

## ***EXHIBIT C***

### ***User Manual***

**HSP Modem™ Technology**

**HSP**

**Modem™**

**Installation  
Guide**

**April 21, 1998**

## Section 1

### 1.0 Introduction

This document provides reference information for the evaluation testing of an internal modem based on *Host Signal Processing* Data/Fax/Voice Modem Technology. The HSP Modem™ evaluation card eliminates the redundant hardware parts found in most modems today. These include the data pump, a controller, an additional UART and external memory as required in a conventional approach. In addition, the complete HSP solution allows an internal modem to be upgraded with enhancements and features through software upgrades rather than a chip change or board swap.

### 1.1 System Requirements

- Pentium 166 MHz + (200 MHz MMX Pentium required for V.80/videophone)
- AMD K6 200 MHz +
- Cyrix 6x86MX PR200 +
- 16MB RAM
- Windows 95 (Includes OSR1/OSR2), NT4.0

### 1.2 Features

#### DATA

##### Supported Communication Standards

\*K56Flex, V.90 upgradable, V.34, V.32bis, V.32, V.22bis, v.22, V.21, V.23, Bell212A, Bell 103

**Data Compression** MNP 5

V.42bis

**Error Correction** MNP 2,3,4

V.42 LAPM

#### FAX

**Supported Protocols** EIA Class 1

V.8bis, V.80, V.17, V.29, V.27ter, V.21

Channel 2

#### General Features

Auto Fallback

AT Commands

ISA/PCI Bus interface

Data/Fax/Voice/Speakerphone (requires full duplex sound card)

Signal Quality Monitoring and Auto Retrain

Low power consumption

Caller ID

Auto Selection of COM Port and IRQ settings

High throughput Virtual UART, DTE rate up to 115,200

#### Operating System Compatibility

Windows 98

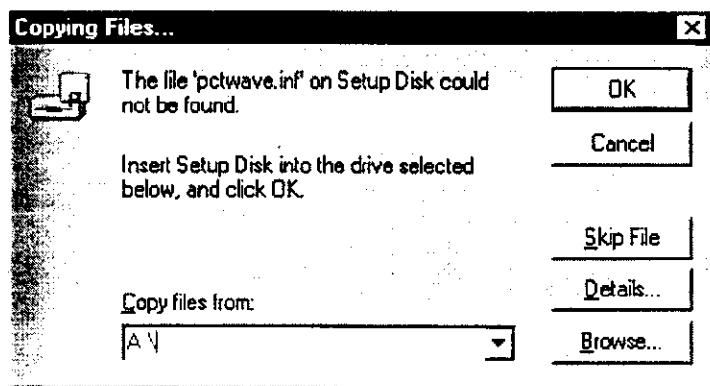
Windows 95 OSR1/OSR2

Windows NT 4.0

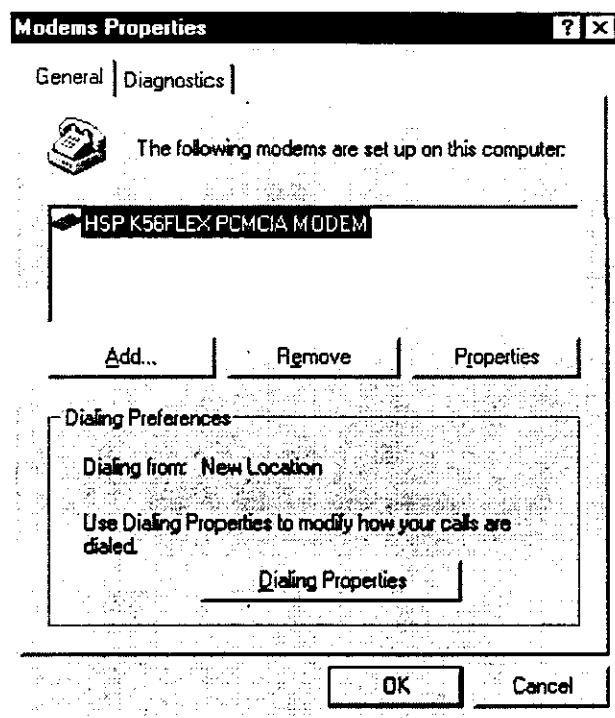
Windows is a registered trademark of Microsoft Corp.

K56Flex is a registered trademark of Rockwell and Lucent Technologies.

3. Type "A:\\" in the prompted field and click "OK" to complete the installation.



4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".



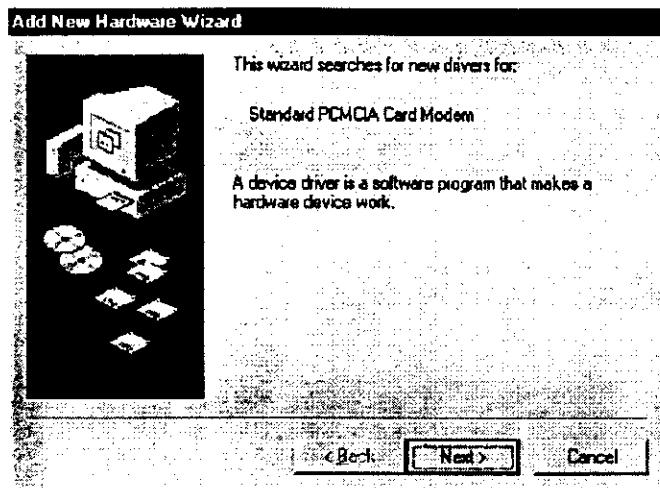
## **HSP PCMCIA Modem™ Setup using Windows 98**

The HSP Modem™ will automatically handle all variations of CPU types. It will safely detect the CPU type from different vendors and install the proper driver version for them. This eliminates the problem of poor performance that results from installing the incorrect driver.

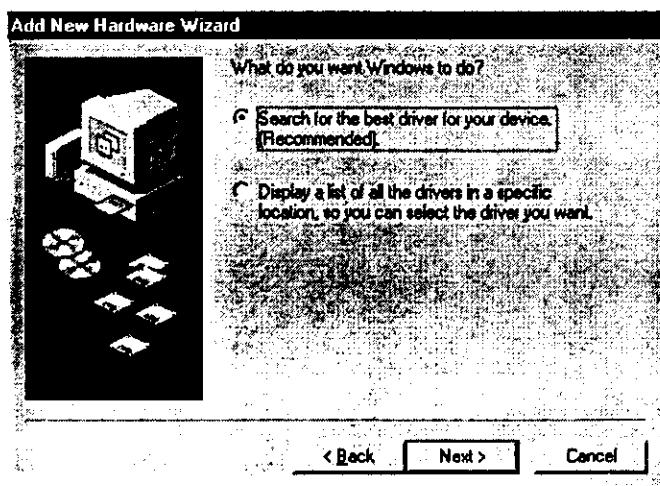
The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

Plug the HSP PCMCIA Modem™ into an empty PCMCIA slot. The system will automatically detect the PCMCIA modem. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next". Follow the "Wizard" installation instructions.



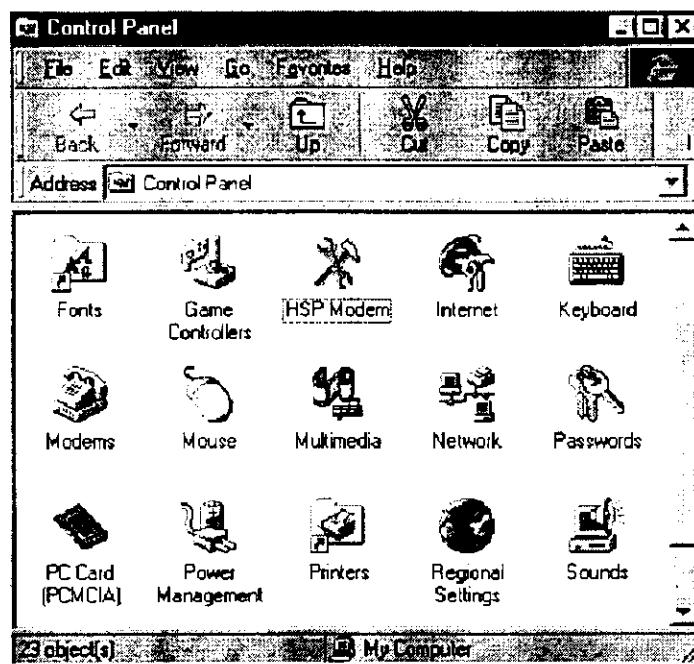
2. Windows will search for the driver. Choose the "Recommended" option and click "Next".



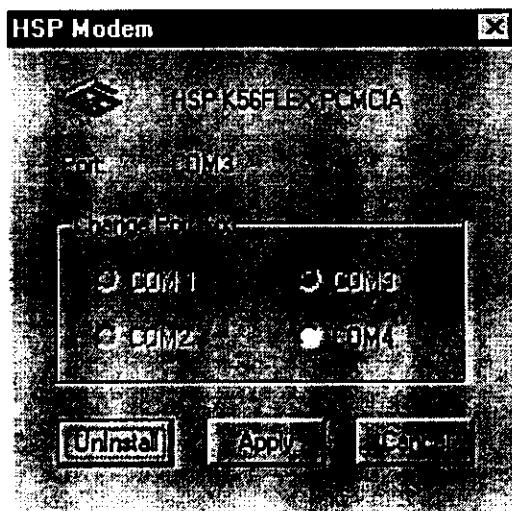
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

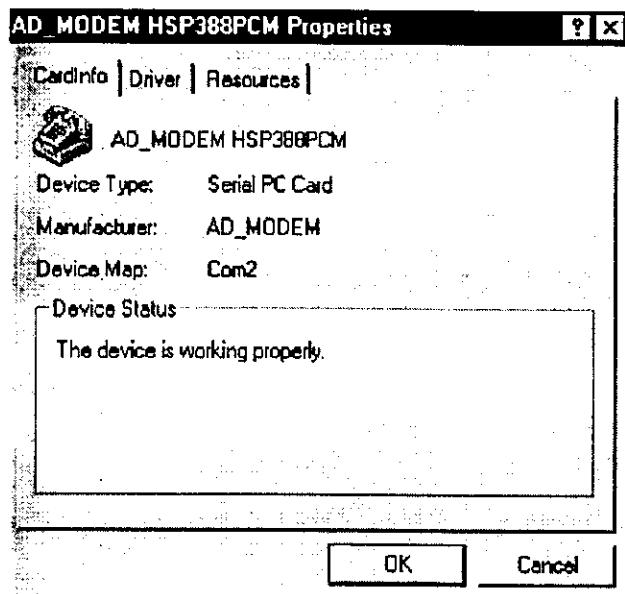
1. Click "HSP Modem" under "Control Panel".



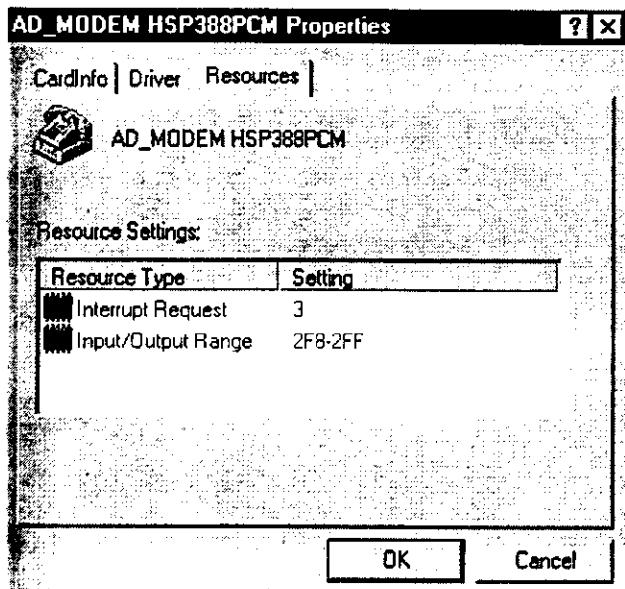
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



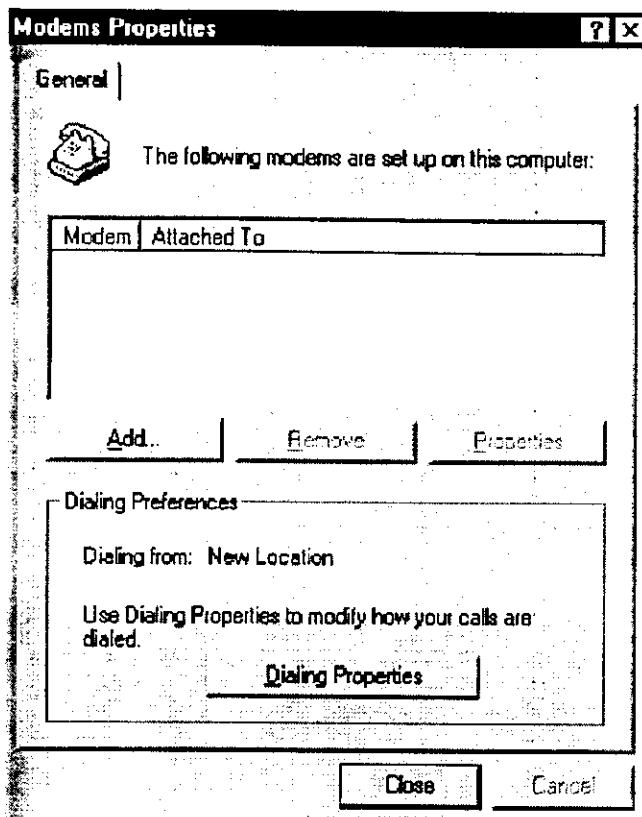
3. Under the HSP Modem™ "Properties", click on "Resources".



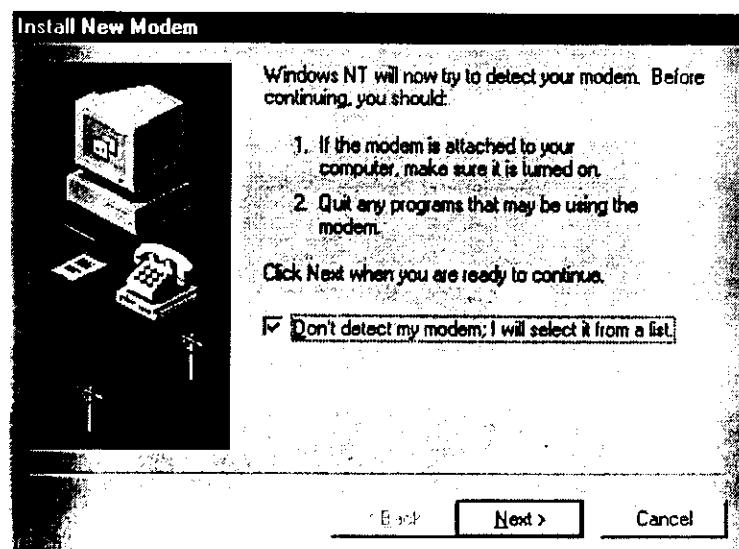
4. The "Interrupt Request" and "Input/Output Range" shown here have been assigned to the modem. Document the settings for future reference and click "OK".



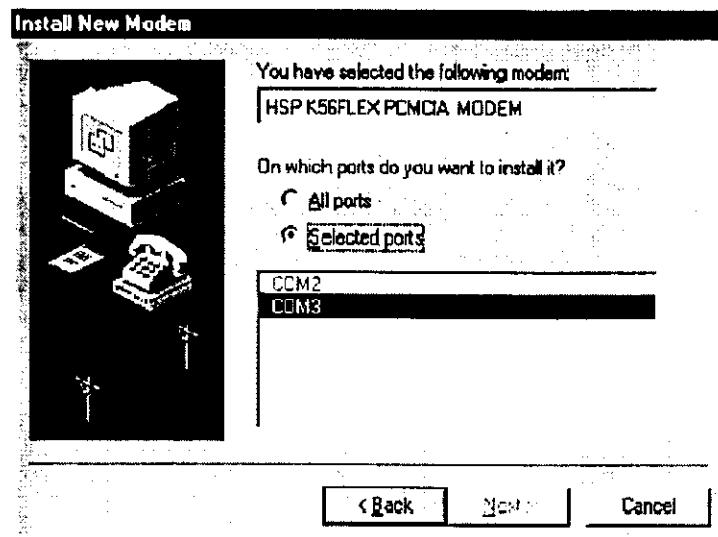
9. To start the modem installation program, click "Modems" in the "Control Panel". Under "Modem Properties", click "Add" to start the installation program.



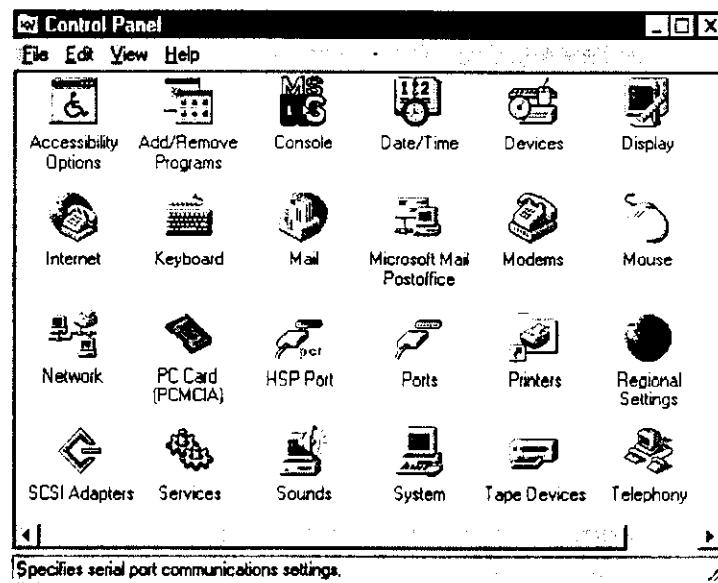
10. Select "Don't detect my modem" and click "Next".



14. Select the Communication Port added for the HSP Modem™ and click "Next."



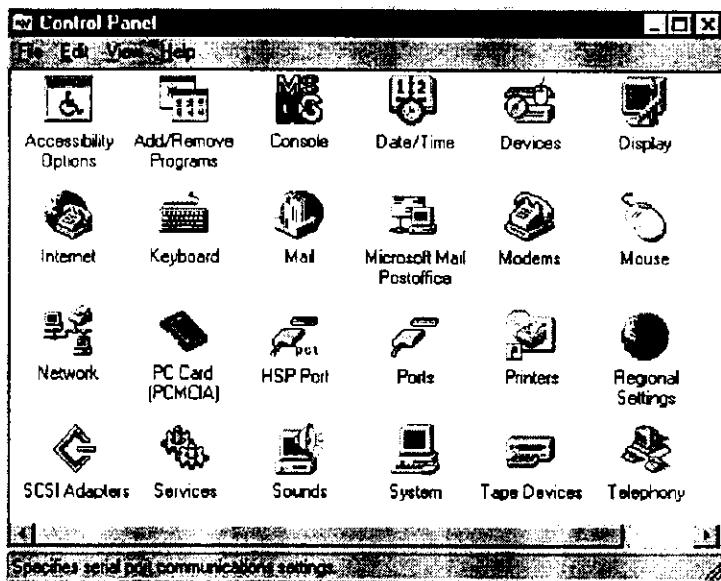
15. To complete the installation program, the new Com Port must be confirmed. Under "Control Panel" click "View" and "Refresh". Click "HSP Port".



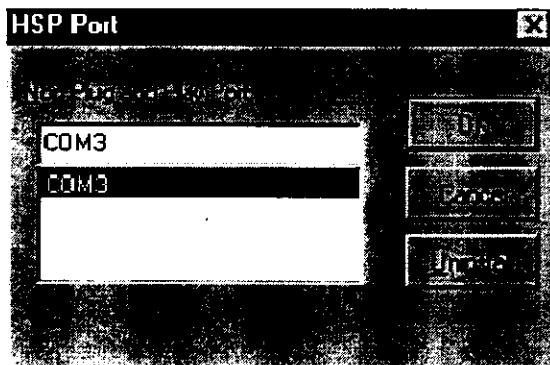
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

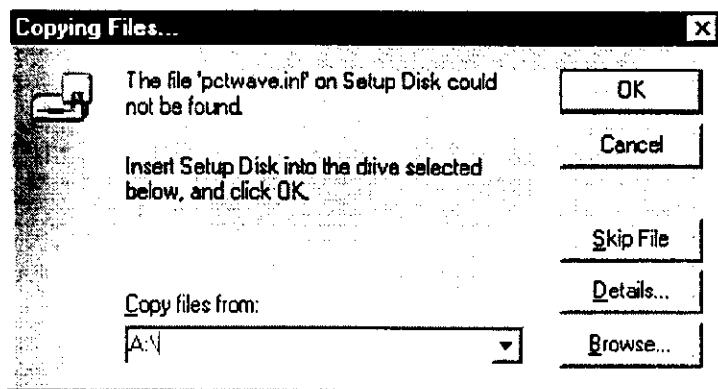
1. Under "Control Panel", click "HSP Port".



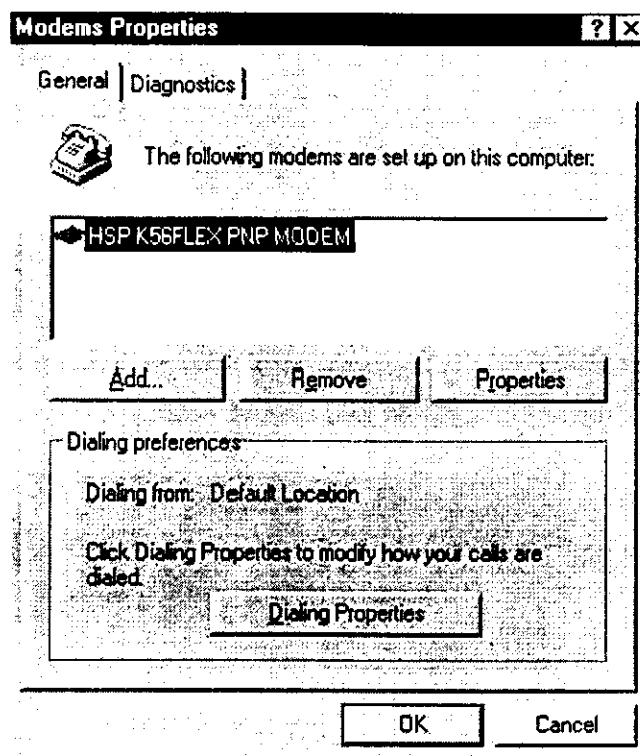
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



3. Type "A:\\" in the prompted field and click "OK" to complete the installation.



4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".

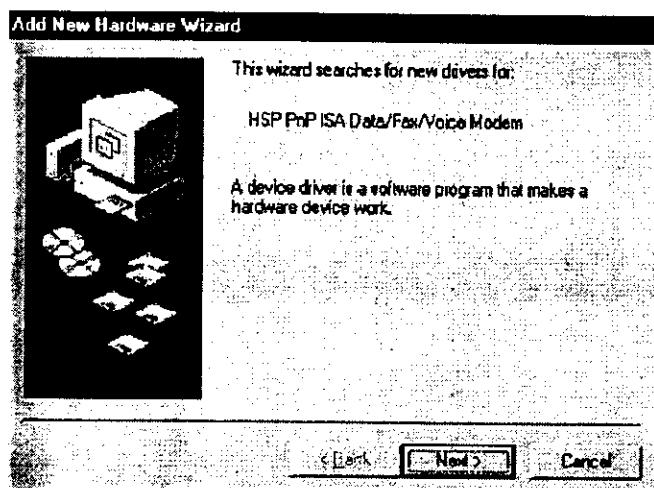


### **HSP PnP ISA Modem™ Setup for Windows 98**

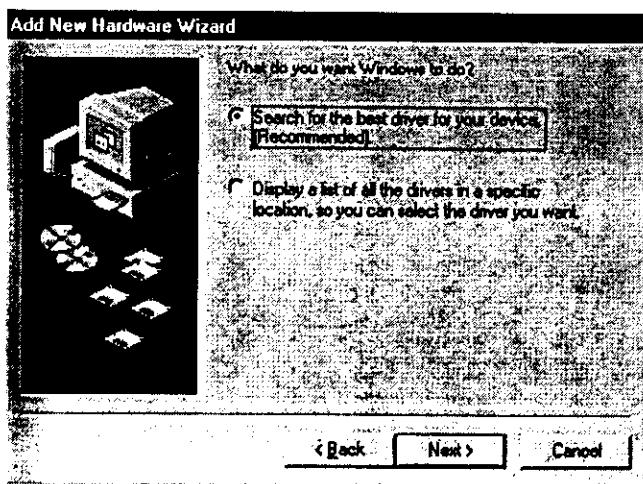
The HSP Modem™ will automatically handle all variations of CPU types. This eliminates the problem of poor performance that results from installing the incorrect driver. The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

When the computer is turned off, plug the HSP ISA Modem™ into an empty ISA slot. After the system is turned on, it will automatically detect the ISA modem. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next".



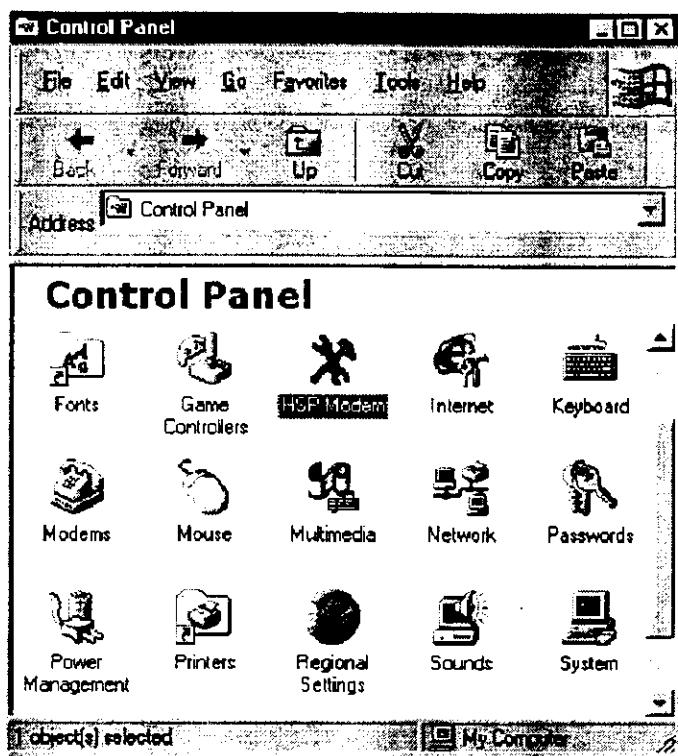
2. Windows will search for the driver. Choose the "Recommended" option and click "Next".



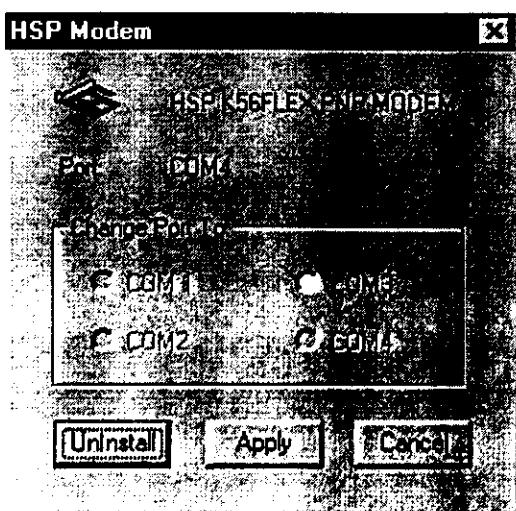
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

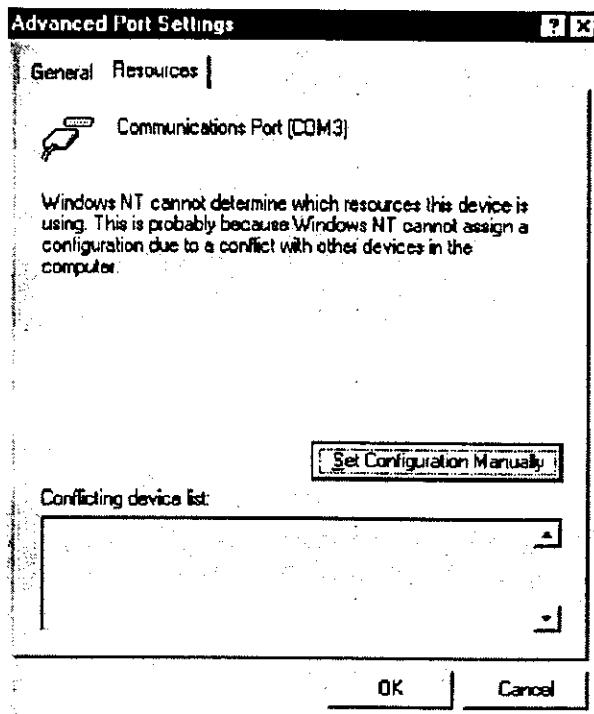
1. Click "HSP Modem" under "Control Panel".



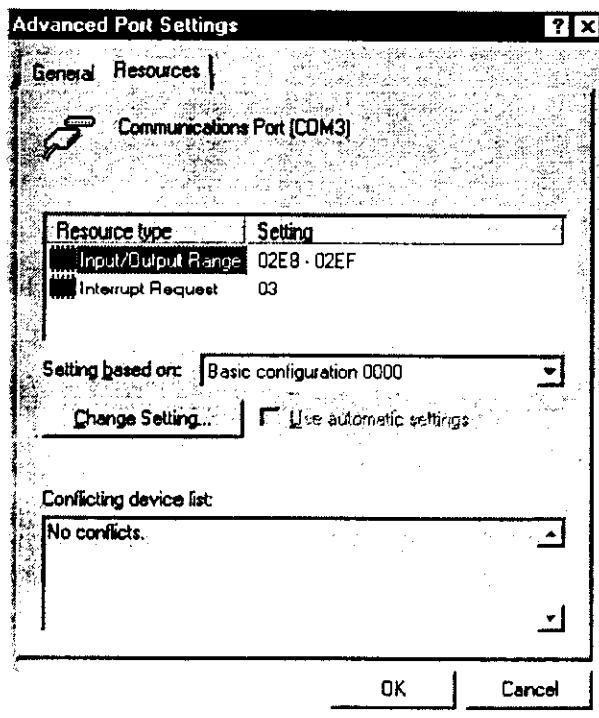
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



2. Under "Advanced Port Settings", click "Set Configuration Manually".



3. If there is a resource conflict, manually change the setting and click "OK" to complete the modem installation.



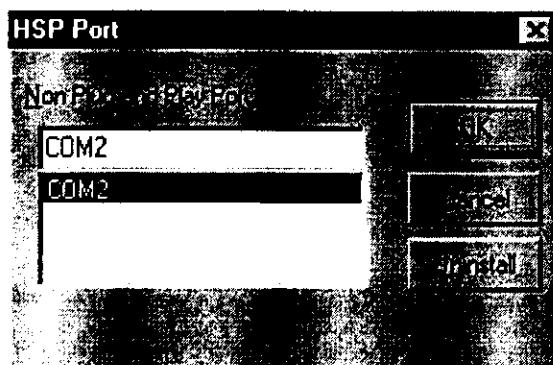
## Uninstallation:

The HSP Modem™ can be uninstalled by using the following procedure.

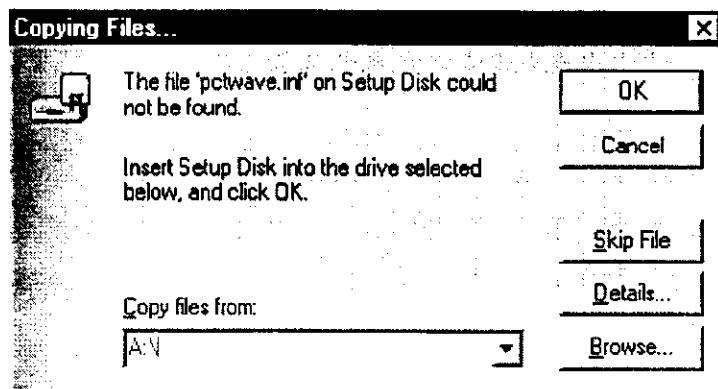
1. Click "HSP Port" under "Control Panel".



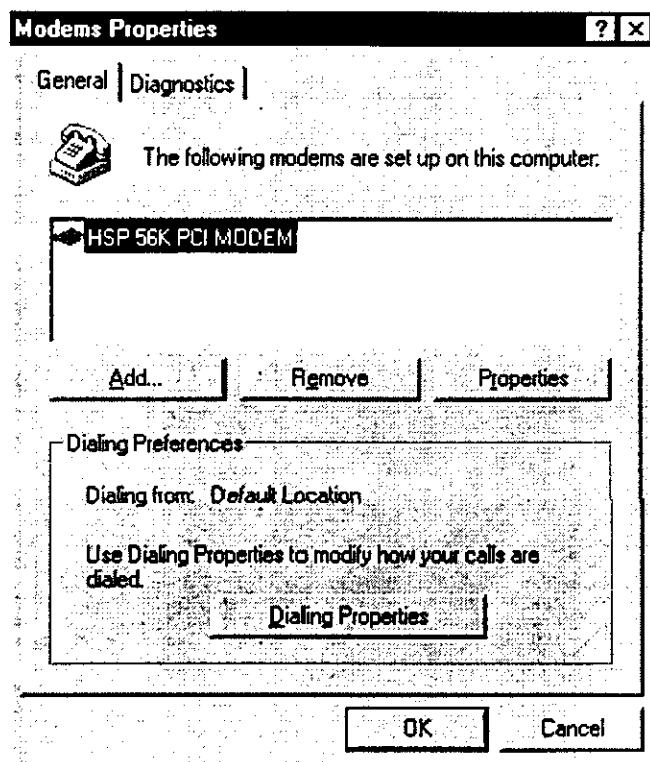
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



3. Type "A:\\" in the prompted field and click "OK" to complete the installation.



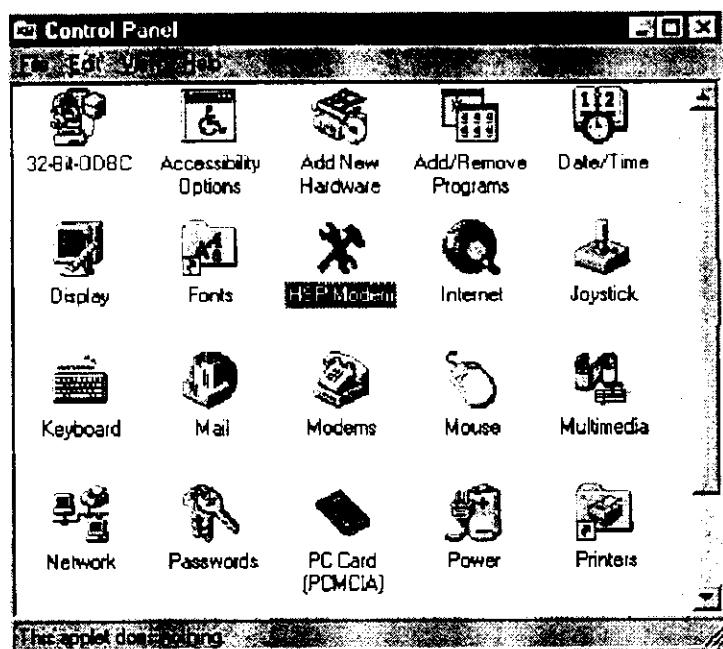
4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".



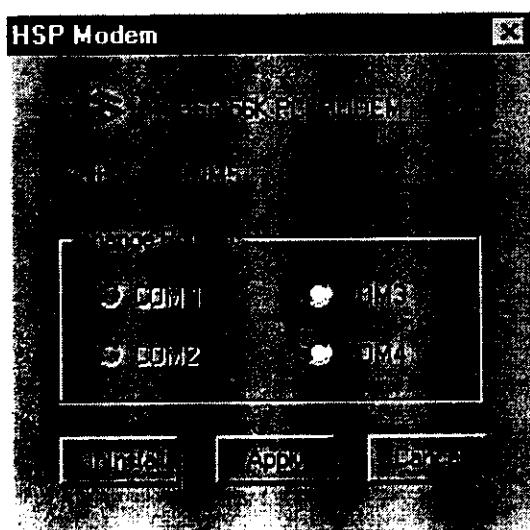
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

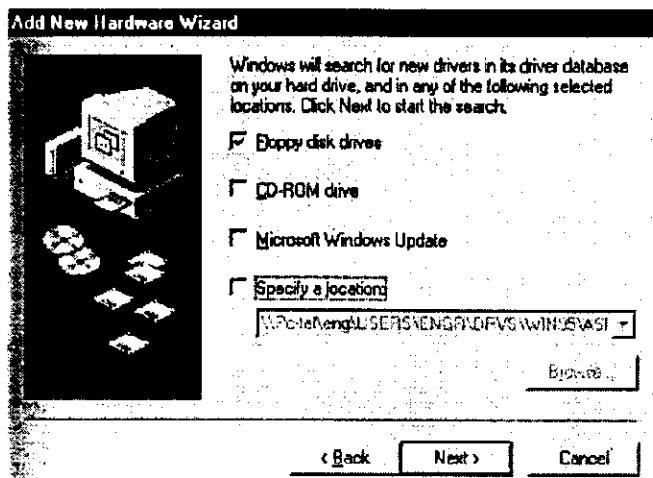
1. Click "HSP Modem" under "Control Panel".



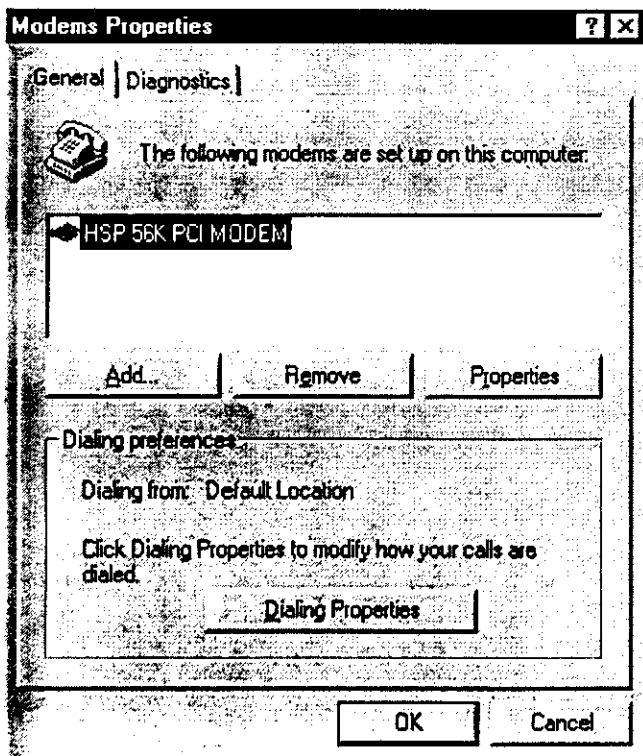
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



3. Choose "Floppy disk drives" and click "Next". Continue to follow the "Wizard" instructions to complete the installation process.



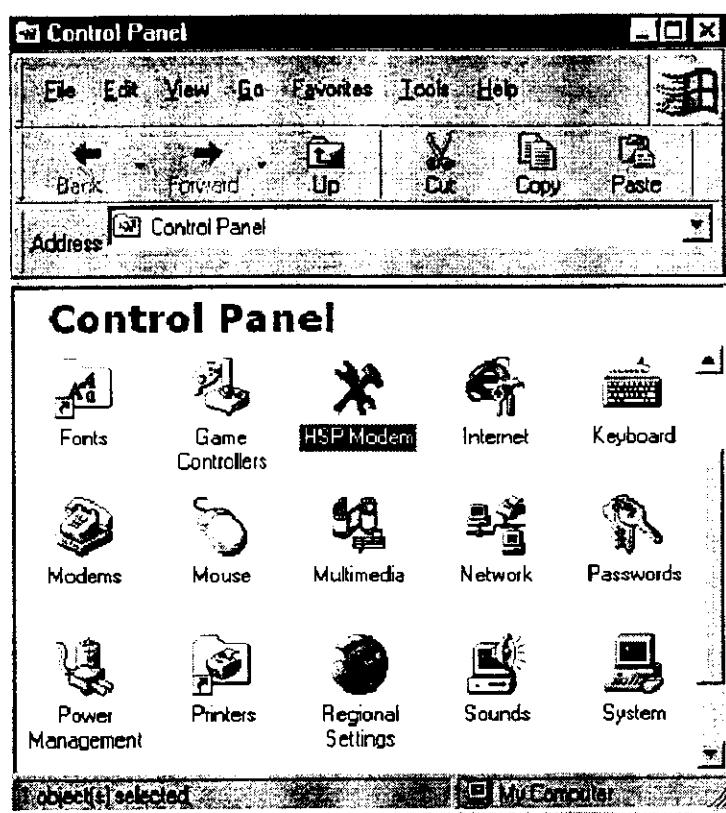
4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".



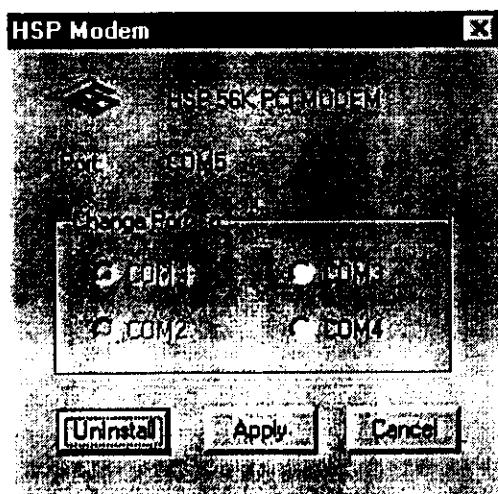
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

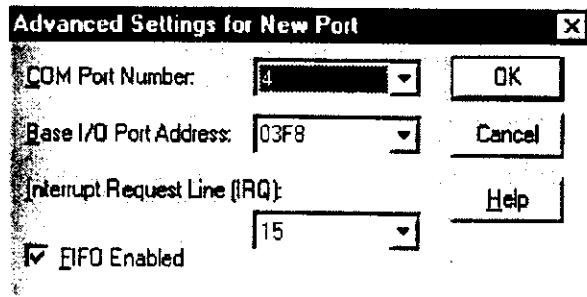
1. Click "HSP Modem" under "Control Panel".



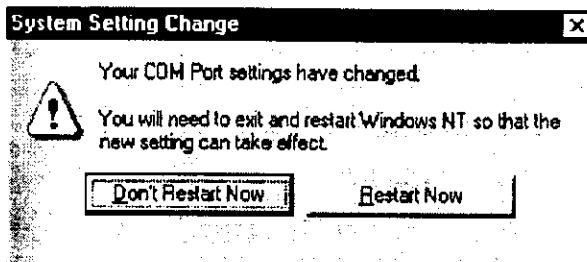
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



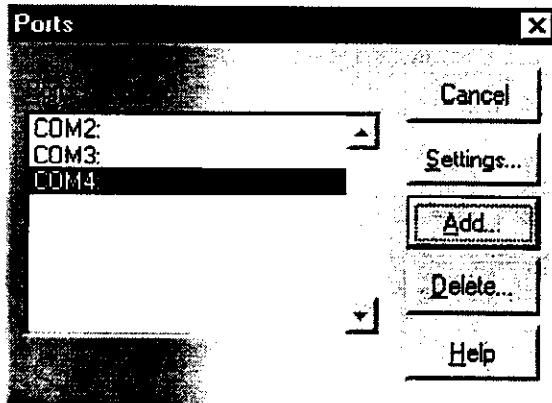
3. Click "OK" to finish installing a new Com Port.



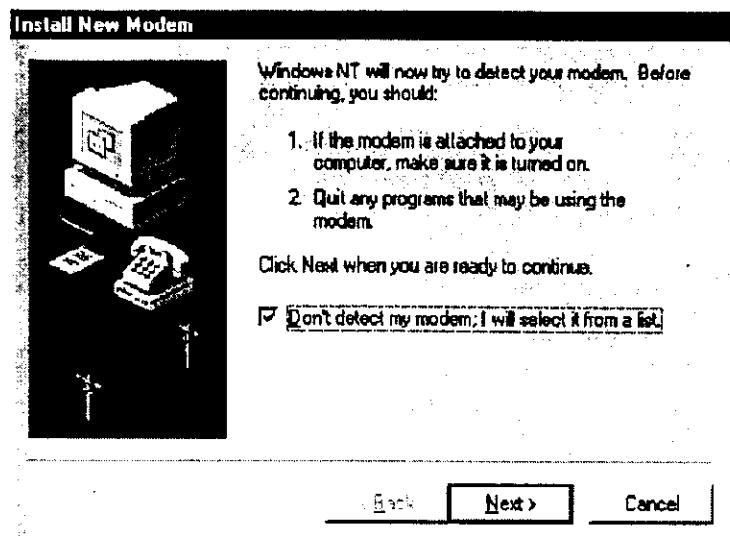
4. Click "Don't Restart Now". The system will be restarted after installing the modem.



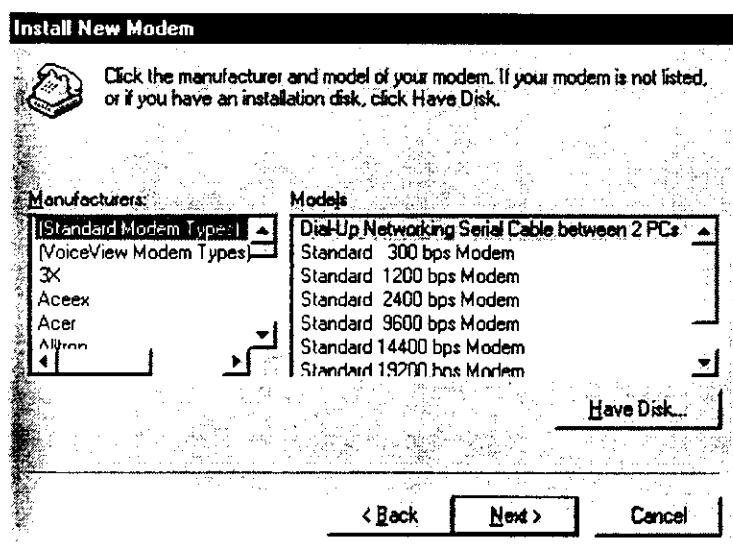
5. The new Communications Port should be shown. Click "Close" to continue.



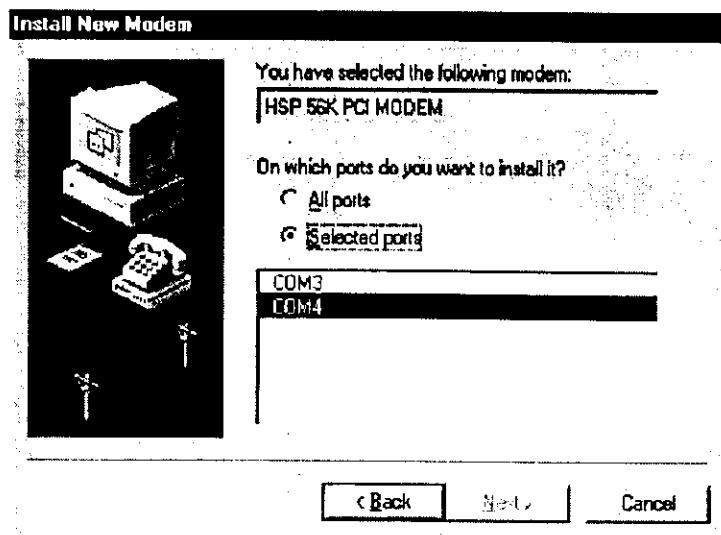
8. Select "Don't detect my modem" and click "Next".



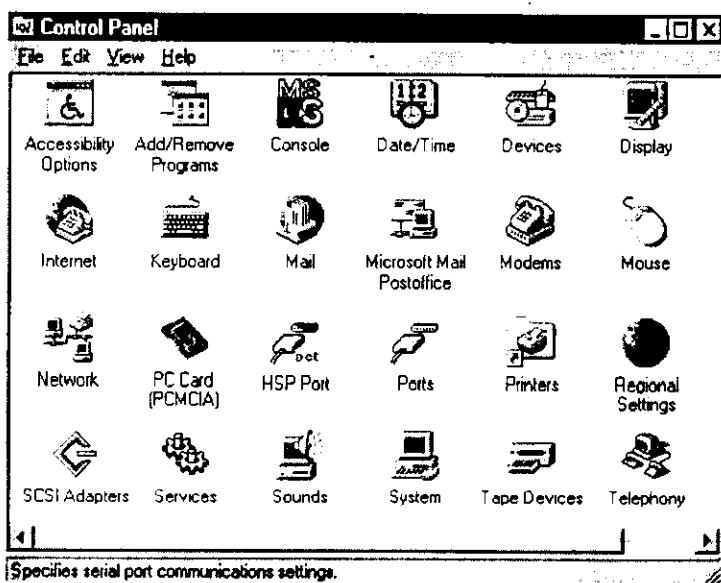
9. Make sure the driver disk is installed in the A: Drive and click "Have Disk".



12. Select the Communications Port added for the HSP Modem™ and click "Next".

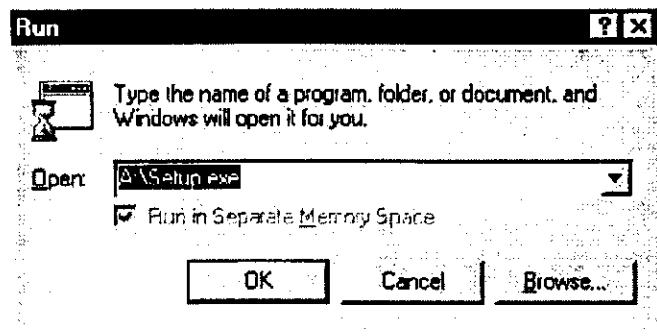


13. To complete the installation program, the new Communications Port needs to be confirmed. Under "Control Panel", select **View** and **Refresh**. Click "HSP Port".

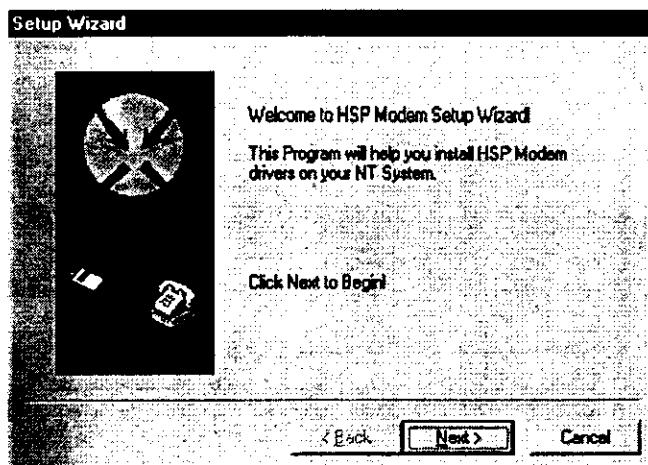


**Option 2:**

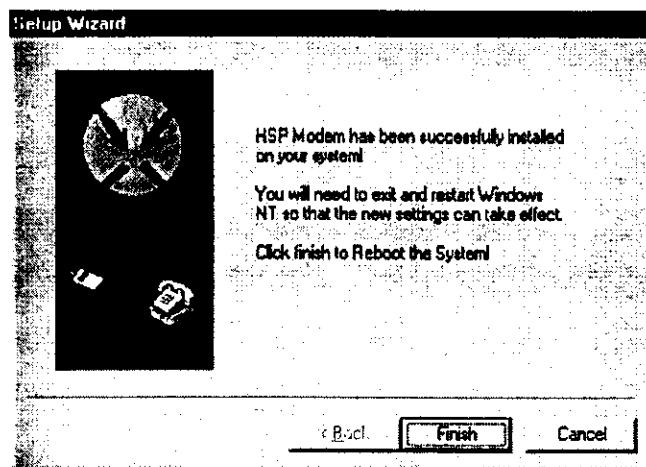
1. The second option to install the HSP Modem™ is done in “Run” under the “Start” menu. Type the path as shown below to start the installation and click “OK”.



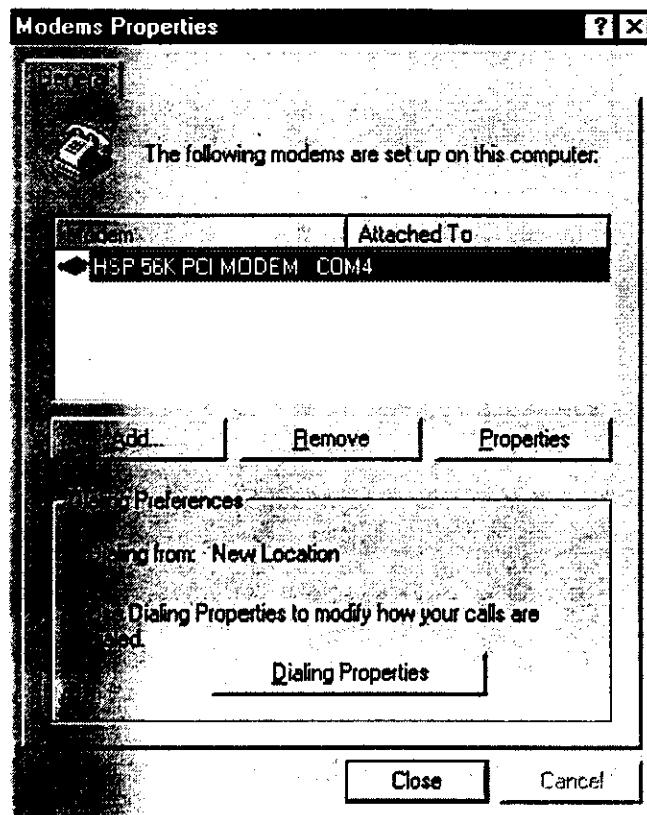
2. Click “Next” to continue the installation program.



6. Click "Finish" and the system will automatically restart.



7. After restarting the system, the following modem should be listed under "Modem Properties"



## **2.3 Windows NT 4.0 with Service Pack 3**

### **NT 4.0 PnP Modem Installation**

Before installing the modem drivers, the PnP ISA Enabler driver for NT must to be installed. The driver library on the Windows NT 4.0 CD-ROM includes the PnP ISA Enabler driver, which handles the detection and installation of Plug and Play devices in Windows NT 4.0. Install the PnP ISA Enabler driver (PNPISA) according to the following steps.

**Note:** Although Windows NT includes PNPISA to detect Plug and Play devices, Plug and Play devices are not supported in Windows NT 4.0. Microsoft provides PNPISA as a "use at your own risk" tool.

1. Locate the "PNPISA.INF" file in the Drvlib\Pnpisa\x86 folder on the Windows NT 4.0 CD-ROM.
2. Use the right mouse button to click the "PNPISA.INF" file, and then click Install on the menu that appears.
3. Restart the computer.

After restarting the computer, you will receive a message that Windows NT has detected a Plug and Play device. If the Plug and Play modem is not detected, you may need to repeat this process to trigger the PnP detection. The following steps should work.

1. Turn off the computer and remove the modem.
2. Turn the computer on, and install PNPISA again.
3. Turn off the computer.
4. Plug the modem card back in.
5. Restart your computer and see if the modem is detected.

When the modem been detected, use following steps:

1. Install the new device from the modem driver disk.
2. When Windows NT finishes the modem setup, restart the computer.

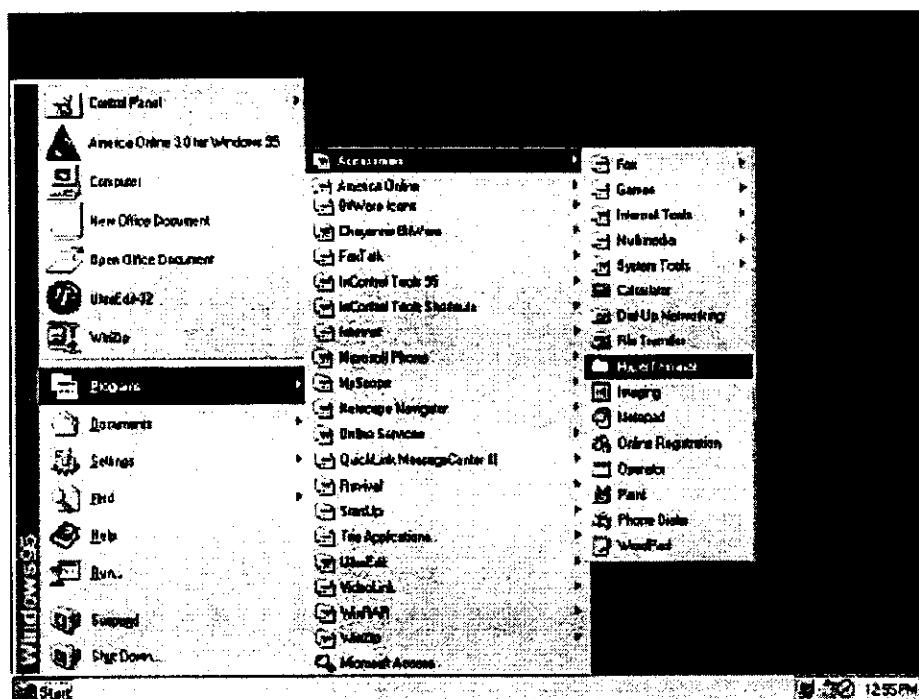
#### **Uninstall HSP Modem**

1. Go to "Control Panel" and click "HSP Port".
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.

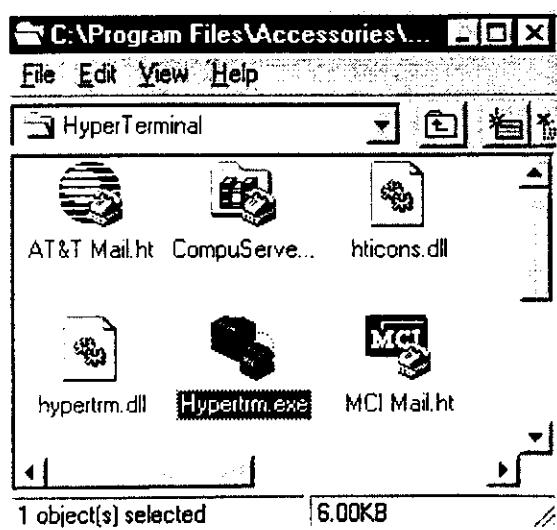
### **3.1 Windows 95 Hyper Terminal test for HSP Modem Card**

If you experience difficulty with an HSP™ Modem, follow these steps to try to isolate the possible cause. Continue until you encounter the problem.

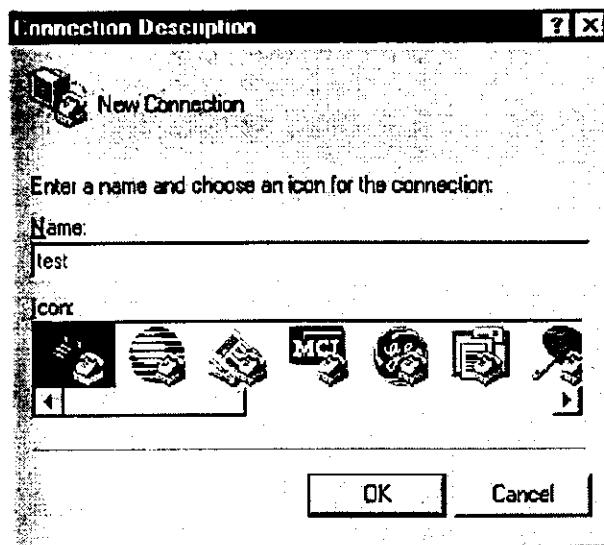
1. Go to the "Start" menu, choose "Programs" and then "Accessories".



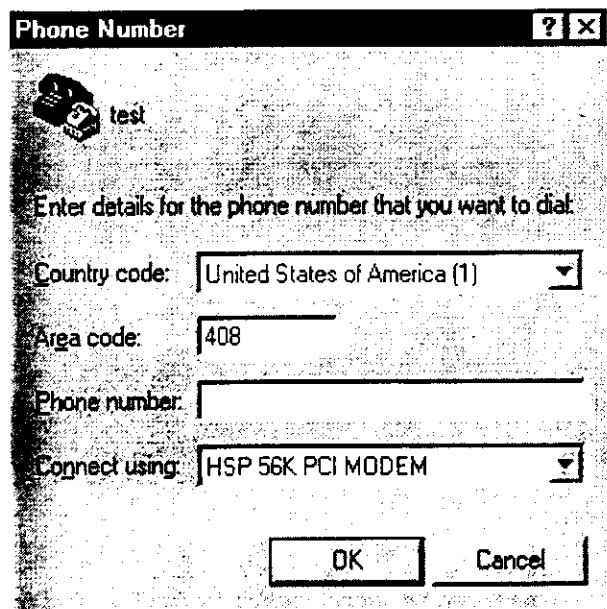
2. Double click on "Hyper Terminal". Run Hyper Terminal to open the Connection windows.



3. Enter a name and choose an icon. Click OK.



4. Verify the modem selection. Enter any phone number, and click OK.



USER INFORMATION

INFORMATION TO THE USER

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and  
(2) This device must accept any interference received, including  
interference that may cause undesired operation.

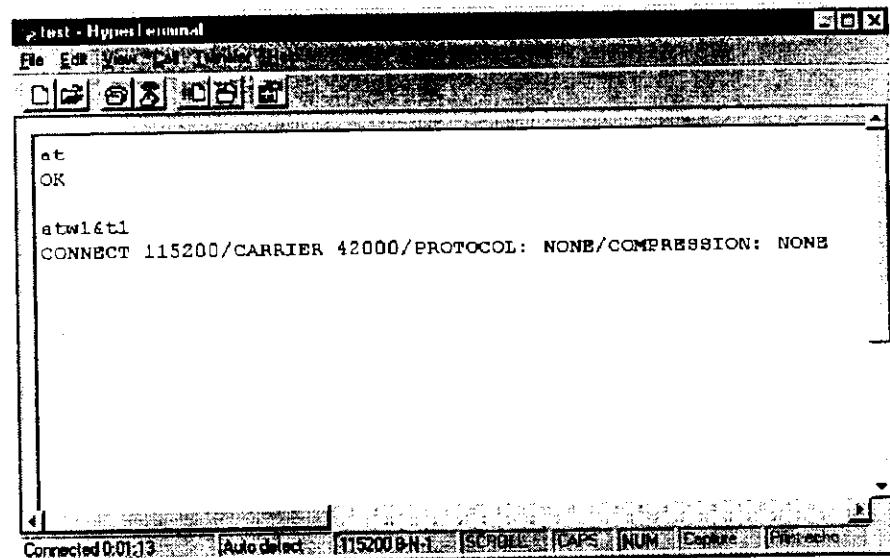
NOTE: This equipment has been tested and found to comply with the  
limits for a Class B digital device. Pursuant to Part 15 of the  
FCC Rules. These limits are designed to provide reasonable  
protection against harmful interference in a residential  
installation. This equipment generates, uses and can radiate  
radio frequency energy and, if not installed and used in  
accordance with the instructions, may cause harmful interference  
to radio communications. However, there is no guarantee that  
interference will not occur in a particular installation. If this  
equipment does cause harmful interference to radio or television  
reception. Which can be determined by turning the equipment off  
and on the user is encouraged to try to correct the interference  
by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation 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.

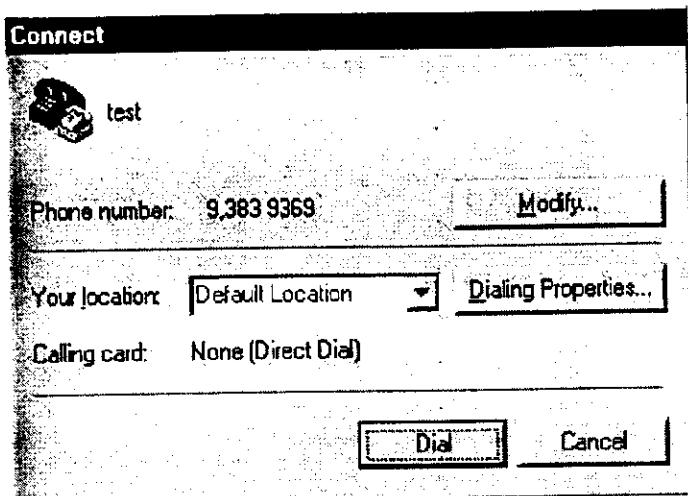
This booklet is available from the US government Printing Office  
\*Washington, DC 20402, Stock NO. 004-000-00345-4.

**CAUTION: Any changes or modifications not expressly  
approved by the grantee of this device could void the  
user's authority to operate the equipment.**

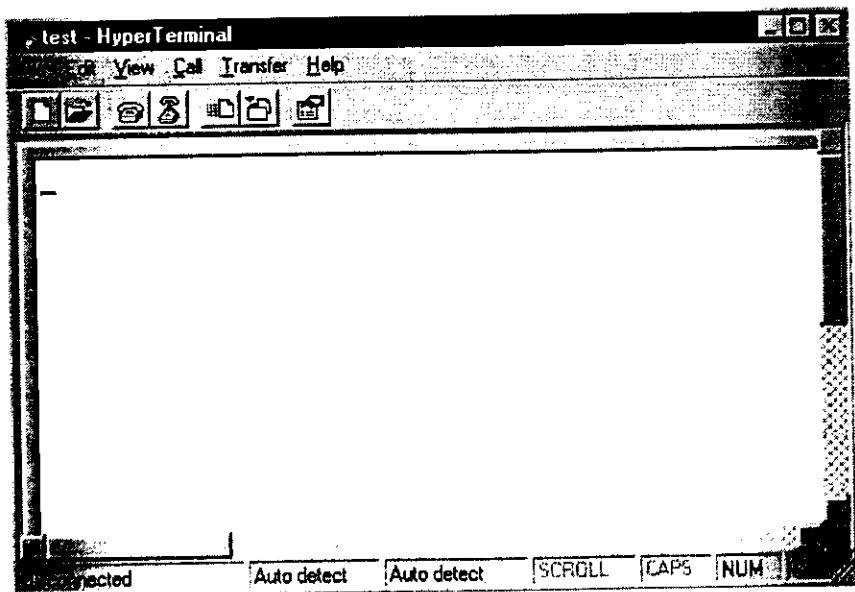
7. Test the analog loopback function for 56K by typing ATW1&T1<enter>. You should see the 'CONNECT 115200/CARRIER 42000 result code. After the CONNECT message, the modem is in the data mode and ready to transfer a text file. You can use the TRANSFER function in the terminal program to do a file transfer or by simply typing any characters from the terminal.



5. Click on "Cancel", and the modem will not dial. This will leave you at the terminal window.



6. Once you get to the terminal window, you can enter commands to the modem. Type AT<enter>. You should see an 'OK' response. If nothing happened at this point, this indicates that the modem is not getting the proper IRQ. In Windows 95, use the modem control panel to change the IRQ.



## **Section 3**

### **3.0 Windows95 and Memphis Diagnostic Sequence for HSP Modem™ Card**

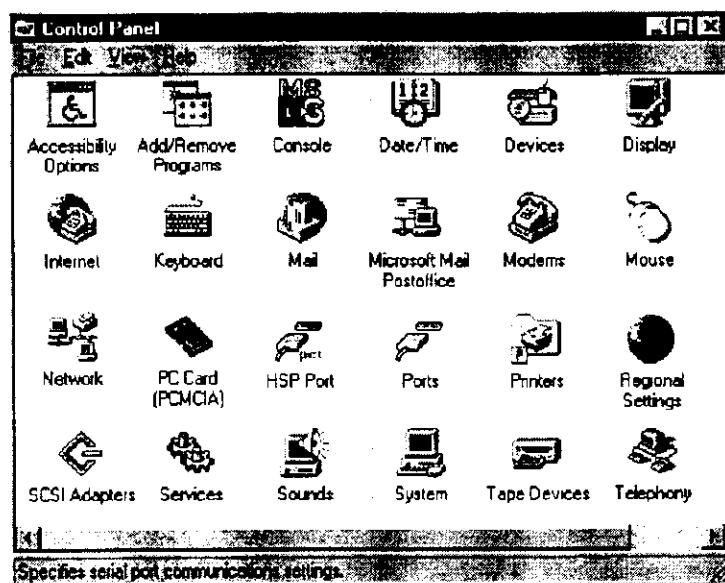
If you experience difficulty with the HSP™ Modem, follow these steps to try to isolate the possible cause. Continue until you encounter the problem.

1. Start Windows95, and select the Microsoft Terminal program in the Accessories group. Make sure the communication setting is at 115200 with the proper COM port selected.
2. If the port opened properly, go to the next step. Otherwise, check if you have any other communication software trying to use the same port. If any other communications software is open, close it. If not, switch to a different COM port. If the problem persists, make sure the card is pressed firmly into its slot. You should also try another slot, and clean the contacts with a pencil eraser. If you can't get it to work, then call technical support for help.
3. Type AT<enter>, you should see an 'OK' response. If nothing happened at this point, this indicates that the modem is not getting the proper IRQ. In Windows 95, use the modem control panel to change the IRQ.
4. Test the analog loopback function for 56K by typing ATW1&T1<enter>. You should see the 'CONNECT 115200/CARRIER 42000 result code. After the CONNECT message, the modem is in the data mode and ready to transfer a text file. This means your modem is installed successfully.

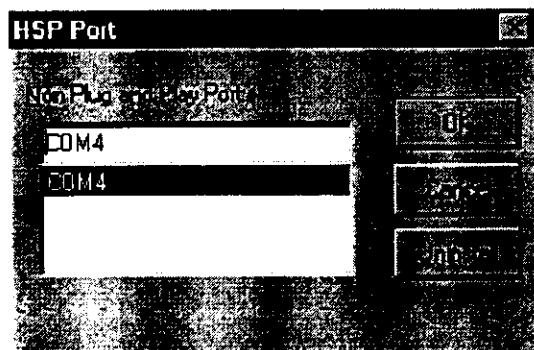
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

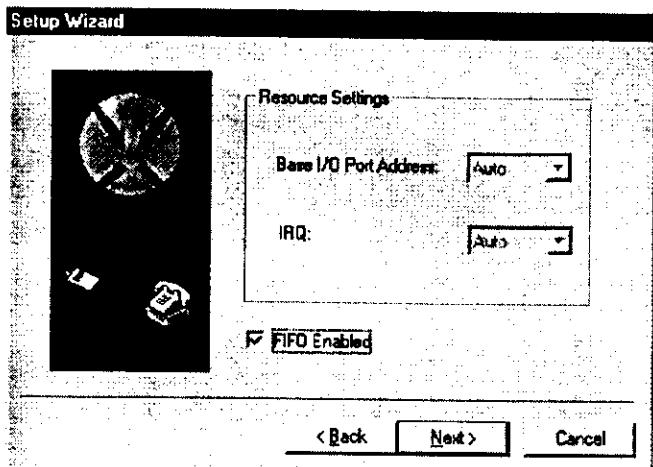
1. Under "Control Panel", click "HSP Port".



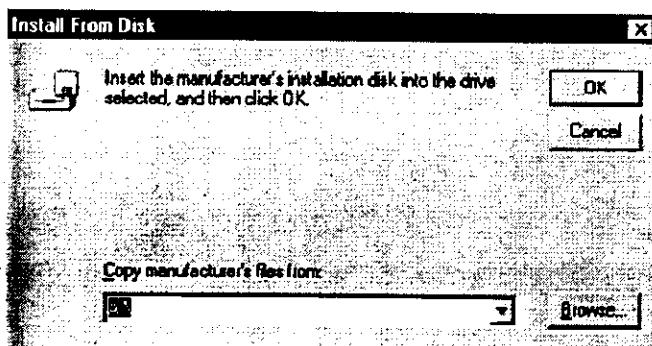
2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



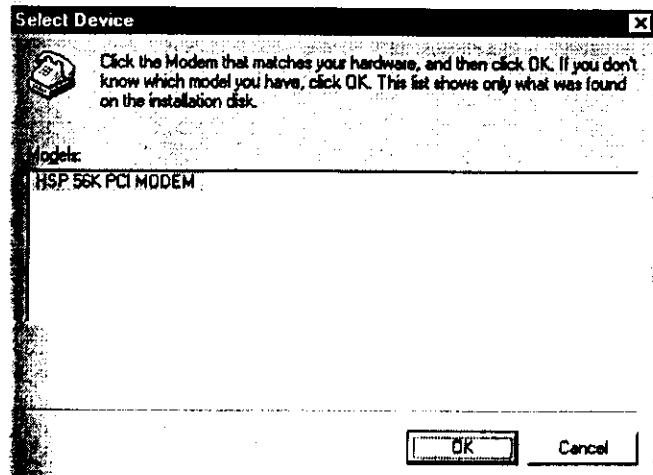
3. Click "Next" to continue.



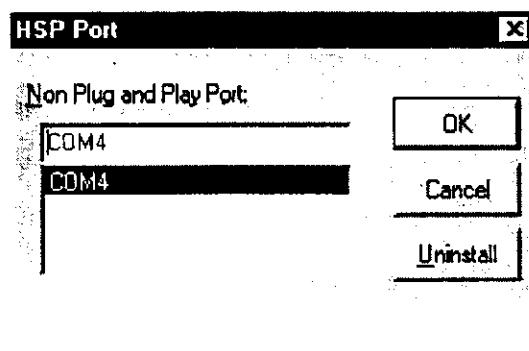
4. Install the driver disk in the A: Drive and click "OK".



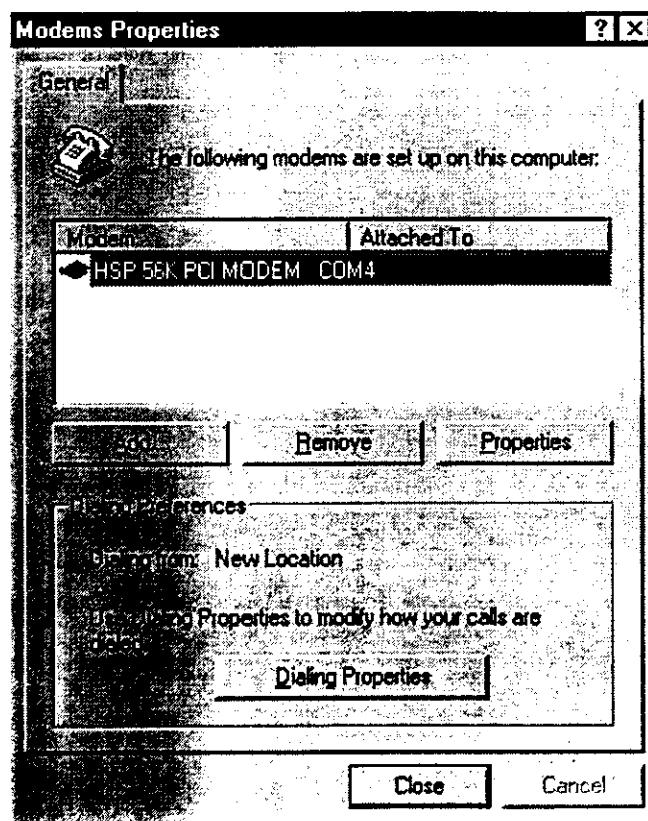
5. Select the HSP Modem™ and click "OK".



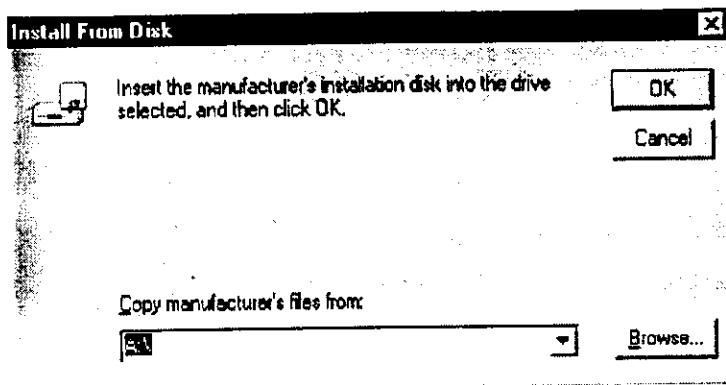
14. The new Com Port should be listed. Select the new Com Port and click "OK". Restart the system.



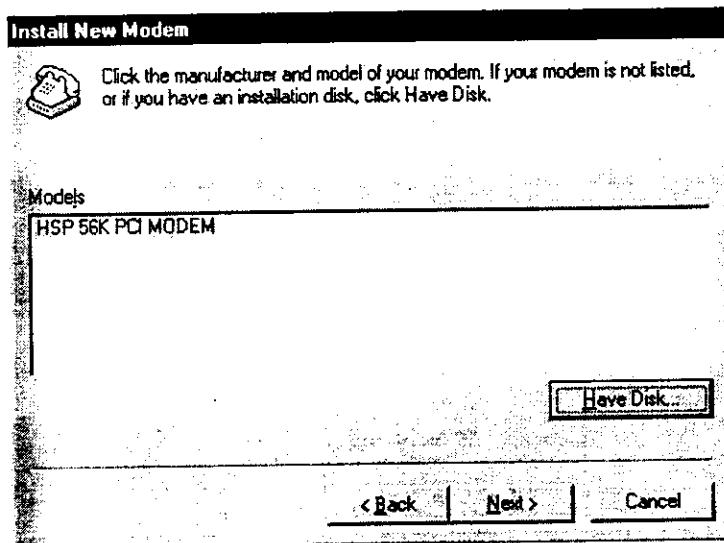
15. After restarting the system, the following modem should be listed under "Modem Properties"



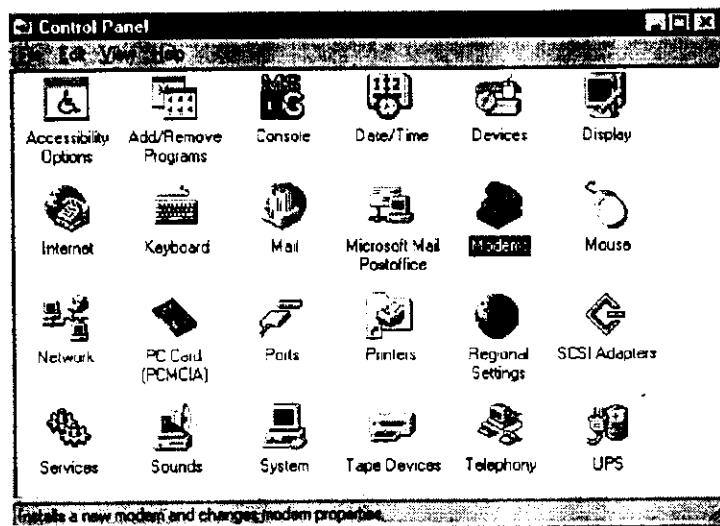
10. Click "OK" to continue the installation program.



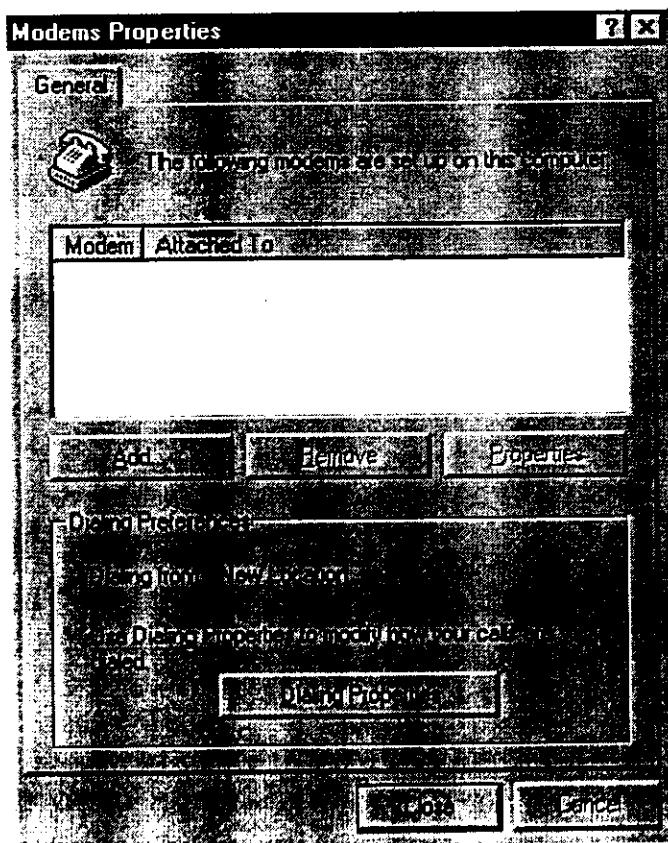
11. The following listing should be shown. Click "Next" to continue.



6. The modem can now be added. Under "Control Panel", click "Modems".



7. Click "Add" to start the installation program.



## **HSP PCI Modem™ Setup using Windows NT Workstation 4.0**

Windows NT 4.0 cannot automatically detect the CPU type from different vendors; therefore, we have provided different drivers for the appropriate CPU type. Be sure to use the correct driver for your CPU type. If you are unsure of the CPU type, contact your system vendor.

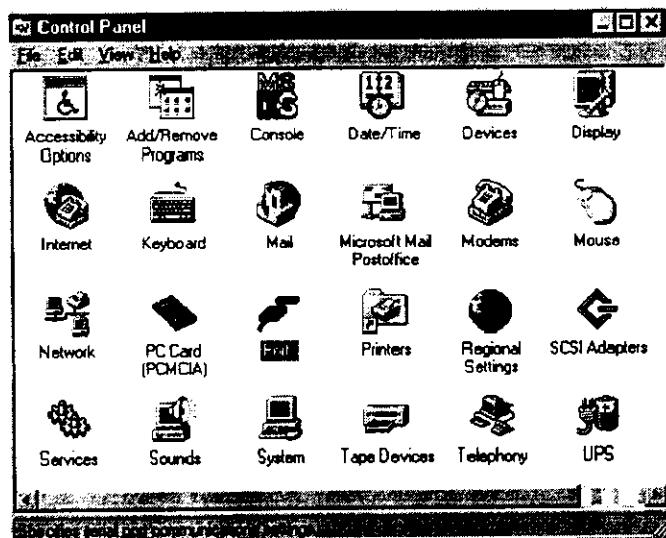
**Note:** There are two ways to install the PCI Modem under Windows NT 4.0. Both options are shown below.

### **Option 1:**

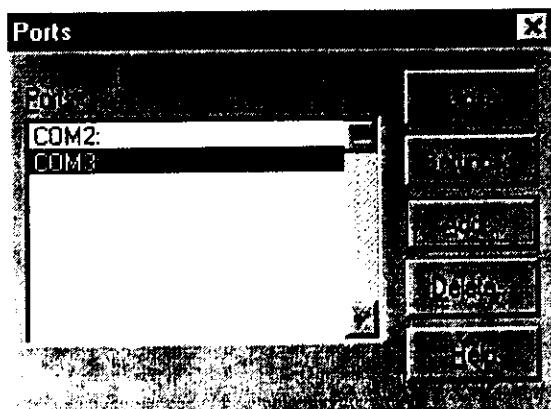
If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

When the computer is turned off, plug the HSP Modem™ PCI card into an empty PCI slot. After turning the system on, a new Com Port will need to be added.

1. Under "Control Panel", click "Ports".



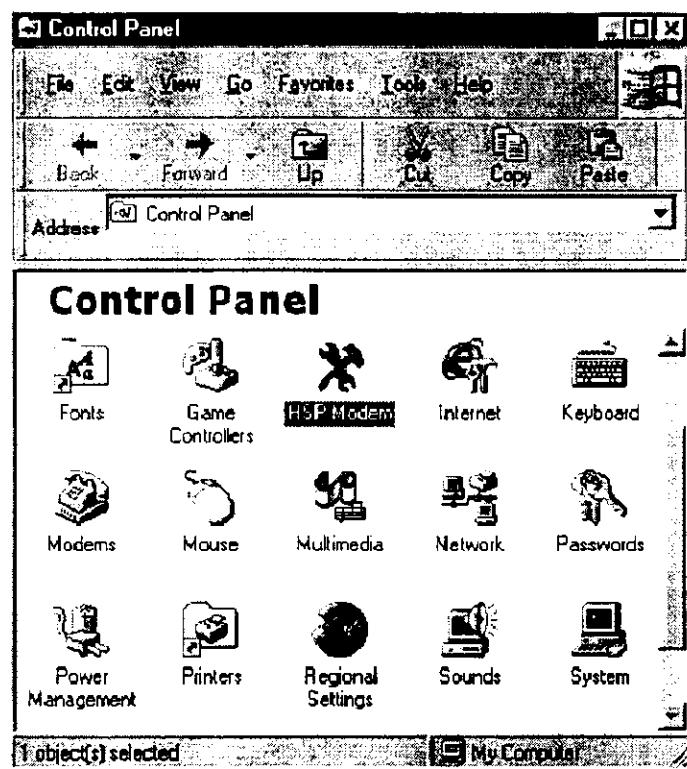
2. Click "Add" to install an a new Communications Port.



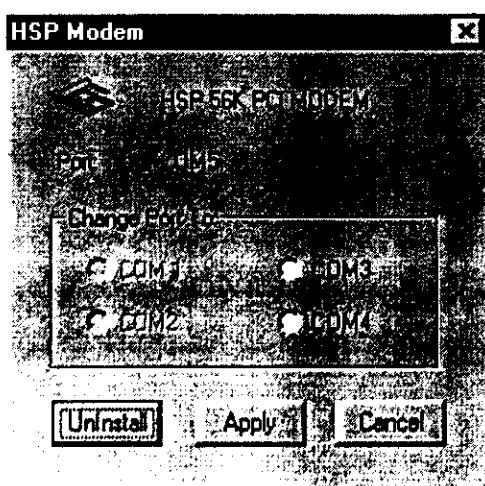
**Communications Port Change:**

The installation program will automatically add the HSP Modem™ to Com Port 5. Since certain applications require Com Ports 1-4, the Com Port can be changed by following the procedure outlined below.

1. Click "HSP Modem" under "Control Panel".



2. Choose the appropriate Com Port and click "Apply". This will complete the Com Port change.

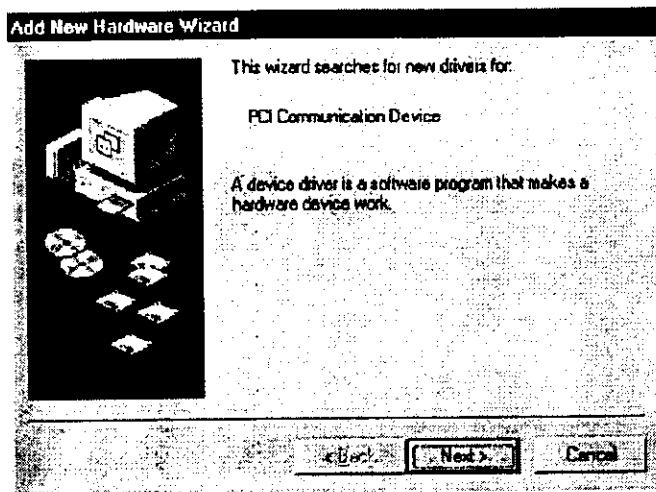


## **HSP PCI Modem™ Setup using Windows 98**

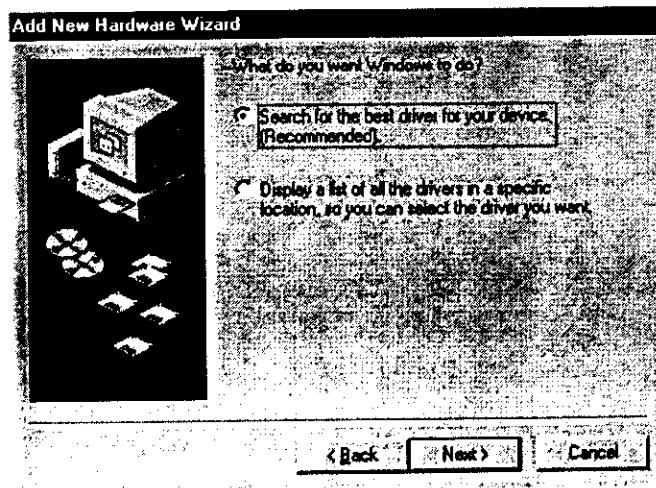
The HSP Modem™ will automatically handle all variations of CPU types. This eliminates the problem of poor performance that results from installing the incorrect driver. The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

When the computer is turned off, plug the HSP PCI Modem™ into an empty PCI slot. When the system is turned on, it will automatically detect the PCI card. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next".



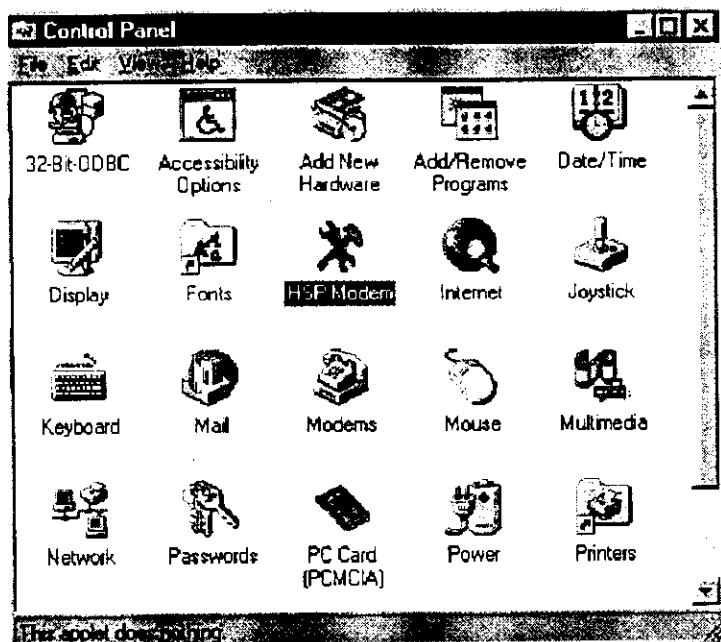
2. Windows will search for the driver. Choose the "Recommended" option and click "Next".



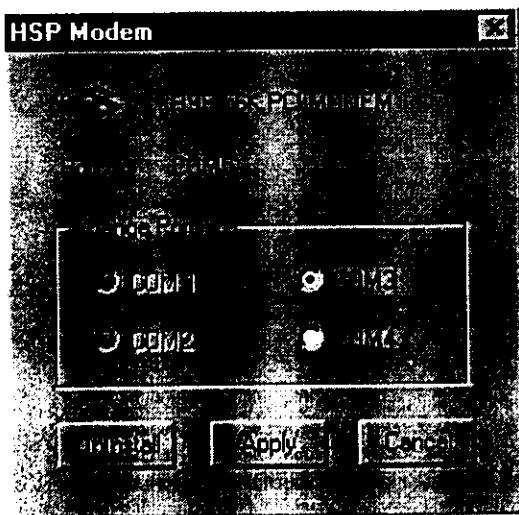
### **Communications Port Change:**

The installation program will automatically attach the HSP Modem™ to Com Port 5 or higher. Since certain applications require Com Ports 1-4, the Com Port can be changed by following the procedure outlined below.

1. Click "HSP Modem" under "Control Panel".



2. Choose the appropriate Com Port and click "Apply". This will complete the Com Port change.

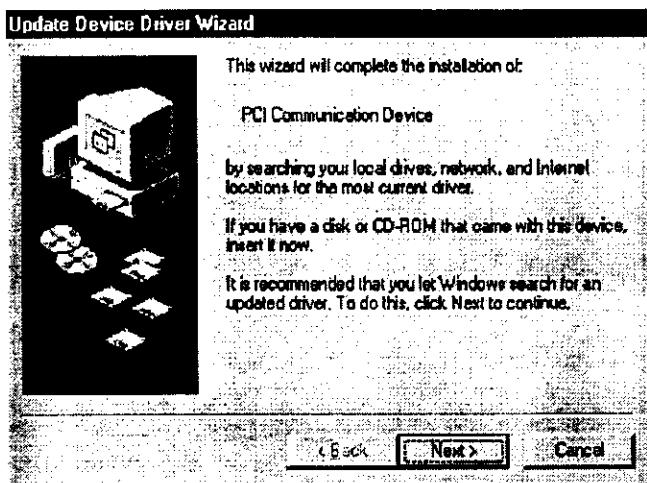


## **2.2 HSP PCI Modem™ Setup using Windows 95 OEM Service Release 2**

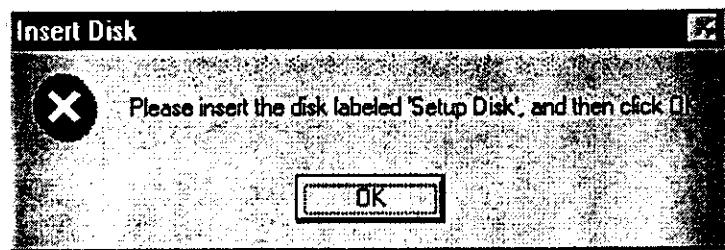
The HSP Modem™ driver will automatically handle all variations of CPU types. This eliminates the problem of poor performance that results from installing the incorrect driver. The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

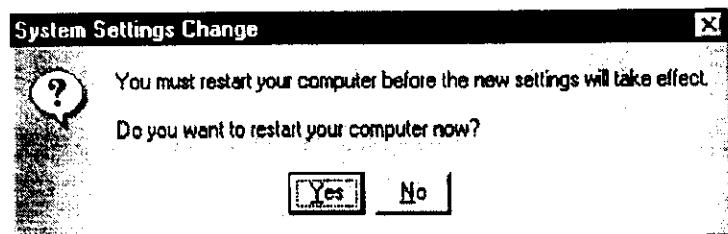
When the computer is turned off, plug the HSP Modem™ PCI card into an empty PCI slot. After the system is turned on, it will automatically detect the PCI card. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next". Follow the "Wizard" installation instructions.



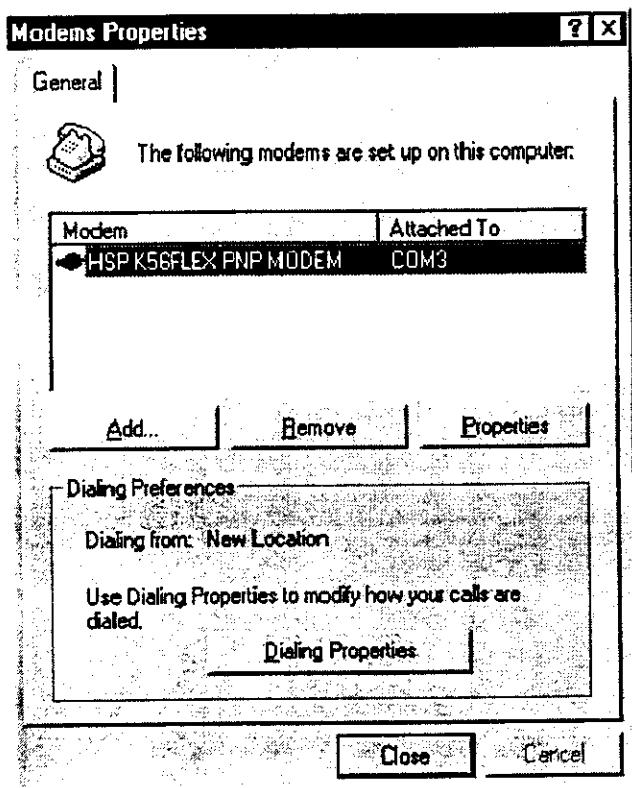
2. The installation program will request the "Setup" file. Click "OK".



4. Click "Yes" to restart the system.



5. After restarting the system, the following modem listing should be shown under "Modem Properties" in the "Control Panel".

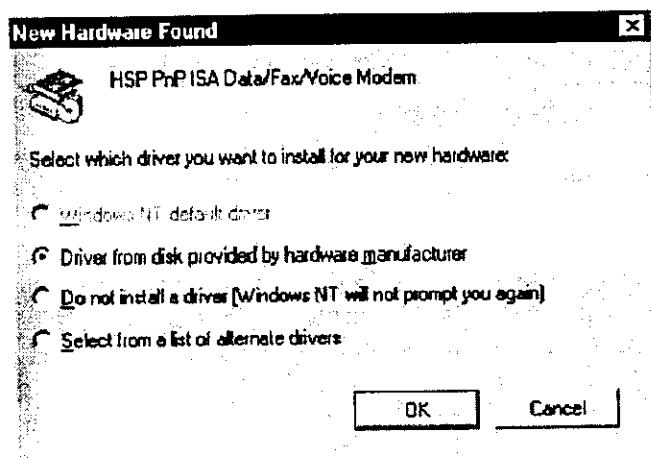


### **HSP PnP ISA Modem™ Setup using Windows NT Workstation 4.0**

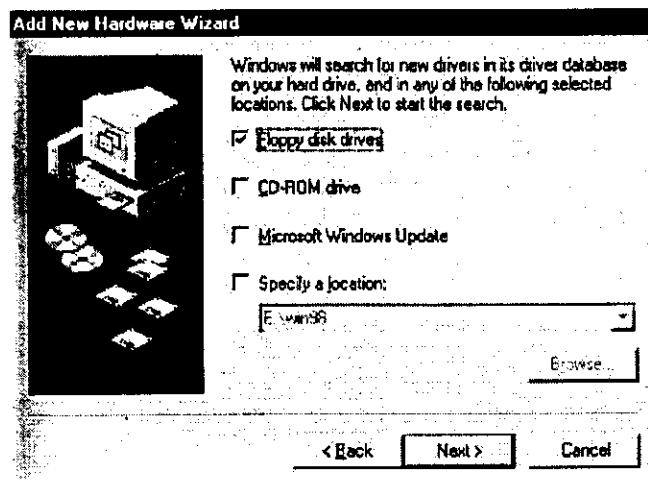
Windows NT 4.0 cannot automatically detect the CPU type from different vendors; therefore, we have provided different drivers for the appropriate CPU type. Be sure to use the correct driver for your CPU type. If you are unsure of the CPU type, contact your system vendor.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

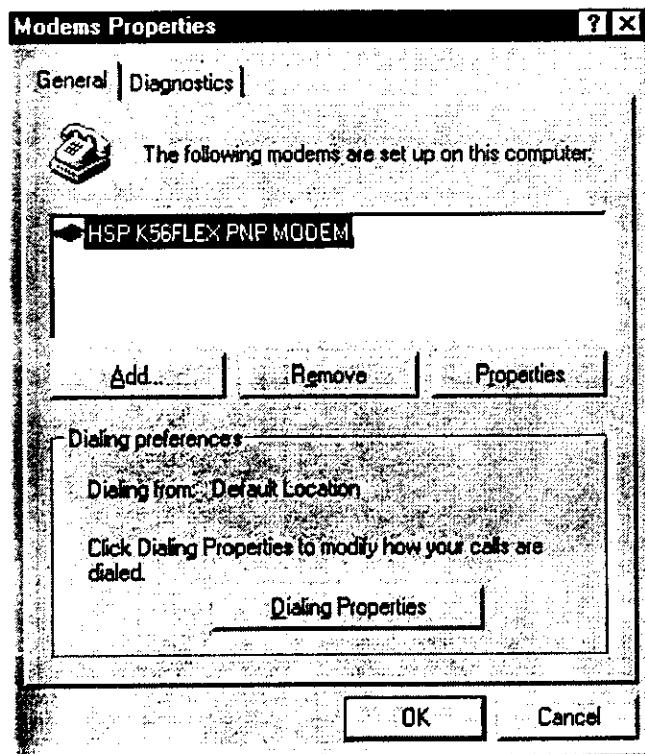
When the computer is turned off, plug the HSP ISA Modem™ into an empty ISA slot. After the system is turned on, it will automatically detect the ISA modem. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "OK". Follow the "Wizard" installation instructions.



3. Choose "Floppy disk drives" and click "Next". Continue to follow the "Wizard" instructions to complete the installation process.



4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".



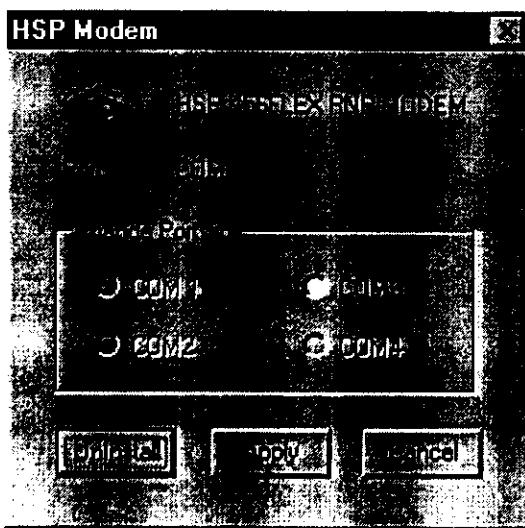
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

1. Click "HSP Modem" under "Control Panel".



2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.

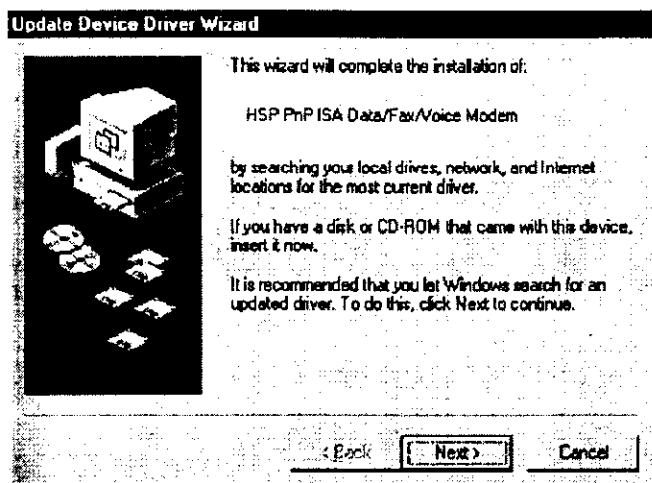


## **2.1 HSP PnP ISA Modem™ Setup for Windows 95 OEM Service Release 2**

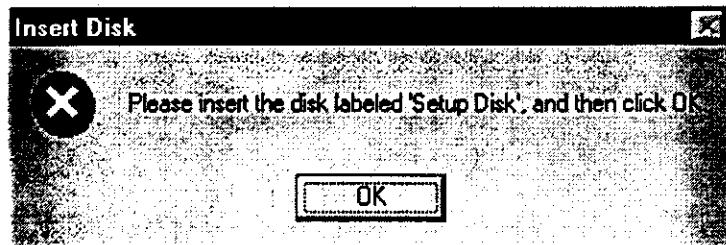
The HSP Modem™ driver will automatically handle all variations of CPU types. This eliminates the problem of poor performance that results from installing the incorrect driver. The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

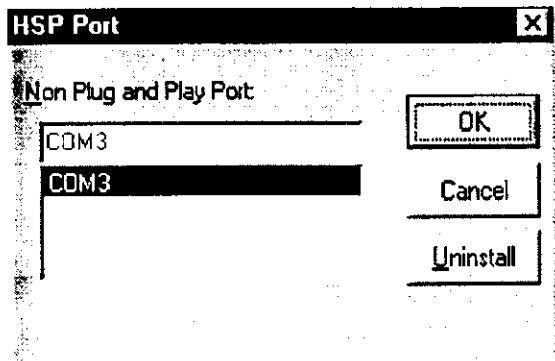
When the computer is turned off, plug the HSP ISA Modem™ into an empty ISA slot. After the system is turned on, it will automatically detect the ISA card. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next". Follow the "Wizard" installation instructions.



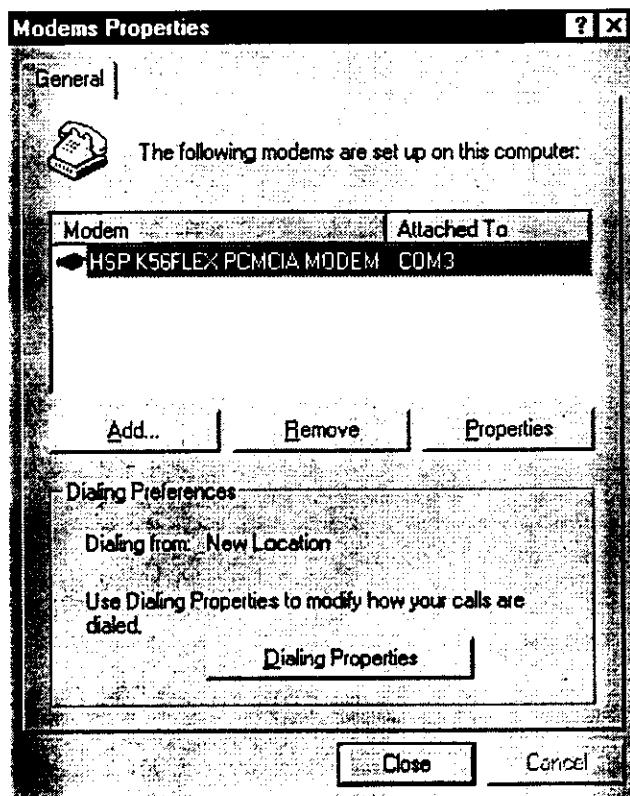
2. The "Wizard" will request the "Setup" file. Click "OK".



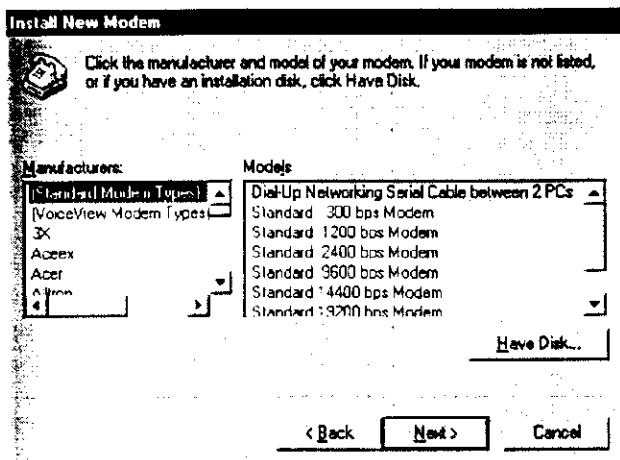
16. The new Com Port should be listed. Select the new Com Port and click "OK". Restart the system. Be sure to remove the PCMCIA card before restarting the system.



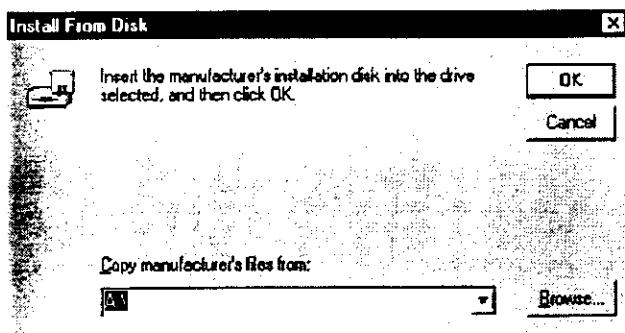
17. Reinsert the PCMCIA modem during system boot up. After restarting the system, the following modem should be listed under "Modem Properties" in the "Control Panel".



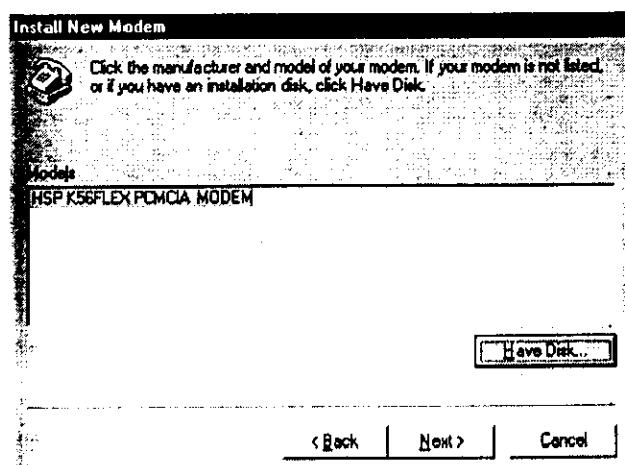
11. Make sure the driver disk is installed in the A: Drive and click "Have Disk". Continue to follow the screen instructions to complete the installation.



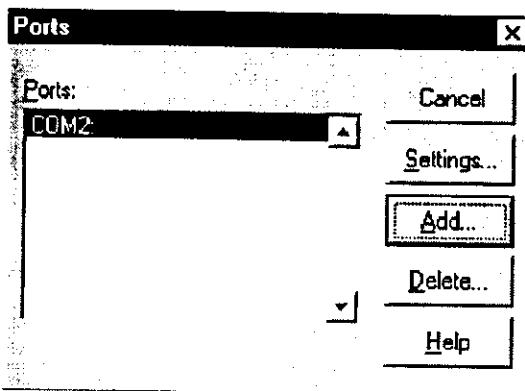
12. Click "OK" to continue the installation program.



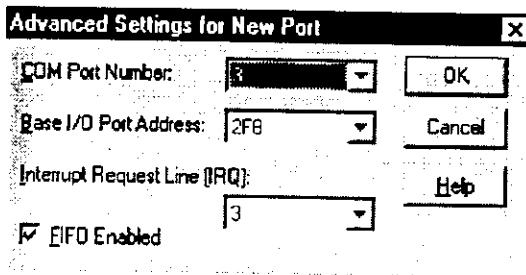
13. The following listing should be shown. Click "Next" to continue.



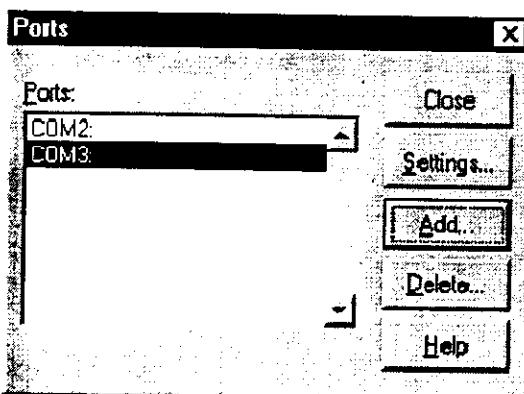
5. A new Com Port needs to be added. Click "Ports" in the "Control Panel" and click "Add" to install a new Com Port.



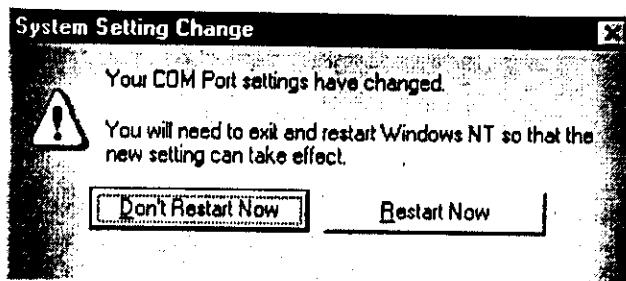
6. Change the "I/O Port Address" and "IRQ" to match the settings previously shown under "Resource Settings" in Step 4. When completed, click "OK".



7. The new Com Port should be shown. Under "Ports", click "Close" to continue.



8. Click "Don't Restart Now". The system will be restarted after installing the modem.



## **HSP PCMCIA Modem™ Setup using Windows NT 4.0**

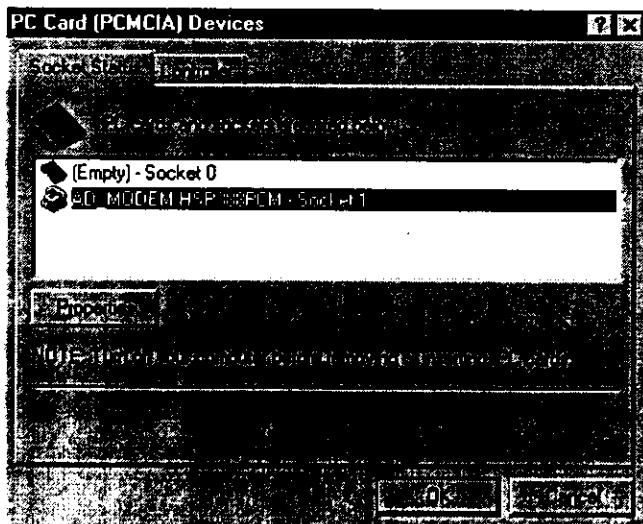
Windows NT 4.0 cannot automatically detect the CPU type from different vendors; therefore, we have provided different drivers for the appropriate CPU type. Be sure to use the correct driver for your CPU type. If you are unsure of the CPU type, contact your system vendor.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

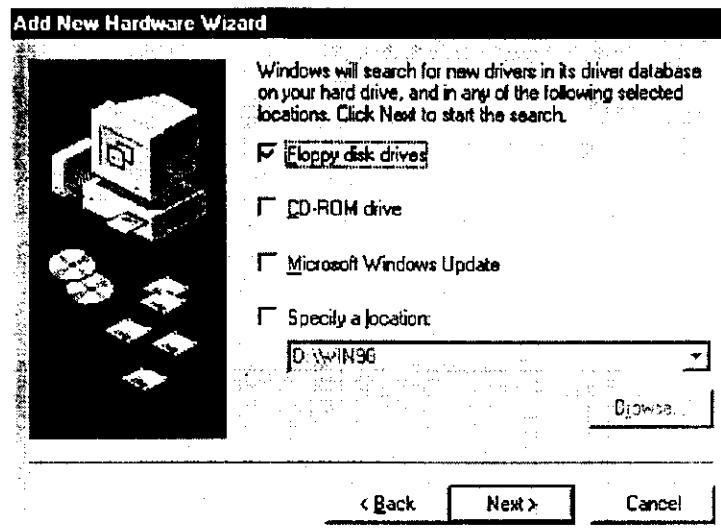
Insert the PCMCIA modem and start the system. Windows NT will assign the Resources - Interrupt Request and I/O Range- to the modem. Under "Control Panel", click "PC Card



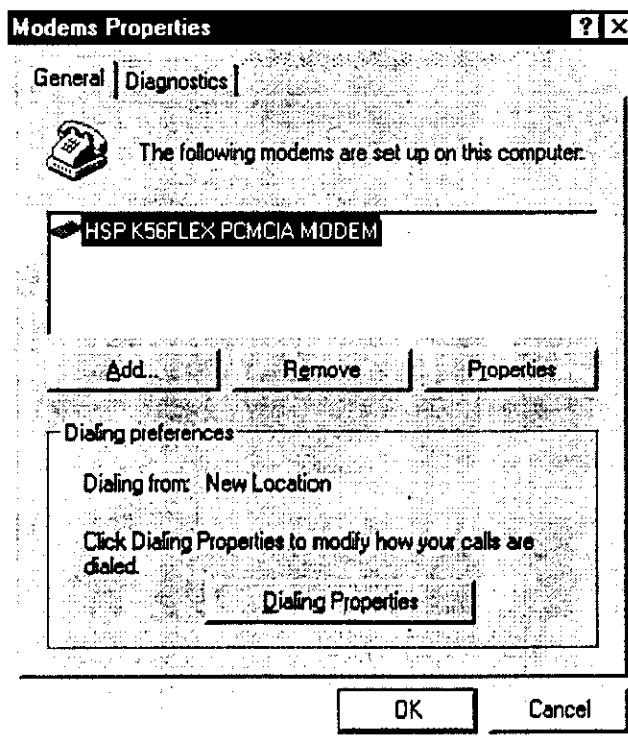
2. Under "PC Card Devices", select the HSP Modem™ and click on "Properties".



3. Choose "Floppy disk drives" and click "Next". Continue to follow the "Wizard" instructions to complete the installation.



4. After the installation is complete, the following modem listing should be shown under "Modem Properties" in the "Control Panel".



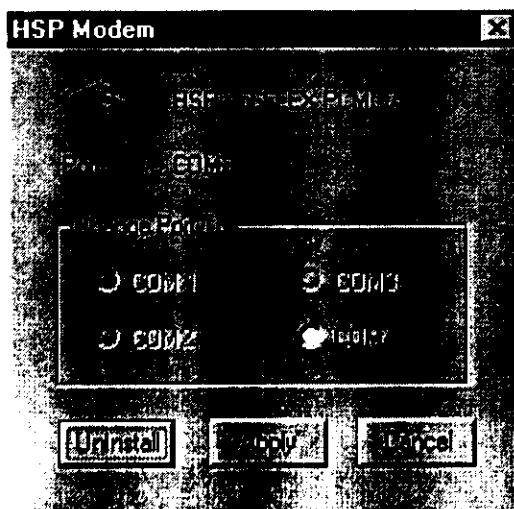
**Uninstallation:**

The HSP Modem™ can be uninstalled by using the following procedure.

1. Click "HSP Modem" under "Control Panel".



2. Click "Uninstall". The uninstallation program will automatically remove the HSP Modem™ from the system.



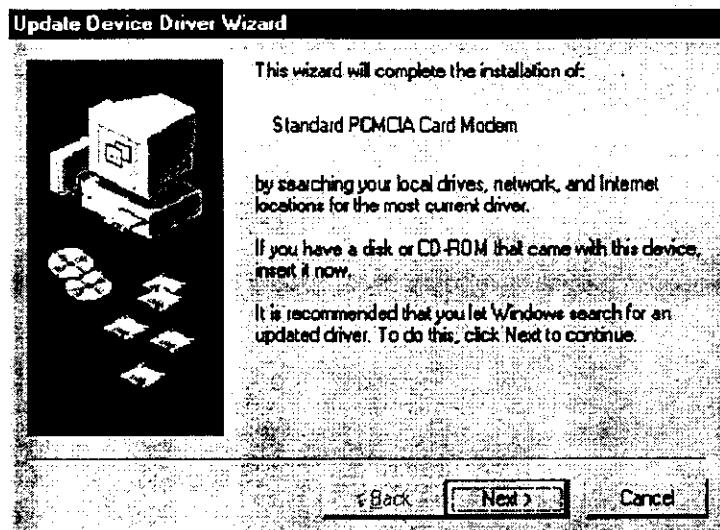
## **Section 2**

### **2.0 HSP PCMCIA Modem™ Setup using Windows 95 OEM Service Release 2**

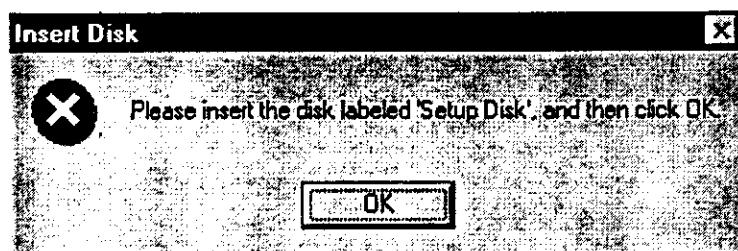
The HSP Modem™ driver will automatically handle all variations of CPU types. This eliminates the problem of poor performance that results from installing the incorrect driver. The driver will take advantage of the MMX enhancements if available.

1. If another HSP Modem™ driver was previously installed, be sure to remove the software by following the appropriate Uninstallation Procedure provided in the prior manual.

Plug the HSP PCMCIA Modem™ into an empty PCMCIA slot. The system will automatically detect the PCMCIA modem. The installation program will begin with the screen shown below. At this point, insert the HSP Modem™ driver disk in the floppy disk drive and click "Next". Follow the "Wizard" installation instructions.



2. The "Wizard" will request the "Setup" file. Click "OK".



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