MultiMobile™ USB

V.92 Portable USB Modem

MT9234MU-CDC

User Guide

MultiTech® ●
Systems

Revision	Date	Description
A	03/05/10	New CDC build option initial release.
B	11/21/2011	Removed references to product CD
C	12/13/2012	Updated RoHS and other regulatory information.
D	12/18/2013	UL Translations

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; 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; 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; D353,598; 5,355,365; 5,309,562; 5,301,274. Other patents pending.

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Contacting Multi-Tech Support

Online Support Portal: **https://support.multitech.com**
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 https://support.multitech.com.

Knowledge Base and Support Services: **www.multitech.com/support.go**
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.

Technical Support
U.S. office hours are 9am – 5pm, CST

Country	By Email	By Phone
Europe, Middle East, Africa:	support@multitech.co.uk	(44) 118 959 7774
U.S., Canada, all others:	support@multitech.com	(800) 972-2439 or (763) 717-5863

Warranty
Warranty information can be found at: http://www.multitech.com/warranty.go

Contents

Chapter 1 – Product Description

The MultiMobile USB V.92 Portable USB modem MT9234MU-CDC provides V.92/56K data rates, fax and file transfer capabilities and a hot-swappable USB interface. This modem, weighing only 2 ounces, is ideal for mobile users who want email and Internet access on the road. The MT9234MU-CDC modem can also serve as the mobile user's home office desktop modem.
This user's guide helps you install, configure, test and use your modem.

Features

Command Buffer	40 characters
Diagnostics	Power-on self test, local analog & local digital loop, remote digital loop.
LED Indicators	LEDs for Data, Carrier Detect, Off Hook, Terminal Ready
Intelligent Features	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; 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; help menus; remote configuration.

Telecom Safety Warnings

Before servicing, disconnect this product from its power source and telephone network. Also:

- 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.

- Use this product with UL and cUL listed computers only.

- 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 may be a remote risk of electrical shock from lightning.

- Do not use a telephone in the vicinity of a gas leak.

CAUTION: To reduce the risk of fire, use only 26 AWG or larger UL Listed or CSA Certified telecommunication line cord.

Avertissements de sécurité télécom analogique

Avant de l'entretien, débrancher ce produit de son réseau d'alimentation et de téléphone. également:

- Ne jamais installer du câblage téléphonique pendant un orage électrique.

- Ne jamais installer de prises téléphoniques à des endroits mouillés à moins que la prise ne soit conçue pour de tels emplacements.

- Utilisez ce produit avec UL et cUL ordinateurs répertoriés seulement.

- Ne jamais toucher fils ou des bornes téléphoniques non isolés à moins que la ligne téléphonique n'ait été déconnectée au niveau de l'interface réseau.

- Faire preuve de prudence au moment d'installer ou de modifier des lignes téléphoniques.

- Éviter d'utiliser le téléphone pendant un orage électrique. Il peut y avoir un risque de choc électrique causé par la foudre.

- N'utilisez pas un téléphone à proximité d'une fuite de gaz.

ATTENTION: Pour réduire les risques d'incendie, utiliser uniquement des conducteurs de télécommunications 26 AWG au de section supérleure.

Package Contents

- MT9234MU-CDC modem

- One RJ-11 cable

Inspect the contents for signs of any shipping damage. If damage is observed, do not power up (connect to a USB port) the unit. Contact Multi-Tech's Technical Support for advice.

About AT Commands

AT Commands for this product are published in a separate document. You can find this documentation on the Multi-Tech website.

Technical Specifications

Trade Name	MultiMobile™ USB
Model Number	MT9234MU
Data Rates	56K download speeds from digital V.92/V.90 servers; 33.6K upload and download speeds from non-V.92/V.90 servers and other client modems
Fax Rates	33.6K and below
Standards: 　**Data** 　**Error Correction** 　**Data Compression** 　**Fax** 　**Video**	V.92, V.90 enhanced, V.34 and below V.42 V.44, V.42bis, MNP Class 5 V.34, Class 2.1 & 1.0, V.17, Group 3; Class 1 & 2, Error Correction Mode V.80
Cables	1 USB series A 1 RJ-11
Operation	USB Port: 12 Mbps Line Type: Dial-up
Physical Description	1.3" w x 1.0" h x 3.1" d; 2 oz 3.0 cm w x 2.5 cm h x 8.0 cm d; 62 g
Operating Environment	Operating Temperature: -31° to +167° F (-35° to 75° C) 　　　　　　　　　　　UL listed at 60° C Humidity Range: 25–85% non-condensing
Approvals	**CE Mark** **EMC:** FCC Part 15 Class B, EN55024, EN55022 Class B, ICES-003 Class B **Safety:** UL/cUL 60950-1, IEC 60950-1 **Telecom:** 47CFR Part 68, CS03, TBR21, other countries also included

Power*	Sleep Mode	Typical	Maximum		
	Measured Volts	4.99	4.96	4.95	
	Current (AMPS)	0.099	0.130	0.172	
	Watts	0.494	0.645	0.851	
Limited Warranty	2 years				

* Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into their power source when determining product load.

Chapter 2 – Installing the Modem

Installing the Modem Driver

Before you begin, go to the Multi-Tech website and download the driver for your modem.

Installing the Modem in Windows 7

After connecting the MT9234MU-CDC to an available USB port, Windows displays a message that the driver software was not successfully installed.

To install the driver software:

1. From the Windows **Start** button and select **Control Panel**.

2. Select the **Hardware and Sound** link.

3. In the Devices and Printers group, click **Device Manager**.
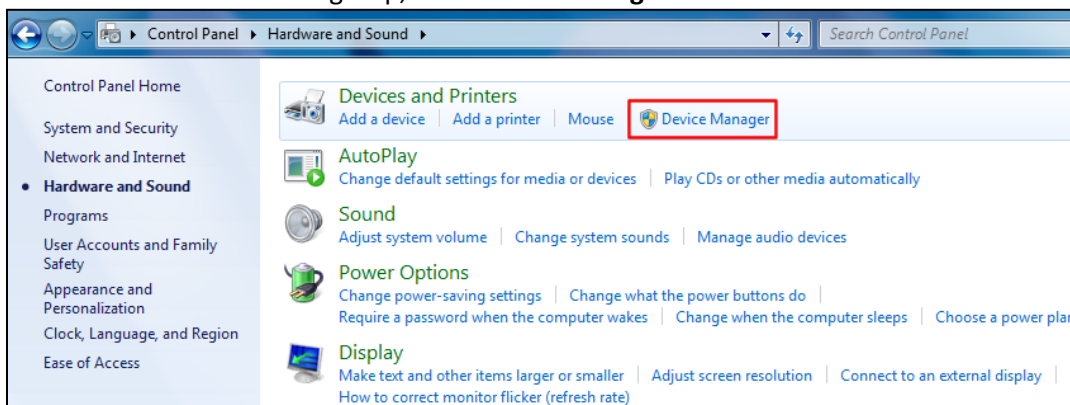
4. In the list of devices, right-click on **MT9234MU-CDC** and select **Update Driver Software**.
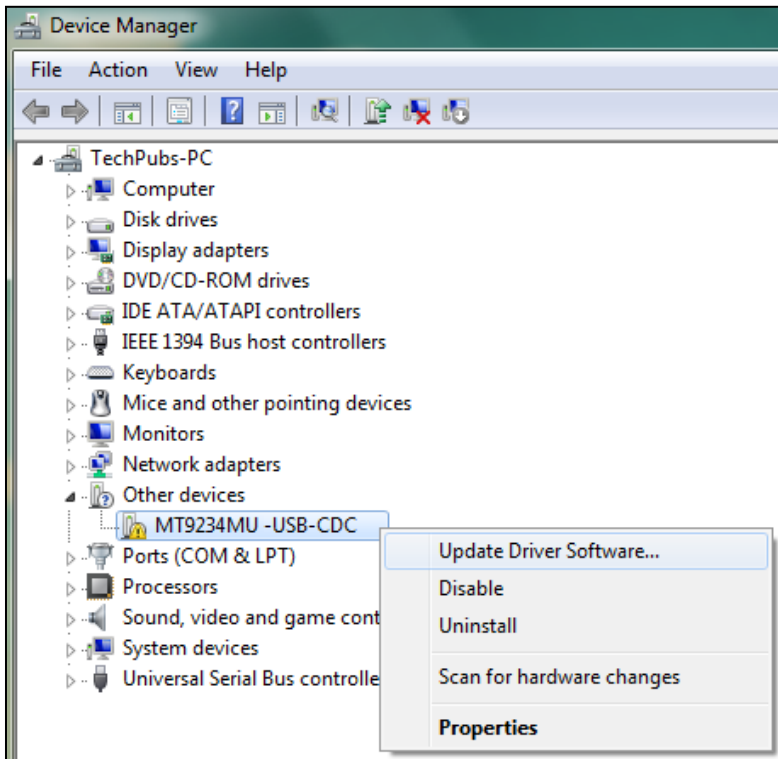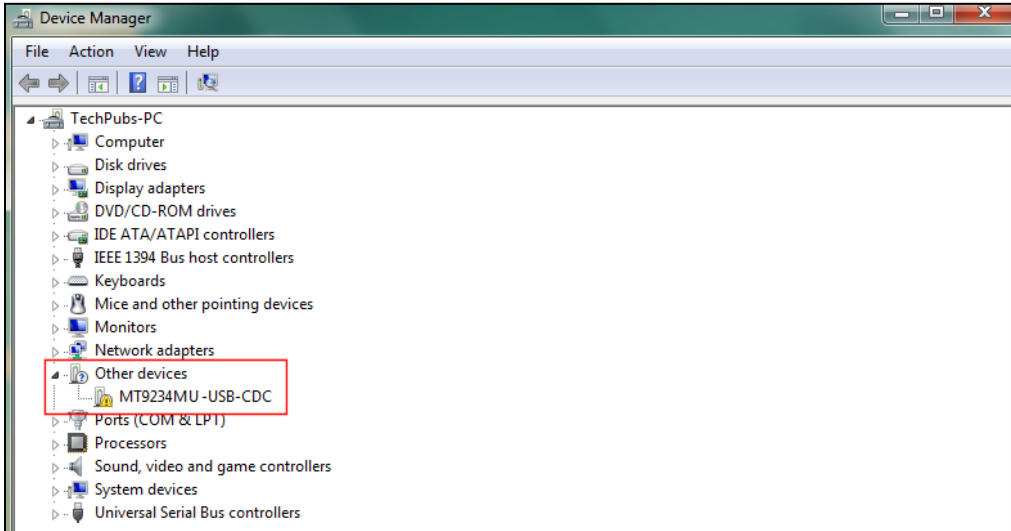
5. Click **Browse my computer for driver software**.
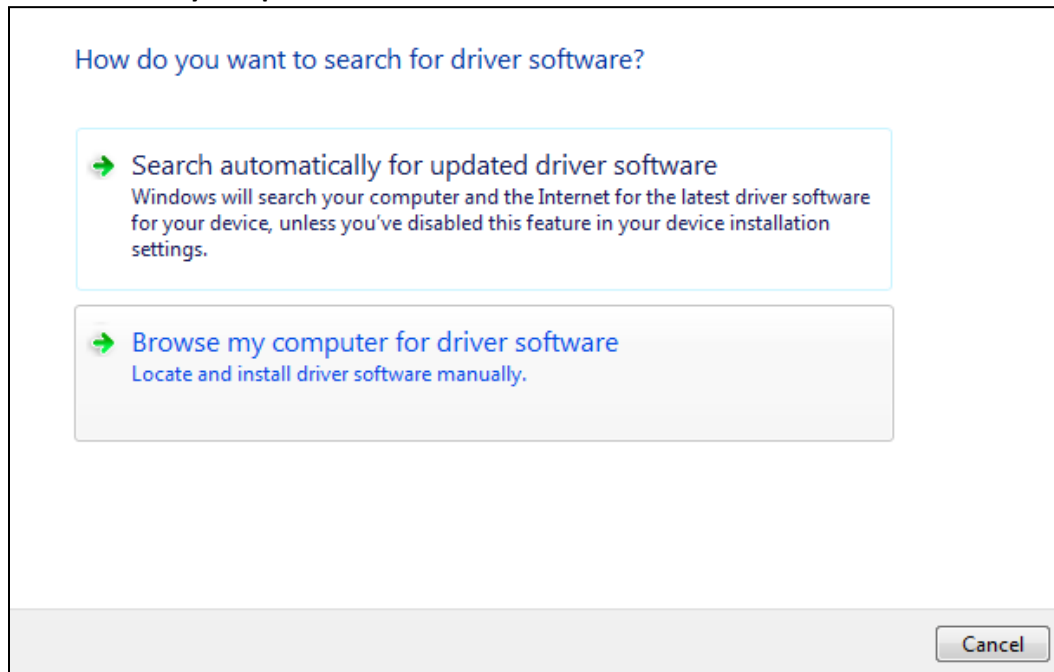
6. Click **Browse** and navigate to the area where you downloaded the driver.

7. Select the appropriate drivers for your device (either 34-bit or 64-bit) and click **OK**.
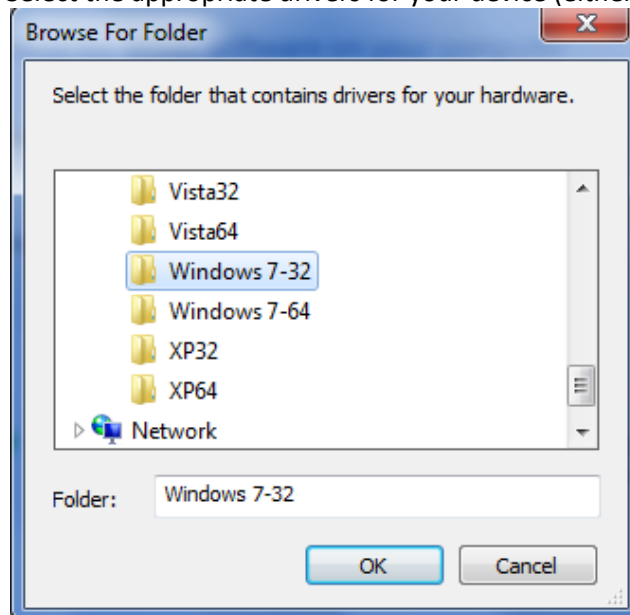
8. Click **Next** to continue the installation.
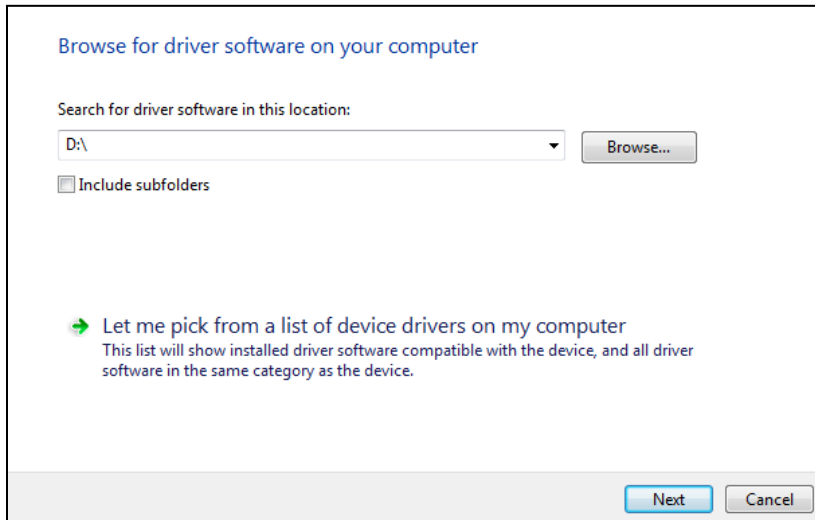
9. A Windows Security window can appear, stating that the publisher cannot be verified. Click **Install this driver software anyway**.
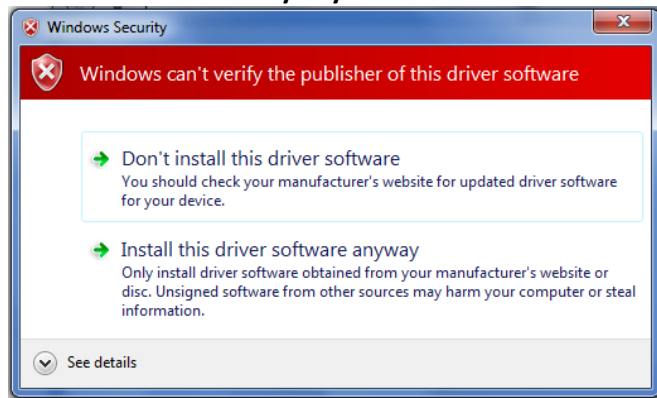
10. A transitory window appears, as the installation completes.

11. To finish installing, click **Close**.
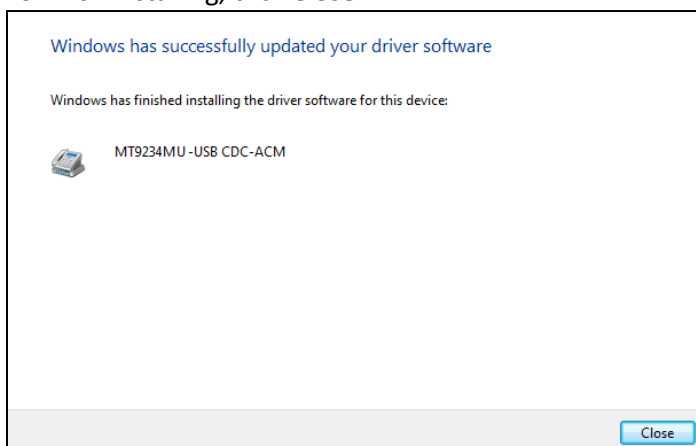
Your modem is installed and ready to use.

After you have installed the modem, register the MT9234MU product. To do so, open an Internet browser and go to the following address. Follow instructions at this site:
http://www.multitech.com/en_US/TOOLS/Forms/register/warranty.asp

Installing the Modem in Windows Vista

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 detects that the new modem is present and starts the New Hardware wizard. Select the **Locate and install driver software (recommended)** option.
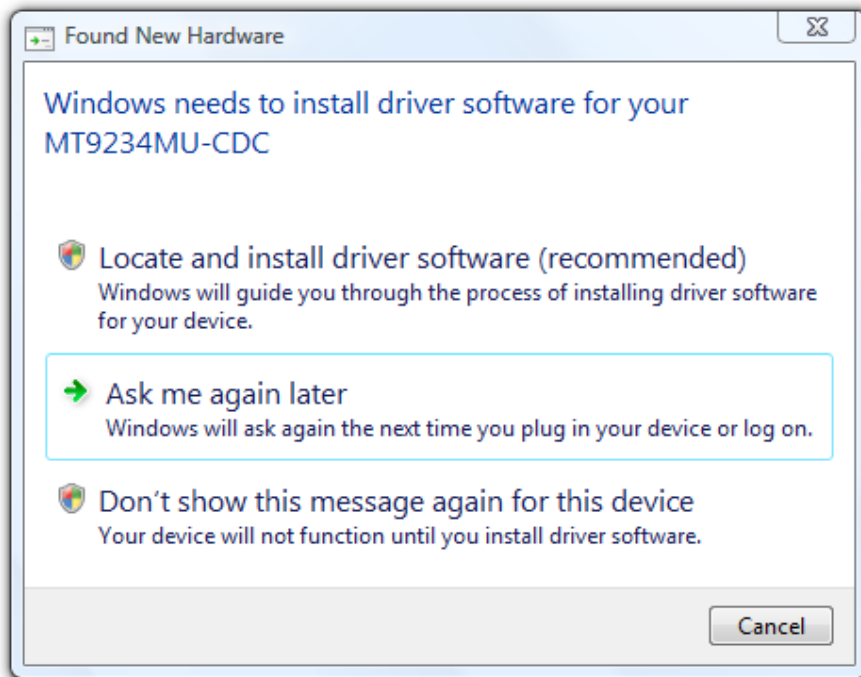
Note: As you install, the Vista 'User Account Control' (hereafter referred to as the UAC) may prompt you. If so click **Continue** to install.

4.   The New Hardware wizard asks if you want to search online for drivers. Select **Don't search online**.
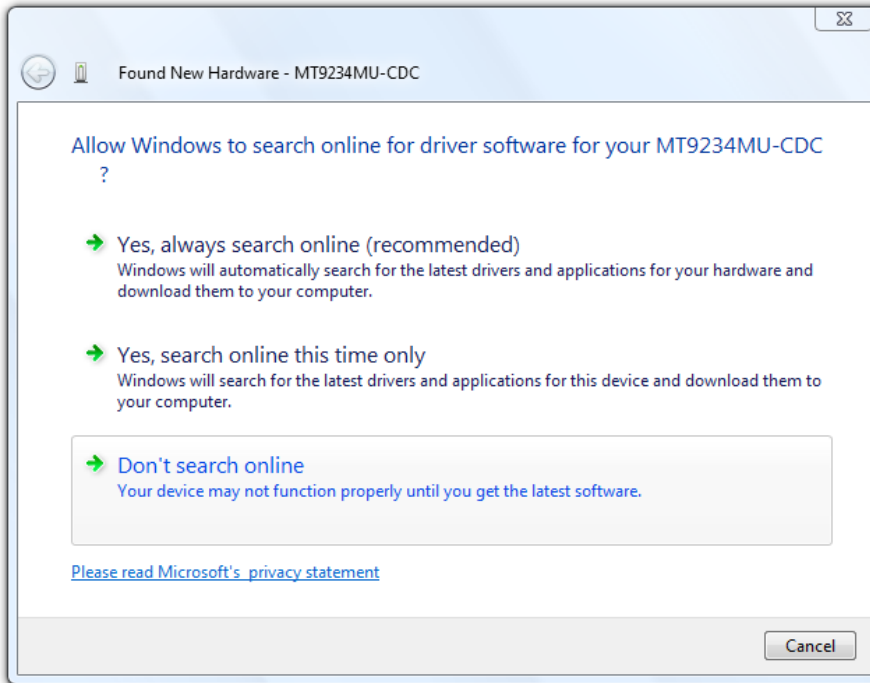
5.   In the wizard pane that asks to you insert a disc, click **I don't have the disc. Show me other options**.
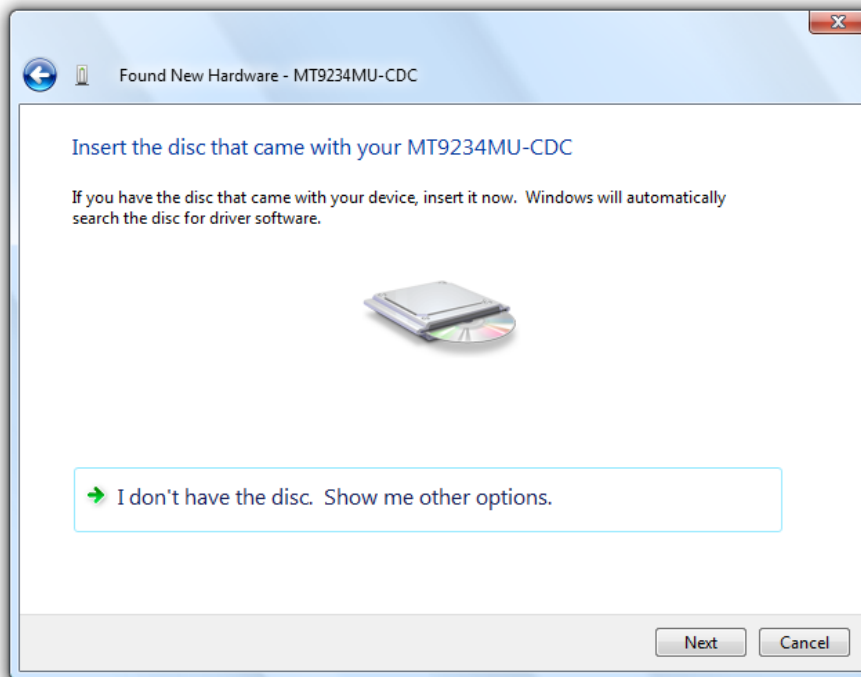
Click **Next**.

6. Navigate to the location where you downloaded the driver. And then select the desired driver.

7. A pop-up window for Windows Security asks if you want to install the device software from Multi-Tech Systems Incorporated.
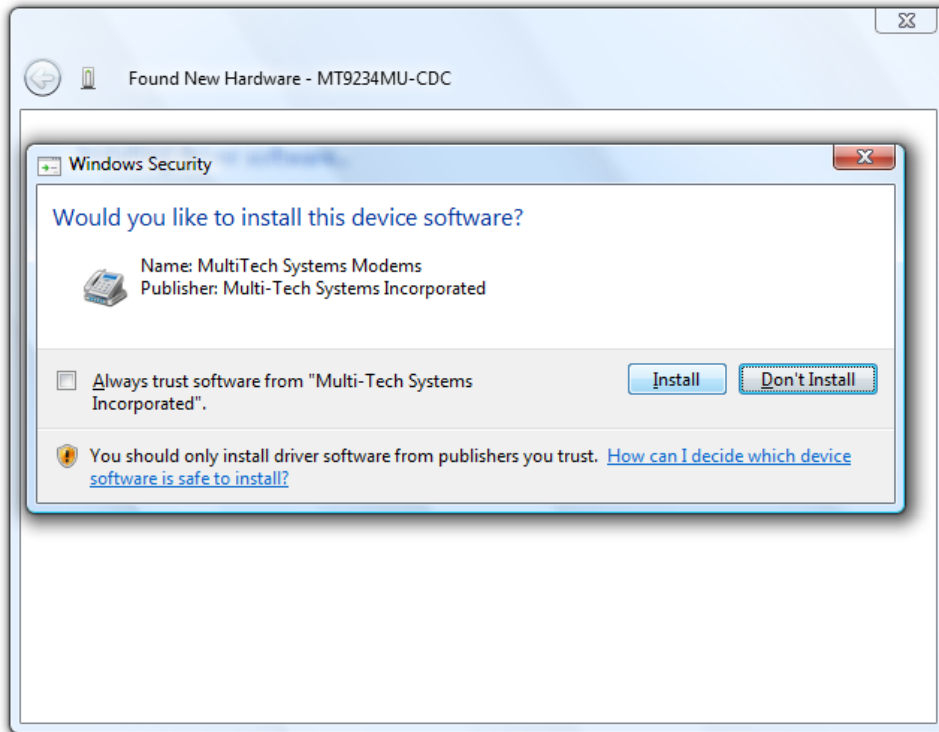
Click **Install**.

8. Windows finishes the installation.
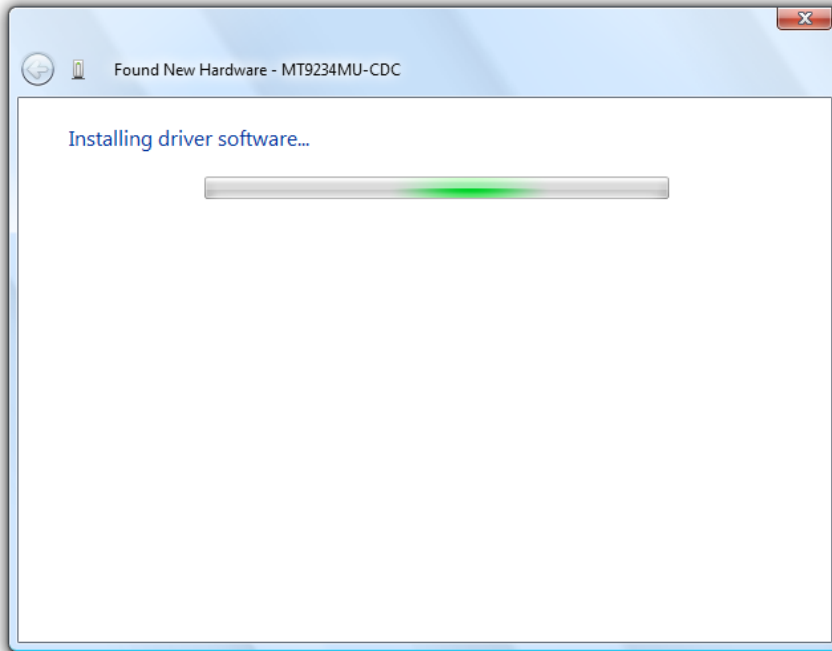
9. A window opens to tell you that you have successfully installed the software. Click **Close**.
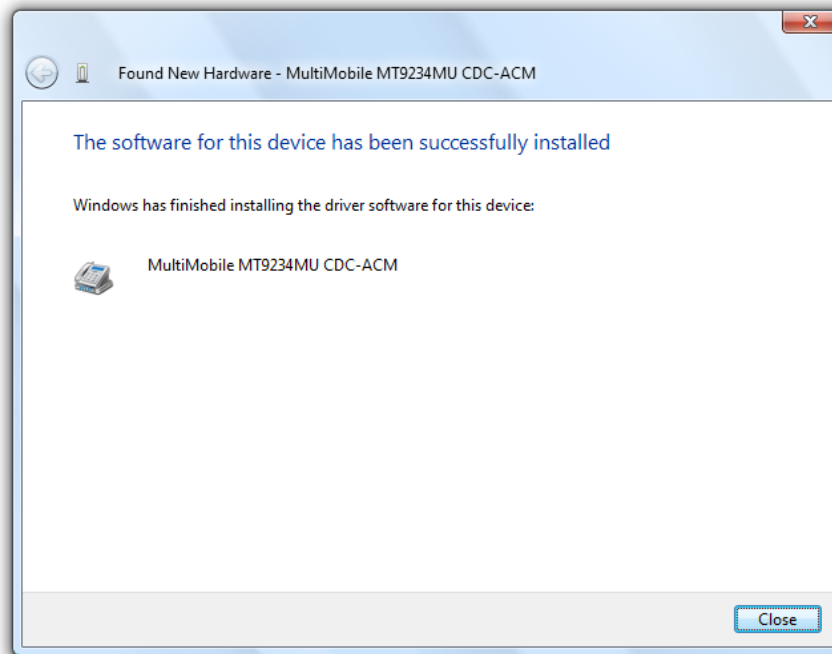
After installing the modem and setting up Internet access, register the product. To do so, open an Internet browser and go to the following address. Follow the instructions that appear at the site:

http://www.multitech.com/en_US/TOOLS/Forms/register/warranty.asp

Installing the Modem in Windows XP and Server 2003 or 2008

These instructions describe how to install the modem to operate with the following operating systems: Windows Server 2008, XP, or 2003.

The procedure in this section uses Windows XP as the operating system; the other operating systems have similar windows.

1. Connect the USB cable between the MultiModem and the PC.

   The Welcome to the Found New Hardware Wizard page opens. Select **No, not this time**. Then click **Next**.
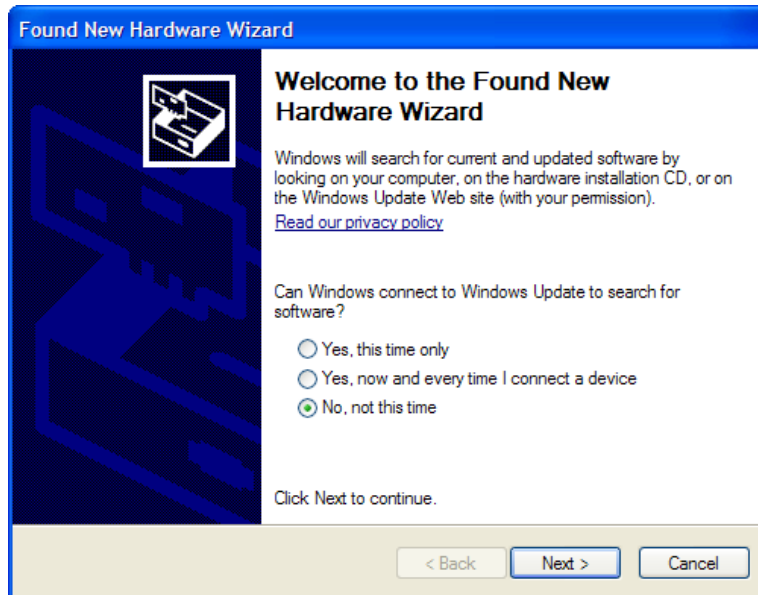
2. The wizard helps you install the software for MT9234MU-CDC.
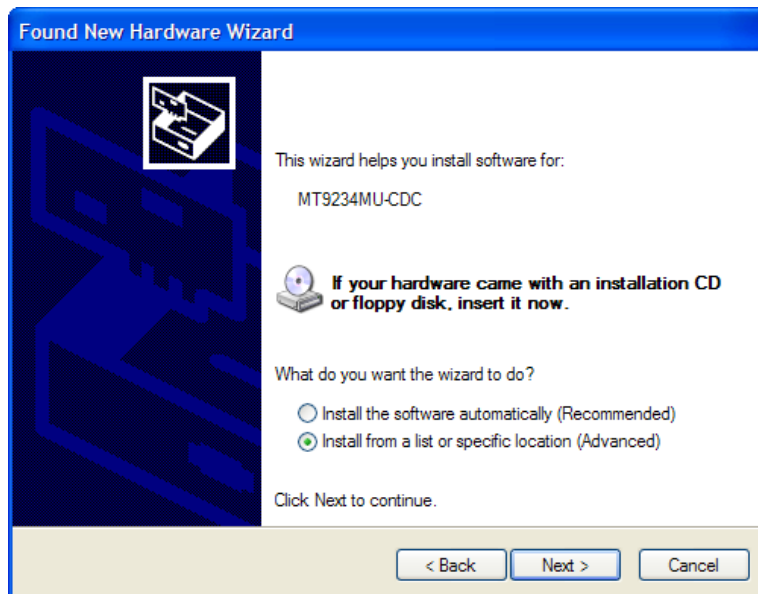
   Select **Install from a list or specific location (Advanced)**. Click **Next**.

3. In the next wizard page, select **Search for the best drive in these locations**, and then ensure that the item **Include this location in the search** is the only option selected.
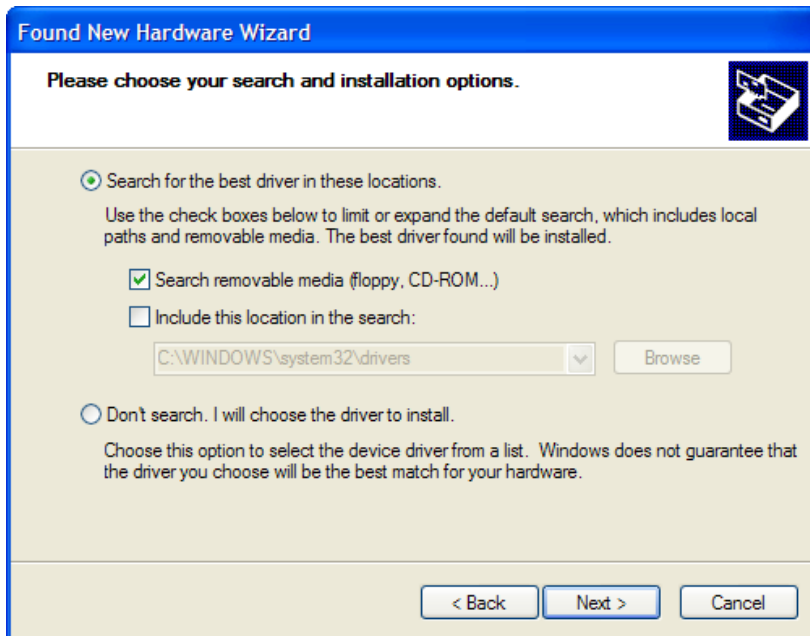
4. Click **Browse**, and navigate to the area where you downloaded the driver.

5. Click **Next**.

6. The wizard searched for the driver, and displays the message Please wait while the wizard searches...
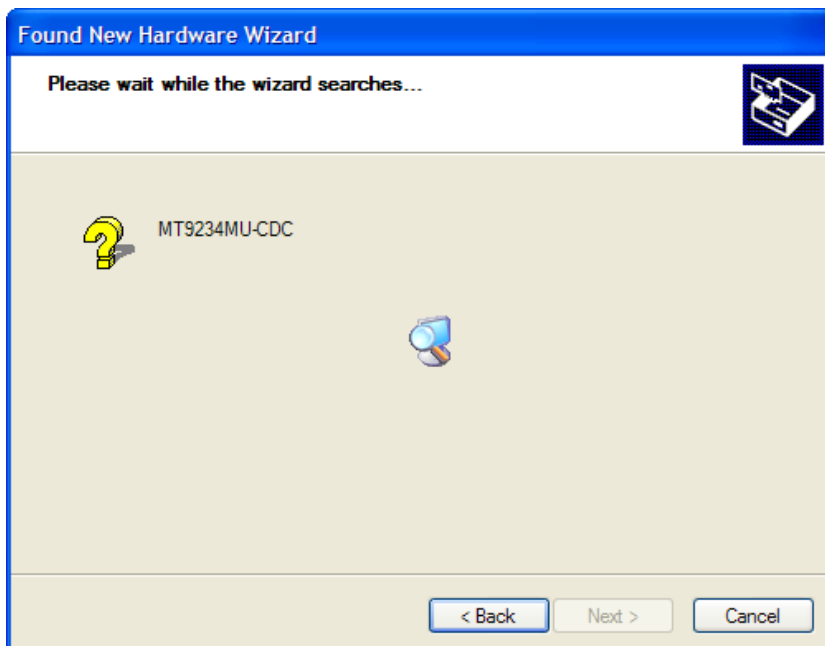
7. You may be prompted by the Windows Logo check. It is safe to continue (select to **Continue Anyway**) as the installation file has passed certification testing for Windows Vista (all other operating systems may display a certification warning).
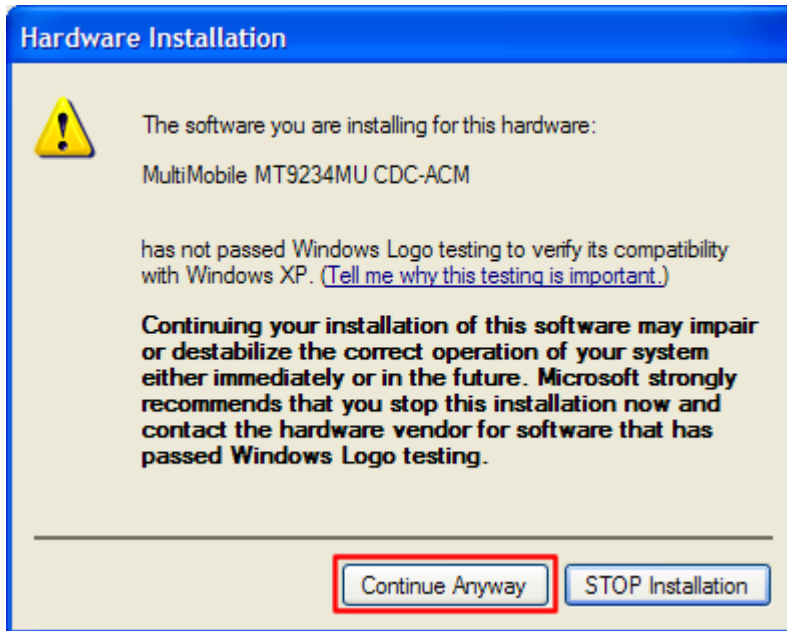
8. The wizard displays the message Please wait while the wizard installs the software.
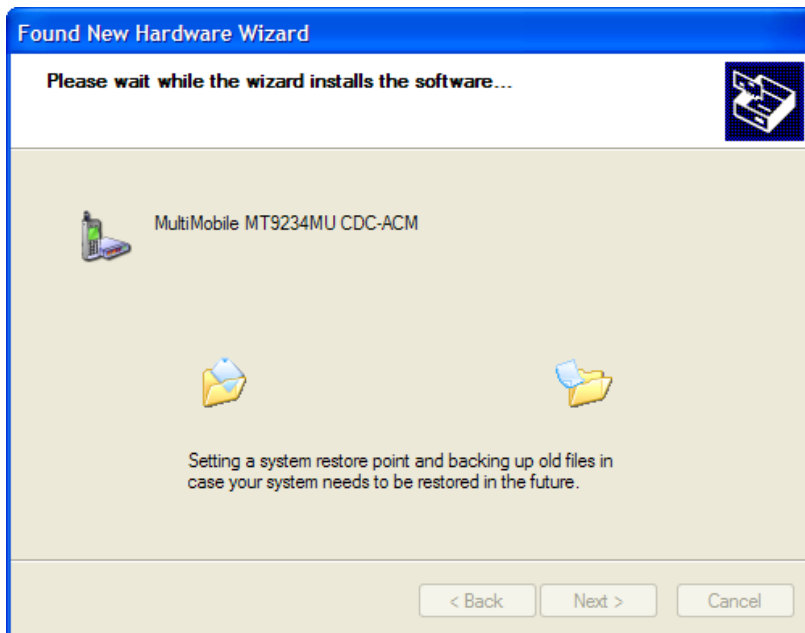
9. At the Completing the Found New Hardware Wizard page click **Finish**.
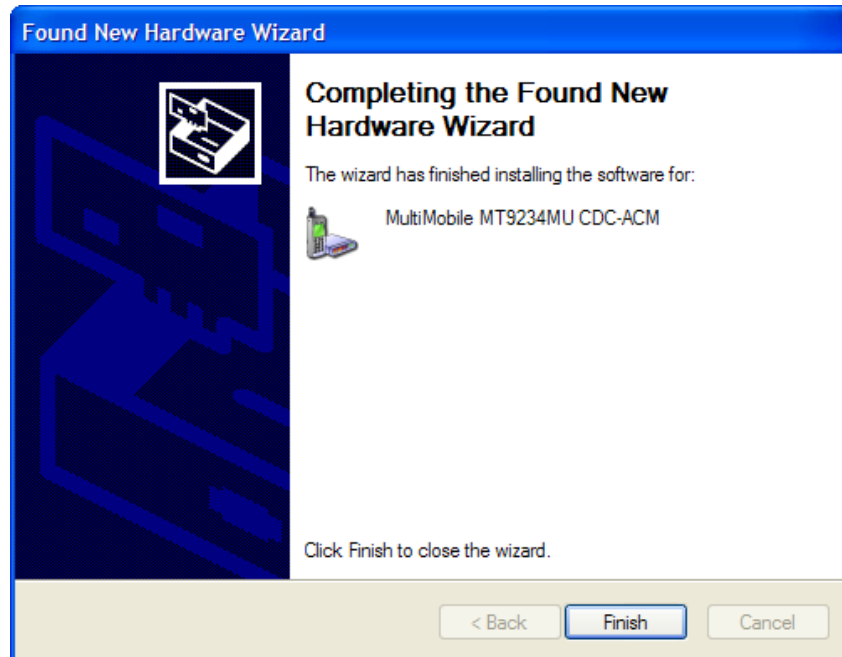
After you have installed the product and set up Internet access, register the product. To do so, open an Internet browser and go to the following address. Follow the instructions that appear at this site:

http://www.multitech.com/en_US/TOOLS/Forms/register/warranty.asp

Configuring the Modem's Country Code

Different countries have different requirements for how modems work. Therefore, before you use the modem, configure it to match the defaults of the country in which you are using it. You can configure the MT9234MU-CDC either manually using AT commands or with the Global Wizard.

Using the Global Wizard Utility to Configure Country Code

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

1. From the Multi-Tech website, download the Global Wizard executable file. You can find this file in the zip file of the product's resources.

2. Start the executable, then click Initial Setup and Country Selection. The Global Wizard dialog box appears. Click **Next**.

3. View the Global Wizard as it searches for your modem and identifies it. Click **Next**.

4. Select the country in which the modem is to be used and then click **Next**.

5. Review your choice of country. If it is correct, click **Next** to configure the modem.

6. When Global Wizard announces that the parameters have been set, click **Finish** to exit.

Using AT Commands to Configure Country Code

If you are comfortable using AT commands, you can configure your modem using AT commands. You must enter these commands in your communication program's terminal window. If you do not have a terminal program available, please use the Global Wizard Utility as outlined above.

To configure the modem for a specific country, execute the following AT commands:

1. Type **AT%T19,0,nn** (where *nn* represents the country code). Press **Enter**.

2. The modem will respond "OK."

3. Type **AT&F&W** (this saves changes). Press **Enter**.

4. The modem will respond "OK."

5. Type **ATI9** (this verifies that country code has been chosen). Press **Enter**.

6. The modem displays the country code in decimal format followed by "OK."

7. Check to be sure the code for your country is displayed.

    If not, repeat procedure to correct.

    An example of country, command, and result codes follows:

Example	Country/Region	AT Command (Hexadecimal)	Country Code (Decimal)
	Euro/NAM*	AT%T19,0,34 (default)	52

The Multi-Tech website includes a complete list of country/region codes:
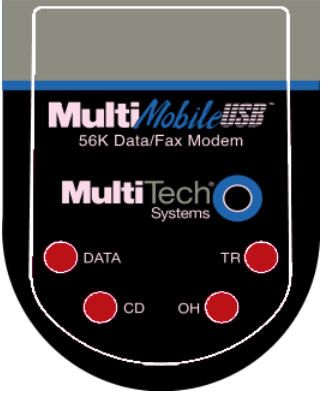
http://www.multitech.com/en_US/PRODUCTS/Categories/Device_Networking/global_modems/configuration.asp#chart

Once you are on this page, click global modems. The Global Modem Country Approvals page displays. On this page you can view approvals, configuration strings and responses by country and product.

Chapter 3 – Operating the Modem

Front Panel Overview

The MT9234MU-CDC has 4 LEDs on the front panel indicating status, configuration, and activity:

Data. The Data LED flashes when the modem is transmitting/receiving data to/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 Windows detects and initializes the modem.

Connecting to the Internet

To use the modem to access the Internet, you must establish a dial-up account with an Internet service provider (ISP). To locate an ISP near you, refer to a local directory or computer publication. Ask your ISP to give you the following information:

● User name (also called user ID)

● Password

● Access number (the number you call to connect to the server)

● Host name and domain name

● Domain Name Server (DNS) server address

If you use the Internet for e-mail and newsgroups, ask the ISP to also provide the following information:

● E-mail or POP mail address

● POP server address

● Mail or SMTP address

● News or NNT server address

Setting Up a Remote Node

Before connecting to the Internet, set up a remote-node client program on your computer to make the connection. Most web 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 provide a program that installs and configures this connection automatically for you.

Chapter 4 – Remotely Configuring the Modem

You can use a network management tool to configure the modem from anywhere in your network from one location. You can use the modem's password and then issue AT commands to a remote MT9234MU-CDC modem for maintenance or troubleshooting as if you were on site with the modem.

To remotely configure a modem:

1. Establish a data connection with a remote MT9234MU-CDC modem.

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.

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

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

Changing the Default Password and Escape Character

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

Changing the Setup Password

1. Open a data communications program such as HyperTerminal.

2. To change the password, type **AT#S=xxxxxxxx**, 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 D.

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.

2. Type **ATS9=*n***, where *n* is the ASCII code for the new remote configuration escape character. Press Enter.

3. To save the new value, type **AT&W** and press **Enter**.

4. Type **ATO<CR>** to exit remote configuration.

Appendix A – Regulatory Information

FCC Part 15 Class B Statements

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.

- Connect 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.

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.

EMC Requirements for 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 Reglement Canadien sur le matériel brouilleur.

This device complies with Industry Canada RSS Appliance radio exempt from licensing. The operation is permitted for the following two conditions:
1. the device may not cause harmful interference, and
2. the user of the device must accept any interference suffered, even if the interference is likely to jeopardize the operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC Part 68 Telecom

1. This equipment complies with Part 68 of the 47 CFR rules and the requirements adopted by the ACTA. Located on this equipment is a label that contains, among other information, the registration number and Ringer Equivalence Number (REN) for this equipment or a product identifier in the format:

   For current products: US:AAAEQ##Txxxx.

   For legacy products: AU7USA-xxxxx-xx-x

   If requested, this number must be provided to the telephone company.

2. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable 47 CFR Part 68 rules and requirements adopted by the ACTA. It's designed to be connected to a compatible modular jack that is also compliant.

3. The Ringer Equivalence Number (REN) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAAEQ##Txxxx. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

4. 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 isn't practical, the telephone company will notify the customer 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.

5. 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 to maintain uninterrupted service.

6. If trouble is experienced with this equipment, please contact Multi-Tech Systems, Inc. at the address shown below for details of how to have the repairs made. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

7. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

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. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this equipment does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

10. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

11. This equipment is hearing aid compatible.

12. Manufacturing Information:

Manufacturer: Multi-Tech Systems, Inc.

Trade Name MultiMobile USB

Model Number: MT9234MU

Registration Number: AU7MM04B9234MU

Service Center in USA: Multi-Tech Systems, Inc.

2205 Woodale Drive
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(763) 785-9874 Fax

Canadian Limitations Notice

Notice: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Notice: The REN assigned to each terminal equipment 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 five.

Restrictions concernant le raccordement de matériel

Avis: Le présent matériel est conforme aux spécifications techniques d'Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'Industrie Canada ont été respectées. Il n'implique pas qu'Industrie Canada a approuvé le matériel.

Avis: L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

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 2004/108/EC of 15 December 2004 on the approximation of the laws of Member States relating to electromagnetic compatibility;

and

- Council Directive 2006/95/EC of 12 December 2006 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 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

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.

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 RNs 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.

Thailand Approval

Translation in Thai

"This telecom device and equipment is conform to technical standard no…."

or

"This telecom device and equipment is conform to requirement to NTC"

"เครื่องโทรคมนาคมและอุปกรณ์นี้ มีความสอดคล้องตามมาตรฐานทางเทคนิค เลขที่………"

or

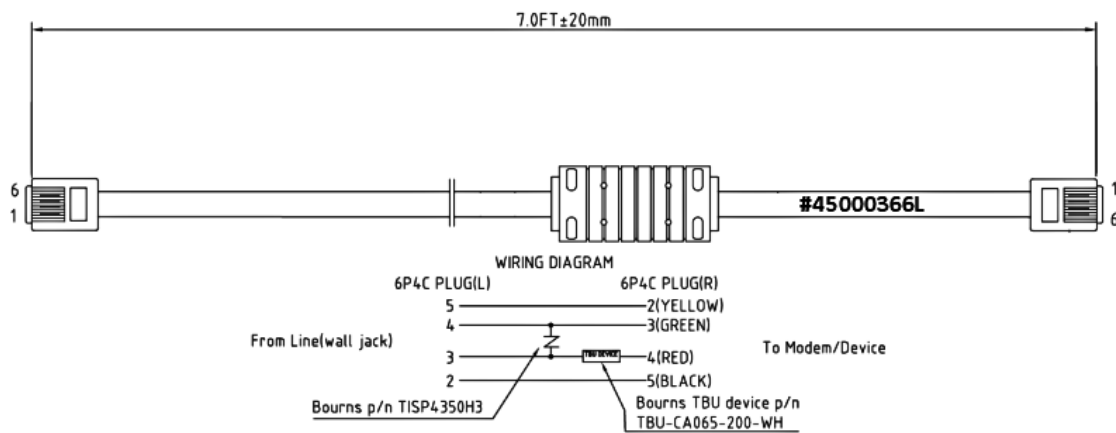"เครื่องโทรคมนาคมและอุปกรณ์นี้ มีความสอดคล้องตามข้อกำหนดของ กทช."

Brazil Regulatory Special Cable Requirement

Model: MT9234MU – special cable needed.

Attention:
A special phone cable is required for regulatory compliance.

Um cabo especial para telefone é requerido para a conformidade regulatória.

Restriction of the Use of Hazardous Substances (RoHS)

Multi-Tech Systems, Inc.
Certificate of Compliance
2011/65/EU

Multi-Tech Systems confirms that its embedded products comply with the chemical concentration limitations set forth in the directive 2011/65/EU of the European Parliament (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment - RoHS)

These Multi-Tech products do not contain the following banned chemicals[1]:

- Lead, [Pb] < 1000 PPM

- Mercury, [Hg] < 1000 PPM

- Hexavalent Chromium, [Cr+6] < 1000 PPM

- Cadmium, [Cd] < 100 PPM

- Polybrominated Biphenyl, [PBB] < 1000 PPM

- Polybrominated Diphenyl Ether, [PBDE] < 1000 PPM

Environmental considerations:

- Moisture Sensitivity Level (MSL) =1

- Maximum Soldering temperature = 260C (in SMT reflow oven)

[1]Lead usage in some components is exempted by the following RoHS annex, therefore higher lead concentration would be found in some modules (>1000 PPM);

–Resistors containing lead in a glass or ceramic matrix compound.

REACH Statement

Registration of Substances:

After careful review of the legislation and specifically the definition of an "article" as defined in EC Regulation 1907/2006, Title II, Chapter 1, Article 7.1(a)(b), it is our current view Multi-Tech Systems, Inc. products would be considered as "articles". In light of the definition in § 7.1(b) which requires registration of an article only if it contains a regulated substance that "is intended to be released under normal or reasonable foreseeable conditions of use," our analysis is that Multi-Tech Systems, Inc. products constitute nonregisterable articles for their intended and anticipated use.

Substances of Very High Concern (SVHC)

Per the candidate list of Substances of Very high Concern (SVHC) published October 28, 2008 we have reviewed these substances and certify the Multi-Tech Systems, Inc. products are compliant per the EU "REACH" requirements of less than 0.1% (w/w) for each substance. If new SVHC candidates are published by the European Chemicals Agency, and relevant substances have been confirmed, that exceeds greater than 0.1% (w/w), Multi-Tech Systems, Inc. will provide updated compliance status.

Multi-Tech Systems, Inc. also declares it has been duly diligent in ensuring that the products supplied are compliant through a formalized process which includes collection and validation of materials declarations and selective materials analysis where appropriate. This data is controlled as a part of a formal quality system and will be made available upon request.

Waste Electrical and Electronic Equipment Statement

WEEE Directive

The WEEE Directive places an obligation on EU-based manufacturers, distributors, retailers, and importers to take-back electronics products at the end of their useful life. A sister directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all Multi-Tech products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

July, 2005

Information on HS/TS Substances According to Chinese Standards

In accordance with China's Administrative Measures on the Control of Pollution Caused by Electronic Information Products (EIP) # 39, also known as China RoHS, the following information is provided regarding the names and concentration levels of Toxic Substances (TS) or Hazardous Substances (HS) which may be contained in Multi-Tech Systems Inc. products relative to the EIP standards set by China's Ministry of Information Industry (MII).

Name of the Component	Hazardous/Toxic Substance/Elements					
	Lead (PB)	Mercury (Hg)	Cadmium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Printed Circuit Boards	O	O	O	O	O	O
Resistors	X	O	O	O	O	O
Capacitors	X	O	O	O	O	O
Ferrite Beads	O	O	O	O	O	O
Relays/Opticals	O	O	O	O	O	O
ICs	O	O	O	O	O	O
Diodes/ Transistors	O	O	O	O	O	O
Oscillators and Crystals	X	O	O	O	O	O
Regulator	O	O	O	O	O	O
Voltage Sensor	O	O	O	O	O	O
Transformer	O	O	O	O	O	O
Speaker	O	O	O	O	O	O
Connectors	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
Screws, Nuts, and other Hardware	X	O	O	O	O	O
AC-DC Power Supplies	O	O	O	O	O	O
Software / Documentation CDs	O	O	O	O	O	O
Booklets and Paperwork	O	O	O	O	O	O
Chassis	O	O	O	O	O	O

X   Represents that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/Txxx-2006 Requirements for Concentration Limits.

O   Represents that no such substances are used or that the concentration is within the aforementioned limits.

Information on HS/TS Substances According to Chinese Standards (in Chinese)

依照中国标准的有毒有害物质信息

根据中华人民共和国信息产业部 (MII) 制定的电子信息产品 (EIP) 标准－中华人民共和国《电子信息产品污染控制管理办法》（第 39 号），也称作中国 RoHS，下表列出了 Multi-Tech Systems, Inc. 产品中可能含有的有毒物质 (TS) 或有害物质 (HS) 的名称及含量水平方面的信息。

成分名称	有害/有毒物质/元素					
	铅 (PB)	汞 (Hg)	镉 (CD)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板	O	O	O	O	O	O
电阻器	X	O	O	O	O	O
电容器	X	O	O	O	O	O
铁氧体磁环	O	O	O	O	O	O
继电器/光学部件	O	O	O	O	O	O
IC	O	O	O	O	O	O
二极管/晶体管	O	O	O	O	O	O
振荡器和晶振	X	O	O	O	O	O
调节器	O	O	O	O	O	O
电压传感器	O	O	O	O	O	O
变压器	O	O	O	O	O	O
扬声器	O	O	O	O	O	O
连接器	O	O	O	O	O	O
LED	O	O	O	O	O	O
螺丝、螺母以及其它五金件	X	O	O	O	O	O
交流–直流电源	O	O	O	O	O	O
软件/文档 CD	O	O	O	O	O	O
手册和纸页	O	O	O	O	O	O
底盘	O	O	O	O	O	O

X   表示所有使用类似材料的设备中有害/有毒物质的含量水平高于 SJ/Txxx-2006 限量要求。

O   表示不含该物质或者该物质的含量水平在上述限量要求之内。

Appendix B – ASCII Conversion

ASCII Conversion Chart

CTRL	CODE	HEX	DEC	CODE	HEX	DEC	CODE	HEX	DEC	CODE	HEX	DEC
@	NUL	00	0	SP	20	32	@	40	64	`	60	96
A	SOH	01	1	!	21	33	A	41	65	a	61	97
B	STX	02	2	"	22	34	B	42	66	b	62	98
C	ETX	03	3	#	23	35	C	43	67	c	63	99
D	EOT	04	4	$	24	36	D	44	68	d	64	100
E	ENQ	05	5	%	25	37	E	45	69	e	65	101
F	ACK	06	6	&	26	38	F	46	70	f	66	102
G	BEL	07	7	'	27	39	G	47	71	g	67	103
H	BS	08	8	(	28	40	H	48	72	h	68	104
I	HT	09	9	)	29	41	I	49	73	i	69	105
J	LF	0A	10	*	2A	42	J	4A	74	j	6A	106
K	VT	0B	11	+	2B	43	K	4B	75	k	6B	107
L	FF	0C	12	,	2C	44	L	4C	76	l	6C	108
M	CR	0D	13	-	2D	45	M	4D	77	m	6D	109
N	SO	0E	14	.	2E	46	N	4E	78	n	6E	110
O	SI	0F	15	/	2F	47	O	4F	79	o	6F	111
P	DLE	10	16	0	30	48	P	50	80	p	70	112
Q	DC1	11	17	1	31	49	Q	51	81	q	71	113
R	DC2	12	18	2	32	50	R	52	82	r	72	114
S	DC3	13	19	3	33	51	S	53	83	s	73	115
T	DC4	14	20	4	34	52	T	54	84	t	74	116
U	NAK	15	21	5	35	53	U	55	85	u	75	117
V	SYN	16	22	6	36	54	V	56	86	v	76	118
W	ETB	17	23	7	37	55	W	57	87	w	77	119
X	CAN	18	24	8	38	56	X	58	88	x	78	120
Y	EM	19	25	9	39	57	Y	59	89	y	79	121
Z	SUB	1A	26	:	3A	58	Z	5A	90	z	7A	122
[	ESC	1B	27	;	3B	59	[	5B	91	{	7B	123
\	FS	1C	28	<	3C	60	\	5C	92	|	7C	124
]	GS	1D	29	=	3D	61	]	5D	93	}	7D	125
^	RS	1E	30	>	3E	62	^	5E	94	~	7E	126
_	US	1F	31	?	3F	63	_	5F	95	DEL	7F	127

NUL	Null, or all zeros	VT	Vertical Tab	SYN	Sync.
SOH	Start of Header	FF	Form Feed	ETB	End Transmission Block
STX	Start of Text	CR	Carriage Return	CAN	Cancel
ETX	End of Text	SO	Shift Out	EM	End of Medium
EOT	End of Transmission	SI	Shift In	SUB	Substitute
ENQ	Enquiry	DLE	Data Link Escape	ESC	Escape
ACK	Acknowledge	DC1	Device Control 1	FS	File Separator
BEL	Bell or Alarm	DC2	Device Control 2	GS	Group Separator
BS	Backspace	DC3	Device Control 3	RS	Record Separator
HT	Horizontal Tab	DC4	Device Control 4	US	Unit Separator
LF	Line Feed	NAK	Negative Acknowledge	DEL	Delete

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