



Model MT5656ZDX-Series
Voice/Data/Fax Modem

User Guide



User Guide
MT5656ZDX-Series
PN S000248G Revision G

This publication may not be reproduced, in whole or in part, without prior expressed written permission from Multi-Tech Systems, Inc. All rights reserved.

Copyright © 2003-4 by Multi-Tech Systems, Inc.

Multi-Tech Systems, Inc. makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, Multi-Tech Systems, Inc. reserves the right to revise this publication and to make changes in the content hereof without obligation of Multi-Tech Systems, Inc. to notify any person or organization of such revisions or changes.

Revision	Date	Description
A	06/17/02	Manual released
B	07/15/02	Manual updated to remove K56flex from Modulation Selection (+MS).
C	07/26/02	Manual updated to include registration number.
D	10/22/02	Remove Fax 2 references (MT5656ZDX does not support Fax 2 commands). Move AT Commands to a separate document. Move Fax 1 Commands to a separate document.
E	11/07/02	Remove Flash protocol information. At this point Flash is not supported.
F	01/13/03	Add Fax Class 2 support and Flash protocol. Both now supported.
G	11/22/04	Remove Voice Commands (they are in the AT Command document). Change power supply to 9 volts. Remove Remote Configuration as a feature.

Trademarks

MultiModem, Multi-Tech, and the Multi-Tech logo are trademarks of Multi-Tech Systems, Inc. Adobe and Acrobat are trademarks of Adobe Systems Incorporated. Microsoft, Windows, Windows 95, Windows 98, Windows NT, and Windows 2000 are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other brand and product names mentioned in this publication are trademarks or registered trademarks of their respective companies.

Patents

This device is covered by one or more of the following patents: 6,031,867; 6,012,113; 6,009,082; 5,905,794; 5,864,560; 5,815,567; 5,815,503; 5,812,534; 5,809,068; 5,790,532; 5,764,628; 5,764,627; 5,754,589; D394,250; 5,724,356; 5,673,268; 5,673,257; 5,644,594; 5,628,030; 5,619,508; 5,617,423; 5,600,649; 5,592,586; 5,577,041; 5,574,725; D374,222; 5,559,793; 5,546,448; 5,546,395; 5,535,204; 5,500,859; 5,471,470; 5,463,616; 5,453,986; 5,452,289; 5,450,425; D361,764; D355,658; D355,653; D353,598; D353,144; 5,355,365; 5,309,562; 5,301,274. Other patents pending.

Notice

Though these modems are capable of 56K bps download performance, line impairments, public telephone infrastructure and other external technological factors currently prevent maximum 56K bps connections.

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112
U.S.A
(763) 785-3500 or (800) 328-9717
Fax (763) 785-9874
Technical Support (800) 972-2439
Internet <http://www.multitech.com>

Contents

Chapter 1 - Introduction	4
Product Description	4
Chapter 2 - Hardware Installation	5
We Supply	5
You Supply	5
Safety Warnings	5
Connecting the Modem to Your System	6
Using Your Modem	7
Voice Connections (Voice option only)	8
Installing the Modem Driver	9
Removing an Old Modem Driver	9
Installing Your Data Communications Software	9
Connecting to the Internet	10
Dial-Up Networking	10
Chapter 3 - Operation	11
About the LED Indicators	11
Configuring Your Software	12
Configuring Your Modem	12
Sending a Fax	13
Chapter 4 - AT Commands, Voice Commands, and Fax Class 1 and 2 Commands	14
See Commands Reference Guides	14
Chapter 5 - Troubleshooting	15
None of the Indicators Light	15
The Modem Does Not Respond to Commands	16
The Modem Dials But Cannot Connect	17
The Modem Disconnects While Online	18
The Modem Cannot Connect When Answering	18
There Are Garbage Characters on the Monitor	18
The Modem Doesn't Work with Caller ID	18
Appendix A - Warranty, Service, and Technical Support	19
Limited Warranty	19
Online Warranty Registration	19
Service	19
International Products	20
Replacement Parts	20
Technical Support	20
Recording Modem Information	20
Internet Sites	20
Appendix B - Regulatory Compliance	21
FCC Part 15	21
FCC Part 68 Telecom	21
Fax Branding Statement	22
Canadian Limitations Notice	22
International Modem Restrictions	22
EMC, Safety, and R&TTE Directive Compliance	23
New Zealand Telecom Warning Notice	23
South African Notice	23
Appendix C - Technical Specifications	24
Appendix D - Installing a Modem in Linux	26
Standard Linux Serial Port Definitions	26
Installation	26
Appendix E - Upgrading the Modem	28
Upgrade Overview	28
Index	30

Chapter 1 - Introduction

Congratulations on your purchase of the Multi-Tech MT5656ZDX-Series modem.

- The Multi-Tech MT5656ZDX modem is your data/fax modem.
- The MT5656ZDX-V offers your voice option.

You have acquired one of the finest intelligent data/fax or voice/data/fax modems available today from one of the world's oldest modem manufacturers: Multi-Tech Systems, Inc. This user guide will help you install, configure, test, and use your modem.

Product Description

The Multi-Tech MT5656ZDX and MT5656ZDX-V modems are compatible with the ITU-TV.92 protocol that provide quick connections, downstream transmissions at speeds up to 56K bps, and upstream transmissions at speeds up to 48K bps when connected to V.92-compatible Internet Service Providers. The V.92 protocol is able to send downstream from the Internet to your computer at these speeds because data on the telephone network typically is converted from digital to analog only one before it reaches your modem. Upstream transmissions and transmissions between client modems are limited to 33.6K bps, as are upstream transmissions that are converted more than once on the telephone lines.

Modem features include Plug and Play operation. In standard mode, the modem can store up to four command lines or telephone numbers of up to 40 characters each in nonvolatile memory. Other modem capabilities include modem-on-hold, AT&T calling card tone detection, pulse and tone dialing, adaptive answer, V.42bis and V.44 data compression, and self-resetting lightning protection.

Please note that some V.92 features are turned off in the factory default configuration, and may need to be turned on, depending on your needs.

Chapter 2 - Hardware Installation

This chapter shows you step-by-step how to set up your Multi-Tech modem, test it, and make your first calls.

We Supply

- An MT5656ZDX data/fax modem or a MT5656ZDX-V voice/data/fax modem
- A DC power transformer
- One RJ11 phone cable
- A printed *Quick Start Guide*
- A CD containing modem drivers, communications software (PhoneTools), this User Guide, AT Commands Reference Guide which includes voice commands, a Fax 1 Commands Reference Guide, and Adobe Acrobat software
- Four vinyl gripper feet for the bottom of the modem

You Supply

- A computer with an available serial port. The processor speed should be at least 75 MHz in order to take full advantage of the ZDX-V's telephony features.
- A shielded RS232 serial cable with a male DB-25 connector on one end and a connector to match your computer's serial port on the other end.
- A nearby AC power outlet
- A nearby phone jack

Optional: If you want speakerphone functions along with the ability to record sound or .WAV files through the sound card at the same time, you will need:

- One stereo PC microphone
- One stereo male to male patch cord
- One sound card
- Speakers

Safety Warnings

- Use this product only with UL- and CUL-listed computers.
- Never install phone wiring during a lightning storm.
- Never install a phone jack in a wet location unless the jack is specifically designed for wet locations.
- Never touch uninsulated phone wires or terminals unless the phone line has been disconnected at the network interface.
- Use caution when installing or modifying phone lines.
- Avoid using a phone (other than a cordless type) during an electrical storm; there is a risk of electrical shock from lightning.
- Do not use a phone in the vicinity of a gas leak.
- To reduce the risk of fire, use only 26 AWG or larger telephone line cord.

Connecting the Modem to Your System

Turn off your computer. Placing the modem in a convenient location, connect it to your computer's serial port, to the phone line, to AC power, and to your phone.

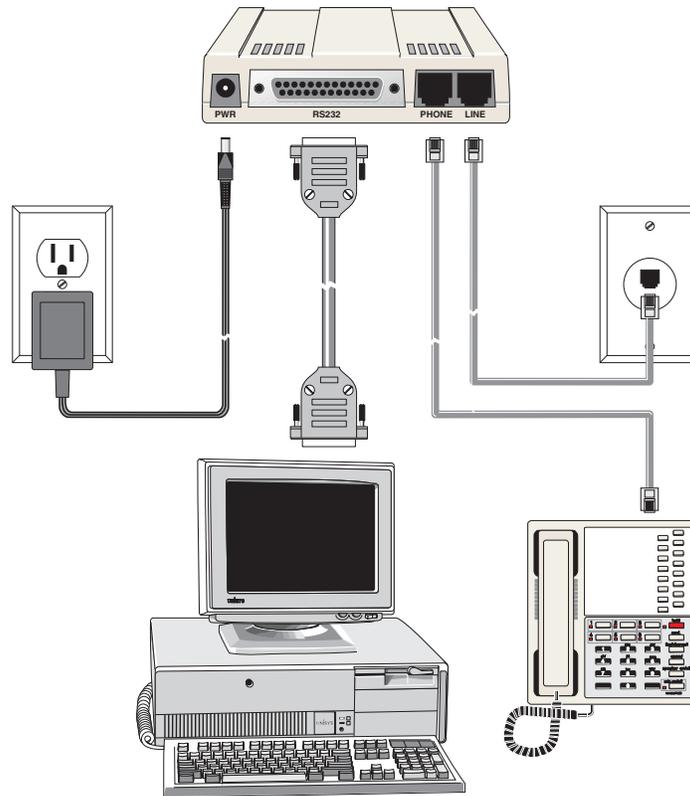


Figure 2–1. MT5656ZDX Connections.

Connect the Modem to Your PC (RS-232 Connection)

Plug one end of the RS-232 serial cable into the RS-232 connector on the modem, and plug the other end into a serial port connector on your computer, such as COM1 or COM2. You supply the RS-232 cable.

Connect the Modem to the Phone Jack (Line Connection)

Plug one end of the phone cable into the modem's LINE jack and the other end into a phone wall jack. The phone cable is included with your modem.

Note: The LINE jack is not interchangeable with the PHONE jack. Do not plug the phone into the LINE jack or the line cable into the PHONE jack.

(Optional) Connect the Modem to the Phone

For voice-only calls, plug a phone into the modem's PHONE jack.

Connect the Modem to the AC Power Outlet

Plug the DC power transformer into an AC power outlet or power strip. Plug the DC power transformer into the POWER jack on the modem.

Note: Use only the DC power transformer supplied with the modem. Use of any other transformer voids the warranty and can damage the modem.

A Note About Power Connection, Surge Protectors, and Lightning

Power surges and other transient voltages on power lines, such as those caused by lightning strikes, can damage or destroy your modem. Therefore, we recommend that you plug the modem into a surge protector rather than directly into a wall outlet, preferably a surge protector that provides protection against electrical spikes on the phone line as well as on the power line. Note that not even a surge protector can guard against damage from a nearby lightning strike. During an electrical storm, it is safest to unplug your computer equipment from both the power outlet and the phone line.

Power-On Test

Test the modem by turning it on (an on-off switch is located on the side panel). When you apply power, the modem performs a diagnostic self-test. The **PWR** indicator lights; and if a terminal program is running, the TR indicator also lights. If this does not happen, check that the power switch is on, the power supply is solidly connected, and the AC outlet is live. If these measures do not work see the *Troubleshooting* chapter.

Note: The Federal Communications Commission (FCC) and Industry Canada impose certain restrictions on equipment connected to public phone systems. For more information, see Appendix B.

Using Your Modem

Right now the modem is set up for the most typical user application, that is, the modem is set to make dial-up calls to remote installations where the calls are answered automatically. Therefore, you shouldn't need to change the current default configuration.

You will likely use your data communications software to:

- Launch a data communications session through a set of modem configurations which you select and then associate with a target phone number. Once you have created, saved, and named this set of information according to your connection needs and your data communications software's conventions, the software then simplifies your dialing. You need not reconfigure the modem nor run the risk of mistakenly keying-in incorrect information, or
- Enter terminal mode, where you can issue AT commands .

Voice Connections (Voice option only)

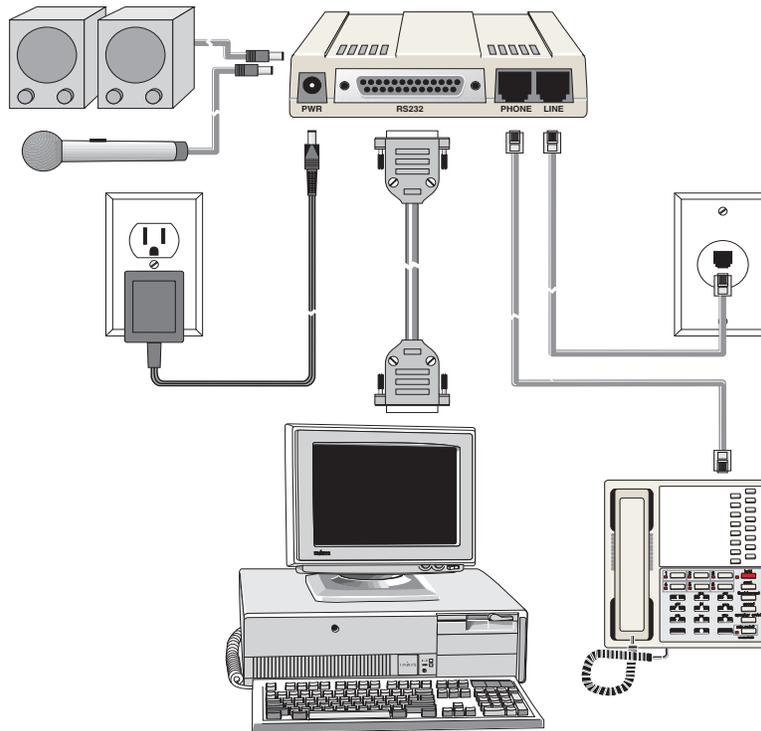


Figure 2–2. Voice Connections (Optional)

Connect the Microphone

For voice mail or speakerphone applications, plug an unamplified microphone into the MIC jack on the side of the modem. The microphone should have a stereo 1/8-inch mini plug. Do not use a monophonic microphone.

Connect the Speaker

For speakerphone or voice mail applications, use a 1/8-inch-plug male-to-male stereo patch cord to connect the SPKR jack on the side of the modem to the LINE IN jack on your sound card. If your sound card does not have a LINE IN jack, use its MIC jack. The stereo male-to-male patch cord can be purchased at a local PC retail store.

If you do not have a sound card, you can plug an amplified speaker directly into the SPKR jack.

Installing the Modem Driver

If you use Windows 95/98/Me/2000/NT/XP, you must install the modem driver.

If you use another operating system, see Appendix E.

When operating the modem under Windows 95/98/Me/2000/XP, the modem driver can be installed by using the Plug and Play feature. Follow the 4-step procedure below.

1. Make sure your modem is connected properly, and then turn on your computer. Windows should detect your new modem and open the **Install New Modem** wizard.
Note: If Windows cannot find a modem, your modem may be turned off, it may be plugged into the wrong connector on your computer, or the serial cable may be faulty. See “None of the LEDs Light When the Modem Is Turned On” and “The Modem Does Not Respond to Commands” in the “Troubleshooting” chapter in the User Guide.
2. Insert the MT5656ZDX CD, and then click **OK**.
3. Windows installs and configures the modem.
4. Click Finish to exit.

For Windows NT, the **Install New Modem** wizard has one prompt before Step 2. Select **Don't detect my modem; I will select it from a list**, and then click **Next**. A dialog box with a list of manufacturers and a list of modem models appears.

Then continue with Step 2 above.

Removing an Old Modem Driver

When your new modem replaces another modem, the old modem driver remains in Windows, and the old modem driver is still selected in HyperTerminal and other Windows applications. Though you can change the application connection descriptions one at a time, it is easier to force the Windows applications to use the new modem by removing the old modem driver from Windows.

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the Modems icon to open the **Modems Properties** dialog box.
3. In the list box, select the old modem.
4. Click **Remove**, and then click **Close**.
5. The next time you dial a HyperTerminal connection, it will select your new modem and ask you to confirm the selection.

Installing Your Data Communications Software

Data communications software is designed to send and receive messages. Multi-Tech includes data communications software with your modem. However, the modem will work with most data communications software. To install the data communications software provided with this modem, insert the CD into the CD-ROM drive and click on the Phone Tools icon. You will be asked to choose your language. The software will automatically load onto your PC.

Note: Data communications software running in a Windows operating system normally do not have to be configured since they use the Plug and Play configuration supplied by the Windows modem driver. Data communications software running in DOS or other operating systems may need to be manually configured. See Chapter 3, Operations.

Connecting to the Internet

Your Multi-Tech modem is your gateway to the Internet and the World Wide Web. To access the Internet and Web via your modem, you must establish a dial-up account with an Internet service provider (ISP). To locate an ISP near you, look in a local directory or computer publication. Your ISP should provide you with the following information:

- User name (also called user ID)
- Password
- Access number (the number you call to connect to the server)
- Host name and/or domain name
- Domain Name Server (DNS) server address

If, besides the Web, you use the Internet for email and newsgroups, your ISP should also provide you with the following information:

- Email or POP mail address
- POP server address
- Mail or SMTP address
- News or NNT server address

Dial-Up Networking

Before you can connect to the Internet, you must set up a remote-node client program on your computer. The Windows version is called Dial-Up Networking. Dial-Up Networking establishes your connection to the ISP's server, which is the shared computer that manages calls from clients (your computer) to the Internet. Most, if not all, Windows browsers start Dial-up Networking automatically when you open them.

For instructions on how to set up Dial-Up Networking, consult your ISP or your operating system's online help or printed documentation. Many ISPs include with their service a program that will instruct and configure Dial-Up Networking automatically for you.

Chapter 3 - Operation

Like any modem, your Multi-Tech modem operates only under the control of a communications program, such as the communications program included with your modem. It also operates under other general-purpose data communication programs, such as Windows Terminal and HyperTerminal. For information on how to use the modem with the communications program of your choice, please refer to the documentation provided with the data communications program.

An experienced modem user can configure the program's software to change the way the software interacts with a modem and configure the modem to change the way it operates.

About the LED Indicators

The modem has ten LED indicators on the front panel that indicate status and activity:

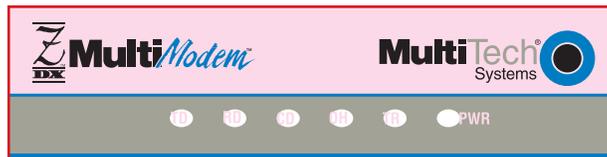


Figure 2–1. Front panel

- TD** **Transmit Data**
Flashes when the modem is transmitting data to another modem.
- RD** **Receive Data**
Flashes when the modem is receiving data from another modem.
- CD** **Carrier Detect**
Lights when the modem detects a valid carrier signal from another modem. It is on when the modem is communicating with the other modem, and off when the link is broken.
- OH** **Off-Hook**
Lights when the modem is off-hook, which occurs when the modem is dialing, online, or answering a call. The LED flashes when the modem pulse-dials.
- TR** **Terminal Ready**
Lights when a communication program is using the modem. It means the modem is ready for an outgoing or incoming call. It goes off when the communication program disconnects the serial port. When it goes off, a connected modem will disconnect.

Note: When you turn on the modem, the **PWR** indicator lights; and if a terminal program is running, the **TR** indicator also lights.

Configuring Your Software

You may use either the communication program included with your modem or a third-party program. Communication programs designed for Windows 95 and above normally do not need to be manually configured, since they obtain configuration information from Windows. Communication programs designed for DOS and other operating systems, however, may need to be manually configured to work with your modem. Though each communication program is different, the following procedure should work with most of them.

1. Turn on your computer and run your communications program.
2. Find the dialog box or menu that lets you select your modem. (In Windows Terminal select **Settings | Modem Commands**; in HyperTerminal select **File | Properties | Phone Number**; and in the communications program select **Configure | General Configuration | Communication | Change Modem**.)
3. Choose your modem from the program's modem list. If it isn't listed, choose a generic modem and modify the settings as necessary.
4. Change the modem initialization string, if necessary. The factory default configuration works well for most purposes. To load the factory default configuration, use **AT&F**. To load a custom configuration that was saved using the **&W** command, use **ATZ**. Note that the **Z** command must be in a command string by itself. For a Macintosh, the initialization string should include the **&D0** command. If you do not want the modem to always answer the phone, add **S0=0** to the string. To use Caller ID with the modem, add **S0=2** to the string (Caller ID information is sent between the first and second rings, so the phone must ring at least twice before the modem picks up the line). Depending on the software, you might have to end the string with a carriage return character (^M).

Note: To change the modem's default configuration, type new commands in the communication program's terminal window, adding the **&W** command to store them in the modem's nonvolatile memory. For instance, to create a default configuration for a Macintosh computer that turns off autoanswer, type **AT&F&D0S0=0&W**. The new configuration loads automatically whenever the modem is turned on or receives the **ATZ** command.
5. Select the port the modem is connected to (normally COM1 or COM2).
6. Select your serial port speed. This can be labeled "maximum speed," "DTE bps," or "baud rate." Ideally, if you use data compression, you should set your serial port baud rate to four times the modem's maximum transmission speed or faster; however, few files can be compressed enough to require speeds that high, and not all serial ports can handle speeds that high.
7. If the communication program has an autobaud selection, make sure it is disabled. Autobaud applies only to older modems, and can cause problems if enabled.
8. If the program allows you to edit the no-connect messages (*NO CARRIER*, *BUSY*, *NO ANSWER*, *NO DIALTONE*), make sure there is no space between *DIAL* and *TONE* in *NO DIALTONE*.
9. Refer to the program manual or online help for other configuration choices. In most cases you can accept the default values.

Configuring Your Modem

Your modem normally is configured through Windows or through the communication program you are using. The default settings work best for most purposes. However, you also can configure your modem by sending **AT** commands to the modem. See the AT Command Reference Guide for a list of **AT** (data) commands and how to use them.

Sending a Fax

With your data communications software, you can use your modem to send and receive faxes directly from your computer. The following steps show you how to fax a document directly from a Windows application without opening the data communications program.

1. Create a document in a Windows application, such as Word, a graphics editor, or a spreadsheet. Keep the application and the document open, and select **Print** from the **File** menu.
2. Select **CAPTURE FAX BVRP** as the printer driver, and then click **OK**. The **Send Fax** wizard appears.
3. In the **Recipient** section, type the required information or extract it from the Phone Book by clicking this icon.
4. In the **Template** section, optionally select a cover page and type a cover message.
5. Select the document to be sent. The default file when sending from within a Windows application is **Capture.dgr**.
6. Select the date and time to send the document, if you do not want to send it immediately.
7. Click **Finish** to start the transmission.

Chapter 4 - AT Commands, Voice Commands, and Fax Class 1 and 2 Commands

See Commands Reference Guides

AT Commands and Voice Commands are in the AT Command Reference Guide.

Fax Class 1 Commands and Fax Class 2 Commands are documented in separate Fax Reference Guides.

All Reference Guides are included on the MT5656ZDX CD and on the Multi-Tech Web site.

Chapter 5 - Troubleshooting

Your modem was thoroughly tested at the factory before it was shipped. If you are unable to make a successful connection, or if you experience data loss or garbled characters during your connection, check the list of troubleshooting procedures before calling Multi-Tech.

- None of the LEDs light when the modem is on.
- The modem does not respond to commands.
- The modem dials but is unable to make a connection.
- The modem disconnects while online.
- The modem cannot connect when answering.
- File transfer is slower than it should be.
- Data is being lost.
- There are garbage characters on the monitor.
- The modem doesn't work with Caller ID.
- Fax and data software can't run at the same time.

If you experience problems, please check the following possibilities before calling Technical Support (refer to Appendix A).

None of the Indicators Light

When you turn on the modem, the PWR indicator and the terminal turn on. If the LEDs remain off, the modem is probably not receiving power.

- ✓ Make sure the modem's power switch is on, especially if you normally turn the modem on by turning on a power strip.
- ✓ If the modem is plugged into a power strip, make sure the power strip is plugged in and its power switch is on.
- ✓ Make sure the transformer module is firmly connected to the modem and to the wall outlet or power strip.
- ✓ If the power strip is on and the modem switch is on, try moving the transformer module to another outlet on the power strip.
- ✓ Test that the outlet is live by plugging another device, such as a lamp, into it.
- ✓ The modem or the DC power transformer may be defective. If you have another Multi-Tech modem, try swapping modems. If the problem goes away, the first modem or the DC power transformer may be defective. Call Technical Support for assistance.

CAUTION: Do not under any circumstances replace the transformer module with one designed for another product; doing so can damage the modem and void your warranty.

The Modem Does Not Respond to Commands

- ✓ Make sure the modem is plugged in and turned on. (See “None of the Indicators Light.”)
- ✓ Make sure you are issuing the modem commands from the data communications program, either manually in terminal mode or automatically by configuring the software. (You cannot send commands to the modem from the DOS prompt.)
- ✓ Make sure you are in terminal mode in your data communications program, then type **AT** and press **ENTER**. If you get an **OK** response from your modem, your connections are good and the problem likely is in the connection setup in your communications program.
- ✓ If you don't get an **OK**, the problem may still be in the communications program. Make sure you have done whatever is necessary in your software to make a port connection. Not all communication programs connect to the COM port automatically. Some connect when the software loads and remain connected until the program terminates. Others can disconnect without exiting the program. The modem's TR indicator lights to show that the software has taken control of the modem through the COM port.
- ✓ Your communications program settings may not match the physical port the modem is connected to. The serial cable might be plugged into the wrong connector—check your computer documentation to make sure. Or you might have selected a COM port in your software other than the one the modem is physically connected to—compare the settings in your software to the physical connection.
- ✓ If the modem is on, the cable is plugged into the correct port, the communications program is configured correctly, and you still don't get an **OK**, the fault might be in the serial cable. Make sure it is firmly connected at both ends.
- ✓ Is this the first time you have used the cable? If so, it may not be wired correctly. Check the cable description on the packaging to make sure the cable is the right one for your computer.
- ✓ Peripheral expansion cards, such as sound and game cards, might include a serial port preconfigured as COM1 or COM2. The extra serial port, or the card itself, may use the same COM port, memory address, or interrupt request (IRQ) as your communication port. Be sure to disable any unused ports.

Windows 9x and 2000: Right-click on My Computer, select **Properties** from the menu, click on the **Device Manager** tab, double-click on **Ports**, then double-click on the communication port your modem is connected to. In the port's **Properties** sheet, click on the **Resources** tab to see the port's input/output range and interrupt request. If another device is using the same address range or IRQ, it appears in the **Conflicting Device List**. Uncheck **Use automatic settings** to change the port's settings so they do not conflict with the other device, or select the port the conflicting device is on and change it instead. If you need to open your computer to change switches or jumpers on the conflicting device; refer to the device's documentation.

Windows NT 4.0: To look for address or IRQ conflicts, click Start, Programs, Administrative Tools (Common), and Windows NT Diagnostics. In the **Windows NT Diagnostics** dialog box, click the **Resources** tab to see which input/output ranges and interrupt requests are in use. If you need to open your computer to change switches or jumpers on the conflicting device; refer to the device's documentation.

- ✓ The serial port might be defective. If you have another serial port, install the modem on it, change the COM port setting in your software, and try again.
- ✓ The modem may be defective. If you have another Multi-Tech modem, try swapping modems. If the problem goes away, the first modem may be defective. Call Technical Support for assistance (Refer to Appendix A).

The Modem Dials But Cannot Connect

There can be several reasons the modem fails to make a connection. Possibilities include:

- lack of a physical connection to the telephone line.
- a missing dial tone.
- a busy signal.
- a wrong number.
- no modem at the other end.
- a faulty modem, computer, or software at the other end.
- incompatibility between modems.

You can narrow the list of possibilities by using extended result codes. Extended result codes are enabled by default. If they have been disabled, include **V1X4** in the modem's initialization string, or in terminal mode enter **ATV1X4** and press ENTER. When you dial again, the modem reports the call's progress.

- ✓ If the modem reports *NO DIAL TONE*, check that the modem's phone line cable is connected to both the modem's LINE jack (not the PHONE jack) and the phone wall jack. If the cable looks secure, try replacing it. If that doesn't work, the problem might be in your building's phone installation. To test the building installation, plug a phone into your modem's phone wall jack and listen for a dial tone. If you hear a dial tone, your modem might be installed behind a corporate phone system (PBX) with an internal dial tone that sounds different from the normal dial tone. In that case, the modem might not recognize the dial tone and might treat it as an error. Check your PBX manual to see if you can change the internal dial tone; if you can't, change your modem's initialization string to replace **X4** with **X3**, which will cause the modem to ignore dial tones (note, however, that **X3** is not allowed in some countries, such as France and Spain).
- ✓ If the modem reports *BUSY*, the other number might be busy, in which case you should try again later, or it might indicate that you have failed to add a **9**, prefix to the phone number if you must dial **9** for an outside line.

If you must dial **9** to get an outside line, the easiest way to dial it automatically is to include it in the modem's dial prefix, e.g., **ATDT9**. Note the comma, which inserts a pause before the number is dialed. By inserting **9**, into the dial prefix, you do not have to include it in each directory entry.

To change the dial prefix in Windows 95 HyperTerminal, select **Connect** from the **Call** menu, click **Dialing Properties**, and type **9** in the local and long distance boxes in **How I dial from this location**.

- ✓ If the modem reports *NO ANSWER*, the other system has failed to go off-hook, or you might have dialed a wrong number. Check the number.
- ✓ If the modem reports *NO CARRIER*, the phone was answered at the other end, but no connection was made. You might have dialed a wrong number, and a person answered instead of a computer, or you might have dialed the correct number but the other computer or software was turned off or faulty. Check the number and try again, or try calling another system to make sure your modem is working. Also, try calling the number on your telephone. If you hear harsh sounds, then another modem is answering the call, and the modems might be having problems negotiating because of modem incompatibilities or line noise. Try connecting at a lower speed.

The Modem Disconnects While Online

- ✓ If you have Call Waiting on the same phone line as your modem, it can interrupt your connection when someone tries to call you. If you have Call Waiting, disable it before each call. In most phone areas in North America, you can disable Call Waiting by preceding the phone number with ***70** (check with your local phone company).

You can automatically disable Call Waiting by including the disabling code in the modem's dial prefix (e.g., **ATDT*70**,—note the comma, which inserts a pause before the number is dialed). To change the dial prefix in Windows Terminal, select **Settings | Modem Commands**. To change it in HyperTerminal, select **Connect** from the **Call** menu, click **Dialing Properties**, check **This location has Call Waiting**, and select the correct code for your phone service.

- ✓ If you have extension phones on the same line as your modem, you or someone else can interrupt the connection by picking up another phone. If this is a frequent problem, disconnect the extension phones before using the modem, or install another phone line especially for the modem.
- ✓ Check for loose connections between the modem and the computer, the phone jack, and AC power.
- ✓ You might have had a poor connection because of line conditions or the problem might have originated on the other end of the line. Try again.
- ✓ If you were online, it might have hung up on you because of lack of activity on your part or because you exceeded your time limit for the day. Try again.

The Modem Cannot Connect When Answering

- ✓ Autoanswer might be disabled. Turn on autoanswer in your data communications program or send the command **ATS0=1** (**ATS0=2** if you have Caller ID service) to your modem in terminal mode.

There Are Garbage Characters on the Monitor

- ✓ Your computer and the remote computer might be set to different word lengths, stop bits, or parities. If you have connected at 8-N-1, try changing to 7-E-1, or vice-versa, using your communications program.
- ✓ You might be experiencing line noise. Enable error correction, if it is disabled, or hang up and call again; you might get a better connection the second time.
- ✓ Try entering the **&V1** command to display information about the last connection, making a screen print of the connection statistics, and checking for parameters that might be unacceptable.

The Modem Doesn't Work with Caller ID

- ✓ Caller ID information is transmitted between the first and second rings, if the modem is set to answer after only one ring (**S0=1**), the modem will not receive Caller ID information. Check your initialization string, and if necessary change it to set the modem to answer after the second ring (**S0=2**).
- ✓ Make sure that you have Caller ID service from your telephone company.

Appendix A - Warranty, Service, and Technical Support

Limited Warranty

Multi-Tech Systems, Inc. (MTS) warrants that this product will be free from defects in material or workmanship for a period of ten years from the date of purchase or, if date of purchase is not provided, ten years from the date of shipment.

MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

This warranty does not apply to any products that have been damaged by lightning storms, water, or power surges, or that have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products that prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory with transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

Online Warranty Registration

If you have access to the World Wide Web, you can register your Multi-Tech product online at the following URL:

<http://www.multitech.com/TOOLS/FORMS/register/warranty.asp>

Service

North American Products

In the event that service is required, products may be shipped, freight prepaid, to our Mounds View, Minnesota, factory. Please send modems that require repairs to the following address:

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112
U.S.A.

Attn: Repairs, Serial # _____

A Returned Materials Authorization (RMA) is not required. Return shipping charges (surface) will be paid by MTS. Please include inside the shipping box a description of the problem, a return shipping address (must have street address, not P.O. Box), a telephone number, and if the product is out of warranty, a check or purchase order for repair charges.

Extended two-year overnight replacement agreements are available for selected products. Please refer to our Overnight Replacement Agreement at <http://www.multitech.com/PARTNERS/Programs/orc/DEFAULT.asp> for details on rates and coverages. Please direct your questions regarding technical matters, product configuration, verification that the product is defective, etc., to our Technical Support department at 800 972-2439.

Please direct your questions regarding repair expediting, receiving, shipping, billing, etc., to our Repair Accounting department at 800 328-9717 or 763 785-3500.

Repairs for damages caused by lightning storms, water, power surges, incorrect installation, physical abuse, or user-caused damages are billed on a time-plus-materials basis.

International Products

Your distributor should contact Amex, Inc., for information about repairs for your Multi-Tech product:

Amex, Inc.
2724 Summer Street NE
Minneapolis, MN 55413
U.S.A.
Tel: +612 331-3251
Fax: +612 331-3180

Please direct questions regarding technical matters, product configuration, verification that the product is defective, etc., to our Technical Support department nearest you (see Technical Support below). When calling the U.S., please direct questions regarding repair expediting, receiving, shipping, billing, etc., to our Repair Accounting department at 763 785-3500.

Repairs for damages caused by lightning storms, water, power surges, incorrect installation, physical abuse, or user-caused damages are billed on a time-plus-materials basis.

Replacement Parts

SupplyNet, Inc. can supply you with replacement power supplies, cables, and connectors for select Multi-Tech products. You can place an order with SupplyNet via mail, phone, fax, or the Internet at the following addresses:

Mail: SupplyNet, Inc.
613 Corporate Way
Valley Cottage, NY 10989
Phone: 800- 826-0279
Fax: 914-267-2420
Email: info@thesupplynet.com
Internet: <http://www.thesupplynet.com>

Technical Support

Multi-Tech Systems has an excellent staff of technical support personnel available to help you get the most out of your Multi-Tech product. If you have any questions about the operation of this unit, please call 800 972-2439 (USA and Canada) or 763 785-3500 (international and local). Please have modem information available. You can also contact Technical Support by email at the following addresses:

U.S., Canada, and Europe: support@multitech.com
France: support@multitech.fr
India: support@multitechindia.com
U.K.: support@multitech.co.uk

Recording Modem Information

Complete the following information about your Multi-Tech modem before calling Technical Support.

Modem Model No.: _____

Modem Serial No.: _____

The model and serial numbers are printed on the bottom of the modem.

Note the status of the modem before calling Technical Support. The status includes information about LED indicators, screen messages, diagnostic test results, problems with a specific application, etc.

Internet Sites

Multi-Tech has a Web site at:
<http://www.multitech.com>
and an ftp site at:
<ftp://ftp.multitech.com>

Appendix B - Regulatory Compliance

FCC Part 15

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

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

This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement Canadien sur le matériel brouilleur.

FCC Part 68 Telecom

1. This equipment complies with part 68 of the Federal Communications Commission Rules. On the outside surface of this equipment is a label that contains, among other information, the FCC registration number. This information must be provided to the telephone company.
2. The suitable USOC jack (Universal Service Order Code connecting arrangement) for this equipment is shown below. If applicable, the facility interface codes (FIC) and service order codes (SOC) are shown.
3. An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. See installation instructions for details.
4. The ringer equivalence number (REN) is used to determine the number of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed 5.0. To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local telephone company.
5. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
6. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.
7. If trouble is experienced with this equipment (the model of which is indicated below) please contact Multi-Tech Systems, Inc. at the address shown below for details of how to have repairs made. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.
8. No repairs are to be made by you. Repairs are to be made only by Multi-Tech Systems or its licensees. Unauthorized repairs void registration and warranty.
9. This equipment should not be used on party lines or coin lines.
10. If so required, this equipment is hearing-aid compatible.

Manufacturer:	Multi-Tech Systems, Inc.
Trade Name:	MultiModem
Model Number:	MT5656ZDX
Registration No:	US:AN7M501B56ZDX
Ringer Equivalence No:	0.3B
Modular Jack (USOC):	RJ11C or RJ11W (single line)
Service Center in USA:	Multi-Tech Systems, Inc. 2205 Woodale Drive Mounds View, MN 55112

Fax Branding Statement

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 the following information:

- Date and time the message is sent
- Identification of the business or other entity, or other individual sending the message
- Telephone number of the sending machine or such business, other entity, or individual

This information is to appear in a margin at the top or bottom of each transmitted page or on the first page of the transmission. (Adding this information in the margin is referred to as *fax branding*.)

Since any number of fax software packages can be used with this product, the user must refer to the fax software manual for setup details. Typically the fax branding information must be entered via the configuration menu of the software.

Canadian Limitations Notice

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

Notice: The Industry Canada label identifies certificated equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Industry Canada label 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. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be made by an authorized Canadian maintenance facility 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.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

U.S.A.
(763) 785-3500
(763) 785-9874 Fax

International Modem Restrictions

Some dialing and answering defaults and restrictions may vary for international modems. Changing settings may cause a modem to become non-compliant with national telecom requirements in specific countries. Also note that some software packages may have features or lack restrictions that may cause the modem to become non-compliant.

EMC, Safety, and R&TTE Directive Compliance



The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

- Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility;
and
- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits;
and
- Council Directive 1999/5/EC of 9 March on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

New Zealand Telecom Warning Notice

1. The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

This equipment is not capable under all operating conditions of correct operation at the higher speed which it is designated. 33.6 kbps and 56 kbps connections are likely to be restricted to lower bit rates when connected to some PSTN implementations. Telecom will accept no responsibility should difficulties arise in such circumstances.

2. Immediately disconnect this equipment should it become physically damaged, and arrange for its disposal or repair.
3. This modem shall not be used in any manner which could constitute a nuisance to other Telecom customers.
4. This device is equipped with pulse dialing, while the Telecom standard is DTMF tone dialing. There is no guarantee that Telecom lines will always continue to support pulse dialing.

Use of pulse dialing, when this equipment is connected to the same line as other equipment, may give rise to 'bell tinkle' or noise and may also cause a false answer condition. Should such problems occur, the user should not contact the Telecom Faults Service.

The preferred method of dialing is to use DTMF tones, as this is faster than pulse (decadic) dialing and is readily available on almost all New Zealand telephone exchanges.

5. Warning Notice: No '111' or other calls can be made from this device during a mains power failure.
6. This equipment may not provide for the effective hand-over of a call to another device connected to the same line.
7. Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. The associated equipment shall be set to operate within the following limits for compliance with Telecom's Specifications:

For repeat calls to the same number:

- There shall be no more than 10 call attempts to the same number within any 30-minute period for any single manual call initiation, and
- The equipment shall go on-hook for a period of not less than 30 seconds between the end of one attempt and the beginning of the next attempt.

For automatic calls to different numbers:

- The equipment shall be set to ensure that automatic calls to different numbers are spaced such that there is no less than 5 seconds between the end of one call attempt and the beginning of another.

For automatically answered incoming calls:

- The equipment shall be set to ensure that calls are answered between 3 and 30 seconds of receipt of ringing.

8. For correct operation, total of the RN's of all devices connected to a single line at any time should not exceed 5.

South African Notice

This modem must be used in conjunction with an approved surge protection device.

Appendix C - Technical Specifications

The MultiModemZDX modem meets the following specifications:

Trade Name	MultiModemZDX™
Model Number	MT5656ZDX
Server-to-Client Data Rates	V.90 speeds when accessing a V.90 or V.92 server (actual speed depends on server capabilities and line conditions)*
Client-to-Server Data Rates	Up to 50Kbps when accessing a V.92 server (actual speed depends on server capabilities and line conditions); otherwise, the same as client-to-client data lines.
Client-to-Client Data Rates	33600,31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
Fax Data Rates	14400, 12000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
Data Format	Serial, binary, asynchronous
Modem Compatibility	ITU-T V.92,V.90, V.34 enhanced, V.34, V.34bis, V.32, V.22bis, V.22; Bell 212A and 103; ITU-T V.21; V.42, V.42bis, V.44
Fax Compatibility	ITU-T "Super" Group 3, Class 1.0, 2.0, 2.1, T.4, T30, V.21, V.27ter, V.29, V.34, V.17; TIA/EIA 578 Class 1,2, TR29.2
Video Compatibility	ITU-T V.80 for H.34 video conferencing
Voice Compatibility	AT+V/TAM command set
Voice Mode Sampling	Up to 44.100 KHz (down-sampled to 11.025KHz)
Error Correction	ITU-T V.42 (LAP-M or MNP 4)
Data Compression	ITU-T V.44 (4:1 throughput), V.42bis (4:1 throughput), MNP 5 (2:1 throughput)
Speed Detection	Automatic speed detection and switching between available speeds
Speed Conversion	Serial port data rates adjustable to 300; 1200; 2400; 4800; 9600; 19,200; 38,400; 57,600; 115,200 bps
Mode of Operation	Fax online modes, full duplex data over dial-up; voice
Flow Control	XON/XOFF (software), RTS/CTS (hardware)
Intelligent Features	Plug and play, full AT command compatible, autodial, redial, repeat dial, pulse or tone dial, dial pauses, auto answer, adaptive answer; EIA extended automode; caller ID, adaptive line probing; automatic symbol and carrier frequency during start-up, retrain and rate renegotiation, DTMF detection, call status display, auto-parity and data rate selections, keyboard-controlled modem options, non-volatile memory, US Caller ID reporting; quick-connect startup

*Though these modems are capable of 56K bps download performance, line impairments, public telephone infrastructure and other external technological factors currently prevent maximum 56K bps connections.

Command Buffer	40 Characters
Transmission Level	-11 dBm (North America and Pan Euro) - varies by country setting
Frequency Stability	±0.01%
Receiver Sensitivity	-43 dBm under worst-case conditions
AGC Dynamic Range	43 dB
Connectors	Two RJ-11 phone jacks, DB25F RS-232C connector, power connector
Cables	One modular telephone cable (USA); country-specific cord for UK and International models; one 9-pin to 25-pin serial cable for UK and International models; external power transformer and cord
Diagnostics	Local analog loop, local digital loop, remote digital loop
Speaker	Speaker for call progress monitoring
Speaker and Microphone Jacks	MultiModemZDXV
Manual Controls	Power switch
Environmental	Temperature range 0°–50°C (32°–120°F); humidity range 20–90% (non-condensing)
Storage Temperature	-10° to +85°C (14°- 185° F)
Power Consumption	150 mA @ 9 VDC
Dimensions	10.8 cm wide x 14.8 cm long x 2.9 high (4.25" × 5.8" x 1.15")
Weight	224 g (8 oz)
Operating Systems	Tested for use with Windows 95, 98, NT, and 2000, and Linux (2.2.x kernel)
Limited Warranty	10 years

Appendix D - Installing a Modem in Linux

This appendix explains how to install a modem on a PC operating under the RedHat Linux 6.2 operating system. Other versions of RedHat and other Linux operating systems should be similar. Briefly, in Linux, you do not need drivers for most standard external modems and most internal ISA bus modems. Programs in Linux commonly call upon the port, rather than the modem.

Standard Linux Serial Port Definitions

Port	Linux Port
Com 1	ttyS0
Com 2	ttyS1
Com 3	ttyS2
Com 4	ttyS3

Installation

Connect the external modem to an available serial port.

Setup

This section describes how to make sure Linux can talk to the modem and be able to dial up to the Internet.

Using the terminal program Minicom to verify operation

1. At the command prompt, type **minicom -s** and press **ENTER**.
2. Select **Serial port setup** and press **ENTER**.
3. From **Serial port setup**, use the **A** key to access **Serial Device**, and then press **ENTER**.
4. Press **Esc**.
5. You are now in the Minicom terminal. Type **AT** and press **ENTER**. The screen should display **OK** to verify the operation. Alternately, dial a phone number to verify line operation
6. To leave Minicom, press **CTRL + A**, and then press **Z**.
7. On the help menu, press **X** to exit.

Using the modem to call the Internet

Linux allows different graphic user interfaces (GUI). In the following steps, we'll use the Gnome Desktop GUI and assume that the Internet Service Provider (ISP) you are calling assigns you the Domain Name Service (DNS) and Internet Protocol (IP) addresses. For more information on DNS or IP, see the Linux OS owner's manual or contact your ISP.

1. On the Task Bar at the bottom of the screen, select the Gnome Footprint.
2. Select **Internet** from the menu.
3. Select **Dialup Configuration Tool**.
4. Select **Add**, and then click **Next**.
5. Enter the connection name and phone number, and then click **Next**.
6. Enter your user name and password, and then click **Next**.
7. Select **Normal ISP** if your ISP is not listed, and then click **Next**.
8. Click **Finish**.

Calling the ISP

1. On the Task Bar at the bottom of the screen, select the Gnome Footprint.
2. Select **Internet** from the menu.
3. Select **RH PPP Dialer**.
4. Select the connection name you entered in step 5 of the previous section.
5. Click **OK**.

That's basically it. Linux can use different programs and desktops depending on who made the Linux operating system and what version it is. The above procedures use the most commonly installed components of Red Hat 6.2. More details can be found in in the Linux OS owner's manual.

To use the system for answering calls, Linux requires other programs to be installed, such as Mgetty, Mgetty+Sendfax and others, depending what you require. Each vendor of Linux usually has more than adequate information on installing these programs.

Appendix E - Upgrading the Modem

Your modem is controlled by semi-permanent software, called *firmware*, which is stored in flash memory. Firmware is nonvolatile; that is, it remains stored in memory when the modem is turned off. However, it can be changed by either the manufacturer or the user as bugs are fixed or new features are added.

Since the firmware in your modem is stored in flash memory, you can upgrade it yourself in a few minutes by using the following procedures.

Upgrade Overview

The upgrade procedure consists of the following steps, which are described in greater detail in the following sections.

1. Identify the model number and firmware version of your modem.
2. Identify the current version of the firmware at the Multi-Tech Web site. If your modem already has the current firmware, there is no need to update it.
3. Download the upgrade file for your modem.
4. Extract the firmware .HEX file and the appropriate flash upgrade program from the file you downloaded.
5. Document and clear your stored parameters.
6. Upgrade the modem's firmware using the .HEX file and the flash upgrade program.
7. Restore your parameters.

Step 1: Identify the Modem Firmware

You must know the model number and firmware version of your Multi-Tech modem to know whether or not you should update it.

1. Run your favorite terminal program. If you are using Windows 95, 98, 2000 or Windows NT, you can use HyperTerminal. If you are using Windows 3.1, you can use Windows Terminal.
2. In the program's terminal window, type **AT&F**. Even if you cannot see the **AT&F** command on your screen, be sure to type it completely, and then press ENTER. If the modem does not respond with **OK**, repeat the **AT&F** command.
3. Now type **ATI3** and record your results. The firmware version should appear first in the response, which should look **similar** to the following:
V2.300G-V90_2M_DLS

Step 2: Identify the Current Firmware Version

Identify the current version of the firmware at the Multi-Tech Web site. If your modem already has the current firmware, there is no need to update it.

1. Using your favorite Web browser, go to <http://www.multitech.com/support/MultiModemZDX/firmware.asp>.
2. Scroll down the table to your modem model number.
3. Look at the firmware version number for your modem.
4. If the firmware version number matches the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has the current firmware version, and does not need to be updated.
5. If the firmware version number is greater than the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has an older firmware version. Continue with "Step 3: Download the Upgrade File."

Warning: The first digit of the new firmware must match the first digit of the old firmware, or the modem may not work properly; e.g., if your current firmware version is 4.16, replace it only with 4.xx firmware, not 6.xx firmware.

Step 3: Download the Upgrade File

1. If you are not already at the MultiModemZDX firmware page of the Multi-Tech Web site, follow the procedure in "Step 2: Identify the Current Firmware."
2. Download the upgrade file for your modem by clicking its name, and save the file in a temporary folder on your hard disk.
3. In the same section of the Web page, download the Flash Wizard utility for your operating system by clicking it, and save it in the same folder.

Step 4: Extract the Upgrade Files

1. Install the Flash Wizard utility by double-clicking the file name in Windows Explorer.
2. Extract the upgrade files by double-clicking the file name. The extracted files include a .HEX file, which contains the upgrade data, and a Readme file.
3. Copy the upgrade .S37 file into the Flash Wizard folder, which, in a default installation, is at C:\Program Files\MultiTech Systems\Flash Wizard\.

Step 5: Upgrade the Modem's Firmware

Before you begin the following procedure, read the README.TXT file extracted from the upgrade archive file. Note the file name for the boot code (e.g., 2MBPFL11.S37) and the file name for the new firmware (e.g., BkQg300G.hex).

Warning: Never install an older version of firmware over a newer version. Doing so will destroy the Flash PROM! If the Flash PROM is destroyed, the modem must be sent in for repair.

1. Run Flash Wizard by double-clicking its icon or file name, or by selecting it from the Start menu. The **Identifying Devices** dialog box is displayed as Flash Wizard locates and identifies the devices connected to your system.
Note: If the message *ERROR: No valid devices detected* is displayed, verify that the device is powered on and that all cables are correctly and securely attached.
2. Click the modem to be upgraded, and then click **Next** to proceed.
3. Select the port to be upgraded from the **Port** list, select the appropriate .HEX file from the **Hex File** list, and then click **Next** to continue.
Note: Do not use FLASHLDR.HEX. This file is used internally by Flash Wizard.
4. The **Progress** dialog box appears, showing a status bar that indicates the progress of the upgrade.
Caution: Any disruption of the program during this stage of the upgrade can cause your modem to become inoperable. Wait for the **Next** button to become active before proceeding.
5. When the flash upgrade is complete, the message *Programming Complete* appears. Click **Next** to continue.
6. The **Results** dialog box appears next. Click **Finish** to exit Flash Wizard.

Step 6: Restore Your Parameters

Your modem has been updated. You can now open your terminal program to reprogram your modem parameters or to confirm the update by typing **AT+I3** in the terminal window and pressing ENTER.

Index

A

AT Commands	14
autoanswer	18
autobaud	12

B

baud rate	12
-----------------	----

C

Call Waiting	18
Caller ID	18
Canadian Limitations Notice	22
communication programs	16
connect messages	12
connecting the modem	6

D

driver installation	9
DTE rate	12

E

EMC, Safety, and R&TTE Directive Compliance	23
---	----

F

Fax Branding Statement	22
FCC Part 15	21
FCC Part 68 Telecom regulation	21
firmware upgrading	28
flash memory	28
Flash PROM	29
Flash Wizard	29
Flash Wizard upgrade utility	28
front panel	11

I

indicators	11, 15
initialization strings	12
installation and setup	5
Installing a Modem in Linux	26
installing the modem driver	9
International Modem Restrictions	22
International Products	20
Internet Sites	20

L

LED indicators	11
Limited Warranty	19
line connection	6

Linux OS	26
Load Factory Settings command	12

M

modem driver installation	9
---------------------------------	---

N

New Zealand Telecom Warning Notice	23
None of the Indicators Light	15
North American Products	19

O

Online Warranty Registration	19
------------------------------------	----

P

patch cord for sound card	8
---------------------------------	---

R

rcording your modem information	20
registering your product	19
Regulatory Compliance	21
removing a modem from Windows	9
Replacement Parts	20
result codes	17

S

safety	5
Sending a fax	13
serial cable	16
serial port	12, 16
Service	19
servicing your modem	21
solving problems	15
sound card	8
sound card connection	8
South African Notice	23
speaker	
connection	8
speakerphone	8
specifications, technical	24
speed	
serial port	12
Standard Linux Serial Port Definitions	26
surge protector	7

T

Technical Specifications	24
technical support	20
telephone line	17
terminal mode	16
testing the modem	7, 17
fax	13
The Modem Cannot Connect When Answering	18

The Modem Dials But Cannot Connect	17
The Modem Disconnects While Online	18
The Modem Does Not Respond to Commands	16
The Modem Doesn't Work with Caller ID	18
There Are Garbage Characters on the Monitor	18
troubleshooting	15

U

uninstalling a modem from Windows	9
---	---

V

voice mail	8
------------------	---

W

Windows 2000	16
Windows 9x	16
Windows NT	16