

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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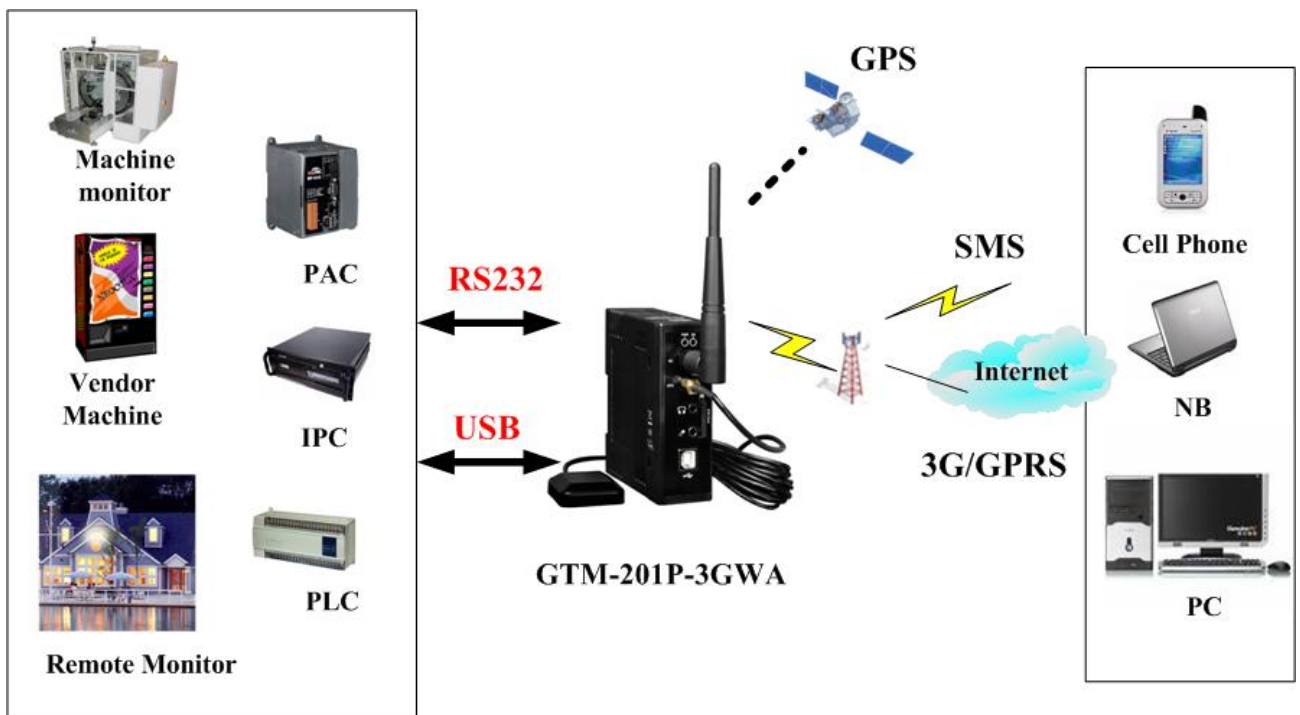
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Chapter 1 Introduction

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



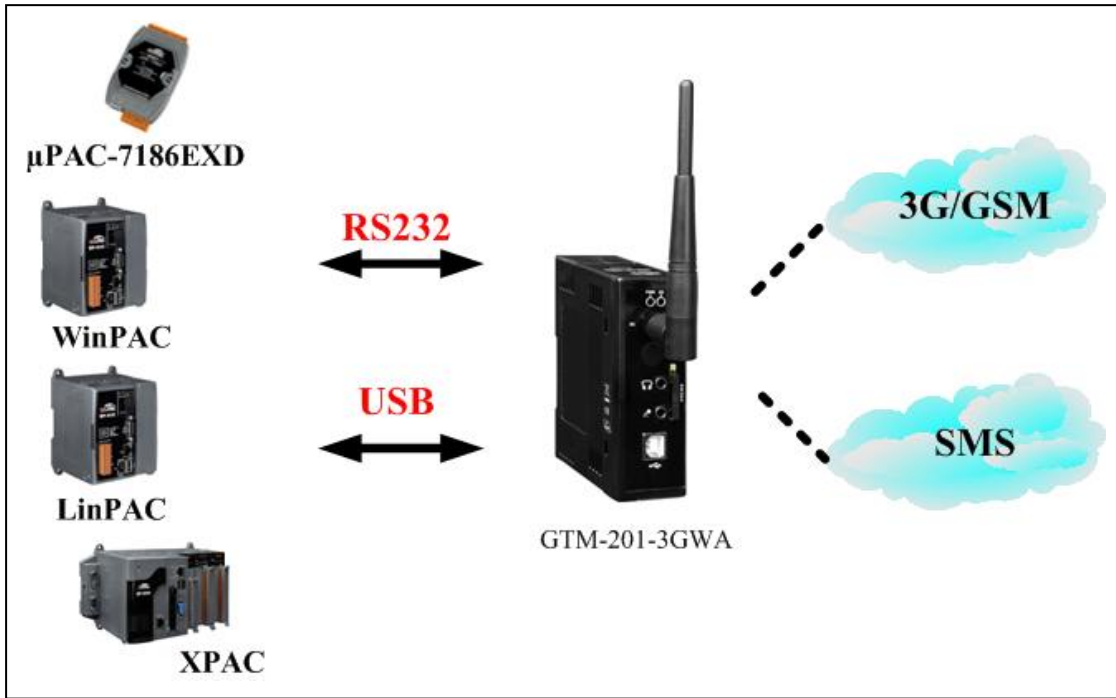
2.2 GTM-201-3GWA Specifications

Item	GTM-201-3GWA	GTM-201P-3GWA
3G System		
Frequency Band	UMTS : 2100/1900/850 MHz	
Data Transmission	UMTS / HSDPA / HSUPA 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 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} ~ +30V _{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°C to 75°C	
Storage Temp	-40°C to 80°C	
Humidity	5~95% non-condensing	

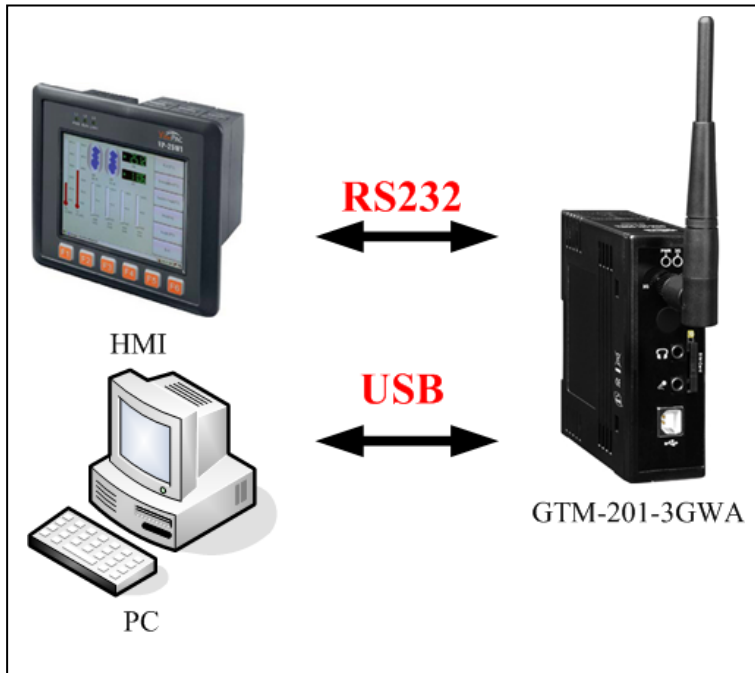
Note1: The default baud rate is 115200 bps.

Chapter 3 Application architecture

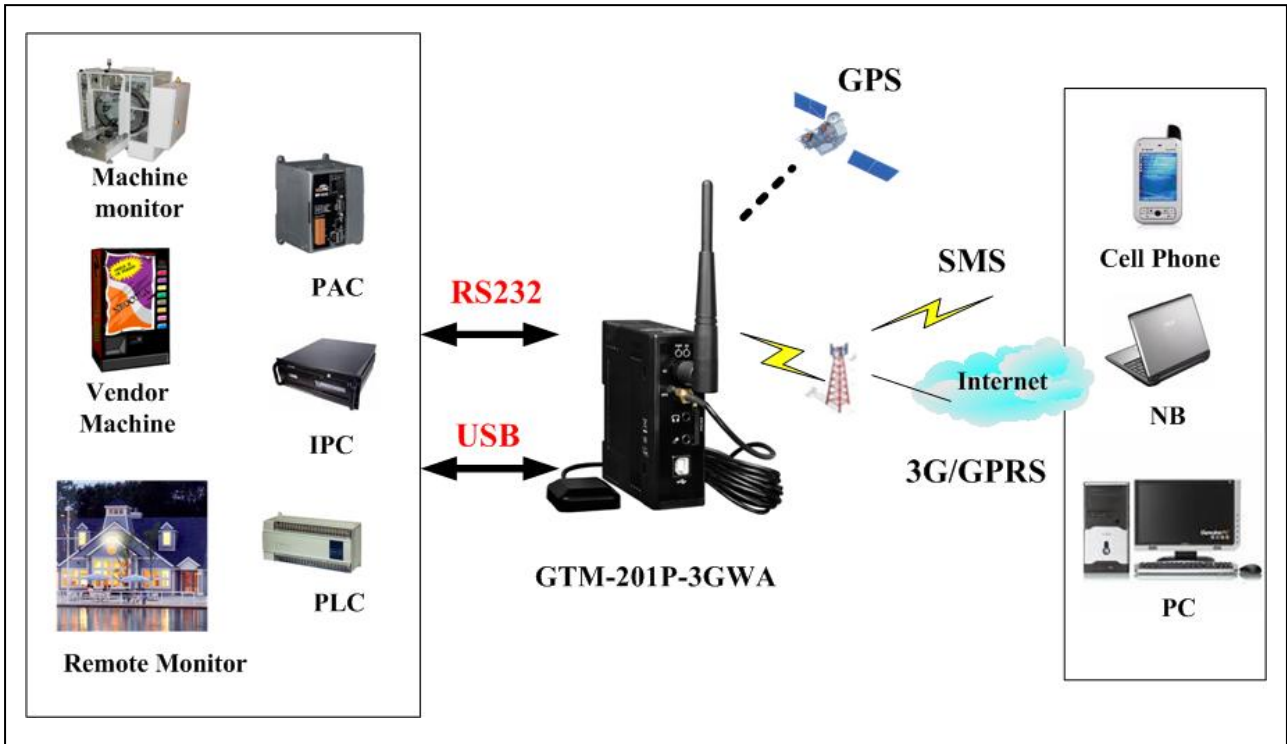
3.1 Application 1



3.2 Application 2

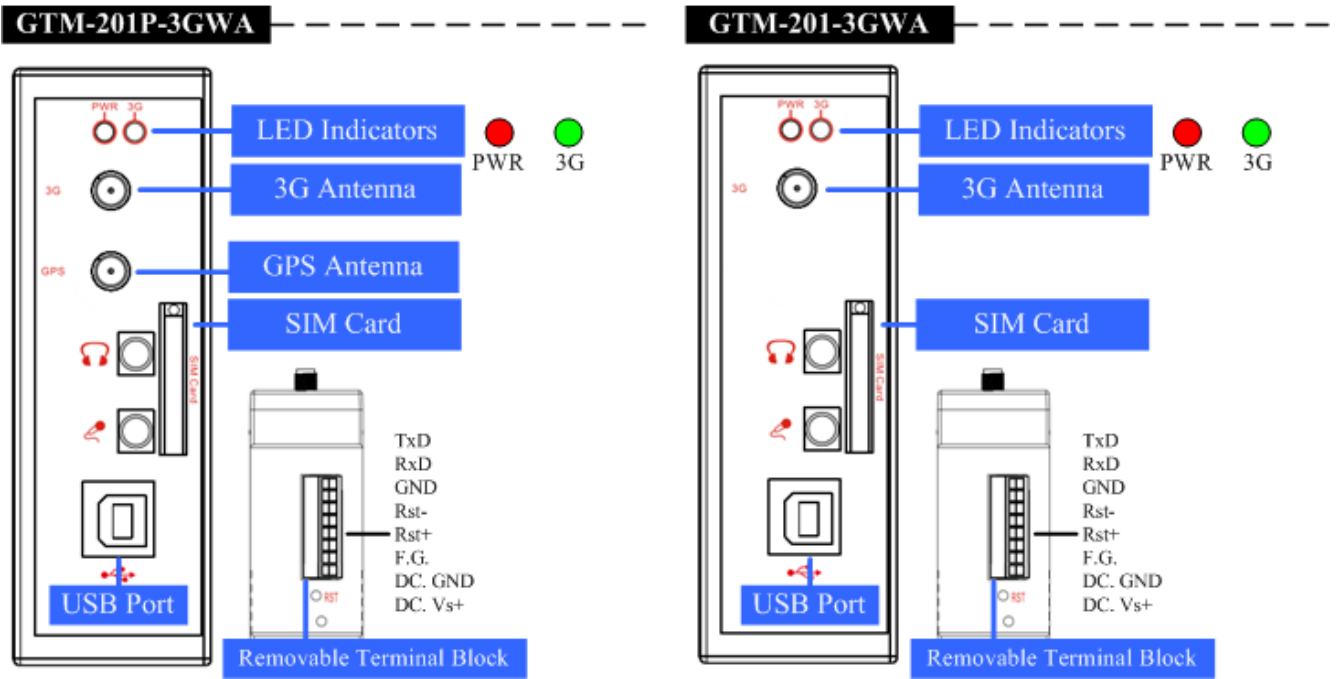


3.3 Application 3

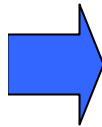
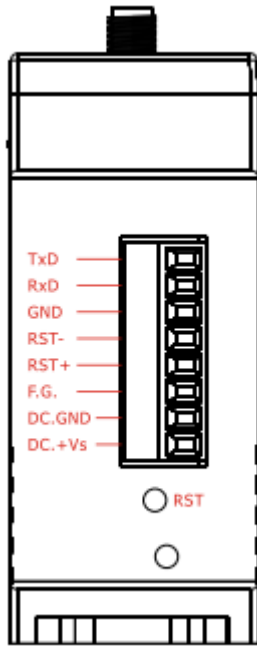


Chapter 4 Hardware Appearance

4.1 View of the GTM-201-3GWA Panel



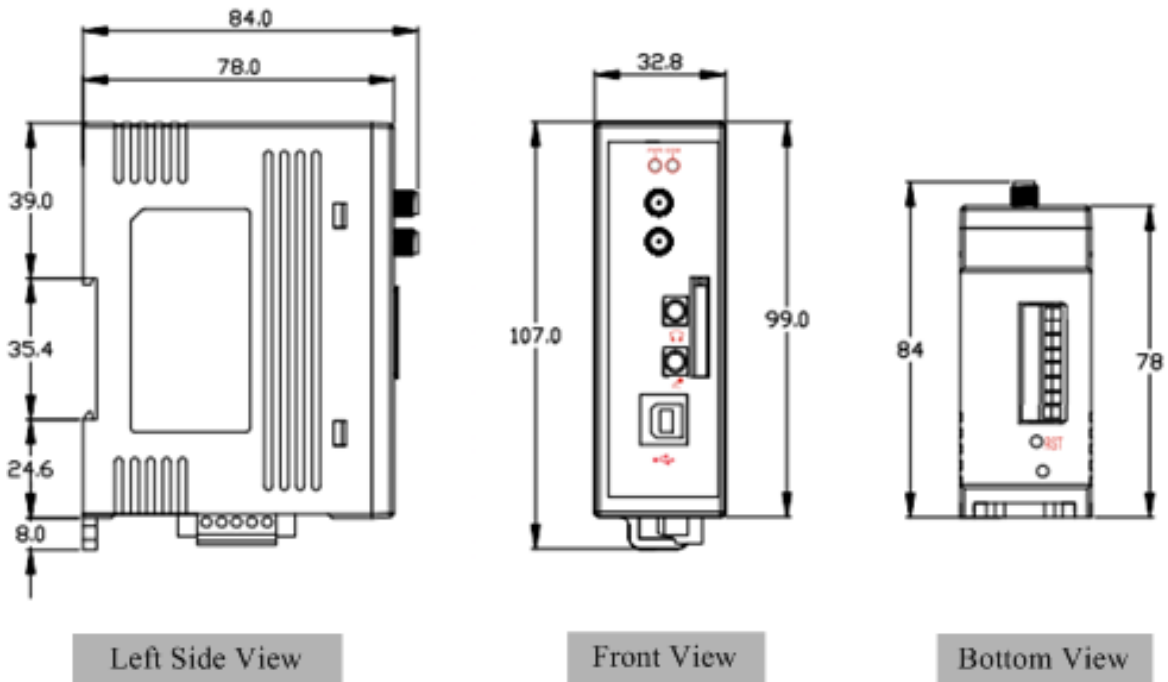
4.2 Pin Assignments



RS-232	TxD
	RxD
	GND
RESET	RST-
	RST+
Frame Ground	F.G.
Power Input: +10 ~ 30V _{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

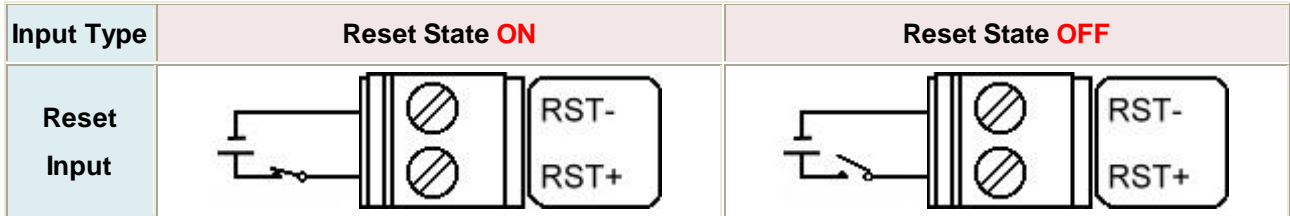
3G (Green) : The modem LED can indicate the status of GSM module.

Modem normal	Modem fail	Data transmit
Blanking (800 ms)	Off On	Blanking(200 ms)

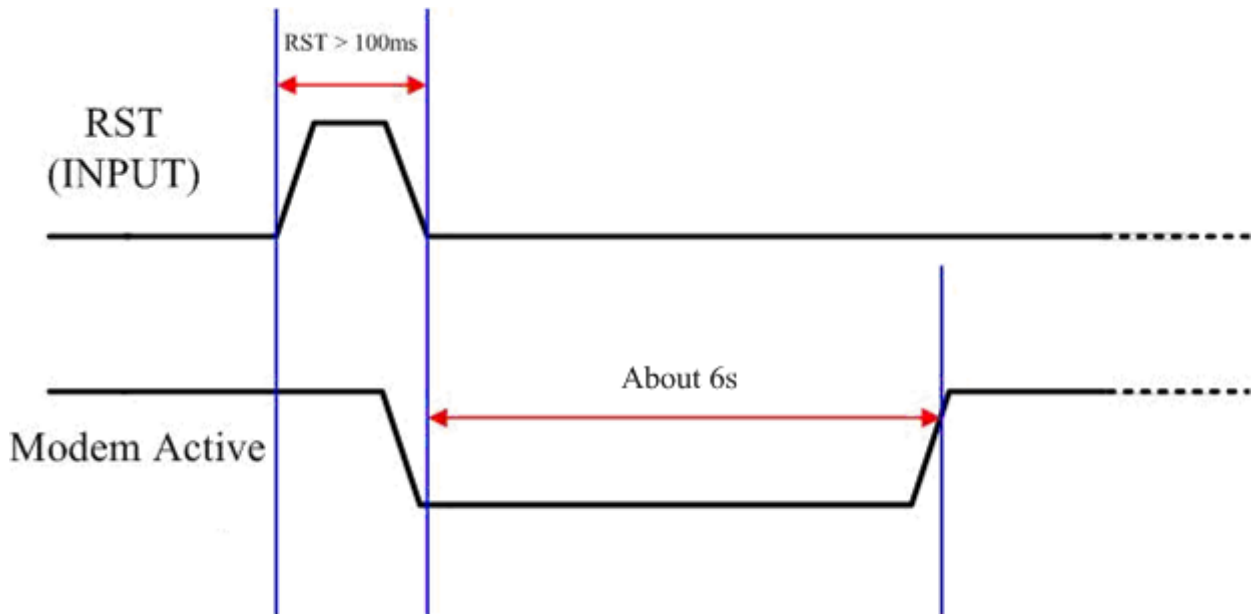
Chapter 5 Hardware Wire Connection

5.1 Reset Wire Connection

➤ Reset Wire Connection



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

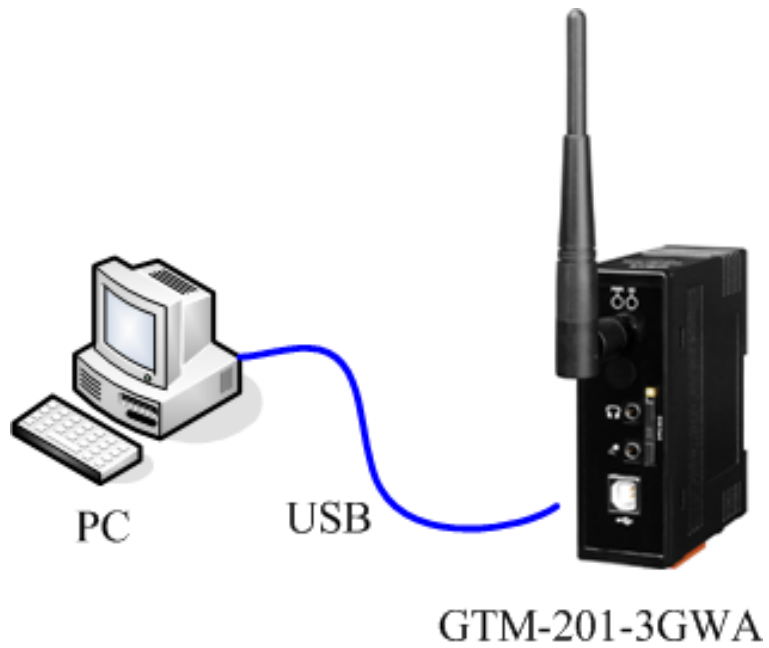


➤ 3G/GPS Antenna Installation



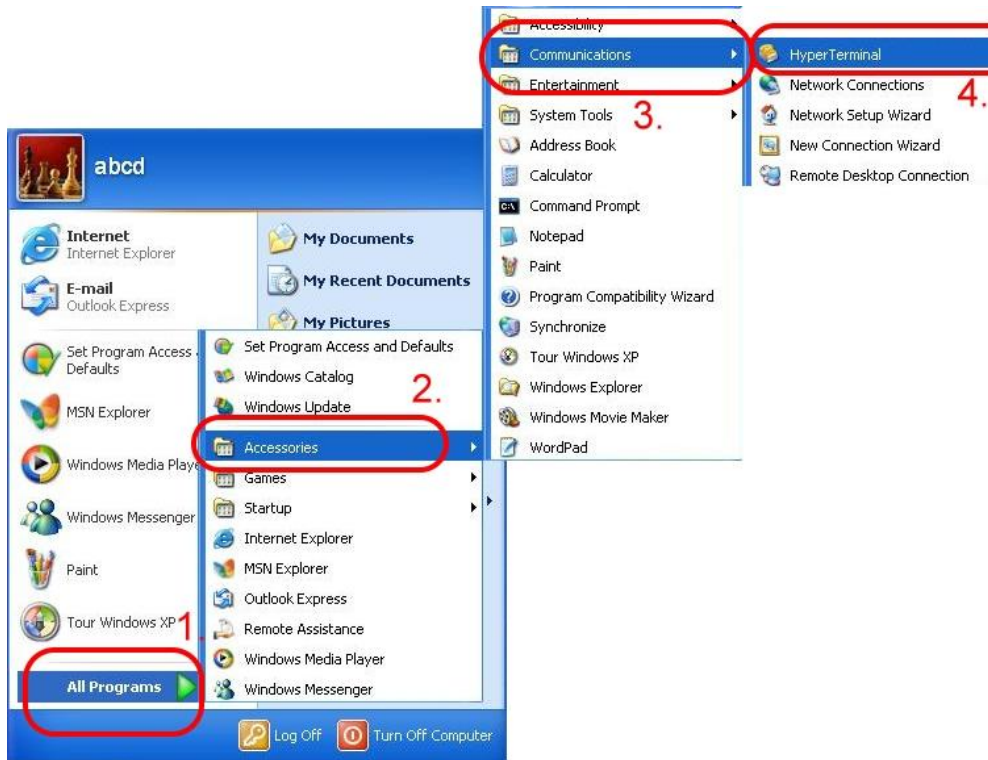
5.3 Quick Test

- **Hardware installation :**



➤ **Software Installation: (Hyper Terminal)**

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



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



Step3. Input new connection name → Click “OK”



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

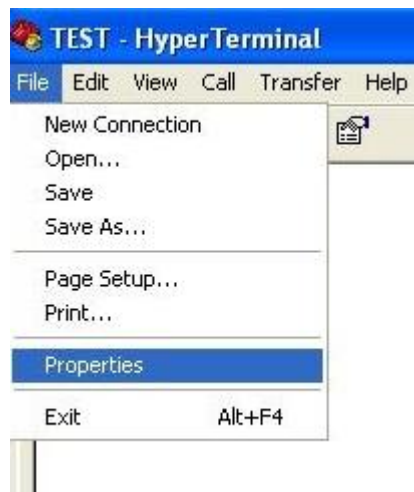


Step5. Please refer to the following settings

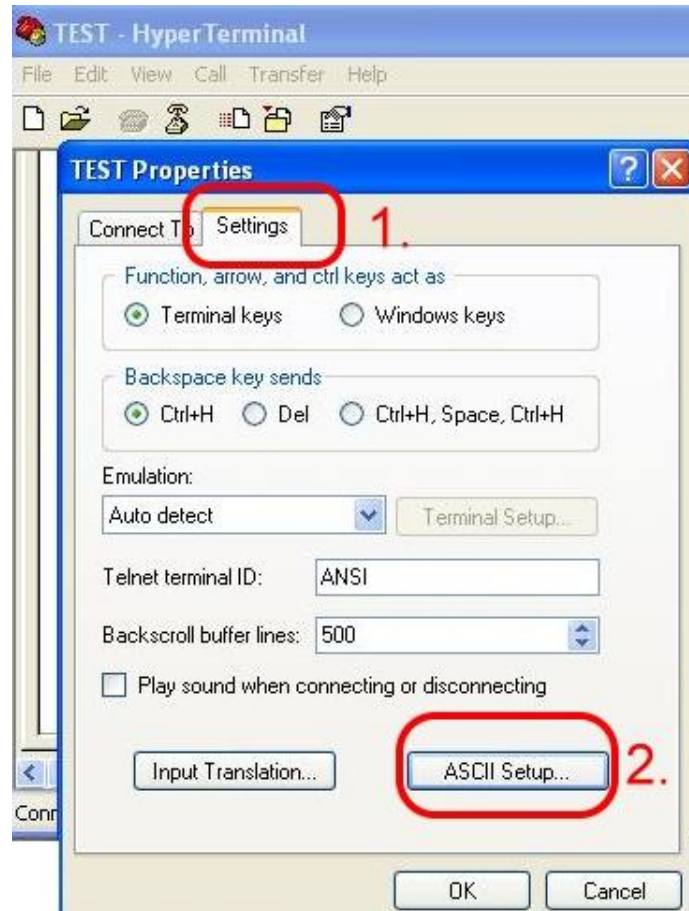
Bits per second	115200
Data bits	8
Parity	None
Stop bits	1
Flow control	None (Note)



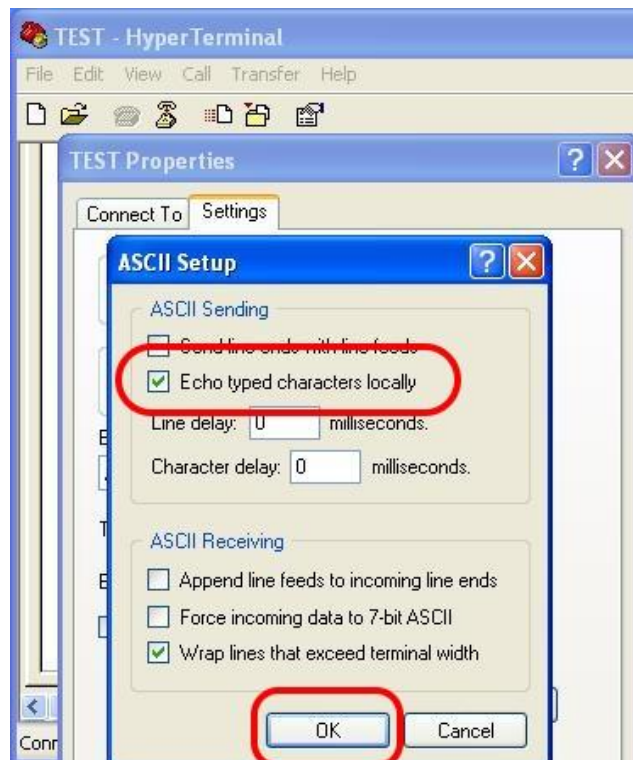
Step6. File → Properties



Step7. Settings → Click “ASCII Setup...”



Step8. Select “Echo typed character locally” → OK



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

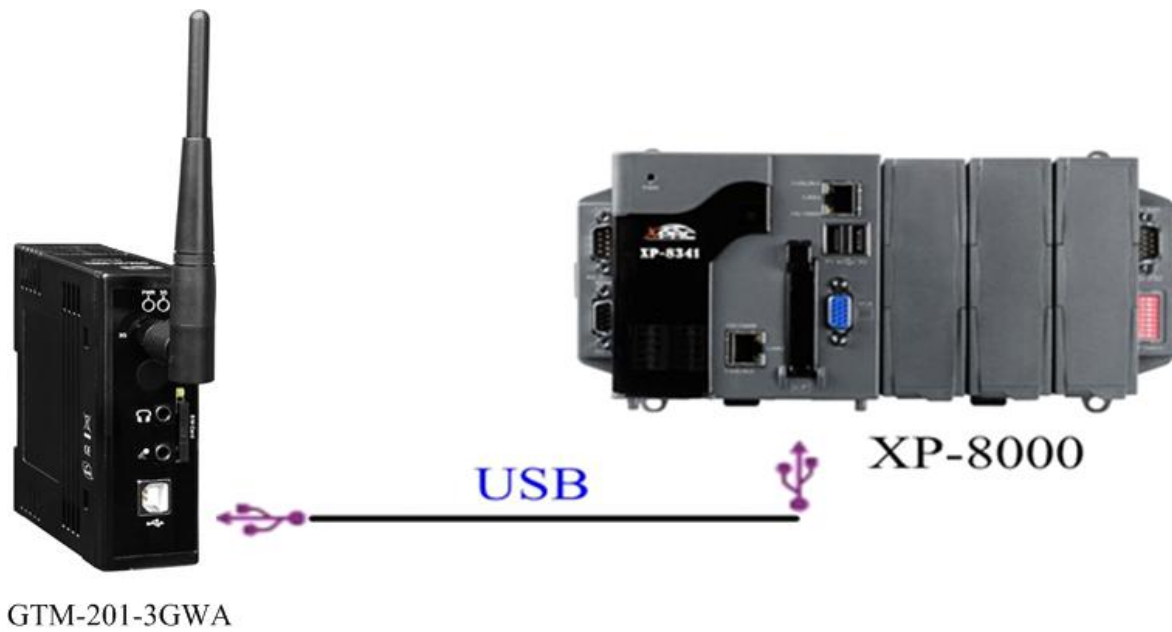


Chapter 6 GPRS connection

6.1 XPAC – 8000 (Microsoft Windows XP)

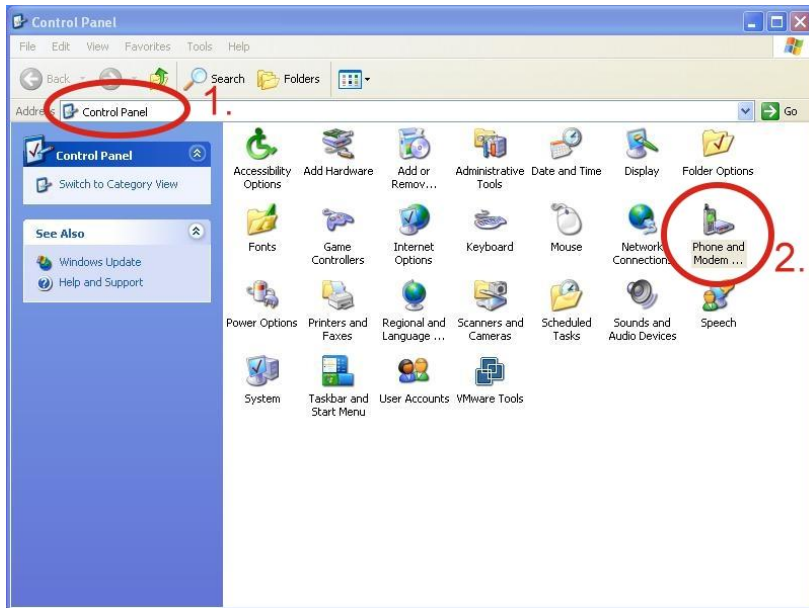
6.1.1.1 GTM-201-3GWA Hardware requirement

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

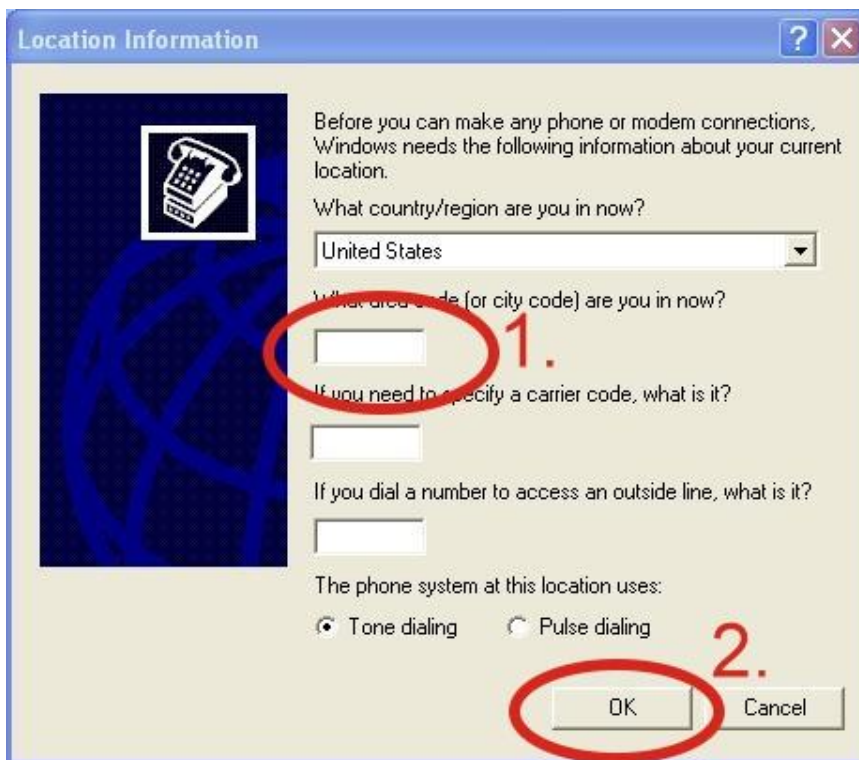


6.1.2.1 Create a new modem connection

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”



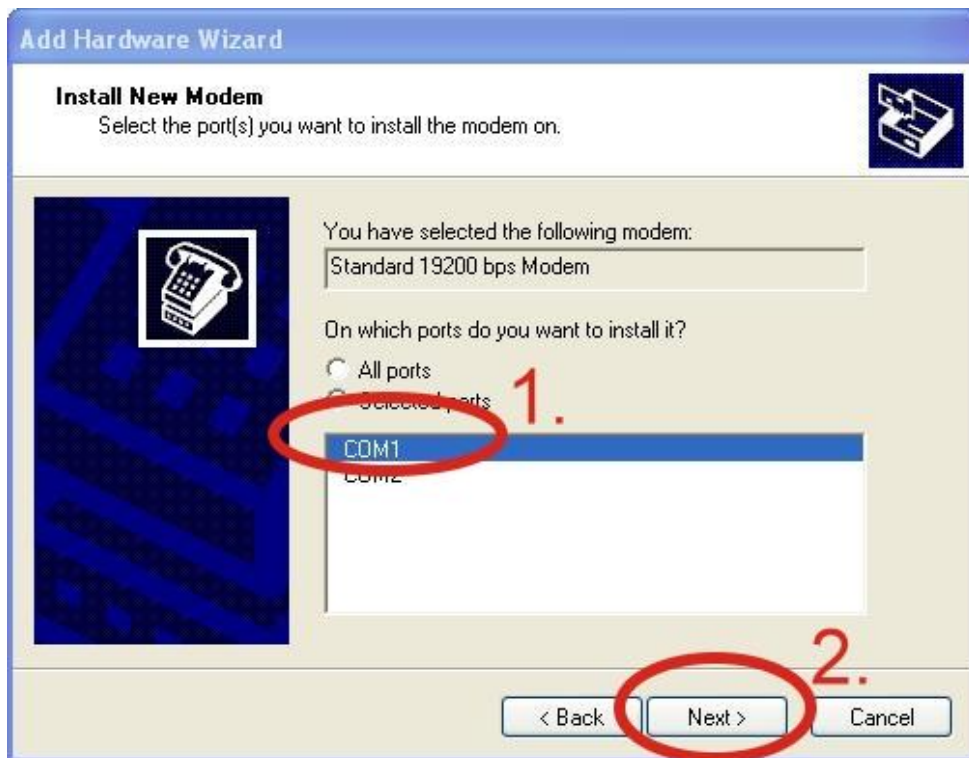
Step4. Select “Don’t detect my modem; I will select it from a list.” → Click “Next”



Step5. Select "Standard Modem Types" → Select "Standard 19200 bps Modem"
→ Click "Next"



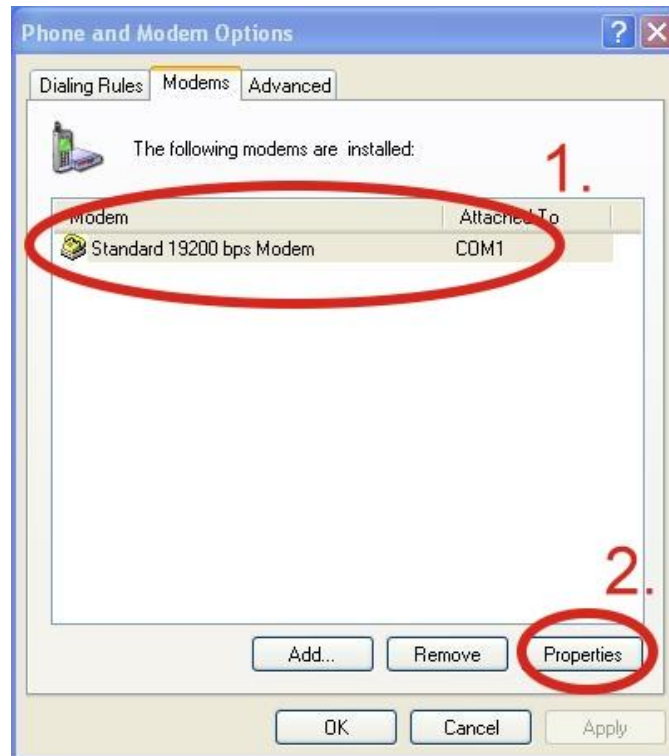
Step6. Select your COM Port to connect to the modem → Click "Next"



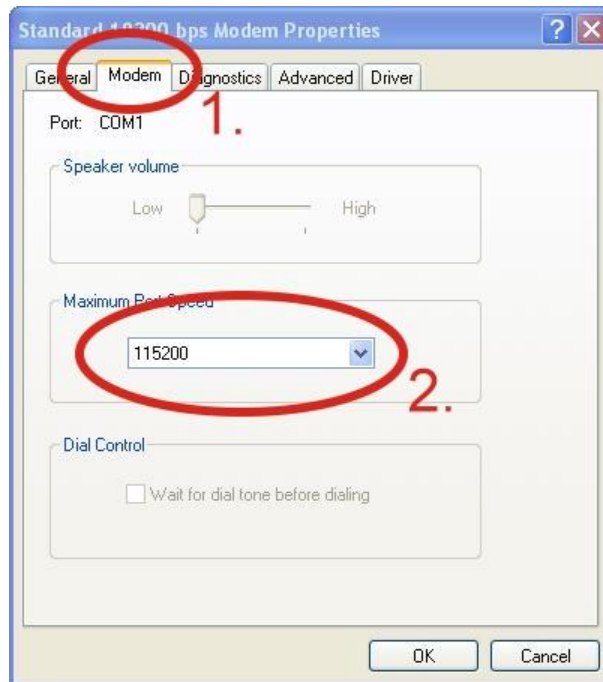
Step7. Click “Finish” to finish the install new modem.



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

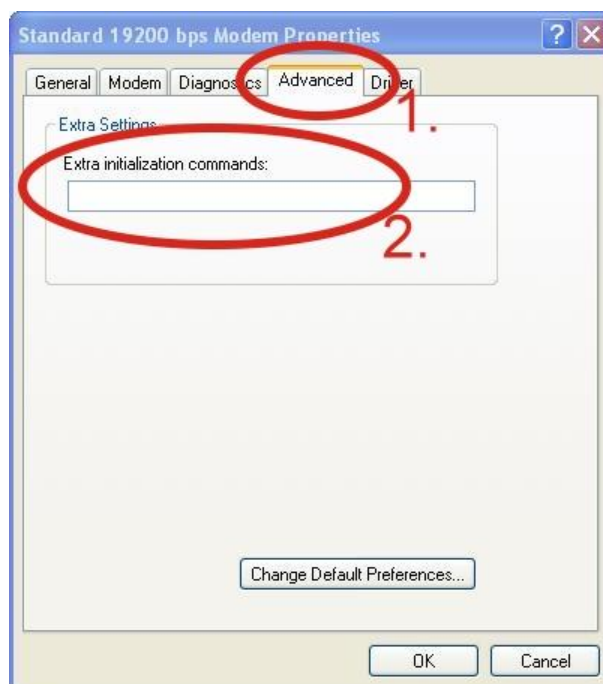


Step10. Advanced → Extra initialization commands:

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

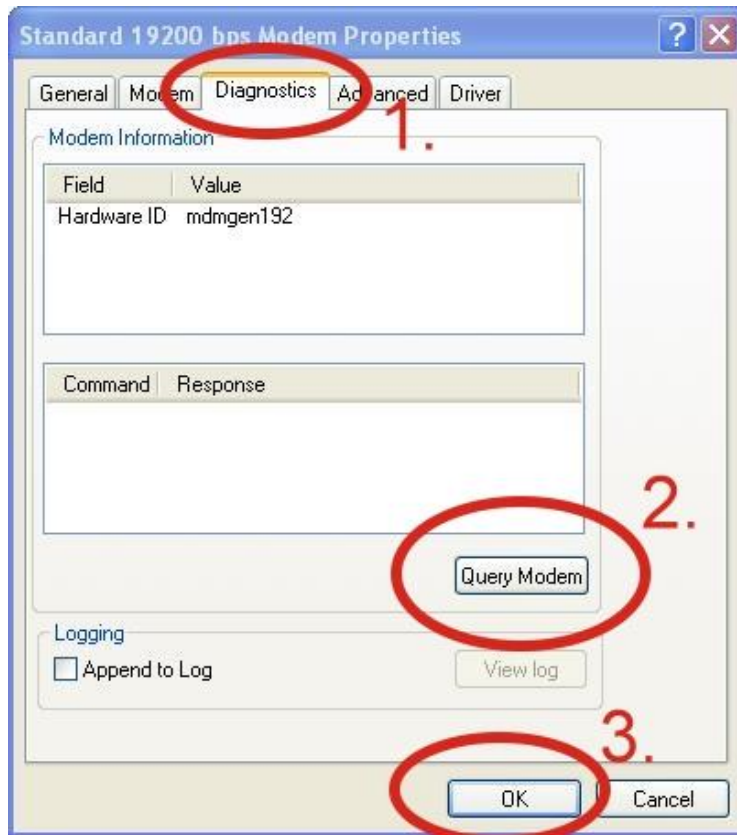
For example in Taiwan: AT+CGDCONT=1,"IP","INTERNET"

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

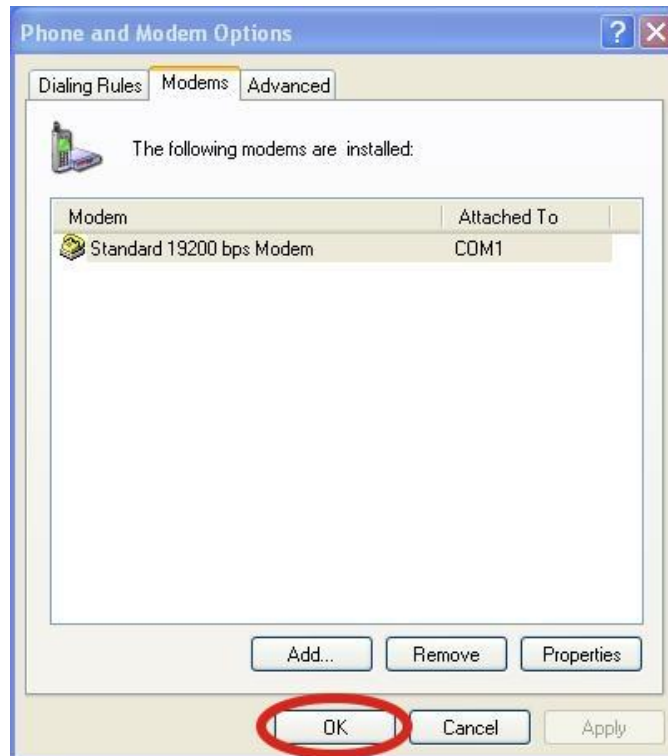


Step11. Diagnostics → Query Modem →Click “OK”

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

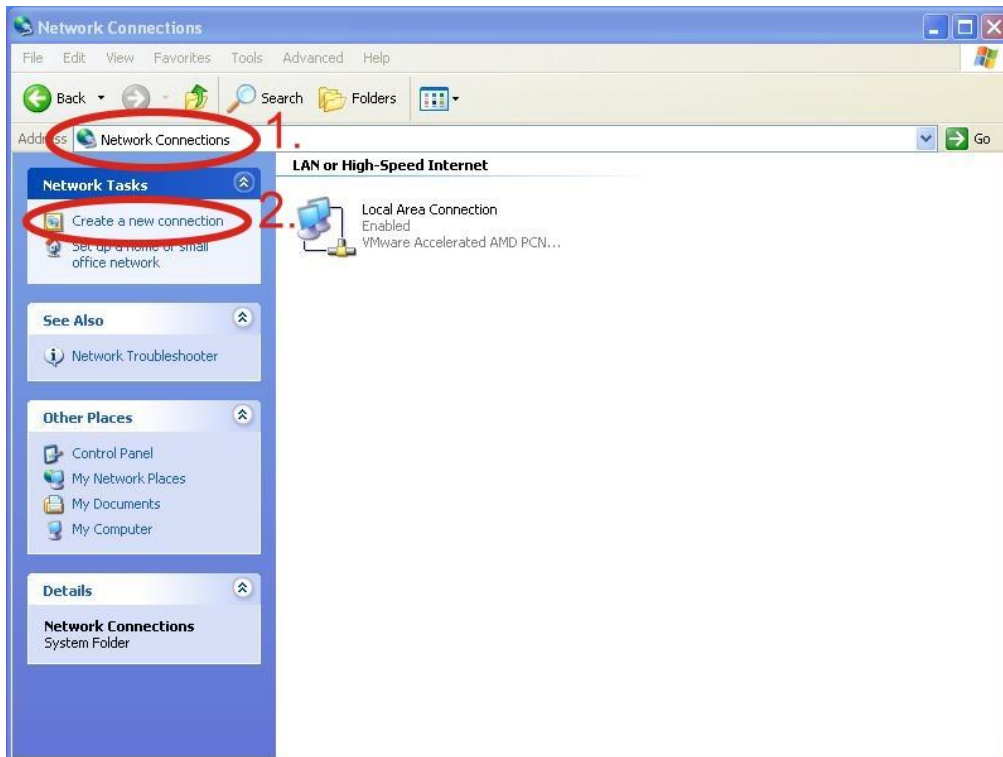


Step12. Click “OK”



6.1.2.2 Create a new dial-up and networking connection

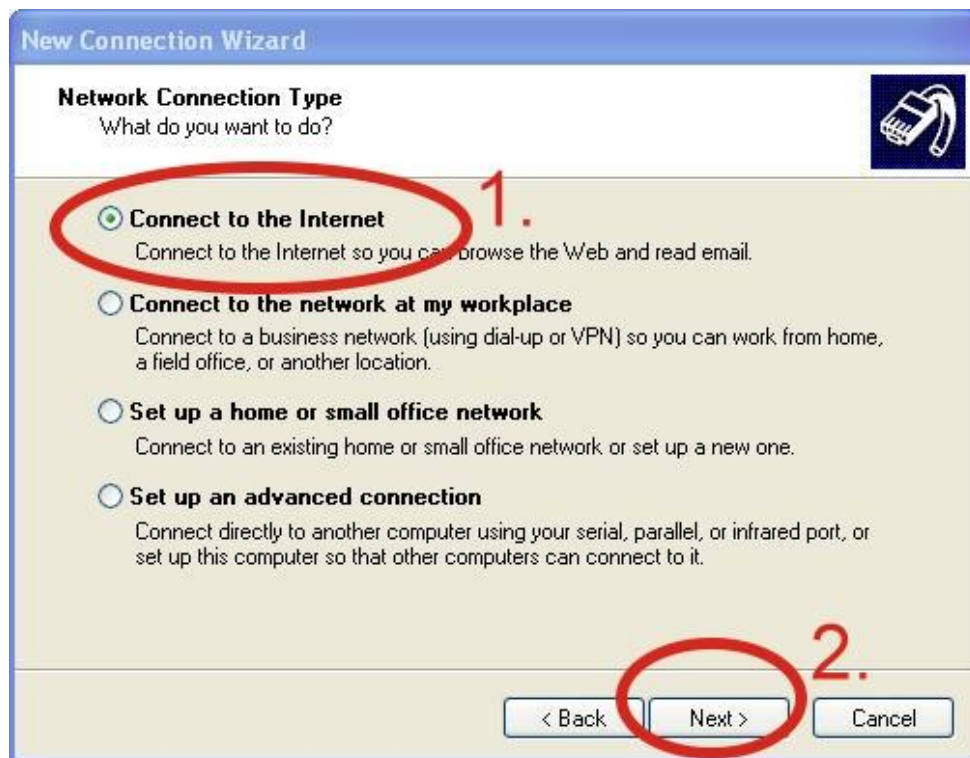
Step1. Control Panel → Network Connections → Click “Create a new connection”



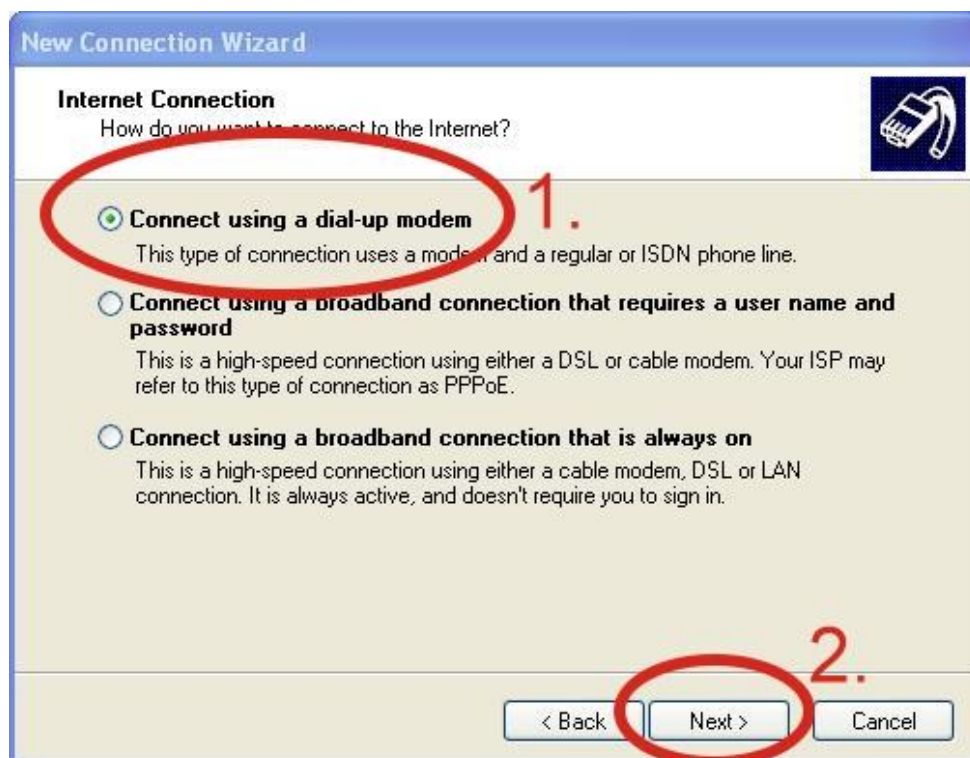
Step2. Click “Next”



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"

New Connection Wizard

Connection Name
What is the name of the service that provides your Internet connection?

Type the name of your ISP in the following box.

ISP name **1.**

The name you type here will be the name of the connection you are creating.

2.

< Back **Next >** Cancel

Step6. Phone Number: → Click "Next"

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

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

New Connection Wizard

Phone Number to Dial
What is your ISP's phone number?

Type the phone number below.

Phone number: **1.**

You might need to include a "+" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.

2.

< Back **Next >** Cancel

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.

New Connection Wizard

Internet Account Information
You will need an account name and password to sign in to your Internet account.

Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)

User name:

Password:

Confirm password:

Use this account name and password when anyone connects to the Internet from this computer.

Make this the default Internet connection.

Turn on Internet Connection Firewall for this connection.

< Back **Next >** Cancel

Step8. Click "Finish"

New Connection Wizard

Completing the New Connection Wizard

You have successfully completed the steps needed to create the following connection:

Dial-up Connection

- Make this the default connection
- This connection is firewalled
- Share with all users of this computer
- Use the same user name & password for everyone

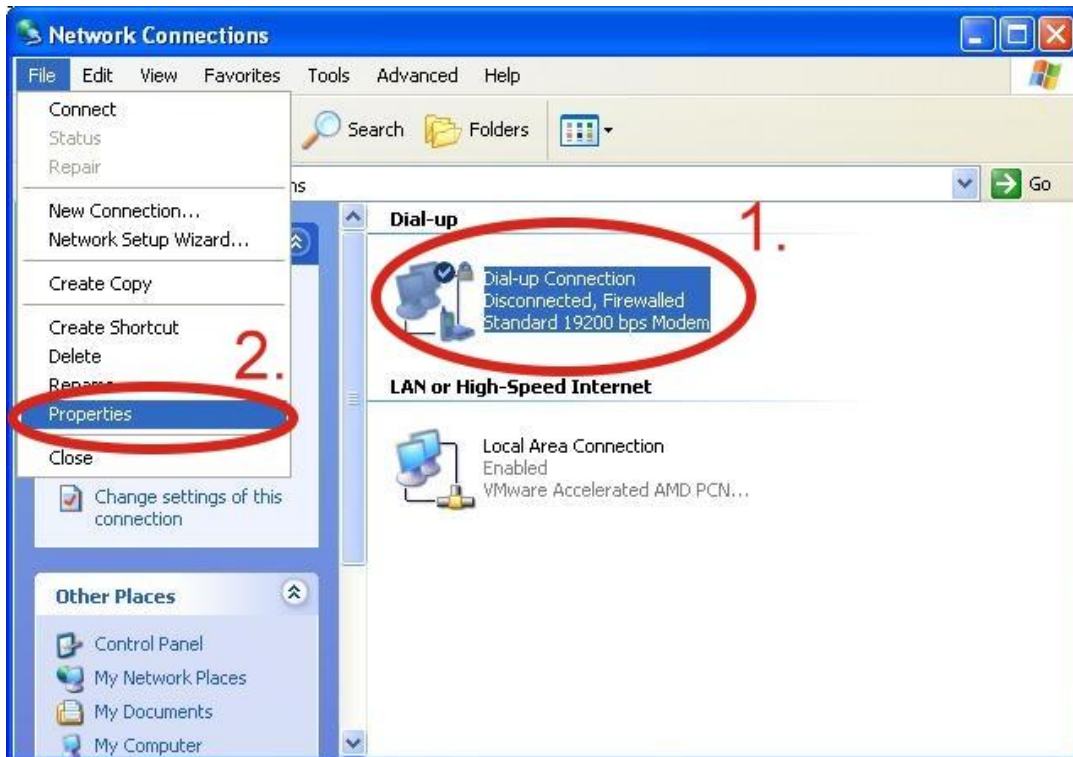
The connection will be saved in the Network Connections folder.

Add a shortcut to this connection to my desktop

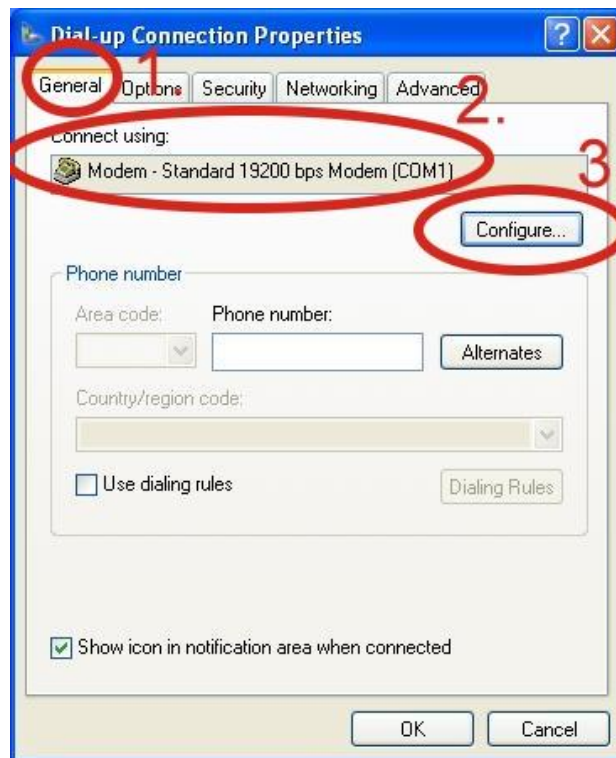
To create the connection and close this wizard, click Finish.

< Back **Finish** Cancel

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

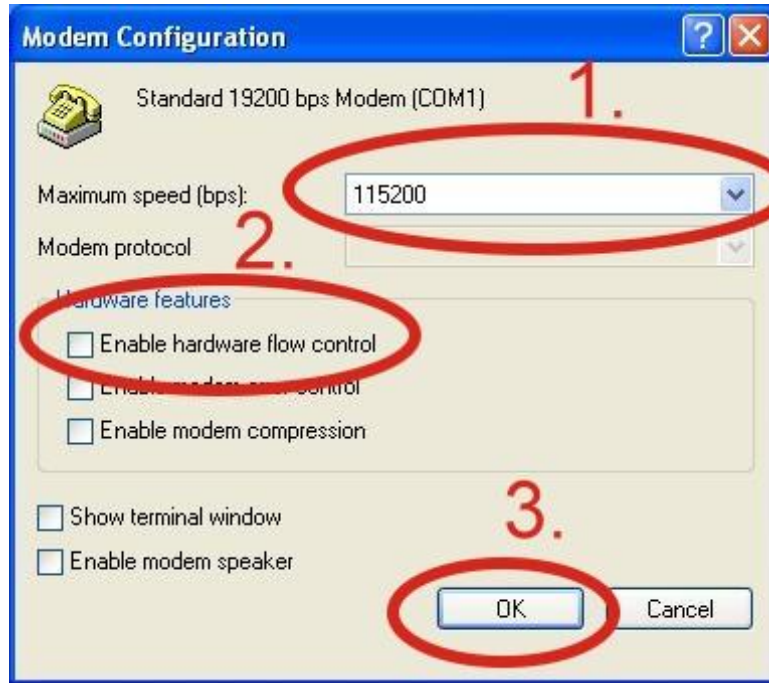


Step10. General → Select “Standard 19200 bps Modem” → Click “Configure”

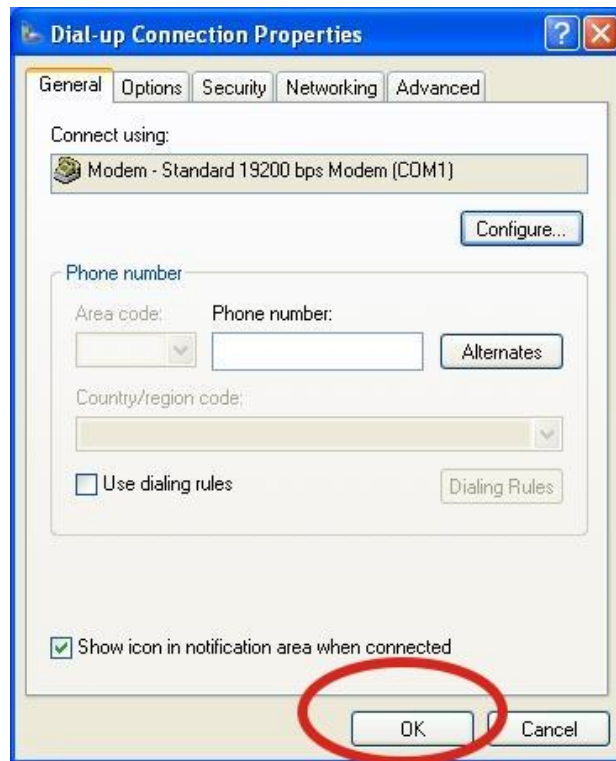


Step11. Maximum speed(bps) → Select "115200" → disable "Enable hardware flow control" **(Note)** → Click "OK"

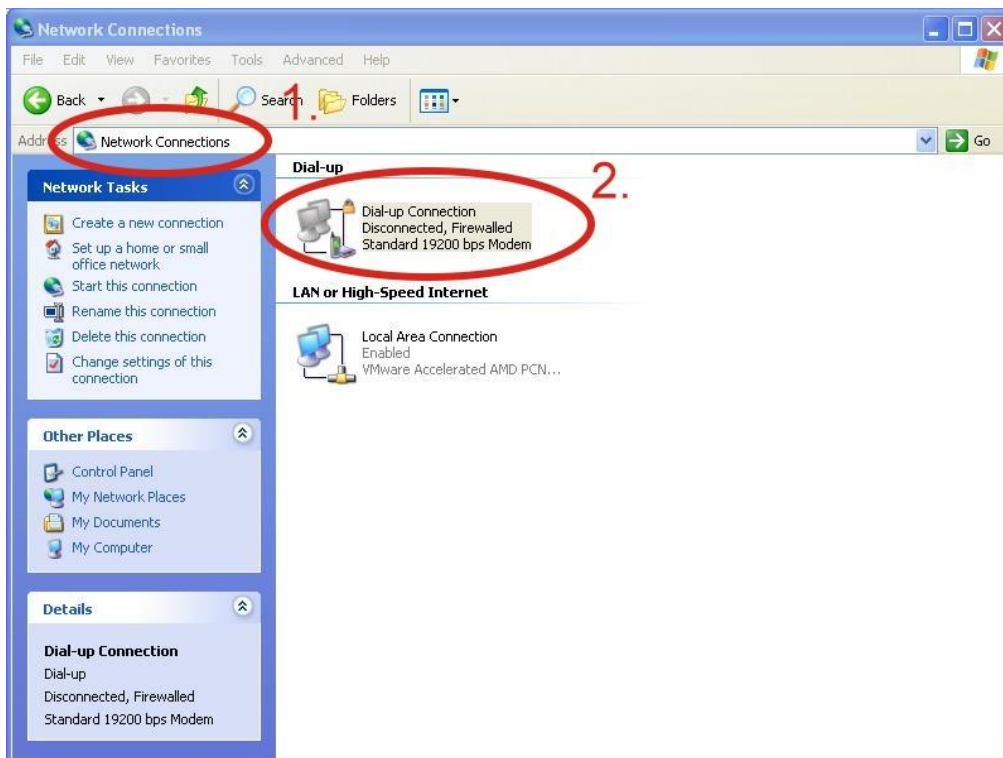
Note : Please **don't** select "Enable hardware flow control"



Step12. Click “OK”



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



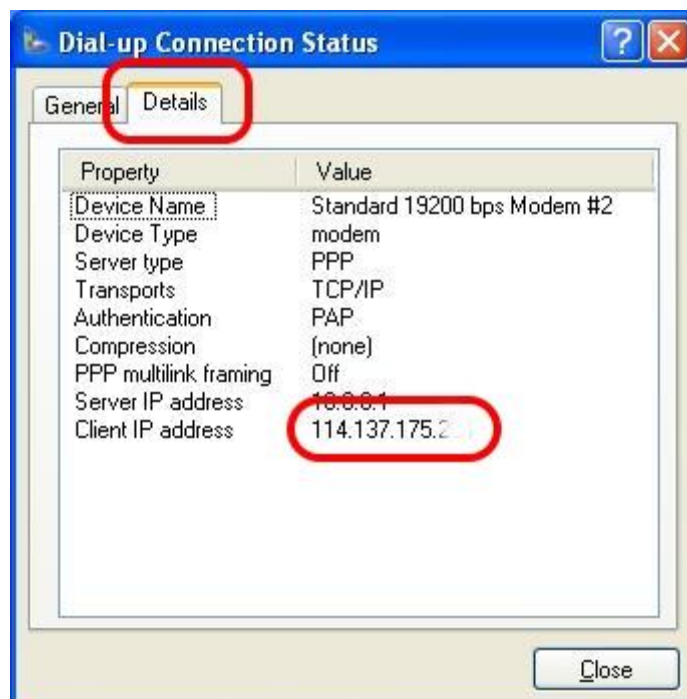
Step14. Click “Dial”



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



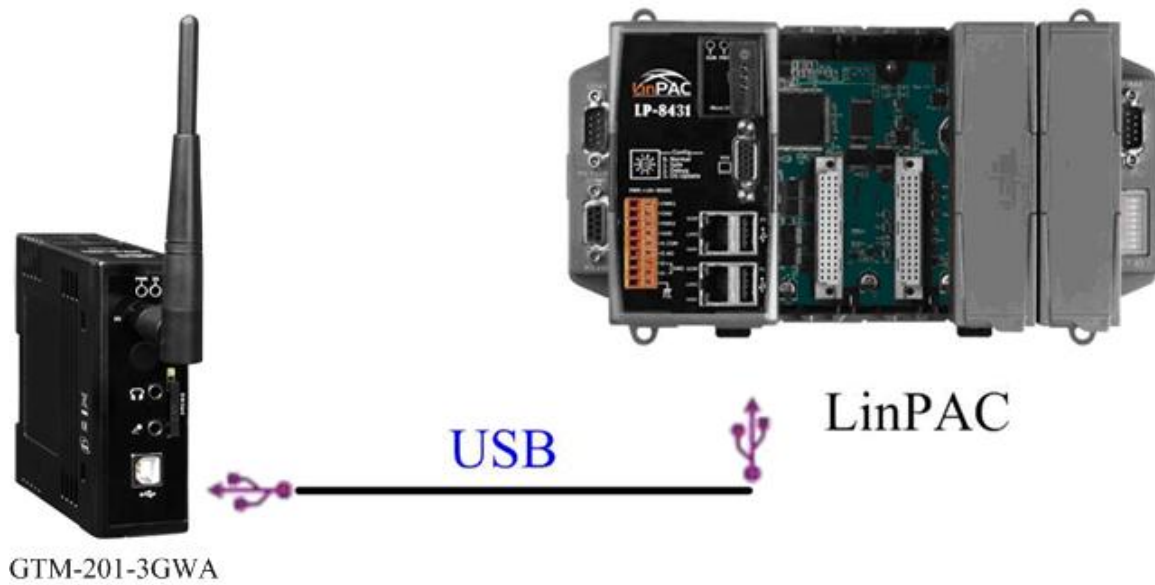
Step16. You can Double-Click the new logo → Click “Details” → Get your IP address



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/

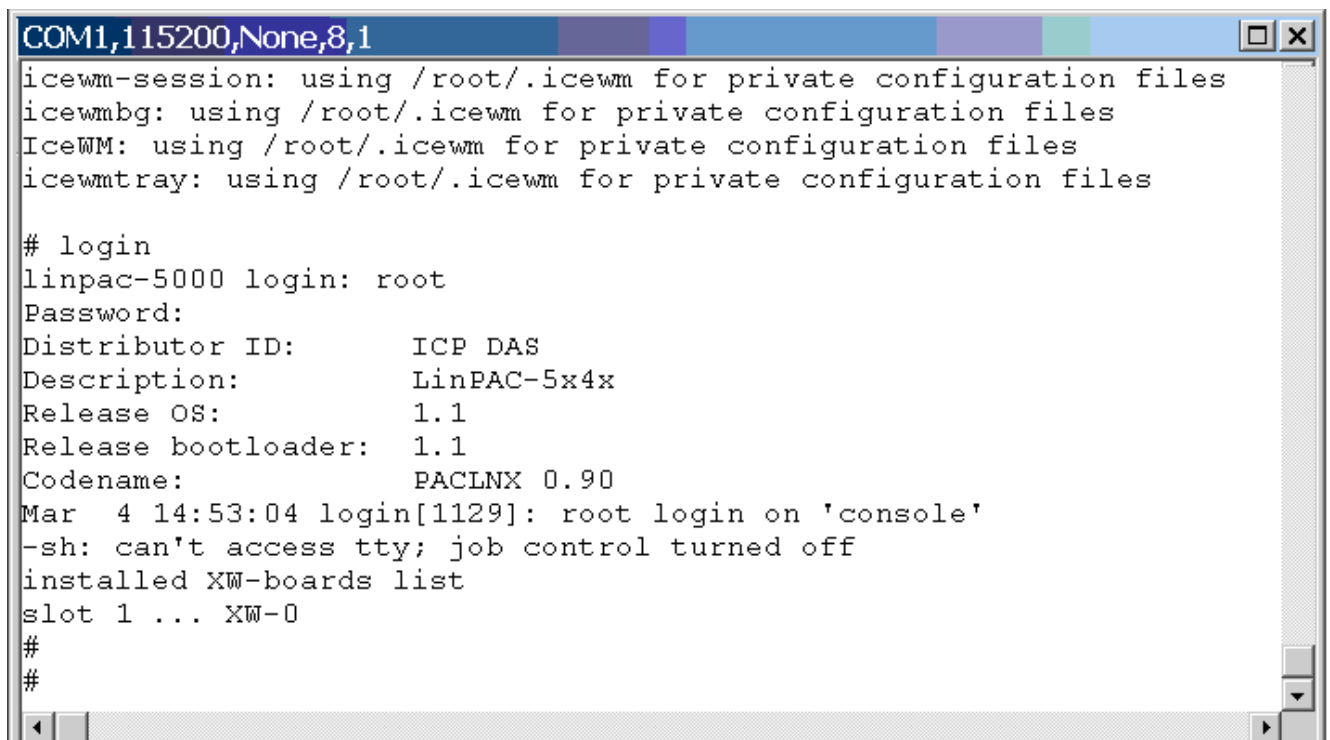
PDS-8x2: ftp://ftp.icpdas.com/pub/cd/linpac/napdos/pds-8x2/os_image/

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).



```
COM1,115200,None,8,1
icewm-session: using /root/.icewm for private configuration files
icewmdbg: using /root/.icewm for private configuration files
IceWM: using /root/.icewm for private configuration files
icewmtray: using /root/.icewm for private configuration files

# login
linpac-5000 login: root
Password:
Distributor ID:      ICP DAS
Description:         LinPAC-5x4x
Release OS:          1.1
Release bootloader:  1.1
Codename:             PACLNX 0.90
Mar  4 14:53:04 login[1129]: root login on 'console'
-sh: can't access tty; job control turned off
installed XW-boards list
slot 1 ... XW-0
#
#
```

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

```
COM1,115200,None,8,1
# insmod /lib/modules/2.6.19/sim5218.ko
drivers/usb/serial/usb-serial.c: USB Serial support registered for SIM5218
SIM5218 1-1:1.0: SIM5218 converter detected
usb 1-1: SIM5218 converter now attached to ttyUSB0
SIM5218 1-1:1.1: SIM5218 converter detected
usb 1-1: SIM5218 converter now attached to ttyUSB1
SIM5218 1-1:1.2: SIM5218 converter detected
usb 1-1: SIM5218 converter now attached to ttyUSB2
SIM5218 1-1:1.3: SIM5218 converter detected
usb 1-1: SIM5218 converter now attached to ttyUSB3
SIM5218 1-1:1.4: SIM5218 converter detected
usb 1-1: SIM5218 converter now attached to ttyUSB4
usbcore: registered new interface driver SIM5218
#
```

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_U1.24
SIM5218A_240150_100422_U1.24^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 ConfReq 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 UJ 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 ProtReq 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 UJ 0f 01> <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>]
rcvd [IPCP ConfReq id=0x2]
sent [IPCP ConfNak id=0x2 <addr 0.0.0.0>]
rcvd [IPCP ConfReq id=0x2 <compress UJ 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

```
COM1,115200,None,8,1
#
# ifconfig
eth0  Link encap:Ethernet HWaddr 00:0D:E0:AB:CD:33
      UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
      RX packets:0 errors:0 dropped:0 overruns:0 frame:0
      TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:0 (0.0 B) TX bytes:1770 (1.7 KiB)
      Interrupt:41 Base address:0x8000

eth1  Link encap:Ethernet HWaddr 00:0D:E0:AB:CD:44
      UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
      RX packets:0 errors:0 dropped:0 overruns:0 frame:0
      TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:0 (0.0 B) TX bytes:1770 (1.7 KiB)
      Interrupt:114 Base address:0xc000

lo    Link encap:Local Loopback
      inet addr:127.0.0.1 Mask:255.0.0.0
      UP LOOPBACK RUNNING MTU:16436 Metric:1
      RX packets:0 errors:0 dropped:0 overruns:0 frame:0
      TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:0
      RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

ppp0  Link encap:Point-to-Point Protocol
      inet addr:111.81.57.21 P-t-P:10.64.64.64 Mask:255.255.255.255
      UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1
      RX packets:8 errors:0 dropped:0 overruns:0 frame:0
      TX packets:7 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:3
      RX bytes:186 (186.0 B) TX bytes:129 (129.0 B)

#
```

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`

```
COM1,115200,None,8,1
# sh /etc/ppp/scripts/3g.route
# route
Kernel IP routing table
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface
10.64.64.64      *                255.255.255.255 UH    0      0      0 ppp0
default          10.64.64.64     0.0.0.0         UG    0      0      0 ppp0
#
# ftp ftp.speed.hinet.net
Connected to ftp.speed.hinet.net.
220- Welcome to HiNet SpeedTest FTP site.
220- (ftp.speed.hinet.net)
220
Name (ftp.speed.hinet.net:root): ftp
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>
ftp>
ftp> by
221 Goodbye.
#
```

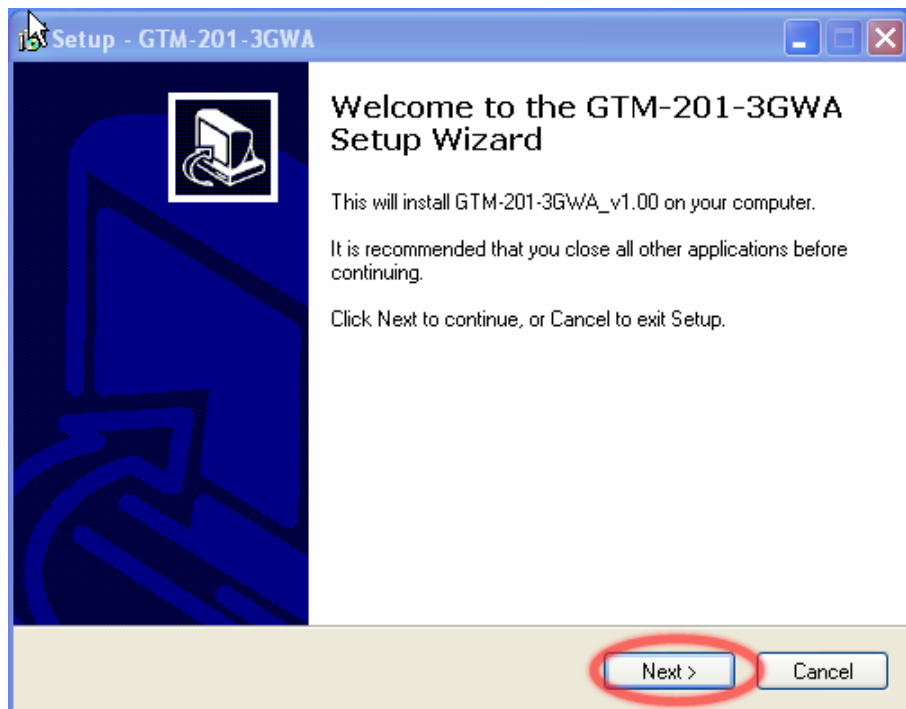

Chapter 7 USB driver installation

7.1 XPAC – 8000 (Microsoft Windows XP)

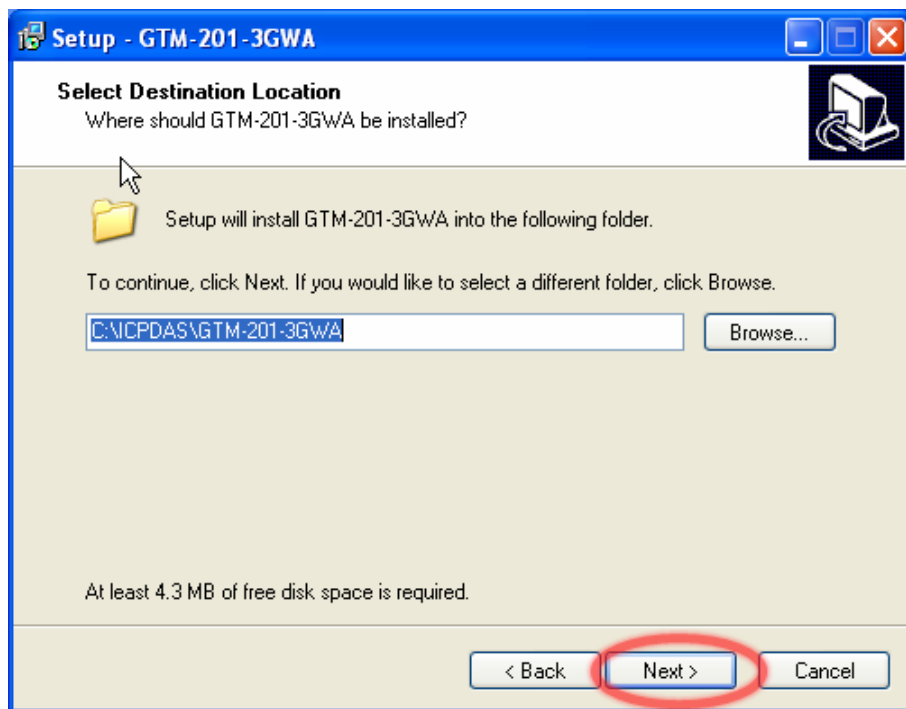
7.1.1 Install USB driver

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

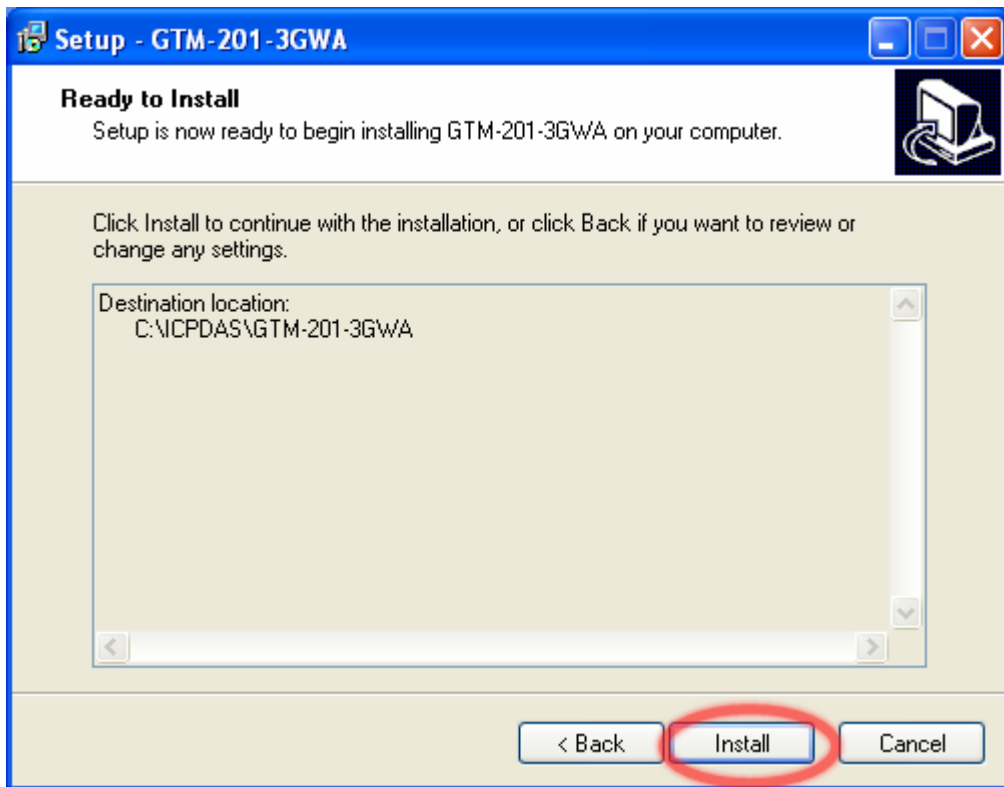
Step2. Click “Next”.



Step3. Click “Next”



Step4. Select "Install"

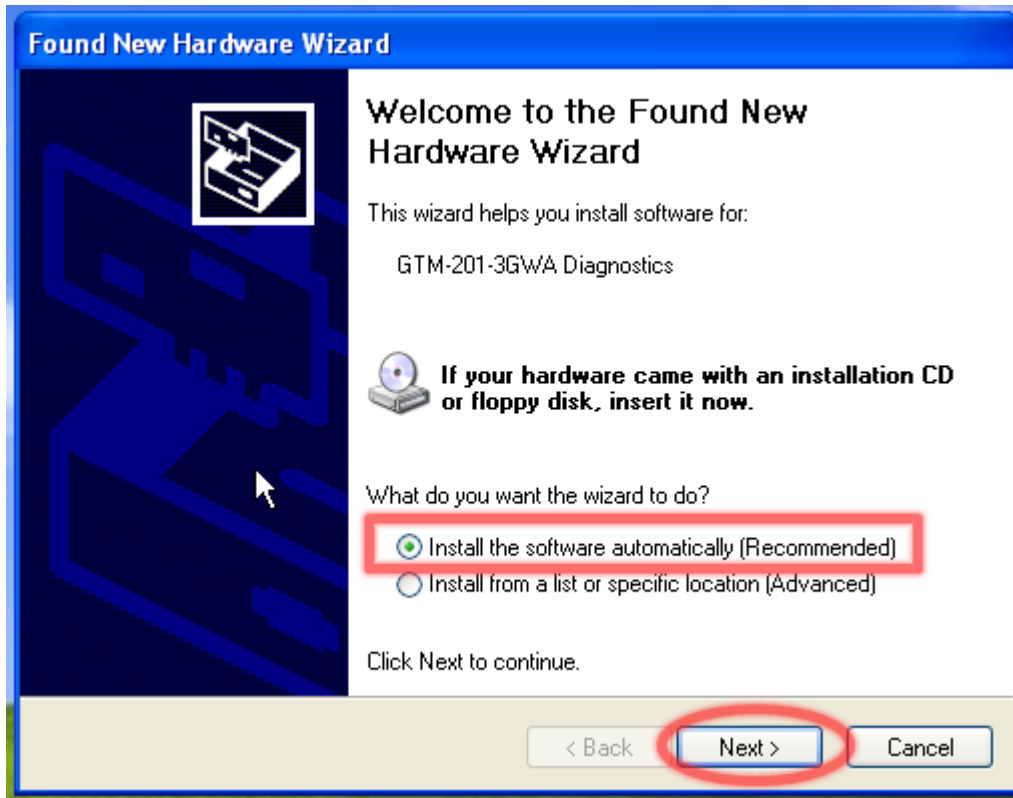


Step5. Click "Finish"



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

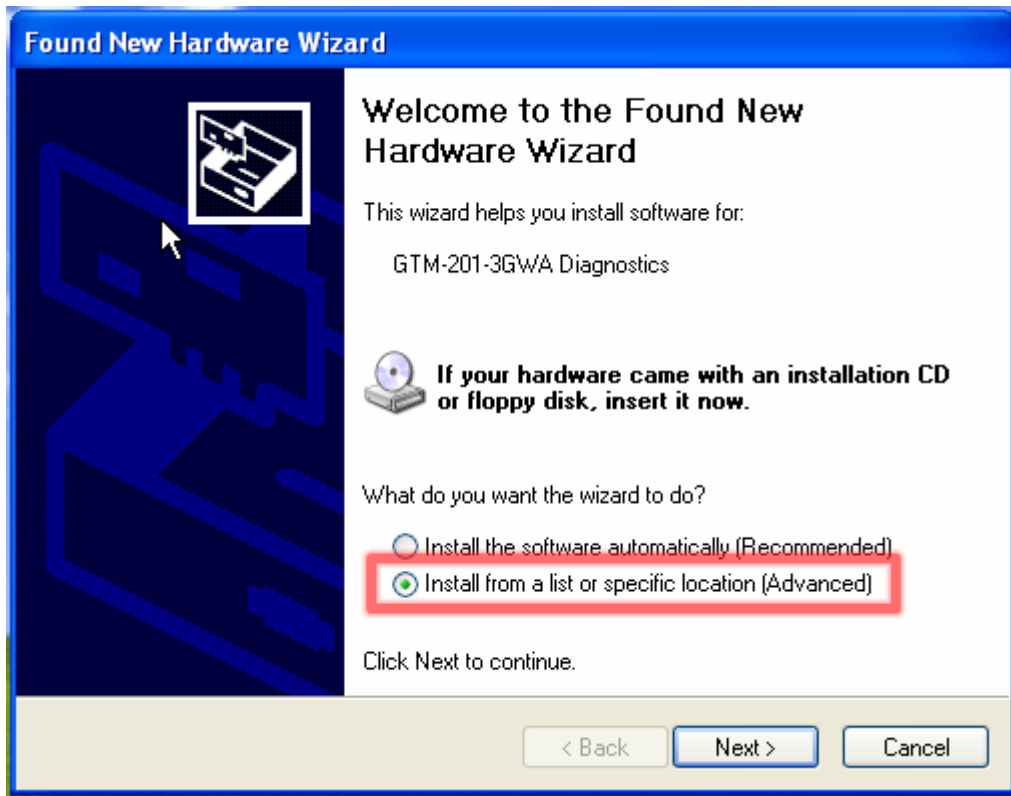
Step7. The “Found New Hardware Wizard” window for “GTM-201-3GWA Diagnostics” will pop-out. Please click “Next”.



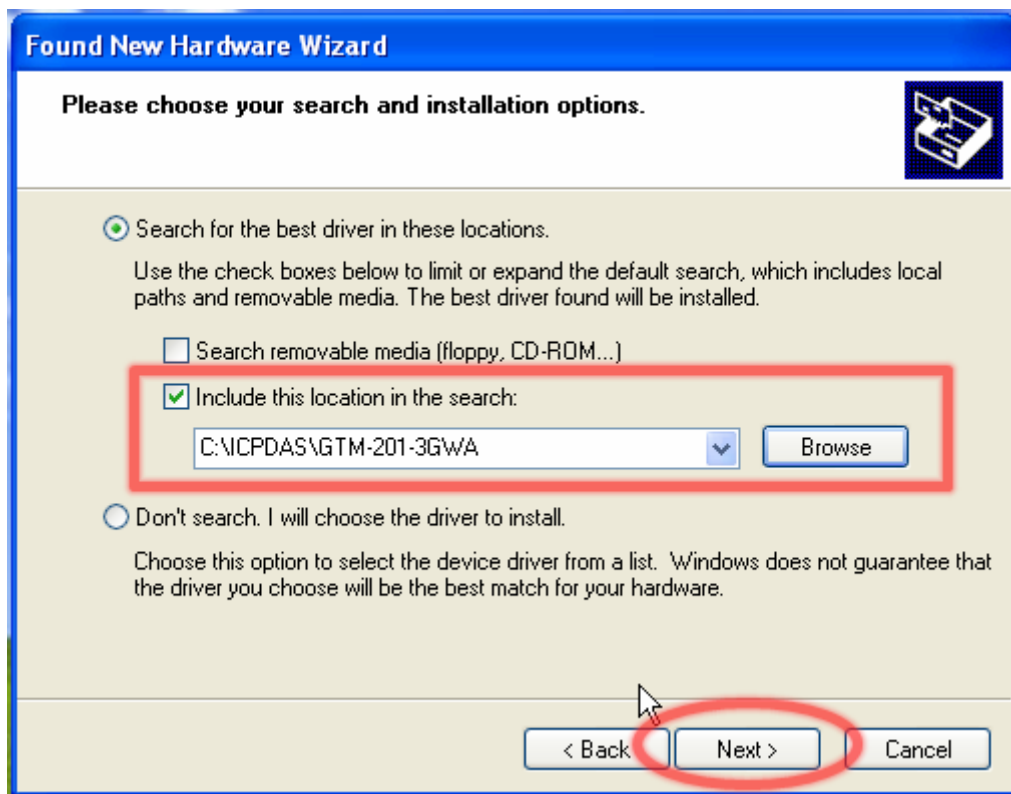
Step7-1. Click “Finish” if you got a success message.



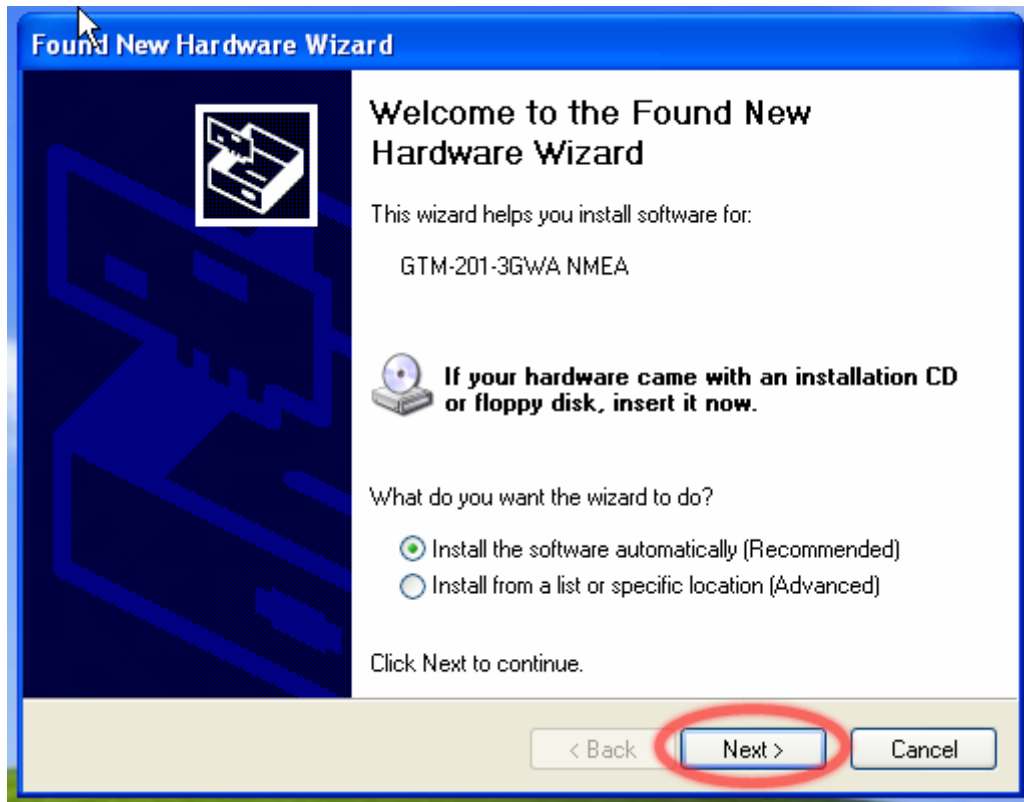
Step7-2. Click “Back” if you got a fail message, and then choose “Install from a list or specific location” in all install steps.



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”.



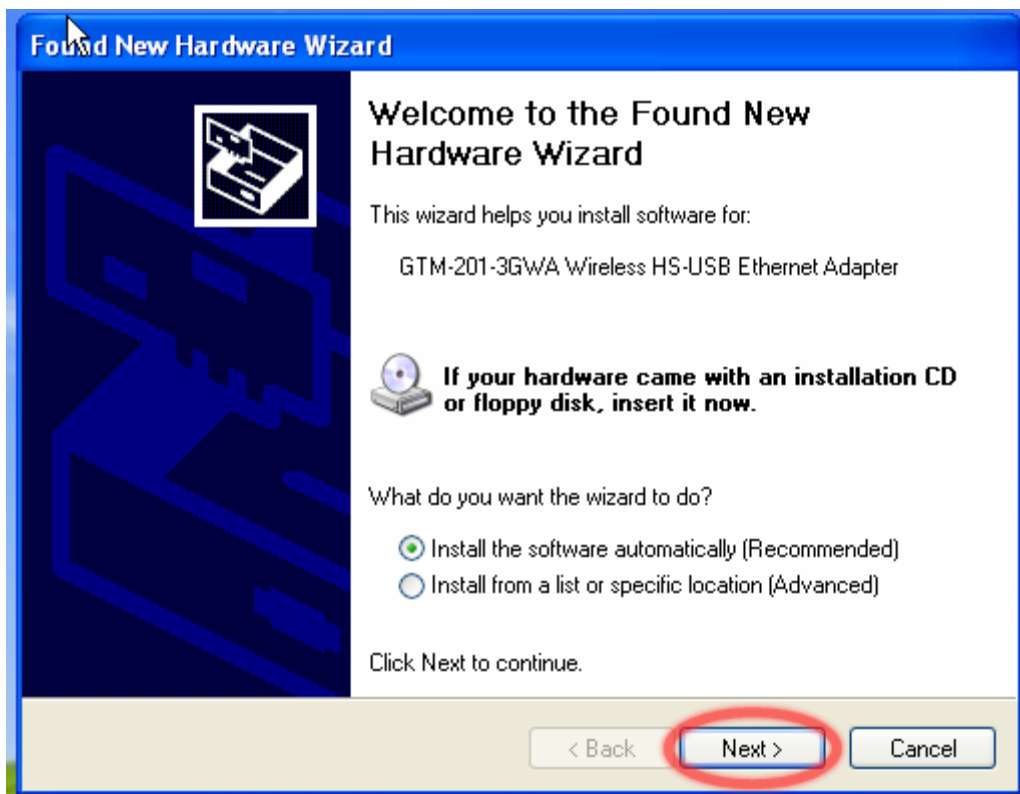
Step9. The “Found New Hardware Wizard” window for “GTM-201-3GWA AT Port” will pop-out. Please click “Next”.



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



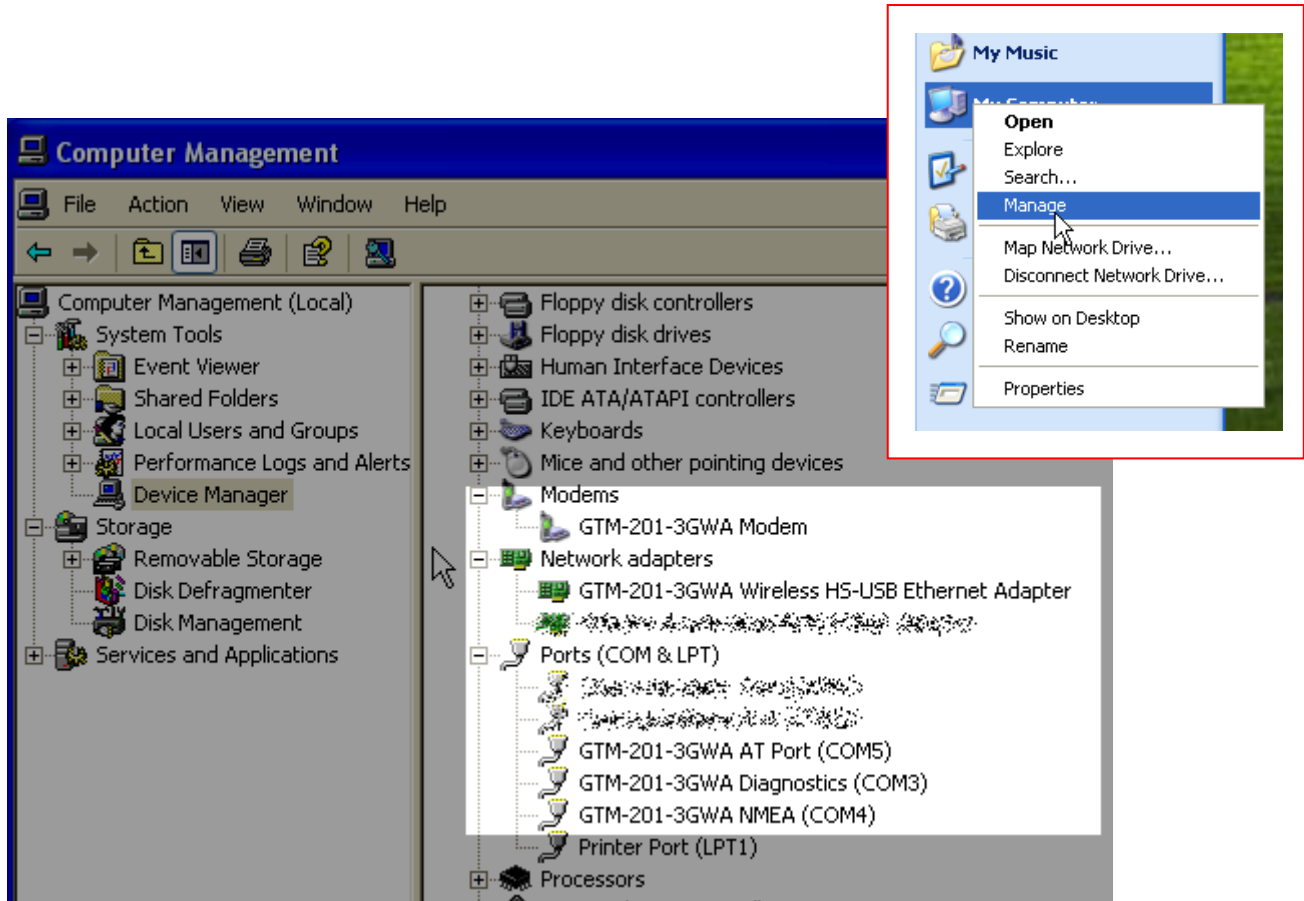
Step11. The “Found New Hardware Wizard” window for “GTM-201-3GWA Wireless HS-USB Ethernet Adapter” will pop-out. Please click “Next”.



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