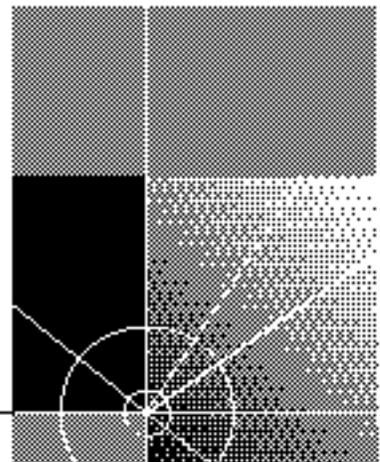


U.S. Robotics U.S. Robotics® Modems:
User's Guide

<http://www.usr.com/>

Published September 2000



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60008

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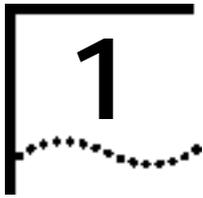
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56K FAXMODEM PRODUCT FEATURES

Modulation Schemes

ITU-T V.92♦

ITU-T V.90*

x2™ technology*

ITU-T V.34+

ITU-T V.34

ITU-T V.32bis

ITU-T V.32

ITU-T V.22bis

ITU-T V.22

ITU-T V.23

Bell 212A

ITU-T V.21

Bell 103

* models 5686, 5687, 5609, 5610, 5605, 5613 only

♦ on select models

Error Control and Data Compression Schemes	ITU-T V.42
	ITU-T V.42bis
	MNP 2-5
Fax Modulation Schemes	ITU-T V.17
	ITU-T V.29
	ITU-T V.27ter
	ITU-T V.21
	Fax Standards
	EIA 578 Class 1 FAX
	EIA 592 Class 2.0 FAX
Front Channel Link Rates (download) (V.90/V.92)	28000, 29333, 30666, 32000, 33333, 34666, 36000, 37333, 38666, 40000, 41333, 42666, 44000, 45333, 46666, 48000, 49333, 50666, 52000, 53333, 54666, 56000
Back Channel Link Rates (upload) (V.92)	28000, 29333, 30666, 32000, 33333, 34666, 36000, 37333, 38666, 40000, 41333, 42666, 44000, 45333, 46666, 48000
Back Channel Link Rates (upload) (V.90)	4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600
V.34+ Link Rates	4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600

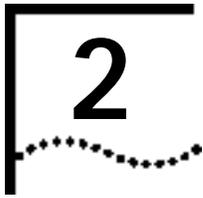
V.32bis Link Rates 4800, 7200, 9600, 12000, 14400

Additional Link Rates 300, 1200/75 (V.23), 1200, 2400

Fax Link Rates 2400, 4800, 7200, 9600, 12000, 14400

DTE Rates 300, 1200, 2400, 9600, 19200, 38400, 57600, 115200





INTERNAL AND EXTERNAL MODEMS WITH SPEAKERPHONE

Making a Speakerphone Call with a Telephone

External Modems with Speakerphone

- 1 Make sure your telephone is plugged into the modem's PHONE jack.
- 2 Lift the telephone's handset.
- 3 Dial the phone number.
- 4 When the person on the other end answers, press the SPEAKER button (on top of the modem).
- 5 Hang up the handset.
- 6 To end the call, press the SPEAKER button again.

Internal Modems with Speakerphone

See your modem's communications software manual for instructions.

Making a Speakerphone Call with Communications Software

- 1 Dial the telephone number using your communications software.
- 2 To end the call, hang up using your software (see the software's Help file for more information).

Answering an Incoming Call

External Modems with Speakerphone

When you hear your phone ring, press the SPEAKER button.

If you do not hear your phone ring, you may not have the telephone's cord plugged into the modem's PHONE jack. If you are using your communications software to dial speakerphone calls, the software needs to be running in order for you to hear incoming calls.

Internal Modems with Speakerphone

See your modem's communications software manual for instructions.

Speaking Privately to a Caller

If you want to talk privately to a caller, you can use a phone handset instead of the speaker by lifting the handset. To use the speaker again, press the SPEAKER button and then hang up the handset.

Adjusting Speaker Volume

Press the up and down volume buttons on top of the modem (marked VOLUME).

Muting a Call

External Modems with Speakerphone

If you'd like to say something without the receiving party hearing you, you can press the MUTE button. When you mute a call, the ONLINE light will blink.

To turn off the mute feature, press MUTE again. (The ONLINE light will stop blinking and remain illuminated for the remainder of the call.)

Internal Modems with Speakerphone

Refer to your communications software manual for specific speakerphone instructions.

3

UNINSTALLING A U.S. ROBOTICS® MODEM

NOTE: These instructions only apply to current U.S. Robotics modems. If the modem you'll be uninstalling was made by another manufacturer, refer to that modem's documentation for instructions.

This chapter covers the uninstallation of:

- A U.S. Robotics Winmodem® modem.
- A U.S. Robotics Internal Faxmodem.
- A U.S. Robotics External Faxmodem.
- A U.S. Robotics Macintosh Faxmodem.

Uninstalling a Winmodem modem

(Model Numbers 3CP5699A, 3CPxx5699A, 3CPxx2884A, 3CP5695, and 3CPxx5695)

- 1 Click **Start**, point to **Settings** and then click **Control Panel**.
- 2 Double-click the **Add/Remove Programs** icon.
- 3 Scroll down, select your modem and click **Add/Remove**.
- 4 A reminder that your U.S. Robotics modem will be permanently removed from your system appears. Click **Remove** to proceed.
- 5 Click **OK** to confirm that the modem has been removed from your system.
- 6 Next, verify that you completely uninstalled the Winmodem software. Click **Start**, point to **Settings** and select **Control Panel**.
- 7 Double-click the **System** icon and click the **Device Manager** tab. If you do not see a modem icon, you've successfully uninstalled your Winmodem software. If you do see an icon, repeat these instructions beginning with Step 1.

- 8 Shut down Windows and turn off your computer.
- 9 Remove the phone cords from the modem's TELCO and PHONE jacks. If the modem is a voice modem, remove any microphones or powered speakers attached to the modem.
CAUTION: To avoid the risk of electric shock, make sure your computer and all peripheral devices are turned off and unplugged.
- 10 Remove the computer's cover. (If you do not know how to do this, refer to your computer's documentation.)
- 11 Find the modem inside the computer. (It will be the green board with TELCO and PHONE stamped on its metal bracket.)
- 12 Remove the screw that attaches the modem's metal bracket to the computer.
- 13 Remove the modem from its slot.
- 14 Replace the computer's cover. Your modem has now been completely uninstalled.

Uninstalling an Internal Faxmodem

- 1 First, remove the modem from the Windows operating system. From the **Start** menu, point to **Settings** and then click **Control Panel**.
- 2 Double-click the **Modems** icon.
- 3 Click to highlight the name of the modem you wish to remove.
- 4 Click the **Remove** button.
- 5 Shut down Windows and turn off your computer.
- 6 Remove the phone cords from the modem's TELCO and PHONE jacks. If the modem is a voice modem, remove any microphones or powered speakers attached to the modem.
CAUTION: To avoid the risk of electric shock, make sure your computer and all peripheral devices are turned off and unplugged.
- 7 Remove the computer's cover. (If you do not know how to do this, refer to your computer's documentation.)
- 8 Find the modem inside the computer. (It will be the green board with TELCO and PHONE stamped on its metal bracket.)

- 9 Remove the screw that attaches the modem's metal bracket to the computer.
- 10 Remove the modem from its slot.
- 11 Replace the computer's cover. Your modem has now been completely uninstalled.

Uninstalling an External Faxmodem

1. First remove the modem from the Windows operating system. From the **Start** menu, point to **Settings** and then click **Control Panel**.
 2. Double-click the **System** icon.
 3. Click the **Device Manager** tab.
 4. Double-click the **Modems** icon.
 5. Click to highlight the name of the modem you wish to remove.
 6. Click the **Remove** button.
 7. Remove the phone cords from the modem's TELCO and PHONE jacks.
 8. Shut down Windows and turn off your computer.
- CAUTION: To avoid the risk of electric shock, make sure your computer and all peripheral devices are turned off and unplugged.*
9. If your modem uses a power adapter, unplug it from the outlet or power strip.
 10. Unplug the modem's serial or USB cable from the computer.

Uninstalling a Macintosh Faxmodem

- 1 Unplug the power supply from the electrical outlet.
- 2 Unplug the modem's cable from the back of the Macintosh computer.
- 3 Remove the phone cords from the modem's TELCO and PHONE jacks.

4

TROUBLESHOOTING AND HELP RESOURCES

This chapter covers:

- External Serial Modems
- External USB Modems
- Macintosh Modems
- Internal Winmodem® modems
- Internal ISA Modems
- Internal PCI Modems
- Help Resources
- Are You Still Having Problems?
- If You Need to Return the Modem to U.S. Robotics for Repair

External Serial Modems

Basic Troubleshooting Steps

1. Is your modem turned on? When your modem is properly connected to power and is turned on, the CS light on the front panel will be on.
2. Is your power supply connected properly to both your modem and an electrical outlet? If it is, check the outlet with another electric device (like a lamp) to be sure that you are getting power. Also, use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem.
3. Are you using the proper cable to connect your modem to your computer? Make sure you are using an RS-232 modem cable. Check the packaging of the cable you bought. There are many computer cables that look similar to an RS-232, such as a Null Modem cable, that will not work

with this modem. Depending on whether you have a 9-pin or 25-pin serial port on your computer, you will need either a DB9/DB25 or a DB25/DB25 serial cable. See the diagrams below.



You need a DB9F/DB25M RS-232 serial cable.



You need a DB25F/DB25M RS-232 serial cable.

4. If there are DIP switches on the back of your modem, are they set correctly? DIP switches 3, 5, and 8 should be in the down position. See the diagram below for the correct settings.



5. Is your phone cord properly connected? The phone cord should be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible

My computer isn't recognizing my modem.

Possible solution:

You may be using a COM port that is either already in use or not configured correctly. To work properly, this modem needs to be plugged into an enabled serial port which is assigned to a free COM port. Typically, most computers have two serial ports assigned to COM 1 & 2 respectively.

Windows 2000 Make sure your COM port is not already in use by another modem. Click Windows **Start**, **Settings**, and **Control Panel**, and then double-click **Phone and Modem Options**. Click the **Modems**

tab. Look for another modem already in the machine. If there is another modem listed, check which COM port it is using. If a previous modem is already using the available COM port, you can either use another COM port or uninstall the previously installed modem. See your previous modem's manual for uninstallation instructions.

Next make sure that your COM Ports are configured correctly. Right-click the **My Computer** icon on your desktop. Click **Properties**. Click the **Hardware** tab. In the "Device Manager" section, click the **Device Manager** button. Look under **Ports (COM & LPT)**. If the COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly. If this is the case, you may need to contact your computer manufacturer.

It is also possible that you may be plugging an external modem's cable into a disabled serial port. Refer to your computer's manual for information about enabling COM ports. This usually involves altering the BIOS settings and possibly the operating system. You may need to call your computer's manufacturer to change your BIOS settings if they are incorrect.

Windows 95/98 Make sure your COM port is not already in use by another modem. Click Windows **Start**, **Settings**, and **Control Panel**, and then double-click **Modems**. Look for another modem already in the machine. If there is another modem installed, click the **Diagnostics** tab to find out which COM port it is using. If a previous modem is already using the available COM port, you can either use another COM port or uninstall the previously installed modem. See your previous modem's manual for uninstallation instructions.

Next, make sure that your COM Ports are configured correctly. Right-click the **My Computer** icon on your desktop. Click **Properties**. Click the **Device Manager** tab. Look under **Ports (COM & LPT)**. If the COM Ports have yellow explanation points or red Xs over them, your COM ports may be configured incorrectly. If this is the case, you may need to contact your computer manufacturer.

It is also possible that you may be plugging an external modem's cable into a disabled serial port. Refer to your computer's manual for information about enabling COM ports. This usually involves altering the BIOS settings and possibly the operating system. You may need to call your computer's manufacturer to change your BIOS settings if they are incorrect.

Windows NT Click Windows **Start**, **Settings**, and then **Control Panel**. Double-click **Ports**. Make sure the port you are plugging the modem into appears in the list. If it does not, the port needs to be added, and possibly enabled in the BIOS. Consult your Windows NT manual for information about adding ports. After you add or enable the port, follow the instructions on the front of the Installation Guide that came with your modem to install your modem.

My software isn't recognizing my modem.

Possible solution:

Your communications software may not function properly if you have more than one version of the software installed, you are using an older version, or you have more than one communications software installed on your system. We highly recommend using the communications software provided with your modem on the Installation CD-ROM.

Possible solution:

Make sure the modem is plugged in and turned on. If it is, check the outlet with another electric device (like a lamp) to be sure that you are getting power. Also, you must use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem. When your modem is properly connected to power and is turned on, the CS light on the front panel will be on.

Possible solution:

Your software's port settings may be incorrect. Make sure the software's port settings match those for your modem. This information is on the Installation Guide that came with your modem. There should be a place in the Setup section of your software for this.

Possible solution:

Windows 2000 You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start**, **Settings**, and **Control Panel**. When **Control Panel** opens, click **Phone and Modem Options**. Click the **Modems** tab. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed,

your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

Windows 95/98/NT You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start**, **Settings**, and **Control Panel**. When **Control Panel** opens, click **Modems**. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

Possible solution:

Windows 2000 If you are using Dial-Up Networking, it may not be configured correctly. Check your configuration and make sure you have the correct port selected. Click **Start**, point to **Settings** and click **Network and Dial-up Connections**. Make sure that the description in the "Connect Using" box (under the **General** tab) matches the description of the modem you are using. If it doesn't match, select the proper modem description.

Windows 95/98/NT If you are using Dial-Up Networking, it may not be installed or configured correctly. Check your configuration and make sure you have the correct port selected. Double-click **My Computer**, double-click **Dial-Up Networking**, right click on the connection you are trying to use, and select **Properties**. Make sure that the description in the modem box matches the description of the modem you are using. If it doesn't match, select the proper modem description.

My modem won't dial out or doesn't answer incoming calls.

For both dialing and answering problems:

Possible solution:

Make sure that you are using the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem.

Possible solution:

You might have a bad phone cord connection to your modem, or your phone cord may be plugged into the wrong jack. The phone cord should be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

Possible solution:

You may have devices between the modem and the phone jack. There should be no line splitters, fax machines, or other devices between the modem and the wall jack.

Office Users Possible solution:

You may have plugged your modem's phone cord into a digital line, which can damage your modem. Contact your phone system administrator if you are unsure whether or not your phone line is digital.

If your phone system requires dialing "9" to access an outside line, be sure to add "9" before the number you are dialing.

Dialing Problems for Voice Mail Users Possible solution:

If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

My modem sounds like it's trying to connect to another modem but fails. Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again.

Possible solution:

If you have DIP switches on the back of your modem, make sure they are set correctly. DIP switches 3, 5, and 8 should be in the down position. See the following diagram for the correct settings.



My modem isn't achieving a 56K Internet connection.

Possible solution:

Our research has shown that the vast majority of telephone lines in North America can and do support V.90/V.92 connections. The V.90/V.92 protocol allows for connection speeds of up to 56K, but line conditions may affect the actual speeds during a given connection. Due to unusual telephone line configurations, some users will not be able to take full advantage of V.90/V.92 technology at this time. In order to achieve a V.90/V.92 connection:

- 1.** The server you're dialing into must support and provide a digital V.90/V.92 signal. Your ISP can provide you with a list of dial-up connections and information on what those connections currently support.
- 2.** The telephone line between your ISP and your modem must be capable of supporting a 56K connection and contain only one analog-to-digital conversion. The 56K signal from your ISP begins as a digital signal. Somewhere between the ISP and your modem, there will be an analog-to-digital signal conversion so that your modem can receive the data. There must be no more than one analog-to-digital signal conversion in the path from your ISP to your modem. If more than one analog-to-digital conversion occurs, your connect speeds will default to V.34 (33.6 Kbps). There may also be impairments on the local lines between your ISP and your modem. These impairments can prevent or limit connection speeds. All telephone calls are routed differently, so you should try making your 56K connection several times. One way to test this is to dial into a long distance location. Long distance lines are often much clearer than local lines. It is important to note that telephone companies are constantly upgrading their systems. Lines that do not support 56K today may support 56K in the near future.
- 3.** For a V.90 connection, your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

4. For a V.92 connection, your modem must be connecting to a V.92 server. A pair of 56K modems will not connect to each other at V.92/56K speeds.

Note: Current IC/FCC regulations limiting power may limit maximum download speeds to 53,333 bps.

External USB Modems

Basic Troubleshooting Steps

1. Is your modem turned on? When your modem is properly connected to power and is turned on, the Power light on the front panel will be on.

2. Is your power supply connected properly to both your modem and an electrical outlet? If it is, check the outlet with another electric device (like a lamp) to be sure that you are getting power. Also, use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem.

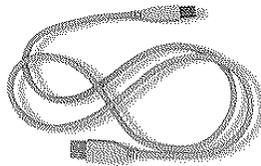
3. Are you using the proper cable to connect your modem to your computer? If you are using your modem as a USB device, you will need to purchase a USB A to B cable. If you are using your modem as a serial device, you will need to purchase an RS-232 serial/modem cable. Check the packaging of the cable you bought. There are many computer cables that look similar to an RS-232, such as a Null Modem cable, that will not work correctly with this modem. Depending on whether you have a 9-pin or 25-pin serial port on your computer, you will need either a DB9/DB25 or a DB25/DB25 serial cable. If you are using your modem as a USB device, you need a USB A to B cable. See the following diagrams.



You need a DB9F/DB25M RS-232 serial cable.



You need a DB25F/DB25M RS-232 serial cable.



USB A to B cable

NOTE: You should NOT attempt to connect or use your modem with both the USB and serial cable connected at the same time. Your modem may fail to respond. If this occurs, you must power down your computer, disconnect the cable you are not using, and restart your system.

4. Is your phone cord properly connected? The phone cord should be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

My computer isn't recognizing my modem.

Possible solution:

Make sure the modem is plugged in and turned on. If it is, check the outlet with another electric device (like a lamp) to be sure that you are getting power. Also, you must use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem. When your modem is properly connected to power and is turned on, the Power light on the front panel will be on.

Possible solution:

Make sure you are using the proper cable. If you are using your modem as a USB device, you will need to purchase a USB A to B cable. If you are using your modem as a serial device, you will need to purchase an RS-232 serial/modem cable. Check the packaging of the cable you bought. There are many computer cables that look similar to an RS-232,

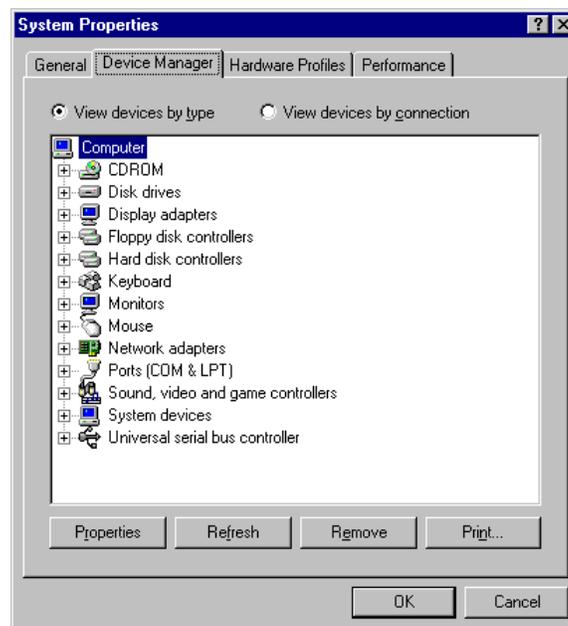
such as a Null Modem cable, that will not work correctly with this modem.

If You Are Using This Modem as a USB Device



Possible solution:

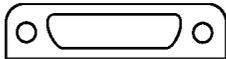
Your USB port may not be enabled. To ensure USB is enabled on your system, click Windows **Start**. Then click **Settings** and then **Control Panel**. Click the **System** icon. Next click the **Device Manager** tab. If your USB is enabled, there will be a **USB** icon and the words "Universal serial bus controller" under the **Computer** icon. See the following picture for an example of how the USB icon appears in Device Manager.



If USB is not enabled, you will need to enable USB in the system's BIOS. For instructions, check with your computer manufacturer's technical support. Once your USB port has been enabled in your system's BIOS, Windows will automatically detect and install USB support when it restarts.

Possible solution:

If the modem has worked previously and you removed the USB cable from the computer and then reattached it, try another USB port. It may have been set up originally on the other USB port. You should notice some minimal activity from your computer such as hard disk activity or an hour glass icon for a few seconds when you insert or remove a USB cable from the computer or the USB device. If you do not see anything, your system may not be properly communicating with the USB ports.

If You Are Using This Modem as a Serial Device**Possible solution:**

You may be using a COM port that is either already in use or not configured correctly. To work properly, this modem needs to be plugged into an enabled serial port which is assigned to a free COM port.

Windows 2000 Make sure your COM port is not already in use by another modem. Click Windows **Start, Settings,** and **Control Panel,** and then double-click **Phone and Modem Options.** Click the **Modems** tab. Look for another modem already in the machine. If there is another modem listed, check which COM port it is using. If this modem is already using the available COM port, you can either use another COM port or uninstall the modem. See the modem's manual for uninstallation instructions.

Right-click the **My Computer** icon on your desktop. Click **Properties.** Click **Hardware.** In the Device Manager section, click **Device Manager.** Look under **Ports (COM & LPT).** If the COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly or are disabled. If this is the case, you may need to contact your computer manufacturer.

Windows 95/98 Make sure your COM port is not already in use by another device. Click Windows **Start, Settings,** and **Control Panel,** and then double-click **Modems.** Look for another modem already in the machine. If there is another modem installed, click the **Diagnostics** tab to find out which COM port it is using. If this modem is already using the available COM port, you can either use another COM port or uninstall the modem. See the modem's manual for uninstallation instructions.

Right-click the **My Computer** icon on your desktop. Click **Properties.** Click the **Device Manager** tab. Look under **Ports (COM & LPT).** If the

COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly or are disabled. If this is the case, you may need to contact your computer manufacturer.

Windows NT Click Windows **Start, Settings**, and then **Control Panel**. Double-click **Ports**. Make sure the port you are plugging the modem into appears in the list. If it does not, the port needs to be added and possibly enabled in the BIOS. Consult your Windows NT manual for information about adding ports.

My software isn't recognizing my modem.

Possible solution:

Your communications software may not function properly if you have more than one version of the software installed, you are using an older version, or you have more than one communications software installed on your system. We highly recommend using the communications software provided with your modem on the Installation CD-ROM.

Possible solution:

Make sure the modem is plugged in and turned on and that you are using the power supply that came with it. When your modem is properly connected to power and is turned on, the Power light on the front panel will be on.

Possible solution:

Your software's port settings may be incorrect. Make sure the software's port settings match those for your modem. This information is located on the Installation Guide that came with your modem. There should be a place in the Setup section of your software for port settings.

Possible solution:

Windows 2000 You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start, Settings**, and **Control Panel**. When **Control Panel** opens, click **Phone and Modem Options**. Click the **Modems** tab. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed,

your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

Windows 95/98/NT You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start**, **Settings**, and **Control Panel**. When **Control Panel** opens, click **Modems**. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

My modem won't dial out or doesn't answer incoming calls.

Possible solution:

Windows 2000 If you are using Dial-Up Networking, it may not be configured correctly. Check your configuration and make sure you have the correct port selected. Click **Start**, point to **Settings** and click **Network and Dial-up Connections**. Make sure that the description in the "Connect Using" box (under the **General** tab) matches the description of the modem you are using. If it doesn't match, select the proper modem description.

Windows 95/98/NT If you are using Dial-Up Networking, it may not be installed or configured correctly. Check your configuration and make sure you have the correct port selected. Double-click **My Computer**, double-click **Dial-Up Networking**, right-click the connection you are trying to use, and select **Properties**. Make sure that the description in the modem box matches the description of the modem you are using. If it doesn't match, select the proper modem description.

For Both Dialing and Answering Problems

Possible solution:

Make sure that you are using the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem.

Possible solution:

You might have a bad phone cord connection to your modem, or your phone cord may be plugged into the wrong jack. The phone cord should

be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

Possible solution:

You may have devices between the modem and the phone jack. There should be no line splitters, fax machines, or other devices between the modem and the wall jack.

Office Users

Possible solution:

You may have plugged your modem's phone cord into a digital line, which can damage your modem. Contact your phone system administrator if you are unsure whether or not your phone line is digital.

If your phone system requires dialing "9" to access an outside line, be sure to add "9" before the number you are dialing.

**Dialing Problems for
Voice Mail Users**

Possible solution:

If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

**My modem sounds
like it's trying to
connect to another
modem but fails.**

Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again.

**My modem isn't
achieving a 56K
Internet connection.**

Possible solution:

Note: U.S. Robotics 56K modems are capable of receiving downloads at up to 56 Kbps and sending at 31.2 Kbps. Actual download speeds you experience may be lower due to varying line conditions. Maximum download speeds in U.S. and Canada are limited to 53K, due to regulatory limits on power output.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K installation. The V.90 protocol allows for connection speeds of up to 56K, but line conditions may affect the actual speeds during a given connection. Due to unusual telephone line

configurations, some users will not be able to take full advantage of V.90 technology at this time. In order to achieve a V.90 connection, the following must occur:

- 1 The server you're dialing in to must support and provide a digital V.90 signal. Your ISP can provide you with a list of dial-up connections and information on what those connections currently support.
- 2 The telephone line between your ISP and your modem must be capable of supporting a 56K connection and contain only one analog-to-digital conversion. The 56K signal from your ISP begins as a digital signal. Somewhere between the ISP and your modem, there will be an analog-to-digital signal conversion so that your modem can receive the data. There must be no more than one analog-to-digital signal conversion in the path from your ISP to your modem. If more than one analog-to-digital conversion occurs, your connect speeds will default to V.34 (33.6). There may also be impairments on the local lines between your ISP and your modem. These impairments can prevent or limit V.90 connection speeds. All telephone calls are routed differently, so you should try making your 56K connection several times. One way to test this is to dial into a long distance location. Long distance lines are often much clearer than local lines. It is important to note that telephone companies are constantly upgrading their systems. Lines that do not support 56K today may support 56K in the near future.
- 3 Your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

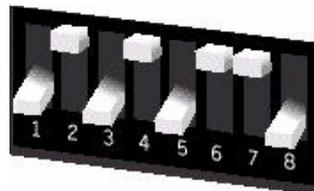
Macintosh Modems

Basic Troubleshooting Steps

1. Is your modem turned on? When your modem is properly connected to power and is turned on, the TR and CS lights on the front panel will be on.
2. Is your power supply connected properly to both your modem and an electrical outlet? You must use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem. When your modem is properly connected to power and is turned on, the TR and CS lights on the front

panel will be on. If they are not, check your outlet with another electrical device to be sure you are getting power.

3. If there are DIP switches on the back of your modem, are they set correctly? DIP switches 1, 3, 5, and 8 should be in the down position. See the following diagram for the correct settings.



4. Is your phone cord properly connected? The phone cord should be plugged into the jack labelled \cup on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

5. Make sure you are using the proper cable and that it is connected to the proper port on the back of your Macintosh computer. This modem requires a hardware handshaking cable, which is packaged with your modem. Make sure it is connected to the modem port on the back of your computer and not the printer port.

My computer isn't recognizing my modem.

Possible solution:

Make sure the modem is plugged in and turned on. Also, you must use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem. When your modem is properly connected to power and is turned on, the TR and CS lights on the front panel will be on. If they are not, check your outlet with another electrical device to be sure you are getting power.

Possible solution:

Make sure you are using the proper cable and that it is connected to the proper port on the back of your Macintosh computer. This modem requires a hardware handshaking cable, which is packaged with your

modem. Make sure it is connected to the modem port on the back of your computer and not the printer port.

My software isn't recognizing my modem.

Possible solution:

Your communications software may not function properly if you have more than one version of the software installed, you are using an older version, or you have more than one communications software installed on your system. We highly recommend using the communications software provided with your modem on the Installation CD-ROM.

Possible solution:

Make sure the modem is plugged in and turned on. Also, you must use the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem. When your modem is properly connected to power and is turned on, the TR and CS lights on the front panel will be on. If they are not, check your outlet with another electrical device to be sure you are getting power.

Possible solution:

Verify that your communications software is set to use the Modem port. If this is not the case, either change the setting in your software or physically change your modem's connection to your Macintosh computer. Refer to your software manual for information about changing modem settings.

My modem won't dial out or doesn't answer incoming calls.

For both dialing and answering problems:

Possible solution:

Make sure that you are using the power supply that came with your modem; other similar-looking power supplies may be of different voltages and could damage your modem.

Possible solution:

You might have a bad phone cord connection to your modem, or your phone cord may be plugged into the wrong jack. The phone cord should be plugged into the jack labelled  on the modem and into the wall

phone jack. Use the phone cord included in your modem's box if possible.

Possible solution:

You may have devices between the modem and the phone jack. There should be no line splitters, fax machines, or other devices between the modem and the wall jack.

Office Users Possible solution:

You may have plugged your modem's phone cord into a digital line, which can damage your modem. Contact your phone system administrator if you are unsure whether or not your phone line is digital.

If your phone system requires dialing "9" to access an outside line, be sure to add "9" before the number you are dialing.

Dialing Problems for Voice Mail Users

Possible solution:

If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

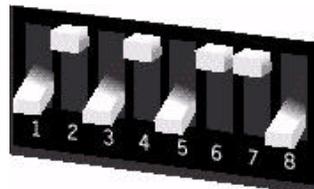
My modem sounds like it's trying to connect to another modem but fails.

Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again.

Possible solution:

Make sure the DIP switches on the back of your modem are set correctly. DIP switches 1, 3, 5, and 8 should be in the down position. See the following diagram for the correct settings.



My modem isn't achieving a 56K Internet connection.

Possible solution:

Note: U.S. Robotics 56K modems are capable of receiving downloads at up to 56 Kbps and sending at 31.2 Kbps. Actual download speeds you experience may be lower due to varying line conditions. Maximum download speeds in U.S. and Canada are limited to 53K, due to regulatory limits on power output.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K installation. The V.90 protocol allows for connection speeds of up to 56K, but line conditions may affect the actual speeds during a given connection. Due to unusual telephone line configurations, some users will not be able to take full advantage of V.90 technology at this time. In order to achieve a V.90 connection, the following must occur:

- 1.** The server you're dialing in to must support and provide a digital V.90 signal. Your ISP can provide you with a list of dial-up connections and information on what those connections currently support.
- 2.** The telephone line between your ISP and your modem must be capable of supporting a 56K connection and contain only one analog-to-digital conversion. The 56K signal from your ISP begins as a digital signal. Somewhere between the ISP and your modem, there will be an analog-to-digital signal conversion so that your modem can receive the data. There must be no more than one analog-to-digital signal conversion in the path from your ISP to your modem. If more than one analog-to-digital conversion occurs, your connect speeds will default to V.34 (33.6). There may also be impairments on the local lines between your ISP and your modem. These impairments can prevent or limit V.90 connection speeds. All telephone calls are routed differently, so you should try making your 56K connection several times. One way to test this is to dial into a long distance location. Long distance lines are often much clearer than local lines. It is important to note that telephone companies are constantly upgrading their systems. Lines that do not support 56K today may support 56K in the near future.
- 3.** Your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

**Internal
Winmodem®
Modems**

(Model Numbers 3CP5699A, 3CPxx5699A, 3CP5695, 3CPxx5695, and 3CPxx2884A)

**Basic Troubleshooting
Steps**

1. Make sure that your phone cord is properly connected. Remove the phone cord from the modem and wall jacks. Reinsert the cord securely in the wall jack and the modem's jack labelled . Use the phone cord included with your modem, if possible.

2. Make sure that your modem is physically installed correctly in your computer. With your computer off, remove the modem and reinstall it in another PCI slot if possible. When the modem is installed correctly, you will no longer see any part of the connector edge, which may be gold or black. See the Installation Guide that came with your modem for instructions more specific to your modem.

3. Make sure you are running a version of Windows that is supported by this product. Check your modem's original box to find out which operating systems are supported.

**My computer isn't
recognizing my
modem.****Possible solution:**

Make sure that your modem is installed correctly in your computer. The modem will fit snugly, and you may need to rock it back and forth firmly to properly seat it in its slot. When the modem is installed correctly, you will no longer see any part of the gold or black connector edge.

Possible solution:

Windows 2000 Make sure your COM port is not already in use by another modem. Click Windows **Start**, **Settings**, and **Control Panel**, and then double-click **Phone and Modem Options**. Click the **Modems** tab. Look for another modem already in the machine. If there is another modem listed, check which COM port it is using. If a previous modem is already using the available COM port, you can either use another COM port or uninstall the previously installed modem. See your previous modem's manual for uninstallation instructions.

Make sure that your COM Ports are configured correctly. Right-click the **My Computer** icon on your desktop. Click **Properties**. Click the **Hardware** tab. In the "Device Manager section", click the **Device**

Manager button. Look under **Ports** (COM & LPT). If the COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly. If this is the case, you may need to contact your computer manufacturer.

Possible solution:

Windows 95 or 98 Your modem will locate a free IRQ to install itself. For a proper installation, one of these IRQs will have to be free before you install your modem.

First uninstall your modem, but do **not** physically remove it from your computer. Uninstallation directions vary; check the “Uninstalling a U.S. Robotics Modem” chapter in this manual for the proper method. Then, to free an IRQ for your modem, open Device Manager. Click **Windows Start**, select **Settings**, and click **Control Panel**. Click the **System** icon, then click the **Device Manager** tab. In the list of system devices where you found your modem, double-click the **Computer** icon. The “Computer Properties” screen will appear. When it does, click the **View Resources** tab, then click **Interrupt request (IRQ)** to make sure that it is selected.

On the left side of the “Computer Properties” screen is a list of the system IRQs, numbered 0 through 15. On the right side are the devices that are using these IRQs. Any IRQ numbers **not** listed on the left side are not being used. Take note of an available IRQ that your modem can use. If a usable, free IRQ does not exist, you may need to remove, disable, or relocate another device. Refer to that device’s documentation for more information about removing, disabling, or relocating it.

Windows NT Make sure you follow the instructions on the Installation Guide and any addenda included with your modem. The installation of this modem in Windows NT is very specific, and it is possibly different from other installations you have experienced. The steps need to be followed exactly for a successful installation.

My software isn’t recognizing my modem.

Possible solution:

Your communications software may not function properly if you have more than one version of the software installed, you are using an older version, or you have more than one communications software installed

on your system. We highly recommend using the communications software provided with your modem either on the Installation CD-ROM or the *Connections*[™] CD-ROM.

Possible solution:

Check in your software manual or with the software manufacturer to make sure that your software is completely Windows-based. The Winmodem modem does not work with DOS components of any software.

Possible solution:

Your software's port settings may be incorrect. There should be a place in the Setup section of your software that addresses port settings. Make sure the software's port settings match those for your modem. See the instructions on the Installation Guide that came with your modem to determine your modem's port settings. Check your communication software's documentation for instructions on adjusting the port settings in your software.

Possible solution:

Windows 2000 You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start, Settings,** and **Control Panel**. When **Control Panel** opens, click **Phone and Modem Options**. Click the **Modems** tab. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

Windows 95/98/NT You may not have the correct modem type selected in your software or in Windows. Click Windows **Start, Settings,** and **Control Panel**. When **Control Panel** opens, click **Modems**. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list match your U.S. Robotics modem or no modems are listed, your modem is not properly installed.

Try reinstalling your modem using the instructions on the Installation Guide.

My modem won't dial out or doesn't answer incoming calls.

For both Dialing and Answering Problems

Possible solution:

You may have a bad phone cord connection to your modem, or your phone cord may be plugged into the wrong jack. The phone cord should be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

Possible solution:

You may have devices between the modem and the phone jack. There should be no line splitters, fax machines, or other devices between the modem and the wall jack.

Office Users

Possible solution:

You may have plugged your modem's phone cord into a digital line, which can damage your modem. Contact your phone system administrator if you are unsure whether or not your phone line is digital.

If your phone system requires dialing "9" to access an outside line, be sure to add "9" before the number you are dialing.

Voice Mail Users

Possible solution:

If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

My modem sounds like it's trying to connect to another modem but fails.

Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again.

My modem isn't achieving a 56K Internet connection.

Possible solution:

Note: U.S. Robotics 56K modems are capable of receiving downloads at up to 56 Kbps and sending at 31.2 Kbps. Actual download speeds you experience may be lower due to varying line conditions. Maximum download speeds in U.S. and Canada are limited to 53K, due to regulatory limits on power output.

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- 3.** Your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

Internal ISA Modems

Basic Troubleshooting Steps

1. Make sure that your phone cord is properly connected. Remove the phone cord from the modem and wall jacks. Reinsert the cord securely in the wall jack and the modem's jack labelled . Use the phone cord included with your modem, if possible.
2. Make sure that your modem is physically installed correctly in your computer. With your computer off, remove the modem and reinstall it in another slot if possible. When the modem is installed correctly, you will no longer see any part of the connector edge, which may be gold or black. See the Installation Guide that came with your modem for instructions more specific to your modem.

My computer isn't recognizing my modem.

Possible solution:

You may be using an IRQ that is already in use. To work properly, your modem needs to be assigned to a free IRQ.

Windows 2000 If you set your modem's jumpers to Plug-and-Play mode, Windows should locate a free IRQ, if one exists, for your modem to use.

If Plug-and-Play fails to install the modem, you need to determine IRQ availability. Right-click the **My Computer** icon on your desktop. Click **Properties**, and then the **Hardware** tab. In the Device Manager section, click **Device Manager**. From the **View** menu, select **Resources by type**. Click **Interrupt Request (IRQ)**. You will now see a listing of your system's IRQs and the devices to which they are assigned. If an IRQ is not present in this list, it indicates that Windows is not currently using it and the IRQ is considered available.

Locate your modem in the list of devices. If a yellow exclamation point appears over the modem's description, your modem is in conflict with another device. Either your modem or the other device will have to be reinstalled to another IRQ in order to resolve your conflict.

If a usable, free IRQ does not exist, you may need to remove, disable, or relocate another device. Refer to that device's documentation for more information about removing, disabling, or relocating it.

If Windows still fails to recognize your modem and it does not have a yellow exclamation point next to its IRQ, or if your modem doesn't appear in the list, another problem exists, and you may need to call 3Com Technical Support.

Windows 95/98 If you set your modem's jumpers to Plug-and-Play mode, Windows should locate a free IRQ, if one exists, for your use by your modem. See the "Windows NT Users" section that follows for more information, as the installation using jumper shunts is similar for Windows NT, 95, and 98.

If Plug-and-Play fails to install the modem, you need to determine IRQ availability. Right-click the **My Computer** icon on your desktop. Click **Properties**, and then the **Device Manager** tab. Double-click the **Computer** icon at the top of the device list. You will now see a listing of your system's IRQs and the devices to which they are assigned. If an IRQ is not present in this list, it indicates that Windows is not currently using it and the IRQ is considered available.

Locate your modem in the list of devices. If a yellow exclamation point appears over the modem's description, your modem is in conflict with another device. Either your modem or the other device will have to be reinstalled to another IRQ in order to resolve your conflict.

If a usable, free IRQ does not exist, you may need to remove, disable, or relocate another device. Refer to that device's documentation for more information about removing, disabling, or relocating it.

If Windows still fails to recognize your modem and it does not have a yellow exclamation point next to its IRQ, or if your modem doesn't appear in the list, another problem exists, and you may need to call 3Com Technical Support.

Windows NT Turn off your computer and physically remove the modem. Restart your computer, and check for an available IRQ by clicking Windows **Start, Programs, Administrative Tools, and Windows NT Diagnostics**. Click the **Resources** tab and select **IRQ**. Take note of an available IRQ that your modem can use. Your modem should be jumpered to one of these IRQs. If there are no IRQs available, you may have to remove, disable, or relocate another device in order to free an IRQ for use by your modem. Refer to that device's documentation for more information about removing, disabling, or relocating it.

Possible solution:

You may be using a COM port address that is either already in use or not configured correctly. To work properly, this modem needs to be assigned to a free COM port.

Windows 2000 Make sure your COM port is not already in use by another modem. Click Windows **Start, Settings,** and **Control Panel,** and then double-click **Phone and Modem Options.** Click the **Modems** tab. Look for another modem already in the machine. If there is another modem listed, check which COM port it is using. If a previous modem is already using the available COM port, you can either use another COM port or uninstall the previously installed modem. See your previous modem's manual for uninstallation instructions.

Next, make sure that your COM Ports are configured correctly. Right-click the **My Computer** icon on your desktop. Click **Properties.** Click the **Hardware** tab. In the "Device Manager section", click the **Device Manager** button. Look under **Ports (COM & LPT).** If the COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly. If this is the case, you may need to contact your computer manufacturer.

Windows 95/98 Make sure your COM port is not already in use by another device. Click Windows **Start, Settings,** and **Control Panel,** and then double-click **Modems.** Look for another modem already installed in your computer. If there is another modem installed, click the **Diagnostics** tab to find out which COM port it is using. If a previously installed modem is already using the available COM port, you should uninstall that modem. See your previous modem's manual for uninstallation instructions.

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Windows NT Turn off your computer and remove your modem. Restart and click Windows **Start, Settings,** and then **Control Panel.** Double-click the **Ports** icon. Your modem must be jumpered to a COM port setting that does not appear in this list.

My software isn't recognizing my modem.

Possible solution:

Your communications software may not function properly if you have more than one version of the software installed, you are using an older version, or you have more than one communications software installed on your system. We highly recommend using the communications software provided with your modem on the Installation CD-ROM.

Possible solution:

Your software's port settings may be incorrect. There should be a place in the Setup section of your software that addresses port settings. Make sure the software's port settings match those for your modem. See the Installation Guide that came with your modem for an explanation about how to determine your modem's port settings. Check your communications software's documentation for instructions on adjusting the port settings in your software.

Possible solution:

Windows 2000 You may not have the correct modem type selected in your software or in Windows. Click on Windows **Start, Settings, and Control Panel**. When **Control Panel** opens, click **Phone and Modem Options**. Click the **Modems** tab. Here you will see a list of installed modems. You can also add, remove, or view the properties of modems from this window. The U.S. Robotics modem you have installed should be present in the list of installed modems. If none of the modem descriptions in the list matches your U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem using the instructions on the Installation Guide.

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Possible solution:

Windows 2000 If you are using Dial-Up Networking, it may not be configured correctly. Check your configuration and make sure you have the correct port selected. Click **Start**, point to **Settings** and click **Network and Dial-up Connections**. Make sure that the description in the "Connect Using" box (under the **General** tab) matches the description of the modem you are using. If it doesn't match, select the proper modem description.

Windows 95/98/NT If you are using Dial-Up Networking, it may not be installed or configured correctly. Check your configuration and make sure you have the correct modem selected. Double-click **My Computer**, double-click **Dial-Up Networking**, right-click the connection you are trying to use, and click **Properties**. Make sure that the description in the modem box matches the description of the modem you are using. If it doesn't match, select the proper modem description.

My modem won't dial out or doesn't answer incoming calls.

For both Dialing and Answering Problems**Possible solution:**

You may have a bad phone cord connection to your modem, or your phone cord may be plugged into the wrong jack. The phone cord should be plugged into the jack labelled  on the modem and into the wall phone jack. Use the phone cord included in your modem's box if possible.

Possible solution:

You may have devices between the modem and the phone jack. There should be no line splitters, fax machines, or other devices between the modem and the wall jack.

Office Users**Possible solution:**

You may have plugged your modem's phone cord into a digital line, which can damage your modem. Contact your phone system administrator if you are unsure whether or not your phone line is digital.

If your phone system requires dialing "9" to access an outside line, be sure to add "9" before the number you are dialing.

Voice Mail Users Possible solution:

If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

My modem sounds like it's trying to connect to another modem but fails. Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again.

My modem isn't achieving a 56K Internet connection. Possible solution:

Note: U.S. Robotics 56K modems are capable of receiving downloads at up to 56 Kbps and sending at 31.2 Kbps. Actual download speeds you experience may be lower due to varying line conditions. Maximum download speeds in U.S. and Canada are limited to 53K, due to regulatory limits on power output.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K installation. The V.90 protocol allows for connection speeds of up to 56K, but line conditions may affect the actual speeds during a given connection. Due to unusual telephone line configurations, some users will not be able to take full advantage of V.90 technology at this time. In order to achieve a V.90 connection, the following must occur:

1. The server you're dialing in to must support and provide a digital V.90 signal. Your ISP can provide you with a list of dial-up connections and information on what those connections currently support.
2. The telephone line between your ISP and your modem must be capable of supporting a 56K connection and contain only one analog-to-digital conversion. The 56K signal from your ISP begins as a digital signal. Somewhere between the ISP and your modem, there will be an analog-to-digital signal conversion so that your modem can receive the data. There must be no more than one analog-to-digital signal conversion in the path from your ISP to your modem. If more than one analog-to-digital conversion occurs, your connect speeds will default to V.34 (33.6). There may also be impairments on the local lines between your ISP and your modem. These impairments can prevent or limit V.90 connection speeds. All telephone calls are routed differently, so you

should try making your 56K connection several times. One way to test this is to dial into a long distance location. Long distance lines are often much clearer than local lines. It is important to note that telephone companies are constantly upgrading their systems. Lines that do not support 56K today may support 56K in the near future.

3. Your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

Internal PCI Modems

(Model Numbers 3CP5609, 3CP5610x, and 3CPxx5610x)

Basic Troubleshooting Steps

1. Make sure that your phone cord is properly connected. Remove the phone cord from the modem and wall jacks. Reinsert the cord securely in the wall jack and the modem's jack labelled . Use the phone cord included with your modem, if possible.

2. Make sure that your modem is physically installed correctly in your computer. With your computer off, remove the modem and reinstall it in another slot if possible. When the modem is installed correctly, you will no longer see any part of the connector edge, which may be gold or black. You will need to press the modem in firmly so that it is seated properly in its slot. See the Installation Guide that came with your modem for instructions more specific to your modem.

My computer isn't recognizing my modem.

Possible solution:

You may be using an IRQ that is already in use. To work properly, your modem may need to be assigned to a free IRQ.

Windows 2000 Windows should locate a free IRQ, if one exists, for use by your modem.

If Plug-and-Play fails to install the modem, you need to determine IRQ availability. Right-click the **My Computer** icon on your desktop. Click **Properties**, and then the **Hardware** tab. In the Device Manager section, click **Device Manager**. From the **View** menu, select **Resources by type**. Click **Interrupt Request (IRQ)**. You will now see a listing of your system's IRQs and the devices to which they are assigned. If an IRQ is not present in this list, it indicates that Windows is not currently using it and the IRQ is considered available.

Locate your modem in the list of devices. If a yellow exclamation point appears over the modem's description, your modem is in conflict with another device. Either your modem or the other device will have to be reinstalled to another IRQ in order to resolve your conflict.

If a usable, free IRQ does not exist, you may need to remove, disable, or relocate another device. Refer to that device's documentation for more information about removing, disabling, or relocating it.

If Windows still fails to recognize your modem and it does not have a yellow exclamation point next to its IRQ, or if your modem doesn't appear in the list, another problem exists, and you may need to call 3Com Technical Support.

Windows 95/98 If Plug-and-Play fails to install the modem, you need to determine IRQ availability. Right-click the **My Computer** icon on your desktop. Click **Properties**, and then the **Device Manager** tab. Double-click the **Computer** icon at the top of the device list. You will now see a listing of your system's IRQs and the devices to which they are assigned. If an IRQ is not present in this list, it indicates that Windows is not currently using it and the IRQ is considered available.

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Windows NT Turn off your computer and physically remove the modem. Restart your computer, and check for an available IRQ by clicking Windows **Start**, **Programs**, **Administrative Tools**, and **Windows NT Diagnostics**. Click the **Resources** tab and select **IRQ**. Take note of an available IRQ that your modem can use. If there are no IRQs available, you may have to remove, disable, or relocate another device in order to free

an IRQ for use by your modem. Refer to that device's documentation for more information about removing, disabling, or relocating it.

Possible solution:

You may be using a COM port address that is either already in use or not configured correctly. To work properly, this modem needs to be assigned to a free COM port.

Windows 2000 Make sure your COM port is not already in use by another modem. Click Windows **Start**, **Settings**, and **Control Panel**, and then double-click **Phone and Modem Options**. Click the **Modems** tab. Look for another modem already in the machine. If there is another modem listed, check which COM port it is using. If a previous modem is already using the available COM port, you can either use another COM port or uninstall the previously installed modem. See your previous modem's manual for uninstallation instructions.

Next, make sure that your COM Ports are configured correctly. Right-click the **My Computer** icon on your desktop. Click **Properties**. Click the **Hardware** tab. In the "Device Manager section", click the **Device Manager** button. Look under **Ports (COM & LPT)**. If the COM Ports have yellow exclamation points or red Xs over them, your COM ports may be configured incorrectly. If this is the case, you may need to contact your computer manufacturer.

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1. The server you're dialing into must support and provide a digital V.90 signal. Your ISP can provide you with a list of dial-up connections and information on what those connections currently support.
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3. Your modem must be connecting to a V.90/56K server. A pair of 56K modems will not connect to each other at V.90/56K speeds.

Help Resources

World Wide Web

Contains useful product information, documents, and manuals. Log on to:

<http://www.usr.com/support>

U.S. Robotics Knowledgebase

A Web-based troubleshooting tool that will help you solve problems you may be having with your modem. Go to:

<http://www.usr.com/kb>

When the page loads, click the **Modems** graphic. Then follow the onscreen directions.

Internet FTP

<ftp://ftp.usr.com>

Are You Still Having Problems?

- 1 Review this manual.
- 2 Call or visit your modem dealer. Your dealer may be able to provide immediate assistance.
- 3 If your dealer can't help you, contact U.S. Robotics Customer Support. When you call, specify your modem serial number (found on the modem and on the outside of the box), the model number, and the software being used. The model number is located on the outside of the box. The model number is four sequential numbers and may be preceded by USR. If you do not have the model number, you will have to call the Priority phone number listed below to get it. This call will have a \$2.50 per minute charge.

Customer Support via the Phone

Technical questions about U.S. Robotics modems can be answered by technical support specialists.

If you can, have your ati7 information written down on a piece of paper before you call tech support.

In the United States

Regular Phone Service

(847) 262 5151

8:00 am - 6:00 pm CST Monday - Friday.

Automated service is available 24 hours a day, 7 days a week.

Priority, No-Hold Service

U.S. Robotics also staffs its own fee-based 900 number for immediate assistance. These lines are staffed from:

8:00 am - 10:00 pm CST Monday - Friday

9:00 am - 5:00 pm CST Saturday - Sunday

No-Hold line (900) 555 USR1

For a no-hold call, a \$2.50 per minute charge (price subject to change without notice) will appear on your local phone bill. You must be 18 or older or have parental permission. (Service available in the U.S. only.)

In Canada

Keating Technologies
(905) 479 0231
8:00 am - 8:00 pm EST Monday - Friday

**If You Need to Return
the Modem to U.S.
Robotics for Repair**

Contact U.S. Robotics Customer Support. If the support representative determines that you need to return the modem for repair or replacement, you will receive a SRO (Service Repair Order) number. You must have a SRO number before returning the modem to us.

Ship the unit, postage paid, in a strong box made of corrugated cardboard with plenty of packing material. Do NOT send the modem back in the original box.

Send ONLY the modem (NOT the power supply, manuals, CD-ROM, etc.).

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

Send the package insured or via a courier capable of tracking the progress of the shipment.

Ship to the following address:

In the United States:

U.S. Robotics
SRO# _____
Attn: Dock 15 PCD
1800 W. Central Avenue
Mt. Prospect, IL 60056

In Canada:

Keating Technologies
25 Royal Crest Court, Suite 120
Markham, ONT L3R 9X4



GLOSSARY

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.

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 task or set of tasks. Examples include word processing and spreadsheet applications.

ARQ

Automatic Repeat reQuest. A function that allows your modem to detect flawed data and request that it be retransmitted. 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 characters may not be transmitted at set intervals, start/stop bits are used to mark the beginning and end of each character.

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 Reference" chapter of this manual.

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. Auto-dial is used to dial voice numbers. See basic data command Dn in the "Technical Reference" chapter of this manual.

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. 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 analog 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 (kbps).

buffer

A temporary memory area used as 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. Most often the term refers to 8-bit units or characters. One kilobyte (KB) is equal to 1,024 bytes or characters; 640 KB is equal to 655,360 bytes or characters.

carrier

The basic signal altered or modulated by the modem in order to carry information.

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 by 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

The transmission or sharing of data between computers via an electronic medium.

data compression table

A table containing values assigned for each character during a call under MNP5 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

Mode used by a modem when sending and receiving data files.

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.

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.

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.

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 used by a modem to send and receive data in 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 extended data commands &Hn, &In, &Rn in the "Technical Reference" chapter of this manual.

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

Signals can flow in both directions at the same time over one line. In microcomputer communications, this may refer to the suppression of the online local echo.

half duplex

Signals can 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 cycles per second.

Internet

An electronic communications network that connects computer networks and organizational computer facilities around the world.

Internet Service Provider

A company which provides dial-up (modem) access to the Internet for a 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.

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 basic data command En in the "Technical Reference" chapter of this manual.

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 flawed 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 U.S. Robotics modem, it includes four stored phone numbers and the modem settings.

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.

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.

start/stop bits

The signaling bits attached to a character before and after the character is transmitted during asynchronous transmission.

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.

USB

Universal Serial Bus.

V.8

The ITU-T standard specification that covers the initial handshaking process.

V.17 fax

An ITU-T standard for making facsimile connections at 14,400 bps, 12,000 bps, 9600 bps, and 7200 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.

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 ter

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.

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.

V.90

The ITU-T standard for 56 Kbps modem communications. This technology uses the digital telephone network to increase the bit rate of the receive channel by eliminating the analog to digital conversion commonly found in modem connections. V.90 connections require a modem with V.90 or x2 technology calling a digitally connected Internet Service Provider or corporate host site compatible with V.90 or x2 technology.

V.92

The ITU-T standard for advanced 56 kbps modem communications. This technology offers three new features to enhance the V.90 standard. The first feature is V.PCM-Upstream, which allows a modem's upstream communication to reach speeds of 48,000 bps. The second feature provides quicker connection times by allowing the modem to remember the line conditions of a V.92 supported service provider. The third feature is the Modem On Hold technology, which allows your internet connection to be suspended when there is an inbound telephone call, then return to the connection when the call is completed without losing the connection. The V.92 technology can only be utilized if a V.92 modem is dialing into an Internet Service Provider that supports and provides a digital V.92 signal.

World Wide Web

A part of the Internet designed to allow easier navigation of the network through the use of graphical user interfaces and hypertext links between different addresses

x2™ Technology

U.S. Robotics's trademark for its proprietary technology that uses the digital telephone network to increase the bit rate of the receive channel by eliminating the analog to digital conversion commonly found in modem connections. x2 connections require a modem with x2 technology calling a digitally connected Internet Service Provider or corporate host site compatible with x2 technology.

XON/XOFF

Standard ASCII control characters used to tell an intelligent device to stop/resume transmitting data.

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.



TECHNICAL REFERENCE

Front-of-the-Case Lights (External Serial Faxmodems)

Symbol	Meaning	Status
AA	Auto Answer mode	ON when register S0 is set to 1 or higher (Auto Answer), and when answering a call; OFF when modem originates a call. Light flashes when there is an incoming call.
CD	Carrier Detect	ON if modem receives a valid data signal (carrier) from a remote modem, indicating that data transmission is possible. Always ON if CD override is ON (&C0)
RD	Received Data	Flashes when modem sends result codes or passes received data bits from remote
SD	Send Data	Flashes when computer sends a data bit to modem
TR	Data Terminal Ready	ON if modem receives a DTR signal from computer. Always ON (modem ignores DTR) if the DTR override is ON (&D0)
CS	Clear to Send	ON until modem lowers CTS when Transmit Data hardware flow control is enabled (&H1, &H3)

Symbol	Meaning	Status
ARQ/Error Control/FAX	Fax Operations Data Mode	Error Control. ON if modem is set to &M4 or &M5 and successfully establishes an error control connection. Flashes when modem retransmits data to remote modem. Fax Mode: flashes to indicate fax mode.

Top-of-the-Case Lights (Voice Faxmodem Pro Externals)

Light	What It Means When Lighted
POWER	The modem is turned on.
SEND	The computer is sending a data bit to the modem.
RECEIVE	The modem is sending result codes or passing received data bits from the remote.
ONLINE	The modem is online. (NOTE: This light blinks when the mute feature is being used.)

Typing Commands

- Type commands in either upper or lower case, not a combination. Use the Backspace key to delete errors. (You cannot delete the original AT command.)
- If a command has numeric options and you don't include a number, zero is assumed. For example, if you type ATB, the command ATB0 is assumed.
- Every command except A/, +++, and A> must begin with the AT prefix and be entered by pressing ENTER.

*All defaults are based on the &F1*Hardware Flow Control template loaded in NVRAM when the modem is shipped. Defaults are listed in italics.*

Basic Data Commands

<control key>S

Stop or restart help screens.

<control key>C or <control key>K

Stop help screens.

- \$** Use in conjunction with D, S, or & commands (or just AT) to display a basic command list; online help.
- A** Manual Answer: Goes off hook in answer mode. Pressing any key before connected aborts the operations.
- A/** Re-executes the last issued command. Used mainly to re-dial. Does not require the AT prefix or a Carriage Return.
- A>** Re-executes the last issued command continuously, until the user intervenes or the command is executed forever. Does not require the AT prefix or a Carriage Return.
- +++** Escapes to online-command mode.

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

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

Bn U.S./ITU-T answer sequence.

B0 ITU-T answer sequence

B1 U.S. answer tone

Dn Dials the specified phone number. Includes the following:

0-9 Numeric digits

#, * Extended touch-tone pad tones

L Dials the last dialed number.

P Pulse (rotary) dial

R Originates call using answer (reverse) frequencies.

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

- T Tone dial
- , (Comma) Pause. Linked to S8 register.
- ; (Semicolon) Return to Command mode after dialing.
- " Dials the letters that follow (in an alphabetical phone number).
- ! (Exclamation point) Flashes the switch hook.
- / Delays for 125 ms. before proceeding with dial string.
- W Wait for second dial tone (X2 or X4); linked to S6 register.
- @ Dials, waits for quiet answer, and continues (X3 or higher).
- \$ Displays a list of Dial commands.

En Sets local echo.

- E0 Echo OFF
- E1 Modem displays keyboard commands

Fn 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 data it receives.

Hn Controls ON/OFF hook.

- H0 Hangs up (goes on hook).
- H1 Goes off hook.

In 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
- I9 Plug and Play information
- I11 Extended link diagnostics

Ln Controls speaker volume (internals only).

- L0 Low volume
- L1 Low volume
- L2 Medium volume
- L3 High volume

Mn Operates speaker.

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

On Returns online.

- O0 Returns online.
- O1 Returns online and retrains.

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

Qn Displays/suppresses result codes.

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

Sr=n Sets register r to n.

Sr? Displays contents of S-Register r.

S\$ Displays a list of the S-Registers.

T Sets tone dial.

Vn Displays verbal/numeric result codes.

V0 Numeric codes

V1 Verbal codes

Xn Sets result code displayed. Default is X4.

NOTE: Result codes 0 - 155 are for 33.6 products and V.90 products. Result codes above 155 apply only to V.90.

Result Codes X0 X1 X2 X3 X4

Table6-1

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				*	*
9/Reserved					
10/CONNECT 2400		*	*	*	*

Table6-1

Result Codes	X0	X1	X2	X3	X4
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 24000		*	*	*	*
103/CONNECT 26400		*	*	*	*
107/CONNECT 28800		*	*	*	*
151/CONNECT 31200		*	*	*	*
155/CONNECT 33600		*	*	*	*
256/CONNECT 28000		*	*	*	*
260/CONNECT 29333		*	*	*	*
264/CONNECT 30666		*	*	*	*
268/CONNECT 32000		*	*	*	*
180/CONNECT 33333		*	*	*	*
272/CONNECT 34666		*	*	*	*
276/CONNECT 36000		*	*	*	*
184/CONNECT 37333		*	*	*	*
280/CONNECT 38666		*	*	*	*
284/CONNECT 40000		*	*	*	*
188/CONNECT 41333		*	*	*	*
192/CONNECT 42666		*	*	*	*
196/CONNECT 44000		*	*	*	*
200/CONNECT 45333		*	*	*	*
204/CONNECT 46666		*	*	*	*
208/CONNECT 48000		*	*	*	*
212/CONNECT 49333		*	*	*	*
216/CONNECT 50666		*	*	*	*

Table6-1

Result Codes	X0	X1	X2	X3	X4
220/CONNECT 52000		*	*	*	*
224/CONNECT 53333		*	*	*	*
228/CONNECT 54666		*	*	*	*
232/CONNECT 56000		*	*	*	*
Adaptive Dialing			*	*	*
Wait for 2nd Dial Tone (W)			*		*
Wait for Answer (@)				*	*
Fast Dial			*		*

*Requires @ in dial string; replaces NO CARRIER

Yn Selects power-on/reset default configuration.

Y0 Use profile 0 setting in NVRAM

Y1 Use profile 1 setting in NVRAM

Y2 Use factory configuration 0.

Y3 Use factory configuration 1.

Y4 Use factory configuration 2

Z Resets modem.

Z0 Resets modem to NVRAM profile selected by Y command or dip 7.

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)

Extended Data Commands

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

&An Enables/disables added result code subsets (see Xn).

&A0 ARQ result codes disabled

&A1 ARQ result codes enabled

&A2 V.32 modulation indicator added

&A3 Protocol indicators added LAPM/MNP/NONE (error control) and V42bis/MNP5 (data compression)

&Bn Manages 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

&Cn Controls Carrier Detect (CD) signal.

&C0 CD override

&C1 Normal CD operations

&Dn Controls Data Terminal Ready (DTR) operations.

&D0 DTR override

&D1 DTR toggle causes online Command mode

&D2 Normal DTR operations

&D3 Resets on receipt of DTR

&Fn Loads a read-only (non-programmable) factory configuration.

&F0 Generic template

&F1 Hardware flow control template

&F2 Software flow control template

&Gn 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.

&Hn Sets Transmit Data (TD) flow control (see also &Rn).

&H0 Flow control disabled

&H1 Hardware flow control, Clear to Send (CTS)

&H2 Software flow control, XON/XOFF

&H3 Hardware and software flow control

&In Sets Receive Data (RD) software flow control (see also &Rn).

&I0 Software flow control disabled

&I1 XON/XOFF signals to your modem and remote system

&I2 XON/XOFF signals to your modem only

&Kn Enables/disables data compression.

&K0 Data compression disabled

&K1 *Auto enable/disable*

&K2 Data compression enabled

&K3 MNP5 compression disabled

&Mn Sets Error Control (ARQ) for connections at 1200 bps and higher.

&M0 Normal mode, error control disabled

&M1 Reserved

&M2 Reserved

&M3 Reserved

&M4 Normal/ARQ

&M5 ARQ mode

&Nn Sets connect speed. If connection cannot be made at this speed, the modem will hang up.

When used in conjunction with &Un and &Un is greater than 0, &Nn sets the ceiling connect speed. &Un sets the floor connect speed (see also the table in the &Un section).

&N0 Connection speed is determined by the remote modem.

&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

Note: &N17 through &N39 apply only to V.90 and V.92 products.

&N17 28,000 bps

&N18 29,333 bps

&N19 30,666 bps

&N20 32,000 bps

&N21 33,333 bps

&N22 34,666 bps

&N23 36,000 bps

&N24 37,333 bps

&N25 38,666 bps

&N26 40,000 bps

&N27 41,333 bps

&N28 42,666 bps

&N29 44,000 bps

&N30 45,333 bps

&N31 46,666 bps

&N32 48,000 bps

&N33 49,333 bps

&N34 50,666 bps

&N35 52,000 bps

&N36 53,333 bps

&N37 54,666 bps

&N38 56,000 bps

&Pn Sets pulse (rotary) dial make/break ratio.

&P0 U.S./Canada ratio, 39%/61%

&P1 U.K. ratio, 33%/67%

&Rn Sets Receive Data (RD) hardware flow control, Request to Send (RTS) (see also &Hn).

&R0 Reserved

&R1 Modem ignores RTS

&R2 Received Data to computer only on RTS

&Sn Controls Data Set Ready (DSR) operations.

&S0 DSR override; always ON

&S1 Modem controls DSR

&Tn Begins test modes.

&T0 Ends testing

&T1 Analog Loopback

&T2 Reserved

&T3 Local Digital Loopback

&T4 Enables Remote Digital Loopback

&T5 Prohibits Remote Digital Loopback

&T6 Initiates Remote Digital Loopback

&T7 Remote Digital with self-test and error detector

&T8 Analog Loopback with self-test and error detector

&Un With $n > 0$, sets the floor connect speed (lowest acceptable connection speed).

Note: If your modem cannot connect to the remote modem at or above the speed set with this command, it will hang up.

&N=0 &U=0 Connects at highest available speed.

Note: This default setting should be sufficient for most users.

&N>0 Connects at fixed speed.

&U>0 Connects at highest speed above &Un.

&N>0 &U>0 Connects at highest speed between &Nn and &Un

&U0 No minimum connection speed.

&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

Note: &U17 through &U39 apply only to V.90 and V.92 products.

&U17 28,000 bps

&U18 29,333 bps

&U19 30,666 bps

&U20 32,000 bps

&U21 33,333 bps

&U22 34,666 bps

&U23 36,000 bps

&U24 37,333 bps

&U25 38,666 bps

&U26 40,000 bps

&U27 41,333 bps

&U28 42,666 bps

&U29 44,000 bps

&U30 45,333 bps

&U31 46,666 bps

&U32 48,000 bps

&U33 49,333 bps

&U34 50,666 bps

&U35 52,000 bps

&U36 53,333 bps

&U37 54,666 bps

&U38 56,000 bps

&Wn Writes current configuration to NVRAM templates.

&W0 Modifies the NVRAM 0 template (Y0)

&W1 Modifies the NVRAM 1 template (Y1)

&Yn Sets break handling.

&Y0 Destructive, but doesn't send break

&Y1 Destructive, expedited

&Y2 Nondestructive, expedited

&Y3 Nondestructive, unexpedited

&Zn=s Writes phone number string s to NVRAM at position n (n = 03).

&Zn=L Writes last executed dial string to NVRAM at position n (n = 03).

&Zn? Displays phone number stored at position n (n = 03).

&ZL? Displays the last executed dial string.

Table6-2

Switch	Default	Function
1	OFF	Data Terminal Ready (DTR) Override
		OFF Normal DTR operations: computer must provide DTR signal for the modem to accept commands; dropping DTR terminates a call
		ON Modem ignores DTR (Override)
2	OFF	Verbal/Numeric Result Codes

Table6-2

Switch	Default	Function
		OFF Verbal (word) results ON Numeric results
3	ON	Result Code Display OFF Suppresses result codes ON Enables result codes
4	OFF	Command Mode Local Echo Suppression OFF Displays keyboard commands ON Suppresses echo
5	ON	Auto Answer Suppression OFF Modem answers on first ring, or higher if specified in NVRAM ON Disables auto answer
6	OFF	Carrier Detect (CD) Override OFF Modem sends CD signal when it connects with another modem, drops CD on disconnect ON CD always ON (Override)
7	OFF	Power-on and ATZ Reset Software Defaults OFF Loads Y0-Y4 configuration from user-defined nonvolatile memory (NVRAM) ON Loads &F0 Generic template from read only memory (ROM)
8	ON	AT Command Set Recognition OFF Disables command recognition (dumb mode) ON Enables recognition (smart mode)

S Registers

Table6-3

Register	Default	Function
S0	0	Sets number of rings on which to answer in Auto Answer mode. When set to 0, Auto Answer is disabled.
S1	0	Counts and stores number of rings from an incoming call. (S0 must be greater than 0.)
S2	43	Stores ASCII decimal code for the escape code character. Default character is +. A value of 128 - 255 disables escape code.
S3	13	Stores ASCII code for the Carriage Return character. Valid range is 0 - 127.
S4	10	Stores ASCII decimal code for the Line Feed character. Valid range is 0 - 127.
S5	8	Stores ASCII decimal code for the Backspace character. A value of 128-255 disables Backspace key's delete function.
S6	2	Sets number of seconds modem waits before dialing. If Xn is set to X2 or X4, this is time-out length if no dial tone.
S7	60	Sets number of seconds modem waits for a carrier. May be increased as needed, for example to allow modem time to establish an international connection.
S8	2	Sets duration, in seconds, for pause (,) option in the Dial command. Valid range is 0-32.

Table6-3

Register	Default	Function
S9	6	Sets required duration, in tenths of a second, of remote modem's carrier signal before recognition by your 3Com U.S. Robotics modem.
S10	14	Sets duration, in tenths of a second, that modem waits to hang up after loss of carrier. This guard time allows your modem to distinguish a line disturbance from a true disconnect (hang up) by the remote modem. Note: If you set S10 = 255, the modem will not hang up when carrier is lost. Dropping DTR hangs up the modem.
S11	70	Sets duration and spacing, in milliseconds, for tone dialing.
S12	50	Sets duration, in fiftieths of a second, of guard time for 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). Refer to Table 6-4
S14	0	Reserved
S15	0	Bit-mapped register setup. To set the register, see instructions for S13. Refer to Table 6-5.
S16	0	Reserved
S17	0	Reserved

Table6-3

Register	Default	Function
S18	0	Test timer for &T 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 duration, in minutes, for inactivity timer. This timer activates when there is no data activity on the phone line; at time-out the modem hangs up. S19 = 0 disables the timer.
S20	0	Reserved
S21	10	Sets length, in 10-millisecond units, of breaks sent from the modem to the computer; applies to MNP or V.42 mode only.
S22	17	Stores ASCII decimal code for the XON character.
S23	19	Stores ASCII decimal code for the XOFF character.
S24	0	Reserved
S25	20	Sets duration, in hundredths of a second, of a true DTR drop. Prevents modem from interpreting random glitches as DTR loss. (Most users will use the default; this register is useful for compatibility with older systems and operating software.)
S26	0	Reserved
S27	0	Bit-mapped register setup. To set the register, see instructions for S13. Refer to Table 6-6.
S28	0	Eliminates the V.32 answer tones for a faster connection.

Table 6-3

Register	Default	Function
	8	Default item, all times are in tenths of seconds.
	255	Disables all connections except V.32 at 9600 bps.
S29	20	Sets the duration, in tenths of a second, of the V.21 answer mode fallback timer.
S30	0	Reserved
S31	128	Reserved
S32	2	Bit-mapped register setup. To set the register, see the instructions for S13. Refer to Table 6-7.
S33	0	Bit-mapped register setup. To set the register, see the instructions for S13. Refer to Table 6-8.
S34	0	
S35-S37		Reserved
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. 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.
S39-S40		Reserved
S41	0	Bit-mapped register setup. To set registers, see instructions for S13. Refer to Table 6-9.
S42		Reserved

Bit-Mapped Registers

To set a bit-mapped register, select the bit(s) you want on and set the register (for example, 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).

Table6-4 Settings for S13

Bit	Value	Result
0	1	Reset when DTR drops.
1	2	Reset non-MNP transmit buffer from 1.5K to 128 bytes.
2	4	Set backspace key to delete.
3	8	On DTR signal, autodial the number stored in NVRAM at position 0.
4	16	At power on/reset, autodial the number stored in NVRAM at position 0.
5	32	Reserved
6	64	Disable quick retrains.
7	128	Disconnect on escape code.

Table6-5 Settings for S15

Bit	Value	Result
0	1	Disable ARQ/MNP for V.22.
1	2	Disable ARQ/MNP for V.22bis.
2	4	Disable ARQ/MNP V.32/V.32bis.
3	8	Disable MNP handshake.
4	16	Disable MNP level 4.
5	32	Disable MNP level 3.
6	64	MNP incompatibility.

Table6-5 Settings for S15

Bit	Value	Result
7	128	Disable V.42 operation. Note: To disable V.42 detect phase, select sum of bits 3 and 7 (in other words S15 = 136 [8 + 128])

Table6-6 Settings for S27

Bit	Value	Result
0	1	Enables ITU-T V.21 modulation at 300 bps for overseas calls; in V.21 mode, the modem answers both overseas and domestic (U.S. and Canada) calls, but only originates V.21 calls (default Bell 103).
1	2	Enables unencoded (non-trellis coded) modulation in V.32 mode.
2	4	Disables V.32 modulation.
3	8	Disables 2100 Hz answer tone to allow two V.42 modems to connect faster.
4	16	Enables V.23 fallback mode.
5	32	Disables V.32bis mode.
6	64	Disable V.42 selective reject.
7	128	Software compatibility mode. 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, 12,000, and 14,400 bps or greater result codes.

Table6-7 Settings for S32

Bit	Value	Results
0	1	V.8 Call Indicate enabled.
1	2	Enables V.8 mode.
2	4	Reserved.
3	8	Disable V.34 modulation.
4	16	Disable V.34+ modulation.
5	32	Disable x2 modulation.
6	64	Disable V.90 modulation.
7	128	Disable V.92 modulation

Table6-8 Settings for S33

Bit	Value	Results
0	1	Disable 2400 symbol rate.
1	2	Disable 2743 symbol rate.
2	4	Disable 2800 symbol rate.
3	8	Disable 3000 symbol rate.
4	16	Disable 3200 symbol rate.
5	32	Disable 3429 symbol rate.
6	64	Reserved
7	128	Disable shaping.

Table6-9 Settings for S41

Bit	Value	Results
0	1	Distinctive ring enabled.
1	2	Speakerphone connect message override (voice products only).
2	4	Disable Digital Line Guard (56K internal faxmodems only).
3	8	Message waiting (voice products only).

Table6-9 Settings for S41

Bit	Value	Results
4	16	Reserved.
5	32	Reserved.
6	64	Reserved.
7	128	Reserved.





REGULATORY INFORMATION

Manufacturer's Declaration of Conformity

We declare under our sole responsibility that this product (56K Faxmodem) to which this declaration relates, is in conformity with the following standards or more normative documents:

ANSI C63.4-1992 Methods of Measurement

Federal Communications Commission 47 CFR part 15, subpart B

15.107 (e) Class B conducted limits

15.109 (g) Class B Radiated Emissions Limits

U.S. Robotics Corporation
3800 Golf Road
Rolling Meadows, IL 60008
U.S.A.

Products marked "CE" indicate:
This device complies with the requirements of European Directive 1995/5/EC.

Tested to comply with FCC Standards for Home and Office Use.

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.

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.

Part 68

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

If you have an external modem:

UL Listing/CUL Listing or CSA Listing

This information technology equipment is UL-Listed/CUL Listed or CSA Listed for the uses described in the users guide.

If you have an internal modem:

UL Listing/CUL Listing or CSA Listing

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

Caution to the User To avoid the risk of electrical shock, disconnect the phone cord from the modem and unplug the power to the computer before removing the cover.

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 the margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and 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 modem, refer to the BVRP™ software manual on the CD-ROM that shipped with your modem. If you are using a different communication 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. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio and television communications.

For Canadian Modem Users

Industry Canada (IC)

Industry Canada Class B Emission Compliance Statement

This Class B digital apparatus complies with Industry Canada ICES-003.

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 devices does not exceed 5.

The Ringer Equivalence Number is located on the bottom of the modem.

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.

AVIS DE CONFORMITÉ À LA RÉGLEMENTATION D'INDUSTRIE CANADA

Cet appareil numérique de la classe B est conforme à la norme NMB-0003 du Canada.

AVIS : L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les

exigences techniques relatives au matériel terminal. Le Ministère 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'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées cidessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Centre de garantie et de service après-vente:

Keating Technologies

25 Royal Crest Court, Suite 120

Markham, ONT L3R 9X4

