

工業級三頻 3G 模組

GTM-201-3GWA 系列

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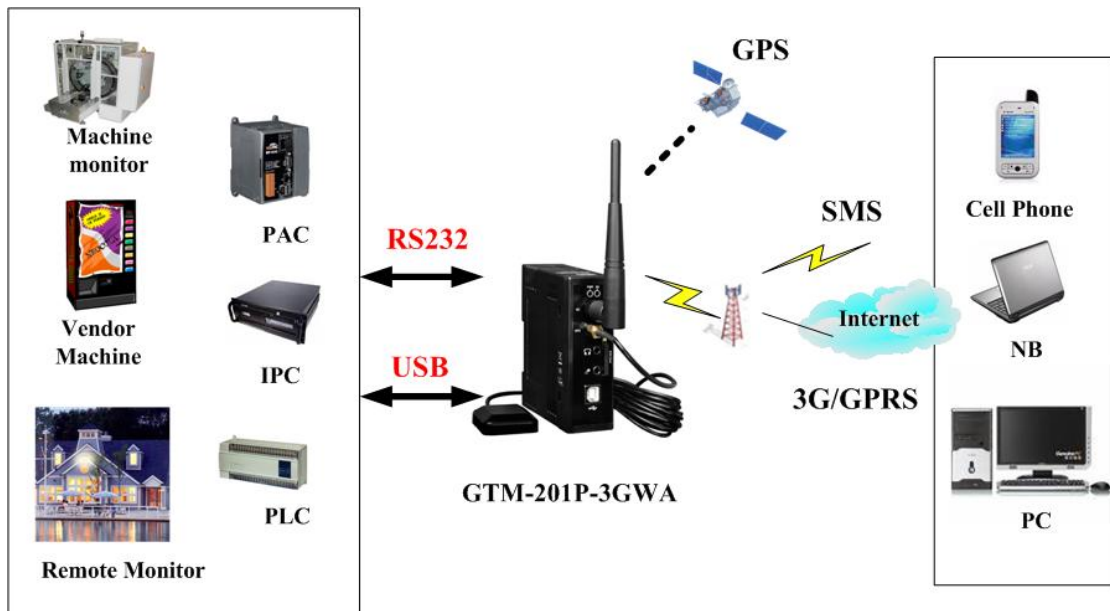
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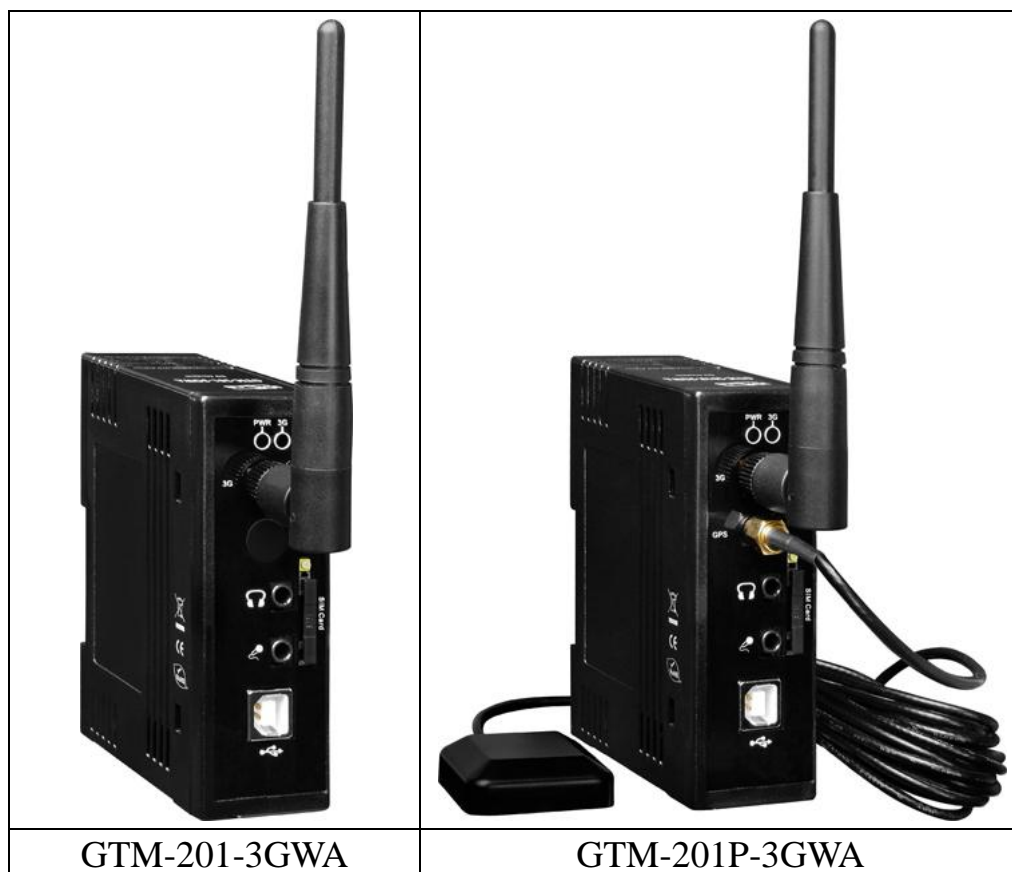
1. 簡介

GTM-201-3GWA 是三頻 3G(UMTS 2100 / 1900 / 850 MHz)和四頻 GSM(GSM 850 / 900 / 1800 / 1900 MHz)工用模組，提供 RS-232 和 USB 介面。該模組使用 3G 或 GPRS 網絡傳輸資料。其特色為支援多種 PLC 和 PC 利用 SMS、3G、GPRS 網絡相互連結，並提供語言介面以利應用於語音警示系統。



2. 硬體介紹

2.1 GTM-201-3GWA 系列產品照



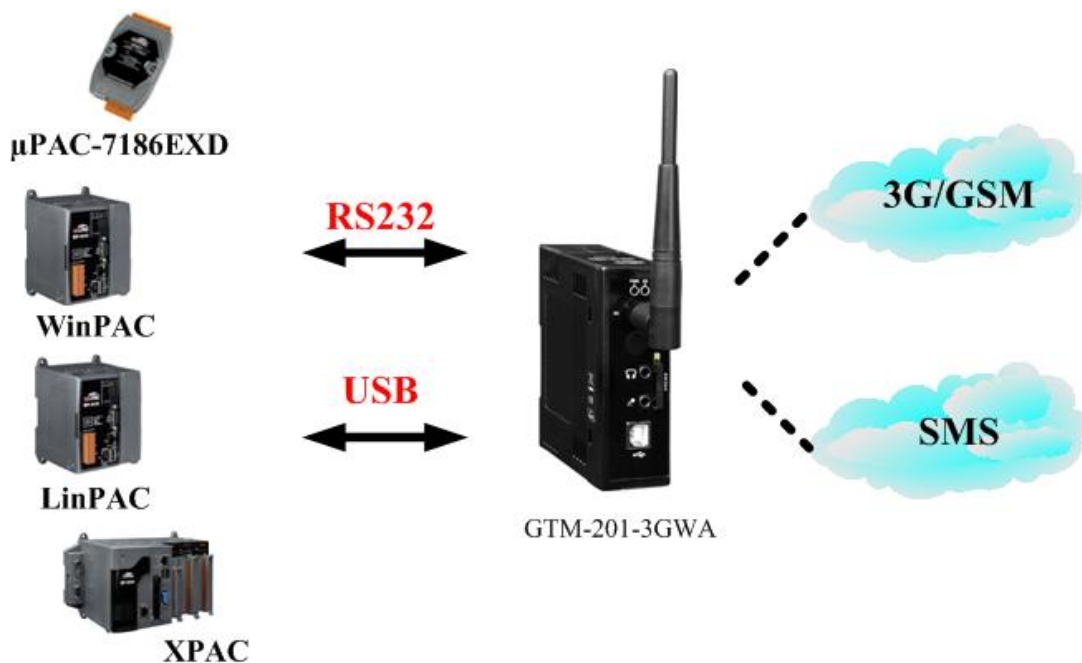
2.2 GTM-201-3GWA 規格

Item	GTM-201-3GWA	GTM-201P-3GWA
3G 系統		
頻道	UMTS : 2100/1900/850 MHz	
資料傳輸	UMTS / HSDPA / HSUPA Downlink transfer: Max. 7.2Mbps; Uplink transfer: Max 5.76Mbps	
GSM / GPRS 系統		
頻道	GSM : 850/900/1800/1900 MHz	
GPRS 連結	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	
編碼	CS 1, CS 2, CS 3, CS 4	
SMS		
SMS	MT, MO, CB, Text and PDU mode	
GPS 系統		
支援頻道數	-	32
支援協議	-	NMEA 0183
Comm. 介面		
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 指示燈		
電源	Red	
3G/GSM	Green	
電源		
保護	Power reverse polarity protection (極性反接保護)	
接地保護框架	ESD, Surge, EFT, Hi-Pot	
電源輸入範圍	+10 V _{DC} ~ +30 V _{DC}	
功耗	Idle: 25 mA @ 24 V _{DC} ; Data Link: 100 ~ 400 mA (peak) @ 24 V _{DC}	
連接器	8-Pin 3.5 mm Removable Terminal Block	
重置輸入		
輸入類型	Isolated, 3750 V _{rms}	
開啟電壓	+3.5 V _{DC} ~ +30V _{DC}	
關斷電壓	+1 V _{DC} max.	
輸入電阻	3 k Ω , 0.25W	
機體		
外殼	Plastic	
材質	UL 94V-0 materials	
尺寸 (W x L x H)	33 mm x 87 mm x 107 mm	
導軌	DIN-Rail	
環境		
操作溫度	-25°C to 75°C	
存放溫度	-40°C to 80°C	
濕度	5~95% non-condensing	

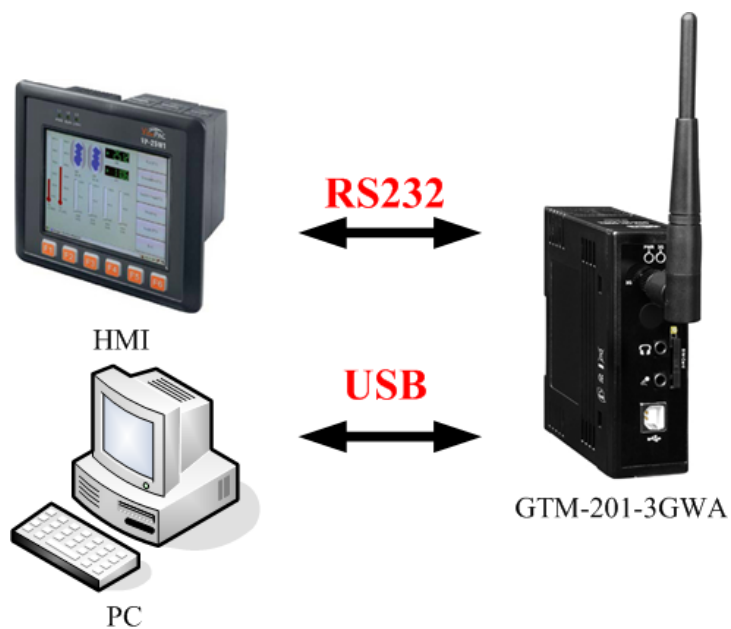
備註:原廠預設速率為 11522bps.

3. 應用架構

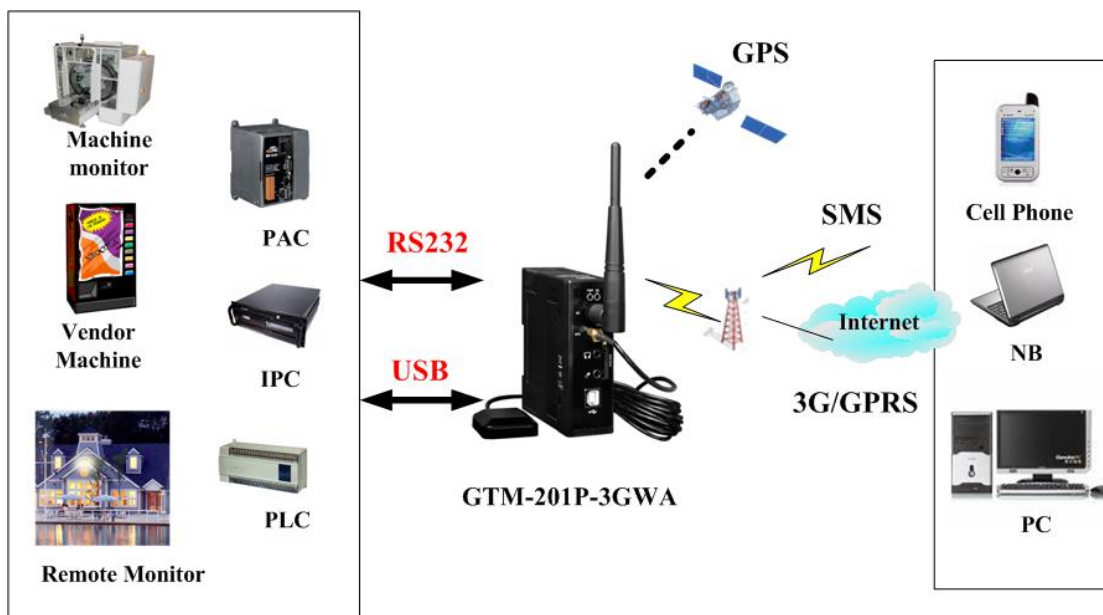
3.1 應用架構 1



3.2 應用架構 2

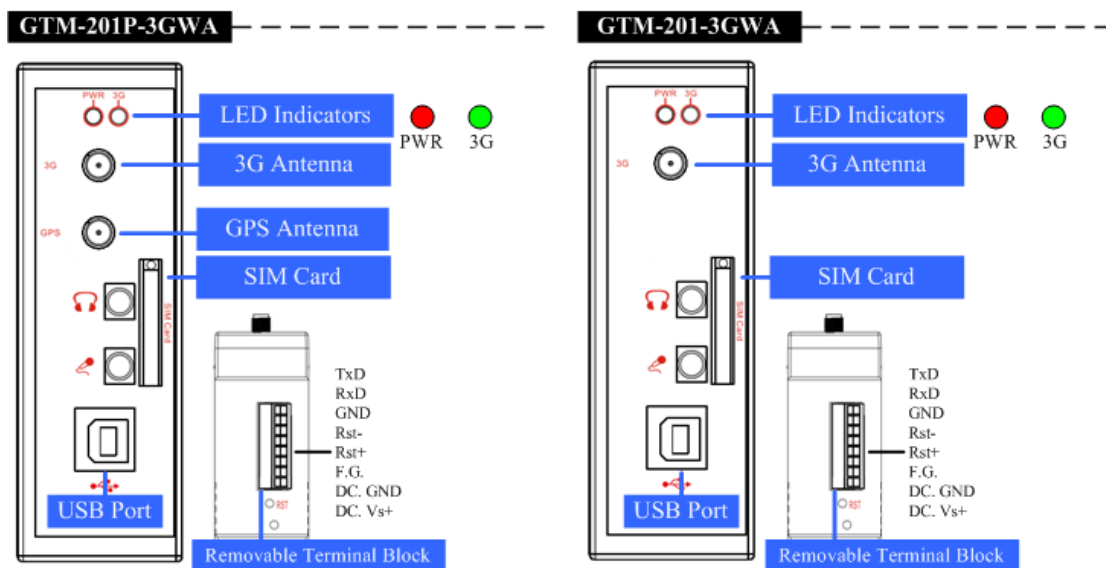


3.3 應用架構 3

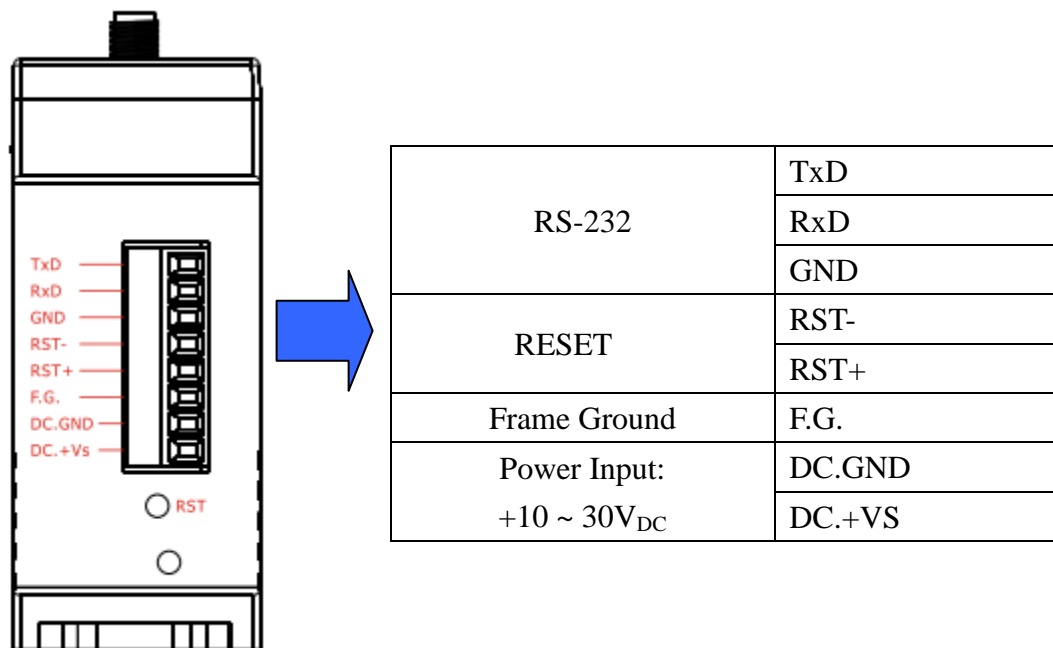


4. 硬體外觀

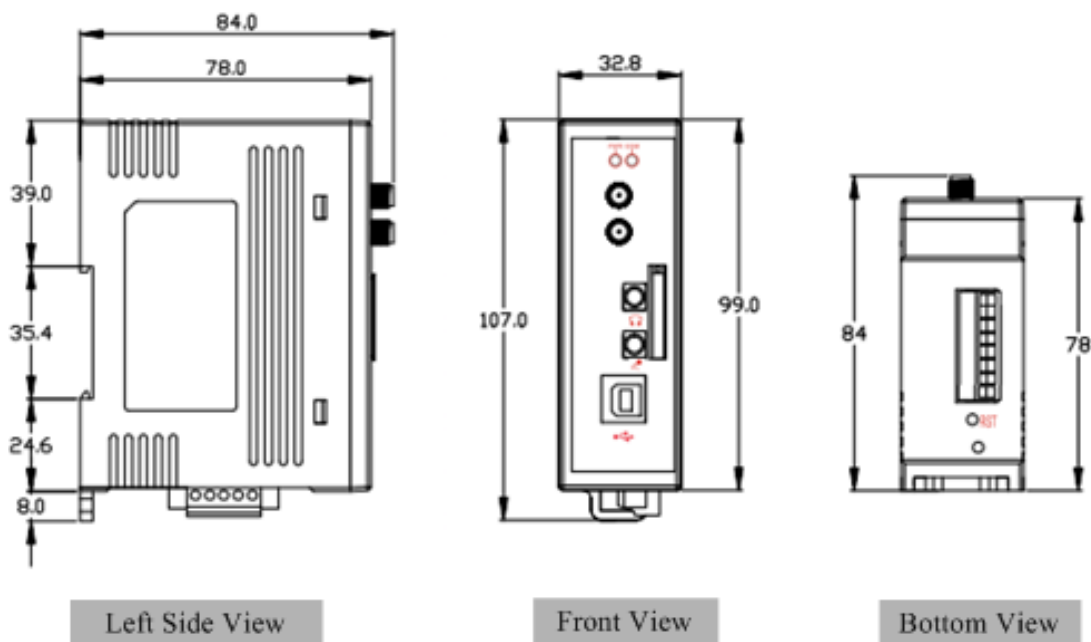
4.1 面板圖



4.2 腳位圖與說明



4.3 尺寸規格(單位:mm)



4.4 LED 指示燈



有兩個 LED 指示燈幫助使用者了解機況，其亮燈訊號說明如下：

- ▶ 電源指示燈（紅色）：顯示電源運轉狀況。

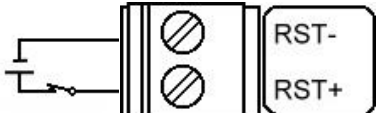
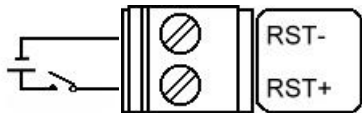
電源正常	電源異常
恆亮	恆滅

- ▶ 3G 指示燈（綠色）：顯示 3G 運轉狀況。

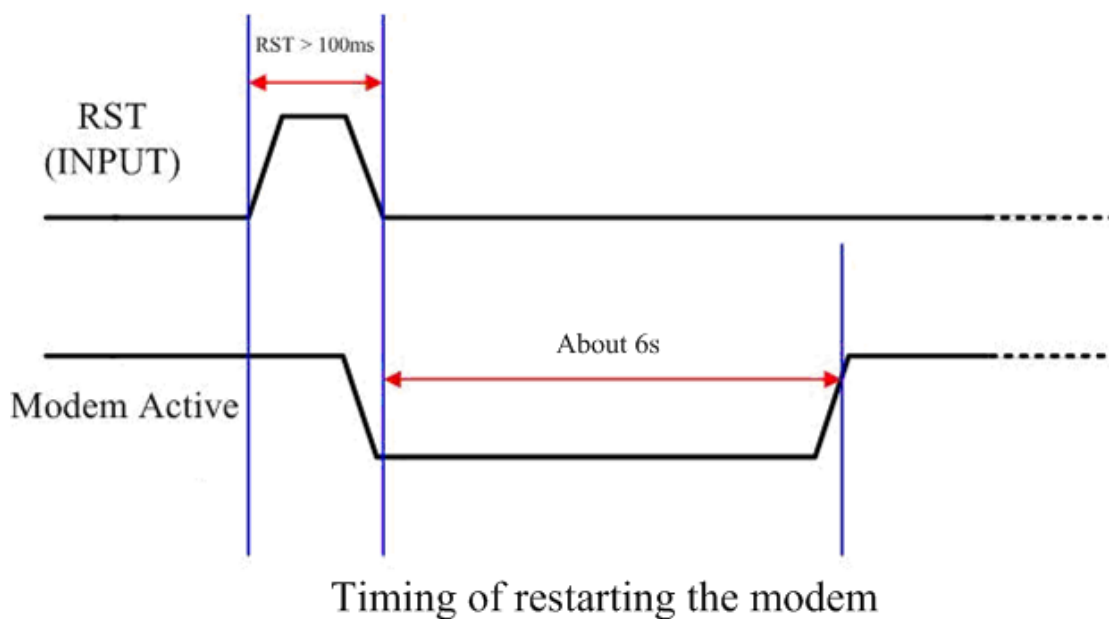
模組正常運作	模組運作異常	資料傳輸中
每 800 豪秒閃爍一次	恆滅或恆亮	每 200 豪秒閃爍一次

5. 硬體接線

5.1 重置系統接線法

類型	開啟重置	關閉重置
接線		

重置輸入	
開啟電壓	+3.5 VDC ~ +30 VDC
關閉電壓	+1 VDC max.



5.2 3G/GPS 安裝

- ▶ SIM 卡安裝



- ▶ 3G/GPS 天線安裝



5.3 快速測試

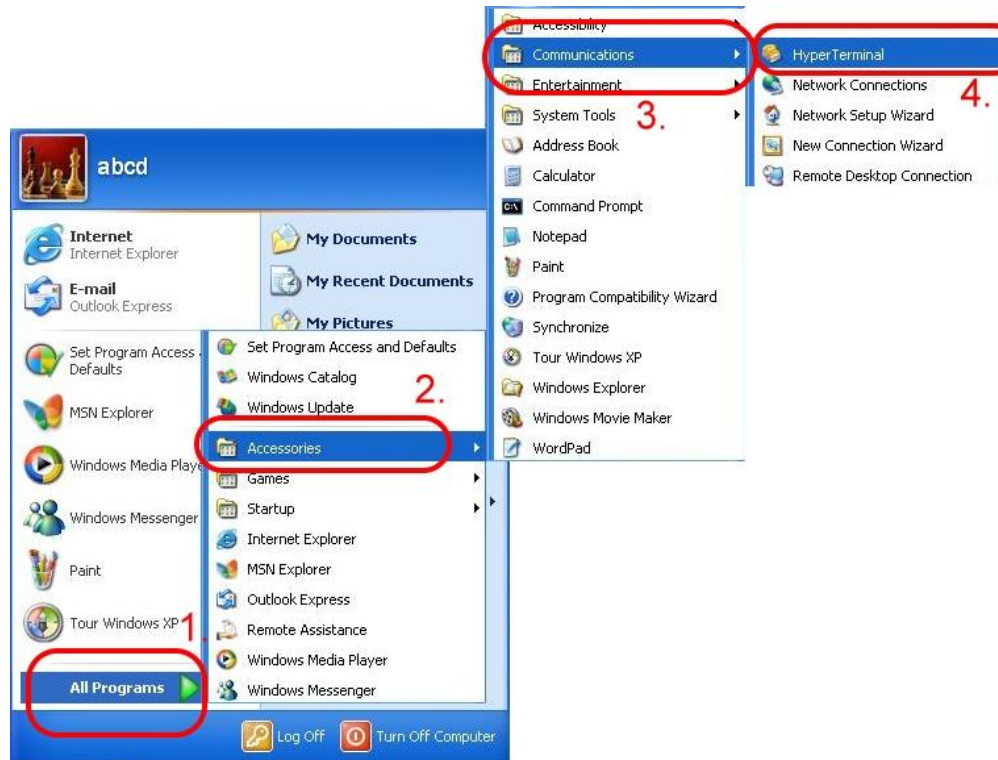
▷ 硬體安裝



▶ 軟體安裝

步驟 1. Start → All Programs → Accessories →

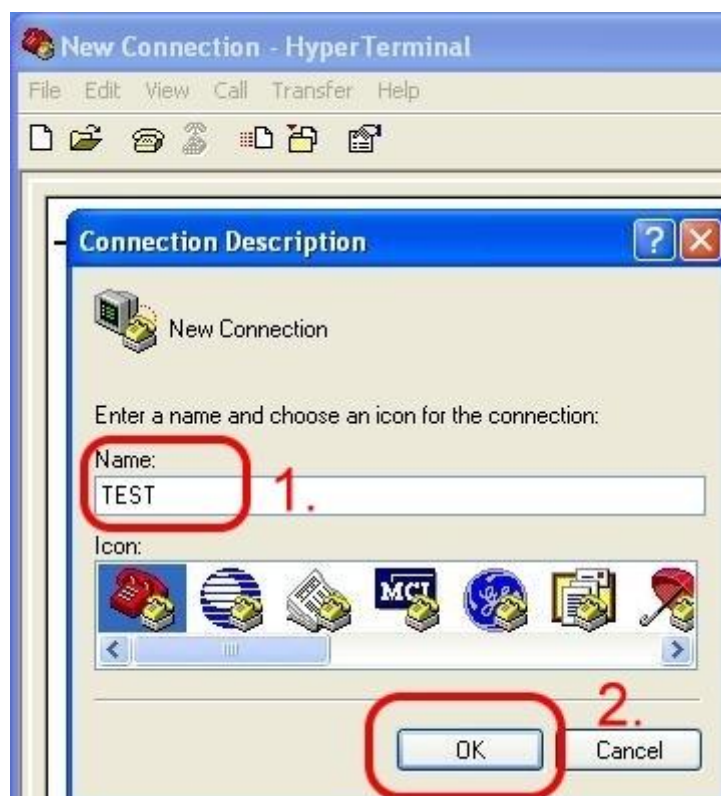
Communications → Hyper Terminal



步驟 2. 如果彈跳出對話視窗 “Default Telnet Program?”，請點選 “Yes”。



步驟 3. 輸入新連結名稱，按“OK”。

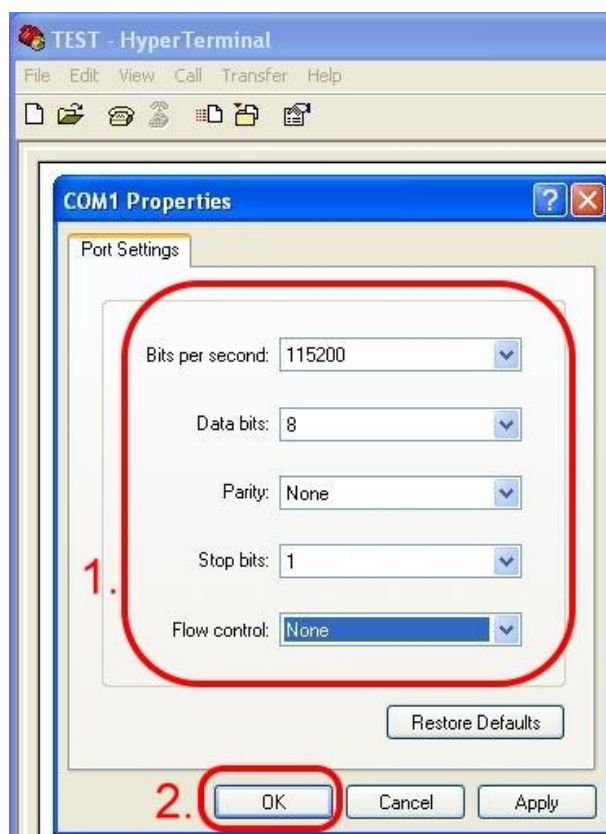


步驟 4. 選擇電腦串列埠，按“OK”。

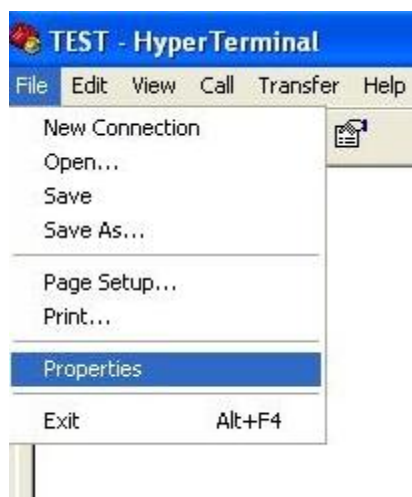


步驟 5. 請參考下列設定值：

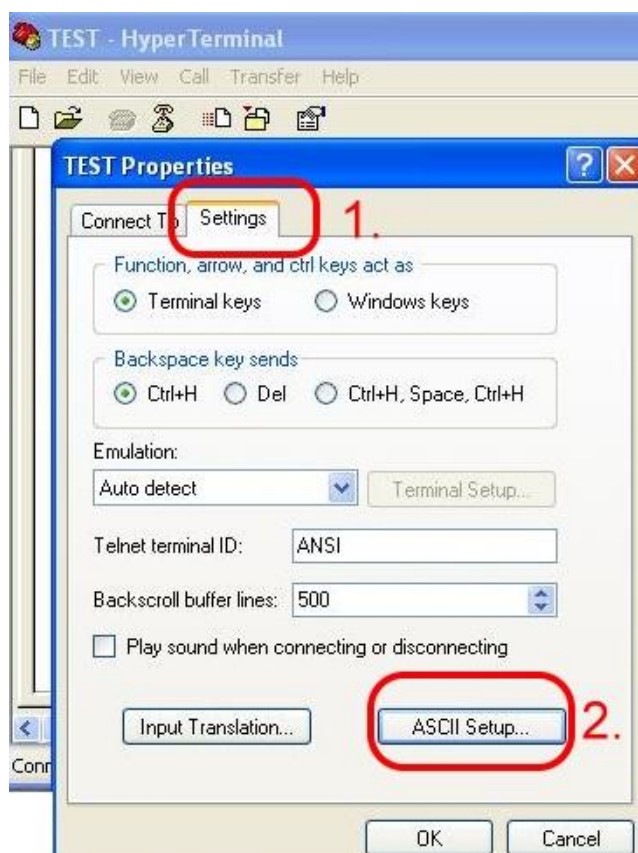
Bits per second	115200
Data bits	8
Parity	None
Stop bits	1
Flow control	None



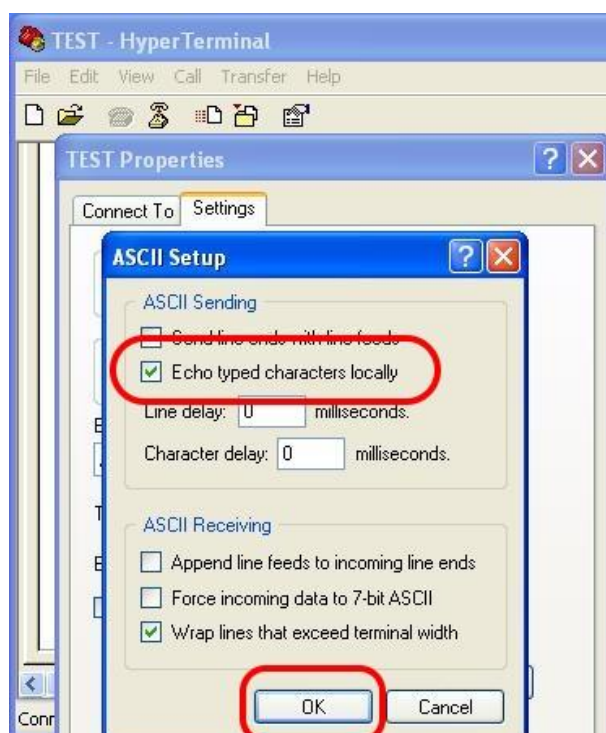
步驟 6. File → Properties



步驟 7. Settings → 點 “ASCII Setup…”



步驟 8. 勾選 “Echo typed character locally” → OK



步驟 9. 輸入 “AT” 按 “Enter”即可接收到“AT OK”。

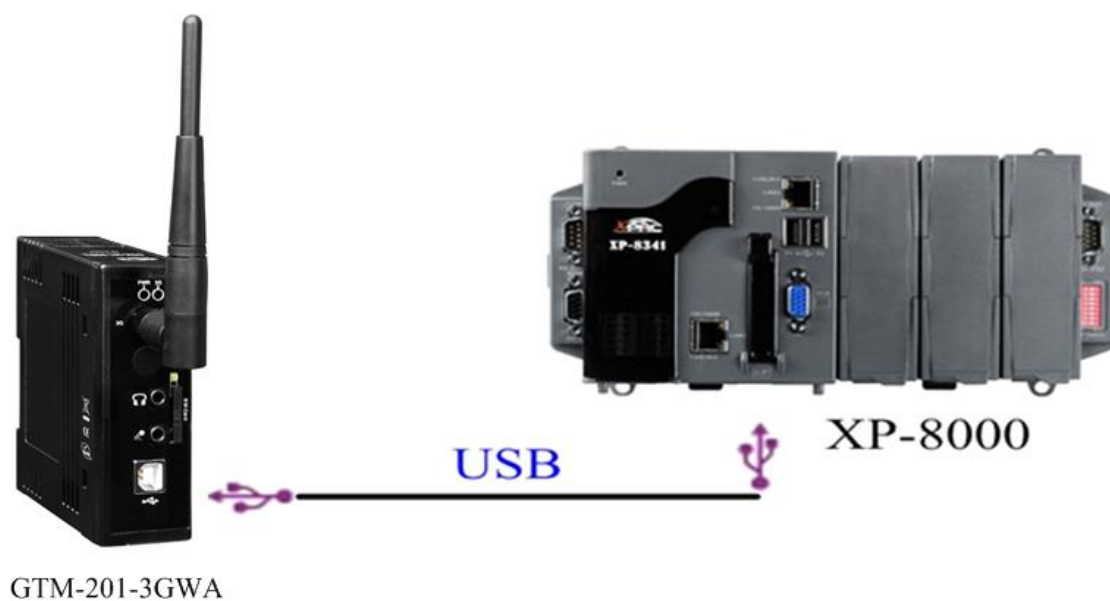


6. GPS 連線

6.1 XPAC – 8000 (Microsoft Windows XP)

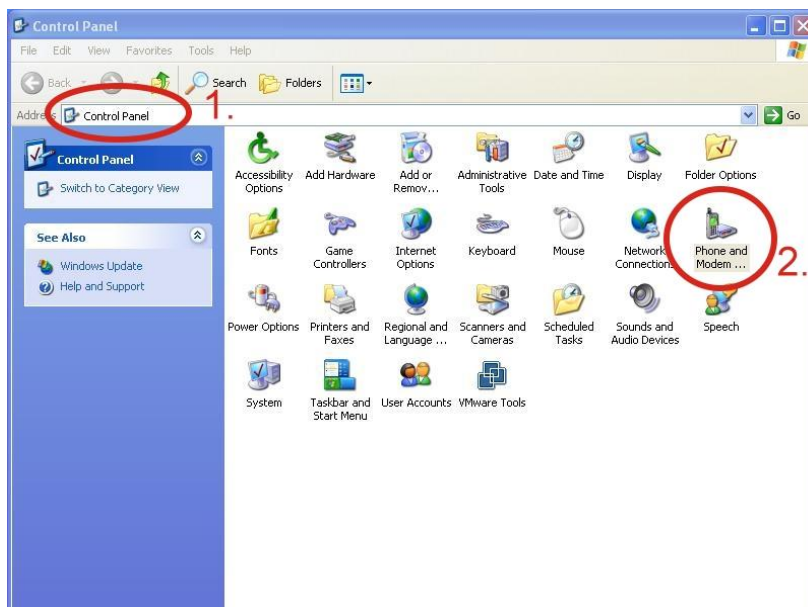
6.1.1 GTM-201-3GWA 硬體需求

- (1) GTM-201-3GWA (請先安裝 USB 驅動)
- (2) XPAC-8000
- (3) USB Cable

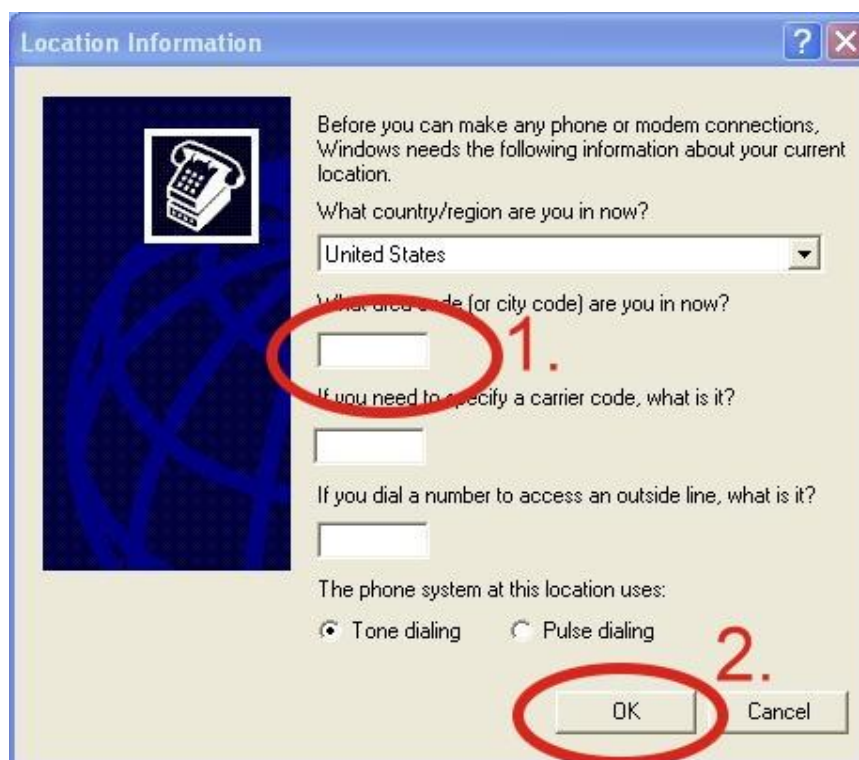


6.1.2 建立新數據機連結

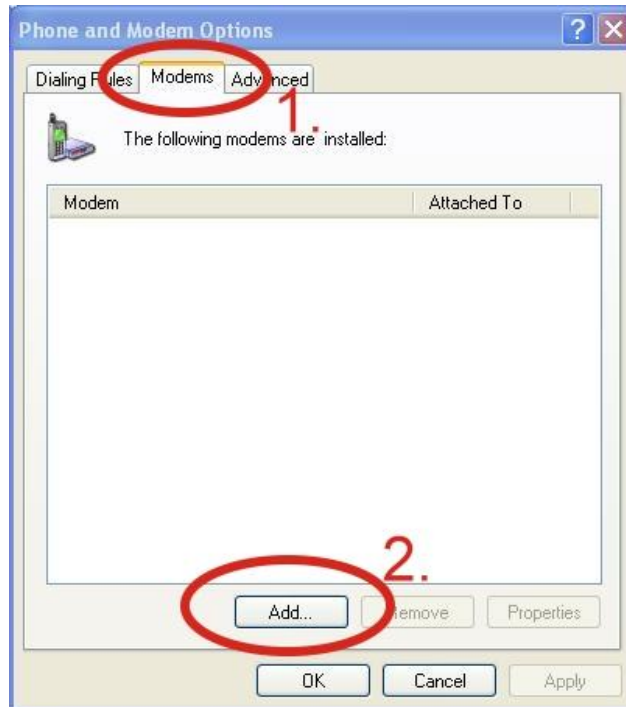
步驟 1. Control Panel → 點兩下 “Phone and Modem Options”



步驟 2. 設定區碼 → 點 “OK”



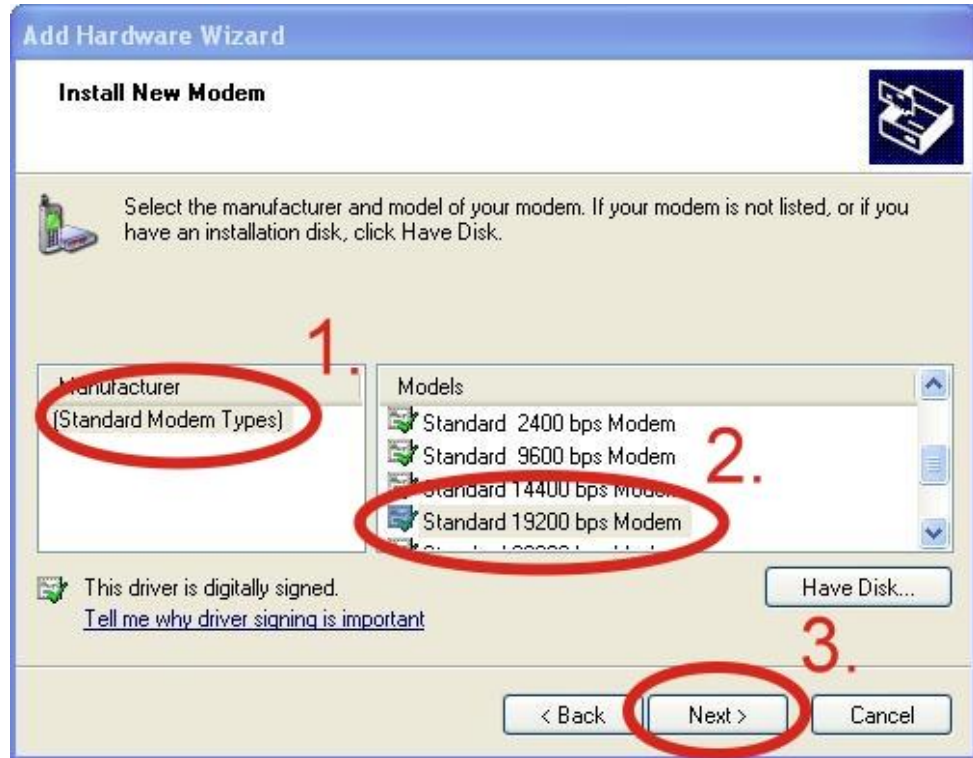
步驟 3. Control Panel → 點兩下 “Phone and Modem Options” → Modem → 點 “Add”



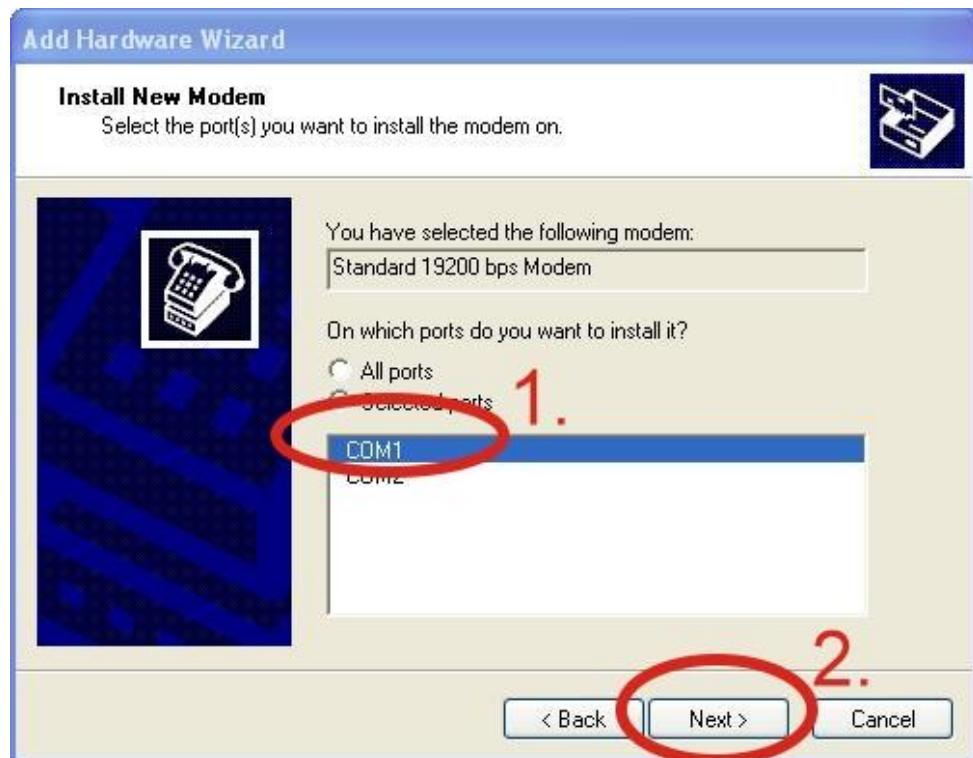
步驟 4. 勾選 “Don't detect my modem; I will select it from a list.” → 點 “Next”



步驟 5. 左邊欄位選取 “Standard Modem Types” → 右邊欄位選取 “Standard 19200 bps Modem” → 點 “Next”



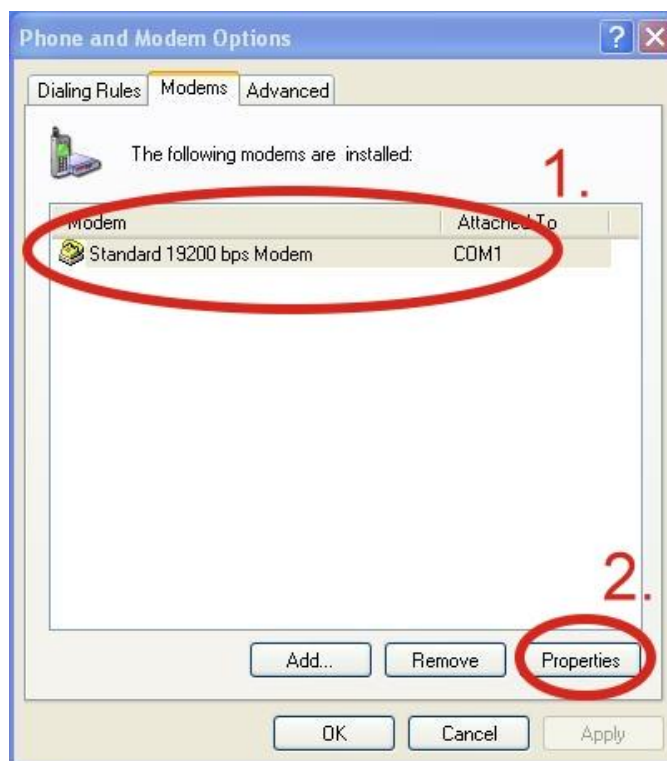
步驟 6. 選取連接數據機的 COM Port → 點 “Next”



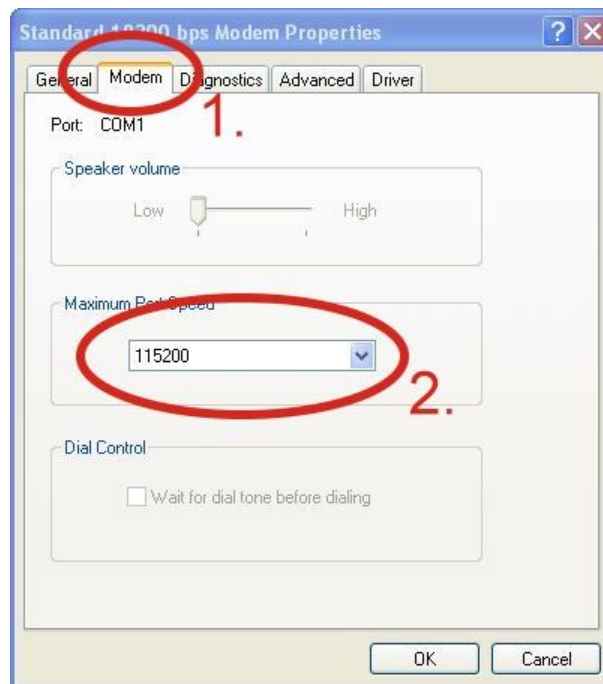
步驟 7. 點 “Finish”完成安裝



步驟 8. Control Panel → 點兩下 “Phone and Modem Options” → Modem → 選取 “Standard 19200 bps Modem” → 點 “Properties”



步驟 9. Control Panel → 點兩下 “Phone and Modem Options” → Modem → 選取 “Standard 19200 bps Modem” → 點 “Properties” → Modem → 於 Maximum Port Speed 欄位選取數值 115200



步驟 10. Advanced → 輸入額外的撥號指令，如下圖：

備註：GPRS 的 APN 由您當地的電信業者提供。

例如：

在台灣即輸入：AT+CGDCONT=1, “IP” ,

“INTERNET”

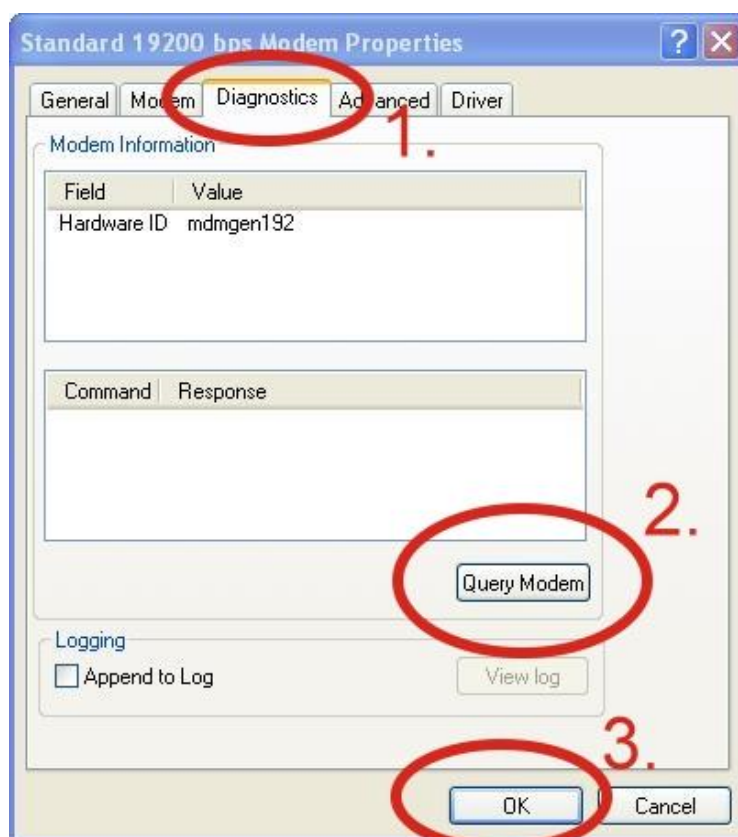
在中國大陸輸入：AT+CGDCONT=1, “IP” ,

“CMNET”

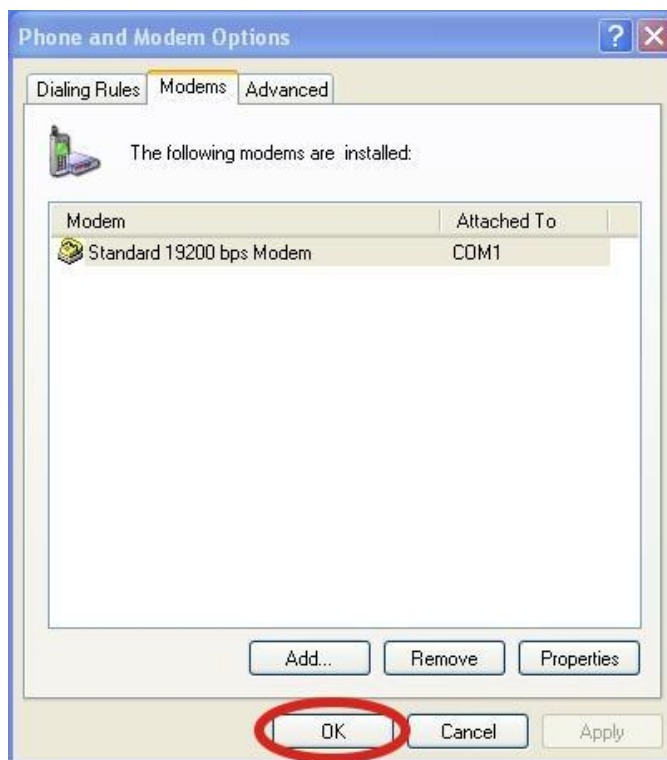


步驟 11. Diagnostics → Query Modem → 點 “OK”

備註：如果出現錯誤訊息請再試一次。

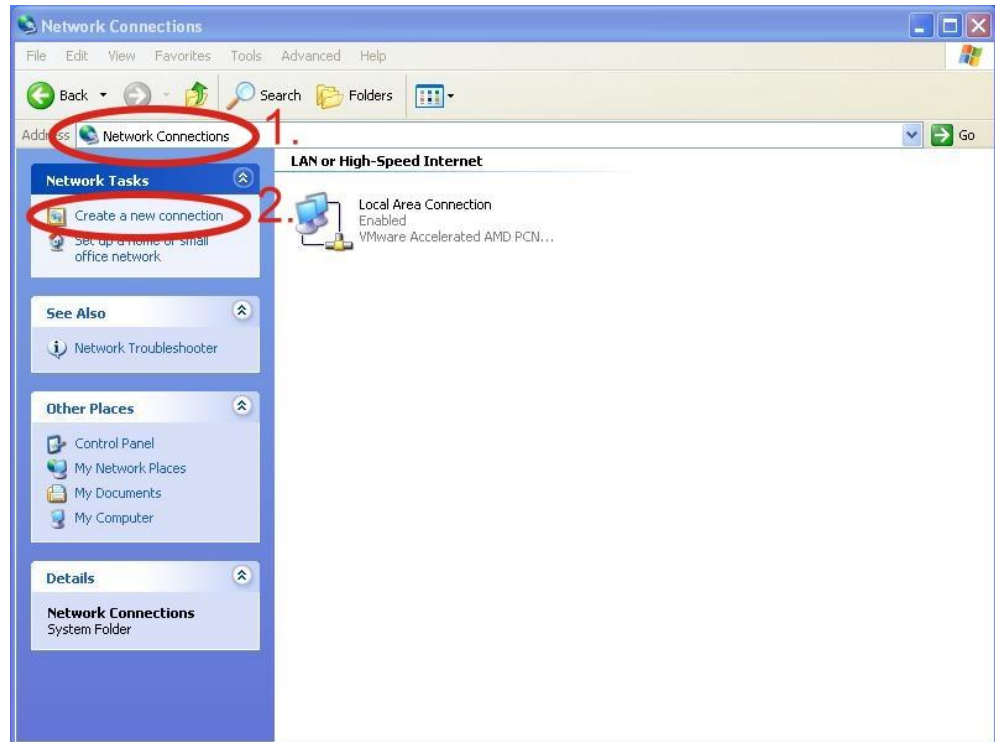


步驟 12. 點 “OK”



6.1.3 建立新網路連結

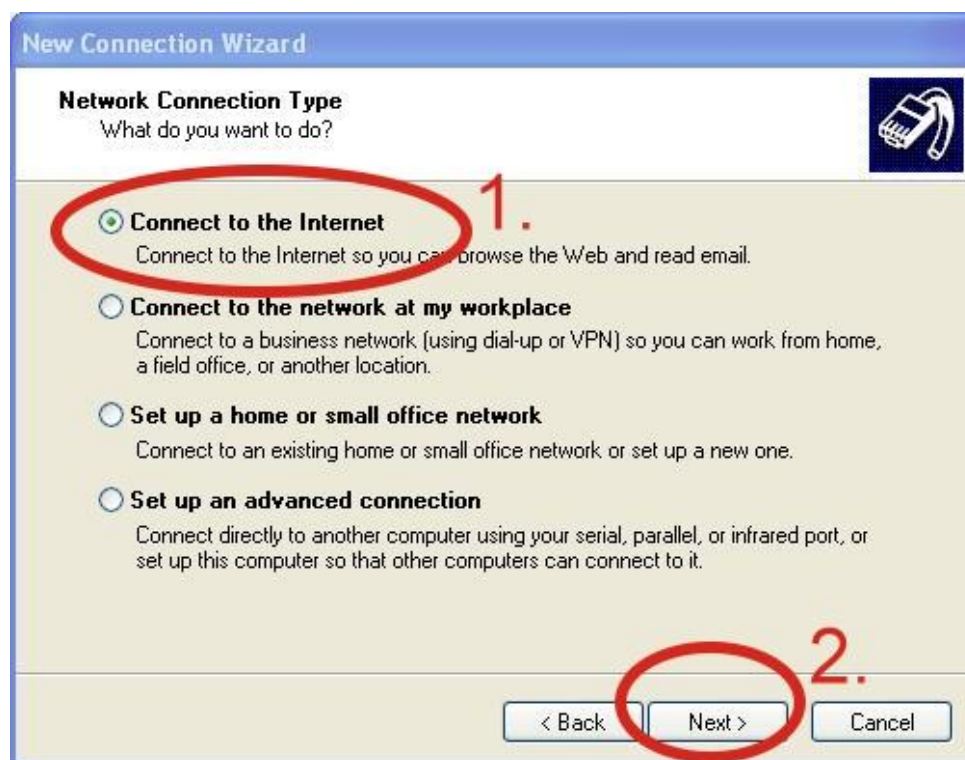
步驟 1. Control Panel → Network Connections → 點“Create a new connection”



步驟 2. 點“Next” 至下一步

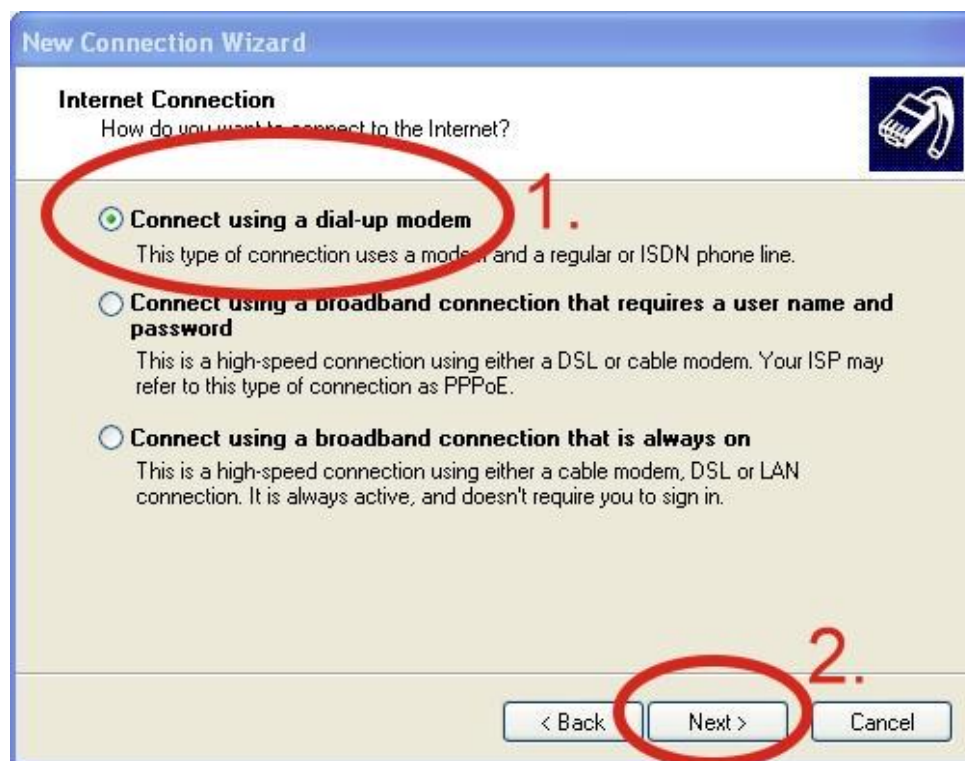


步驟 3. 選取 “Connect to the Internet” → 點 “Next”

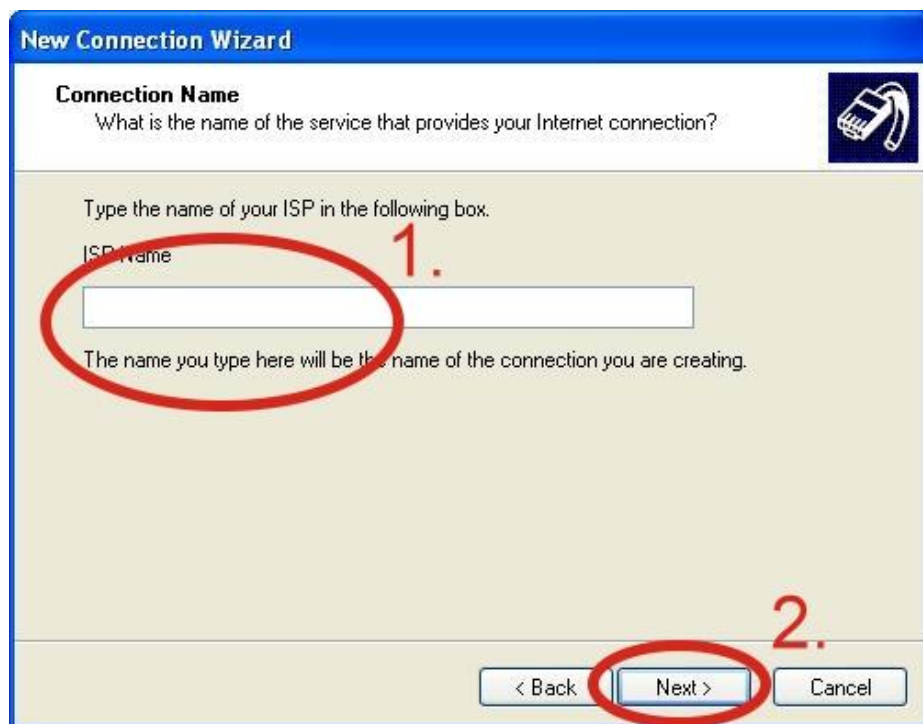


步驟 4. 選取 “Connect using a dial-up modem” → 點

“Next” 至下一步



步驟 5. ISP Name → 填入您的 GPRS 名稱 → 點 “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.

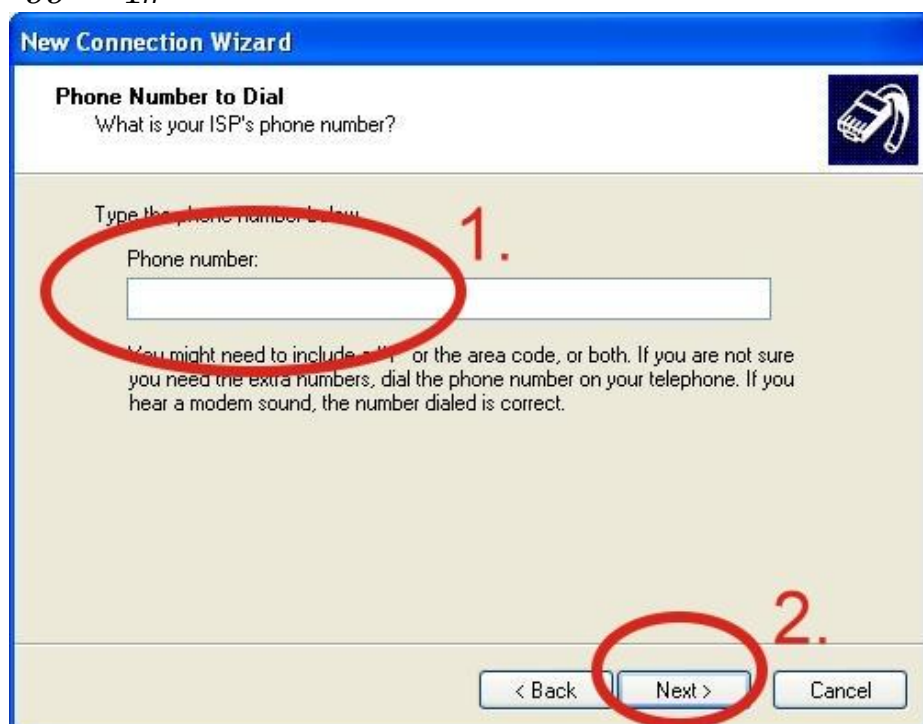
ISP Name

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

< Back **Next >** Cancel

步驟 6. 請輸入您的電話號碼 → 點 “Next” 至下一步

備註：電話號碼由您當地的電信業者提供，例如台灣為 *99***1#



New Connection Wizard

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

Type the phone number below.

Phone number:

You might need to include +#, 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.

< Back **Next >** Cancel

步驟 7. 請輸入您 GPRS 的帳號及密碼→點 “Next”

備註：GPRS 的帳號密碼由您當地的電信業者提供。

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

步驟 8. 點 “Finish”完成新增

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

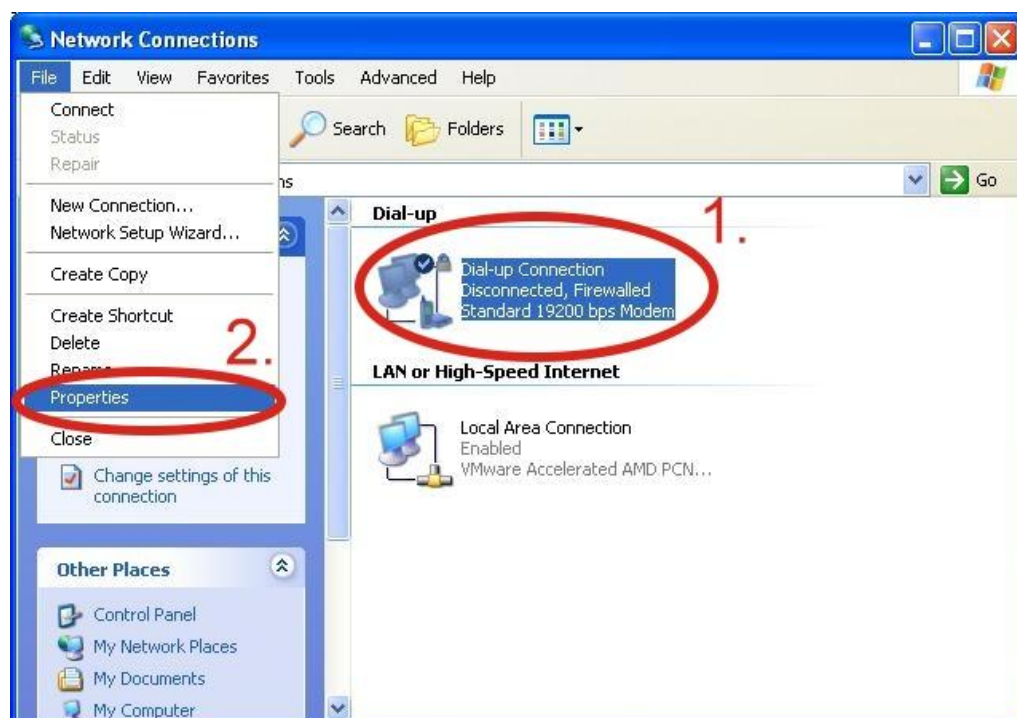
The connection will be saved in the Network Connections folder.

Add a shortcut to this connection to my desktop

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

< Back **Finish** Cancel

步驟 9. Control Panel → Network Connections → 點 “Your GPRS’s name” → File → Properties，如下圖所示：



步驟 10. General → 選 “Standard 19200 bps Modem” → 點 “Configure”



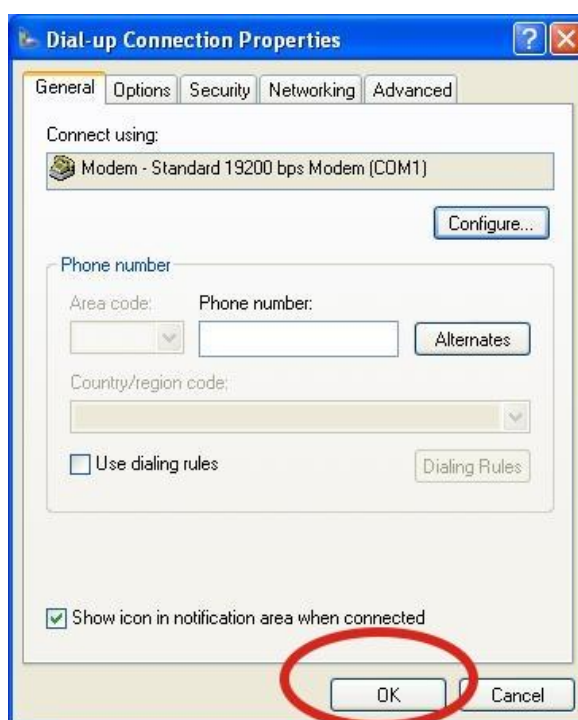
步驟 11. Maximum speed(bps) 選“115200”，取消勾選

“Enable hardware flow control”(備註)→點“OK”

備註：請勿勾選 “Enable hardware flow control”。

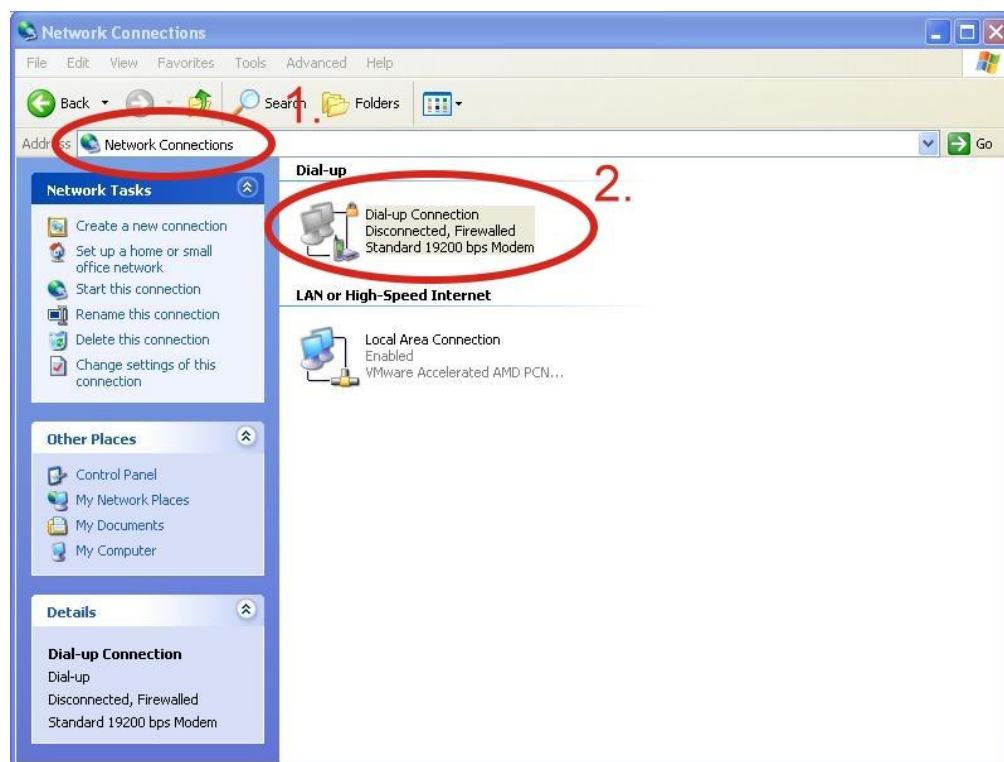


步驟 12. 點“OK”



步驟 13. Control Panel → Network Connections → 點兩下

“Your GPRS’s name”，如下圖所示：



步驟 14. 點 “Dial”

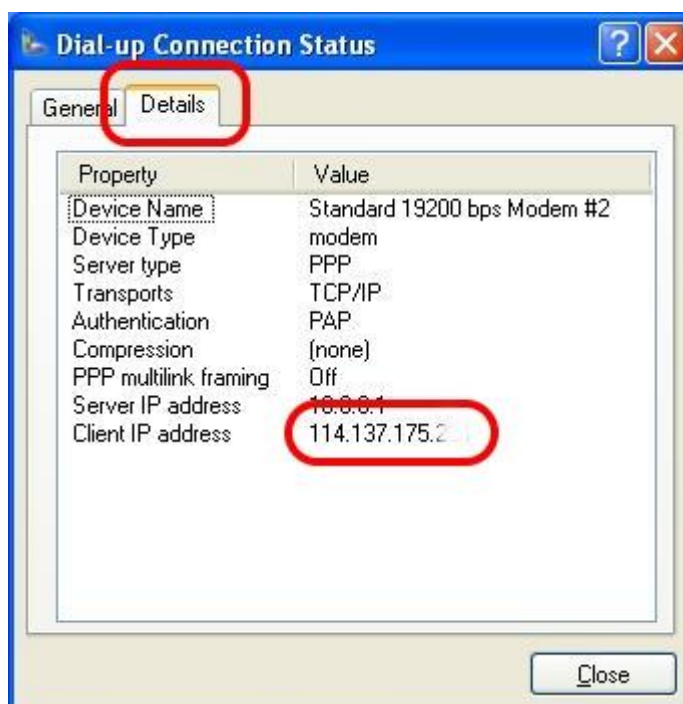


步驟 15. 當您連線成功時, 右下角工具列會顯示新的連線

成功圖示。



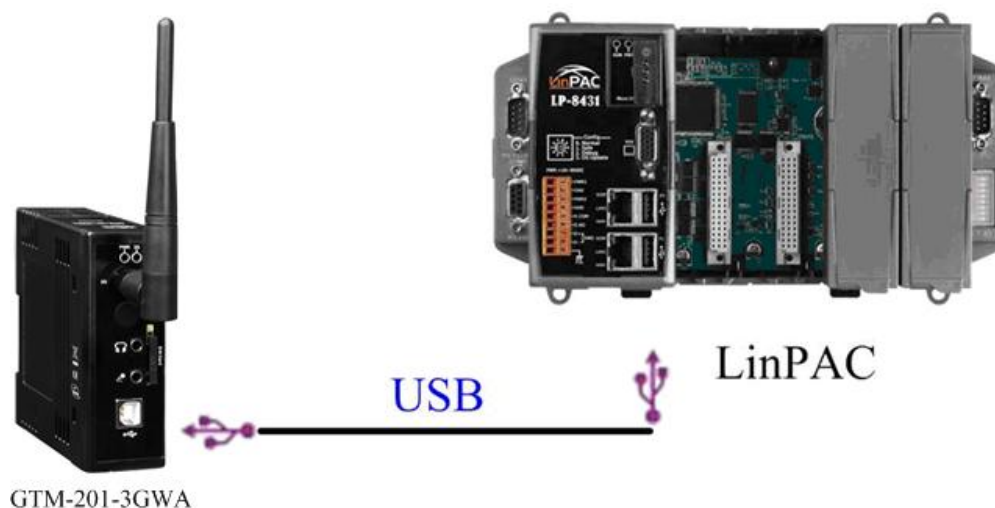
步驟 16. 您可以點兩下這個圖示 → 點“Details” → 取得您的 IP 位址。



6.2 LinPAC – 8000 (Linux)

6.2.1 GTM-201-3GWA 硬體需求

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



6.2.2 撥接方法

步驟 1. 下載最新版 OS

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:

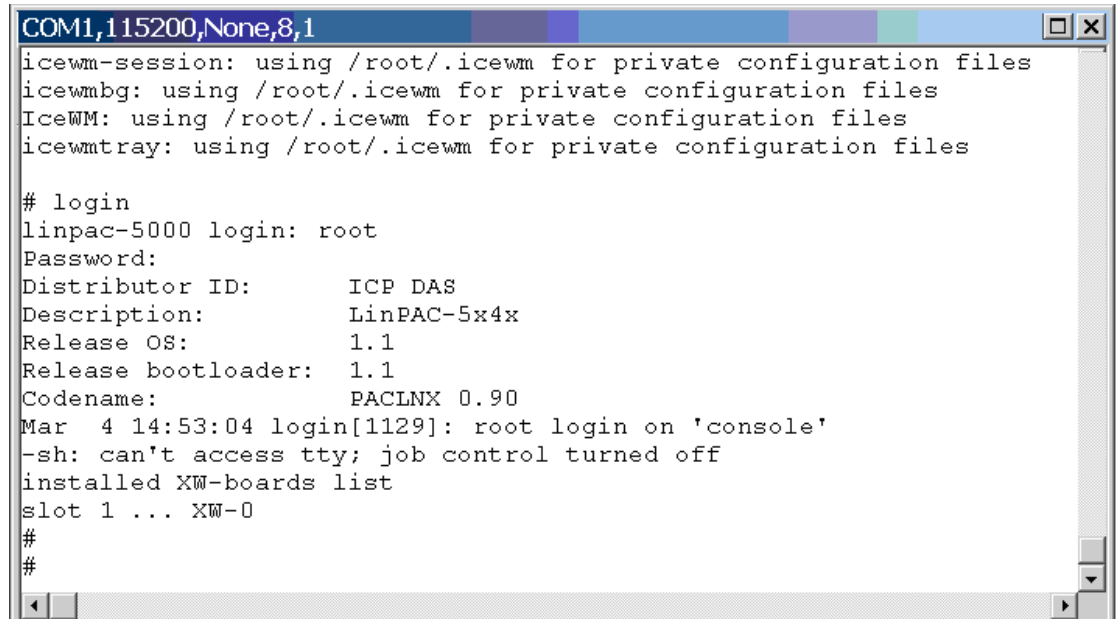
ftp://ftp.icpdas.com/pub/cd/linpac/napdos/pds-8x2/os_image

步驟 2. 連結 LinPAC 的 COM1 port 和 PC 的 COM port

步驟 3. 開啟終端機並將參數設定為 115200/8/n/1

步驟 4. 開啟 LinPAC (請勿連結乙太網路)

步驟 5. 登入帳號密碼並輸入“login” (系統默認之帳號為 root，密碼為 root)。如下圖所示：

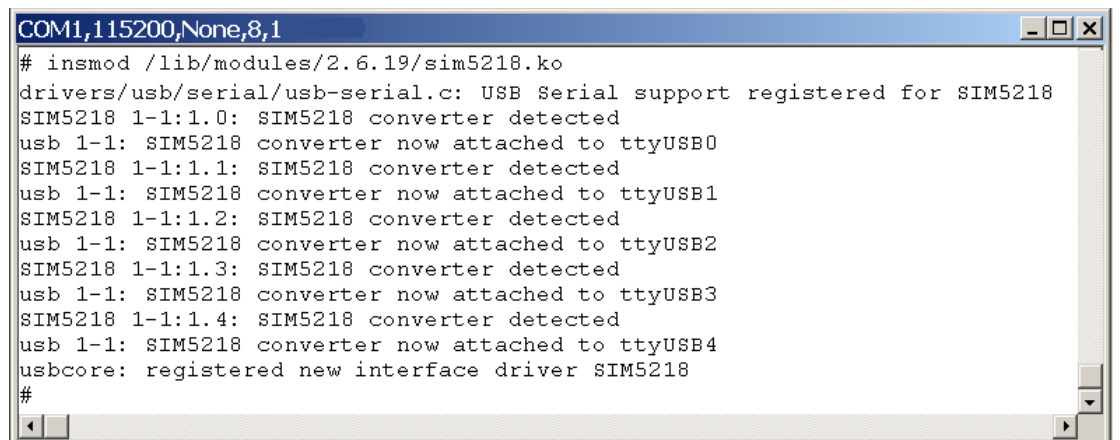
A terminal window titled "COM1,115200,None,8,1" showing the login process. The output includes configuration for icewm-session, icewmdbg, IceWM, and icewmtray. The user enters "login" and "root" as the password. System information is displayed, including Distributor ID (ICP DAS), Description (LinPAC-5x4x), Release OS (1.1), Release bootloader (1.1), Codename (PACLNX 0.90), and a timestamp (Mar 4 14:53:04). The message "-sh: can't access tty; job control turned off" is shown, followed by the installed XW-boards list (slot 1 ... XW-0) and a prompt "#".

```
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
#
#
```

步驟 6. 下指令安裝驅動：

```
insmod /lib/modules/2.6.19/sim5218.ko
```

A terminal window titled "COM1,115200,None,8,1" showing the output of the "insmod /lib/modules/2.6.19/sim5218.ko" command. The output indicates that the USB Serial support is registered for SIM5218 and that five SIM5218 converters are detected and attached to ttyUSB0 through ttyUSB4. The message "usbcore: registered new interface driver SIM5218" is also shown, followed by a prompt "#".

```
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
#
```

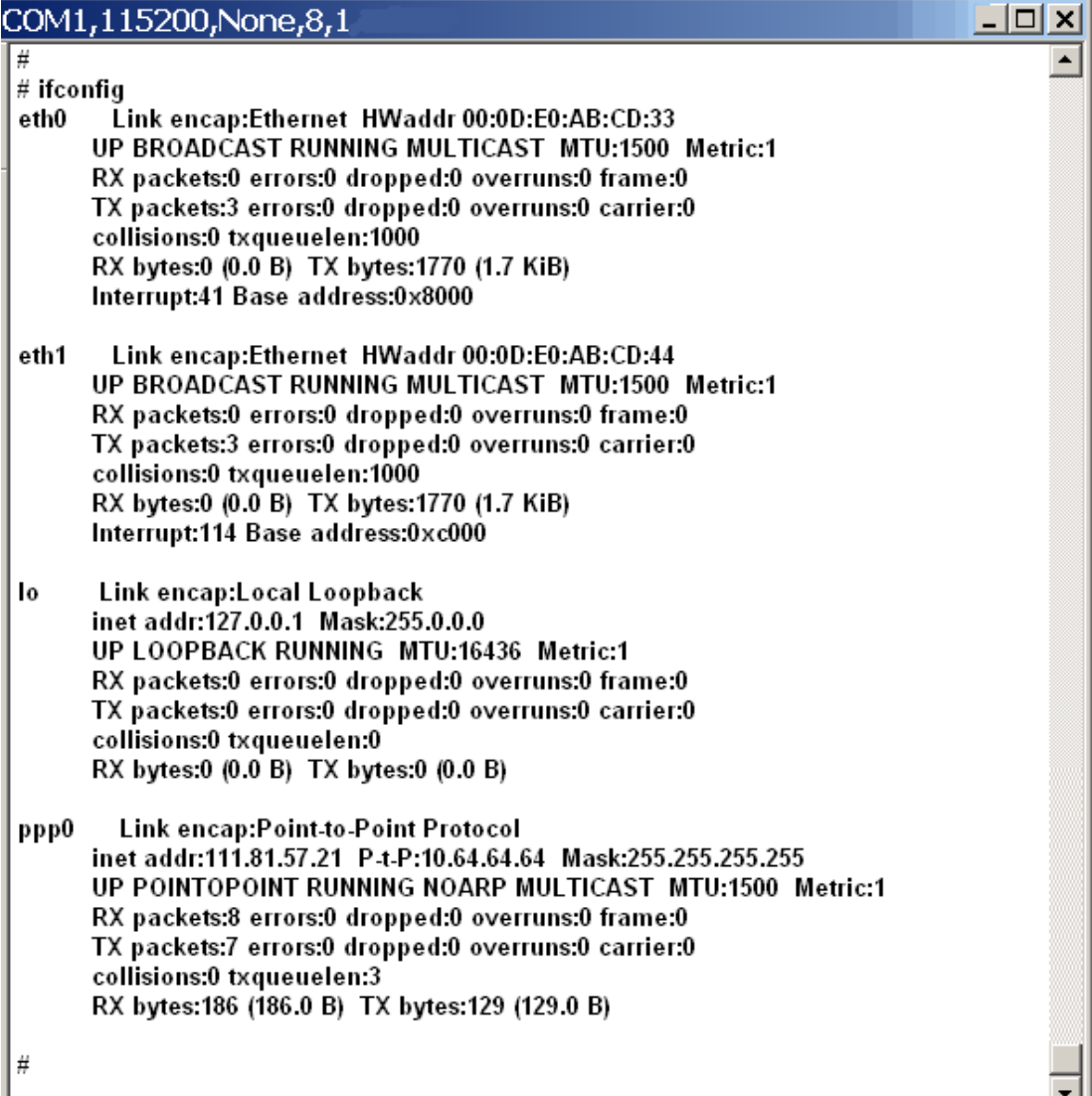
步驟 7. 撥號：pppd call 3g &

```

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: 240T50B14SIM5218A
Revision: 240T50B14SIM5218A^M
SIM5218A_240T50_100422_U1.24
SIM5218A_240T50_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#^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 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 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 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 ConfRej 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
#

```

步驟 8. 確認 ppp 的狀態：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)

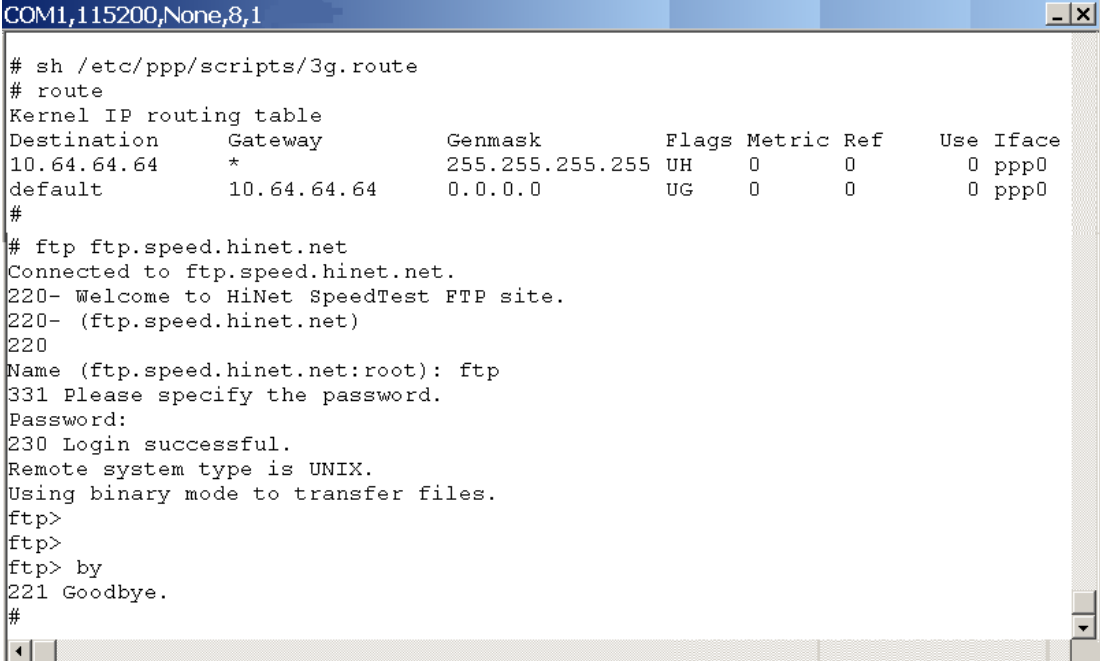
ppp0  Link encap:Point-to-Point Protocol
      inet addr:111.81.57.21 P-t-P:10.64.64.64 Mask:255.255.255.255
      UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1
      RX packets:8 errors:0 dropped:0 overruns:0 frame:0
      TX packets:7 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0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

#
```

步驟 9. 設定路徑：sh /etc/ppp/scripts/3g.route

步驟 10. 確認路徑的設定：route

步驟 11. 測試 3G/GPRS 網路：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.
#
```

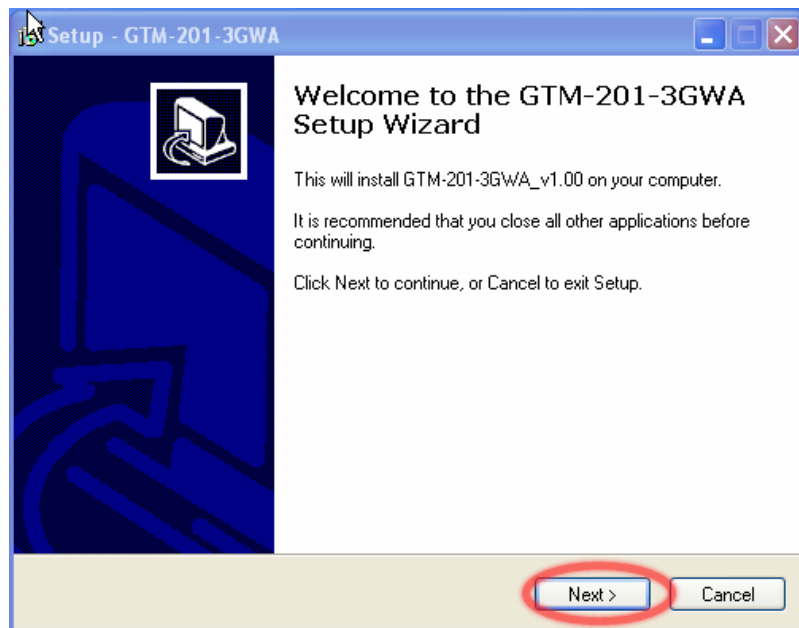
7. USB 驅動安裝

7.1 XPAC – 8000 (Microsoft Windows XP)

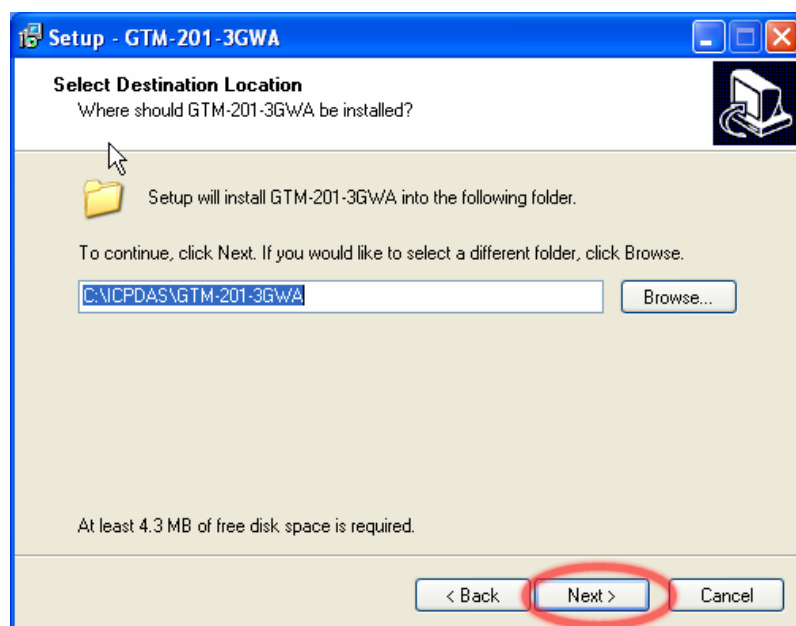
7.1.1 安裝 USB 驅動

步驟 1. 點兩下 “GTM-201-3GWA.exe” 安裝驅動

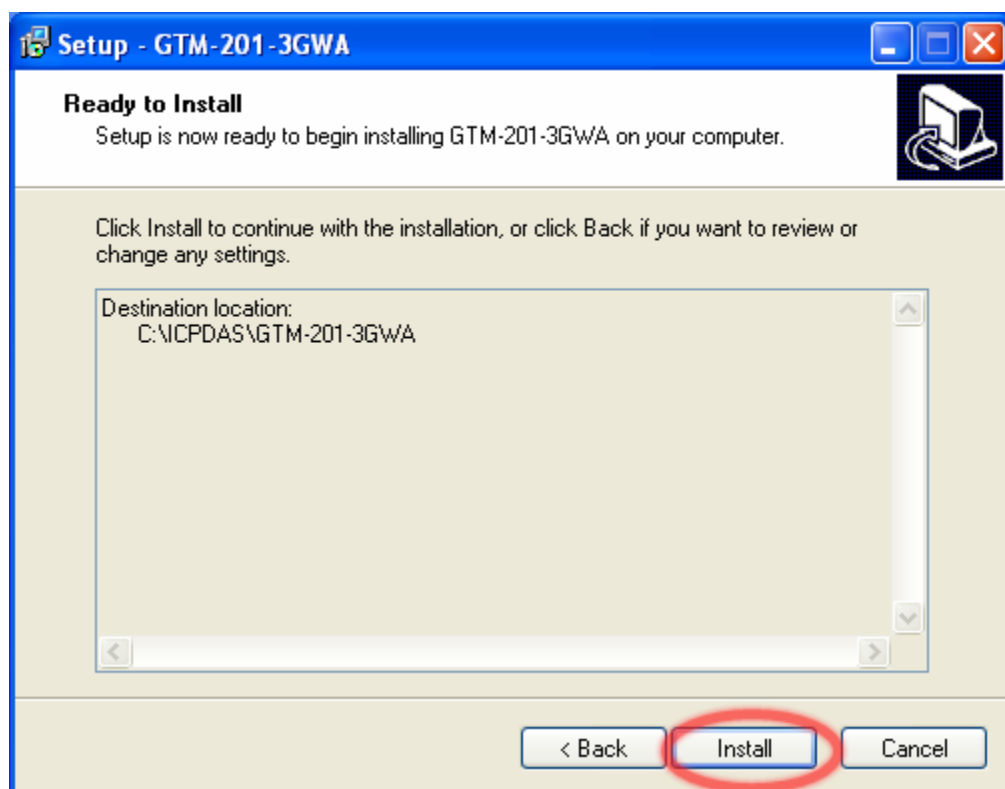
步驟 2. 點 “Next” 至下一步



步驟 3. 點 “Next” 至下一步



步驟 4. 點選“Install”開始進行安裝

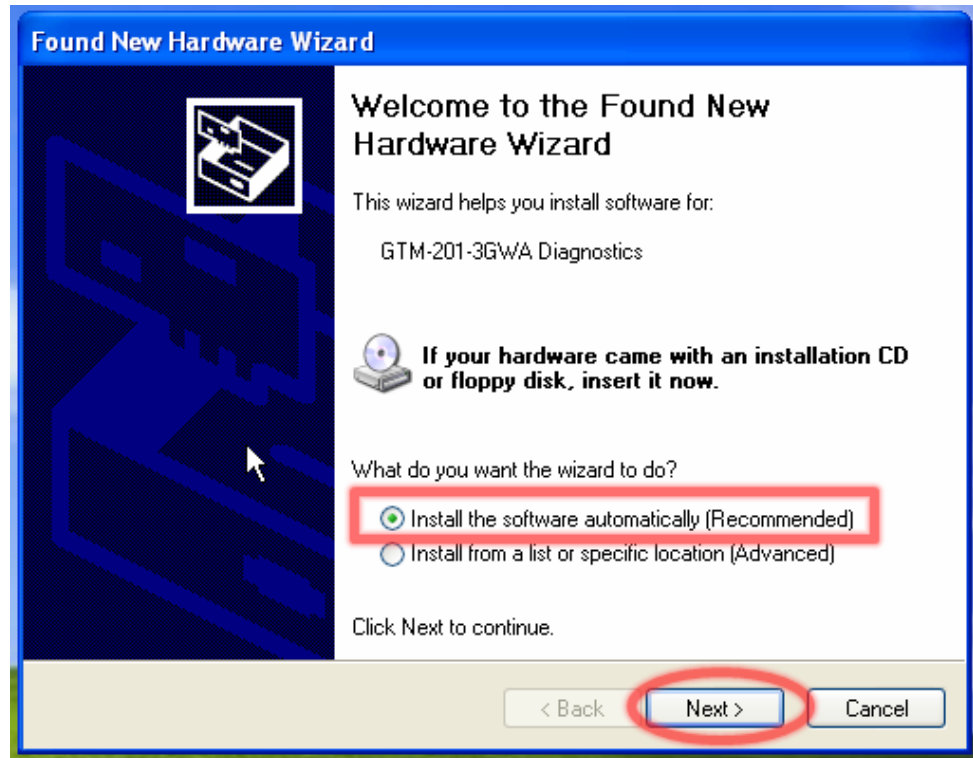


步驟 5. 點 “Finish”完成安裝

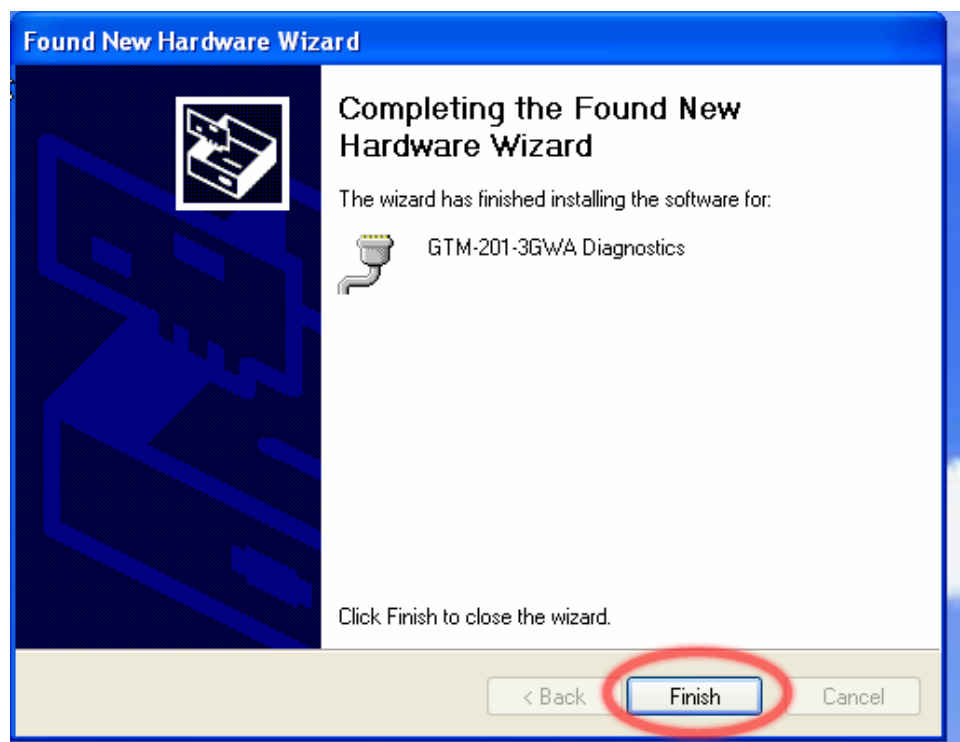


步驟 6. 使 GTM-201-3GWA 的 USB 和 PC 連結

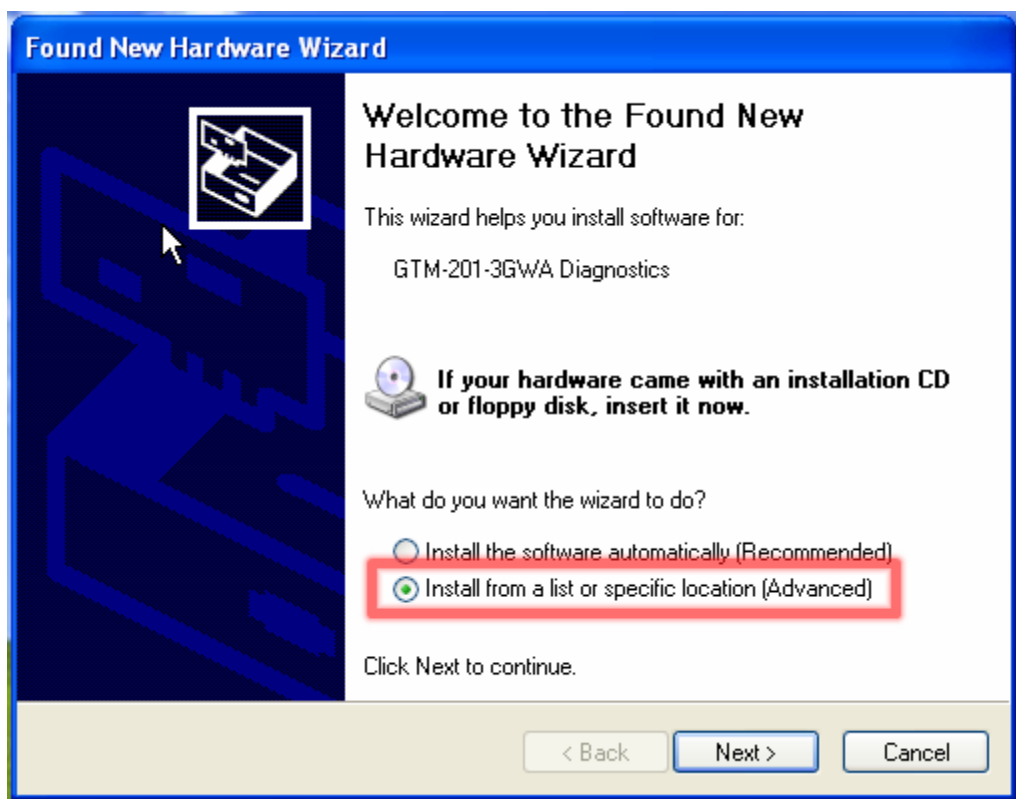
步驟 7. 會彈跳出一個視窗(“Found New Hardware Wizard”)請按“Next”至下一步



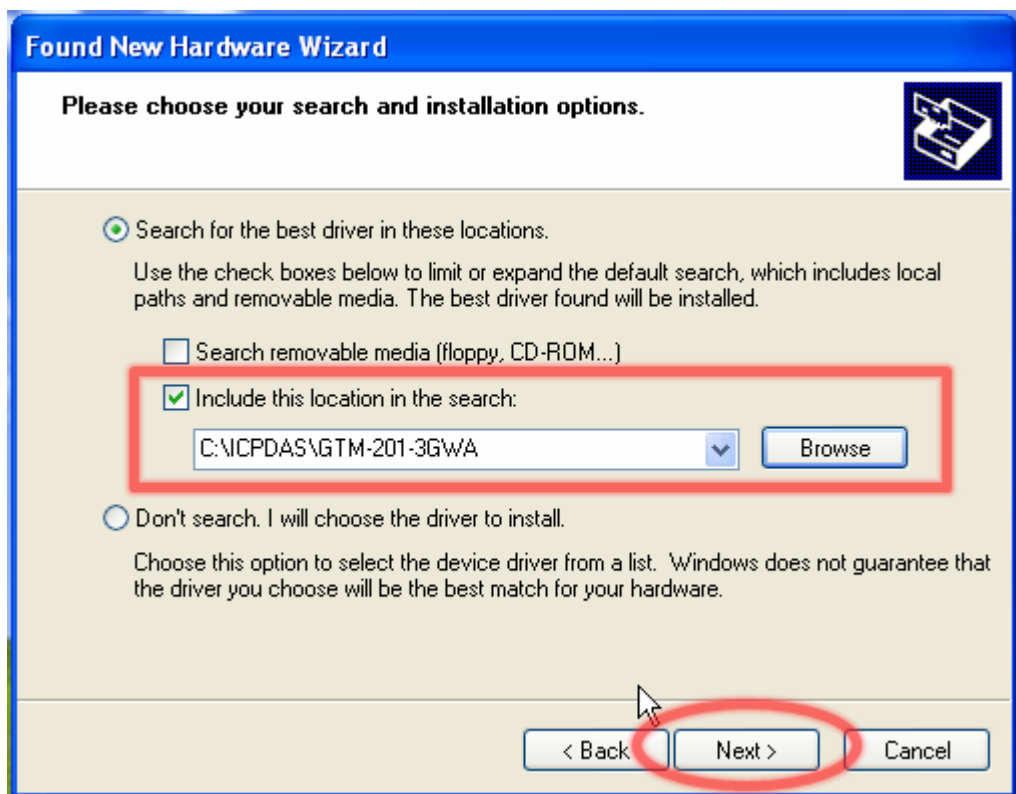
步驟 7-1. 如果您接收到安裝成功的訊息，請點“Finish”結束安裝。



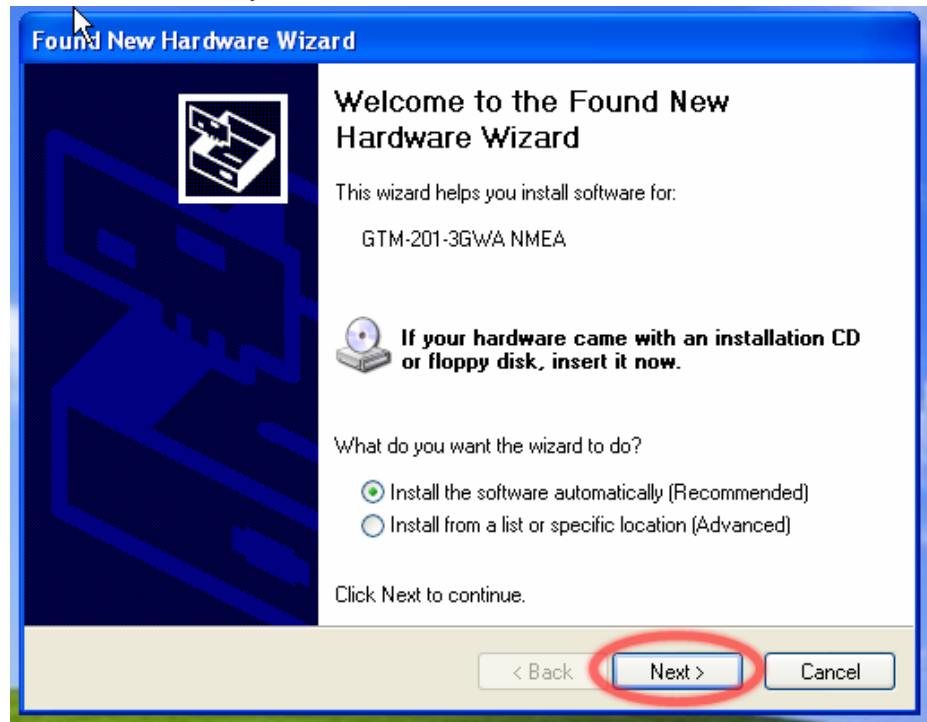
步驟 7-2. 如果您接收到安裝失敗的訊息，請點選
“Install from a list or specific location”



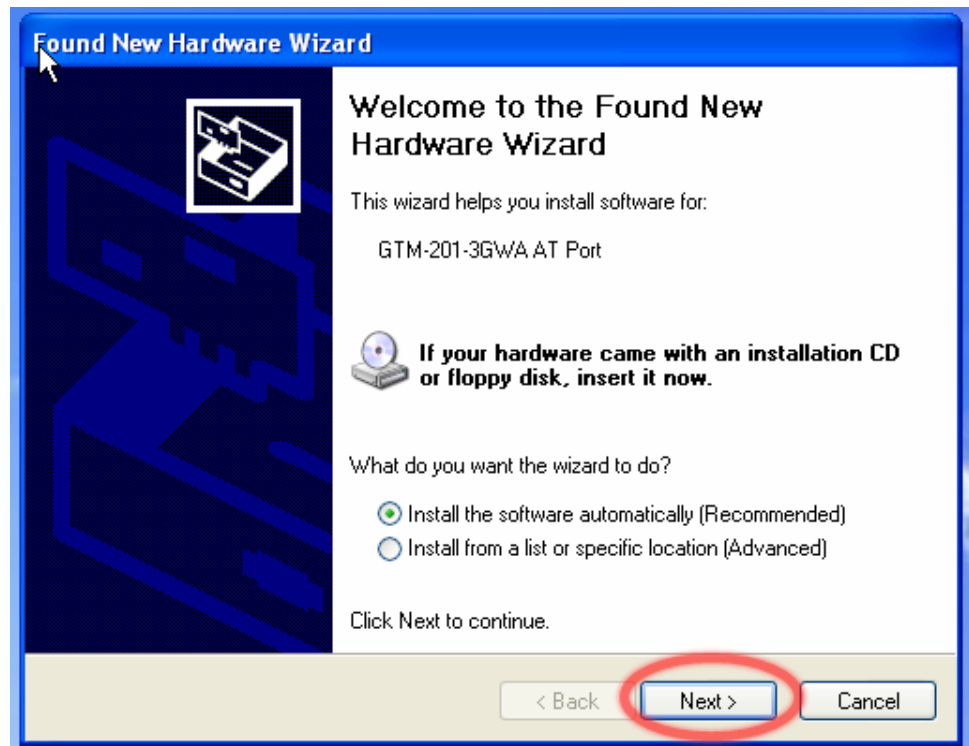
步驟 7-3. 點“Browse”瀏覽與選擇您的安裝資料夾，點
“Next”至下一步。



步驟 8. 彈跳出一個協助 “GTM-201-3GWA NMEA” 安裝的 “Found New Hardware Wizard” 提示視窗，請點選 “Next” 至下一步。



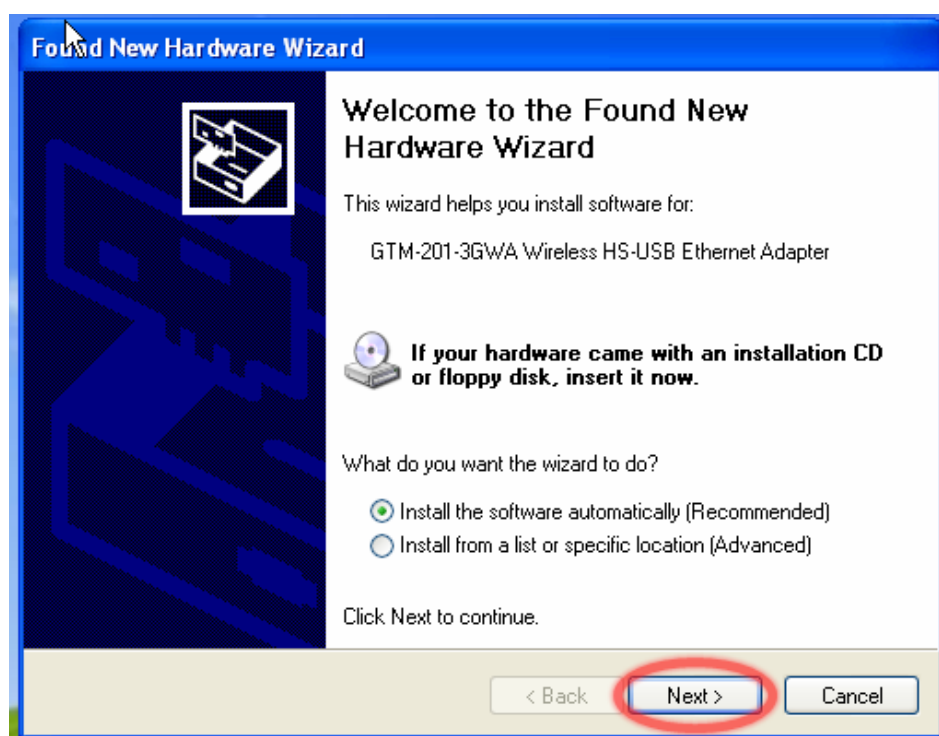
步驟 9. 彈跳出一個協助 “GTM-201-3GWA AT Port” 安裝的 “Found New Hardware Wizard” 提示視窗，請點選 “Next” 至下一步。



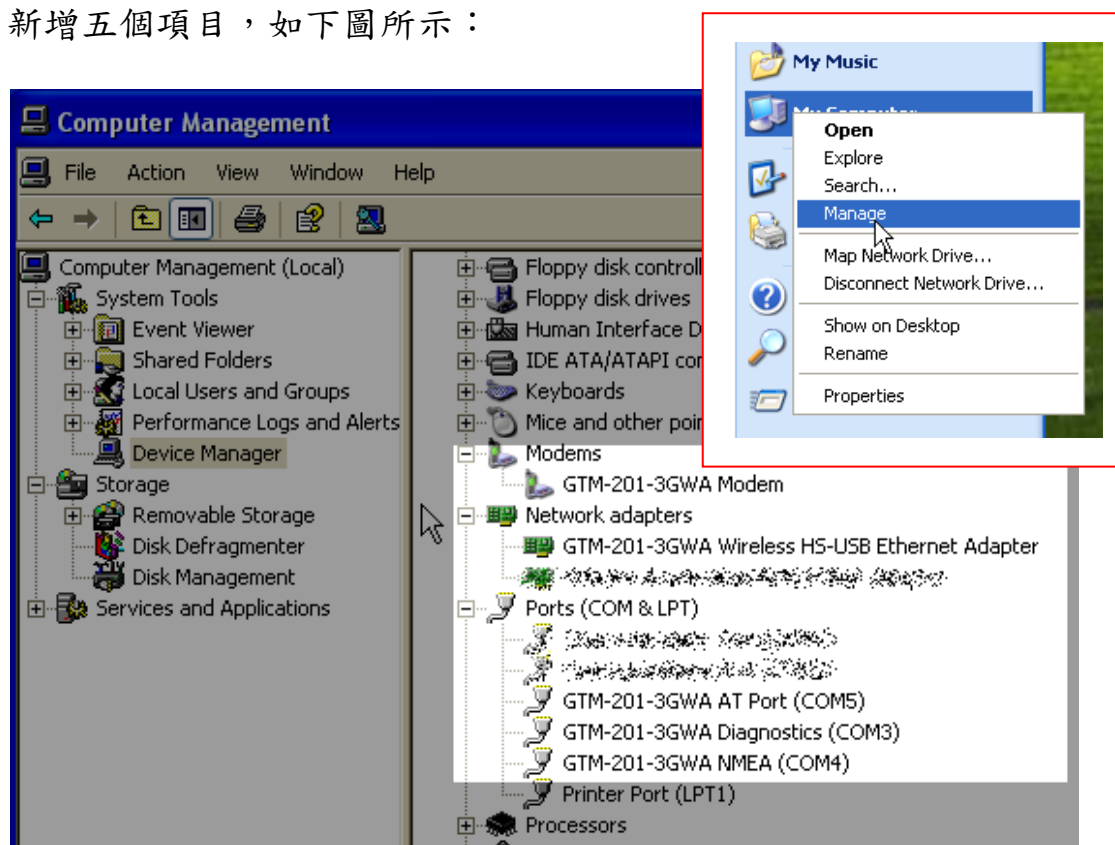
步驟 10. 彈跳出一個協助 “GTM-201-3GWA Modem” 安裝的 “Found New Hardware Wizard” 提示視窗，請點選 “Next” 至下一步。



步驟 11. 彈跳出一個協助 “GTM-201-3GWA Wireless HS-USB Ethernet Adapter” 安裝的 “Found New Hardware Wizard” 提示視窗，請點選 “Next” 至下一步。



步驟 12. 安裝完畢後請開啟 “Device manager”，將可見已新增五個項目，如下圖所示：



7.2 LinPAC – 8000 (Linux)

同第 6.2 章節內容

【版本控管】

版本	作者	日期	說明
1.00	Malo	2011/4/18	Release