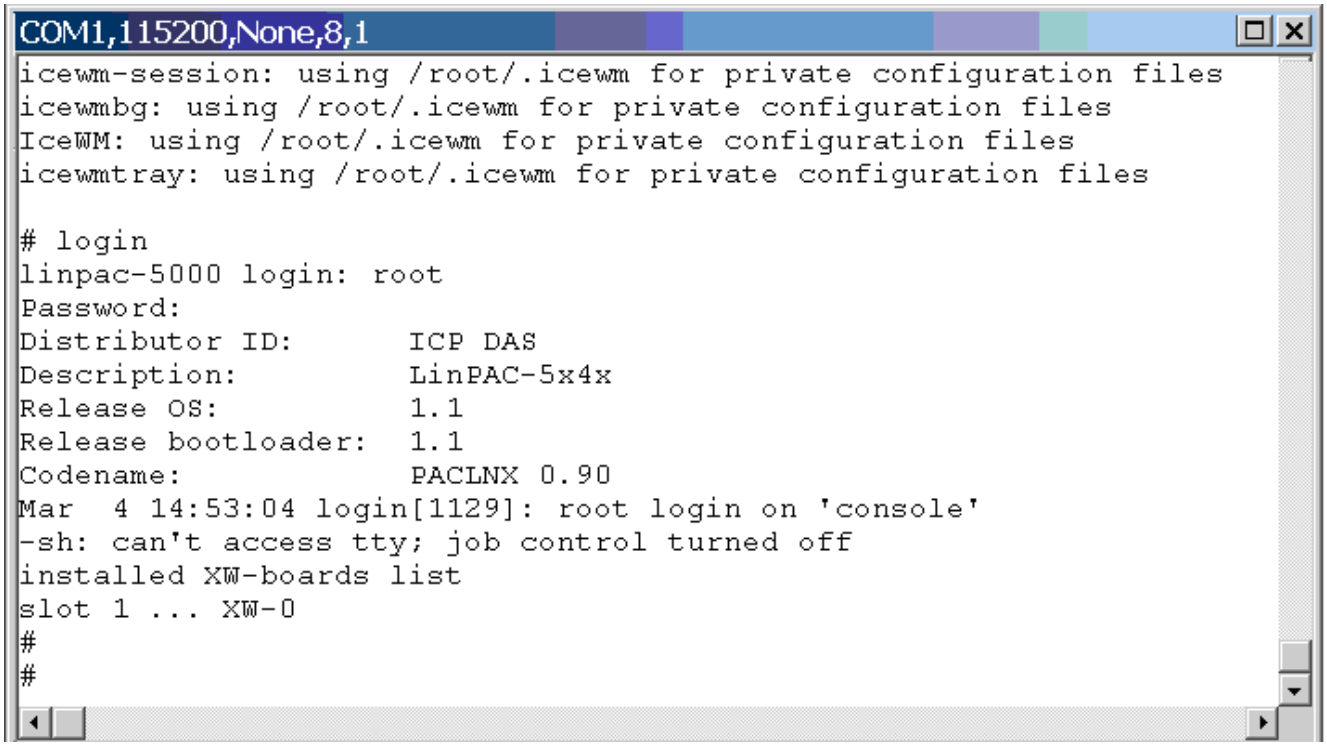
PDS-8x2: ftp://ftp.icpdas.com/pub/cd/linpac/napdos/pds-8x2/os_image/

Step2. Connect the COM1 port of Linpac with the COM port of the pc.

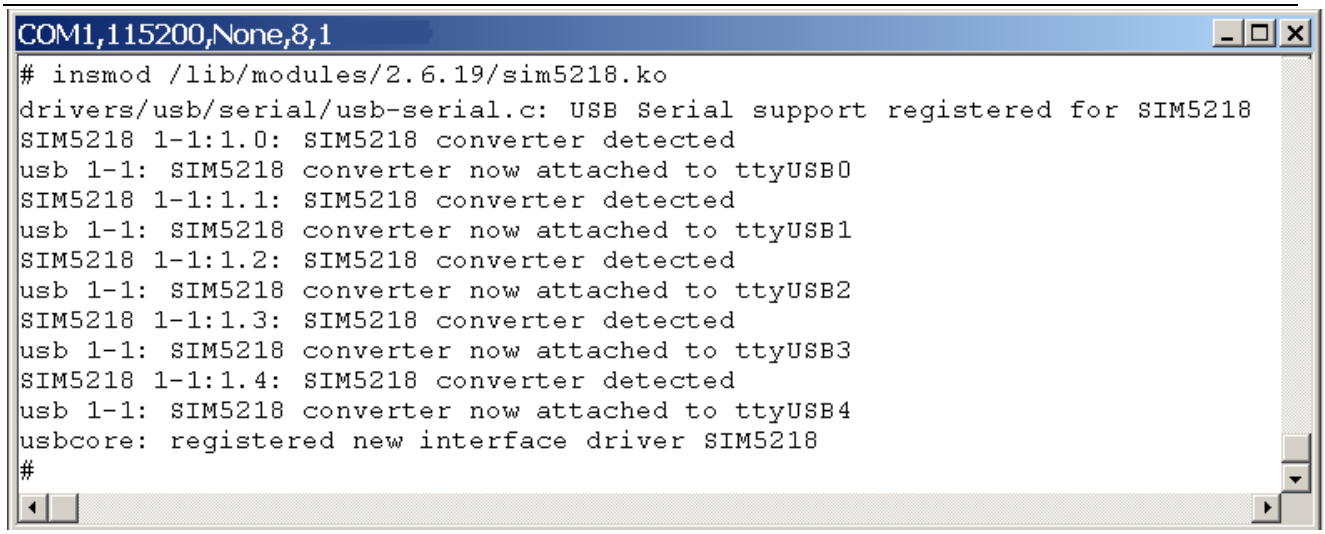
Step3. Open HyperTerminal in 115200/8/n/1

Step4. Power on Linpac (please don't connect the ethernet)

Step5. Login in root, and input "login" (default username = root, password = root).




Step6. Install driver by the command: insmod /lib/modules/2.6.19/sim5218.ko

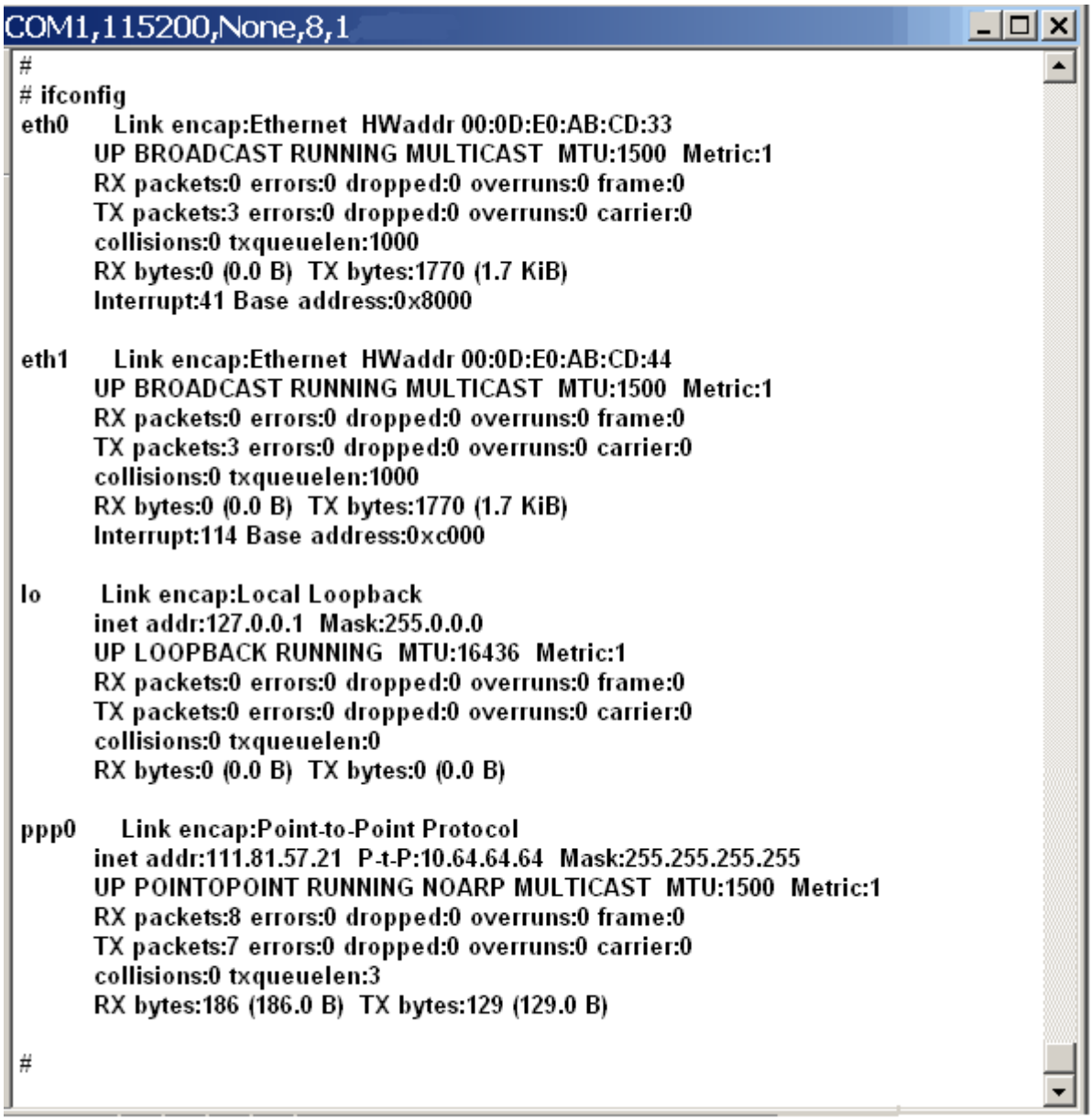



Step7. Dial-up: pppd call 3g &

```
COM1,115200,None,8,1
# pppd call 3g &
# send (^M)
send (ATZ^M)
expect (OK)
ATZ
ATZ^M^M
OKOK
 -- got it
send (ATI^M)
expect (OK)
^M
ATI
ATI^M^M
Manufacturer: SIMCOM INCORPORATED
Manufacturer: SIMCOM INCORPORATED^M
Model: SIMCOM_SIM5218A
Model: SIMCOM_SIM5218A^M
Revision: 240150B14SIM5218A
Revision: 240150B14SIM5218A^M
SIM5218A_240150_100422_V1.24
SIM5218A_240150_100422_V1.24^M
QCN:
QCN: ^M
IMEI: 355841030242927
IMEI: 355841030242927^M
+GCAP: +CGSM,+DS,+ES
+GCAP: +CGSM,+DS,+ES^M
^M
OKOK
 -- got it
send (AT+COPS?^M)
expect (OK)
^M
AT+COPS?
AT+COPS?^M^M
+COPS: 0,0,"Chunghwa Telecom",2
+COPS: 0,0,"Chunghwa Telecom",2^M
^M
OKOK
 -- got it
send (AT+CGDCONT=1,"IP","internet"^M)
expect (OK)
^M
AT+CGDCONT=1,"IP","internet"
AT+CGDCONT=1,"IP","internet"^M^M
OKOK
 -- got it
send (ATD*99#^M)
expect (CONNECT)
^M
ATD*99#
ATD*99#^M^M
CONNECTCONNECT
 -- got it
send (^M)
Serial connection established.
using channel 1
Using interface ppp0
Connect: ppp0 <--> /dev/ttyUSB3
Warning - secret file /etc/ppp/pap-secrets has world and/or group access
sent [LCP ConfReq id=0x1 <asyncmap 0x0> <magic 0xc51edf02> <pcomp> <accomp>]
rcvd [LCP ConfReq id=0x4 <asyncmap 0x0> <auth chap MD5> <magic 0x1c4fe14> <pcomp> <accomp>]
No auth is possible
sent [LCP ConfRej id=0x4 <auth chap MD5>]
rcvd [LCP ConfAck id=0x1 <asyncmap 0x0> <magic 0xc51edf02> <pcomp> <accomp>]
rcvd [LCP ConfReq id=0x5 <asyncmap 0x0> <magic 0x1c4fe14> <pcomp> <accomp>]
sent [LCP ConfAck id=0x5 <asyncmap 0x0> <magic 0x1c4fe14> <pcomp> <accomp>]
sent [LCP EchoReq id=0x0 magic=0xc51edf02]
sent [CCP ConfReq id=0x1 <deflate 15> <deflate(old#) 15> <bsd v1 15>]
sent [IPCP ConfReq id=0x1 <compress VJ 0f 01> <addr 0.0.0.0> <ms-dns1 0.0.0.0> <ms-dns3 0.0.0.0>]
rcvd [LCP DiscReq id=0x6 magic=0x1c4fe14]
rcvd [LCP EchoRep id=0x0 magic=0x1c4fe14 01 c4 fe 14]
rcvd [LCP ProtRej id=0x7 80 fd 01 01 00 0f 1a 04 78 00 18 04 78 00 15 03 2f]
rcvd [IPCP ConfNak id=0x1 <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14> <ms-wins 10.11.12.13> <ms-wins
10.11.12.14>]
sent [IPCP ConfReq id=0x2 <compress VJ 0f 01> <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dns3 10.11.12
rcvd [IPCP ConfReq id=0x2]
sent [IPCP ConfNak id=0x2 <addr 0.0.0.0>]
rcvd [IPCP ConfRej id=0x2 <compress VJ 0f 01>]
sent [IPCP ConfReq id=0x3 <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>]
rcvd [IPCP ConfReq id=0x3]
sent [IPCP ConfAck id=0x3]
rcvd [IPCP ConfNak id=0x3 <addr 111.81.57.21> <ms-dns1 168.95.1.1> <ms-dns3 168.95.192.1>]
sent [IPCP ConfReq id=0x4 <addr 111.81.57.21> <ms-dns1 168.95.1.1> <ms-dns3 168.95.192.1>]
rcvd [IPCP ConfAck id=0x4 <addr 111.81.57.21> <ms-dns1 168.95.1.1> <ms-dns3 168.95.192.1>]
Could not determine remote IP address: defaulting to 10.64.64.64
local  IP address 111.81.57.21
remote IP address 10.64.64.64
primary   DNS address 168.95.1.1
secondary DNS address 168.95.192.1
Script /etc/ppp/ip-up started (pid 1216)
Script /etc/ppp/ip-up finished (pid 1216), status = 0x0

#
```

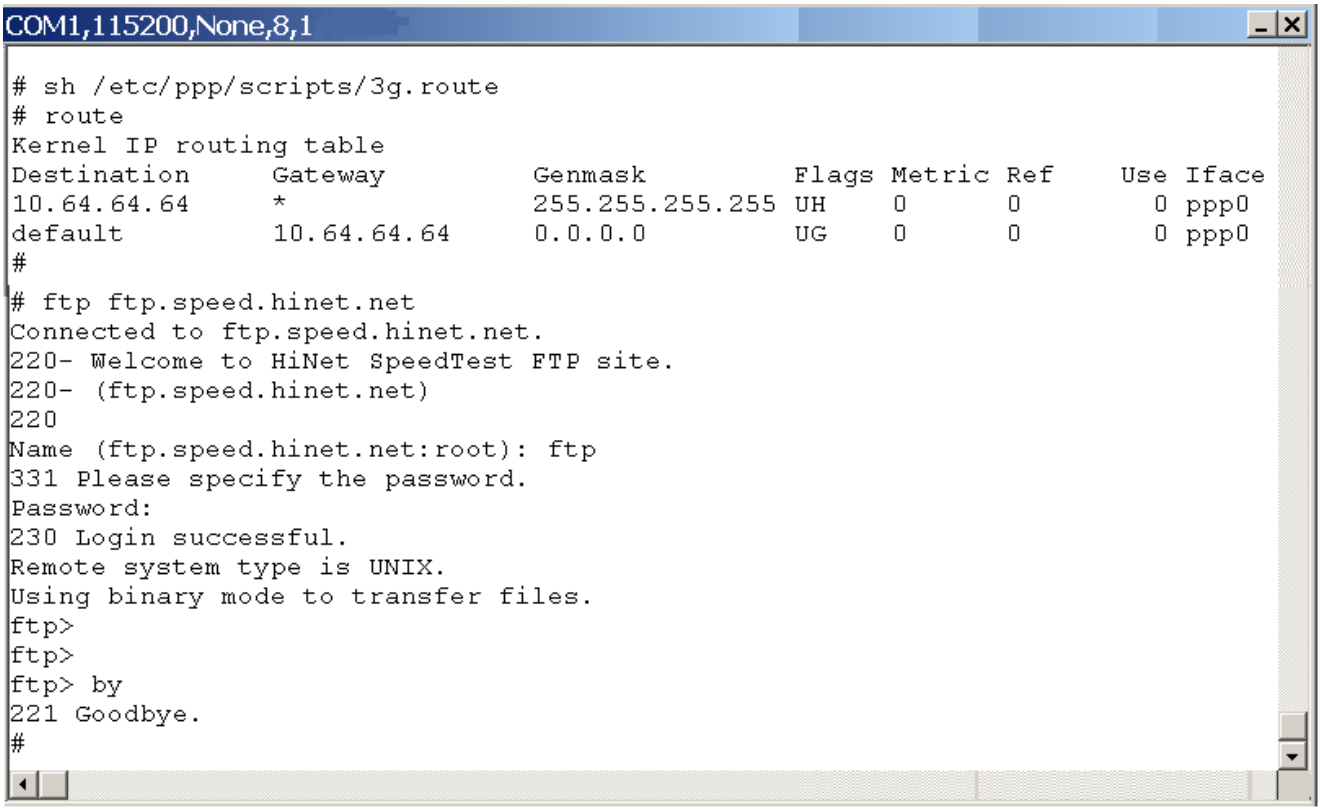
Step8. check the status of ppp : ifconfig



Step9. setting route: sh /etc/ppp/scripts/3g.route

Step10. check router's setting: route

Step11. test 3G/GPRS network: ftp ftp.speed .hinet.net



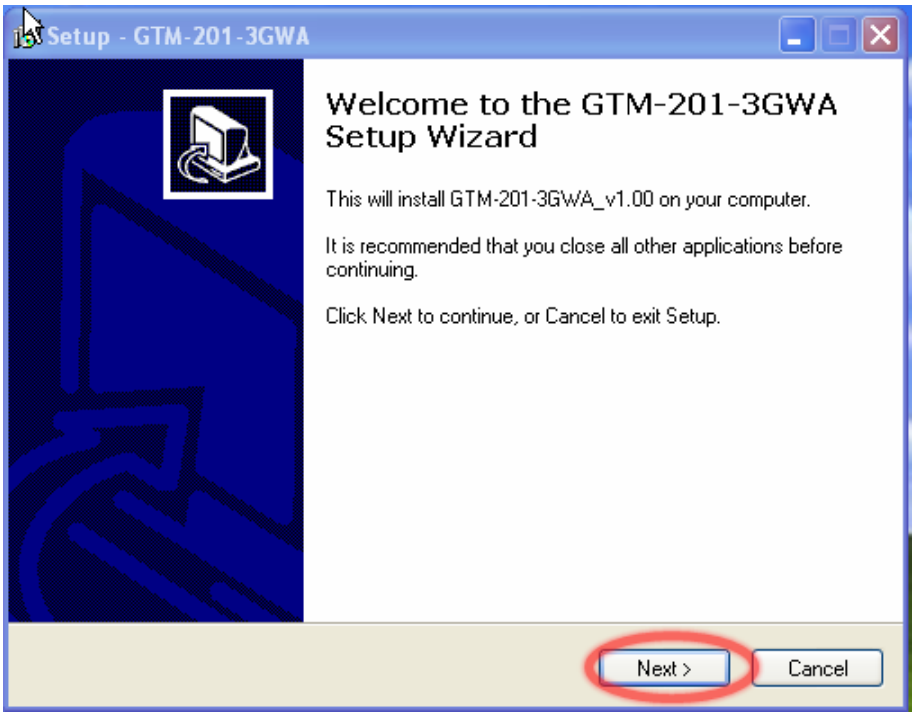
# Chapter 7 USB driver installation

## 7.1 XPAC – 8000 (Microsoft Windows XP)

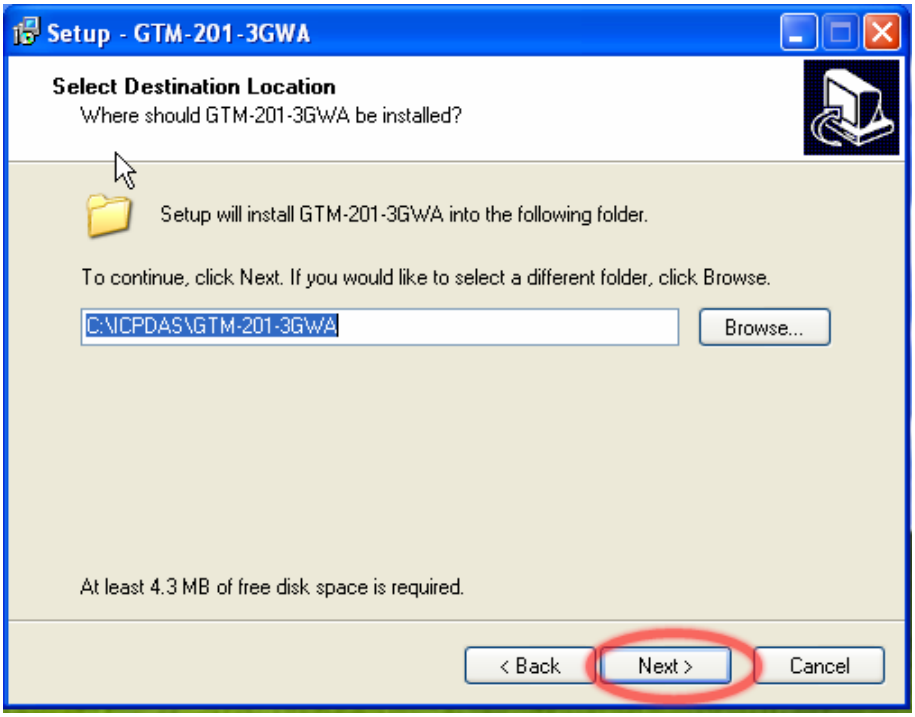
7.1.1 Install USB driver

Step1. Double Click GTM-201-3GWA driver “GTM-201-3GWA.exe” to install the driver.

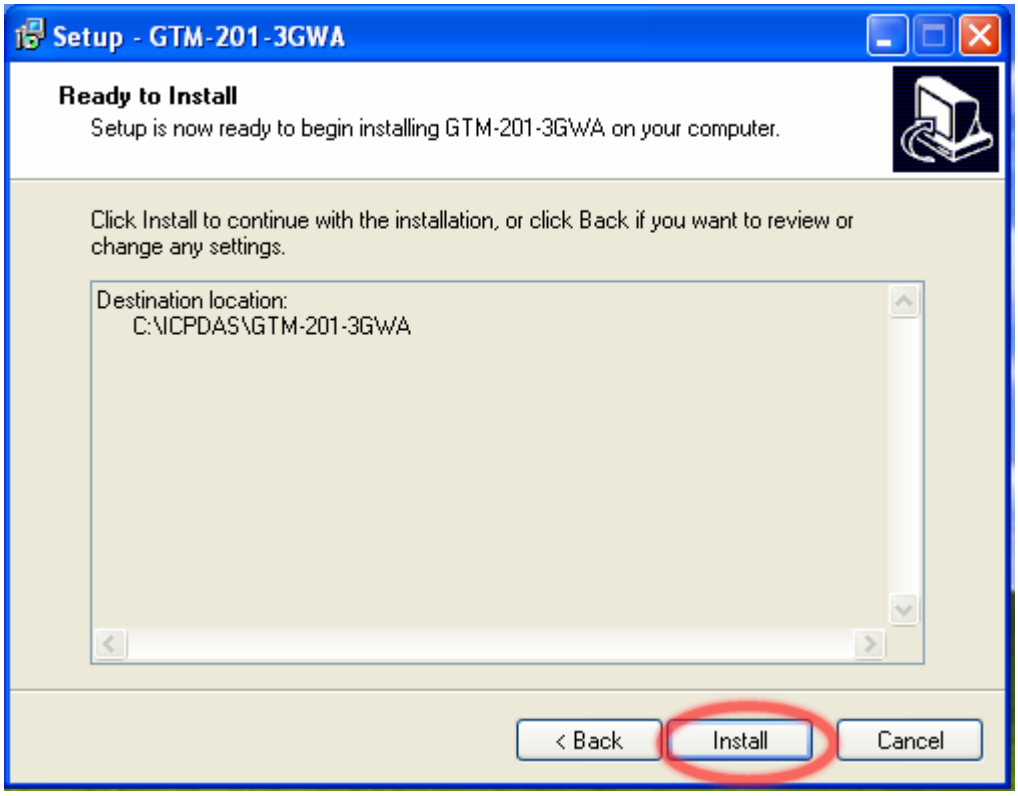
Step2. Click “Next”.



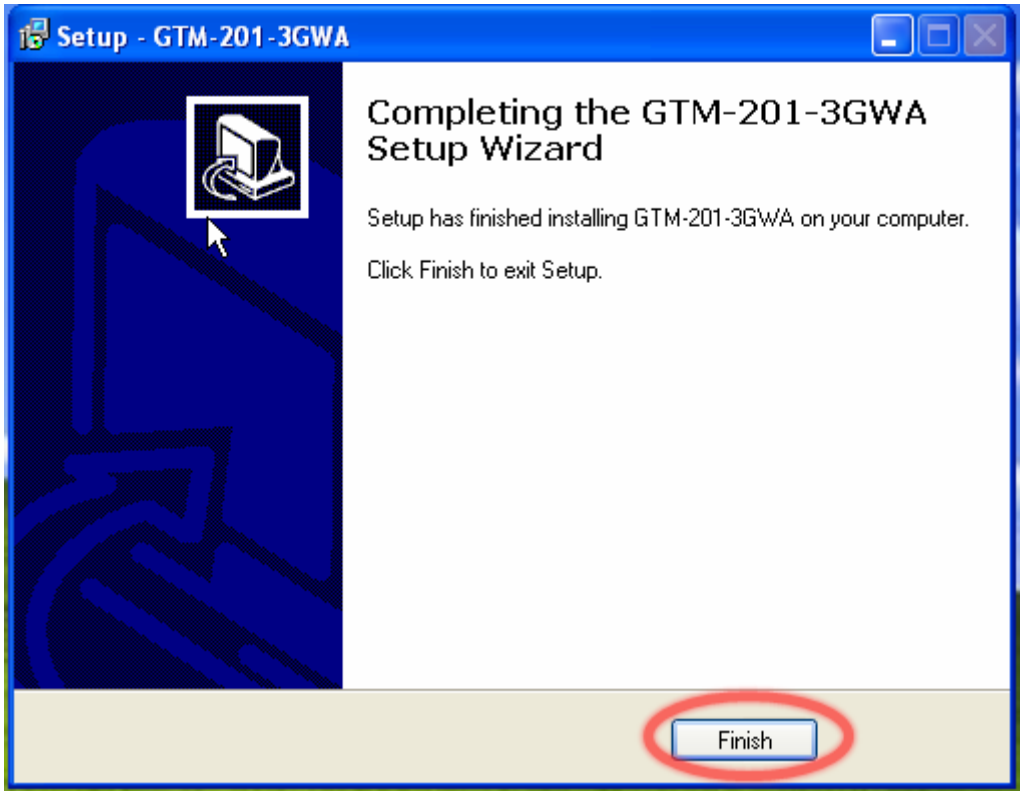

Step3. Click “Next”



Step4. Select “Install”

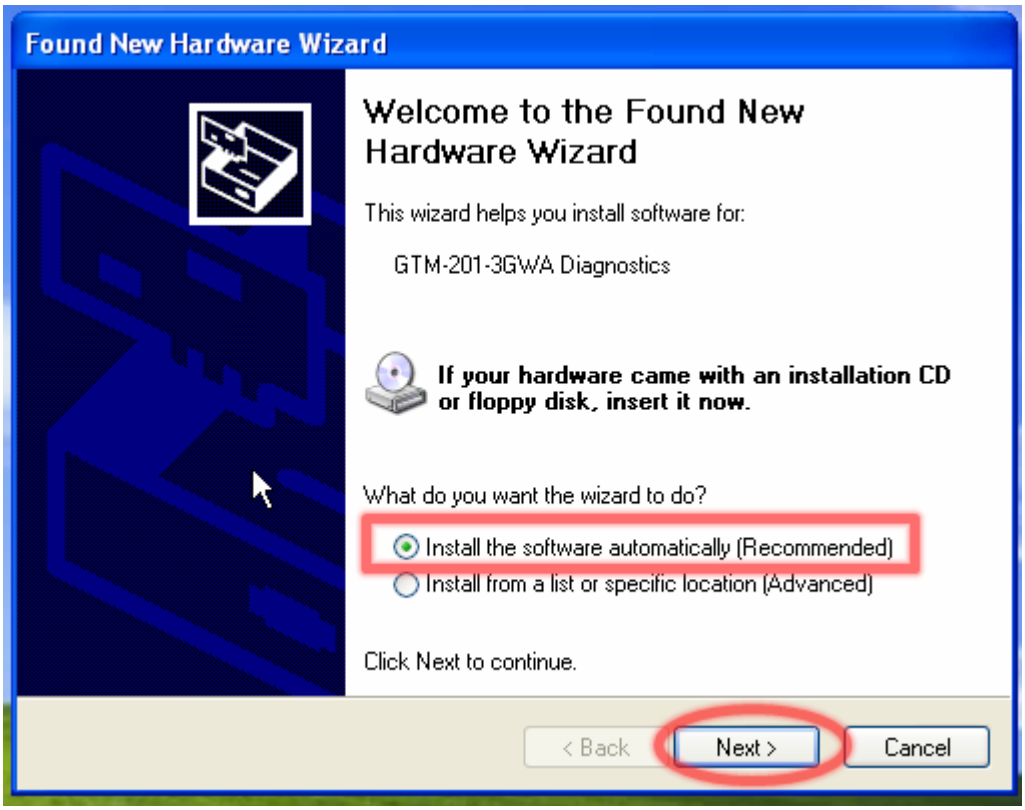



Step5. Click “Finish”

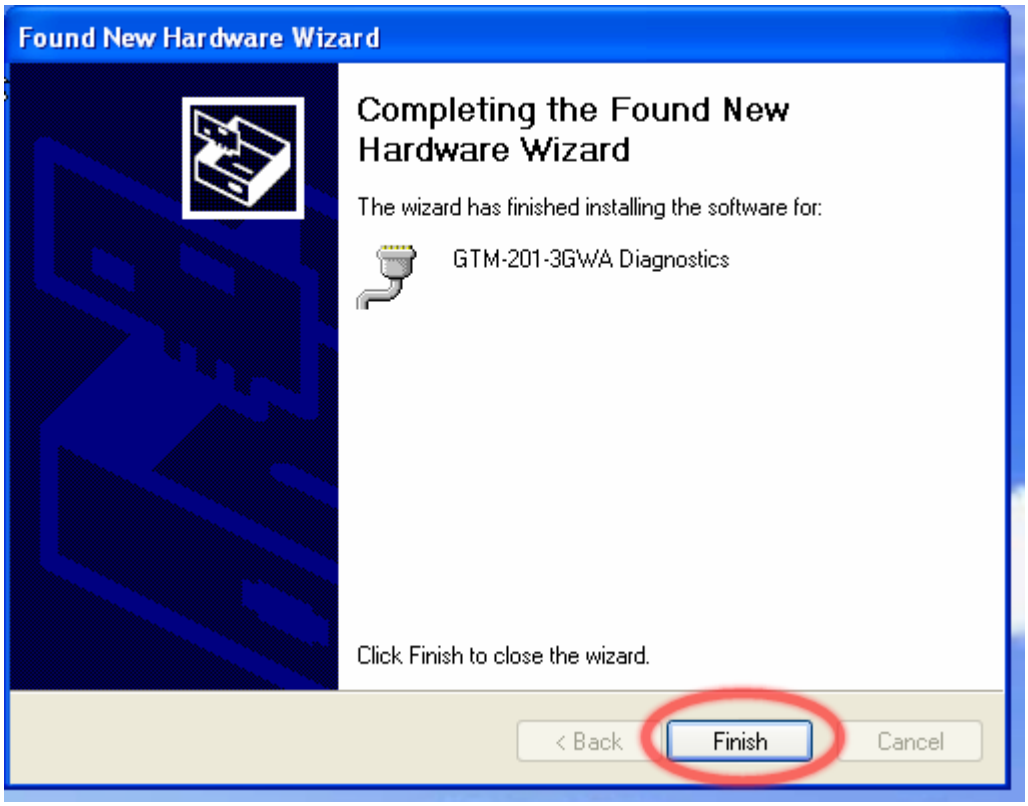


Step6. Connect the USB of GTM-201-3GWA with the PC

Step7. The “Found New Hardware Wizard” window for “GTM-201-3GWA Diagnostics” will pop-out. Please click “Next”.

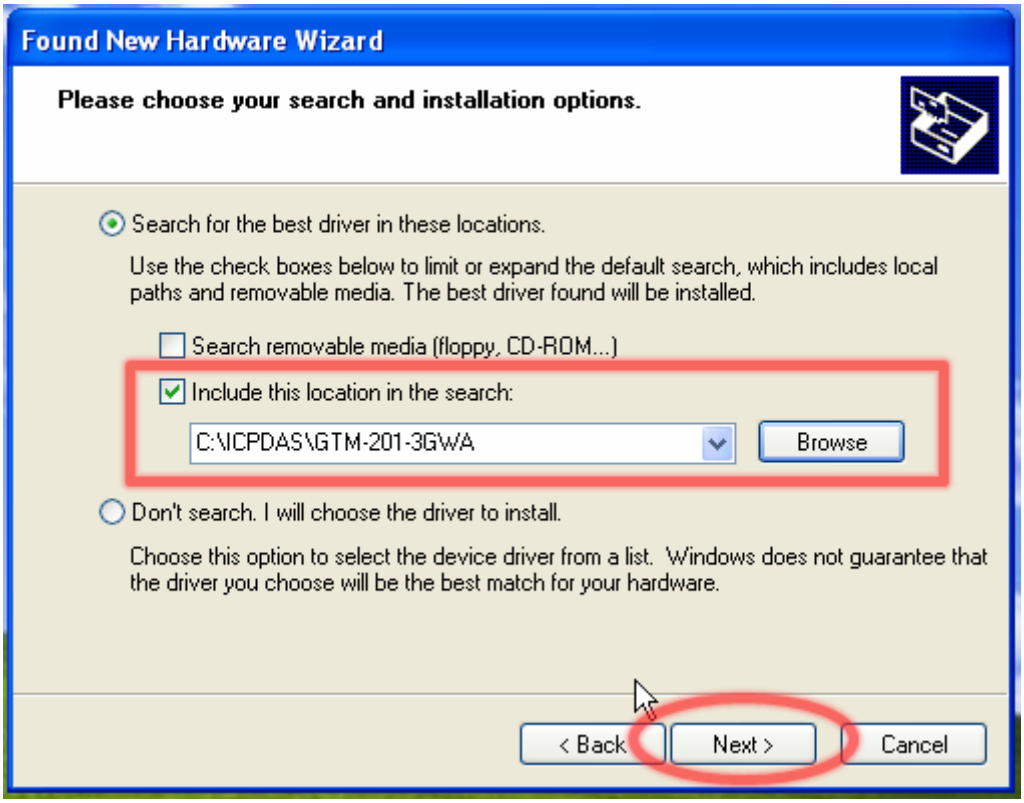



Step7-1. Click “Finish” if you got a success message.

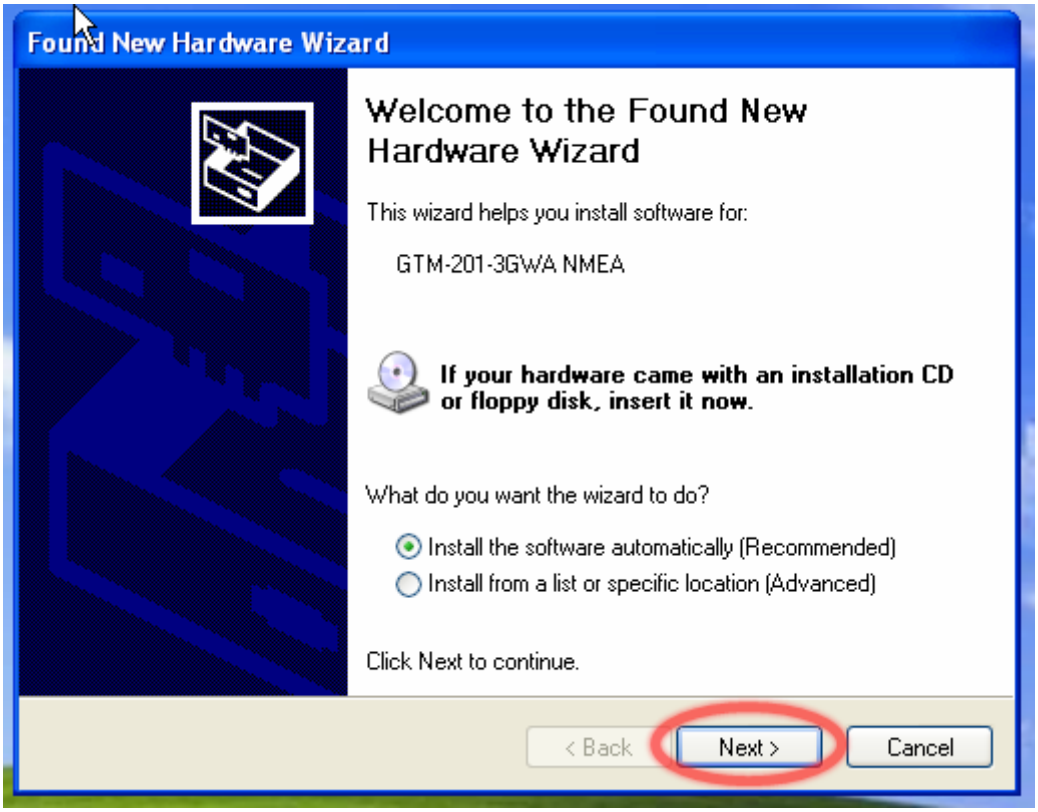


Step7-2. Click “Back” if you got a fail message, and then choose “Install from a list or specific location” in all install steps.

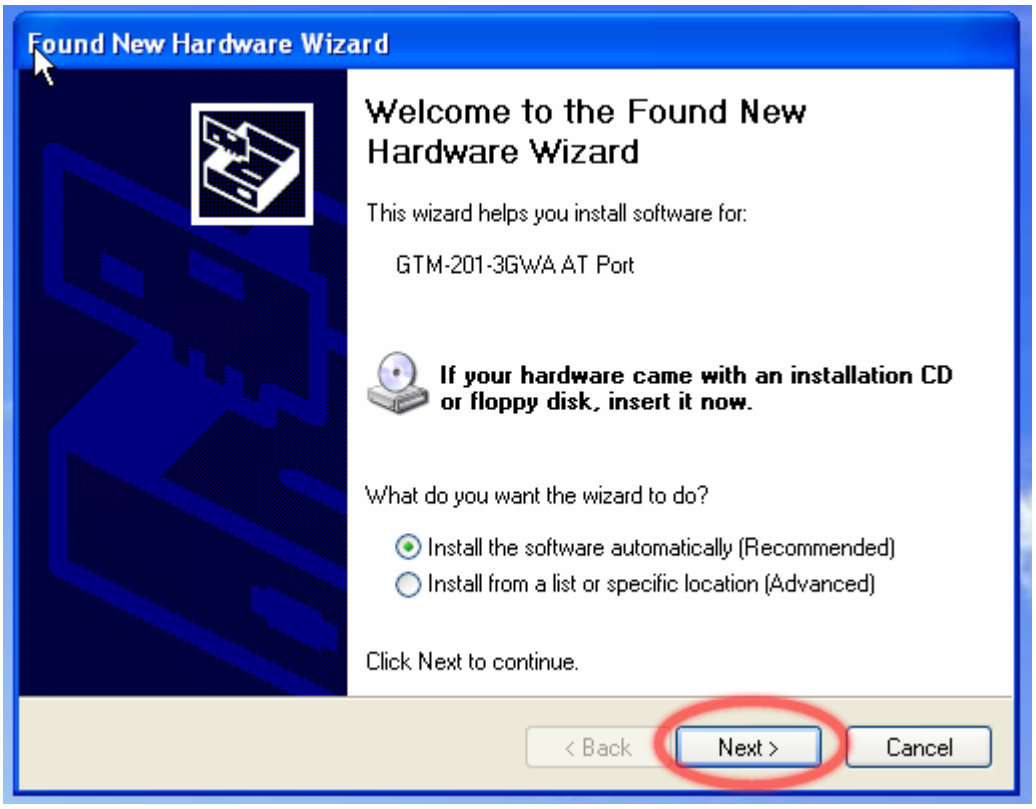

Step7-3. Click “Browse” to choose your installing folder, and Click “Next”.



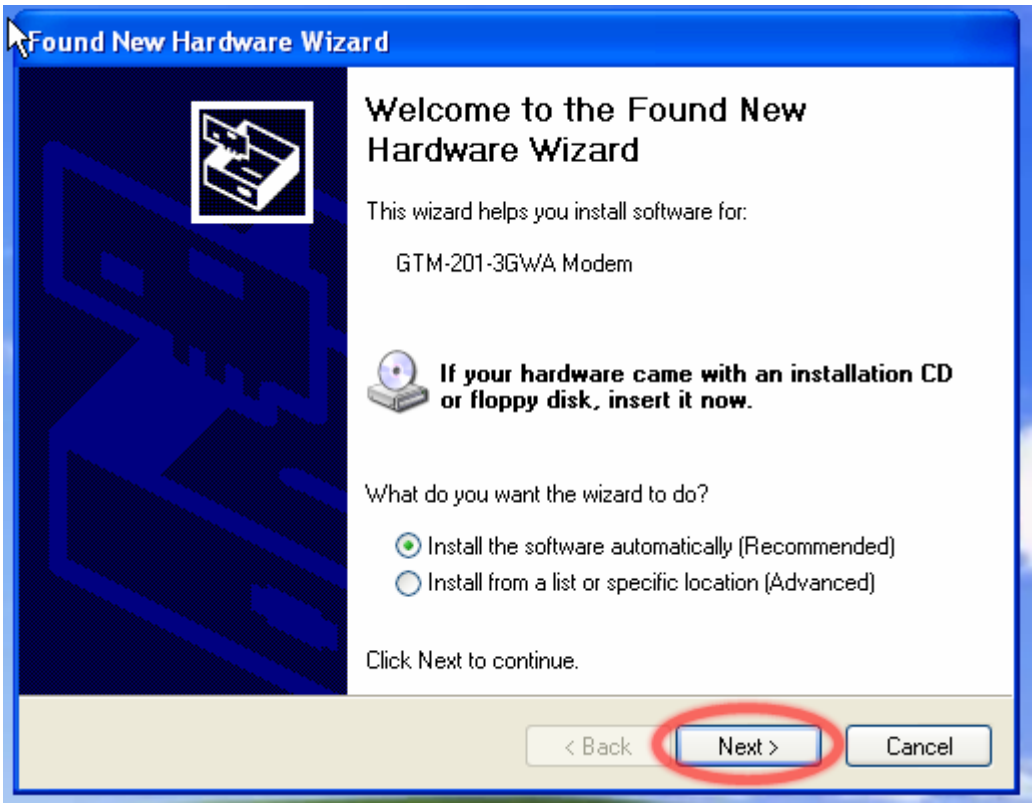
Step8. The “Found New Hardware Wizard” window for “GTM-201-3GWA NMEA” will pop-out. Please click “Next”.



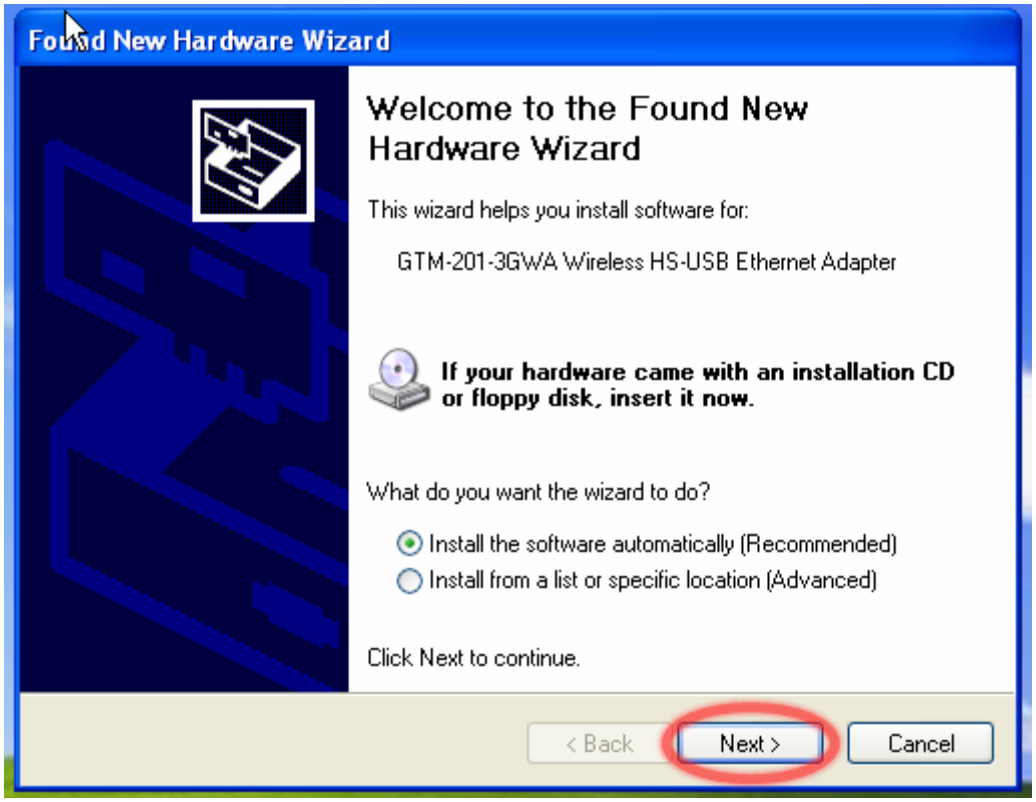

Step9. The “Found New Hardware Wizard” window for “GTM-201-3GWA AT Port” will pop-out. Please click “Next”.



Step10. The “Found New Hardware Wizard” window for “GTM-201-3GWA Modem” will pop-out. Please click “Next”.



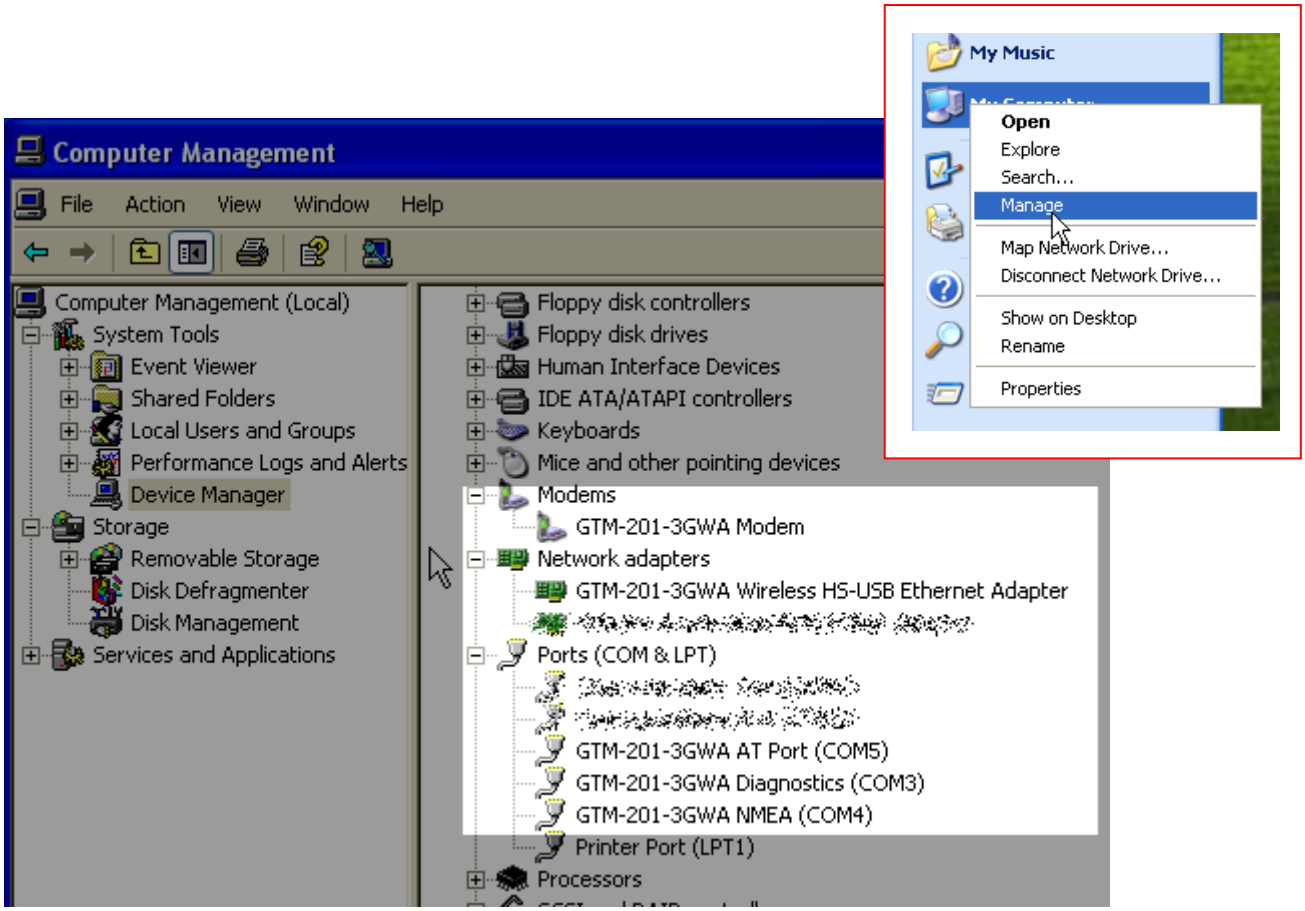

Step11. The “Found New Hardware Wizard” window for “GTM-201-3GWA Wireless HS-USB Ethernet Adapter” will pop-out. Please click “Next”.



Step12. Finish the all install steps. Please open “Device manager”, and you will found new 5 items in your computer.

The “GTM-201-3GWA AT Port” is a “AT command port” for GSM library.

The “GTM-201-3GWA Modem” is a Modem for dial-up to 3G/GPRS Network.



## 7.2 LinPAC – 8000 (Linux)

Please refer to chapter 6.2

Revised Note:

| Version | By | Date | Description |
|---|---|---|---|
| 1.00 | Malo | 2011/04/18 | Release |
| | | | |
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