56K Fax Modem

Ambient HaM

User's Guide

FCC Requirements

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. IF REQUESTED. THIS INFORMATION MUST BE GIVEN TO THE TELEPHONE COMPANY.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have these entire devices ring when your telephone number is called In most. But not all areas the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line. As determined by the REN. You should contact your local telephone company to determine the maximum REN of the area you are calling from. If your telephone equipment causes harm to the telephone network. The Telephone Company may discontinue your service temporally. If possible, they will notify you in advance. But if the advanced notice is failed, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may change in its facilities, equipment, operations or procedures that could affect the proper functions of your equipment. If this occurs, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the following address and phone number for information on obtaining service or repairs. The Telephone Company may ask you to disconnect this equipment from the network until the problem is solved or until that the equipment is not detected malfunctioning. This equipment may not be used on coin service provided by the Telephone Company. Connection to party lines is subject to state Tariffs.

Federal Communications Commission

Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limitation for a lass B digital device pursuant to Part 15 of the FCC Rules. These restrictions are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determine by tuning the equipment off and on, the user is suggested to try to correct the interference by one or more of the following measures:

    -Reorient or relocate the receiving antenna.
    -Increase the distance between the equipment and receiver.
    -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio TV technician for help.

Notices:
(1) The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
(2) Shielded interface cables and AC power cord if any must be used in order to comply with the emission limits.

Notices to Australian users

The modem card must only be used in a data terminal equipment (DTE) e.g. computer, that has a screw down cover (lid). As unsafe voltages (TNV) exist on the modem card, disconnect the modem card from the telephone line while the cover (lid) of the DTE (computer) is removed.

Installation of the modem card in a DTE (computer) which does not require a tool to open the cover (lid) will render the permit void.

Disconnect the telephone line before opening the cover (lid) of the DTE (computer). Do not connect the

customer equipment to the telephone line while the cover (lid) of the DTE (computer) is open.

```
WARNING
ONLY CONNECT EQUIPMENT WITH A TELECOMMUNICATIONS
COMPLIANCE LABEL
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WARNING
FOR SAFETY REASONS, ONLY CONNECT EQUIPMENT WITH A
TELECOMMUNICATIOS COMPLIANCE LABEL.  THIS INCLUDES
CUSTOMER EQUIPMENT PREVIOUSLY LABELLED
PERMITTED OR CERTIFIED.
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Modems connected to the Australian telecommunications network must be marked in accordance with the Labeling Notice. This modem has been specifically configured to ensure compliance with the ACA Standards. Do not adjust your modem or software outside the values indicated as below. To do so would result in your modem being operated in a non-compliant manner.

Call Attempts/Retries

Applications software shall be configured so that no more than 3 attempts are made to   establish a connection to a given number (Note: if the modem can detect service tones, up to   10 attempts can be made). If the call sequence is unsuccessful, there shall be a delay of at least 30 minutes before attempting to call the number again.

Failure to set the modem and any application software used with the modem, to the values shown as above will result in the modem being operated in a non-compliant manner.   Consequently, this would be in violation of the Labeling Notice for this equipment, and the   Telecommunications ACT 1997 prescribes penalties for the connection of non-compliant   equipment.

CONTENTS

Chapter 1 Introduction

1.1 Introduction

Congratulations on the purchase of your new 56K modem! This handbook will help you through the installation procedure. You also can use the commands in this book to customize the performance of your modem, although this is not required for normal operation.

This modem uses the ITU-T V.90 standard. This feature gives your modem the ability to receive data from Internet Service Providers (ISPs) at speeds up to 53.333 kbps. The modem can send data at speeds up to 33.6 kbps and fax messages at up to 14.4 kbps.

1.2 Packing

The package include the following accessories:

- Internal modem card
- User's manual
- Application Software & Driver (CD-ROM)
- Phone Cord

1.3 Features

- WinModem (controlless)
- ITU 56K V.90 Standard
- PCI V2.1 compliant
- Windows 95/98/NT4.0/2000 compatible
- Software upgradeable

Chapter 2 Specifications

Specifications:

Line Connection	PSTN, 2 wires (RJ-11)
Data Transmission	BELL 103 (300 bps), 212A(1200 bps) ITU-T V.21 (300 bps), V.22 (1200 bps), V.23 (1200/600 bps), V.22 bis (2400 bps), V.32 (9600/4800 bps), V.32 bis (14400/1200/9600 bps), V.34 bis (33600/28800/14400 bps), V.90 (56000 bps)
Fax Transmission	Group 3 (TIA/EIA-578 Class 1 and Class 2) V.21ch2 (300 bps) ITU-T V.27ter (4800 bps), V.29 (9600 bps), V.17 (14400 bps)
Error Correction	MNP 2-4/V.42 LAPM
Data Compression	MNP 5/V.42 bis
Command Set	AT Command, Class 1 Fax Command
Communication Model	Asynchronous
DTE Speed (MAX)	115,200 bps
Transmit Level	Depend on country
Flow Control	XON/XOFF, Default (RTS/CTS)
Dialing Mode	Touch Tone /pulse
Auto Dial & Auto Answer	YES
OS	Support Windows 95/98/NT4.0/2000
System Requirement	Pentium 133 + 32M DRAM
Escape code	TIES
Upgrade	Software (modem driver)
Voice	TAM (Telephone Answer Machine)
H.324	V.80 (H.324 software stack compatible)
PTT	FCC Part68 Class B; CTR21
Safety	FCC Part15 Class B; CE
Noted Features	NVRAM Directory and Stored Profile Speed Buffering Caller_ID for FCC (FSK)
Dimension	55*120mm
PCI Specification	PCI 2.1 compliant

Chapter 3 Hardware Installation

1. Remove the computer's case.

2. Insert the modem card into a spare PCI expansion slot.

3. Close the case.

4. Unplug the telephone from the wall socket, then plug the telephone into the socket on the back of the modem marked PHONE.

5. Plug the phone cord supplied into the socket on the back of the modem marked LINE.

6. Plug the other end of the cord into the wall socket.

7. Proceed to Software installation.
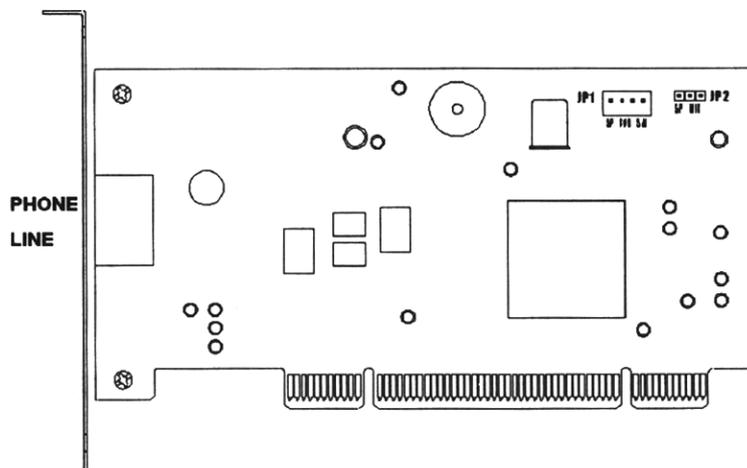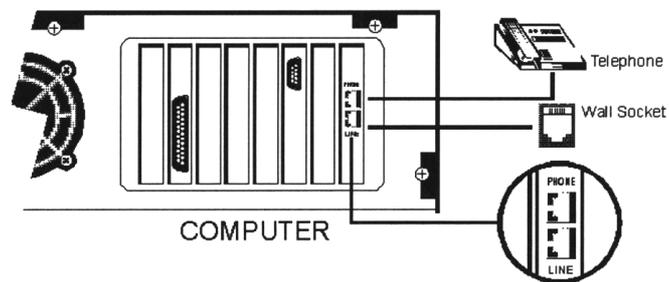
Chapter 4 Software Installation

Power on your computer and modem and then start Windows 95/98/NT4.0/2000.

Windows 95/98/2000 will detect the modem automatically.

4.1 Windows 95 B (OSR2)

1. When you see the message of **PCI Communication Device** shown on the screen. However, it may

    vary with the type of the Mother board. Please insert the driver CD supplied and click **Next**.

2. Click **Other Locations…** to search for the correct driver and location.

3.   Select the location of **H:\Ambient\Win9X** (H is the letter of your CD-ROM drive) and click **OK**.
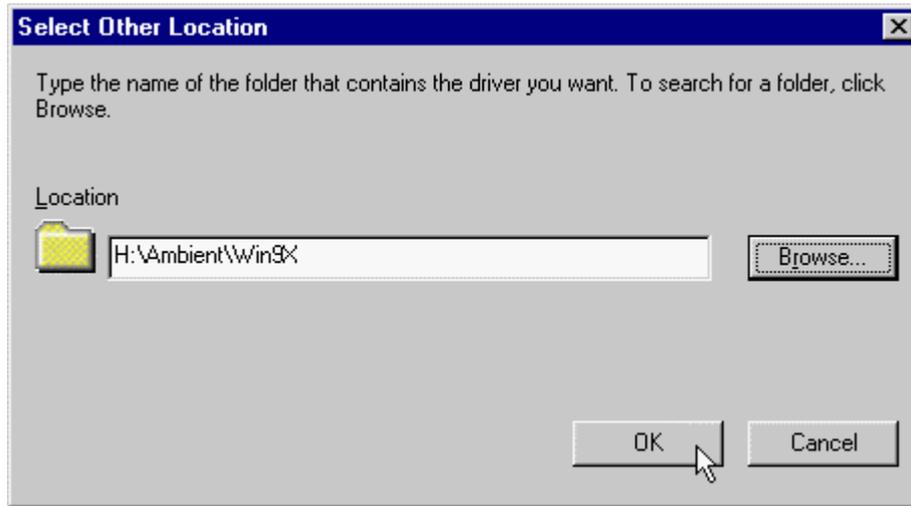
4.   Windows 95 will find the driver shown as below, then click **Finish**.

5.   Click **OK**.

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6.   Type **H:\Ambient\Win9X** or use the **Browse** to find the location of the modem driver, then clicks **OK**.

4.2 Windows 98

1.   When you see the message of **PCI Communication Device** shown on the screen. However, it may

vary with the type of the Mother board. Please insert the driver CD supplied and click **Next**.

2.   Select **Search for the best driver for your device [Recommended]** and click **Next**.

3. Select **Specify a location** and type **G:\Ambient\Win9X** (G is the letter of CD-ROM drive) and click **Next** to continue.

4. Windows will find the driver for **Ambient HaM Data Fax Voice** and click **Next**.

5.   Click **OK** to continue.
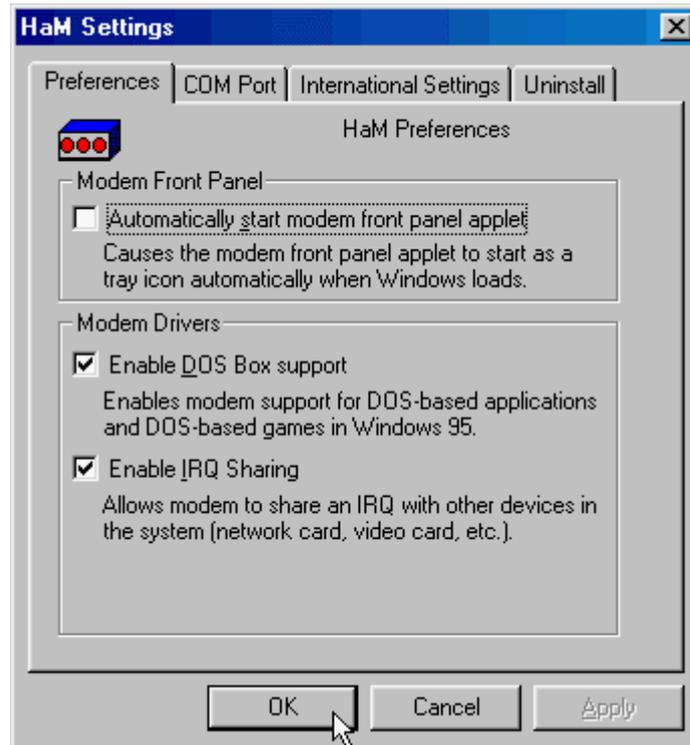
6.   Click **Finish** to end this installation procedure.

4.3 Windows NT 4.0

1. Please insert the driver CD supplied. Then click **Start \ Run** on the desktop and use **Browse** to open the file of **E:\Ambient\WinNT\Installer.exe** (E is the letter of CD-ROM drive) then click **OK**.

2. Click **Yes**.
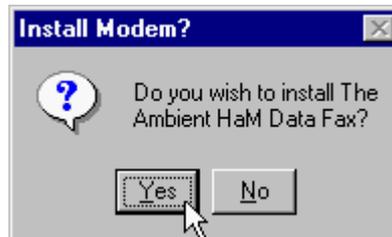
3. Click **OK**.

4. If you want to use **Dial-Up Networking**, please do as following. Click **Start \ Settings \ Control Panel** on the desktop and double-click on the **Network** icon.

5. Click on the **Services** tab and select **Remote Access Service**, then click **Properties**. If you can't see the
    Remote Access Service click **Add** to install.
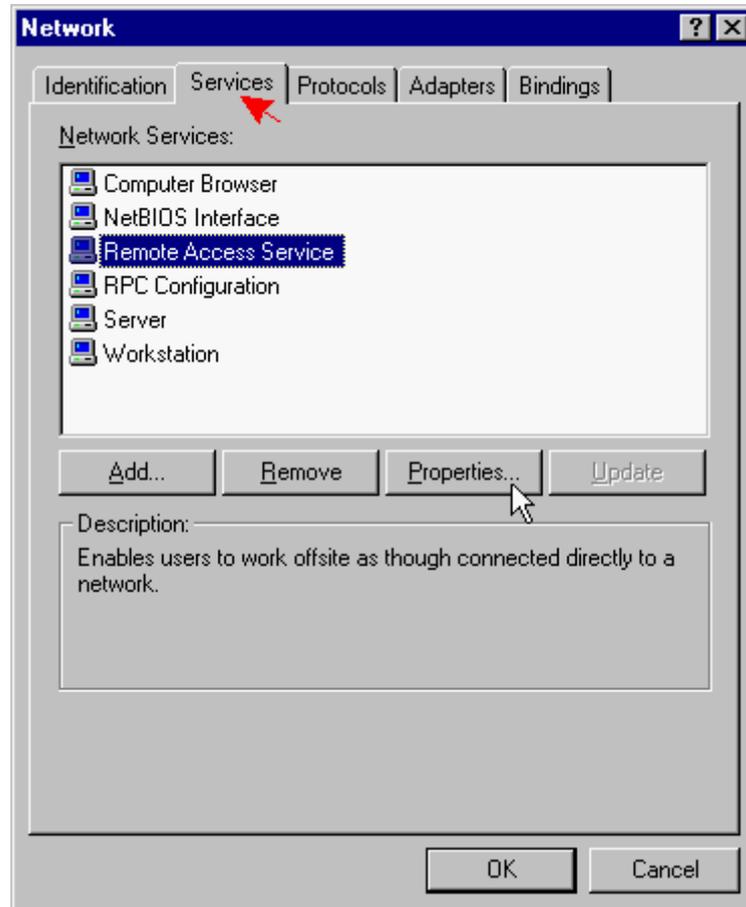
6. Click on the **Add** button to add the Ambient modem. If there is any modem in the list, please click
    Remove first.

7. Select **Ambient HaM Data Fax** then click **OK**.
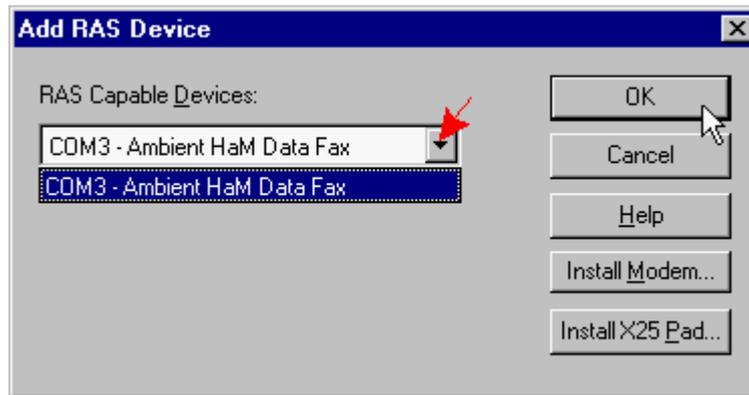
8. Check **Configure** to configure port usage.
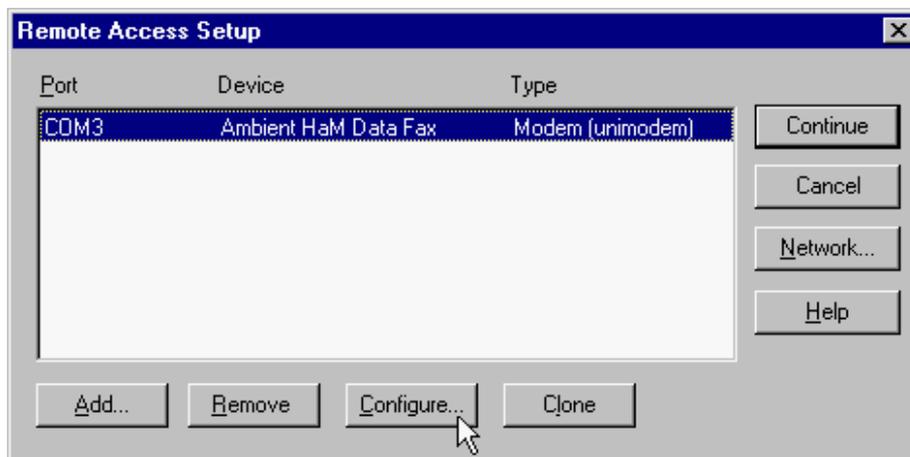
9. Select **Dial out only** for **Port Usage** and click **OK** to confirm the settings.
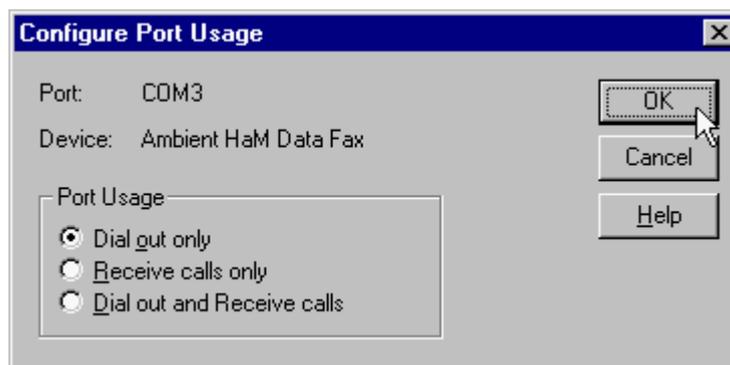
10. Click **Network** to configure the network.
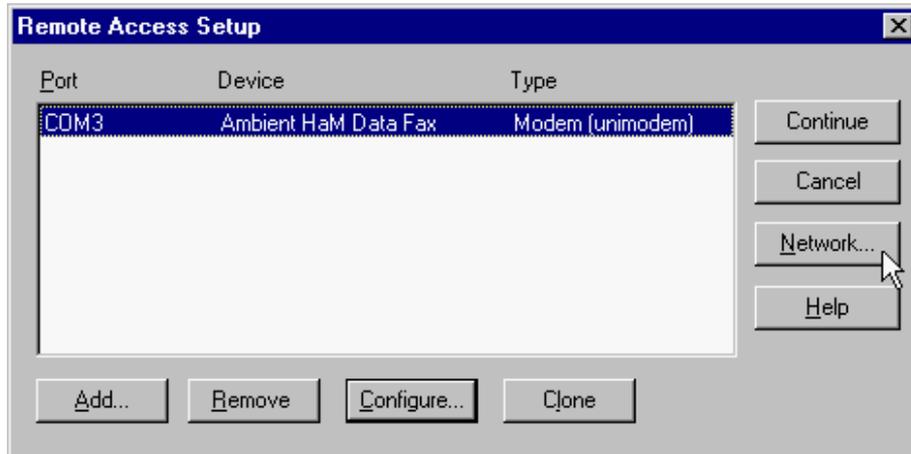
11. Select **TCP/IP** for **Dial out Protocols** and click **OK** to confirm the settings.
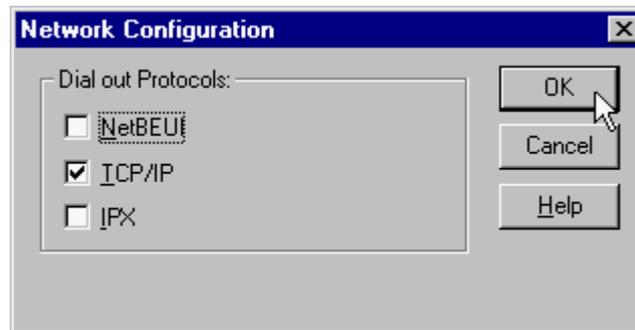
12. Click **Continue** to complete the setup.
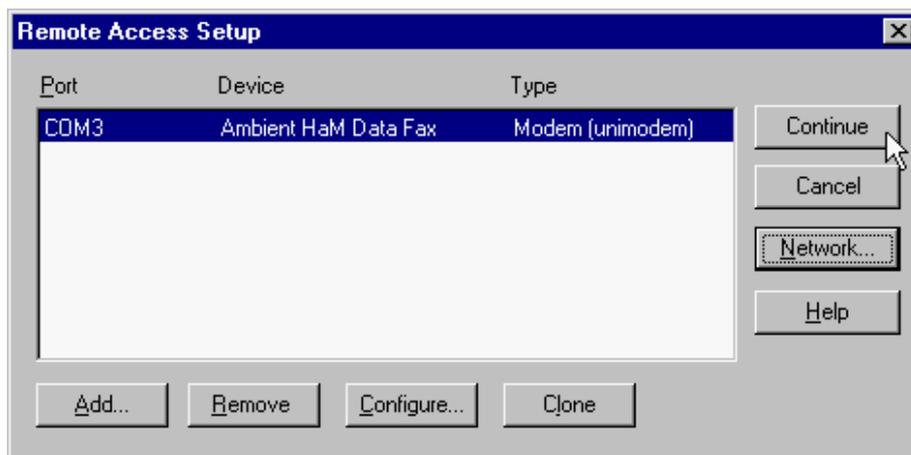
13. Click **Close** to continue.
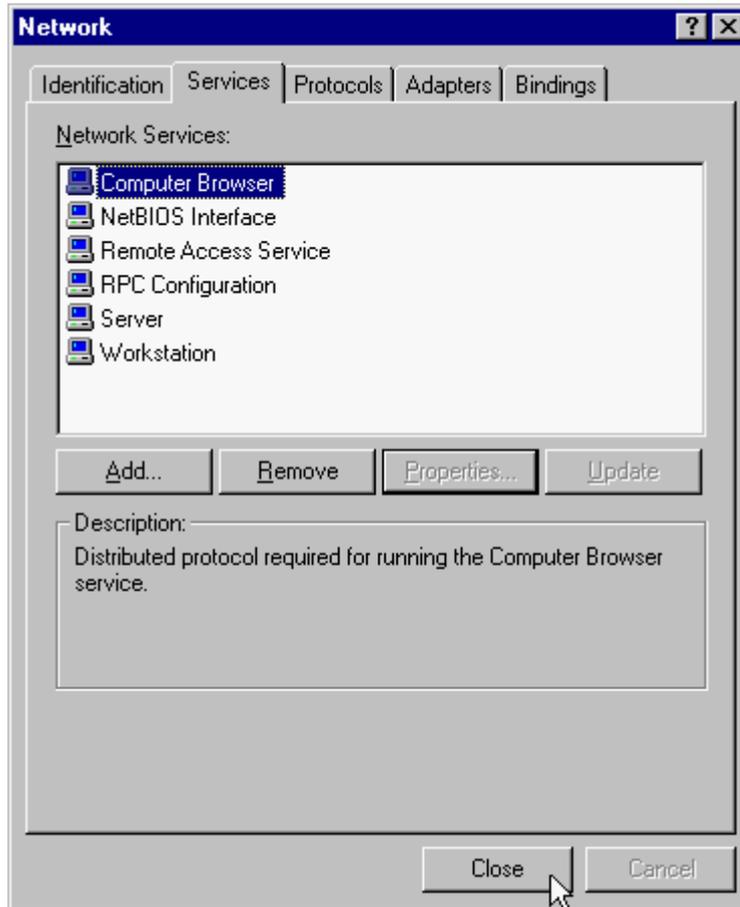
14. Click **Yes** to restart your computer.

15. After restarting your computer, please double-click on the **My computer** icon on the desktop and double-click on the **Dial-Up Networking** icon.
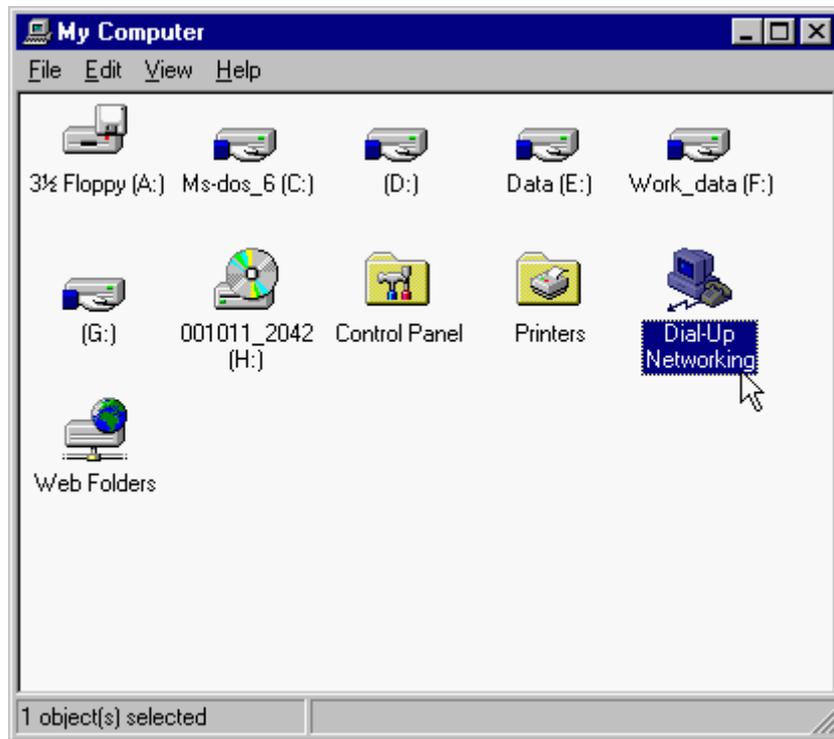
16. If your phonebook is empty, please click **OK** to add an entry.
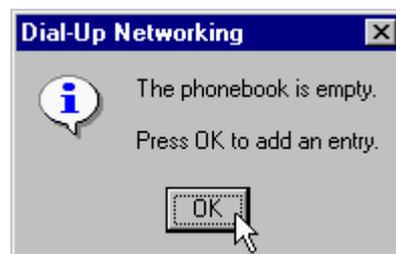
17. You may use the name provided or enter a different one, then click **Next**.

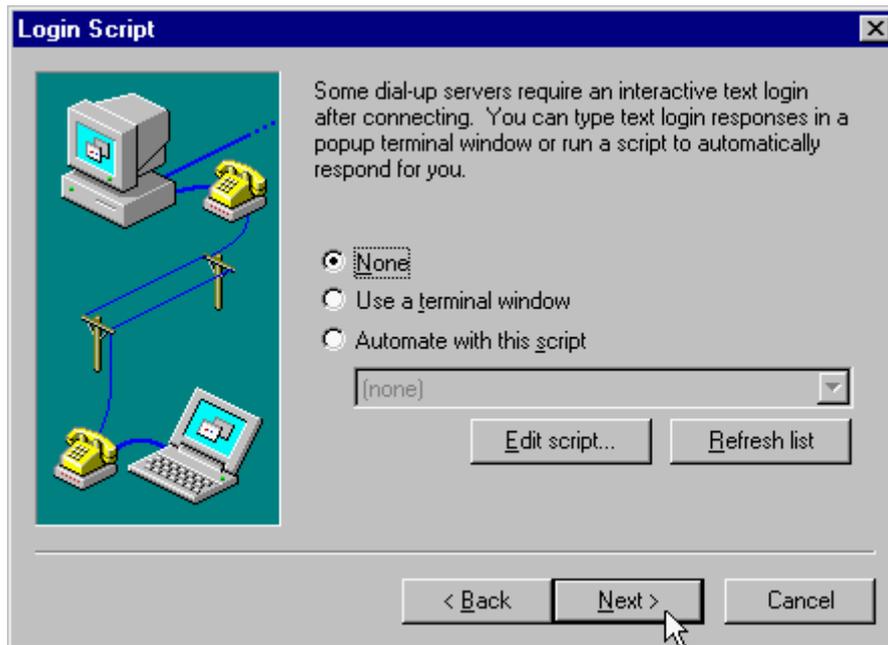18. Select **The non-Windows NT server I am calling**… then click **Next**.
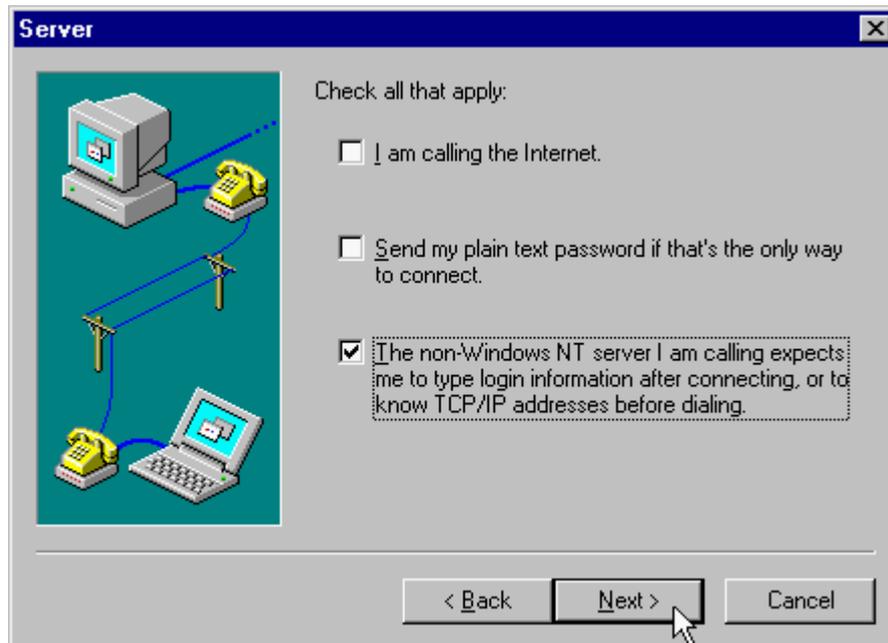
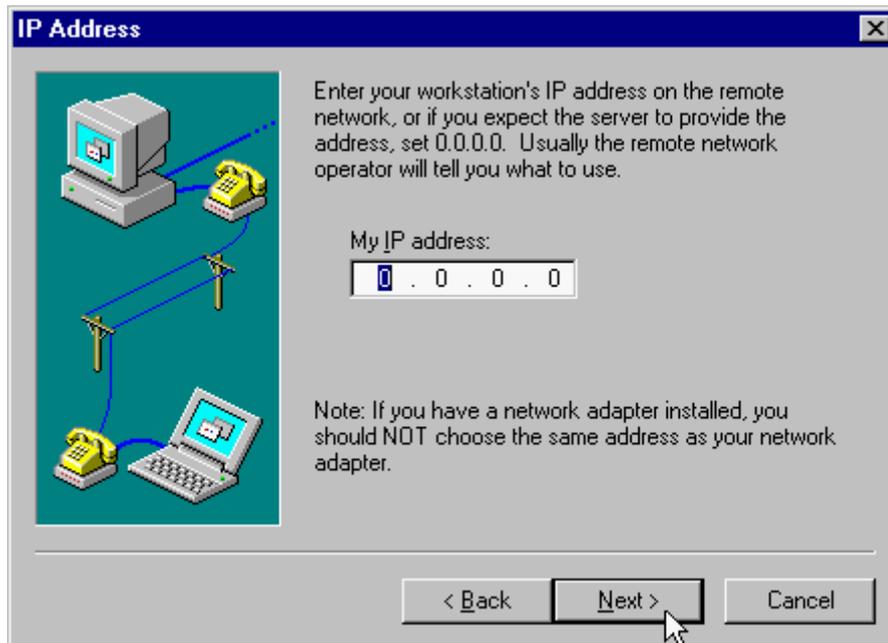19. Enter the phone number of your local ISP and click **Next**.
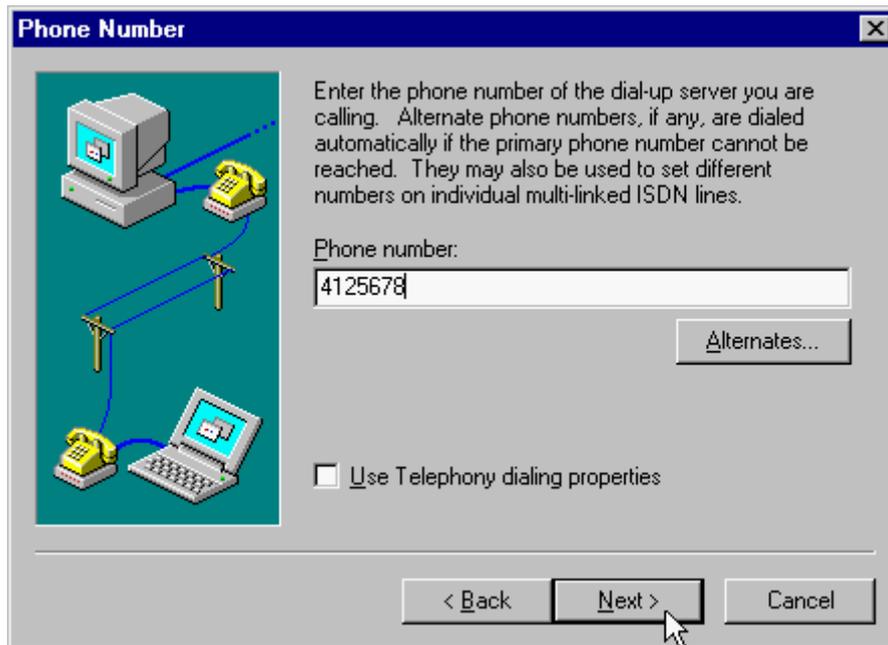
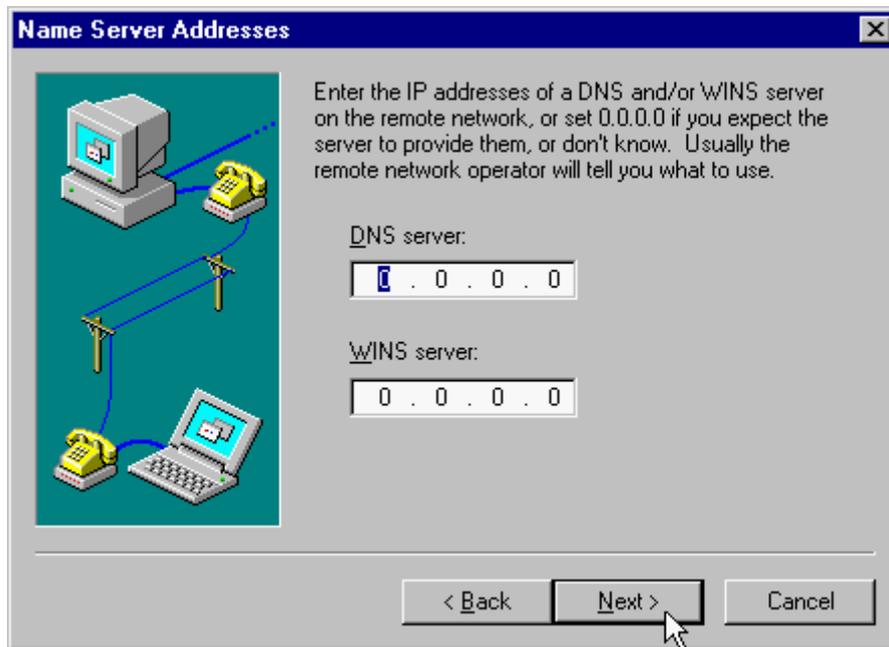20. Select **Point-to-Point Protocol (PPP)** and click **Next**.
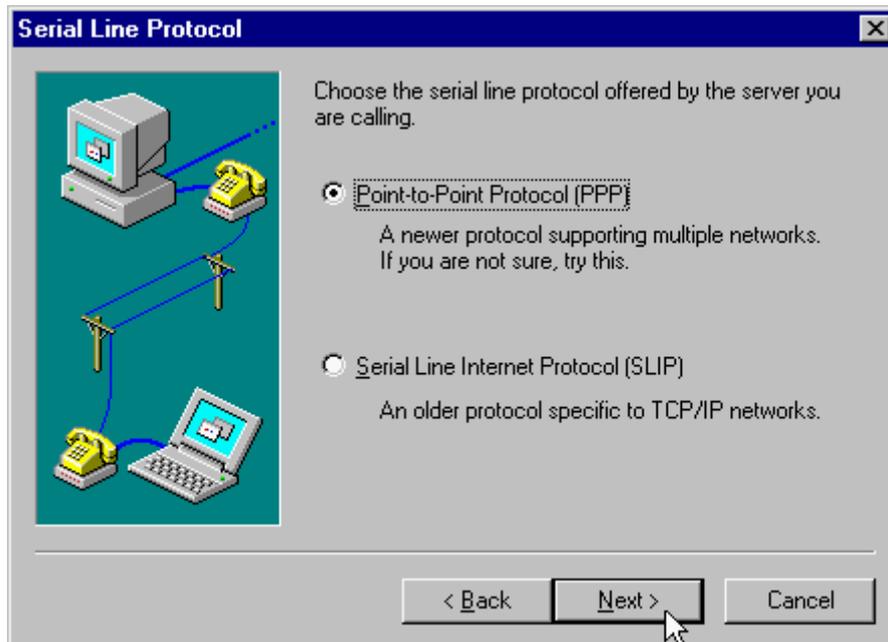
21. Consult with your local ISP for the choice, and then click **Next**.

22. Enter your IP address if you have a fixed one or leave the value: **0.0.0.0**, then click **Next**.
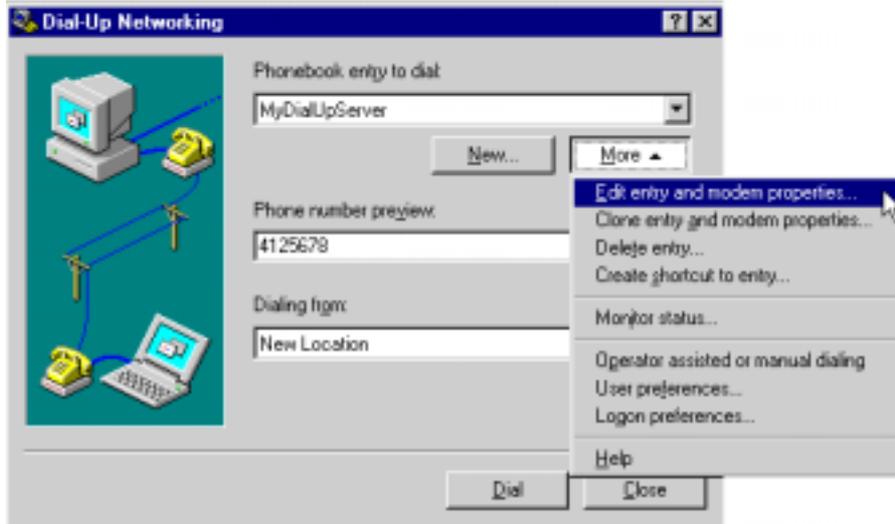
23. Enter the **IP addresses** of a **DNS** and/or **WINS** server or set **0.0.0.0.** If you are not sure. Then click
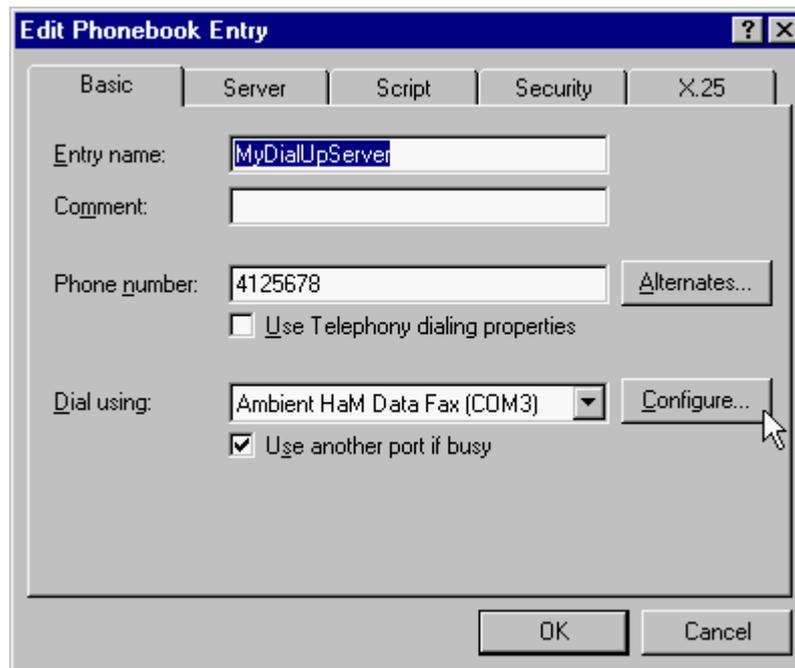   **Next**.

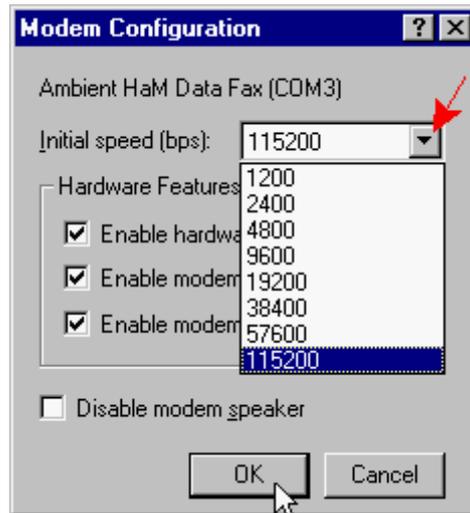24. Click **Finish** to save the settings for the new phonebook entry.

25. Click on the **More** buttons and select **Edit entry and modem properties…**.

26. Select **Ambient HaM Data Fax** from **Dial using** list and click on the **Configure** button.

27. Enable all the **Hardware Features** and select **115200** from **Initial speed** list, then click **OK**.
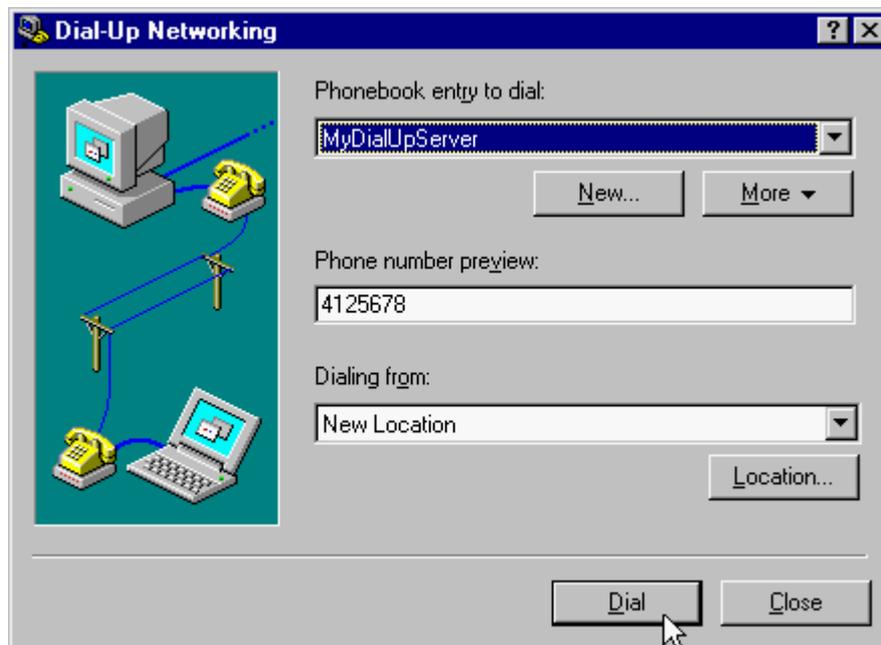
28. Click on the **Server** tab and enable three options of **TCP/IP**, **Enable software compression** and
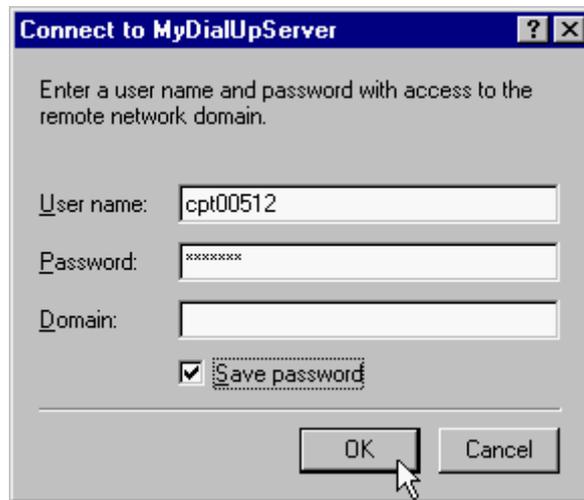   **Enable PPP LCP extensions**.
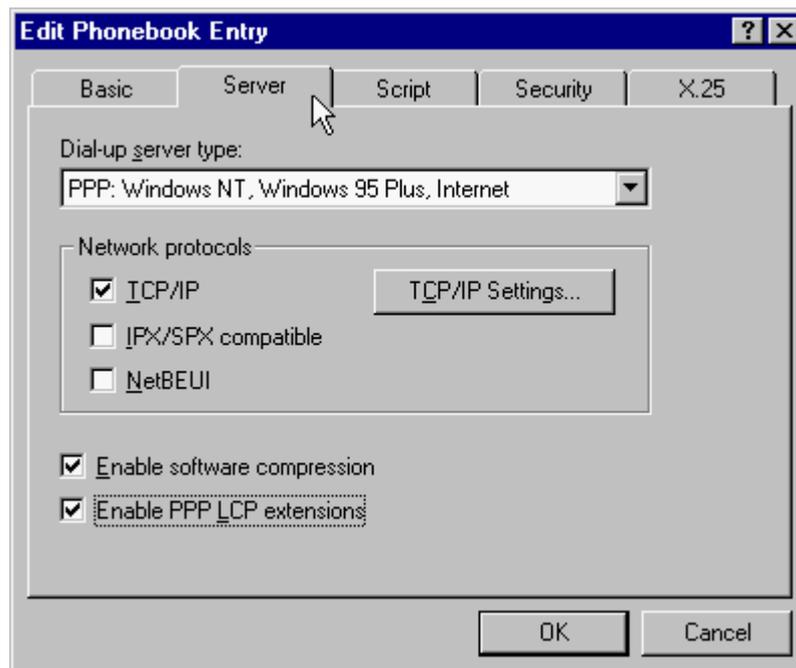
29. Click on the **Security** tab and enable the option of **Accept any authentication including clear text**, then click **OK**.
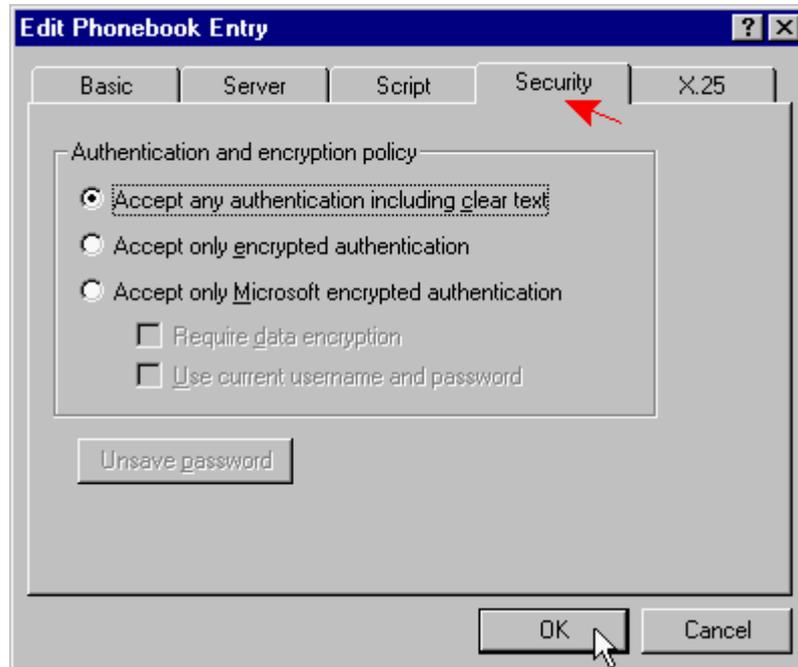
30. The phonebook entry has been edited; click **Dial** to connect to ISP.

31. Enter **User name** and **Password**, and then click **OK**. The modem will access to your local ISP and get

a connection.

4.4 Windows 2000

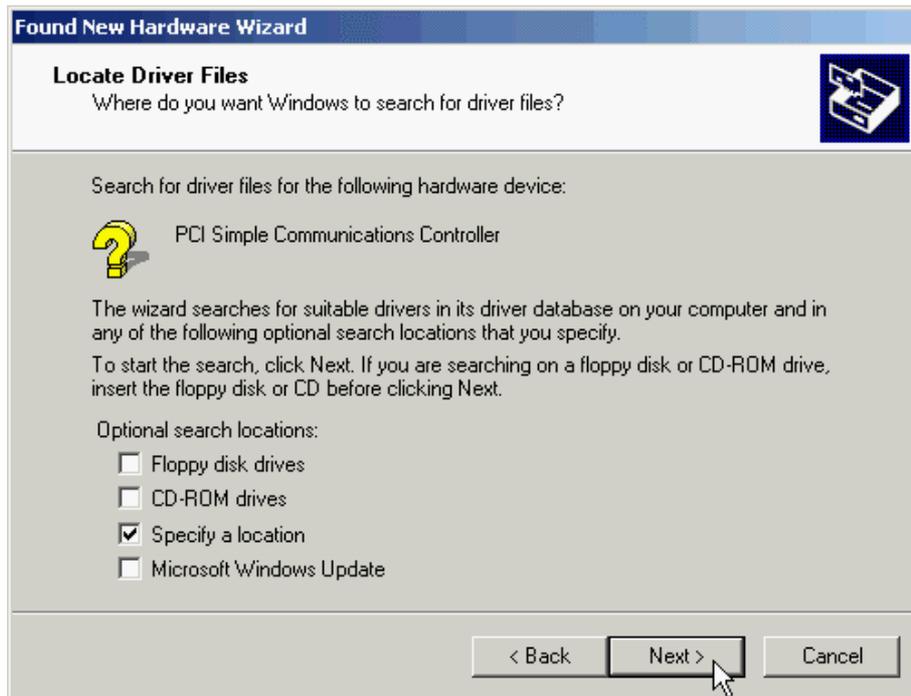1. Windows will detect the modem automatic; please insert the driver CD supplied and clicks **Next**.

2. Select **Search for a suitable driver for my device [recommended]**, and then click **Next**.
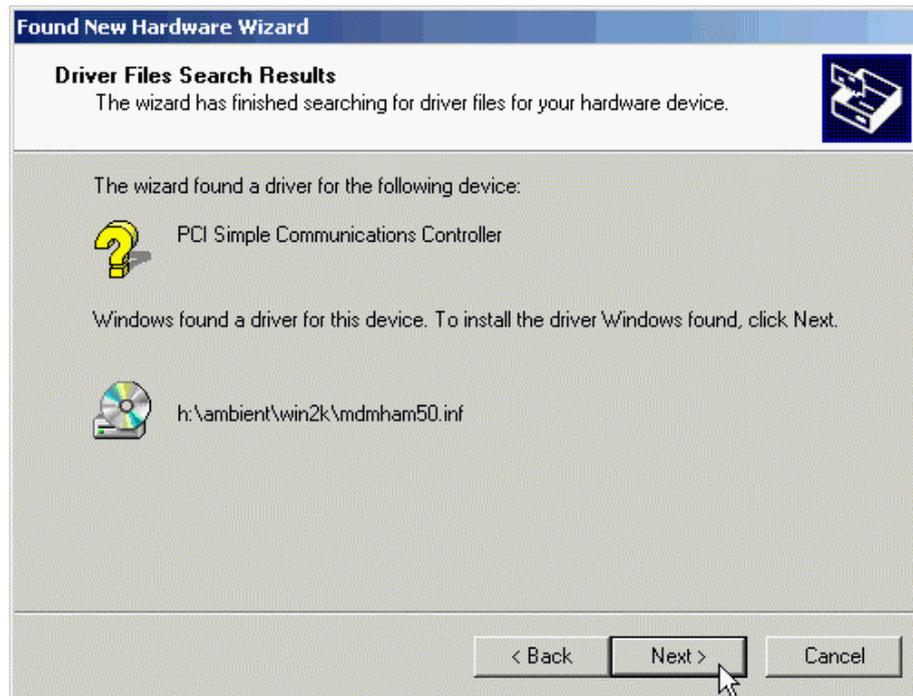
3. Select **Specify a location**, then click **Next**.

4. Please type **H:\Ambient\Win2K** or use **Browse…** to find the driver directly, then click **OK** (H is the
    letter of CD-ROM drive).

5. Windows will found a driver for this device, then click **Next**.

6. Click **Yes** to continue.
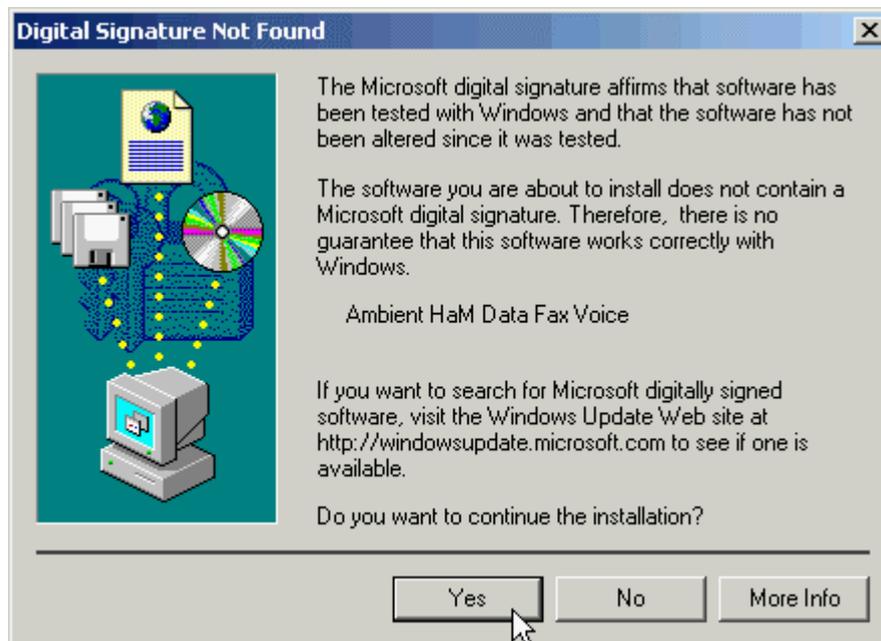
7.   Click **Finish** to end this install procedure.

Chapter 5 Select Modem Country

5.1 Windows 95/98

1. Move your courser as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.

    Then double-click on the **HaM Configuration** icon.
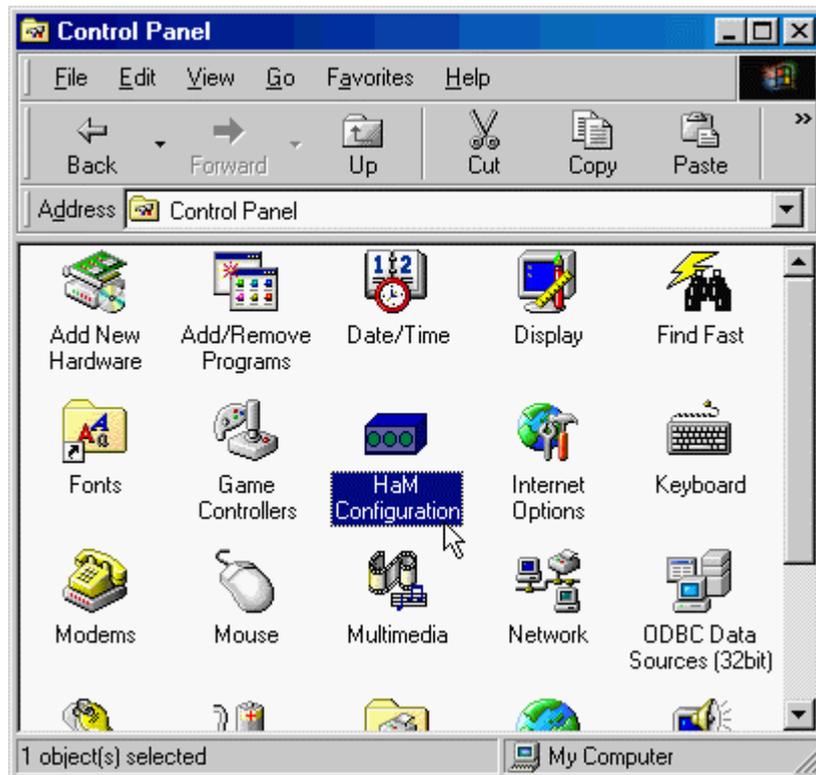
2. Click on the **International Settings** tab, select modem country form the list then click **Apply** to effect this settings.

5.2 Windows NT

1. Move your courser as following sequence **Start \ Programs \ Ambient Technologies \ hamtool** and
    click **hamtool**. Then select modem country form the list and click **Apply** to comform this settings.

5.3 Windows 2000

1. Move your cursor as following sequence **Srart \ Settings \ Control Panel** and click **Control Panel**.

   Then double-click on the **Phone and Modem Options** icon.
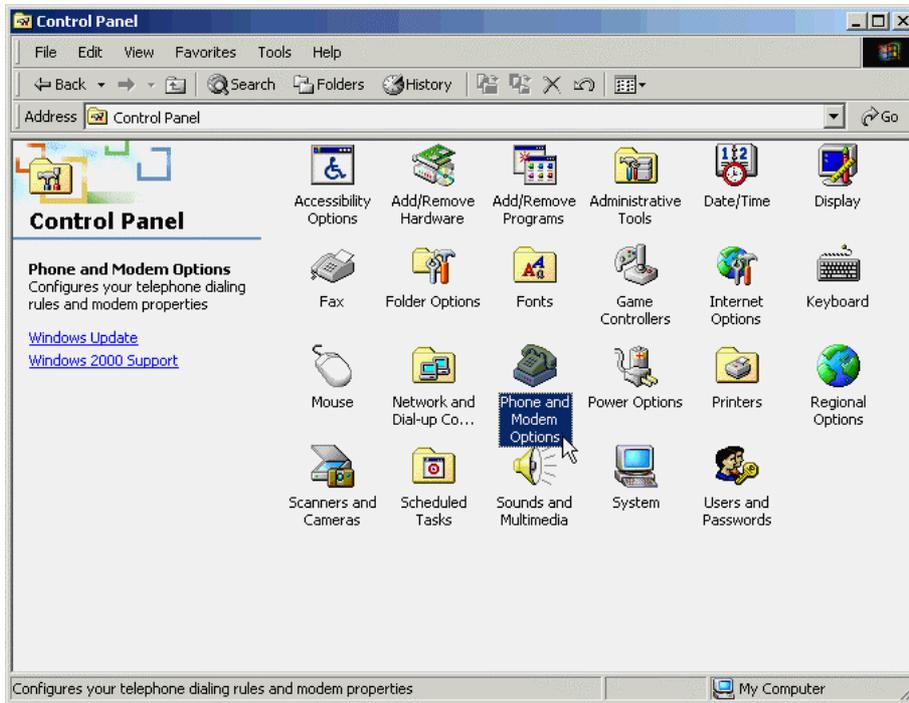
2. Click **Modems** tab and select Ambient modem then click **Properties**.

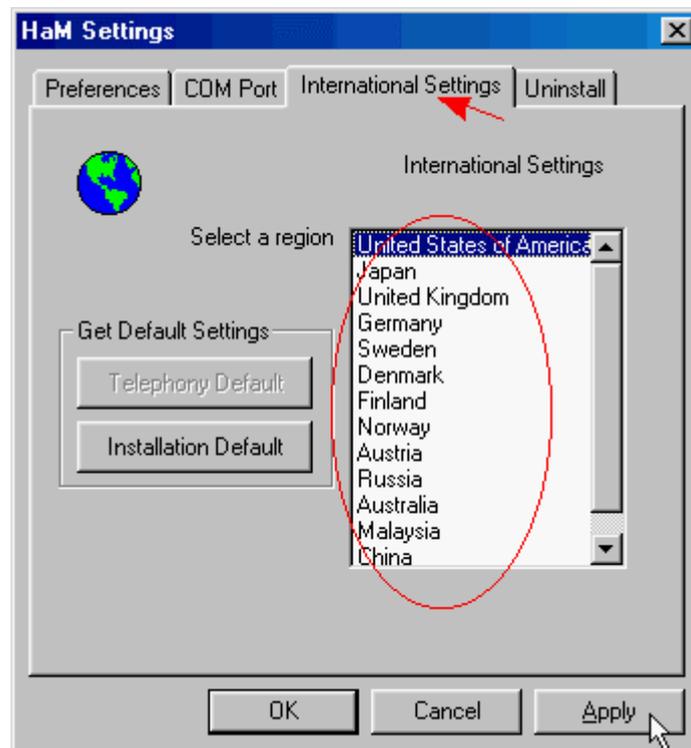3. Click **Advanced** tab and select country form the list, then click **OK**.

Chapter 6 Diagnostics

6.1 Windows 95/98

1. Move your cursor as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.

    Then double-click on the **Modems** icon.
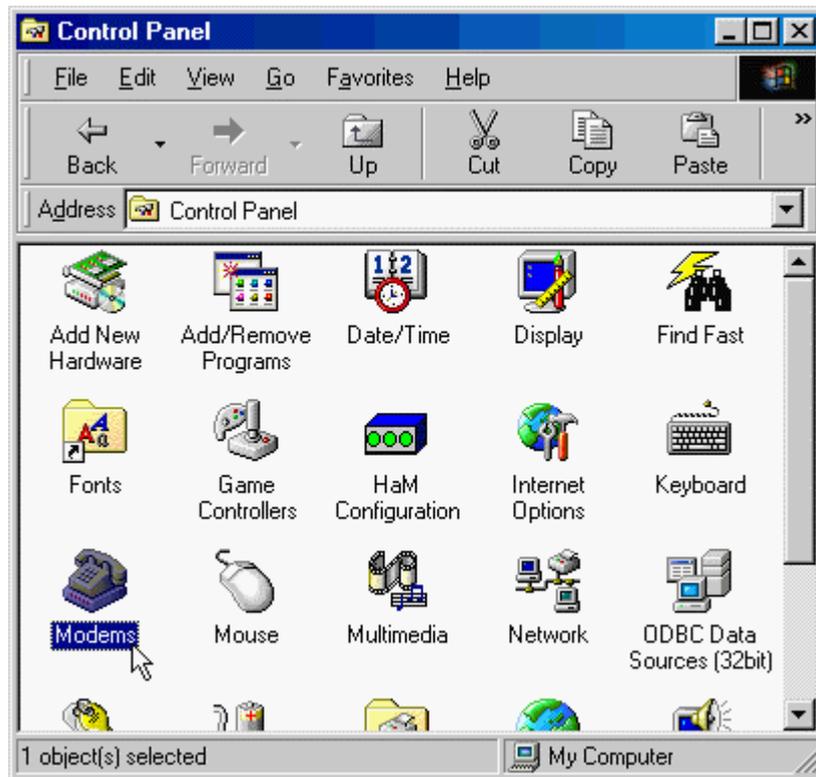
2. To test the modem by clicking on the **Diagnostics** tab. Select the **COM port** which the modem is setting, and clicks **More Info…**.
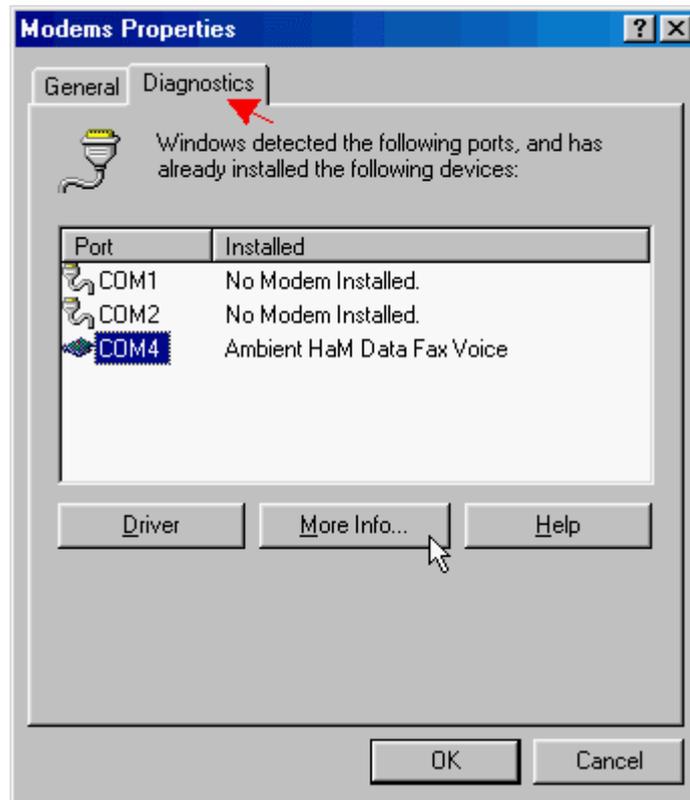
3. If your modem is responding to AT commands and functioning correctly, it means that your modem is working properly. Click **OK** to end this procedure.

6.2 Windows 2000

1. Move your cursor as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.
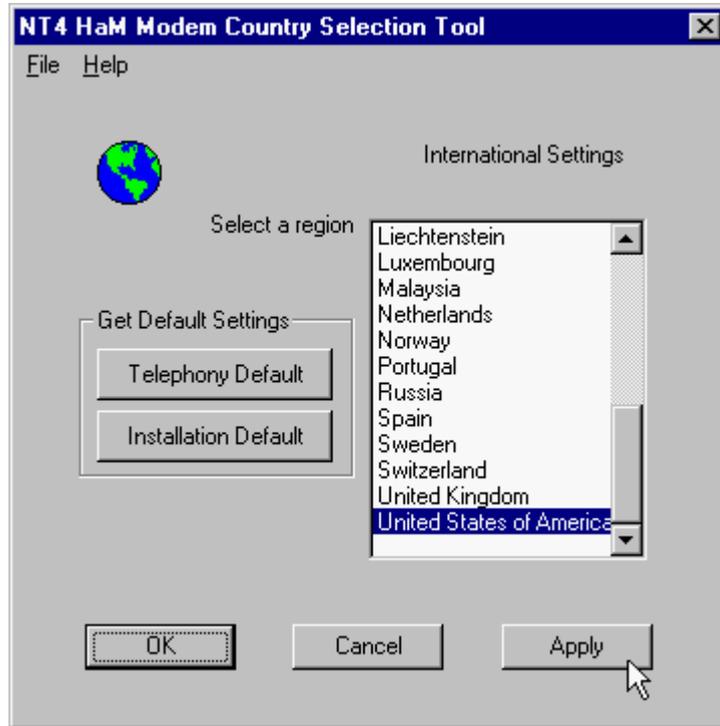
   Then double-click on the **Phone and Modem Options** icon.
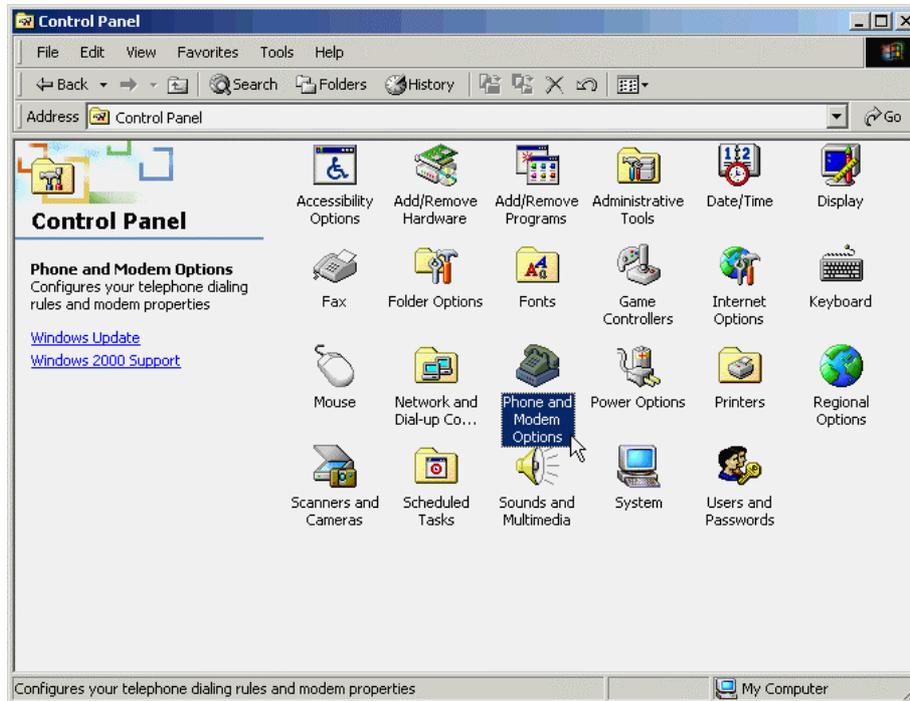
2. Click **Modems** tab and select Ambient modem then click **Properties**.
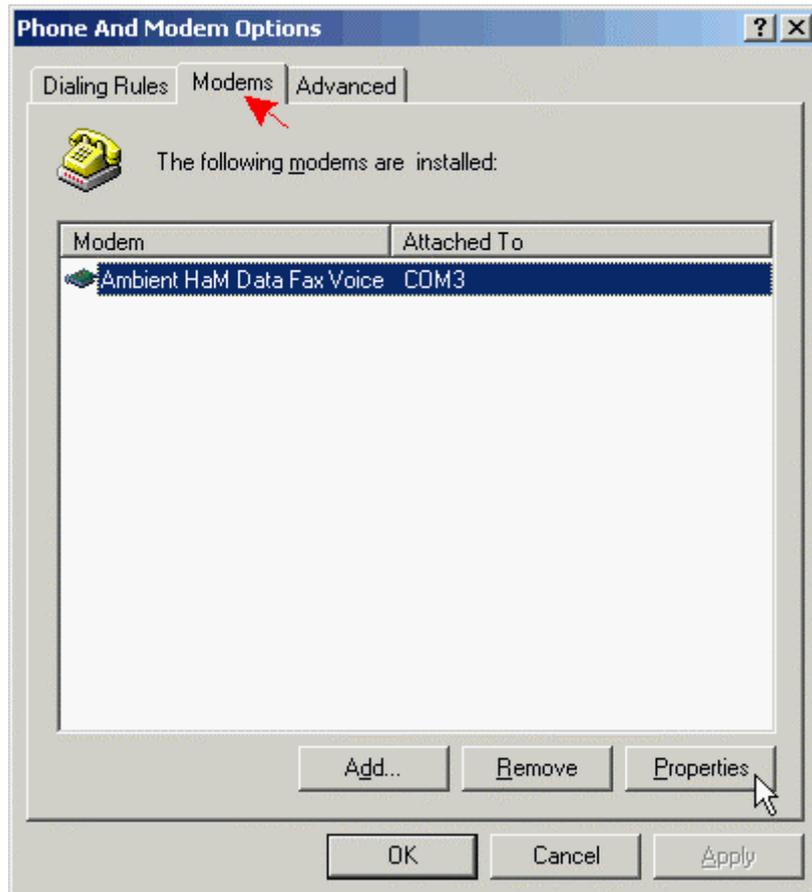
3. Click **Diagnostics** tab, then click **Query Modem**.
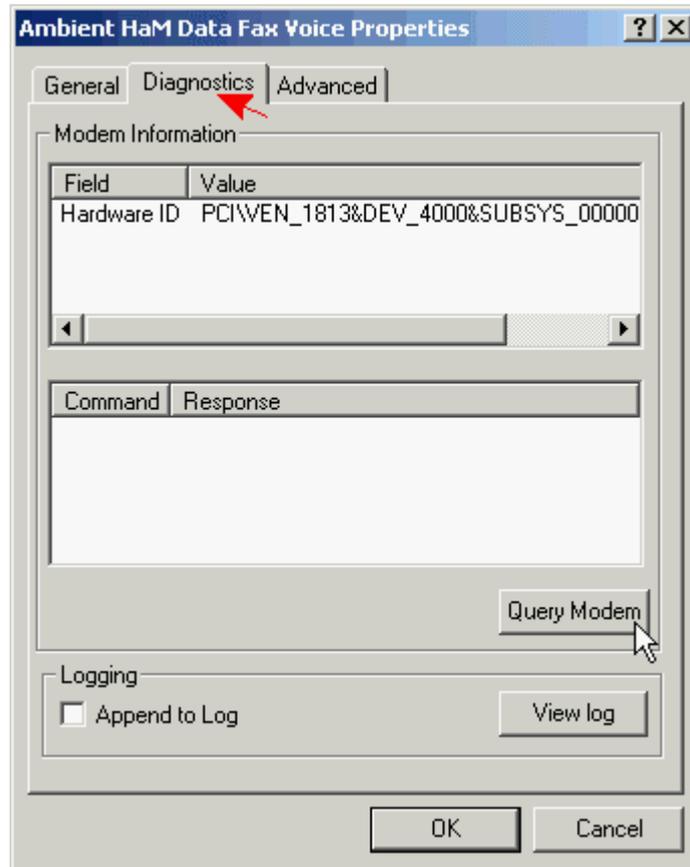
4. If your modem is responding to AT commands and functioning correctly, it means that your modem is
    working properly. Click **OK**.
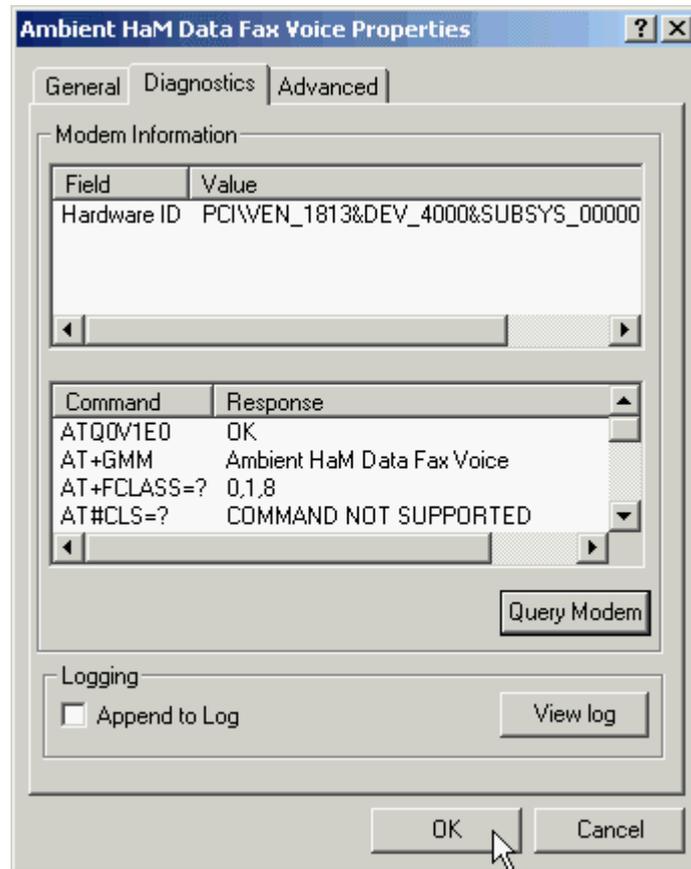
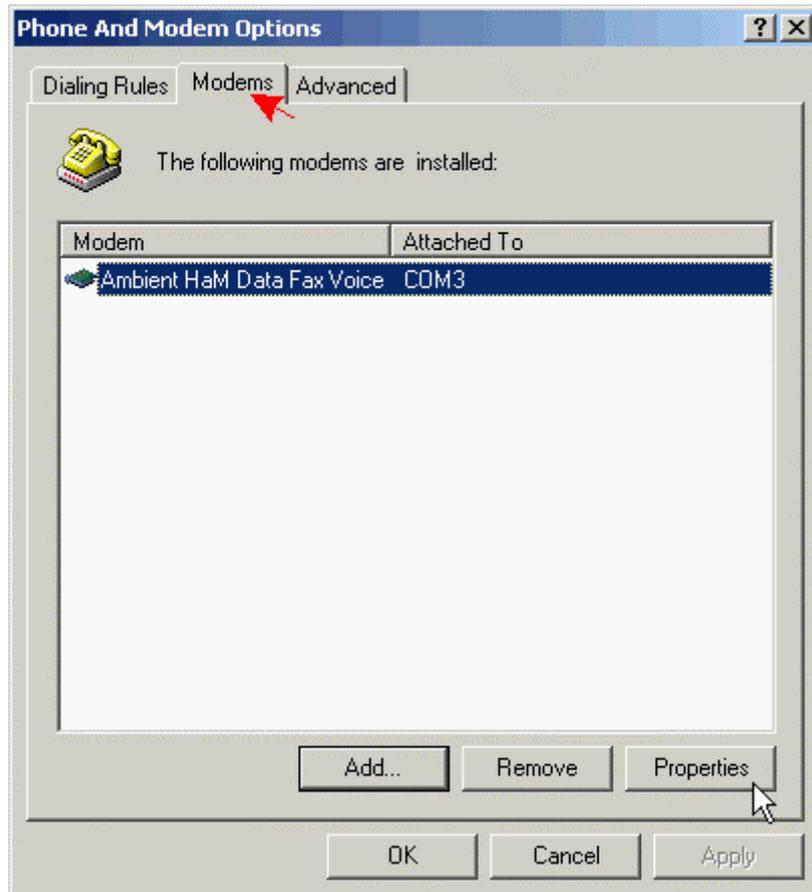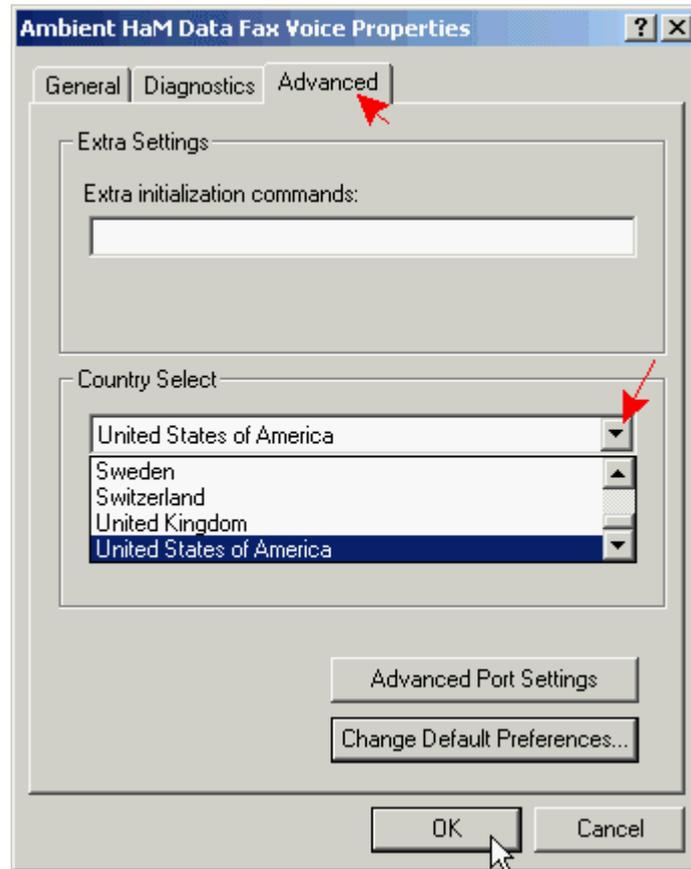# Chapter 7 Uninstalling Procedure

7.1 Windows 95/98

1. Move your cursor as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.

    Then double-click on the **HaM Configuration** icon.

2. Click on the **Uninstall** tab. Then click **Perform Uninstall** icon.

3. Click **Yes** to remove the modem.
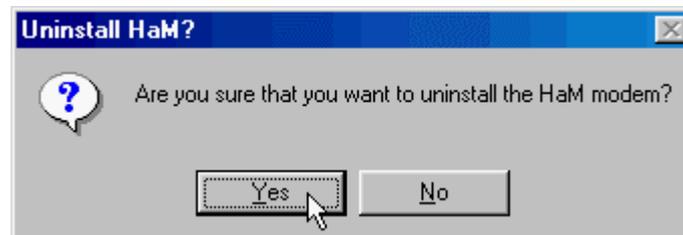
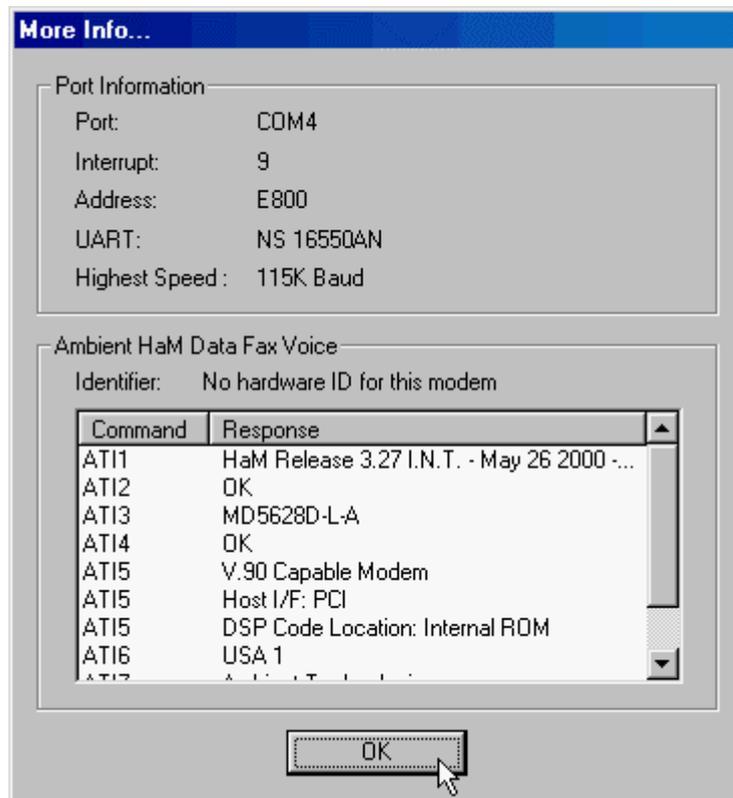4. Click **Yes** to shut down Windows and remove your modem card.

7.2 Windows NT 4.0

1. Move your cursor as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.

    Then double-click on the **Add/Remove Programs** icon.
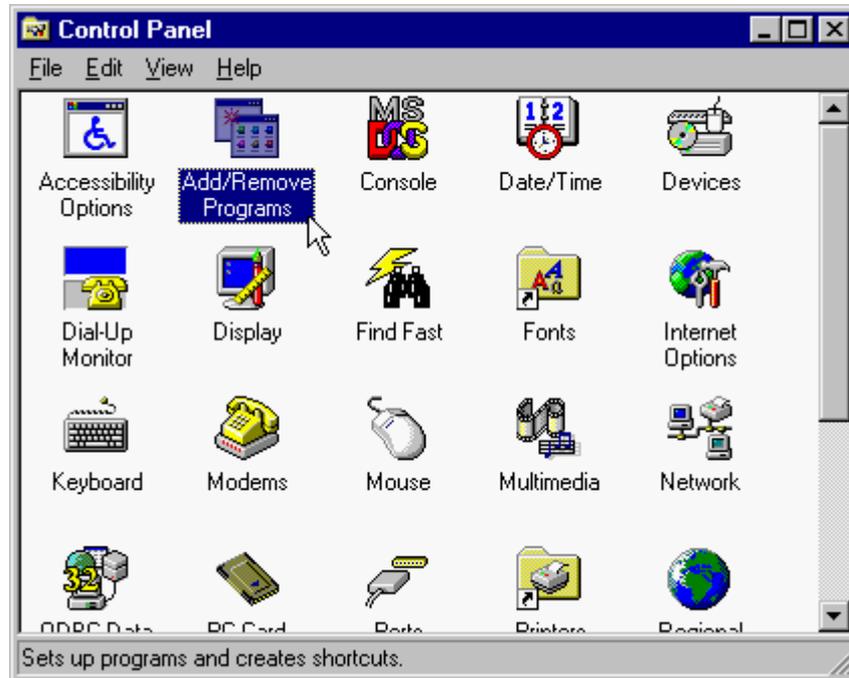
2. Select **Ambient HaM Data Fax** from the list and then click the **Add/Remove** button.
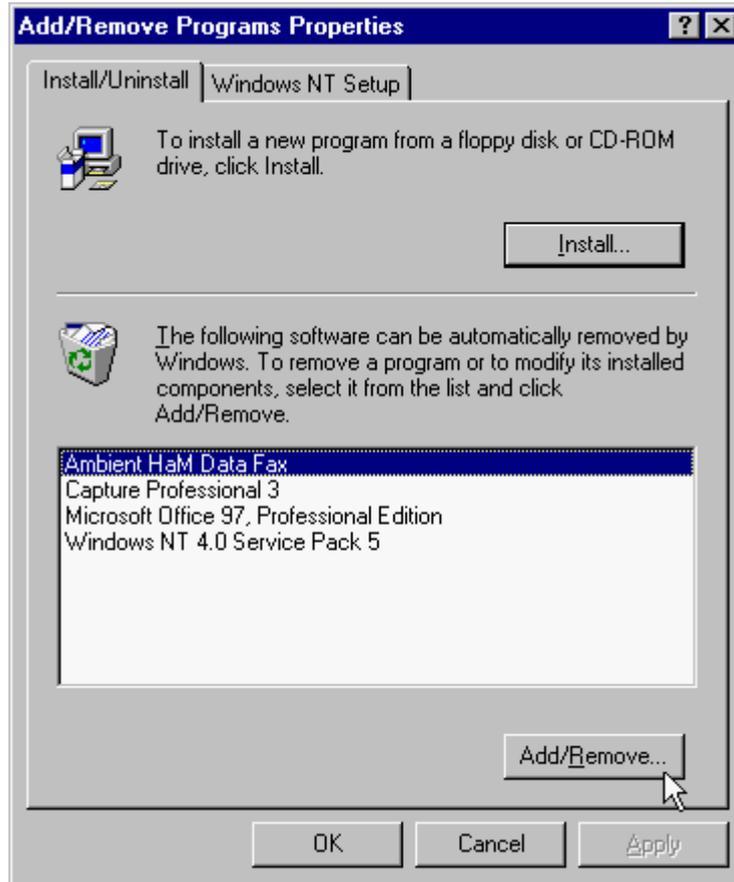
3. Click **Yes** to continue.
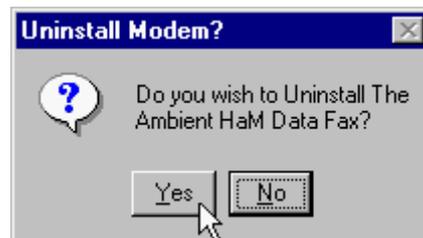
4. Click **OK**.

5.   Click **Remove** to uninstall modem driver.
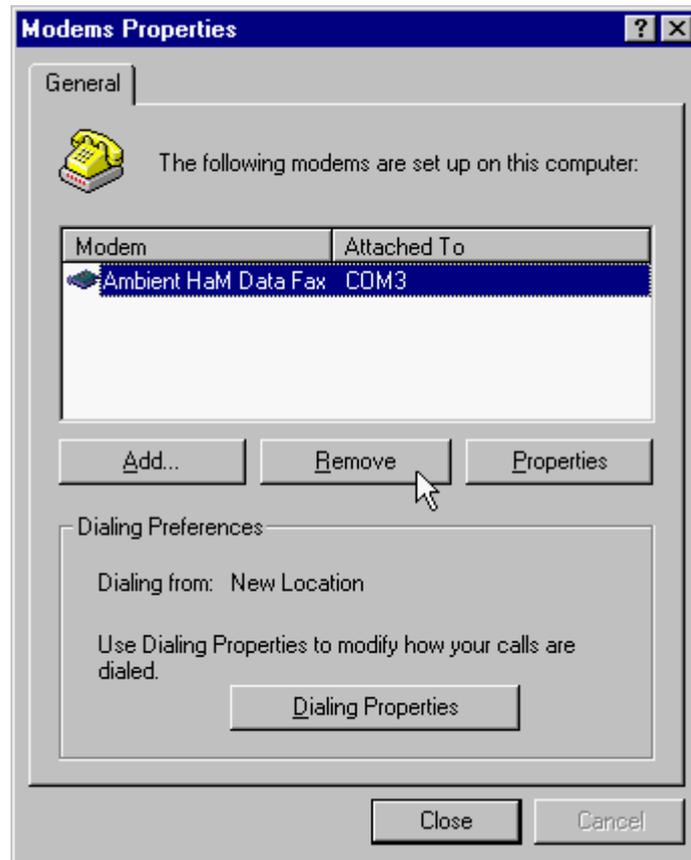
6.   Click **YES** to end this procedure.
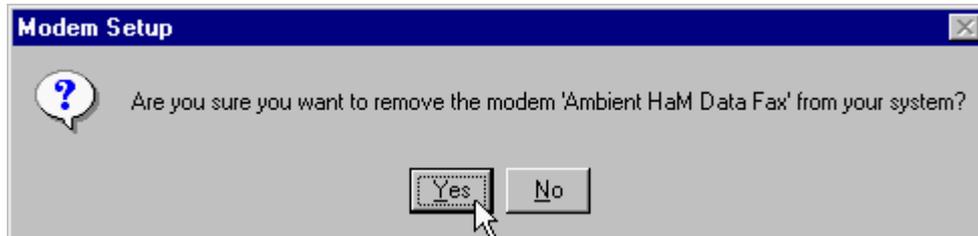
7.3 Windows 2000

1. Move your cursor as following sequence **Start \ Settings \ Control Panel** and click **Control Panel**.

    Then double-click on the **Add/Remove Hardware** icon.
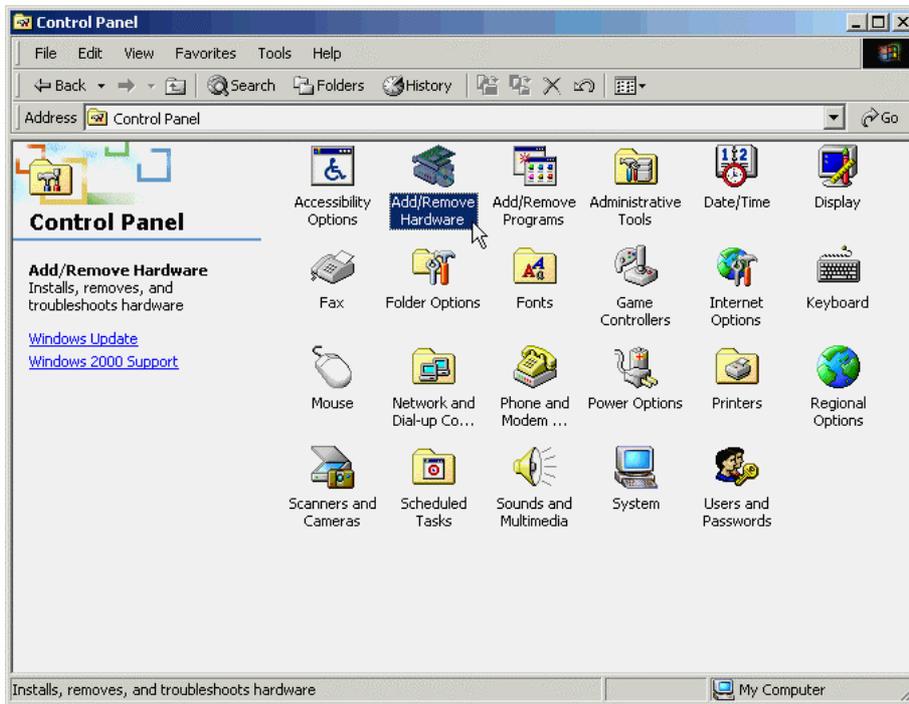
2. To continue, click **Next**.

3.   Select **Uninstall/Unplug a device**, then click **Next**.
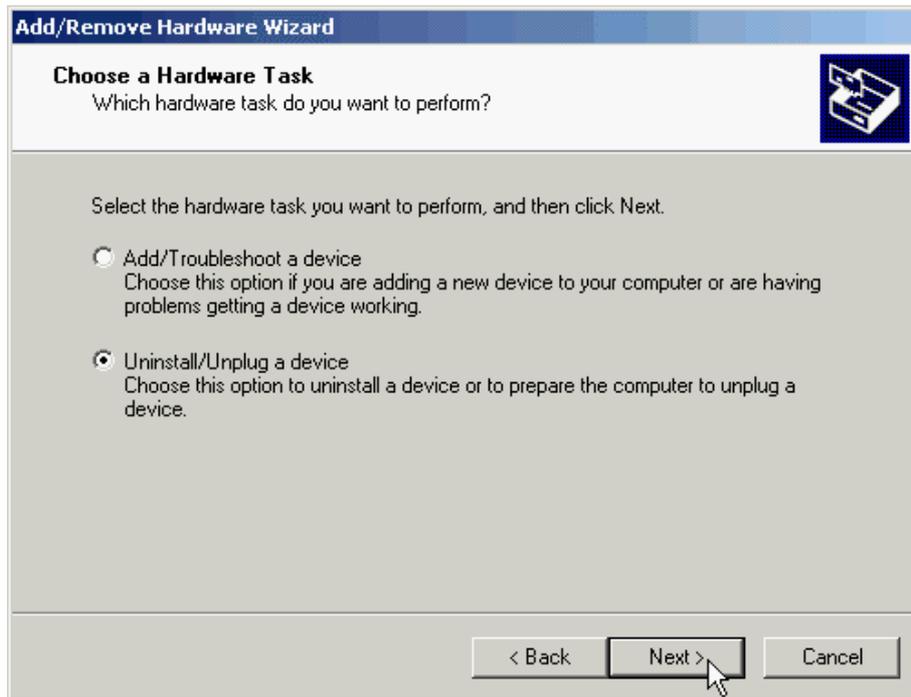
4.   Select **Uninstall a device**, then click **Next**.
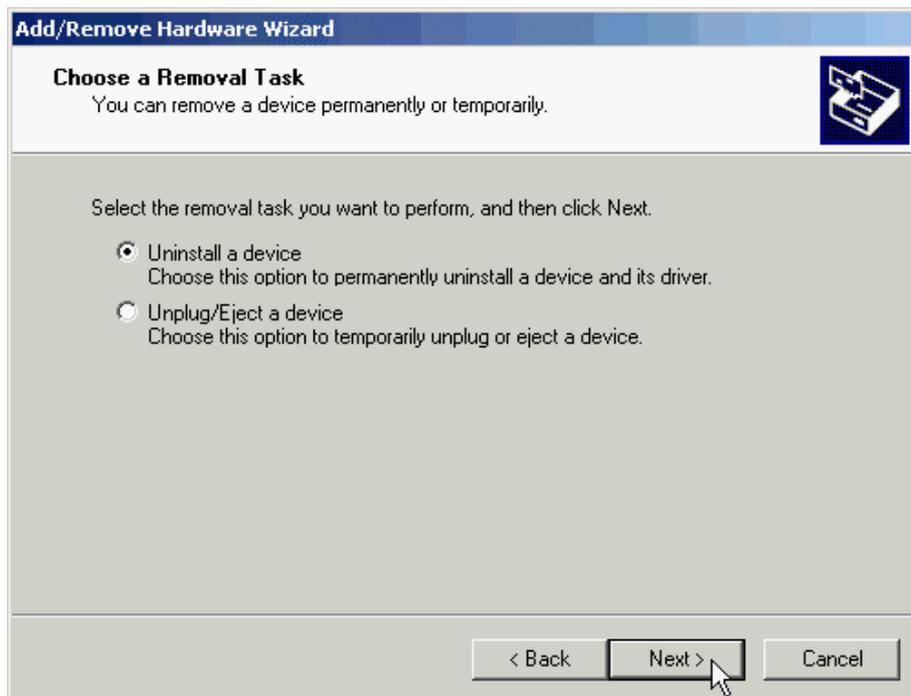
5.   Select **Ambient HaM Data Fax Voice**, then click **Next**.
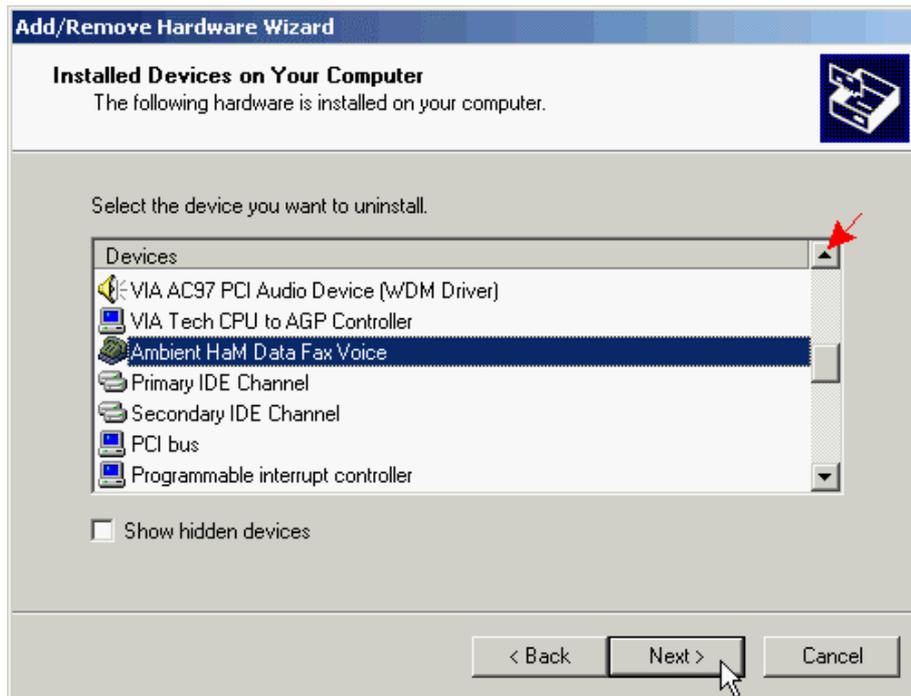
6.   Select **Yes, I want to uninstall this device**, then click **Next**.

7. Click **Finish** to end this procedure.

Chapter 8 Using AT Commands

Guidelines for Using AT Commands

The modem's operation is directed by AT commands. Your communications software issues these commands for you, so you do not need to understand AT commands to operate your modem.

⇒ Besides alerting the modem that a command is being sent, the 'AT' also informs the modem about the data transfer characteristics of the communications program. The modem therefore can automatically adjust its own performance to work smoothly with the communications program.

AT Command Syntax

If you do use AT commands, you must use the correct command procedure and syntax. Commands can be entered alone or in strings, and they must be preceded by the character sequence AT (or at) and ended with a carriage return.

For example: **ATX1**<CR>

    ATQ0<CR>

The maximum length of a command line is 40 characters. If more commands are issued, the modem responds with an error message. The commands can be sent with or without spaces between commands and in upper case or lower-case letters. Use the Backspace key to delete errors. The following commands produce the same results:

    ATX1QODP12345<CR>

    AT X1 Q0 DP 12345<CR>

Communication Modes

The modem operates mainly in two modes: Command mode, which sends commands to your modem, and Data mode, which exchanges data with a remote modem. Your communications software chooses the correct mode depending on the operation you are performing. In Command mode, all the characters sent from the computer are interpreted as commands, and nothing is transferred to the remote modem. The modem may respond to a command by issuing a screen message. To enter Data mode, you must first connect to a remote modem. When the modem makes a connection, it automatically switches to Data mode and transfers all the characters it receives to the remote modem.

Aborting a Data Transfer

You can abort a data transfer at any time and either stay online or enter Command mode. Look at your communications software handbook for instructions. If you remain in Data mode after aborting a data transfer, you can type messages to another person and receive replies real time, as in a 'chat session'. To abort a data transfer and enter Command mode, enter the escape sequence, **+++AT<CR>**.

For the escape sequence to be recognized by your modem, you must observe time restrictions when typing

the '+++' characters. Enter each character with a one-second pause between them. The modem will not

recognize longer pauses.

Returning to Default Settings

To undo changes to the modem settings made using AT commands or S-registers, return the modem to

factory default settings by sending the **AT&F** command.

Data Mode Command Summary

The following table lists commands that change data mode features. See the following section for full

descriptions of each command.

ATA	Answer mode
A/	Repeat last command
ATD	Dial command
ATE	Command mode echo
ATH	Switch hook control
ATI	Identification/checksum option
ATL	Speaker volume control
ATM	Speaker control
ATO	Go online
ATP	Select pulse dialing
ATQ	Result code display control
ATS	Select an S-register
ATT	Select tone dialing
ATV	Result code form
ATW	Response code data rate
ATX	Result code type
ATY	Long space disconnect
ATZ	Recall stored profile
AT+DS	Data Compression
AT+ES	Error Control Selection
AT+MS	Modulation selections
+++	Escape Sequence to return temporarily to Command mode
AT&C	DCD (data carrier detect) option
AT&D	DTR Option
AT&F	Load factory defaults
AT&G	Guard tone option (1200 bps and 2400 bps only)
AT&K	Select serial port flow control
AT&S	DSR (data set ready) option
AT&T	Self-test commands (not x2 mode)
AT&V	View active and stored profiles
AT&W	Store active profile
AT&Y	Select stored profile on power-up
AT&Z	Store telephone number (up to 30 digits) to location 'n' (0–3)
AT%E	Auto-retrain control
AT%C	MNP 5 Compression Control

Voice Mode Command Summary

The following table displays IS-101 voice commands along with their default values and range.

Command	Function	Default	Range
+FCLASS=8	Voice mode selection	0	0, 1, 8
+FLO=n	Flow control select	1	0 - 2
+VBT=m	Buffer threshold setting	192, 320	192, 320
+VCID=n	Caller ID selection	0	0 - 2
+VDR=m	Distinctive Ring selection	0, 0	0 - 255, 0 - 255
+VEM=m	Event reporting and masking	'C' BB86980 BFE63883 BB863EE0	-
+VGM=n	Speakerphone microphone gain	128	121 - 131
+VGR=n	Receive gain selection	128	121 - 131
+VGS=n	Speakerphone speaker gain	128	121 - 131
+VGT=n	Volume selection	128	121 - 131
+VIP	Initialize parameter	-	-
+VIT=n	DTE/DCE inactivity timer	0	0 – 255
+VLS=n	Hardware type control	0	0 - 15
+VNH=n	Automatic hang-up control	0	0 - 2
+VRA=n	Ringback-goes –away timer	50	0 - 50
+VRN=n	Ringback-never-appeared timer	10	0 – 255
+VRX	Record mode	None	-
+VSD=m	Silence detection (quiet and silence)	128, 50	
+VSM=m	Compression method selection	140, 8000, 0, 0	
+VSP=n	Speakerphone on/off control	0	0, 1
#VSPS=n	Speakerphone type selection	1	0, 1
+VTD=n	Beep tone duration timer	100	5 – 255
+VTS=m	DTMF and tone generation	None	
+VTX	Play mode	None	

Fax Class 1 Command Summary

The following table displays Fax Class 1 commands along with their default values and range.

Command	Function	Default	Range
+FCLASS=1	Mode selection	0	0, 1, 8
+FRH=n	Receive HDLC data	None	3
+FRM=n	Receive data	None	24, 48, 72, 73, 74, 96, 97, 98, 121, 122, 145, 146
+FRS=n	Wait for silence	None	1 – 255
+FTH=n	Transmit HDLC data	None	3
+FTM=n	Transmit data	None	24, 48, 72, 73, 74, 96, 97, 98, 121, 122, 145, 146
+FTS=n	Stop transmission and pause	None	0 - 255

Chapter 9 S-Registers

The modem stores its settings in memory locations called S-registers. Some S-registers are stored in non-volatile memory (NVRAM), which can be interrogated with **Z**, **&Y,** and **&W** commands. Look at the **S** command description for the correct way to read or change S-register values. The values of most S-registers can be modified using AT commands.

S-Register Command Summary

Register	Function	Default	Range
S0	No. of rings to auto-answer on	0	0–9
S1	Ring count	0	0–255
S2	Escape character	43	0–127
S3	Carriage return character	13	0–127
S4	Line feed character	10	0–127
S5	Backspace character	8	0–32, 127
S6	Wait before dialing	3	3–9
S7	Wait for carrier	60	0–100
S8	Pause time for dial modifier	2	1–6
S9	Carrier recovery time	6	1–255
S10	Lost carrier hang up delay	14	0–255
S12	Guard Time	50	0–255
S14	Bit-mapped options	138	–
S16	Modem test options	0	–
S18	Modem test timer	0	0–255
S21	Bit-mapped options	48	–
S22	Bit-mapped options	118	–
S23	Bit-mapped options	None	–
S25	Detect DTR change	5	0–255
S27	Bit-mapped options	64	–
S30	Disconnect inactivity timer	0	0–255
S31	Bit-mapped options	49	–
S33	Sleep mode timer	0	0–90