This manual covers installation and operating instructions for the following U.S. Robotics Bigpicture™ products:

- 33.6 kbps and x2™ 56 kbps * Voice/Video Faxmodems
- Video Capture Card
- NTSC Camera (model 1622 only)
- Microphone (model 1690 only)

∗ **IMPORTANT!** All x2 products are capable of 56 kbps downloads; however, due to FCC rules which restrict power output of the service providers' modems, current download speeds are limited to 53 kbps. Actual speeds may vary depending on line conditions. Uploads from users to service providers travel at speeds up to 28.8 kbps. An x2-capable modem, an x2-compatible analog phone line, and an x2-capable Internet Service Provider are necessary for these high-speed downloads.

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INTRODUCTION

Congratulations! You have purchased a very powerful (and fun!) video communications tool. 3Com® (formerly U.S. Robotics®) is known worldwide for reliable, powerful, and easy-to-use data networking and communications tools. Now you can count on 3Com for the same quality in online video communications.

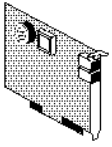
3Com, the leader in modem technology, now puts real, live video and phone communication right inside your PC. You can see and be seen, talk and listen, any time you want, with just a few mouse clicks. You can capture and send family snapshots, have an online reunion, or finally see the friends you've previously only known through e-mail.

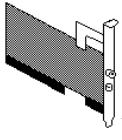
With a simple, compact camera (included with model number 1622) or your own camcorder, a standards-based video capture card, and a specially designed 3Com U.S. Robotics 56 Kbps Voice/Video Faxmodem inside your computer, you're ready to smile, laugh, wink, wave – all the things you've never done online before. You can also grab a still picture with a video camera or scanner and use Kai's Power GOO Special Edition to twist it into a funny image you can print out or send over the Internet. Or edit your home video footage into a real mini-movie with Asymetrix's Digital Video Producer.

The following section will walk you through the installation of the hardware and software included in your Bigpicture™ video package. Have fun!

HARDWARE INSTALLATION

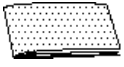
You'll need these items from your Bigpicture ™ box:

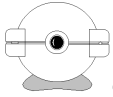

modem


video capture card


phone cord


Video Connections CD

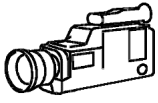

manual


camera (model 1622 only)


microphone (model 1690 only)

Plus (not included):


screwdriver


camcorder (model 1690 only)

This chapter will guide you through the installation of the other hardware in your Bigpicture video package.

Before You Begin

- We recommend that you remove any modems or other telecommunications devices (and any associated software applications) currently installed on your system that you do not plan to use once your Bigpicture kit is installed. This will help free resources within your system and avoid conflicts between such devices and your new Bigpicture hardware. Refer to the documentation for any device you wish to remove for further information about removing the device from your system.
-

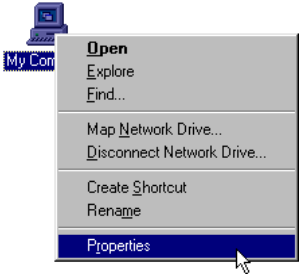
- Your system should have at least a 75 MHz Pentium processor, 16 MB RAM, and 20 MB of free hard disk space.
- Refer to your computer's documentation to make sure that you are correctly identifying your PCI and ISA expansion slots. System configurations vary and your system may not closely resemble the diagrams used in the *Installation Guide* and the *User's Guide & Reference*.

Determining Your Version of Windows 95

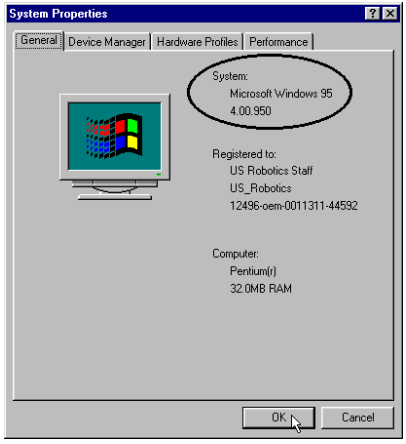
There are different versions of Windows 95 currently on the market. One of the primary ways these versions differ is in the way they handle the detection of added hardware. Before you begin installation, you should follow these steps to determine which version of Windows 95 you have. This will be helpful when you configure the hardware for your operating system later in this guide.

1. Click the **My Computer** icon on your desktop with the right mouse button.

2. Click **Properties**.



3. Click the **General** tab on the "System Properties" screen. Notice the "System:" section of the screen (circled in the following image). The number following the text "Microsoft Windows 95" will end with "950", "950a", or "950b". Write this number down for later reference. Then click **OK**.



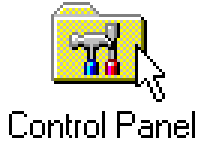
Uninstalling a U.S. Robotics Winmodem ™ Installed in Your Computer

If you have a U.S. Robotics Winmodem installed in your computer, you will need to uninstall it before installing your Bigpicture kit. If you do not currently have a Winmodem installed, go to "Running the Preinstallation Check Utility" (page 9).

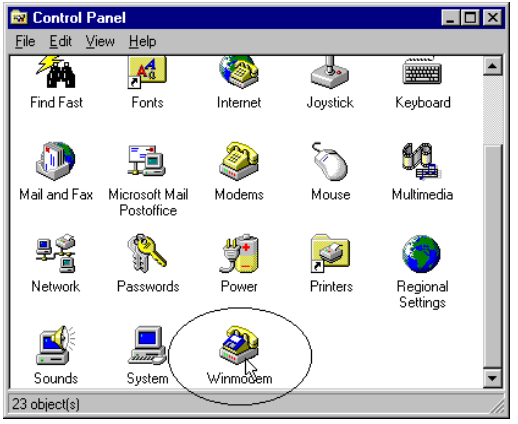
Follow these steps to uninstall the Winmodem:

1. Click the **My Computer** icon on your desktop.

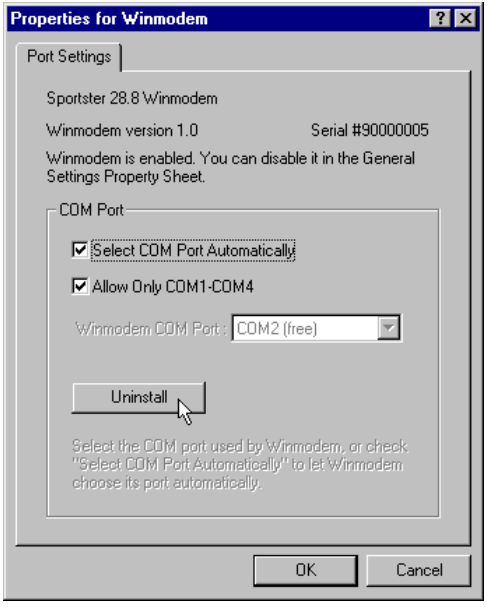
2. Click the **Control Panel** icon.



3. Click the **Winmodem** icon in the Control Panel (circled below).



4. This takes you to the "Properties for Winmodem" screen. When you see this screen, click **Uninstall**.



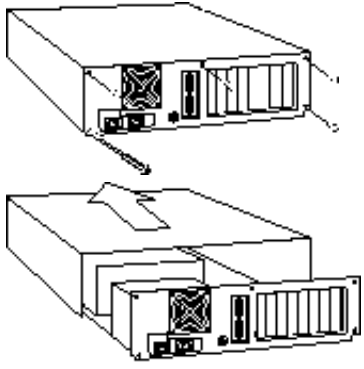
5. When you click **Uninstall**, a warning appears. It asks you to confirm that you want to uninstall the Winmodem. Click **OK**.

6. The following screen will alert you when the Winmodem is uninstalled from your system. Click **OK**.

7. The text in the "Properties for Winmodem" screen that previously indicated the modem was enabled is now printed in light gray text. This indicates that the Winmodem is removed from your system. Click **Close**.

8. Turn off and unplug your computer.

9. Remove the screws from your computer's cover and then remove the cover. Your computer may not resemble the computer in the following drawings, but the basic principle for removing the cover should be the same. Refer to your computer manufacturer's manual if you need further assistance.



10. Find the Winmodem inside your computer and unscrew the screw holding the Winmodem in its slot. Be careful not to drop the screw into the computer.
11. Gently remove the Winmodem from its ISA slot.
12. Using the screw you removed in step 10, screw the expansion slot cover you removed when the Winmodem was originally installed back into place.
13. Replace the computer's cover and fasten it with the screws you removed in step 9.
14. Plug in and turn on your computer.

Now you can run the Preinstallation Check utility to verify that your system has the necessary resources to allow for easy installation of your Bigpicture modem and capture card.

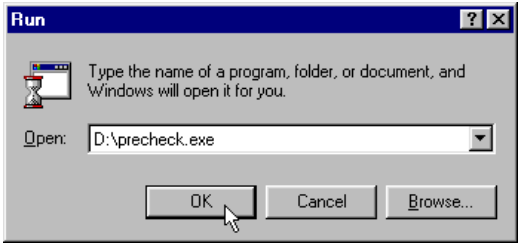
Running the Preinstallation Check Utility

Your Video *Connections*™ CD-ROM contains a Preinstallation Check utility that you can use to check for system conflicts before you begin hardware installation.

Follow these instructions to run the Preinstallation Check.

1. Insert the Video *Connections* CD-ROM into your CD-ROM drive.
2. Click Windows 95 **Start** and then click **Run**.

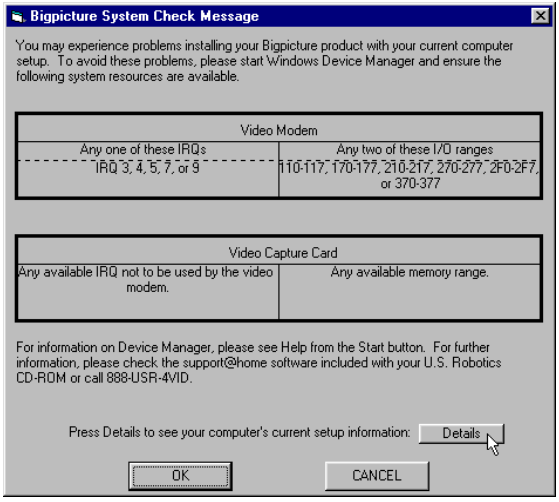
3. Type **D:\precheck.exe** and press **ENTER**. NOTE: If your CD-ROM drive uses a different letter, type that letter in place of "D".



4. This launches the Preinstallation Check utility. The program will search your system for possible resource problems. If Preinstallation Check does not find any conflicts on your system, you will see the following screen.

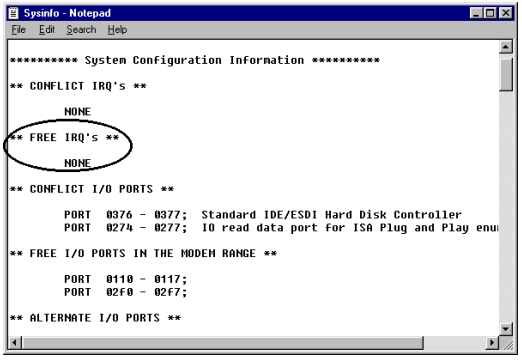
Click **OK** to exit the utility. Turn to "Inserting the Modem and Video Capture Card into the Computer" (page 13).

If Preinstallation Check finds a conflict, you will see a screen similar to this:



If you wish to troubleshoot the conflicts Preinstallation Check has detected, click **Details**.

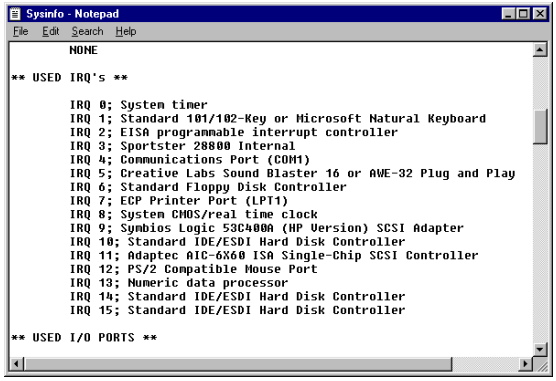
You will need to check two areas on the "Sysinfo" screen that appears. Look first at the "FREE IRQ'S" section of the screen (circled in the following screen image). NOTE: The following screen image shows no free IRQs. Your screen may show different information.



You need two free IRQs in order to install your Bigpicture kit. One of these free IRQs will be used by the modem. Your modem can use IRQs 3, 4, 5, 7 or 9. The other free IRQ

will be used by the video capture card. That IRQ can be any other free IRQ.

If one or more of the two IRQs necessary for installing your Bigpicture kit are not available, you will need to free the IRQ(s) by reassigning IRQ settings for existing hardware or by removing one or more hardware devices currently installed on your system. Scroll down the “Sysinfo” screen until you see the “USED IRQ’S” section.

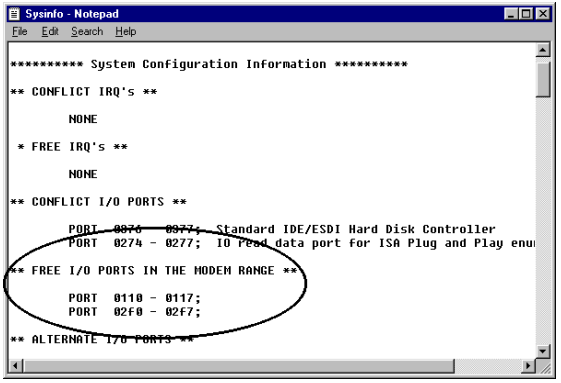


Make a note of which IRQs (if any) are not in use. If all but one or all are in use, it is recommended that you free an IRQ by removing a device from your system that you do not plan to use once your Bigpicture kit is installed. You can uninstall this device, freeing its IRQ for use by your Bigpicture kit.

NOTE: At least one of the IRQs you plan to make available must be 3, 4, 5, 7 or 9 (for use by your modem).

To learn more about freeing IRQs, click Windows **Start** and then click **Help**. Click the **Index** tab and type **IRQ** and then **ENTER**. Next, click **Viewing or changing resource settings for a hardware device**. Windows will guide you through using the Device Manager to change your system's IRQ settings.

Next, look at the "FREE I/O PORTS IN THE MODEM RANGE" section of the screen (circled in the following screen image).



Two of the following I/O port ranges need to be free in order to install your Bigpicture kit:

- 110-117
- 170-177
- 210-217
- 270-277
- 2F0-2F7
- 370-377

If only one (or none) of the required I/O ports are free, you will need to change your I/O port resource configuration.

To learn more about changing your I/O port resource information, click Windows **Start** and then click **Help**. Click the **Index** tab and type **I/O** and then press **ENTER**. Next, click **Viewing or changing resource settings for a hardware device**. Windows will guide you through using the Device Manager to change your I/O port settings.

Once you have eliminated any resource problems, you should be ready to install your Bigpicture kit. Turn to the next section to begin hardware installation.

Inserting the Modem and Video Capture Card into the Computer

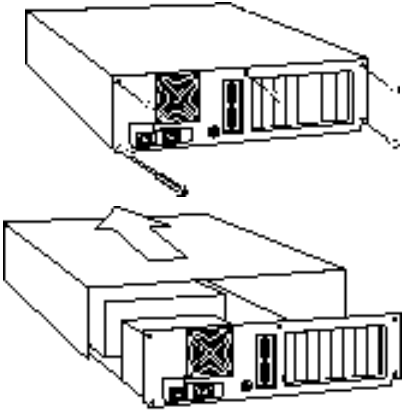
NOTE: Before installing your modem and capture card, write the serial numbers for both cards in the spaces provided on the first page of this manual. (You'll find the serial numbers for the modem and the capture card underneath the bar codes on the white stickers on both cards and on the kit's box.) If you need to call our customer support department, a customer support representative will ask you for these serial numbers. This will help him or her identify the type of modem and capture card you have.

1. Turn off your computer and unplug it from the electrical outlet.
2. Turn off and unplug any peripheral devices (printer, monitor, keyboard, mouse, etc.) from the computer.

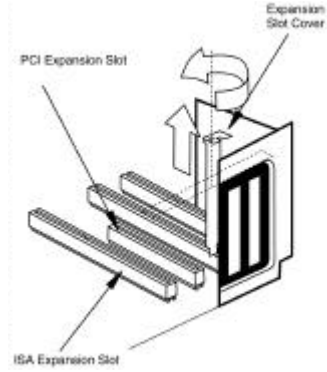
TIP: Before you unplug anything, label the cords or make a sketch of how things are connected. This can be helpful when you plug things back in.

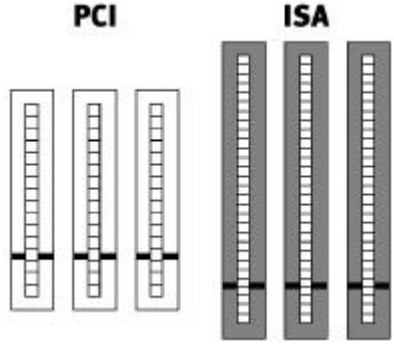
CAUTION : To avoid risk of electric shock, make sure your computer and all peripheral devices are turned off and unplugged from electrical outlets.

3. Remove the screws from your computer's cover and then remove the cover. Your computer may not resemble the computer in the following drawings, but the basic principle for removing the cover should be the same. Refer to your computer manufacturer's manual if you need further instructions.

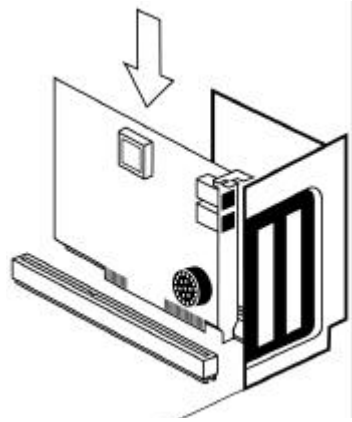


4. Touch an unpainted metal part of your computer (the back panel, for example) to discharge any static electricity you may be carrying. Static electricity can damage electronic components.
5. Find an empty ISA expansion slot that's at least as long as the gold edge of your modem. (ISA slots are usually black plastic grooves lined with silver metal. See the following diagrams.) Unscrew and remove the expansion slot cover (the long, narrow piece of metal that keeps dust from entering through the opening perpendicular to the slot). Be careful not to drop the screw into the PC.





6. Holding the modem at each corner with the gold edge facing the slot, push the modem down as gently as possible until it snaps into the expansion slot. (Note: The drawing shows horizontally aligned expansion slots. Some computers have vertically aligned slots. The instructions apply to both styles.) You will need to apply a little pressure to seat the modem properly. Sometimes a gentle back-and-forth motion helps seat the modem all the way into the slot. If you feel resistance, the modem may not be properly lined up with the slot. Do not force the modem into the slot. Take it all the way out and try again.

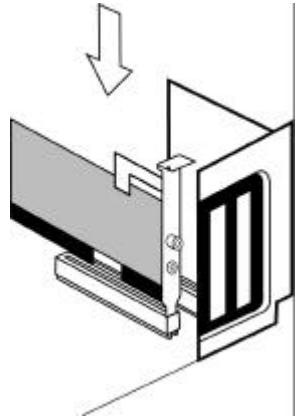


7. Once the modem is inserted, fasten it firmly into place using the screw that you removed in step 5.

8. Next, find an empty PCI slot inside your computer. (PCI slots are usually white plastic grooves lined with silver metal and are not as long as ISA slots. Refer to the

diagrams on the previous page.) Unscrew and remove the PCI slot's cover as you did with the ISA slot's cover in step 5.

9. Holding the video capture card at each corner with the gold edge facing the slot, push the card down as gently as possible until it snaps into the expansion slot. As with the modem in step 6, you will need to apply a little pressure to seat the capture card properly. A gentle back-and-forth motion helps seat the card all the way into the slot. If you feel resistance, the card may not be properly lined up with the slot. Do not force the card into the slot. Take it all the way out and try again.



10. Once the capture card is installed, fasten it firmly into place using the screw that you removed in step 8.

11. Replace the computer's cover and fasten it with the screws.

12. Plug the computer's power cord back into the computer and reattach all peripherals to the computer.

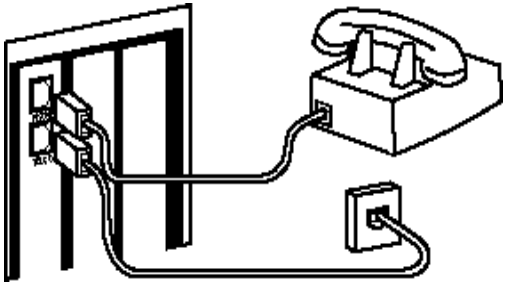
13. If you currently have a telephone plugged into the wall jack you plan to use for the modem's phone cord, disconnect the telephone's cord from that jack.

14. Plug one end of the phone cable that came with the modem into the TELCO jack at the rear of the modem.

⚠ WARNING : The phone jack you use must be for an ANALOG phone line (the type found in most h0mes). Many office buildings have digital phone lines. Be sure you know which type of line you have. The modem will be damaged if you use a digital phone line.

15. Plug the other end of the cable into the wall jack.

If you wish to use a phone through the same phone wall jack as the modem when the modem is not in use, plug your phone's cable into the modem's PHONE jack (see following diagram).



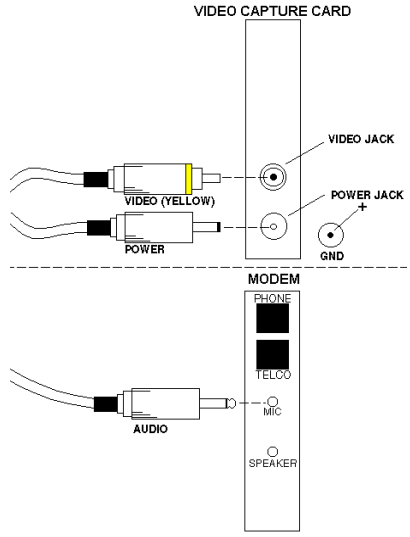
NOTE: You cannot use the modem and a phone at the same time if they share the same telephone line.

Connecting Your NTSC Camera to the Video Capture Card and Modem

You can use the included NTSC video camera (model 1622 only) or a camcorder to channel video signals into your video capture card. If you are using a camcorder, go to "Connecting Your Camcorder to the Video Capture Card and Modem" (page 20). Make the following connections to hook up your Bigpicture NTSC camera.

1. Plug the camera's yellow RCA-type video plug into the yellow RCA-type video jack on the capture card.
2. Plug the camera's power cord into the power jack located just under the video jack on the capture card.

3. Plug the camera's 1/8-inch audio output plug into the modem's *MIC* jack (see the following diagram).
4. Go to "Moving Through the 'New Hardware Found' Screens" on page 22.



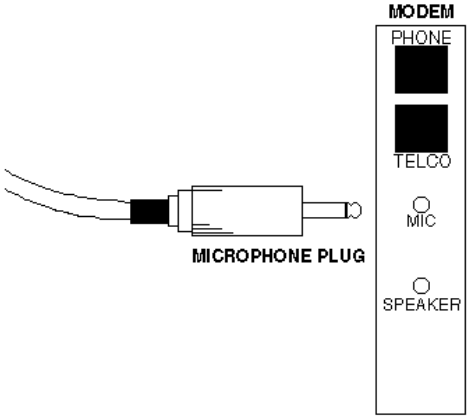
Connecting Your Camcorder to the Video Capture Card and Modem

If you wish to use a camcorder to feed video signals into your capture card, consult your camcorder's manual for specific information about connecting the camera to a source other than a television or VCR. The camcorder must be NTSC compliant to be used with this product.

If your camera is NTSC compliant, you should be able to run an RCA male to RCA male cable from your camcorder's video out jack to the capture card's video in (yellow) jack. Please consult your camera's manual if this configuration does not apply to your camera. You will not use the power jack on the capture card when you are using your camcorder since the camcorder will be powered as it normally is, whether by battery or AC power cord.

If you purchased Bigpicture model 1690, you will need to attach the included microphone to the modem. Attach the microphone's 1/8-inch plug to the modem's *MIC* jack (see following diagram). Place the microphone where it will clearly pick up your voice.

If you are using your camcorder with any Bigpicture model other than model 1690 or if you want to capture audio from your camcorder directly, you will need to run an RCA male to 1/8-inch miniplug cable from your camcorder's RCA audio out jack to the modem's 1/8-inch *MIC* in jack.



In addition to the NTSC camera or camcorder, you may also connect to your capture card any device which is NTSC compliant and that uses an RCA-type jack to output video signals. In this manner you could hook up a VCR, laserdisc player, or other video device. You will need an RCA to 1/8-inch minijack adapter to connect the audio outputs of these devices to your sound card or modem. These cables are available from many electronics retailers.

If you want to play your modem's audio through your sound card or record video with audio from a camcorder or VCR, you may need the following additional parts (not included):

Playing modem audio through sound card speakers: You can attach an 1/8 inch miniplug to 1/8 inch miniplug cable to the speaker output on the modem and the line input on the sound card so that the modem's audio will be played through the speakers attached to the sound card (audio level will then depend on your sound card's settings).

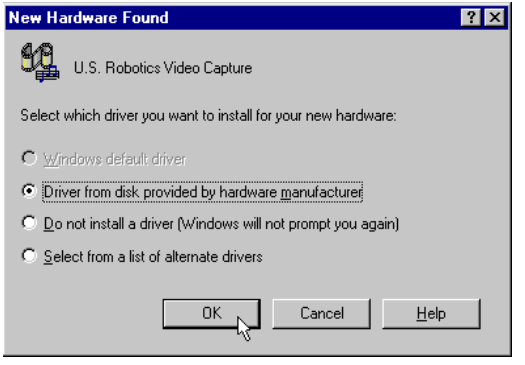
Capturing audio from camcorder/VCR audio out: You can playback or capture audio from a camcorder or VCR by attaching an RCA male to 1/8 inch miniplug cable to your camcorder's audio out and the sound card's microphone in.

Moving Through the "New Hardware Found" Screens

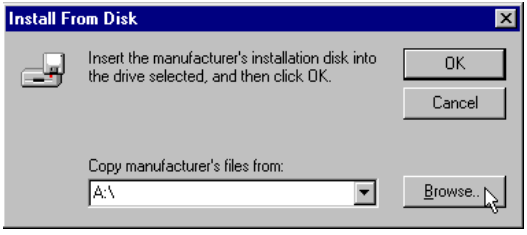
NOTE: Refer to the notes you made in the section "Determining Your Version of Windows 95" on page 4. If you use Windows 95 version 950B, go to "'New Hardware Found' for Windows 95 Version 950B" on page 26. If you use Windows 95 versions 950 or 950a, read the following instructions.

"New Hardware Found" for Windows 95 Versions 950 and 950A

1. Turn on your computer and insert the Video *Connections* CD into your CD-ROM drive. When Windows restarts, it will first detect the video capture card. Click **Driver from disk provided by hardware manufacturer**. Then click **OK**.

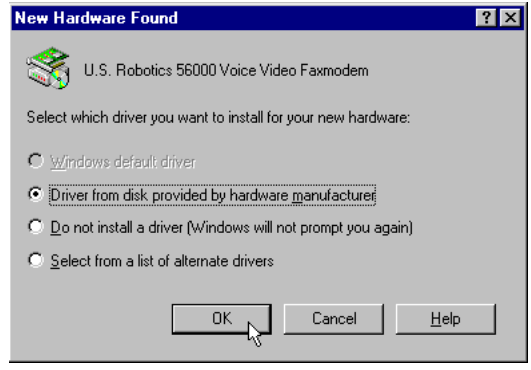


2. When you see the screen below, type your CD-ROM's letter name (usually **D**) in place of **A**. Then click **OK**. Windows will begin installing your video capture card's setup information. If you do not know your CD-ROM's letter name, you can click on the *Browse* button and search for the drive with a CD-ROM icon.



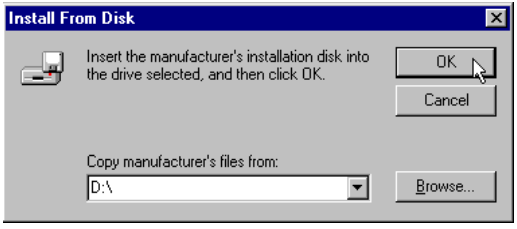
3. A screen will appear announcing that the setup information is being copied.

4. Next, you will see another "New Hardware Found" screen, this time announcing that the modem has been detected. Click **Driver from disk provided by hardware manufacturer**.

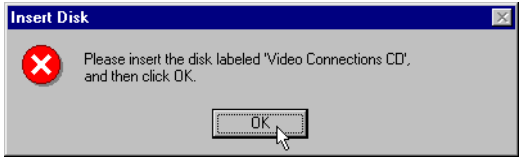


5. Type your CD-ROM's letter name (usually **D**) in place of the **A**. Then click **OK**.

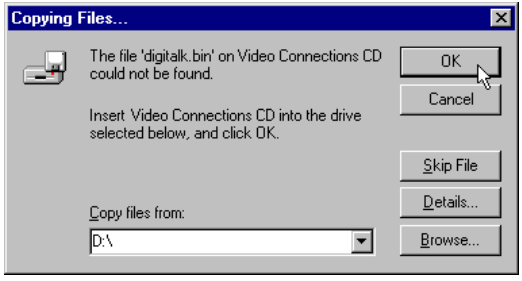
Windows will begin installing your modem's setup information.



NOTE: If you uninstalled a Winmodem before installing your Bigpicture hardware, Windows will look for your modem's setup information in the same location where the Winmodem's setup information was located. However, that information was erased when you uninstalled your Winmodem. The "Copying Files" screen will soon be interrupted by the following screen:



When it appears, click **OK**. When you see the next screen, make sure the correct drive letter for your CD-ROM appears in the dialog box and then click **OK**.

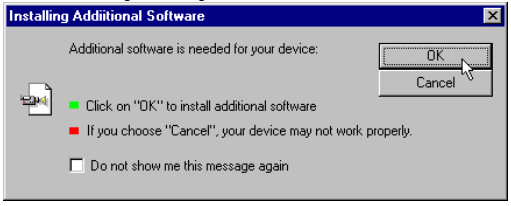


6. A screen will appear announcing that the setup information is being copied.

7. Once installation is complete, you will see the following screen. This screen tells you which communications port your modem is installed to. (NOTE: Your screen may show a different COM port.) Make a note of the COM port setting. You will need this information later when you installing the software on the CD-ROM. Remove the CD from your CD-ROM drive and click **OK**. Windows will restart.

8. When Windows restarts, you will see the following screen. Click **OK**.

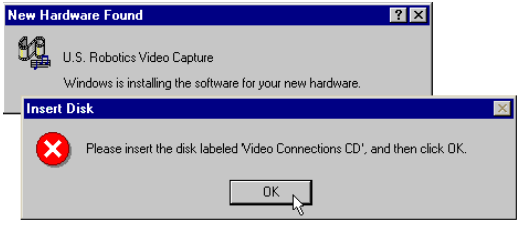
Windows will save DirectX multimedia drivers to your system.



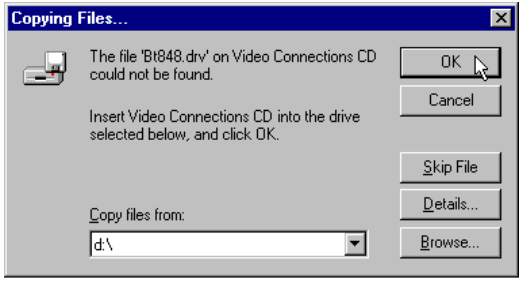
9. In your “Control Panel”, you should see a **Video Modem** icon (circled in the following screen shot). This indicates that the modem is properly installed. Go to “Software Installation” on page 31.

"New Hardware Found" for Windows 95 Version 950B

1. Turn on your computer. When Windows restarts, it will first detect the video capture card. Insert the Video *Connections* CD and click **OK**.

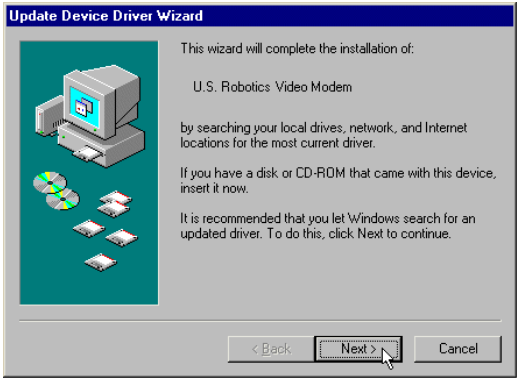


2. When you see the following screen, type your CD-ROM's letter name (usually **D**) in place of **A**. Then click **OK**. Windows will begin installing your video capture card's setup information. If you do not know your CD-ROM's letter name, you can click the **Browse** button and search for the drive with a CD-ROM icon.



3. Next, you will see a "Device Driver Update Wizard" screen announcing that the modem has been detected. Click

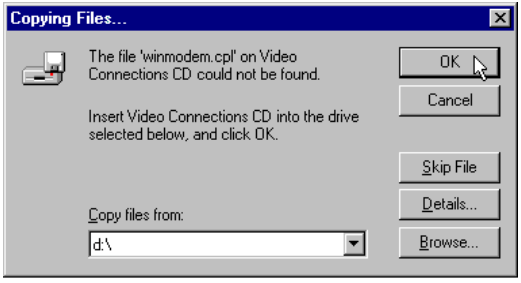
Next. Windows will look for the modem's setup information.



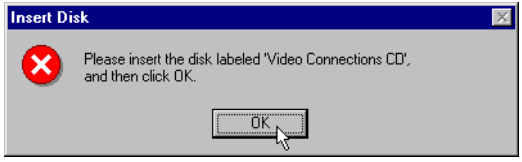
4. The next screen announces that Windows has located the setup information for your video modem. Click **Finish**.

5. Windows will ask you to insert the Video *Connections* CD. It should already be inserted in your CD-ROM drive. Click **OK**.

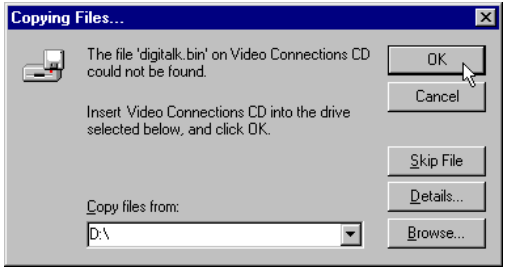
6. When you see the next screen, Windows is once again asking where the setup information is located. In the **Copy files from:** box type **d:** and then click **OK**.



NOTE: If you uninstalled a Winmodem before installing your Bigpicture hardware, Windows will look for your modem's setup information in the same location where the Winmodem's setup information was located. However, that information was erased when you uninstalled your Winmodem. The "Copying Files" screen will soon be interrupted by the following screen. When it appears, click **OK**.

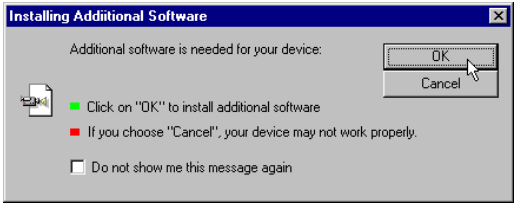


When you see the next screen, make sure the correct drive letter for your CD-ROM appears in the dialog box and then click **OK**.



7. Once installation is complete, you will see the following screen. This screen tells you which communications port your modem is installed to. (NOTE: Your screen may show a different COM port.) Make a note of the COM port setting. You will need this information later when you installing the software on the CD-ROM. Remove the CD from your CD-ROM drive and click **OK**. Windows will restart.

8. When Windows restarts, you will see the following screen. Click **OK**. Windows will save DirectX multimedia drivers to your system.



9. In your “Control Panel”, you should see a **Video Modem** icon (circled in the following screen shot). This indicates that the modem is properly installed. Go to “Software Installation” on page 31.

SOFTWARE INSTALLATION

NOTE: Before you begin software installation, do the following:

1. **Set your Windows 95 display to 256 colors or higher.**
2. **Install Dial-Up Networking in your operating system if you plan to use VDOPHone.**

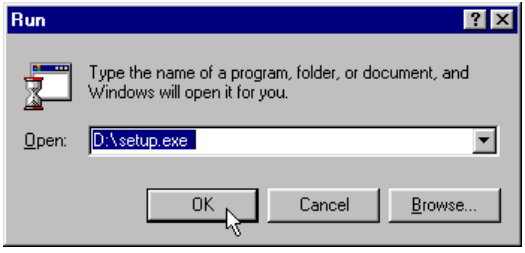
Refer to Windows 95's documentation for further information on either of these topics.

This section will assist you in using the U.S. Robotics Setup Wizard to install the software on the Video *Connections* CD and to register your new video modem.

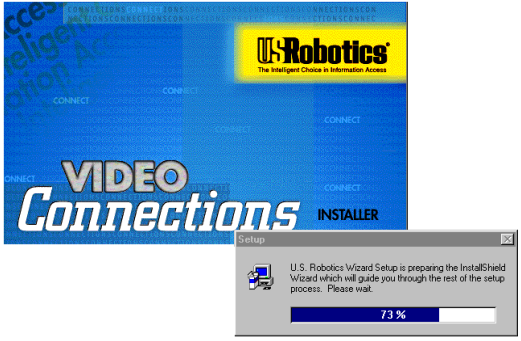
1. From the Windows 95 desktop, click **Start**.

2. Click **Run**.

3. If it is not already inserted, insert the Video *Connections* CD into your CD-ROM drive. In the "Run" text box, type **D:\setup.exe** (If your CD-ROM drive has a letter name other than **D**, type that letter in place of **D**.) Then click **OK**.



4. The Setup Wizard will prepare your system for installation.



5. After you read the "Welcome" screen, click **Next**.

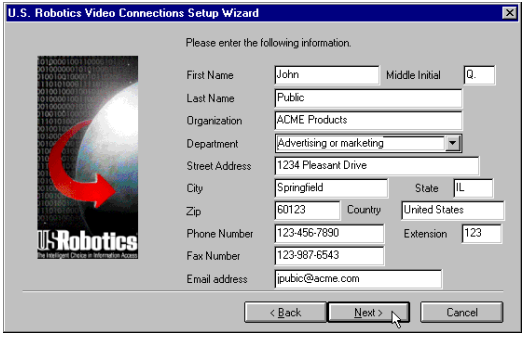
6. You will see this screen for a moment as the System Wizard initializes.

If a Bigpicture System Check message appears announcing that you have a system configuration problem, click **Details**.

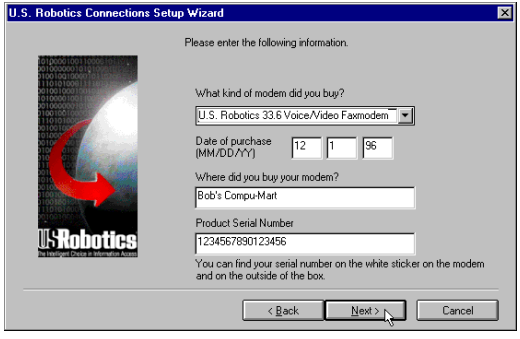
Make sure the video modem and the video capture card are both assigned to individual IRQs. Also make sure that the video modem has two IO ports assigned to it.

- If either of the cards does not have an IRQ assigned, click Windows 95 **Start** and point to **Help**. Click the **Index** tab. Type **IRQ** and then press **ENTER**. Then double-click **Troubleshooting hardware conflicts**. Follow the on-screen instructions to resolve your conflict.
- If the video modem does not have two IO ports assigned to it, follow the directions above for accessing Windows Help, but type **I/O** instead of **IRQ**.

7. Fill in the blanks on the next screen with your information, using the **TAB** key to move between the fields. Then click **Next**.

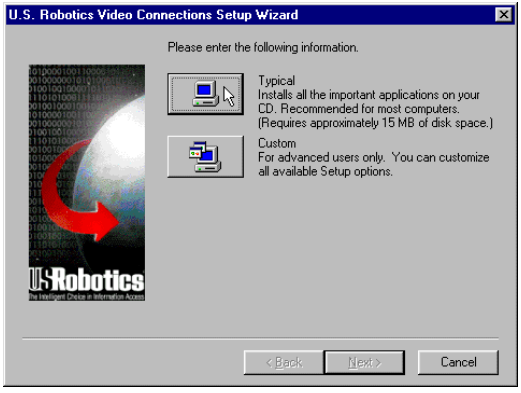


8. Fill in the blanks on the following screen, using the **TAB** key to move between the fields. Then click **Next**.



9. The next screen allows you to choose a typical or custom installation. We recommend that you click **Typical**. If you click **Custom**, you can choose exactly which software applications will install and determine other aspects of the installation.

However, custom installation requires in-depth knowledge of the applications and hardware involved.



Here's a brief synopsis of the software that will be installed during a typical Video *Connections* installation.

RapidComm™ Video - This software supports standards-based videophone calls (H.324) and also allows you to make voice, data, and fax calls. RapidComm Video uses special modem functions to improve videophone performance.

VDOPhone - VDOPhone is an application which uses the Internet to connect you to a new arena in cyber communication. You can exchange real-time video with other VDOPhone users all over the world as easily as you send and receive e-mail (requires Dial Up Networking).

Bigpicture - Bigpicture is the application launcher that you use to quickly access any of the software in the Bigpicture folder on your hard drive. It also provides easy access to help files for all of the applications.

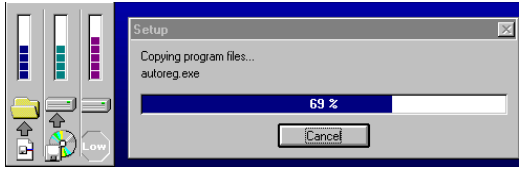
Kai's Power GOO Special Edition - Power GOO is a fun tool for manipulating still images and making movies.

Digital Video Producer - DVP is a powerful video capture and movie editing application.

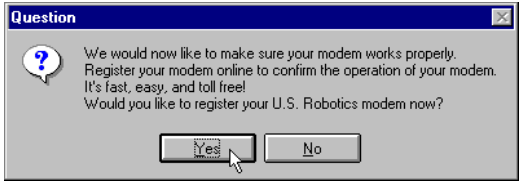
VDOLive - The VDOLive player provides real-time video playback over the Internet. It works as a helper application, a Netscape plug-in, or as an ActiveX control.

10. As the CD installs the software on your system, you will see a series of screens guiding you through the installation. Please follow the on-screen directions.

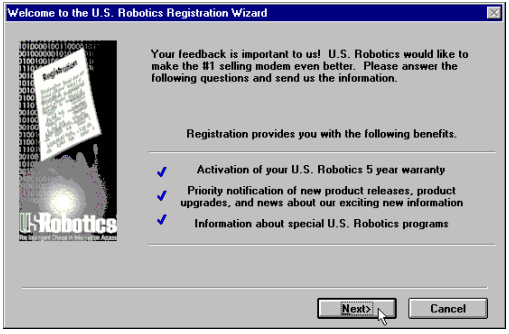
11. When all of the software is installed, you will see the following screen for a moment as the Setup Wizard creates the Bigpicture program group.



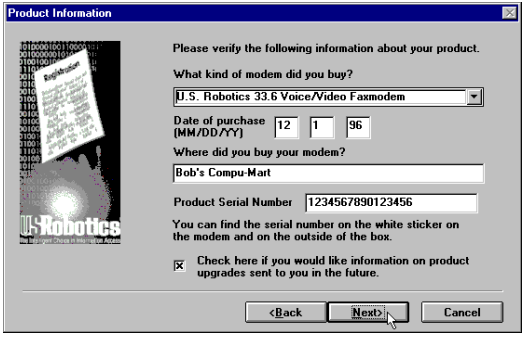
12. After you read the following screen, click **Yes**.

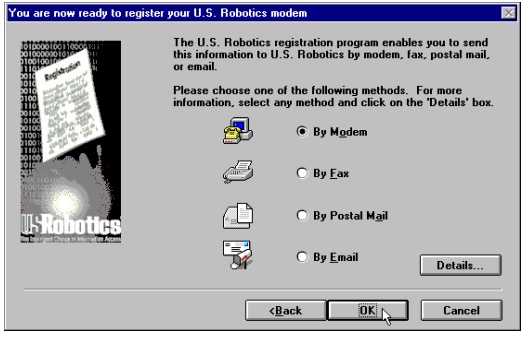


13. This is the first screen of the Registration Wizard. After reading the screen, click **Next**.



14. When you see the next two screens, you should verify that the information on screen is what you typed earlier in the Video *Connections* Setup Wizard installation process. Once you have verified that each screen's information is correct, click **Next** on each screen.



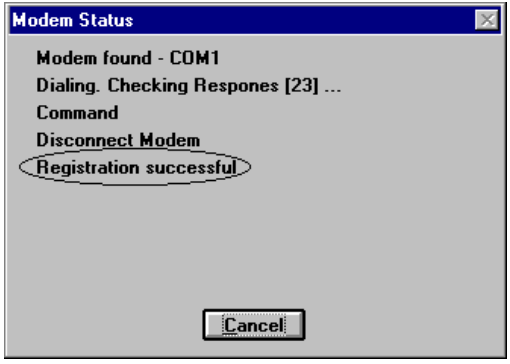


15. The next screen is the first in a series that will help you send your registration electronically using your new modem. This process also allows you to test the modem's installation. Click **By Modem** on the following screen. Then click **OK**.

16. When the following screen appears:

- If you need to dial a prefix (such as 9) to make a call outside your building, type the prefix before the "1" in the **Prefix** box, then click **Dial**.
- If you DO NOT need to dial a prefix, simply click **Dial**.

17. You will see the following screen while the modem sends your registration information. When the data has been sent, you will see "Registration successful" (circled in the following screen shot).

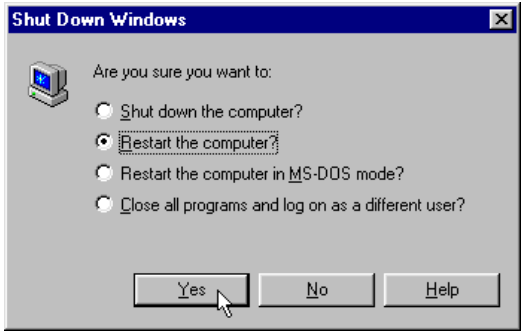


NOTE: If your modem has trouble sending your registration information, refer to the "Troubleshooting and Online Help" section on page 63 of this manual.

18. This screen marks the end of the registration process. Click **OK**.

19. Now you must restart Windows 95. Click Windows **Start** and then click **Shut Down**.

20. Next, click **Restart the computer?** Then click **Yes**.

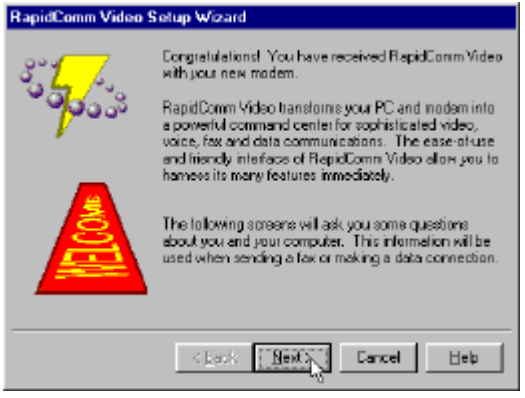


21. When the Windows 95 desktop appears after restarting, click **Start**.

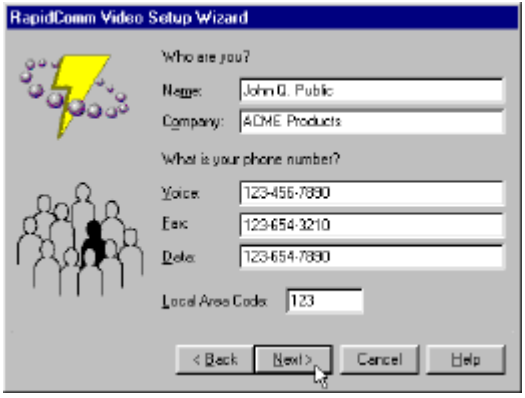
22. Click **Bigpicture**.

23. When the Bigpicture application launcher appears, click **Videophone**. Then point to **RapidComm Video -- H.324** on the pull-down menu that appears.

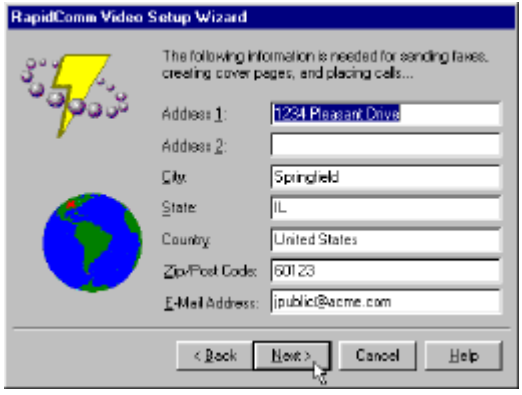
24. Read the first "RapidComm Video Setup Wizard" screen. Then click **Next**.



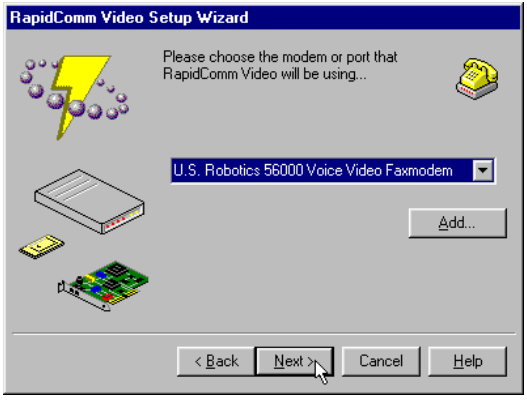
25. When you see the next screen, verify that the information is correct. Then click **Next**.



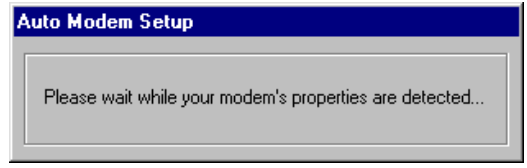
26. Verify the information on the next screen as well, once again clicking **Next** when finished.



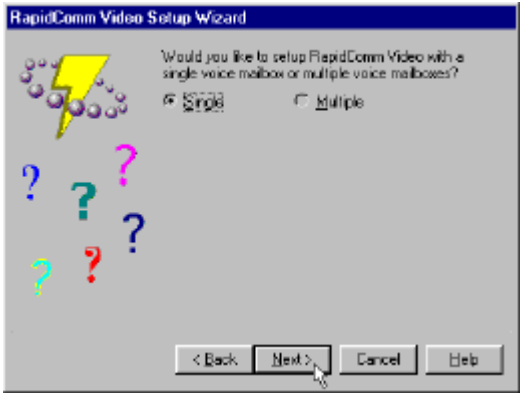
27. When you see the next screen, you should see your video modem listed in the highlighted portion of the screen. If you do not, click the arrow to the right of the text box and look for the video modem among the available options. Then click **Next**.



28. Next you will see a screen indicating that your modem's properties are being detected. If Windows has any problems detecting your modem, it will alert you. Otherwise, this screen should disappear once the modem's properties have been detected.



29. The next screen asks how many voice mailboxes you would like to set up. At this point in the setup process, RapidComm needs to know whether you would like only one or more than one. Please click the appropriate selection. Then click **Next**.



30. In the following screen, you can decide whether or not you want RapidComm to run at Windows startup by checking or not checking the box at the top of the screen. Once you've made your choice, click **Finish**.

31. You will see the main “RapidComm Video” menu screen on your desktop. If your system is working correctly, you should see a moving image of what your camera is pointed at in the RapidComm Video window. If you do not see a picture after one minute, please refer to “Troubleshooting and Online Help Resources” on page 63.

Using Your Bigpicture Video System – Having Fun!

Now that you've installed the software and hardware in your system and it is working properly, it's time to have some fun with your Bigpicture system.

NOTE: You should refer to the NTSC Camera Quick Reference card included in your Bigpicture package (model 1620 only) to optimize your camera's settings before you do any work with the software on your system. If you are using a camcorder, refer to its manual to optimize its settings for highest picture quality.

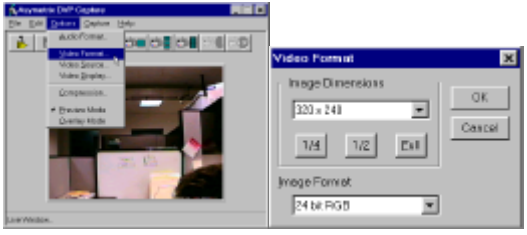
1. Click Windows 95 **Start** and then point to **Bigpicture**.

2. When the Bigpicture application launcher appears, click **Videofun**.

3. A pull-down menu will appear. Click **Asymetrix DVP Capture 4.0 – Still & Motion Capture**.

4. Asymetrix's Digital Video Producer will launch. This is the software you will use to capture video, whether a still image (.bmp), sequence of images (.avi), or mini-movie (.avi).

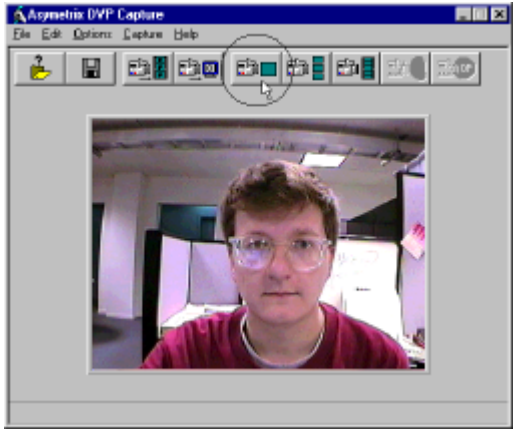
5. You can adjust the size and quality of the image captured by changing the **Video Format** specs located in the **Options** menu.



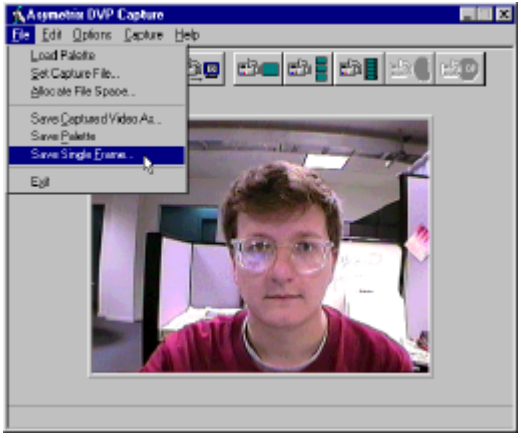
You should keep the size of your captures in mind, especially when making movies, where several shots are captured and stored to your hard drive in rapid succession. Smaller shots require less memory. However, smaller shots also have variations in color quality. Please keep

these issues in mind when you capture in the future.

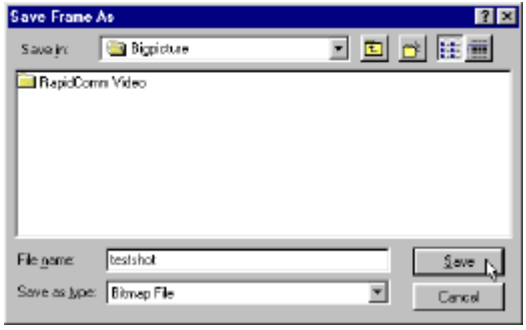
6. When you get to the main screen, you should see a moving image of what your camera is pointed at. When you are ready to grab a still image of what the camera is seeing, click the single frame capture button  (see the circled button in the following screen image).



7. Next, click **File** and point to **Save Single Frame…**.



8. Name the file “testshot” and make sure to select the **Bigpicture** folder in the **Save in** field. Then click **Save**.



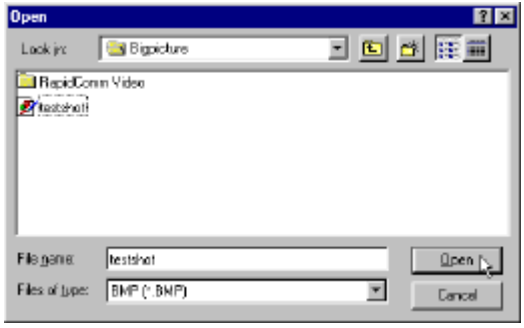
9. Return to your desktop. On the Bigpicture launcher, click **Videofun** and point to **Kai’s Power GOO se** on the pull-down menu that appears.

10. Kai's Power GOO Special Edition will launch.

11. When Power GOO's main screen appears, click **IN** (lower left-hand corner of the screen).

12. Click **Get Image from File**.

13. When the "Open" screen appears, look in your **Bigpicture** folder for the "testshot" file that you saved using Asymetrix's DVP capture program. Double-click on "testshot".



14. The "testshot" file appears in GOO's main editing screen. Experiment with GOO, "gooing" up your picture with the tools on the palette. If you don't see the palette, launch it by clicking the palette icon in the upper left-hand corner of the screen pictured below.

This is just one way you can use the software included with your Bigpicture™ system to have fun with digitized video. Refer to each application's documentation for further help using the software to:

- Edit video
- Send video over the Internet
- Make videophone calls including audio
- Send faxes from your desktop

and much more!

NOTE: Asymetrix DVP 4.0 includes an on-screen tutorial that teaches you about editing mini-movies. Check it out!

The Bigpicture ™ Application Launcher

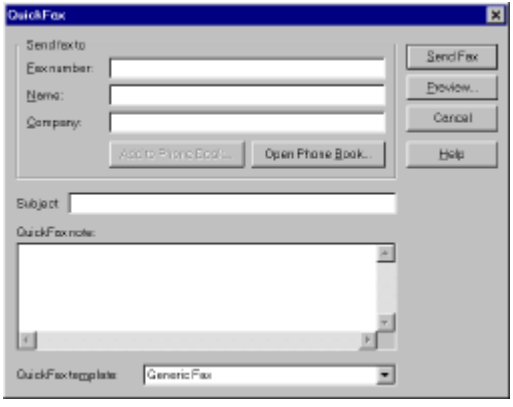
The Bigpicture™ application launcher is a quick and easy way for you to access the software programs installed to your computer from the Video *Connections* CD.

You can start the launcher by clicking Windows **Start** and then pointing to **Bigpicture**.

Here's a quick synopsis of the buttons on the menu bar and the applications they launch.

Clicking **Phone** launches RapidComm Video, which can function as a full-featured speakerphone.

Clicking **Fax** launches RapidComm Video's QuickFax feature, which takes advantage of your modem's capabilities to work as a desktop fax machine.



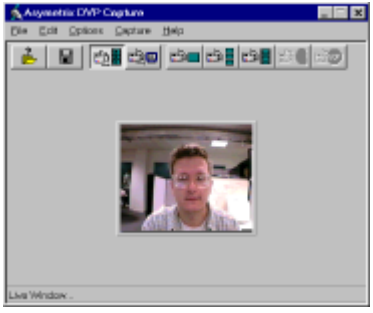
Click **Videophone** to choose between two videophone options. Point to **RapidComm Video – H.324** to make videophone calls directly to other H.324 videophone users over standard phone lines (i.e., it does not use the Internet).

Point to **VDOPhone – Internet** to conduct real-time video transmission over the Internet (see the "Internet Security Issues" section on page 57).

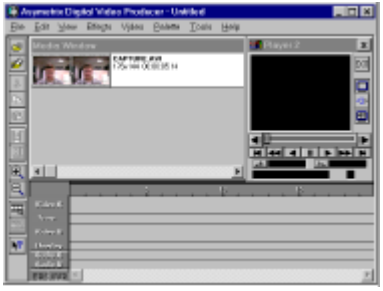
NOTE: If you wish to use RapidComm Video, plug the microphone that came with your kit into the MIC jack on your video modem and plug your speakers into the video modem's SPEAKER jack. If you wish to use VDO Phone, plug the microphone into your sound card's MIC jack and your speakers into the sound card's SPEAKER jack. To avoid these configuration changes, run a miniplug to miniplug cable from your video modem's SPEAKER jack to your sound card's LINE IN jack and connect a second microphone so that both cards have microphones plugged into their MIC jacks. This configuration gives you the greatest flexibility and eliminates the need for reconfiguration.

Click **Videofun** and a menu appears allowing you to choose between Asymetrix Digital Video Producer's still and motion picture capturing program or video clip editing application.

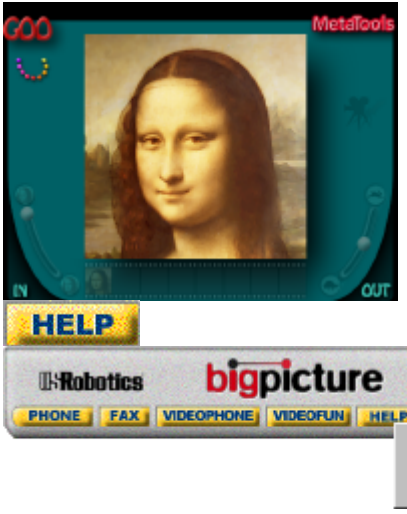
DVP Capture 4.0



DVP Video Clip Editing



Also on this menu is a launcher for Kai's Power GOO Special Edition, which allows you to manipulate still images.



Clicking **Help** allows you to select help files for all five of the applications featured on the Bigpicture™ menu bar.

Clicking **Exit** clears the menu bar from your screen.

Take some time to try out the different applications, accessing their help screens for further information and tutorials. Have fun!

INTERNET SECURITY ISSUES

The Internet is an amazing new frontier of human interaction. Almost anyone and anything can be found there in one form or another. This is part of the appeal of gaining access to the Internet and the World Wide Web. It's like having the world's largest library in your own home.

However, the public and free nature of the Internet can raise some of the same concerns for one's personal security that any public activity might generate. This includes security of your system and its files, your identity and that of your family and friends, and the data you send over the Internet. The security of those receiving information from you is also to be considered.

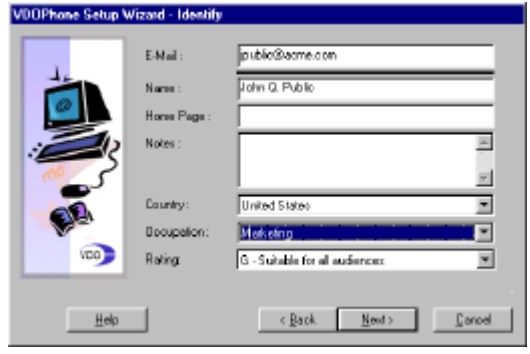
Your Bigpicture™ Video package allows you to tap into the Internet's vast resources for exchanging and accessing video imagery, and voice information, and other data. While 3Com cannot be responsible for any injury to your security or privacy or any security difficulties you may encounter resulting from your use of your Bigpicture equipment, we are concerned with our customers' security and thus would like to make you aware of some possible ways you can manage your privacy in this dynamic arena.

- **Use security features built-in to any Internet based software that you use.** It is important to realize that the Internet is not a private

communications path. It should be considered a public "place." Therefore, you should assume that any information that you send over the Internet can be viewed by strangers. If the software you are using includes security measures, we recommend that you take advantage of them.

- **Use a dynamic IP address when using the Internet.** When you are transferring information on the Internet, you are sending out information about your Internet address, often when you don't even realize it. This can be helpful when you are dealing with family, friends, or business relationships. However, a stranger might just as easily tap into your address and use it to send you information that you do not wish to receive.

VDOPhone, which appears on the CD-ROM in your package, allows you to access a network of other VDOPhone users. When you use this software, you are asked to provide information about yourself and your Internet address.



The information that you provide here will be available to anyone accessing the VDO directory while the VDOPhone software is running on your PC. (NOTE: This isn't an issue when you're using the U.S. Robotics RapidComm Video H.324 videophone, since it is a direct call and does not use the Internet.) Adding information to the VDOPhone "Identity" section might help friends and family identify who you are for practical reasons. However, keep in mind that someone you don't know can use your identity information to make calls to you or send you messages that you may not wish to receive.

The best solution for this potential problem is to talk to your Internet service provider (ISP) about obtaining a dynamic IP address. Dynamic IP addresses change with every call to your ISP. What they allow you to do is to send and receive information over the Internet that can be traced. If someone were to intercept your dynamic address, they could send to that address, but it would only be valid until your next log in. It will be invalid almost as soon as they have a chance to send you unwanted information. Additionally, your ISP should be able to trace who sent to your dynamic IP address at the moment you received the unwanted message or information.

Many ISPs offer dynamic IP addresses for users who are concerned about security. We strongly encourage you to obtain dynamic IP addresses for yourself and

anyone else using your Bigpicture™ system.

- **Use innocuous identity information.** You can fill in the information screens with a nickname, code name, or anything other than your real name to ensure that no one will know who you really are.
- **Use a password your children don't know.** If you have children who use your computer, you may want to keep your VDOPhone password a secret from them to ensure that they don't have access to the software. Unsupervised, a child could access video under the "(X) Adult Only" category with just a few clicks of a mouse.
- **Do not use an actual picture in the photo ID section of VDOPhone setup.**

In VDOPhone setup, you have the opportunity to choose an ID photo of yourself to attach to your video messages.

We recommend that you NOT use an actual photo of yourself or any of your family members. This is another way you can protect your identity and that of your family.

- **Do not use "Auto Answer" when using VDOPhone.** This setting automatically brings up any video images that enter the VDOPhone directory, regardless of whether you want to see them or not. By disabling this feature, you reduce the risk of seeing something that might offend you or that you do not wish to see.

  "Call Screening" enables you to see the identity information of the person calling you before you see any images.

  Remember that just as you can see and hear others, they can see and hear you unless you disconnect your camera and microphone.

Implementing these precautionary procedures are just a few ideas that may help ensure your privacy and security on the Internet. Always remain aware of the public nature of the Internet when using software that utilizes its resources.

TROUBLESHOOTING AND ONLINE HELP RESOURCES

PROBLEM	DIAGNOSIS	POSSIBLE SOLUTION
The computer or software will not recognize the modem.	You may have a conflict between your COM and IRQ ports.	Check to make sure you have the correct COM port and IRQ settings in your software and/or in the Windows Control Panel.
	You might not be entering modem commands in the proper manner.	Type in all upper case (AT) or lower case (at).
The modem won't go off hook to dial or doesn't answer the phone.	You might have a bad phone cord connection to your modem.	Make sure the phone cord is connected to the jack on the modem labeled TELCO on one end and to the wall phone jack at the other end.
Both modems exchange carrier signals but fail to establish a link.	The software you are using might not have auto answer enabled.	Make sure auto answer is enabled. In RapidComm Video's terminal mode, type **ATS0=1** and then press **ENTER**.
	You may have a poor line connection.	Try placing the call again. The phone company routes calls differently each time.
No video appears in an application's video window.	The program may be set to accept video from a non-existent source.	Set the video source option in the software to composite.

PROBLEM	DIAGNOSIS	POSSIBLE SOLUTION
No video appears in an application's video window *(cont.)*	Your software may be set to the wrong video format.	Change the video format to 160 x 120 pixels and 15-bit RGB.
Video does not appear immediately when launching a new RapidComm Video session.	RapidComm Video is initiating the video stream.	This initiation time is normal for each new session.
You have an IRQ or I/O port conflict.	Your computer may not have the necessary resources available for use by your Bigpicture hardware.	See the section titled "Running the Preinstallation Check Utility" on page 9 for more information on using this utility to determine what possible system resource conflicts or shortcomings may exist within your system.
Video capture card is not detected during installation.	The PCI slot your capture card is using needs to be configured to support bus-mastering.	Check your system's manual to determine which of your PCI slots support bus-mastering. The PCI slot must be configured to support PCI Interrupt Class A (INTA). The INTA must be assigned to a free IRQ or set to "auto".

PROBLEM	DIAGNOSIS	POSSIBLE SOLUTION
The ring tone seems longer when making video phone calls than when making video calls.	There is a detection tone in addition to the regular ring tone of your phone when making video calls. The detection tone is louder than the normal ring and rings approximately 3 times as often.	This seemingly longer ringing cycle is normal for the system.
RapidComm Video's volume is too loud or too soft in comparison to other system sounds.	You may need to configure your system's volume controls to balance RapidComm Video's volume.	Set RapidComm Video's volume at a moderate setting. Set your operating system's volume lower and set your hardware's volume (i.e., powered speakers) higher.
RapidComm Video answers multiple faxes in quick succession as voice calls instead of faxes while in Video mode.	The view mode that RapidComm Video is set to may not be the same mode the incoming call is set to.	If you have a video call coming into your system, leave the software in Video view. If you have a fax or voice call coming into your system, set the software to Speakerphone view.

PROBLEM	DIAGNOSIS	POSSIBLE SOLUTION
RapidComm Video detects an incoming voice call as a video call.	It is possible that background noise in your environment resembles the tones used by the video modem to detect an incoming video call.	In Speakerphone View, click **Setup**. Point to **Preferences** . Under **Normal Answer** , change the default setting to **Detect voice, fax & data** . The modem will no longer listen for video mode tones. To answer video calls, return **Normal Answer** mode to the default setting (i.e., **Detect Video, Voice, Fax, Data**).

Online Help Resources

Bigpicture Web Site

You can learn more about Bigpicture products and find helpful support documents and FAQs at **http://www.usr.com/bigpicture**.

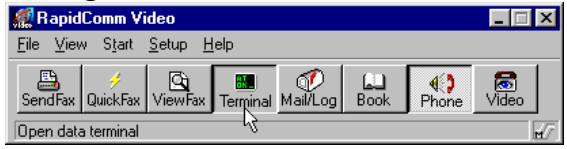
Connecting to the 3Com BBS

To connect to the 3Com Bulletin Board System, follow these steps:

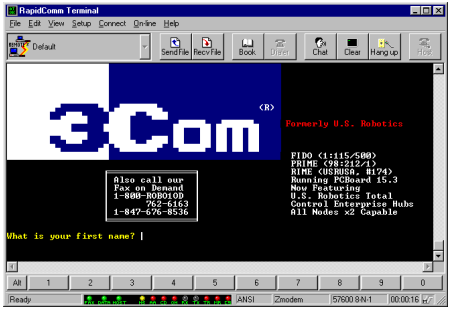
1. Start RapidComm Video. The software settings for the BBS are:

   ANSI terminal emulation
   Data Bits: 8
   Parity: None
   Stop Bits: 1

2. Put RapidComm Video in Terminal mode by clicking **Terminal**.



3. Type **ATDT 18479825092** and then press **ENTER**. If this is your first time connecting to our BBS, you will be asked to enter your name and a password and to fill out a questionnaire. The information requested in this questionnaire is kept confidential by 3Com.

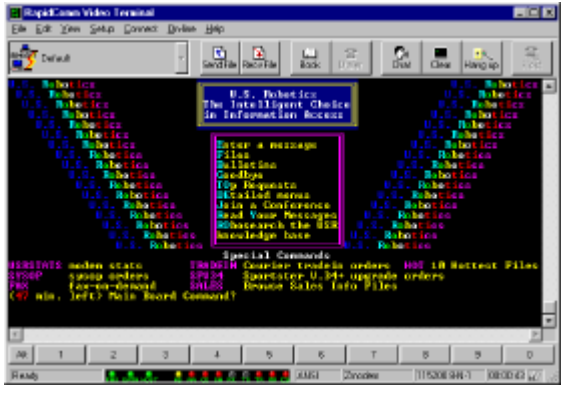


The previous screen shot is what the introduction screen of the 3Com BBS will look like. Follow the on-screen prompts to enter your name and other relevant information to register your video modem and have access to the BBS library. The library contains hundreds of helpful files and tips to make using your modem and computer a breeze.

Downloading the Technical Reference Guide

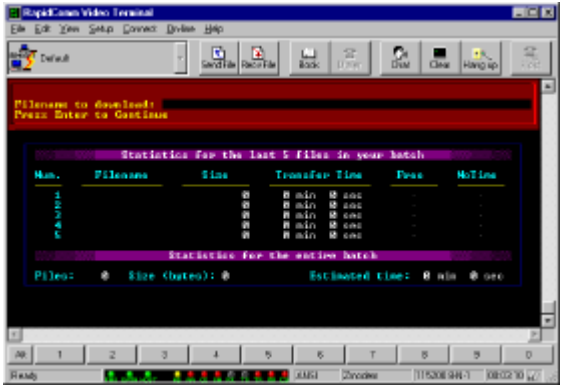
To download the Technical Reference Guide, follow these steps:

1. From the main menu, select **D** for Download a file.



(This is what the main menu will look like.)

2. A *Filename to Download:* text box appears on the screen.



3. Type the name of the file you wish to receive. You have three manual formats from which to choose:

   - BP_WORD.ZIP—The Guide in a zipped Word for Windows v6.0 format. You will need PKUNZIP.EXE to uncompress this file. PKUNZIP.EXE is also available on the BBS.
   - BP_HELP.ZIP—The Guide in a zipped Windows Help format.
   - BP_ASCI.TXT—The Guide in an uncompressed ASCII format.

4. *Protocol Type for Transfer*. Your selection depends on what your software supports. If possible, make Zmodem your first choice.

5. Depending on the software you are using, you will either be prompted where you want the file placed, or the file will be placed in the directory where your communications software is loaded.

6. When the file transfer is complete, and you are ready to leave the BBS, select **G** for Good-bye from the main menu.

3Com offers a number of other online technical support options. Choose any one of the following if you need help with your new video modem or want to learn more about it.

Internet FTP

Provides free library containing the same files as the BBS site. Anonymous FTP to **ftp.usr.com.**

Internet on Demand

Provides automatic technical support through a library containing product information, quick reference cards, and installation help. To obtain an index of available documents, send a blank e-mail to **support@usr.com**. To have a document e-mailed to you, send an e-mail to support@usr.com with the document's multi-digit number as the subject.

World Wide Web

A 3Com/U.S. Robotics home page containing the same information as the Internet on Demand listing as well as information about 3Com. This manual is available in electronic form in the customer support section of our Web page. Log on to **http://www.usr.com/home/online/main.htm**.

CompuServe

Access the same information as the Internet FTP site. Connect through the U.S. Robotics forum or e-mail us through CompuServe Mail for a response within 24 hours. The U.S. Robotics forum address is:

GO USROBOTICS

Address private messages to **76711,707**.

America Online

Connect to U.S. Robotics through America Online. Go to the **Keyword** field and type **USROBOTICS** to connect to the U.S. Robotics forum.

Fax and Technical Support Hotline

Technical questions about Bigpicture products can also be answered via fax or by technical support representatives.

Fax **(847) 676-7323**
Hotline **(888) USR-4VID***

* NOTE: This is a 90 day installation support number. After 90 days, call (847) 982-5151.

Priority No Hold Service

3Com also staffs its own 900 toll number for no hold assistance. These lines are staffed from 8 a.m. - 6 p.m. CST Monday through Friday.

No Hold line **900-555-USR1**

NOTE: There is a $1.50 per minute charge which will appear on your local phone bill. You must be 18 or older or have parental permission. Service not available in Canada.

Are You Still Having Problems?

- Review this manual.
- Call or visit your Bigpicture dealer. They will be able to give you assistance. This is much more efficient and time-saving than returning the modem to 3Com.

- If your dealer can't help you, contact 3Com Customer Support. When you call, specify your modem and capture card's serial numbers (found on the cards and on the outside of the box), the software being used, and, if possible, the contents of your ATI7 screen.

If You Must Return Your Bigpicture Kit for Repair

Contact 3Com Customer Support. If the support representative determines that you need to return your Bigpicture kit, you will receive an SRO (Service Repair Order) number. You must have an SRO number before returning the kit to us. Ship the unit, postage paid, in a strong corrugated cardboard box with plenty of packing material. DO NOT ship the kit back in its original box.

Include your SRO number, name, and address on the shipping label as well as inside the package.

Ship to the following address:

3Com
Attn: RMA
SRO#
6201 W. Oakton, East Dock
Morton Grove, IL 60053

GLOSSARY

Cross references are printed in **boldface**. Cross references with items in the Command Summary, found in the Technical Quick Reference (Section D), are printed in *italics*.

analog loopback

A modem self-test in which data from the keyboard or an internal test pattern is sent to the modem's transmitter, turned into analog form, looped back to the receiver, and converted back into digital form.

analog signals

A variety of signals and wavelengths that can be transmitted over communications lines such as the sound of a voice over the phone line. Contrast with **digital signals**.

answer mode

The mode used by your modem when answering an incoming call from an originating modem. The transmit/receive frequencies are the reverse of the originating modem, which is in **originate mode**.

application

A computer program designed to perform a specific function, such as word processing or organizing data into a spreadsheet.

ARQ

Automatic Repeat reQuest. A general term for a function that automatically allows your modem to detect flawed data and retransmit it. See **MNP** and **V.42**.

ASCII

American Standard Code for Information Interchange. A code used to represent letters, numbers, and special **characters** such as $, !, and /.

asynchronous transmission

Data transmission in which the length of time between transmitted **characters** may vary. Because the time lapses between transmitted characters are not uniform, the receiving modem must be signaled as to when the data bits of a character begin and when they end. The addition of **start/stop bits** to each character serves this purpose.

Auto Answer

Sets the modem to pick up the phone line when it detects a certain number of rings. See S-register S0 in the "Technical Quick Reference."

auto dial

A process where your modem dials a call for you. The dialing process is initiated by sending an *ATDT* (dial tone) or *ATDP* (dial pulse) command followed by the telephone number to dial. Auto dial is used to dial voice numbers. See command *Dn.*

baud rate

A term used to measure the speed of an analog transmission from one point to another. Although not technically accurate, baud rate is commonly used to mean **bit rate**.

binary digit

A 0 or 1, reflecting the use of the binary numbering system (only two digits). Used because the computer recognizes either of two states, OFF or ON. Shortened form of binary digit is bit.

bit rate

Also referred to as transmission rate. The number of **binary digits**, or bits, transmitted per second (**bps**). Communications channels using telephone channel modems are established at set bit rates, commonly 2400, 4800, 9600, 14,400, 28,800 and higher.

bits per second (bps)

The bits (**binary digits**) per second rate. Thousands of bits per second are expressed as kilobits per second (or kbps).

buffer

A memory area set aside to be used as temporary storage during input and output operations. An example is the modem's command buffer.

byte

A group of **binary digits** stored and operated upon as a unit. In user documentation, the term usually refers to 8-bit units or **characters**. One kilobyte (KB) is equal to 1,024 bytes or characters; 640 KB indicates 655,360 bytes or characters.

carrier
A tone signifying a connection the modem can alter to communicate data across telephone lines.

character
A representation, coded in **binary digits**, of a letter, number, or other symbol.

characters per second (CPS)
A data transfer rate generally estimated from the **bit rate** and the **character** length. For example, at 2400 bps, 8-bit characters with **start/stop bits** (for a total of ten bits per character) will be transmitted at a rate of approximately 240 characters per second (cps). Some **protocols**, such as error-control protocols, employ advanced techniques such as longer transmission **frames** and **data compression** to increase cps.

class 1 and 2.0
International standards used between fax **application** programs and faxmodems for sending and receiving faxes.

cyclic redundancy checking (CRC)
An error-detection technique consisting of a test performed on each block or **frame** of data by both sending and receiving modems. The sending modem inserts the results of its tests in each data block in the form of a CRC code. The receiving modem compares its results with the received CRC code and responds with either a positive or negative acknowledgment.

data communications
A type of communications in which computers are able to exchange data over an electronic medium.

data compression table
A table containing values assigned for each **character** during a call under **MNP**5 data compression. **Default** values in the table are continually altered and built during each call. The longer the table, the more efficient **throughput** gained.

data mode
The mode in which the faxmodem is capable of sending and receiving data files. A standard modem without fax capabilities is always in data mode.

DCE
Data communications (or Circuit-Terminating) equipment, such as dial-up modems that establish and control the data link via the telephone network.

default
Any setting assumed, at startup or reset, by the computer's software and attached devices. The computer or software will use these settings until changed by the user or other software.

detect phase
In the **ITU-T** V.42 error-control **protocol**, the first stage in establishing if both modems attempting to connect have **V.42** capability.

dictionary
The term used for compression codes built by the **V.42 *bis*** data compression algorithm.

digital loopback
A test that checks the modem's RS-232 interface and the cable that connects the **terminal** or computer and the modem. The modem receives data (in the form of **digital signals**) from the computer or terminal, and immediately returns the data to the screen for verification.

digital signals
Discrete, uniform signals. In this manual, the term refers to the **binary digits** 0 and 1. Contrast with **analog signals**.

DTE
Data **terminal** (or terminating) equipment. A computer that generates or is the final destination of data.

duplex
Indicates a communications channel capable of carrying signals in both directions. See **half duplex**, **full duplex**.

dynamic IP address
A type of Internet address that is dynamic in nature, changing with every call to the **ISP** (Internet Service Provider). More secure than standard Internet addresses as they are harder for users outside of the ISP to trace.

Electronic Industries Association (EIA)
Group which defines electronic standards in the U.S.

error control
Various techniques that check the reliability of **characters** (**parity**) or blocks of data. **V.42** and **MNP** error-control **protocols** use error detection (**CRC**) and retransmission of flawed **frames** (**ARQ**).

facsimile
A method for transmitting the image on a page from one point to another. Commonly referred to as fax.

fax mode
The mode in which the faxmodem is capable of sending and receiving files in a **facsimile** format. See definitions for **V.17, V.27ter, V.29**.

flow control
A mechanism that compensates for differences in the flow of data into and out of a modem or other device. See commands *&Hn, &In, &Rn.*

frame
A **data communications** term for a block of data with header and trailer information attached. The added information usually includes a frame number, block size data, error-check codes, and Start/End indicators.

full duplex
Signal will flow in both directions at the same time over one line. In microcomputer communications, may refer to the suppression of the online **local echo**.

H.324
An **ITU-T** standard that describes the protocols for the transport of video and audio via standard telephone lines.

half duplex
Signals will flow in both directions, but only one way at a time. In microcomputer communications, may refer to activation of the online **local echo**, which causes the modem to send a copy of the transmitted data to the screen of the sending computer.

Hz
Hertz, a frequency measurement unit used internationally to indicate one cycle per second.

ISP
Internet Service Provider. A company that provides users with Internet access for a set fee.

ITU-T
An international organization that defines standards for telegraphic and telephone equipment. For example, the Bell 212A standard for 1200-bps communication in North America is observed internationally as ITU-T **V.22**. For 2400-bps communication, most U.S. manufacturers observe V.22 bis.

The initials ITU-T represent the French name. In English it is known as the International Telegraph and Telephone Consultative Committee.

LAPM

Link Access Procedure for Modems. An error-control **protocol** defined in **ITU-T** Recommendation V.42. Like the **MNP** protocols, LAPM uses **cyclic redundancy checking** (**CRC**) and retransmission of corrupted data (**ARQ**) to ensure data reliability.

local echo

A modem feature that enables the modem to display keyboard commands and transmitted data on the screen. See command *Hn*.

MNP

Microcom Networking Protocol, an error-control **protocol** developed by Microcom, Inc., and now in the public domain. There are several different MNP protocols, but the most commonly used one ensures error-free transmission through error detection (**CRC**) and retransmission of erred **frames**.

modem

A device that transmits/receives computer data through a communications channel such as radio or telephone lines. It also changes signals received from the phone line back to **digital signals** before passing them to the receiving computer.

nonvolatile memory (NVRAM)
User-programmable random access memory whose data is retained when power is turned off. On the Video Modem, it includes four stored phone numbers and the modem settings.

NTSC
Acronym for National Television Standards Committee. This is the organization which determines the standards for broadcast and some consumer level video production.

off/on hook
Modem operations that are the equivalent of manually lifting a phone receiver (taking it off-hook) and replacing it (going on-hook).

online fall back/fall forward
A feature that allows high-speed, error-control modems to monitor line quality and fall back to the next lower speed in a defined range if line quality diminishes. As line conditions improve, the modems switch up to the next higher speed.

originate mode
The mode used by your modem when initiating an outgoing call to a destination modem. The transmit/receive frequencies are the reverse of the called modem, which is in **answer mode**.

parity
A simple error-detection method that checks the validity of a transmitted **character**.

Character checking has been surpassed by more reliable and efficient forms of error checking, including **V.42** and **MNP 2-4 protocols**. Either the same type of **parity** must be used by two communicating computers, or both may omit parity.

POTS

Acronym for Plain Old Telephone Service. Your telephone line and the lines that modems use are POTS lines.

protocol

A system of rules and procedures governing communications between two or more devices. Protocols vary, but communicating devices must follow the same protocol in order to exchange data. The format of the data, readiness to receive or send, error detection and error correction are some of the operations that may be defined in protocols.

RAM

Random Access Memory. Memory that is available for use when the modem is turned on, but that clears of all information when the power is turned off. The modem's RAM holds the current operational settings, a **flow control buffer**, and a command **buffer**.

remote digital loopback

A test that checks the phone link and a remote modem's transmitter and receiver.

remote echo
A copy of the data received by the remote system, returned to the sending system, and displayed on the screen. Remote echoing is a function of the remote system.

ROM
Read Only Memory. Permanent memory, not user-programmable.

serial transmission
The consecutive flow of data in a single channel. Compare to parallel transmissions where data flows simultaneously in multiple channels.

software flow control
See **xon/xoff**.

start/stop bits
The signaling bits attached to the beginning and end of a **character** before the character is transmitted during **asynchronous transmission**. This enables the receiving computer to determine where the character begins and ends for error control purposes.

TAD
Acronym which stands for Telephone Answering Device.

terminal
A device whose keyboard and display are used for sending and receiving data over a communications link. Differs from a microcomputer or a mainframe in that it has little or no internal processing capabilities.

terminal mode
Software mode that allows direct communication with the modem. Also known as command mode.

throughput
The amount of actual user data transmitted per second without the overhead of **protocol** information such as **start/stop bits** or **frame** headers and trailers. Compare with **characters per second**.

V.8
The **ITU-T** standard specification that covers the initial handshaking process (for the V.34 protocol only).

V.17 fax
An **ITU-T** standard for making **facsimile** connections at 14,400 bps, 12,000 bps, 9,600 bps, and 7,200 bps.

V.21
An **ITU-T** standard for modems operating in asynchronous mode at speeds up to 300 bps, **full-duplex**, on public switched telephone networks (also known as Bell 103).

V.22
An **ITU-T** standard for modem communications at 1200 bps, compatible with the Bell 212A standard observed in the U.S. and Canada.

V.22 bis

An **ITU-T** standard for modem communications at 2400 bps. The standard includes an automatic link negotiation fallback to 1200 bps and compatibility with Bell 212A/V.22 modems.

V.27

An **ITU-T** standard for **facsimile** operations that specifies modulation at 4800 bps, with fallback to 2400 bps.

V.29

An **ITU-T** standard for **facsimile** operations that specifies modulation at 9600 bps, with fallback to 7200 bps.

V.32

An **ITU-T** standard for modem communications at 9600 bps and 4800 bps. V.32 modems fall back to 4800 bps when line quality is impaired.

V.32 bis

An **ITU-T** standard that extends the V.32 connection range: 4800, 7200, 9600, 12,000, and 14,400 bps. V.32 *bis* modems fall back to the next lower speed when line quality is impaired, fall back further as necessary, and also fall forward (switch back up) when line conditions improve (see **online fall back/fall forward**).

V.34
An **ITU-T** standard that currently allows data rates as high as 28,800 bps.

V.34+
An enhancement to **V.34** that enables data transfer rates as high as 33,600 bps (not an ITU-T standard).

V.42
An **ITU-T** standard for modem communications that defines a two-stage process of detection and negotiation for **LAPM error control**.

V.42 bis
An extension of **ITU-T** V.42 that defines a specific data compression scheme for use during V.42 connections (this protocol includes V.42).

V.80
An **ITU-T** standard for modem communications that defines video conferencing-ready modems.

X2
A U.S. Robotics innovation that allows download speeds of up to 56 kbps when using an x2-capable Internet service provider (**ISP**).

Xmodem
The first of a family of **error control** software **protocols** used to transfer files between modems. These protocols are in the public domain and are available from many bulletin board services.

XON/XOFF

Standard **ASCII** control **characters** used by a software or terminal to tell an intelligent device to stop/resume transmitting data (also known **as software flow control**).

Ymodem

An error-checking **protocol** that can send several files of data at a time in 1024-**byte** (1K) blocks. This protocol can use either checksums or CRC for error checking.

Ymodem G

Similar to **Ymodem**, except it includes no error checking, which makes it faster.

Zmodem

Similar to **Xmodem** and **Ymodem**, except it includes batch transfer, the ability to recover from a partially complete transfer, an autostart feature, and improved efficiency.

SPECIFICATIONS

56K* VOICE/VIDEO FAXMODEM

Product Features

Physical Properties

Internal ISA modem, extended half card

Voice Compression Standards

G.723	used with H.324 (hardware assisted with RapidComm Video)
GSM	used with TAD
ADPCM	used with TAD (IMAADPCM, ITU-T G.721)

Data Modulation Protocols

x2	***** 56 Kbps capable, but limited to speeds of 53 kbps. (See title page.)
ITU-T V.34+	33.6K, 31.2K, 28.8K, 26.4K, 24.0K, 21.6K, 19.2K, 16.8K, 14.4K, 12.0K, 9600, 7200, and 4800 bps (data only 9600 and below)
ITU-T V.32bis	14.4K, 12.0K, 9600, 7200, and 4800 bps

ITU-T V.32	9600, 7200, 4800 bps
ITU-T V.22bis	2400 bps
ITU-T V.22	1200 bps
ITU-T V.23	1200 bps with 75 bps back channel
Bell 212A	1200 bps
ITU-T V.21	300 bps
Bell 103	300 bps

User Interface

U.S. Robotics AT-Command Interface
V.25ter

Data Compression

ITU-T V.42bis
MNP 5

Error Control Protocols

ITU-T V.42
MNP 2-4

Facsimile

ITU-T Group 3 Fax compatible
EIA 578 Class 1 commands
EIA 592 Class 2.0 commands

V.17	(14.4K, 12.0K, 9600, 7200 bps)
V.29	(9600, 7200 bps)
V.27ter	(4800, 2400 bps)

Embedded Control

V.80

Host Requirements

Microsoft Windows 95 operating system (will not support DOS, Windows 3.x, or Windows NT)
Pentium 75 MHz processor
Available ISA expansion slot
16MB of RAM
CD-ROM drive
PCI slots (configured for bus mastering)

VIDEO CAPTURE CARD

Physical Properties

Internal PCI half card

Resolution

640x 480 (NTSC standard), supports burst PCI bus transfers

Frame Rate

30 frames/sec at full resolution in overlay mode

Power

Output jack: +5V, 1A limit

NTSC CAMERA (MODEL 1622 ONLY)

Physical Properties

Dimensions: 77 x 62 x 84 mm
Integrated 3.8mm lens mount
Built-in microphone
Switches: Power on/off, WB auto/fixed, BLC, contrast, image neg./pos.
Interface: One cable (video and audio cinch., DC power jack)
Operating temp.: 0 to 40 degrees Celsius ambient

Resolution

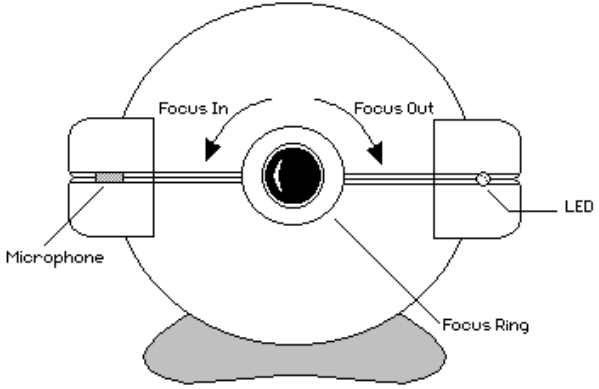
512 x 492 pixels (NTSC standard)
Viewing angle: 51 x 39 deg.
Minimum illumination: <10 lux
CVBS output (75Ohm): Ivpp

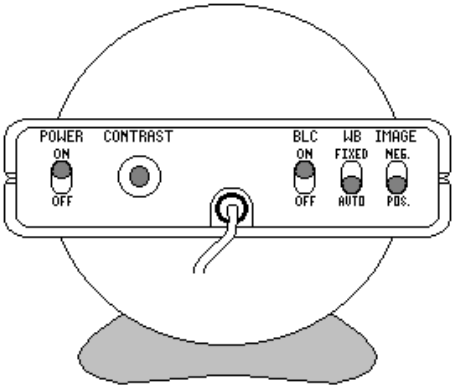
Audio

Signal to noise ratio: 48dB
Audio output: 400 mV_{RMS} in 10kOhm

Power

Power input: DC 5V±5%
Power consumption: <2.5W





TECHNICAL QUICK REFERENCE

NOTE: This section lists result codes and AT commands for x2 56 kbps Bigpicture modems.

AT Command Summary

Follow these rules when using the AT commands listed in the following section:

- Type commands in all upper case or all lower case; do not combine cases. Use the **Backspace** key to delete errors. (You cannot delete the original AT command.)
- Use caution when backspacing to make a correction to the AT command line. The command buffer does not store the spaces you might have included for readability. Backspacing to erase a space will erase a non-space character.
- If you do not include a number when entering a command with numeric options, zero is assumed. For example, if you type **ATB**, the command **ATB0** is assumed.
- Every command except A/ and +++ must begin with the AT prefix and must be followed by pressing **ENTER**.
- Commands can be no longer than 58 characters. When counting the characters, your modem does not count the AT prefix, **ENTER**, or spaces.
- You can have more than one command per line.
- All defaults are based on the &F1 – Hardware Flow Control template loaded in NVRAM prior to shipping. Defaults are noted by an asterisk (*).

AT Command Set

$ Displays a basic command list; online help.

A Manual Answer: goes off hook in answer mode. Pressing any key aborts the operations.

A/ Re-executes the last issued command. Used mainly to redial. This does not require the AT prefix or a Carriage Return.

Any key Aborts off-hook dial/answer operation and hangs up.

AT Required command prefix, except with A/ and +++. Use alone to test for *OK* result code.

B*n* U.S./ITU-T answer sequence.

* B0 ITU-T V.25 answer sequence
B1 U.S. answer tone

D*n* ***If no voice or data call is in progress:***
Dials the specified phone number. Includes the following:

* P Pulse (rotary) dial
T Tone dial
, (Comma) Two-second pause; linked to S-8 register
; (Semicolon) Returns to *Command* mode after dialing
! (Exclamation point) Flashes the switch hook
/ Delays for 125 msec. before proceeding with dial string
W Waits for second dial tone (X3 or higher); linked to S6 register

@ Dials, waits for quiet answer, and continues (X3 or higher)

R Originates call using answer (reverse) frequencies

#,* Extended touch tone pad tones

If a voice call is in progress and you want to start a voice-and-data session:

You can use the D command along with any of its modifiers, but they are unnecessary because a phone connection already exists.

When the modem receives the D command, it initiates a Digital SVD (voice-and-data) session. You receive a CONNECT result code when the Digital SVD session begins. If you receive a NO CARRIER result code, the transition to a Digital SVD session was not completed. The voice call will continue as normal.

If a data-only or voice-and-data session is in progress:

Command is ignored. Entering D (with or without modifiers) is ignored by the modem because a phone connection already exists.

DL Dials the last-dialed number.

DS*n* Dials the phone number string stored in NVRAM at position *n (n* = 0–3*)*. Phone numbers are stored with the &Z*n*=*s* command.

D$ Displays a list of Dial commands.

E*n* Sets local echo.

E0 Echo OFF

* E1 Modem displays keyboard commands

F*n* Sets online local echo of transmitted data ON/OFF.

F0 Local echo ON. Modem sends a copy of the data it sends to

the remote system to your screen.

* F1 Local echo OFF. Receiving system may send a remote echo of the data it receives.

H*n* Controls ON/OFF hook.

H0 ***If a voice-only call is in progress:***
Has no effect because the modem is on hook.
If a data or voice-and data call is in progress:
Hangs up data call but does not stop the voice call. Switches digitized voice to full analog voice.

H1 Goes off hook

I*n* Displays the following information.

I0 Four-digit product code
I1 Results of ROM checksum
I2 Results of RAM checksum
I3 Product type
I4 Current modem settings
I5 Nonvolatile memory (NVRAM) settings
I6 Link diagnostics
I7 Product configuration

L*n* Controls speaker volume (internals only).

L0 Low
L1 Low
* L2 Medium
L3 High

M*n* Operates speaker.

M0 Speaker always OFF
* M1 Speaker ON until CONNECT
M2 Speaker always ON
M3 Speaker ON after dial, until CONNECT

O*n* Returns online after sending an *escape to command mode* signal (see +++).
O0 Returns online
O1 Returns online and retrains

P Sets pulse dial (for phone lines that don't support touch-tone dialing).

Q*n* Displays/suppresses result codes.

* Q0 Displays result codes
Q1 Quiet mode; no result codes
Q2 Displays result codes only in *Originate* mode

S*r*.*b*=*n* Sets bit .*b* of register *r* to *n* (0/OFF or 1/ON).

S*r*=*n* Sets register *r* to *n*.

S*n*? Displays contents of S-Register *n*.

S$ Displays a list of the S-Registers.

T Sets tone dial.

V*n* Displays verbal/numeric result codes.
V0 Numeric codes
* V1 Verbal codes

X*n* Sets result code displayed. Default is X4.

	X*n* Setting				
Result Codes	X0	X1	X2	X3	X4
0/OK	•	•	•	•	•
1/CONNECT	•	•	•	•	•
2/RING	•	•	•	•	
3/NO CARRIER	•	•	•	•	•
4/ERROR	•	•	•	•	•
5/CONNECT 1200		•	•	•	•
6/NO DIAL TONE			•		•
7/BUSY				•	•
8/NO ANSWER*				•	•
10/CONNECT 2400		•	•	•	•
13/CONNECT 9600		•	•	•	•
18/CONNECT 4800		•	•	•	•
20/CONNECT 7200		•	•	•	•
21/CONNECT 12000		•	•	•	•
25/CONNECT 14400		•	•	•	•
43/CONNECT 16800		•	•	•	•
85/CONNECT 19200		•	•	•	•
91/CONNECT 21600		•	•	•	•
99/CONNECT 26400		•	•	•	•
103/CONNECT 16800		•	•	•	•
107/CONNECT 28800		•	•	•	•
151/CONNECT 31200		•	•	•	•
155/CONNECT 33600		•	•	•	•

Xn Setting *(cont.)*

	X0	X1	X2	X3	X4
180/CONNECT 33333		•	•	•	•
184/CONNECT 37333		•	•	•	•
188/CONNECT 41333		•	•	•	•
192/CONNECT 42666		•	•	•	•
196/CONNECT 44000		•	•	•	•
200/CONNECT 45333		•	•	•	•
204/CONNECT 46666		•	•	•	•
208/CONNECT 48000		•	•	•	•
212/CONNECT 49333		•	•	•	•
216/CONNECT 50666		•	•	•	•
220/CONNECT 52000		•	•	•	•
224/CONNECT 53333		•	•	•	•
228/CONNECT 54666		•	•	•	•
232/CONNECT 56000		•	•	•	•
236/CONNECT 57333		•	•	•	•
Adaptive Dialing			•	•	•
Wait for 2nd Dial Tone (W)			•		•
Wait for Answer (@)				•	•
Fast Dial			•		•

*Requires @ in dial string; replaces NO CARRIER

Y*n* Selects power-on/reset default configuration.

* Y0 Default is profile 0 setting in NVRAM

Y1 Default is profile 1 setting in NVRAM

Z*n* Resets modem.

Z0 Resets modem to NVRAM profile selected by Y command

Z1 Resets modem to NVRAM profile 0

Z2 Resets modem to NVRAM profile 1

Z3 Resets modem to factory default profile 0 (&F0)

Z4 Resets modem to factory default profile 1 (&F1)

Z5 Resets modem to factory default profile 2 (&F2)

&$ Displays a list of ampersand (&) commands.

&A*n* Enables/disables ARQ codes.

&A0 ARQ result codes disabled

&A1 ARQ result codes enabled

&A2 V.32 modulation indicator added

* &A3 Protocol indicators added

&B*n* Sets modem's serial port rate.

&B0 Variable, follows connection rate

* &B1 Fixed serial port rate

&B2 Fixed in ARQ mode, variable in non-ARQ mode

&C*n* Controls Carrier Detect (CD) signal.
- &C0 CD override, CD always on
- * &C1 Normal CD operations

&D*n* Controls Data Terminal Ready (DTR) operations.
- &D0 DTR override, DTR always on
- &D1 DTR toggle causes online Command mode
- * &D2 Normal DTR operations
- &D3 Resets on DTR toggle

&F*n* Loads a read-only (non-programmable) factory configuration.
- &F0 Generic template
- &F1 Hardware flow control template
- &F2 Software flow control template

&G*n* Sets Guard Tone.

* &G0 No guard tone, U.S. and Canada
&G1 550 Hz guard tone, some European countries, requires B0 setting.
&G2 1800 Hz guard tone, U.K., requires B0 setting

&H*n* Sets Transmit Data (TD) flow control
&H0 Flow control disabled
* &H1 Hardware flow control, Clear to Send (CTS)
&H2 Software flow control, XON/XOFF
&H3 Hardware and software flow control

&I*n* Sets Receive Data (RD) software flow control (see also &R*n*).
* &I0 Software flow control disabled
&I1 XON/XOFF signals to your modem and remote system
&I2 XON/XOFF signals to your modem only

&K*n* Enables/disables data compression.
&K0 Data compression disabled
* &K1 Auto enable/disable
&K2 Data compression enabled
&K3 MNP5 compression disabled

&M*n* Sets Error Control (ARQ) 1200 bps and higher.

- &M0 Normal mode, error control disabled
- &M1 Reserved
- &M2 Reserved
- &M3 Reserved
- * &M4 Normal/ARQ
- &M5 ARQ mode

&N*n* Sets connect speed. If connection cannot be established at this speed, the modem will hang up. Sets ceiling connect speed if &U*n* is greater than 0. See &U*n*.

- * &N0 Variable rate
- &N1 300 bps
- &N2 1200 bps
- &N3 2400 bps
- &N4 4800 bps
- &N5 7200 bps
- &N6 9600 bps
- &N7 12,000 bps
- &N8 14,400 bps
- &N9 16,800 bps
- &N10 19,200 bps
- &N11 21,600 bps
- &N12 24,000 bps
- &N13 26,400 bps
- &N14 28,800 bps
- &N15 31,200 bps
- &N16 33,600 bps
- &N17 33,333 bps
- &N18 37,333 bps
- &N19 41,333 bps
- &N20 42,666 bps

&N21 44,000 bps
&N22 45,333 bps
&N23 46,666 bps
&N24 48,000 bps
&N25 49,333 bps
&N26 50,666 bps
&N27 52,000 bps
&N28 53,333 bps
&N29 54,666 bps
&N30 56,000 bps
&N31 57,333 bps

&P*n* Sets pulse (rotary) dial make/break ratio.

* &P0 U.S./Canada ratio, 39%/61%
&P1 U.K. ratio, 33%/67%

&R*n* Sets Receive Data (RD) hardware flow control, Request to Send (RTS) (see also &I*n)*.

&R0 Reserved
&R1 Modem ignores RTS
* &R2 Received Data to computer only on RTS

&S*n* Controls Data Set Ready (DSR) operations.

* &S0 DSR override; always ON
&S1 Modem controls DSR

&T*n* Begins test modes.

&T0 Ends testing
&T1 Initiates Analog Loopback
&T2 Reserved

	&T3	Initiates Local Digital Loopback
	&T4	Enables Remote Digital Loopback
*	&T5	Prohibits Remote Digital Loopback
	&T6	Initiates Remote Digital Loopback
	&T7	Initiates Remote Digital with self-test and error detector
	&T8	Initiates Analog Loopback with self-test and error detector

&U*n* Sets floor connect speed when &U*n* is set greater than 0. &N*n* is the ceiling connect speed. See &N*n*.

*	&U0	Disabled
	&U1	300 bps
	&U2	1200 bps
	&U3	2400 bps
	&U4	4800 bps
	&U5	7200 bps
	&U6	9600 bps
	&U7	12,000 bps
	&U8	14,400 bps
	&U9	16,800 bps
	&U10	19,200 bps
	&U11	21,600 bps
	&U12	24,000 bps
	&U13	26,400 bps
	&U14	28,800 bps
	&U15	31,200 bps
	&U16	33,600 bps
	&U17	33,333 bps

&U18 37,333 bps
&U19 41,333 bps
&U20 42,666 bps
&U21 44,000 bps
&U22 45,333 bps
&U23 46,666 bps
&U24 48,000 bps
&U25 49,333 bps
&U26 50,666 bps
&U27 52,000 bps
&U28 53,333 bps
&U29 54,666 bps
&U30 56,000 bps
&U31 57,333 bps

&W*n* Writes current configuration to NVRAM templates.

&W0 Modifies the NVRAM 0 template (Y0)
&W1 Modifies the NVRAM 1 template (Y1)

&Y*n* Sets break handling.
&Y0 Destructive, but doesn't send break
* &Y1 Destructive, expedited
&Y2 Nondestructive, expedited
&Y3 Reserved

&Z*n*=*s* Writes phone number string *s* to NVRAM at position *n* (*n* = 0–3).

&Z*n*=L	Writes last executed dial string to NVRAM at position *n* (*n* = 0–3).
&Z*n*?	Displays the phone number stored at position *n (n* = 0–3).
&ZL?	Displays the last executed dial string.
<Ctrl>C	Cancels the display of the help screens.
<Ctrl>K	Cancels the display of the help screens.
<Ctrl>S	Stops/restarts help screens.
+++	Escapes to online-command mode.
-SPH=?	Provides status of phone connected to modem's PHONE jack. Returns 0 if phone is on-hook and 1 if phone is off-hook.

S-Registers

To change a setting, use the ATS*r*=*n* command, where *r* is the register and *n* is a decimal value from 0–255 (unless otherwise indicated).

Register	Default	Function
S0	0	Sets the number of rings on which to answer in Auto Answer Mode. When set to 0, Auto Answer is disabled.
S1	0	Counts and stores the number of rings from an incoming call (read only).
S2	43	Stores the ASCII decimal code for the escape code character. Default character is +.
S3	13	Stores the ASCII code for the Carriage Return character.
S4	10	Stores the ASCII decimal code for the Line Feed character.
S5	8	Stores the ASCII decimal code for the Backspace character.
S6	2	Sets the number of seconds the modem waits for dial tone before dialing.
S7	60	Sets the number of seconds the modem waits for a carrier or answers before returning on-hook and sending a *No Carrier* result code.
S8	2	Sets the duration, in seconds, for the pause (,) option in the Dial command.

Register	Default	Function
S9	6	Sets the required duration, in tenths of a second, of the remote modem's carrier signal before recognition by your modem.
S10	7	Sets the duration, in tenths of a second, that the modem waits after loss of carrier before hanging up. This guard time allows the modem to distinguish between a line hit, or other disturbances that momentarily break the connection, from a true disconnect (hang up) by the remote modem. (While we don't recommend connecting the modem to a line with call waiting, if you have it, you may wish to adjust this setting upward to prevent the modem from misinterpreting the second call signal as a disconnect by the remote modem. A better alternative is to ask your phone company how to temporarily disable call waiting (usually *70,). For example: ATDT *70, *phone number*.) **Note:** If you set S10 = 255, the modem will not hang up when carrier is lost. Dropping DTR hangs up the modem.

Register	Default	Function
S11	70	Sets the duration and spacing, in milliseconds, for tone dialing.
S12	50	Sets the duration, in fiftieths of a second, of the guard time for the escape code sequence (+++).
S13	0	Bit-mapped register. Select the bit(s) you want on and set S13 to the total of the values in the Value column. For example, ATS13 = 17 enables bit 0 (value is 1) and bit 4 (value is 16).

Bit	Value	Result
0	1	Resets when DTR drops.
1	2	Resets non-MNP buffer to 128 bytes.
2	4	Sets **Backspace** key to delete.
3	8	On DTR signal, auto dials the number stored in NVRAM, position 0.
4	16	At power on/reset, auto dials the number stored in NVRAM at position 0.
5	32	Disables V.32bis ASL mode.
6	64	Disables quick retrains.
7	128	Disconnects on escape code.

Register	Default	Function

S15 0 Bit-mapped register. To set the register, see the instructions for S13.

Bit	Value	Result
0	1	Disables ARQ/MNP for V.22.
1	2	Disables ARQ/MNP for V.22bis.
2	4	Disables ARQ/MNP for V.32 and V.32bis.
3	8	Disables MNP handshake.
4	16	Disables MNP level 4.
5	32	Disables MNP level 3.
6	64	Special MNP incompatibility.
7	128	Disables V.42. NOTE: To disable initial V.42 phase detection, select the total values of bits 3 and 7.

S16 0 Bit-mapped test register.

Bit	Value	Result
0	1	Reserved.
1	2	Touch tone dialing test.
2	4	Internal test pattern.
3-7	8-128	Reserved.

Register	Default	Function
S18	0	Test timer for &T*n* loopback testing. Sets the time in seconds of testing before the modem automatically times out and terminates the test. When set to 0, the timer is disabled. Valid range is 1-255.
S19	0	Sets the duration, in minutes, for the inactivity timer. The timer activates when there is no data activity on the phone line; at time-out the modem hangs up. S19 = 0 disables the timer.
S21	10	Sets the length, in hundredths of a second, of breaks sent from the modem to the computer; applies to ARQ mode only.
S22	17	Stores the ASCII decimal code for the XON character. Valid range is 0–127.
S23	19	Stores the ASCII decimal code for the XOFF character.
S25	20	Sets the duration, in hundredths of a second, that DTR must be dropped so that the modem doesn't interpret a random glitch as a DTR loss. (Most users will want to use the default; this register is useful for setting compatibility with older systems running under older operating software.)

Register	Default	Function

S27 0 Bit-mapped register. To set the register, see the instructions for S13.

Bit	Value	Result
0	1	Enables ITU-T V.21 modulation at 300 bps for overseas calls. In V.21 mode, the modem answers overseas and domestic calls, but only originates V.21 calls.
1	2	Enables unencoded (non-trellis coded) modulation in V.32bis mode; part of ITU-T recommendation V.32.
2	4	Disables V.32 modulation.
3	8	Disables 2100 Hz answer tone to allow two V.42 modems to connect more quickly.
4	16	Enables V.23.
5	32	Disables V.32bis.
6	64	Reserved.
7	128	This setting disables the codes and displays the 9600 code instead. The actual rate of the call can be viewed on the ATI6 screen. Used for unusual software incompatibilities. Some software may not accept 7200, 12000 and 14400 bps result codes.

Register	Default	Function

S27 (handshaking control options)

Bit 4	Bit 5	Result
0	0	Complete handshaking sequence: V.42 Detection, LAPM error control, MNP.
16	0	Disables MNP.
0	32	Disables V.42 Detection and LAPM.
16	32	Combined value of 48 negotiates LAPM without Detection phase. Choose this value if the remote modem uses LAPM but does not support the Detection phase.

S28 8 Sets the duration, in tenths of a second, of the V.32 handshaking time. Allowable times are 0-25.5 seconds. This gives V.32 *bis* modems additional time to connect with most U.S./Canadian modems at 9600 bps or higher before falling back to attempt a V.23 connection (some U.K. and European phone systems, 1200 bps) or a V.21 connection (U.K. and European, 300 bps).

If calling/answering low-speed, overseas modems under V.21 or V.23 modulation, setting S28 to zero eliminates the delay, giving a faster connect time.

Register	Default	Function
S29	20	V.21/V.23 fallback timer.
S30	0	Reserved.
S31	128	TAD audio level adjust.
S32	2	Bit-mapped register. To set, see instructions for S13.

Bit	Value	Result
0	1	Enables V.8 call indication.
1	2	Enables V.8 mode.
2	4	Reserved.
3	8	Disables V.34 modulation.
4	16	Disables V.34bis modulation.
5	32	Disables x2 modulation.
6	64	Reserved.
7	128	Reserved.

S33 0 Bit-mapped register. To set, see instructions for S13.

Bit	Value	Result
0	1	Disables 2400 symbol rate.
1	2	Disables 2743 symbol rate.

Register	Default	Function
S33 *(cont.)*		**Bit Value Result** 2 4 Disables 2800 symbol rate. 3 8 Disables 3000 symbol rate. 4 16 Disables 3200 symbol rate. 5 32 Disables 3429 symbol rate. 6 64 Reserved. 7 128 Disables shaping.
S34	0	Bit-mapped register. To set, see instructions for S13. Allowable S34 values are 0, 1, 4, 5, 8, 9, 12, and 13. **Bit Value Result** 0 1 Disables 8S-2D trellis encoding. 1 2 Disables 16S-4D trellis encoding. 2 4 Disables 32S-2D trellis encoding. 3 8 Disables 64S-4D trellis encoding. 4 16 Disables non-linear coding. 5 32 Disables TX level deviation. 6 64 Disables pre-emphasis. 7 128 Disables pre-coding.

Register	Default	Function
S35	0	Bit-mapped register. To set, see instructions for S13.

Bit	Value	Result
0-2		x2 back channel operation limit field 0 – no back channel limit. 1 – 28800 maximum rate. 2 – 26400 maximum rate. 3 – 24000 maximum rate. 4 – 21600 maximum rate. 5 – 19200 maximum rate. 6 – 16800 maximum rate. 7 – 14400 maximum rate.
3	8	Reserved.
4	16	Enables x2 A law operation.
5	32	Disables automatic A/U law detection.
6	64	Disables power reduction.
7	128	Reserved.

Register	Default	Function
S38	0	Sets an optional delay, in seconds, before a forced hang-up and clearing of the Transmit buffer when DTR drops during an ARQ call. This allows time for a remote modem to acknowledge receipt of all transmitted data before it is disconnected. Default 0: the modem immediately hangs up when DTR drops. (This option only applies to connections terminated by dropping DTR. If the modem receives the ATH command, it ignores S38 and immediately hangs up.)
S41	0	Bit-mapped register. To set, see instructions for S13. **Bit Value Result** 0 1 Enable distinctive ring detection.

REGULATORY INFORMATION

Manufacturer's Declaration of Conformity

3Com
7770 North Frontage Road
Skokie, Illinois 60077-2690
U.S.A.
declares that product Bigpicture™ Video (models 1622 and 1690) conforms to the FCC's specifications:

Part 15:
Operation is subject to the following two conditions:
(1) this device may not cause harmful electromagnetic interference, and
(2) this device must accept any interference received including interference that may cause undesired operations.

Part 68:
This equipment complies with FCC Rules Part 68. Located on the circuit board of the modem is the FCC Registration Number and Ringer Equivalence Number (REN). You must provide this information to the telephone company when requested.

The REN is used to determine the number of devices you may legally connect to your telephone line. In most areas, the sum of the REN of all devices connected to one line must not exceed five (5.0). You should contact your telephone company to determine the maximum REN for your calling area.

This equipment uses the following USOC jacks: RJ11C.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

An FCC compliant telephone cord and modular plug are provided with this equipment, which is designed to connect to the telephone network or premises wiring using a Part 68 compliant compatible jack. See installation instructions for details.

Caution to the User

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC (Canada)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled *Digital Apparatus*, ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B préscrites dans la norme sur le matériel brouilleur: *Appareils Numériques*, NMB-003 édictée par l'Industrie Canada.

UL Listing/CUL Listing

This information technology equipment is UL-Listed and CUL-Listed for use with UL-Listed personal computers that have installation instructions detailing user installation of card cage accessories.

Connecting to the Telephone Company

It is not necessary to notify the telephone company before installing the modem. However, the telephone company may request

the telephone number(s) to which the Bigpicture modem is connected and the FCC information printed on this page.

Be sure that the telephone line you are connecting the modem to is a standard analog line and not a digital (PBX), party, or coin telephone line.

If the modem is malfunctioning, it may affect the telephone lines. In this case, disconnect the modem until the source of the difficulty is traced.

Fax Branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, an identification of the business or other entity, or other individual sending the message, and the telephone number of the sending machine or of such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

In order to program this information into your Bigpicture modem, refer to the RapidComm Video manual on the CD-ROM that shipped with your modem. If you're using a different communications software program, refer to its manual.

Radio and Television Interference

This equipment generates and uses radio frequency energy and if not installed and used

properly, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. The modem has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause interference to radio or television reception, which you can determine by monitoring reception when the modem is installed and when it is removed from the computer, try to correct the problem with one or more of the following measures:

- Reorient the receiving antenna (for televisions with antenna reception only) or cable input device.
- Relocate the computer with respect to the receiver.
- Relocate the computer and/or the receiver so that they are on separate branch circuits.

If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet, prepared by the Federal Communications Commission, helpful:

How to Identify and Resolve Radio-TV Interference Problems
Stock No. 004-000-0345-4
U.S. Government Printing Office
Washington, DC 20402

In accordance with Part 15 of the FCC rules, the user is cautioned that any changes or modifications to the equipment described in this manual that are not expressly approved by 3Com could void the user's authority to operate the equipment.

For Canadian Modem Users

NOTICE: The Industry Canada (IC) label identifies certified equipment. This certification means the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line, individual service may be extended by means of a certified connector assembly (telephone extension cord.) The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Currently, telecommunication companies do not allow users to connect their equipment to jacks except in precise situations that are spelled out in tariffing arrangements with those companies.

Repairs to certified equipment should be coordinated by a representative designated by the

supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For your own protection, make sure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Do ***NOT*** attempt to make such connections yourself. Instead contact an electric inspection authority or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

The Ringer Equivalence Number is located on the modem's circuit board.

WARRANTY AND REPAIR SERVICE CENTER:

Keating Technologies
25 Royal Crest Court, Suite 200
Markham, ONT L3R 9X4

AVIS: L'étiquette de Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des

réseaux de télécommunications. Le Ministére n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'enterprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordment. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas le dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournissuer. La compagnie de télécommunications peut demander à l'utilasateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilasateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordé ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissment: L'utilisateur ne doit pas tenter de faire ces raccordements luimême; il doit avoir recours à un service d'inspection des installations électriques, ou á un électricien, selon le cas.

NOTICE: L'Indice d'Equivalence de la Sonnerie (IES) de chaque appareil donne une indication du nombre maximal de terminaux qui peut être

branché à l'interface téléphonique. La termination d'une interface peut consister de n'importe qu'elle combinaison d'appareils sur le réseau, seulement si la somme des IES de tous les appareils n'excède pas 5."

L'Indice d'Equivalence de la Sonnerie (IES) est situé sur le circuit imprimé.

Centre de guarantie et de service après-vente:

Keating Technologies
25 Royal Crest Court, Suite 200
Markham, ONT L3R 9X4

Limited Warranty

3Com warrants to the original end-user purchaser that this product will be free from defects in materials and workmanship for a period of five years from the date of purchase. During the limited warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or a similar model, which may be a refurbished model) at 3Com's option, without charge for either parts or labor. This limited warranty shall not apply if the product is modified, tampered with, misused, or subjected to abnormal working conditions

(including, but not limited to, lightning and water damage).

THIS LIMITED WARRANTY DOES NOT GUARANTEE YOU UNINTERRUPTED SERVICE. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS LIMITED WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. 3COM SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER, INCLUDING, WITHOUT LIMITATION, LOSS OF REVENUE OR PROFITS, FAILURE TO REALIZE SAVINGS OR OTHER BENEFITS, LOSS OF DATA OR USE, DAMAGE TO EQUIPMENT, AND CLAIMS AGAINST THE PURCHASER BY ANY THIRD PERSON, EVEN IF 3COM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This limited warranty gives you specific legal rights. You may have others, which vary from state to state. Some states do not allow limitations on duration of an implied warranty, or the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

To obtain service under this limited warranty, contact the 3Com Technical Support Department at 847-982-5151 or by mail at 3Com, 7770 N. Frontage Road, Attn.: Technical Support Dept., Skokie, Illinois 60077-2690. You will be given a Service Repair Order ("SRO") number to help 3Com keep track of your service request. Once you have received your SRO number, take or send the product, postage prepaid and insured, to 3Com, Attn: RMA, [your SRO#], 6201 W. Oakton, East Dock, Morton Grove, IL 60053. Pack the product in a strong corrugated cardboard box with plenty of packing material. DO NOT send the product back in its original box. DO NOT send anything but the modem (do not send back the power supply, CD-ROM, documentation, etc.). If possible, send the product via a courier capable of tracking the progress of the shipment. Include proof of the date of purchase. IMPORTANT: If you send your unit, pack it securely, and be sure that your SRO number is visible on the outside of the package.

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