



This manual covers 3Com U.S. Robotics® faxmodems.

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Rolling Meadows, IL 60008

- * **IMPORTANT!** In accordance with the ITU-T standard for 56K transmissions (V.90), U.S. Robotics 56 Kbps modems are capable of 56 Kbps downloads. However, due to FCC rules which restrict power output of service providers, current download speeds are limited to 53 Kbps. Actual speeds may vary due to line conditions and other factors. Uploads from users to server equipment travel at speeds up to 31.2 Kbps. An analog phone line compatible with the V.90 standard or x2 technology and an Internet provider or corporate host site compatible with the V.90 standard or x2 technology are necessary for these high-speed downloads.

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56K FAXMODEM PRODUCT FEATURES

Modulation Schemes

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 112A
ITU-T V.21
Bell 103

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

28000, 29333, 30666, 32000, 33333, 34666,
36000, 37333, 38666, 40000, 41333, 42666,
44000, 45333, 46666, 48000, 49333, 50666,
52000, 53333, 54666, 56000, 57333

Back Channel Link Rates

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

DCE Rates

300, 1200, 2400, 9600, 19200, 38400, 57600,
115200, 230400*

* The 230400 DCE rate is supported by the 56K internal faxmodem only.

SOFTWARE INSTALLATION

Running the Setup Wizard


The instructions for installing your *Connections*™ CD-ROM software are on the installation map included in your modem's box. If you have not completed this portion of your install, you should do so now.

Using Connections Software

Once installation is complete, you can use the *Connections* CD at any time by following these steps:

- Insert the *Connections* CD into your CD-ROM drive.
- If the CD is already in your drive, take it out and reinsert it.
- If you have disabled AutoPlay, click **Start**, point to **Programs**, point to **3Com U.S. Robotics**, and click **Connections**.

Installing the RapidComm™ Software


 **NOTE:** If you have an older version of RapidComm software on your system, uninstall it before continuing. To start the uninstall, double-click the Add/Remove Programs icon in the Control Panel. This will erase any faxes you have in your inbox, and delete your phone/fax lists. If you need to save them, copy them to a new directory.

The *Connections* CD contains the RapidComm communications software. RapidComm is used with standard modems; RapidComm Voice is used with modems with voice functionality.

Once you have installed the *Connections* program group, you can install the RapidComm software. (The Setup Wizard does not install RapidComm.)

Follow these instructions to install RapidComm:

1. Start the *Connections* CD (follow the instructions in the section “Using *Connections* Software” on this page).
2. On the main *Connections* menu, click **Software**.
3. Click the **Communications** button.
4. Click the **RapidComm** (if you have a regular faxmodem) or **RapidComm Voice** (if you have a voice faxmodem) button.
5. Follow the on-screen instructions to finish the installation.

 **NOTE:** The CD also contains an electronic user manual for RapidComm and RapidComm Voice.

Congratulations—you are now ready to start using your U.S. Robotics modem!

SPEAKERPHONE FEATURES (EXTERNAL VOICE SPEAKERPHONE MODEMS ONLY)

Making a Speakerphone Call with a Telephone

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.

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

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.)

Disabling the Speaker Feature

If you want to talk privately to a caller, you can use a phone handset instead of the speaker.

To disable the speaker for the entire call: Do not press the SPEAKER button when the call comes in. Simply lift the handset of the telephone connected to the modem's PHONE jack.

To disable the speaker during a call: Pick up the handset of the telephone connected to the modem's PHONE jack. 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

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.)

INTERNET UPDATE WIZARD

The *Connections*™ CD-ROM, which came with your modem, includes the 3Com Internet Update Wizard. This software is designed to quickly update your modem to the latest code.



NOTE: You can also obtain this software from our BBS (847-262-6000; log in as Modem Utility, and the setup file will be downloaded) or from our Web page (<http://consumer.3com.com/support/index.html>).

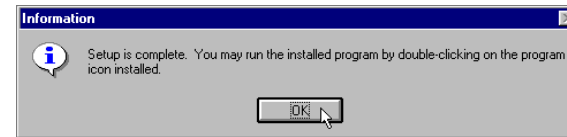


NOTE: Complete the instructions in the "Software Installation" chapter before installing the Internet Update Wizard.

Installing the Wizard

1. Insert the *Connections* CD into your CD-ROM drive.
2. The *Connections* interface will appear automatically.
3. Click **Software**.
4. Click **Modem Software**.
5. Click the **Internet Update Wizard** button.
6. Click **Install Software**.
7. Follow the on-screen instructions to complete the installation.

8. When you see the screen below, the setup is complete. Click **OK**.



NOTE: For more detailed instructions, see our Web page (<http://www.3com.com/56k/usr/upgrade/muw.html>).

Updating Your Modem

1. Click **Start**, point to **Programs**, point to **3Com U.S.Robotics**, and then point to **Internet Update Wizard**. Finally, click the **Internet Update Wizard** selection.
2. Follow the on-screen instructions to complete the update process.

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 uninstall instructions.


To Uninstall



- A **Winmodem® Modem**, see page 5-1.
- An **Internal Faxmodem**, see page 5-2.
- An **External Faxmodem**, see page 5-2.

Uninstalling a Winmodem Modem

1. First, remove the Winmodem software from the Windows operating system. From the **Start** menu, point to **Settings** and then click **Control Panel**.
2. Double-click the **System** icon.
3. Select **Device Manager**.
4. Double-click **Modems**.
5. Select **Winmodem**.
6. Click **Properties**.
7. Choose the **Port Settings** tab and then click the **Uninstall** button.
8. Windows displays the following message: "Warning, you are about to remove this device from your system." Click **OK**. The Winmodem is now uninstalled from your system.
9. Next, verify that you completely uninstalled the Winmodem software. Click **Start**, point to **Settings** and select **Control Panel**.
10. 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.
11. Shut down Windows.
12. Remove the phone cords from the modem's TELCO (or ) and PHONE (or ) jacks. If the modem is a voice modem, remove any microphones or powered speakers attached to the modem.



UNINSTALLING A U.S. ROBOTICS MODEM


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



13. Remove the computer's cover. (If you do not know how, refer to your computer's documentation.)
14. Find the modem inside the computer. (It will be the green board with TELCO (or ) and PHONE (or ) stamped on its metal bracket.)
15. Remove the screw that attaches the modem's metal bracket to the computer.
16. Remove the modem from its slot.
17. Replace the computer's cover, and replace slot cover and screw.

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.

6. Remove the phone cords from the modem's TELCO (or ) and PHONE (or ) 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, refer to the documentation for your computer.)
8. Find the modem inside the computer. (It will be the green board with TELCO (or ) and PHONE (or ) 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, and replace the slot cover and screw.

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.

UNINSTALLING A U.S. ROBOTICS MODEM

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 (or ) and PHONE (or ) jacks.
8. Shut down Windows.



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

9. Unplug the modem's power adapter from the outlet or power strip.
10. Unplug the modem's serial cable from the computer.

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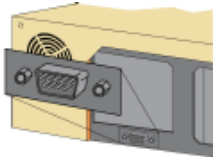
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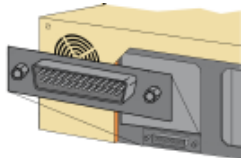
EXTERNAL MODEMS

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 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. See the diagrams below.



You need a
DB9F/DB25M
RS-232 serial cable




You need a
DB25F/DB25M
RS-232 serial cable

TROUBLESHOOTING AND HELP RESOURCES

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 proper settings.



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

PROBLEM: 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 CS light on the front panel will be on.

Possible solution:

Make sure you are using the proper cable. This modem requires an RS-232 serial 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.

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 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.

Right-click the **My Computer** icon on your desktop. Click **Properties**.

Click the **Device Manager** tab. Look under **Ports (COM & LPT)**. If the Communications 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.

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.

PROBLEM: 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 *Connections* CD-ROM.

TROUBLESHOOTING AND HELP RESOURCES

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:

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 3Com 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 3Com U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem.

Possible solution:

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. 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.

PROBLEM: 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.

TROUBLESHOOTING AND HELP RESOURCES

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 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. Call your phone company 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.

PROBLEM: 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. You may see one of the following error messages.

Windows 95

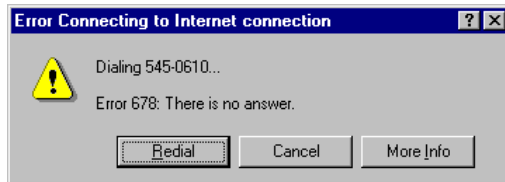
TROUBLESHOOTING AND HELP RESOURCES



Windows 98



Windows NT



Possible solution:

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



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

Note: Due to current FCC regulations, maximum download speed is limited to 53,333 bps.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K connections. 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:

- 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.
- 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 a 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.
- 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.

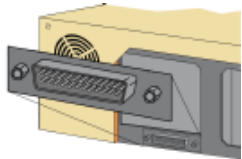
EXTERNAL USB MODEMS

Basic Troubleshooting Steps

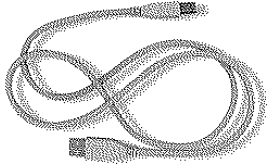
1. Is your modem turned on? When your modem is properly connected to power and is turned on, the Power light on the front panel will be on.
2. Is your power supply connected properly to both your modem and an electrical outlet? If it is, check the outlet with another electric device (like a lamp) to 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 diagrams below.



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

PROBLEM: 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:

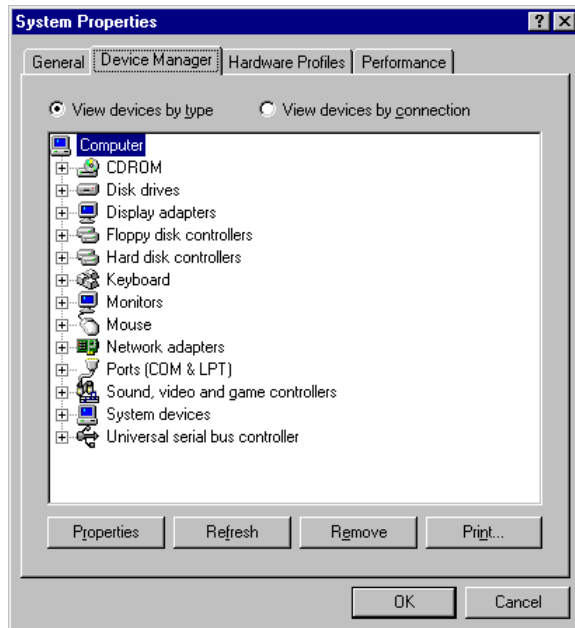
Make sure you are using the proper cable. If you are using your modem as a USB device, you will need to purchase a USB A to B cable. If you are using your modem as a serial device, you will need to purchase an RS-232 serial/modem cable. Check the packaging of the cable you bought. There are many computer 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 (+ Universal serial bus controller) under **Computer**. See the picture below for an example of how the USB icon appears in Device Manager.



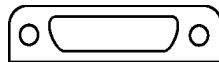
If USB is not enabled, you will need to enable USB in the system's BIOS. For instructions, check with your computer manufacturer's technical support. Once your USB port has been enabled in your system's BIOS, Windows will automatically detect and install USB support when it restarts.

TROUBLESHOOTING AND HELP RESOURCES

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.

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.

Windows 95/98

Right-click the **My Computer** icon on your desktop. Click **Properties**.

Click the **Device Manager** tab. Look under **Ports (COM & LPT)**. If the Communications 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.

PROBLEM: 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 *Connections* 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:

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 3Com 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 3Com U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem.

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

FOR DIALING PROBLEMS:

Possible solution:

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. Double-click **My Computer**, double-click **Dial-Up Networking**, right-click the connection you are trying to use, and

TROUBLESHOOTING AND HELP RESOURCES


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 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. Call your phone company or your company's information technology department 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.

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

TROUBLESHOOTING AND HELP RESOURCES

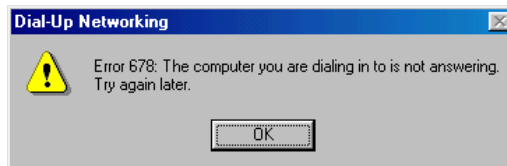
Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again. You may see one of the following error messages.

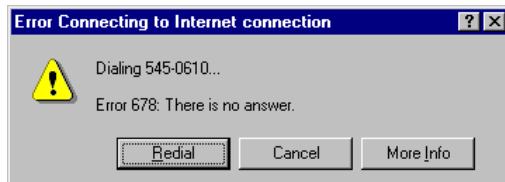
Windows 95



Windows 98



Windows NT



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

Note: Due to current FCC regulations, maximum download speed is limited to 53,333 bps.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K connections. 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:


- 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.
- 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 a 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.
- 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. Are you using the proper cable to connect your modem to your computer? Make sure you are using a hardware handshaking cable, which is packaged with your modem.
4. 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 diagram below for the proper settings.



5. Is your phone cord properly connected? The phone cord should be plugged into the  jack on the modem and into the wall phone. Use the phone cord included in your modem's box if possible.
6. Make sure you are using the proper cable, and that it is connected to the proper port on the back of your Macintosh. 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.

PROBLEM: 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. 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.

PROBLEM: 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 *Connections* 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. Refer to your software manual for information about changing modem settings.


PROBLEM: 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 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. Call your phone company 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.

PROBLEM: 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. You may see one of the following error messages.

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 diagram below for the proper settings.



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

Note: Due to current FCC regulations, maximum download speed is limited to 53,333 bps.


Our research has shown that the vast majority of telephone lines in North America can and do support 56K connections. 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:

TROUBLESHOOTING AND HELP RESOURCES

- 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.
- 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 a 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.
- 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

Basic Troubleshooting Steps

1. Make sure that your phone cord is properly connected. Remove the phone cord from the modem and wall jacks. Clean any dirt or corrosion from the cord and jacks. Reinsert the cord securely in the wall jack and the modem's  jack. Use the phone cord included with your modem, if possible.
2. Make sure that your internal 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 gold edge. See the Installation Guide that came with your modem for complete instructions.
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.

PROBLEM: 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 edge.

Possible solution:

IF YOU HAVE 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. Uninstall directions vary; check your modem's 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

TROUBLESHOOTING AND HELP RESOURCES

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 going unused. 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.

IF YOU HAVE WINDOWS NT:

Possible solution:

Make sure you follow the instructions on the other side of this Guide carefully. 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.

PROBLEM: 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 *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.

TROUBLESHOOTING AND HELP RESOURCES


Possible solution:

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 3Com 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 3Com U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem.

PROBLEM: 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 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 the department responsible for your phone system 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:

TROUBLESHOOTING AND HELP RESOURCES

Possible solution:

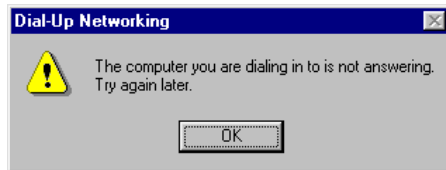
If you have voice mail provided by your local phone company, your dial tone may be altered when messages are waiting. Retrieve your voice mail to restore your normal dial tone.

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

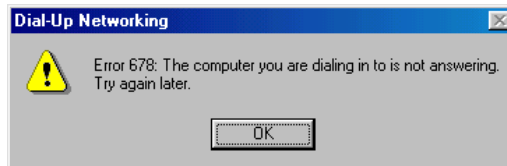
Possible solution:

You may have a poor connection. All calls are routed differently, so try placing the call again. You may see one of the following error messages.

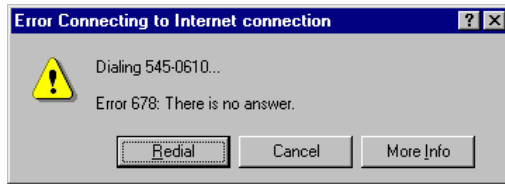
Windows 95



Windows 98



Windows NT



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


Note: Due to current FCC regulations, maximum download speed is limited to 53,333 bps.

Our research has shown that the vast majority of telephone lines in North America can and do support 56K connections. 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:

- 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.
- 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 a 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.
- 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. Clean any dirt or corrosion from the cord and jacks. Reinsert the cord securely in the wall jack and the modem's  jack. Use the phone cord included with your modem, if possible.
2. Make sure that your internal 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 gold edge. See the Installation Guide that came with your modem for complete instructions.

PROBLEM: 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 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 on the other side of this Guide 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.

TROUBLESHOOTING AND HELP RESOURCES

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 (see the "Windows NT Users" section on the other side of this Guide for more information). 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 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.

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

TROUBLESHOOTING AND HELP RESOURCES

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.

PROBLEM: 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 *Connections* 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 communication software's documentation for instructions on adjusting the port settings in your software.

Possible solution:

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 3Com 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 3Com U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem.

TROUBLESHOOTING AND HELP RESOURCES


Possible solution:

If you are using Dial-Up Networking, it may not be 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.

PROBLEM: 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 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 the department responsible for your phone system if you are unsure whether or not your phone line is digital.

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VOICE MAIL USERS:

Possible solution:

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

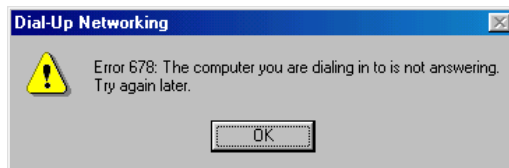
Possible solution:

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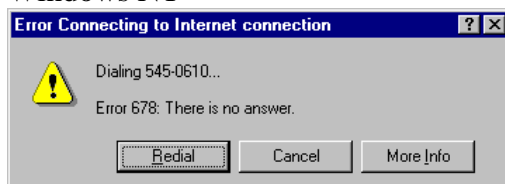
Windows 95



Windows 98



Windows NT



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Our research has shown that the vast majority of telephone lines in North America can and do support 56K connections. 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:

- 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.
- 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 a 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.
- 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

Basic Troubleshooting Steps

1. Make sure that your phone cord is properly connected. Remove the phone cord from the modem and wall jacks. Clean any dirt or corrosion from the cord and jacks. Reinsert the cord securely in the wall jack and the modem's  jack. Use the phone cord included with your modem, if possible.
2. Make sure that your internal 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 gold edge. 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 complete instructions.

PROBLEM: 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 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.

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.

TROUBLESHOOTING AND HELP RESOURCES

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. 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 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.

Right-click the **My Computer** icon on your desktop. Click **Properties**. Click the **Device Manager** tab. Double-click **Ports (COM & LPT)**. If the Communications 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 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 set to a COM port setting that does not appear in this list.

PROBLEM: 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 *Connections* 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. The Installation Guide that came with your modem explains how 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:

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 3Com 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 3Com U.S. Robotics modem or no modems are listed, your modem is not properly installed. Try reinstalling your modem.


Possible solution:

If you are using Dial-Up Networking, it may not be 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.

PROBLEM: 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 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. Contact the department responsible for your phone system 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.

PROBLEM: 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.

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

Note: Due to current FCC regulations, maximum download speed is limited to 53,333 bps.

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- 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://consumer.3com.com/support/index.html>

3Com Knowledgebase

A Web-based troubleshooting tool that will help you solve problems you may be having with your modem. Go to knowledgebase.3com.com

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

Internet FTP

consumerftp.3com.com

3Com BBS

847 262 6000

Fax on Demand

A 24 hour a day automated fax system that supplies user information. Dial **847 545 0859** to have an index of documents faxed to you.

Are You Still Having Problems?

- Review this manual.
- Call or visit your modem dealer. They may be able to provide immediate assistance.
- If your dealer can't help you, contact 3Com Customer Support. When you call, specify your modem serial number (found on the modem and on the outside of the box), the software being used, and, if possible, have the contents of your ati7 screen available.

Customer Support via the Phone

Technical questions about 3Com modems can also be answered by technical support specialists.

Note: In order to obtain phone support for 3Com U.S. Robotics products, you will need a support ID number. In order to obtain this number, you will need to run the 3Com Support ID Generator application. To do so, click Windows **Start**, point to **Programs**, point to **3Com U.S. Robotics**, and double-click **3Com Support ID Generator**. When the application's main window appears, enter your product's serial number in the text window and click "Get Customer ID." The application will produce an ID number that you will need if and when you call our technical support phone lines. Once you have your ID, you can simply run the ID Generator again at any time to display your ID. Please see the application's help file for more information.



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

Regular Phone Service

In the United States:

847 262 5151

8:00 am - 6:00 pm CST Monday - Friday. Automated service is available 24 hours a day, 7 days a week.

In Canada:

905 479 0231

8:30 am – 6:00 pm EST Monday - Friday

Priority, No-Hold Service

3Com 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 \$2.00 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.)

6-40

If You Need to Return the Modem to 3Com for Repair

Contact 3Com Customer Support. If the support representative determines that you need to return the modem for repair, you will receive a USO (User Service Order) number. You must have a USO 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 USO 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:

3Com

USO# _____

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

Cross references are printed in **boldface**.

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 command Dn.

baud rate

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

binary digit

A 0 or 1, reflecting the use of the binary numbering system. 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.

GLOSSARY

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.

GLOSSARY

default

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

detect phase

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

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)**.

GLOSSARY

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 commands **&Hn**, **&In**, **&Rn**.

frame

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

full duplex

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 command **En**.

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).

GLOSSARY

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**.

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.

GLOSSARY

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

GLOSSARY

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**.

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

3Com'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.

Xmodem

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

XON/XOFF

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

Ymodem

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

Ymodem G

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

Zmodem

Similar to **Xmodem** and **Ymodem**, except it includes batch transfer, the

ability to recover from a partially complete transfer, an autostart feature, and improved efficiency.

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TECHNICAL REFERENCE

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

Symbol	Meaning	Status
AA.....	Auto Answer	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).
ARQ/.....	Error Control/	
FAX.....	Fax Operations	Data Mode: Automatic Repeat Request. 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 since it is stored in the modem buffer.)
- 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**.
- The maximum command length is 58 characters. The modem doesn't count the AT prefix, carriage returns, or spaces.



NOTE: 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 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.

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
- ,
- ;
- “ Dials the letters that follow (in an alphabetical phone number).
- !
- /
- W
- @
- \$

Basic Data 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.

Basic Data Commands

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
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		•	•	•	•
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		•	•	•	•

Result Codes	X0	X1	X2	X3	X4
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		•	•	•	•
220/CONNECT 52000		•	•	•	•
224/CONNECT 53333		•	•	•	•
228/CONNECT 54666		•	•	•	•
232/CONNECT 56000		•	•	•	•
236/CONNECT 57333		•	•	•	•
Adaptive Dialing			•	•	•
Wait for 2nd Dial Tone (W)			•		•
Wait for Answer (@)				•	•
Fast Dial			•		•
*Requires @ in dial string; replaces NO CARRIER					

Basic Data Commands

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^{3/4}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

Extended Data Commands

&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.

Note: 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 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
 &N39 57,333 bps

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

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

Extended Data Commands

&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 highest speed at or below &Nn.

&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

Extended Data Commands

Note: &U17 through &U39 apply only to V.90 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
 &U39 57,333 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* = 0–3).

&Zn=L Writes last executed dial string to NVRAM at position *n* (*n* = 0–3).

&Zn? Displays phone number stored at position *n* (*n* = 0–3).

&ZL? Displays the last executed dial string.

#CID=n Controls Caller ID feature.

#CID=0 Caller ID disabled.

#CID=1 Caller ID enabled with formatted information.

#CID=2 Caller ID enabled with unformatted information.

+++ Escapes to online-command mode.

DIP Switches (External Modems with DIP Switches Only)

Note: If a DIP switch is on, it is down. If a DIP switch is off, it is up. Defaults are in italics.

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 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)

TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

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.
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 (+++).

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function																											
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).																											
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** The 1.5K-byte non-MNP buffer allows data transfer via XModem and YModem file transfer protocols without flow control. The 128-byte option lets remote users with slower modems keep data from scrolling off their screens. When remote users send an XOFF (Ctrl-S) and you stop transmitting, the data in transit from your modem's buffer won't exceed the size of their screen or overflow their modem or printer buffers.*

S14	0	Reserved																											
S15	0	Bit-mapped register setup. To set the register, see instructions for S13.																											
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TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function
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Note: To disable V.42 detect phase, select sum of bits 3 and 7 (in other words S15 = 136 [8 + 128])

TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function
S16	0	Reserved
S17	0	Reserved
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

TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function																											
S27	0	Bit-mapped register setup. To set the register, see instructions for S13.																											
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S28	0	Eliminates the V.32 answer tones for a faster connection.																											
	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																											

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function																											
S32	2	Bit-mapped register setup. To set the register, see the instructions for S13.																											
		<table border="1"> <thead> <tr> <th>Bit</th> <th>Value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>V.8 Call Indicate enabled.</td> </tr> <tr> <td>1</td> <td>2</td> <td>Enables V.8 mode.</td> </tr> <tr> <td>2</td> <td>4</td> <td>Reserved.</td> </tr> <tr> <td>3</td> <td>8</td> <td>Disable V.34 modulation.</td> </tr> <tr> <td>4</td> <td>16</td> <td>Disable V.34+ modulation.</td> </tr> <tr> <td>5</td> <td>32</td> <td>Disable x2 modulation.</td> </tr> <tr> <td>6</td> <td>64</td> <td>Disable V.90 modulation.</td> </tr> <tr> <td>7</td> <td>128</td> <td>Reserved</td> </tr> </tbody> </table>	Bit	Value	Result	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	Reserved
Bit	Value	Result																											
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	Reserved																											
S33	0	Bit-mapped register setup. To set the register, see the instructions for S13.																											
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Bit	Value	Result																											
0	1	Disable 2400 symbol rate.																											
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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.																											

TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function																											
S34	0	Bit-mapped register setup. To set registers, see instructions for S13. <table><thead><tr><th>Bit</th><th>Value</th><th>Result</th></tr></thead><tbody><tr><td>0</td><td>1</td><td>Disable 8S-2D trellis encoding.</td></tr><tr><td>1</td><td>2</td><td>Disable 16S-4D trellis encoding.</td></tr><tr><td>2</td><td>4</td><td>Disable 32S-2D trellis encoding.</td></tr><tr><td>3</td><td>8</td><td>Disable 64S-4D trellis encoding.</td></tr><tr><td>4</td><td>16</td><td>Disable non-linear coding.</td></tr><tr><td>5</td><td>32</td><td>Disable TX level deviation.</td></tr><tr><td>6</td><td>64</td><td>Disable Pre-emphasis.</td></tr><tr><td>7</td><td>128</td><td>Disable Pre-coding.</td></tr></tbody></table>	Bit	Value	Result	0	1	Disable 8S-2D trellis encoding.	1	2	Disable 16S-4D trellis encoding.	2	4	Disable 32S-2D trellis encoding.	3	8	Disable 64S-4D trellis encoding.	4	16	Disable non-linear coding.	5	32	Disable TX level deviation.	6	64	Disable Pre-emphasis.	7	128	Disable Pre-coding.
Bit	Value	Result																											
0	1	Disable 8S-2D trellis encoding.																											
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4	16	Disable non-linear coding.																											
5	32	Disable TX level deviation.																											
6	64	Disable Pre-emphasis.																											
7	128	Disable Pre-coding.																											
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																											

TECHNICAL REFERENCE

S Registers

Note: To change a setting use ATSr=n, where r is the register and n is a decimal value from 0 - 255 (unless otherwise indicated).

Register	Default	Function																											
S41	0	Bit-mapped register setup. To set registers, see instructions for S13. <table><thead><tr><th>Bit</th><th>Value</th><th>Result</th></tr></thead><tbody><tr><td>0</td><td>1</td><td>Distinctive ring enabled.</td></tr><tr><td>1</td><td>2</td><td>Speakerphone connect message override (voice products only).</td></tr><tr><td>2</td><td>4</td><td>Disable Digital Line Guard (56K internal faxmodems only).</td></tr><tr><td>3</td><td>8</td><td>Message waiting (voice products only).</td></tr><tr><td>4</td><td>16</td><td>Reserved.</td></tr><tr><td>5</td><td>32</td><td>Reserved.</td></tr><tr><td>6</td><td>64</td><td>Reserved.</td></tr><tr><td>7</td><td>128</td><td>Reserved.</td></tr></tbody></table>	Bit	Value	Result	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).	4	16	Reserved.	5	32	Reserved.	6	64	Reserved.	7	128	Reserved.
Bit	Value	Result																											
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5	32	Reserved.																											
6	64	Reserved.																											
7	128	Reserved.																											
S42	0	Reserved																											

Fax Commands

+FCLASS=<i>n</i>	Sets the mode of operation.	+FTM=<i>n</i>	Transmits data using the modulation specified by <i>n</i>. (<i>n</i> = 3, 24, 48, 72, 96, 97, 98, 121, 122, 145, or 146) Note: See the "Screen Messages" table at the end of this section for an explanation of messages that appear in response to this command.
<i>FCLASS=0</i>	<i>Data mode</i>		
<i>FCLASS=1</i>	Group 3 Facsimile Service Class 1 mode		
<i>FCLASS=2.0</i>	Group 3 Facsimile Service Class 2.0 mode		
FCLASS?	Displays the current FCLASS mode (see descriptions above).	+FRM=<i>n</i>	Receives data using the modulation specified by <i>n</i>. (<i>n</i> = 3, 24, 48, 72, 96, 97, 98, 121, 122, 145, or 146) Note: See the "Screen Messages" table at the end of this section for an explanation of messages that appear in response to this command.
+FCLASS=?	Displays the FCLASS mode options (see descriptions above).		
+FTS=<i>n</i>	Stops the fax transmission. Then the modem waits for a specified time before OK appears on screen. The pause is set in 10 millisecond intervals. <i>n</i> is the number of 10 millisecond intervals that pass before OK appears. (<i>n</i> =0-255)	+FTH=<i>n</i>	Transmits data framed in the HDLC protocol using the modulation specified by <i>n</i>. (<i>n</i> = 3, 24, 48, 72, 96, 97, 98, 121, 122, 145, or 146) Note: See the "Screen Messages" table at the end of this section for an explanation of messages that appear in response to this command.
+FRS=<i>n</i>	Makes the modem wait for a specified length of silence before sending OK to the screen. The pause is set in 10 millisecond intervals. <i>n</i> is the number of 10 millisecond intervals that pass before OK appears. (<i>n</i> =0-255) Note: This command terminates with OK when either the specified amount of silence is detected or when the user types anything (which is ignored).	+FRH=<i>n</i>	Receives data framed in the HDLC protocol using the modulation specified by <i>n</i>. (<i>n</i> = 3, 24, 48, 72, 96, 97, 98, 121, 122, 145, or 146) Note: See the "Screen Messages" table at the end of this section for an explanation of messages that appear in response to this command.

Screen Messages

Screen Messages

Numeric Message	Text Message	Description
0	OK	The previous command has been processed successfully.
1	CONNECT	The modem has just connected to another modem.
2	RING	Reports the receipt of a network altering ring.
3	NO CARRIER	No carrier is being received from the modem.
4	ERROR	The previous command line has not been recognized or was completed abnormally.
6	NO DIAL TONE	(Optional) Dial tone was not received within the time-out period
7	BUSY	(Optional) A busy signal was deleted.
64	CONNECT/FAX	(Optional) The modem has established a fax connection. This response is used only when the fax mode is selected.

The Serial Interface

The serial interface is a standard developed by the Electronic Industries Association (EIA). It defines the signals and voltages used when data is exchanged between a computer and a modem or serial printer.

The entire standard covers many more functions than are used in most data communications applications. Data is transmitted between the devices over a shielded serial cable with a 25-pin male (DB-25) connector to the modem and a 25-pin, 9-pin, 8-pin, or custom-built connector to the computer.

FCC regulations require the use of a shielded cable when connecting a modem to a computer to ensure minimal interference with radio and television.

Pin assignments are factory-set in the U.S. Robotics modem to match the standard DB-25 assignments in the following table. DB-9 connectors for IBM/AT-compatible computers should be wired at the computer end of the cable as shown in the DB-9 column.

Serial Interface Pin Definitions

DB-25	DB-9	Circuit	Function	Signal Source Computer/Modem
1	—	AA	Chassis Ground	Both
2	3	BA	Transmitted Data	Computer
3	2	BB	Received Data	Modem
4	7	CA	Request to Send	Computer
5	8	CB	Clear to Send	Modem
6	6	CC	Data Set Ready	Modem
7	5	AB	Signal Ground	Both
8	1	CF	Carrier Detect	Modem
12	—	SCF	Speed Indicate	Modem
20	4	CD	Data Terminal Ready	Computer
22	9	CE	Ring Indicate	Modem

REGULATORY INFORMATION AND LIMITED WARRANTY

Notice: This modem was not designed or approved for use in Europe, Australia, or New Zealand.

Manufacturer's Declaration of Conformity

3Com Corporation
3800 Golf Road
Rolling Meadows, IL 60008
U.S.A.

declares that this product conforms to the FCC's specifications:

Part 15:

Operation is subject to the following two conditions:

- (1) this device may not cause harmful electromagnetic interference, and
- (2) this device must accept any interference received including interference that may cause undesired operations.

This equipment uses the following USOC jacks: RJ-11C.

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/CSA Certified

This information technology equipment is UL-Listed and CSA-Certified for the uses described in the users guide.

If you have an internal modem:

UL Listing/CUL Listing

This information technology equipment is UL-Listed and CUL-Listed for use with UL-Listed personal computers that

REGULATORY INFORMATION AND LIMITED WARRANTY

have installation instructions detailing user installation of card accessories.

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 time it is sent, an identification of the business or other entity, or other individual sending the message, and the telephone number of the sending machine or of such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

In order to program this information into your modem, refer to the RapidComm 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.

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

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

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

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

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

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For Canadian Modem Users

Industry Canada (IC)

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

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 :** 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.

REGULATORY INFORMATION AND LIMITED WARRANTY

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

3Com Corporation Limited Warranty

3Com warrants this hardware product to be free from defects in workmanship and materials, under normal use and service, for the lifetime of the product from the date of purchase from 3Com or its authorized reseller. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

YEAR 2000 WARRANTY: In addition to the Warranty stated above, 3Com warrants that each product sold or licensed to

Customer on and after January 1, 1998 that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site,

<http://www.3com.com/products/yr2000.html>

as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

REGULATORY INFORMATION AND LIMITED WARRANTY

OBTAINING WARRANTY SERVICE: Customer must contact a 3Com Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase from 3Com or its authorized reseller may be required. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a User Service Order (USO) number marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured or sent by a method that provides for tracking of the package. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after 3Com receives the defective product. Return the product to:

In The United States:

3Com
USO# _____
Attn. Dock 15 PCD
1800 W. Central Ave.
Mt. Prospect, IL 60056

In Canada:

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

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

WARRANTIES EXCLUSIVE: IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SATISFACTORY QUALITY, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT OR MALFUNCTION IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO OPEN, REPAIR OR MODIFY THE PRODUCT, OR ANY OTHER CAUSE BEYOND THE

REGULATORY INFORMATION AND LIMITED WARRANTY

RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OTHER HAZARDS, OR ACTS OF GOD.

LIMITATION OF LIABILITY: TO THE FULL EXTENT ALLOWED BY LAW, 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

DISCLAIMER: Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, or the limitation of liability for personal injury, so the above limitations and exclusions may be limited in their application to you. When the implied warranties are not allowed to be excluded in their entirety, they will be

limited to the duration of the applicable written warranty. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the State of California, U.S.A. excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.