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**MultiModem® ZBA**

**MT9234ZBA-USB**

**User Guide**



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# MultiModem ZBA User Guide

## MT934ZBA-USB

### S000419D Revision D

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#### Record of Revisions

<i>Revision</i>	<i>Date</i>	<i>Description</i>
C	12/15/08	Updated Windows Drivers and added Windows Server 2008 support.
	05/14/09	Added web link for warranty information.
D	09/29/09	Updated FCC statement and EMC, added info on when the power LED comes on, and Thailand approval.

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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; 7082106; 7082141; 7092406 . Other patents pending.

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#### Contacting Multi-Tech Support

In order to better serve our customers, manage support requests and shorten resolution times, we have created the online web portal allowing you to submit questions regarding Multi-Tech products directly to our technical support team. Get answers to your most complex questions, ranging from implementation, troubleshooting, product configuration, firmware upgrades and much more.

To create an account and submit a Support Case on the Portal, visit [support.multitech.com](http://support.multitech.com)

#### Online Web Portal [support.multitech.com](http://support.multitech.com)

The Knowledge Base provides immediate answers to your questions and gives you access to support resolutions for all Multi-Tech products. Visit our support area on the website for other support services.

#### Knowledge Base and Support Services [www.multitech.com/en\\_US/SUPPORT](http://www.multitech.com/en_US/SUPPORT)

#### Technical Support

Business Hours: M-F, 9am to 5pm CST

<b>Country</b>	<b>By Email</b>	<b>By Phone</b>
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U.S., Canada, all others:	<a href="mailto:support@multitech.com">support@multitech.com</a>	(800) 972-2439 or (763) 717-5863

#### Warranty

To read the warranty statement for your product, please visit:

[http://www.multitech.com/en\\_US/COMPANY/Policies/warranty/](http://www.multitech.com/en_US/COMPANY/Policies/warranty/)

# CONTENTS

<b>CHAPTER 1 – DESCRIPTION AND SPECIFICATION.....</b>	<b>4</b>
Features include:.....	4
Universal Serial Bus (USB).....	4
Package Contents .....	4
<i>AT Commands Info</i> .....	4
Technical Specifications.....	5
<b>CHAPTER 2 – INSTALLATION .....</b>	<b>6</b>
Safety Warning Telecom.....	6
Connect the Modem to Your PC .....	6
Install the Modem Driver .....	7
Installing the Modem Driver in Windows Vista.....	7
Country Configuration with Global Wizard .....	21
<b>CHAPTER 3 - OPERATION.....</b>	<b>22</b>
Front Panel .....	22
Connecting to the Internet .....	22
Internet Connection .....	23
<b>CHAPTER 4 - REMOTE CONFIGURATION.....</b>	<b>24</b>
Basic Procedure.....	24
Setup.....	24
<b>CHAPTER 5- TROUBLESHOOTING .....</b>	<b>25</b>
None of the Indicators Light.....	25
The Modem Does Not Respond to Commands .....	25
The Modem Dials But Cannot Connect.....	25
The Modem Disconnects While Online .....	26
The Modem Cannot Connect When Answering.....	26
The Modem Doesn't Work with Caller ID.....	27
Fax and Data Software Can't Run at the Same Time .....	27
<b>APPENDIX A – REGULATORY COMPLIANCE.....</b>	<b>28</b>
FCC Part 68 Telecom .....	28
FCC Part 15 .....	29
Canadian Limitations Notice.....	29
Industry Canada.....	29
International Modem Restrictions .....	30
EMC, Safety, and R&TTE Directive.....	30
South African Notice.....	30
<b>APPENDIX B – WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT .....</b>	<b>31</b>
<b>APPENDIX C - C-ROHS HT/TS SUBSTANCE CONCENTRATION.....</b>	<b>32</b>
<b>APPENDIX D - LINUX INSTALLATIONS .....</b>	<b>33</b>
Introduction .....	33
Installation in Computers Using the Linux 2.4 Kernel.....	33
Installation in Computers Using the Linux 2.6 Kernel.....	38
Installation in Computers Using the Linux 2.6.20 Kernel.....	42
<b>APPENDIX E – ASCII CONVERSION .....</b>	<b>44</b>
Index.....	45



## Chapter 1 – Description and Specification

Congratulations on your purchase of the MultiModem ZBA-USB modem. Your MultiModem product data/fax modem supports remote configuration and dial-up connections. It offers V.34/33.6K fax and Error Correction Mode that reduces fax transmission time by more than half when compared to traditional fax modems. In addition, they are globally approved for use in many countries around the world. This means one model can ship virtually anywhere.

This User Guide will help you install, configure, test, and use your modem.  
Check the Multi-Tech's Web site for current versions of our product documentation.

### Features include:

- V.92/56K download speeds and 48K upload speeds when connecting with V.92 servers
- V.44 compression improves data throughput rates
- Class 1.0 and Class 2.1 faxing at speeds to V.34/33.6K bps (Super G3)
- Error Correction Mode (ECM) provides fast and reliable fax transmissions
- Windows Plug-and-Play operation
- Linux compatible
- U.S. Caller ID reporting
- Remote configuration for centralized setup and control
- Globally approved models for use in many countries worldwide
- Small footprint and stackable design
- Self-resetting lightning protection
- Flash memory for easy updates
- USB cable included
- Two-year warranty

### Universal Serial Bus (USB)

Universal Serial Bus (USB), defined by a consortium of industry leaders, permits connection of multiple low-speed and medium speed computer peripheral devices such as telephones, modems, printers, keyboards, mice, and scanners; all from a single personal computer port. The specification, based on an open architecture is quickly becoming a standard feature in new desktop and notebook computers.

### Package Contents

The MultiModem USB package contains:

- A MultiModem data/fax modem
- A set of four self-adhesive plastic feet
- One Product CD
- One USB cable
- One modular telephone cable

### AT Commands Info

The AT Commands for the MultiModem are published in a separate Reference Guide included on your product CD and posted on the Multi-Tech web site.

## Technical Specifications

Your MultiModemZBA-USB modem meets the following specifications:

<b>Trade Name</b>	MultiModem® ZBA
<b>Model Number</b>	MT9234ZBA-USB
<b>Server-to-Client Data Rates</b>	V.90 speeds when accessing a V.90 or V.92 server (actual speed depends on server capabilities and line conditions)
<b>Client-to-Server Data Rates</b>	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.
<b>Client-to-Client Data Rates</b>	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
<b>Fax Data Rates</b>	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
<b>Data Format</b>	Serial, binary, asynchronous
<b>Modem Compatibility</b>	ITU-T V.92, V.90, V.34 enhanced, V.34, V.34bis, V.32, V.32bis, V.22; Bell 212A and 103; ITU-T V.21, V.42, V.42bis, V.44
<b>Fax Compatibility</b>	ITU-T "Super" Group 3, Class 1.0, 2.0, 2.1, T.4, T.30, V.21, V.27ter, V.29, V.34, V.17; TIA/EIA 578 Class 1, 2, TR29.2
<b>Error Correction</b>	ITU-T V.42
<b>Data Compression</b>	ITU-T V.44 (4:1 throughput), V.42bis (4:1 throughput), MNP 5 (2:1 throughput)
<b>Flow Control</b>	XON/XOFF (software), RTS/CTS (hardware)
<b>Intelligent Features</b>	Plug and play; fully AT command compatible; autodial, redial, repeat dial; pulse or tone dial; dial pauses; auto answer; caller ID; EIA extended automode; 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; on-screen displays for modem option parameters; command lines of up to 40 characters each; remote configuration
<b>Command Buffer</b>	40 characters
<b>Transmit Level</b>	-12dBm (Euro/NAM) – varies by country/region setting
<b>Lightning Protection</b>	FCC Part 68 A/B surge
<b>Frequency Stability</b>	±0.01%
<b>Receiver Sensitivity</b>	-43 dBm under worst-case conditions
<b>AGC Dynamic Range</b>	43 dB
<b>Connectors</b>	USB connector; two RJ-11 phone jacks
<b>Cables</b>	One RJ11 phone cable One USB cable <b>Note:</b> Any cables connected to the computer should be shielded to reduce interference.
<b>Diagnostics</b>	Power-on self test, local analog loop, local digital loop, remote digital loop.
<b>Environmental</b>	Temperature range 0°– 50°C (32°–120°F); humidity range 20–90% (non-condensing)
<b>Dimensions</b>	10.9 cm wide x 14.5 cm long x 2.5 cm high (4.3" x 5.7" x 1.10")
<b>Weight</b>	227 g (8 oz)
<b>Limited Warranty</b>	2 year

# Chapter 2 - Installation

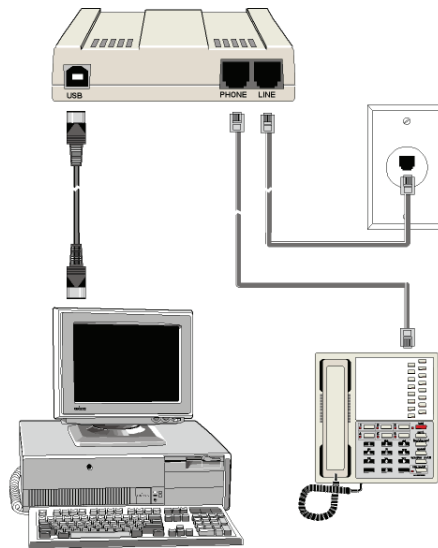
This chapter shows you step-by-step how to set up your Multi-Tech MultiModem product.

## Safety Warning Telecom

- Use this product only with UL and cUL listed computers.
- To reduce the risk of fire, use only 26 AWG (.41mm) or larger telephone wiring.
- Never install telephone wiring during a lightning storm.
- Never install a telephone jack in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone during an electrical storm. There is a risk of electrical shock from lightning.
- Do not use a telephone in the vicinity of a gas leak.
- This product must be disconnected from the telephone network interface when servicing.

## Connect the Modem to Your PC

Placing the modem in a convenient location, connect it to your computer's USB port, to the telephone line, and, optionally, to your telephone.



### USB Connection

Plug one end of the USB cable into the USB connector on the modem, and the other end into a USB port connector on your computer.

### Line Connection

Plug one end of the phone cable into the modem's LINE jack and the other end into a phone line wall jack.

**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.

**Note:** The Federal Communications Commission (FCC), and Industry Canada impose certain restrictions on equipment connected to public telephone systems. See [Appendix A](#) for more information.

### Phone Connection

For voice-only calls, you can optionally plug a telephone into the modem's PHONE jack.

## Install the Modem Driver

### Introduction

**Compatibility:** This MultiModem is compatible with Windows Operating Systems Vista/XP/2003/2008 and Linux.

**Windows Drivers:** The MultiModem product driver must be installed in your computer's program directory. The Windows drivers are located on the MultiModem product CD in the Drivers\Windows Drivers folder. A complete set of drivers for each operating system is organized into Vista and XP with either 32-bit or 64-bit processor. Most users will select either the 32-bit Vista or 32-bit XP drivers (Windows 2003 also use the XP drivers). Server users can select either 32-bit or 64-bit depending on their application. For server users to determine whether they have a 32-bit or 64-bit operating system, go to **Start | All Programs | Accessories | System Tools | Computer** and click on the **System Properties** button. Under **System** you will see **System Type: 64-bit Operating System**.

**Linux Drivers:** Linux Operating System drivers are also located on the CD in the **Drivers\Linux Folder**. Refer to the Readme file (also in the Linux directory) for the correct driver file and installation guide for your distribution/version of Linux.

**Overview of Windows Driver Installation:** Two install wizards guide you through the software Installation in this order:

**Part A** installs the Serial Port.

**Part B** installs the modem driver.

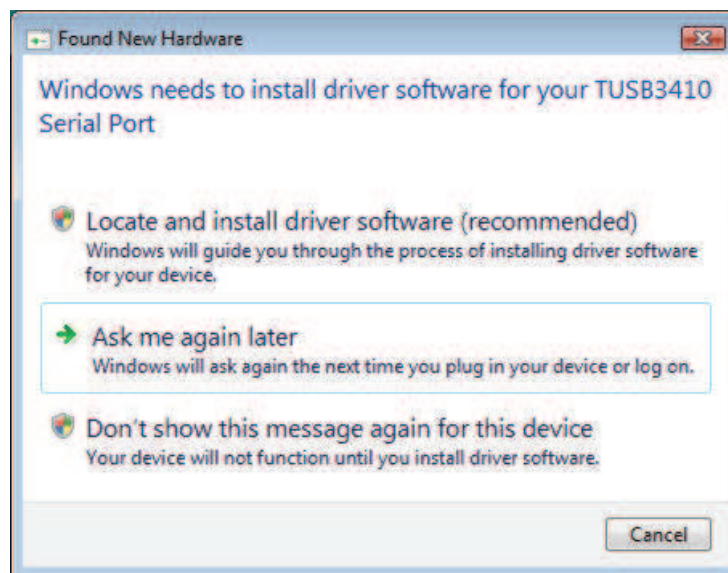
## Installing the Modem Driver in Windows Vista

### Preliminaries

1. Power up your computer.
2. If you have not already done so, connect the modem's USB cable to a USB port on the computer and connect the phone line between the modem and a telephone wall jack.
3. Windows will detect that the new modem is present.

### Driver Installation of your TUSB3410 Serial Port

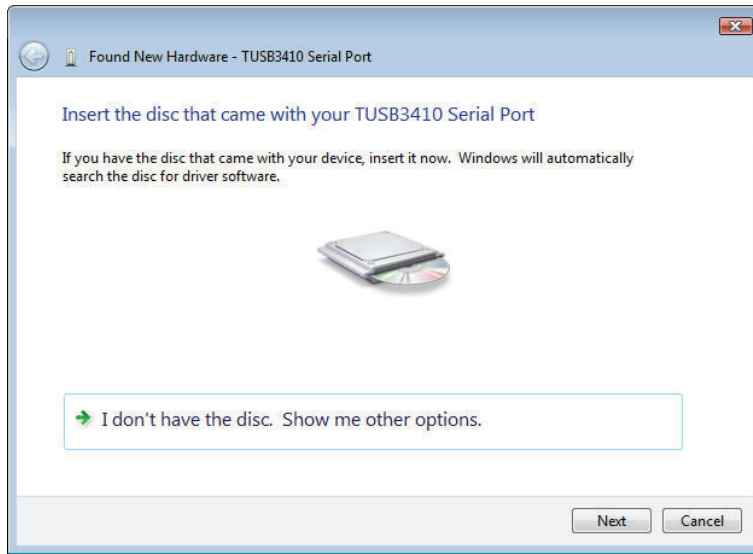
4. The Found New Hardware screen appears with Windows needs to install driver software for your TUSB3410 Serial Port.



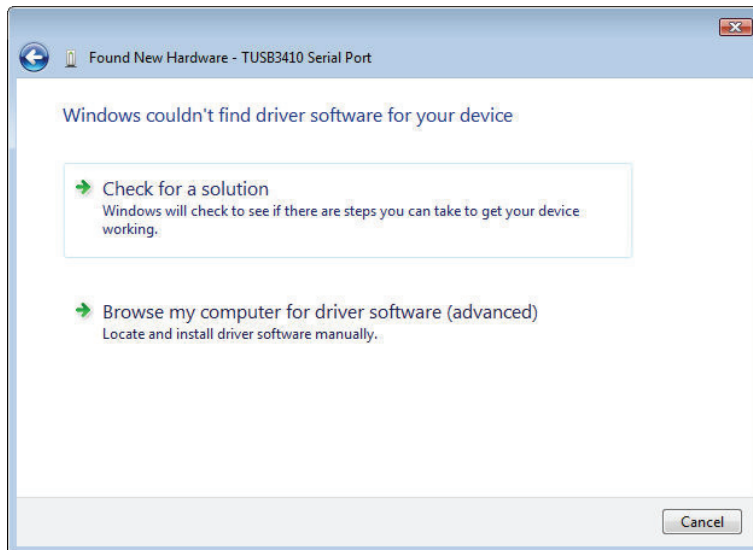
Click on **Locate and install driver software (recommended)**. Windows will guide you through the process of installing driver software for your device.



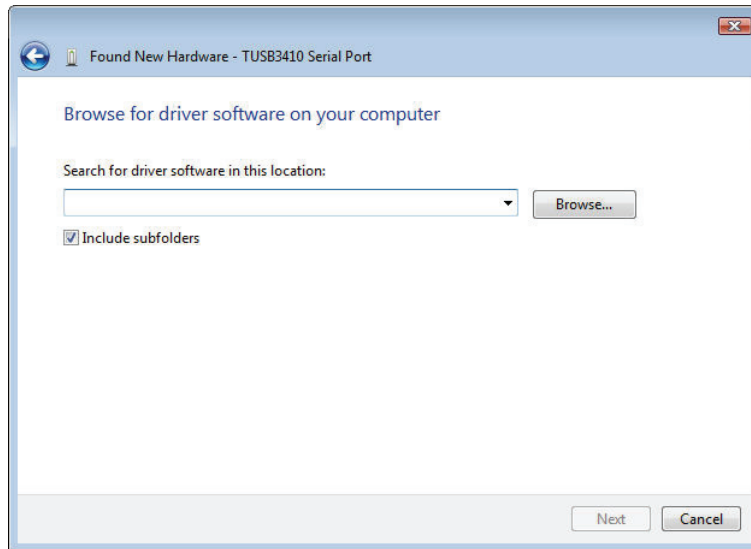
5. The next screen prompts you to insert the disc that came with your MultiModem product. If you have the disc that came with your device, insert it now. Then, click on I don't have the disc. Show me other options. Windows may prompt you to search online, but this is not necessary.



6. Choose **Browse my computer for driver software (advanced)**.

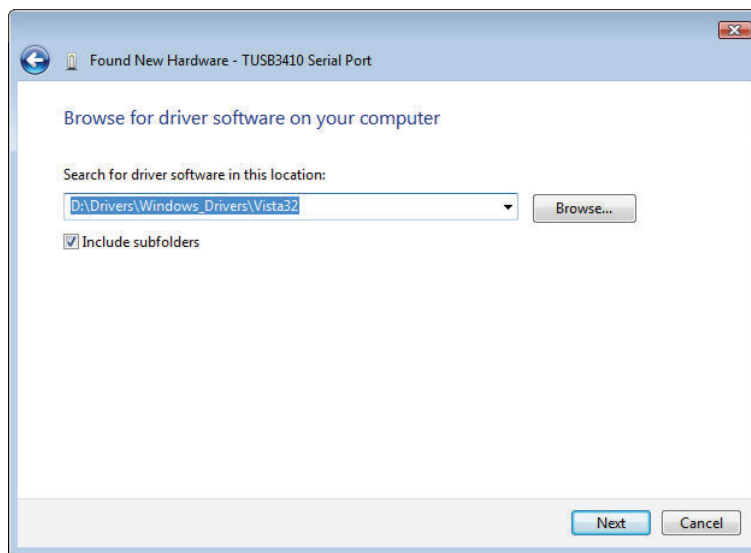


7. At the Browse for driver software on your computer screen.



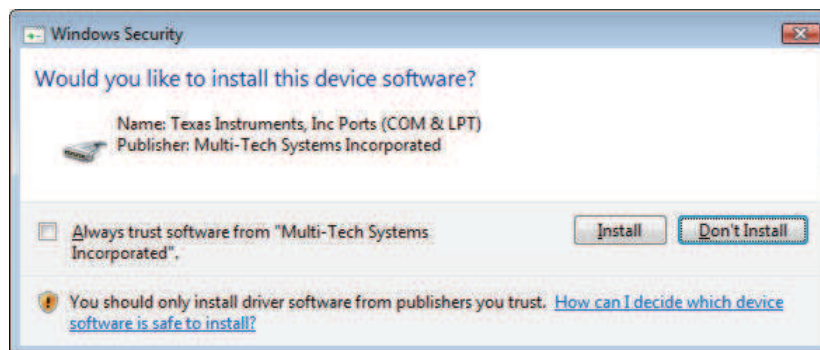
Click the **Browse** button.

8. Browse to the Drivers folder on your MultiModem product CD, then select the Windows\_Drivers folder and then the Vista32 folder. If you were installing drivers on a Vista 64-bit Operating System, you would browse to the Vista64 folder. Click OK, then



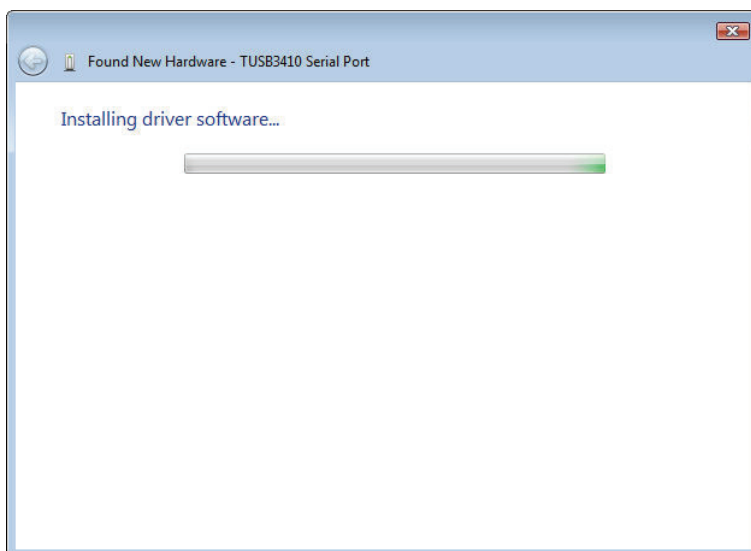
Click **Next**.

9. Would you like to install this device software? screen appears.

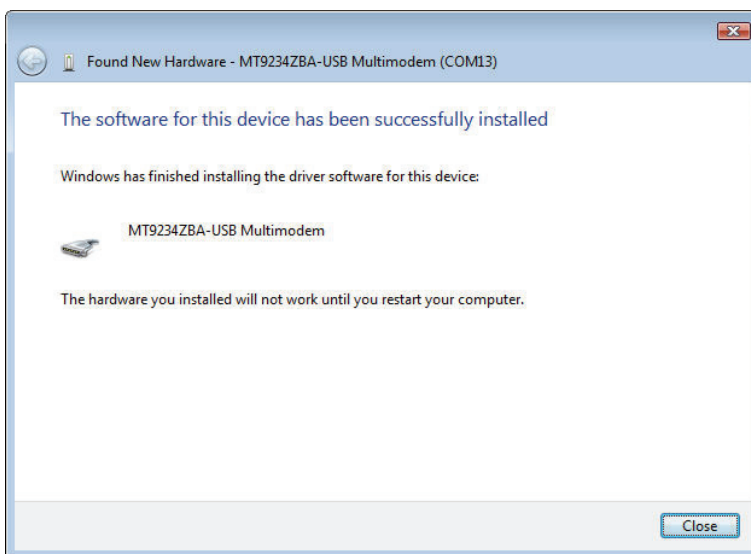


Click **Install**.

**10.** Installing driver software... screen appears.



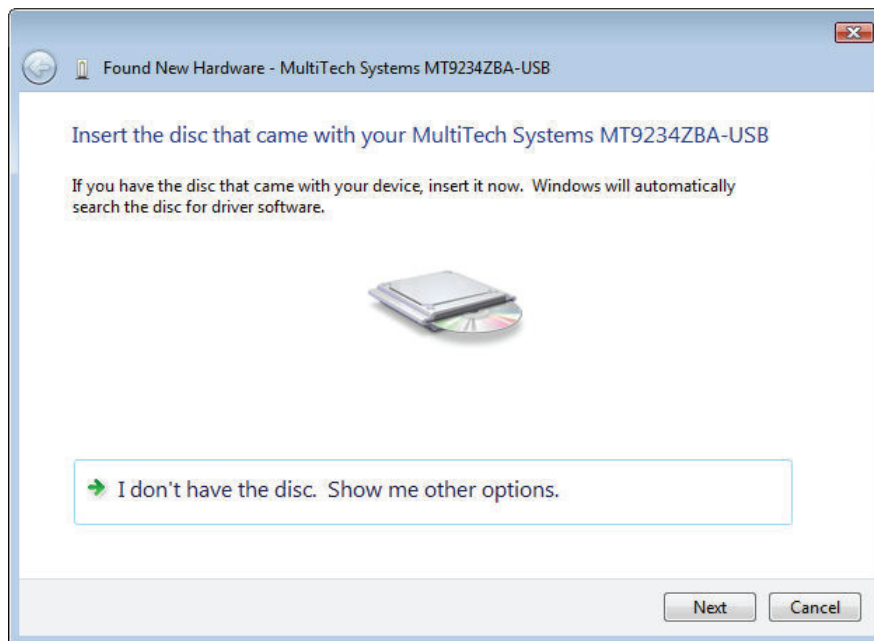
**11.** When the **software for this device has been successfully installed** screen appears with Windows has finished installing the driver software for this device: MT9234ZBA-USB Multimodem.



Click **Close**.

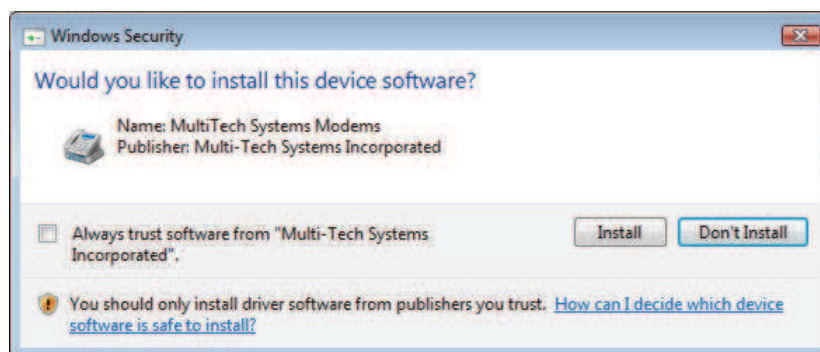
## Installation of the Modem

12. The Found New Hardware – Multi-Tech Systems MultiModem product screen appears. If you have the disc that came with your device, insert it now.



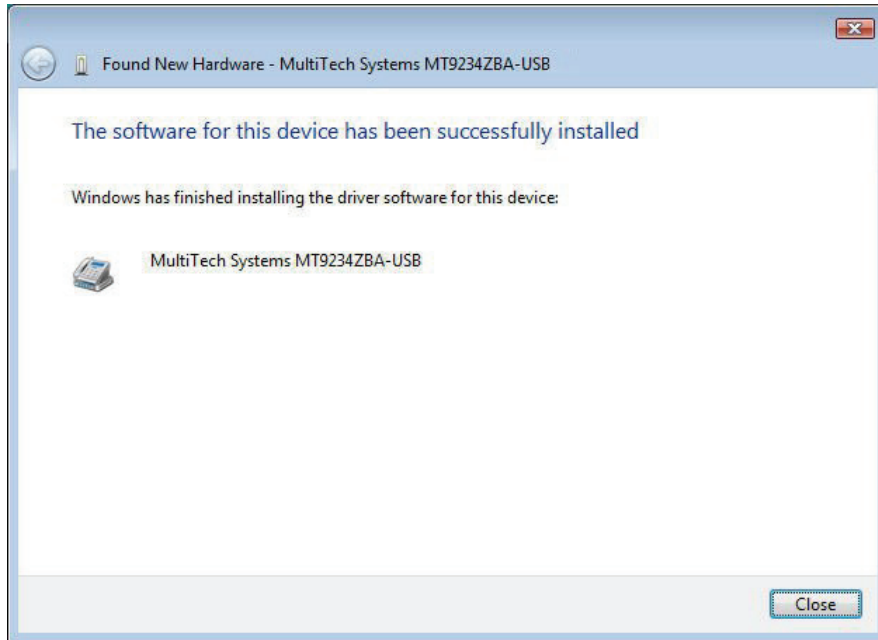
The MultiModem product CD is still in the CD ROM drive. Click **Next**.

13. Would you like to install this device software?



Click **Install**.

14. The software for this device has been successfully installed screen appears. Windows has finished installing the driver software for this device: Multi-Tech Systems MT9234ZBA-USB.



15. Click **Close**. The installation of drivers is now complete.

After installation has been completed, you should test the operation of your new MultiModem product by registering it. Key in the URL given below and follow the on-line instructions:

<http://www.multitech.com/register>



## Installing the Modem Driver in Windows Server 2008,XP,2003

This installation assumes a Windows Server 2008, XP, or 2003 operating system.

### Part A for Windows Server 2008,XP,2003: Installing the Serial Port

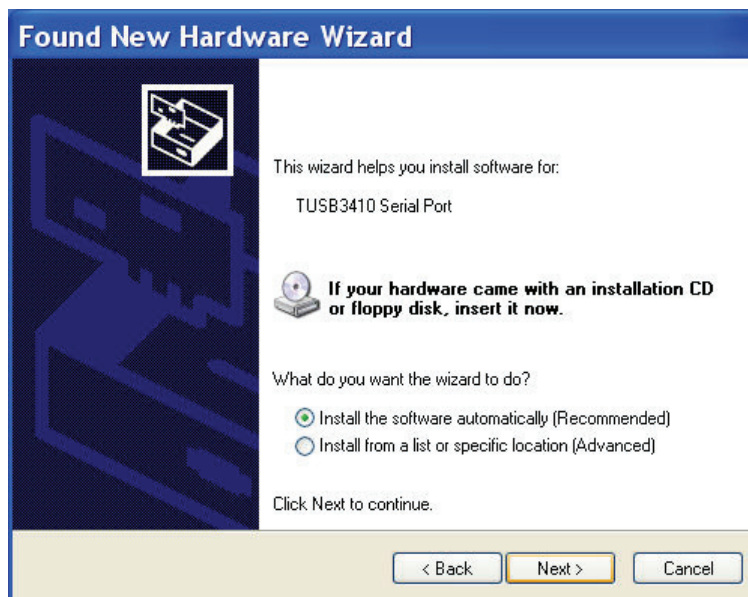
1. Connect the USB cable between the MultiModem and the PC.
2. Insert the MultiModem product CD into your CD-ROM drive. The CD uses the Autorun feature, and after a brief delay, the *MULTIMODEM PRODUCT Setup – Welcome* screen appears. Close the *Welcome* screen.

In some situations the operating system will display a Found New Hardware Wizard screen and asks you: Can Windows connect to Windows Update to search for software?



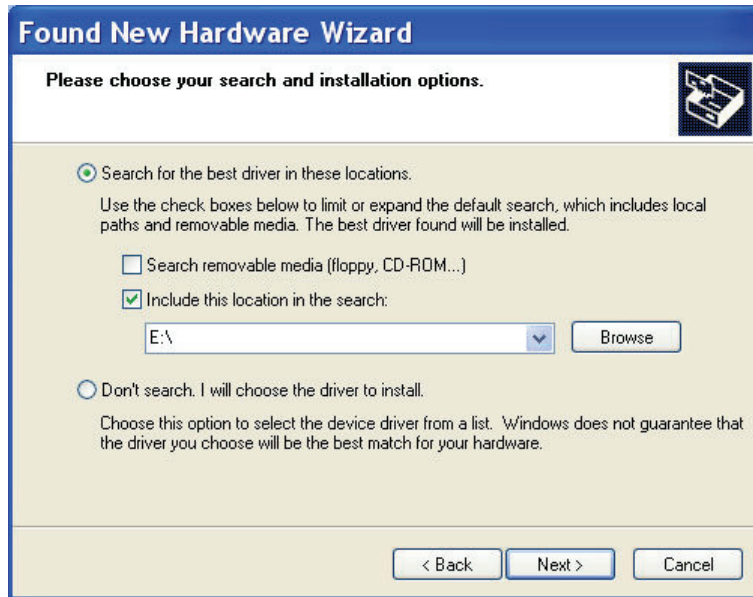
Select **No, not this time**. Then click **Next**.

3. The *Found New Hardware Wizard* screen helps you install software for – TUSB3410 Serial Port.



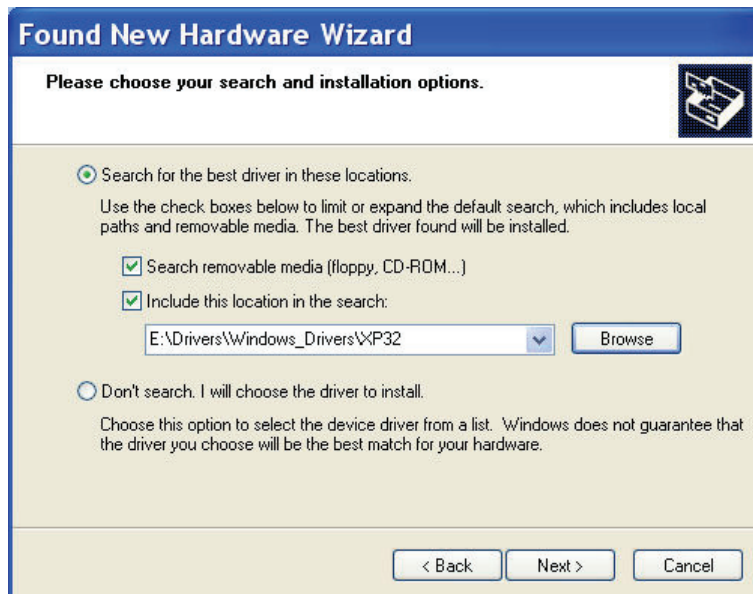
Click on **Install from a list or specific location (Advanced)**, and then click **Next**.

4. The Please choose your search and installation options appears.

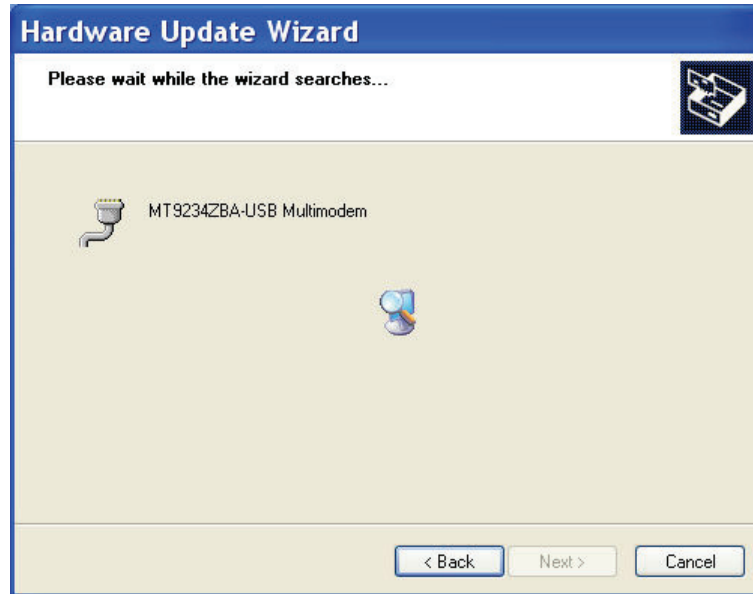


Select only **(floppy, CD-ROM...)** ensure that **Include this location in the search is selected.** Click the **Browse** button.

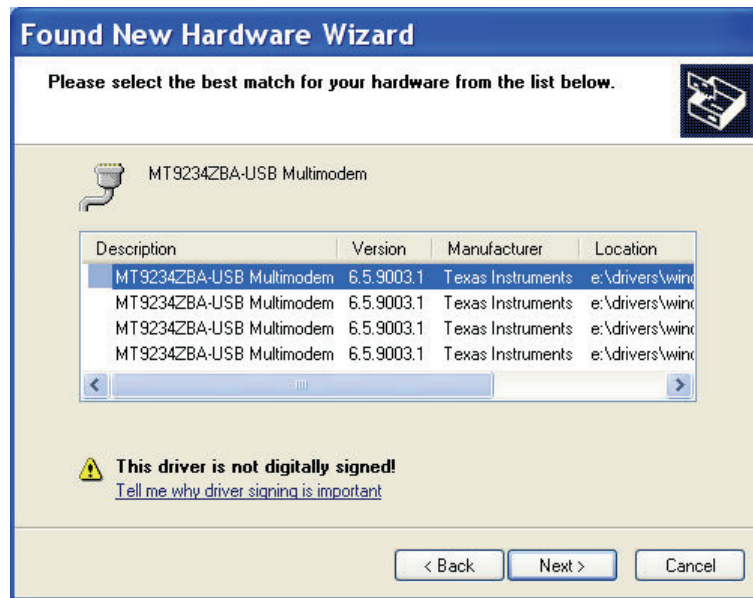
5. Browse to the Drivers folder on your MultiModem product CD, then select the Windows\_Drivers folder and then the XP32 folder. If you are installing drivers on an XP 64-bit Operating System, you would browse to the XP64 folder. Click **Next**.



6. Please wait while the wizard searches for the MT9234ZBA-USB MultiModem. This screen only appears briefly.



7. Please select the best match for your hardware from the list below.



Select **MT9234ZBA-USB MultiModem**.

8. A Windows Logo Testing screen appears.



Click **Continue Anyway**.

9. Please wait while the wizard installs the software.



10. At the Completing the Found New Hardware Wizard screen,



click **Finish**. Installation of the Serial Port is now complete.

## Part B for Windows Server 2008, XP, 2003: Installing the Modem

11. The Welcome to the Found New Hardware Wizard screen – **Can Windows connect to Windows update to search for software?**



Select **No, not this time**. Then click **Next**.

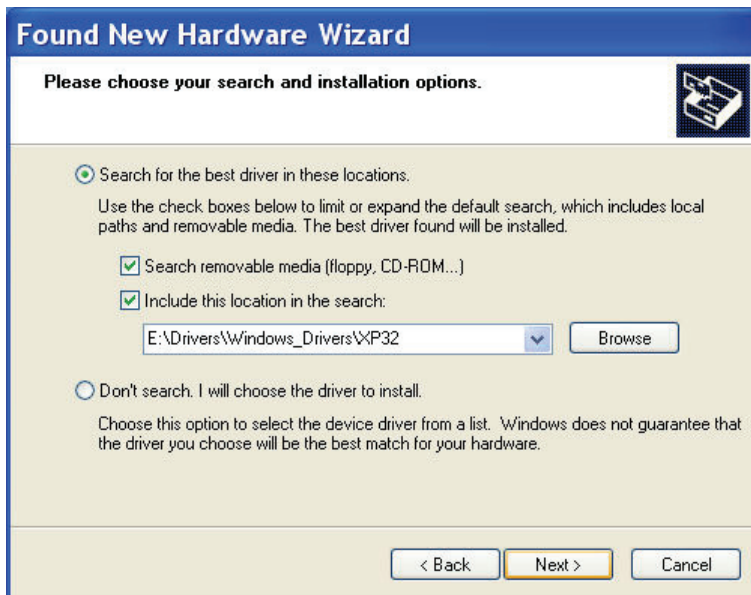


12. This wizard helps you install software for Multi-Tech MT9234ZBA-USB product.



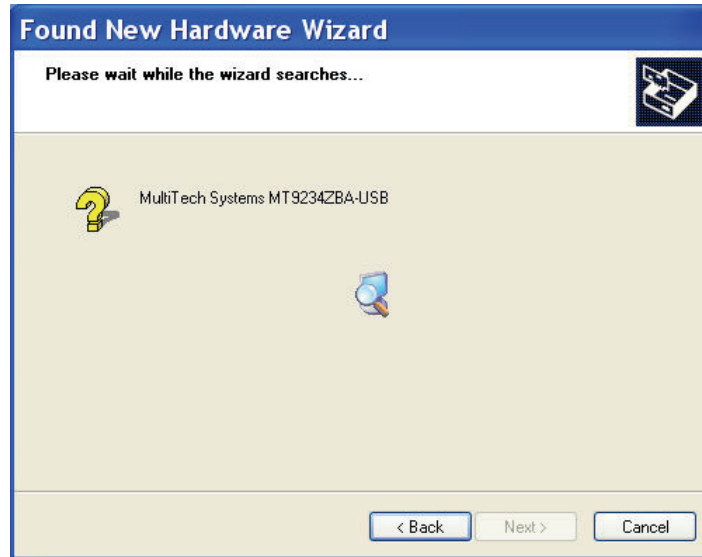
Click on **Install from a list or specific location (Advanced)**. Then click **Next**.

13. The Please choose your search and installation options screen appears.



Click **Next**.

14. Please wait while the wizard searches for the MT9234ZBA-USB screen appears. This screen only appears briefly.



15. Please select the best match for your hardware from the list below.

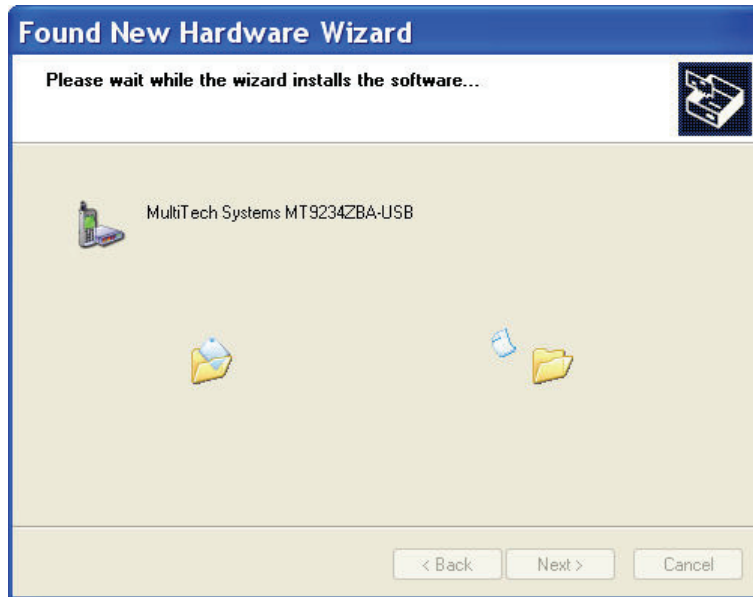


16. The final *Windows Logo Testing* screen may appear depending on operating system settings. This screen pertains to the creation of a modem entity in the operating system that accommodates the MultiModem product.

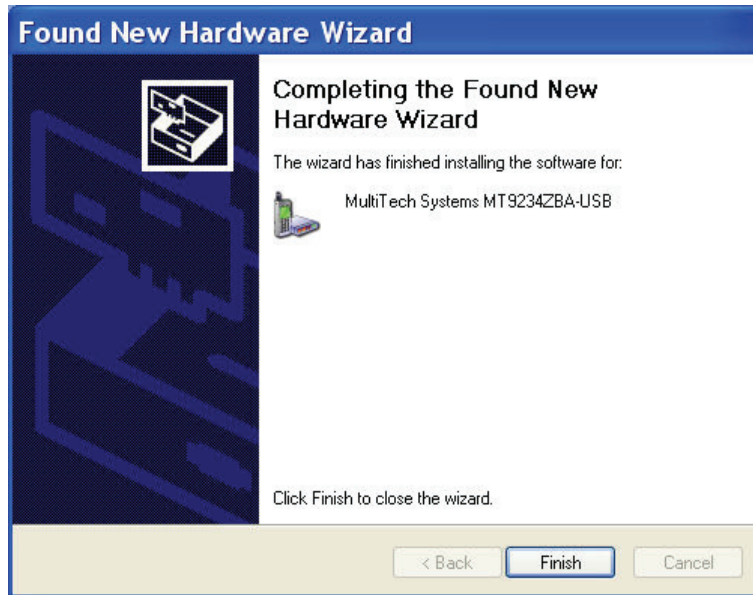


Click **Continue Anyway**.

17. Please wait while the wizard installs the software.



18. The Completing the Found New Hardware Wizard screen appears.



Click **Finish**.

With the modem .inf file successfully installed, the entire software installation procedure for the MultiModem product is complete.

After installation has been completed, you should test the operation of your new MultiModem product by registering it. Key in the URL given below and follow the on-line instructions:

<http://www.multitech.com/register>

## Country Configuration with Global Wizard

Different countries have different requirements for how modems must function. Therefore, before you use your modem, you must configure it to match the defaults of the country in which you are using it. You can use one of two configuration methods:

- Using the Global Wizard to Configure Your Modem
- Using AT Commands to Configure Your Modem

### Using the Global Wizard to Configure Your Modem

The Global Wizard configuration utility is recommended for computers running Windows Server 2008, Vista, XP, and 2003. The Global Wizard can configure your modem for a specific country with just a few mouse clicks.

1. Insert the MultiModem USB CD into the CD-ROM drive. The **Autorun** dialog box appears.
2. Click **Initial Setup and Country Selection**.
3. Choose either:
  - **Run Global Wizard from CD**. This will not load the wizard onto your hard drive, or
  - **Install Global Wizard on the HD**. This will install the wizard onto your hard drive for future use.
4. The **Global Wizard** dialog box appears. Click **Next**.
5. The Global Wizard searches for your modem and identifies it. Click **Next**.
6. Select the country in which the modem will be used and then click **Next**.
7. Review your choice of country. If it is correct, click **Next** to configure the modem.
8. When Global Wizard announces that the parameters have been set, click **Finish** to exit.

### Using AT Commands to Configure Your Modem

Non-Windows users can configure the modem using AT commands. You must enter these commands in your communication program's terminal window.

1. Run your favorite communication program and open the program's terminal window.
2. To configure the modem for a specific country, type **AT%T19,0,nn**, where **nn** is the country code in hexadecimal format, and then press ENTER. The message **OK** displays.
3. To verify the change, type **ATI9**, and then press ENTER.

The country/region code displays:

Example	Country/Region	AT command (hexadecimal)	Country code (decimal)
	Euro/NAM	AT%T19,0,34 (default)	52

The complete list of country/region codes can be found on the Multi-Tech Web site at

[http://www.multitech.com/en\\_US/PRODUCTS/Categories/Device\\_Networking/global\\_modems/configuration.asp](http://www.multitech.com/en_US/PRODUCTS/Categories/Device_Networking/global_modems/configuration.asp)

The Global Modem Country Approvals page displays. On this page you can view approvals, configuration strings and responses by country and product.

# Chapter 3 - Operation

## Front Panel

The MultiModem product has 6 LED indicators on the front panel that indicate status, configuration, and activity.

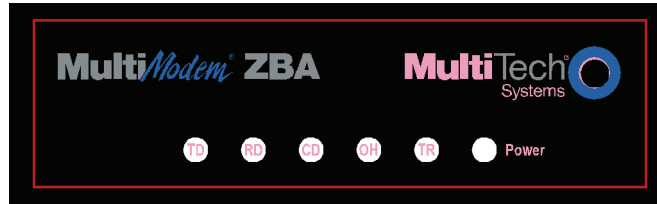


Figure 3-1. Front panel

- TD** **Transmit Data.** The TD LED flashes when the modem is transmitting data to another modem.
- RD** **Receive Data.** The RD LED flashes when the modem is receiving data from another modem.
- CD** **Carrier Detect.** The CD LED 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.** The OH LED 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.** The TR LED lights when a communications program is using the modem. It means the modem is ready for an outgoing or incoming call. It goes off when the communications program disconnects. When it goes off, a connected modem will also disconnect.
- Power.** The PWR led lights when Windows detects and initializes the modem.

## 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 e-mail and newsgroups, your ISP should also provide you with the following information:

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



## Internet Connection

Before you can connect to the Internet, you must set up a remote-node client program on your computer. Windows XP uses HyperTerminal to establish 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 can automatically open this connection. For instructions on how to set up this connection, consult your ISP or your operating system's online help or printed documentation. Many ISPs include with their service a program that will install and configure this connection automatically for you.

# Chapter 4 - Remote Configuration

Remote configuration is a network management tool that allows you to configure modems anywhere in your network from one location. With password protected remote configuration, you can issue AT commands to a remote MultiModem product for maintenance or troubleshooting as if you were on site.

## Basic Procedure

The following steps are valid regardless of whether the connection is established by the local or the remote Multi-Tech modem.

1. Establish a data connection with a remote MultiModem product.
2. Send three remote configuration escape characters followed by **AT** and the setup password, and press ENTER. Example: **%%ATMTSMODEM**. You have four tries to enter the correct password before being disconnected. If the password is correct, the remote modem responds with **OK**.
3. You can now send AT commands to configure the remote modem.
4. When you have finished configuring the remote modem, save the new configuration by typing **AT&W0**, and pressing **Enter**.
5. Type **ATO** and press **Enter** to exit remote configuration. You can then break the connection in the normal way.

**CAUTION:** If you hang up while you are in remote configuration mode, it may lock up the remote modem.

## Setup

Multi-Tech modems are shipped with a default setup password (MTSMODEM). Because anyone who has an owner's manual knows the default setup password, for security you should change the password and possibly also the remote configuration escape character.

### Changing the Setup Password

1. Open a data communications program such as Phone Tools or HyperTerminal.
2. To change the password, type **AT#S=xxxxxxx**, where xxxxxxxx stands for the password, and press ENTER. The password can include any keyboard character, and must be one to eight characters long. The modem responds with **OK**.
3. The new password is saved automatically. You can now either enter more AT commands or exit the data communications program. The next time you remotely configure the modem you must use the new setup password.

**Note:** You can only change the setup password locally; you cannot do it remotely. Also, passwords are case sensitive. The next time you enter the password, it must be in the same case as you set it up.

### Changing the Remote Escape Character

To increase security, you can change a remote modem's remote configuration escape character. The remote configuration escape character is stored in register **S9**. The factory default is 37, which is the ASCII code for the percent character (%). For ASCII code characters, refer to Appendix E. Setting **S9** to 0 (zero) disables remote configuration entirely—but if you do this remotely, you won't be able to change it back remotely!

1. Establish a remote configuration link with the remote modem as described in "Basic Procedure."
2. Type **ATS9=n**, where *n* is the ASCII code for the new remote configuration escape character, then press ENTER.
3. Save the new value by typing **AT&W** and pressing ENTER.
4. Type **ATO<CR>** to exit remote configuration.

# 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, it is possible that the modem is defective. However, it is more likely that the source of your problem lies elsewhere. The following symptoms are typical of problems you might encounter:

- 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.
- 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.

## None of the Indicators Light

When you plug in the modem, the operating system detects and configures the modem, and the TR LED should come on.

If the TR LED does not come on, check to see that the driver from the product CD has been installed, refer to Chapter 2, step 2 – Install the Modem Driver.

## The Modem Does Not Respond to Commands

- Make sure you are issuing the modem commands from data communication software, 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 communication 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 communication software.
- Try resetting your modem by unplugging the USB cable from the modem, and then plugging it back in.
- Try rebooting the computer.
- The modem might have a problem beyond the scope of this user guide. If you have another Multi-Tech modem, try swapping modems. If the problem goes away, the first modem is possibly defective. Contact Technical Support for assistance.

## The Modem Dials But Cannot Connect

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

- lack of a physical connection to the telephone line.
- a wrong 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, enter **ATV1X4** and press ENTER while in terminal mode, or include **V1X4** in the modem's initialization string. When you dial again, the modem will report the call's progress.

- If the modem reports *NO DIALTONE*, check that the modem's telephone line cable is connected to both the modem's LINE jack (not the PHONE jack) and the telephone wall jack. If the cable looks secure, try replacing it. If that doesn't work, the problem might be in your building's telephone installation. To test the building installation, plug a telephone into your modem's telephone wall jack and listen for a dial tone. If you hear a dial tone, your modem might be installed behind a company phone system (PBX) with an