



ISI5634PCI/4/8
Quick Start Guide



Quick Start Guide

Model ISI5634PCI/4/8

P/N 82092804, Revision E

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Record of Revisions

Revision	Description
C (6/1/01)	Updated for digital signature, and info on MTS patents, Win 200/Me, and Novell Netware, and regulatory matters.
D (5/23/02)	Add V.92 Protocol information.
E (4/22/03)	Minor editorial comments incorporated.

TRADEMARKS

The Multi-Tech logo is a registered trademark of Multi-Tech Systems, Inc. Windows NT, Windows 95, and Windows 98 are registered trademarks of Microsoft. Pentium is a registered trademark of Intel Corporation.

Contact Info	Patent Info
Multi-Tech Systems, Inc. 2205 Woodale Dr. Mounds View, Minnesota 55112, U.S.A. (763) 785-3500 (800) 328-9717 U.S. Fax: (763) 785-9874 Tech Support: (800) 972-2439 Internet: www.multitech.com	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

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Intelligent
Serial *Interface*

Chapter 1—Introduction and Description

Introduction

Welcome to the world of data communications. You have acquired one of the finest intelligent data and fax modems available today from one of America's oldest and most respected modem manufacturers—Multi-Tech Systems, Inc.

The new **IntelligentSerialInterface** card, model ISI5634PCI is a multiport serial port expansion card with four V.92data/Super G3 fax modems. The card's capability can be doubled by adding an auxiliary module, which also contains four modems. It is an excellent hardware solution for adding fast serial ports to communication servers and async hosts that have 32-bit PCI bus architecture.

Serial ports are essential to

- Communication servers that pool modems and other communication devices for users on a LAN
- Asynchronous hosts that provide user access through serial ports.

The ISI5634PCI ships with drivers for the following multiuser operating systems: Windows® 2000, Windows NT, version 4.0; Windows 95 , Windows 98, and Windows Me; Novell Netware version 5.x.; SCO Open Server 5; and Linux.

The **IntelligentSerialInterface** card can be combined to support asynchronous serial devices (local or dial-up). The ports can be used to connect basic terminals with or without multiple pages of memory to multiplexer channels and asynchronous modems. Each ISI5634PCI port can support as many screens as there are physical pages of memory on the terminal. In Windows 95/98/Me, a built-in *autodetect* utility enables detection of Multi-Tech modems and sets the proper initialization strings.

ISI5634PCI Modems

The ISI5634PCI modems are compatible with the new ITU-T V.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 data downstream from the internet to your computer at these speeds because data on the telephone

network typically is converted from digital to analog only once before it reaches your modem. Upstream transmissions and transmissions between client modems are limited to 33.6K bps, as are upstream transmissions to non-V.92-compatible ISPs and downstream transmissions that are converted more than once on the telephone line.

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

Modems on the ISI5634PCI card are Plug and Play capable with interactive automatic dialing and command mode configuration. In standard mode, you can store up to three command lines or telephone numbers of up to 40 characters each in the modems' nonvolatile memory. The modems pulse- or tone-dial and recognize dial tones and busy signals for reliable call-progress detection. The modems can detect AT&T calling card tones. They also have DTR dialing, remote configuration, 11-bit capabilities, and incorporate self-resetting lightning protection. Serial port speeds can be set to 230,400 bps. They are both FCC registered for connection without notification to the telephone company.

The ISI5634PCI card has full-duplex intelligent modems with V.42 error correction, V.42bis and V.44 data compression, and "Super G3" ITU-T V.34 fax communications at speeds up to 33.6K bps with Class 2.1 fax commands. Voice functionality (+V commands) has also been added to the features of ISI5634PCI modems.

Intelligent Serial Interface

The ISI5634PCI is a multiport serial port expansion card that adds data buffering on each port for enhanced serial port performance. The ISI5634PCI features an on-board microprocessor to coordinate the communications activity of your local and remote terminals. Using the ISI5634PCI to provide additional serial connections enables your system's processor to perform more efficiently since the ISI5634PCI handles all byte-by-byte interrupts generated by asynchronous terminals and stores the data in buffers.

The processor, along with 256K bytes of RAM, works to allocate resources dynamically to the most active port. The ISI then generates one interrupt for an entire block of information and transfers the block to the system's microprocessor.

The ISI5634PCI has eight Mini RJ-11 jacks. It is a 3/4 size add-on card that supports a high-speed interface up to 230 Kbps.

How to Use This Manual

This Quick Start Guide contains hardware and software installation procedures and tech support/warranty information. Hardware installation and configuration are described in Chapter 2. Software installation and configuration are described in Chapter 3. A more detailed manual for this product (the User Guide) is included on the installation CD-ROM. The User Guide includes descriptions of AT commands and S-registers, and presents expanded detail about installation (especially the sequence of computer screens encountered during software installation).

ISI5634PCI Applications

The ISI5634PCI is an ideal solution for adding ports when a powerful microcomputer used as a server or host lacks enough connectivity to accommodate the desired number of users. The ISI5634PCI provides eight additional serial ports with every card installed, with a potential of four additional cards installed per system—for a total of thirty-two serial ports per system.

What Is in Your Modem Package?

Your modem package has several components. Make sure you have them all before trying to operate your modem. Your package should include:

- One ISI5634PCI/4 card
- One ISI5634PCI/EC auxiliary module (or “extender card”; part of the ISI5634PCI/8 model only)
- Four modular telephone cables (Eight with the ISI5634PCI/8 model)

- *Quick Start Guide* (this printed manual)
- A full *User Guide* on CD-ROM
- An installation CD-ROM that includes drivers, auxiliary software, and documentation (readme files, the User Guide, etc.)

If any of these items are missing, contact Multi-Tech Systems or your dealer/distributor (see the Warranty, Service, and Tech Support section in the User Guide for information on contacting Multi-Tech via telephone and the Internet).

Technical Specifications

Computer Requirements

- Pentium®- based PC or compatible with PCI Bus Architecture
- One of these operating systems: Microsoft Windows 2000, NT v. 4.0; Windows 95, Windows 98 and Windows Me; Novell Netware versions 5.x., SCO Open Server 5; Linux.
- A CD-ROM drive.
- 100K bytes of hard disk space

Physical/Electrical/Environmental

- Dimensions: 6.875" x 4.2"
17.46 cm x 10.67 cm
- Baud Rates: 300 bps to 230 Kbps per port
- Bus Type: PCI
- Connectors: Four (or eight) RJ-11 mini jacks
- Cables: Four (or eight) modulated telephone cables
- Temperature: 32° to 120°F (0° to 50°C)
- Power: 2.5 amp @ +5v DC (8 ports; ISI5634PCI/8)
1.7 amp @ +5v DC (4 ports; ISI5634PCI/4)
- Base I/O Address: One 16-byte address space per card
- Interrupt Request (IRQ): One IRQ per card (can be shared)
- Warranty: Two years

Manufactured in Mounds View, MN, U.S.A.

Intelligent
Serial *Interface*

Chapter 2—Hardware Installation

Introduction

Included in this chapter are two sets of instructions for installing the Multi-Tech ISI5634PCI card in your PCI bus personal computer. The first set of instructions is for installing the ISI5634PCI card. The second set contain instructions for installing the ISI5634PCI card and the auxiliary module.

Safety Warnings Telecom

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jacks are specifically designed for wet locations.
3. This product is to be used with *UL* and *CUL* listed computers.
4. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
5. Use caution when installing or modifying telephone lines.
6. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
7. Do not use the telephone to report a gas leak in the vicinity of that leak.
8. To reduce the risk of fire, use only No. 26 AWG or larger Telecommunication line Cord.

Hardware Installation Procedures

Installing the ISI5634PCI card WITHOUT the auxiliary module:

1. Before handling the ISI5634PCI, discharge any static in your body by touching a piece of grounded metal such as the computer chassis.
2. Carefully remove the ISI5634PCI from its antistatic bag, handling it only by the mounting bracket and edges. Do not touch the gold-plated connectors along the bottom edge. (You may want to save packaging for possible future use.)
3. Visually inspect the ISI5634PCI card. If you have any concerns about its condition, call Technical Support at 800-972-2439.

4. To avoid damaging the ISI5634PCI card and your PC, make sure your computer and any peripheral equipment connected to it are turned off. The ISI5634PCI can be installed in any Pentium equivalent PCI bus computer.
5. Remove the cover of your computer as instructed in your computer's documentation.
6. Locate the unused PCI slot you will be using for your ISI5634PCI card and remove the slot cover according to instructions in your computer's documentation.
7. Install the ISI5634PCI card into the selected expansion slot in the same manner as any other add-on card, as instructed in your computer's documentation.
8. Fasten the retaining bracket to computer chassis and replace cover.
9. Plug one end of the phone cable into each modem's LINE jack and the other end into a phone line wall jack.

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

Note: *The Federal Communications Commission (FCC) and Industry Canada impose certain restrictions on equipment connected to public telephone systems. Refer to Appendix A—Regulatory Information in the User Guide for more information.*

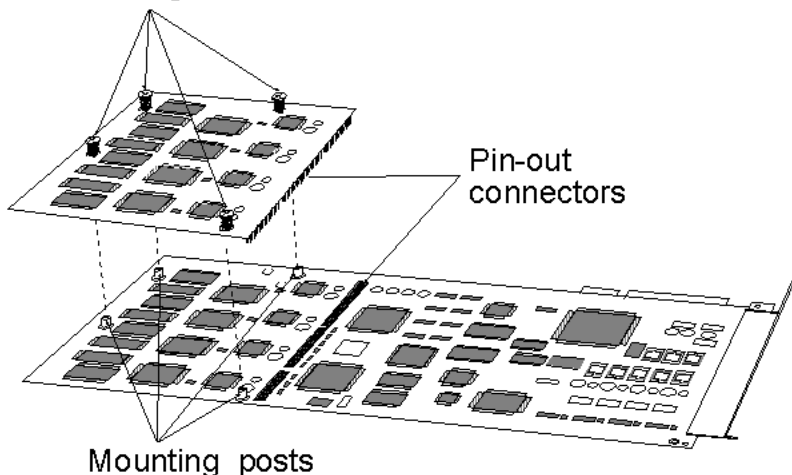
10. Turn on the power to the computer. You now are ready to install your drivers.

Installing the ISI5634PCI card WITH the auxiliary module:

1. The auxiliary module attaches to the ISI5634PCI card. If you already have this card installed, you must remove it from the PC to install the auxiliary module.
2. Before handling the ISI5634PCI card or the auxiliary module, discharge any static in your body by touching a piece of grounded metal such as the computer chassis.
3. Carefully remove the ISI5634PCI card and module from the antistatic bag, handling only by the mounting bracket and edges. Do not touch the gold-plated connectors along the bottom edge. (You may want to save packaging for possible future use.)
4. Visually inspect the ISI5634PCI card and the auxiliary module. If you have any concerns about its condition, call Technical Support at (800) 972-2439.
5. To avoid damaging the card, module, or your PC, make sure your computer and any peripheral equipment connected to it are turned off. The ISI5634PCI and auxiliary module can be installed in any Pentium equivalent PCI bus computer.
6. Remove the cover of your computer as instructed in your computer's documentation.

- Before installing the ISI5634PCI card, carefully line up the pin-out connectors of the ISI5634PCI card with the pin-out connectors of the auxiliary module. See figure below.

Mounting screws



- Press gently but firmly to seat the module onto the card.
- Fasten the mounting connections (four screws) of the auxiliary module to the ISI5634PCI card. See figure above.
- Install the ISI5634PCI card into the selected expansion slot in the same manner as any other add-on card, as instructed in your computer's documentation.
- Fasten the retaining bracket to computer chassis and replace cover.
- Plug one end of the phone cable into each modem's LINE jack and the other end into a phone line wall jack.

There are 8 phone line receptacles on the ISI5634PCI-4, as well as 8 phone line receptacles on the ISI5634PCI-8. However, only four of these receptacles are functional on the ISI5634PCI-4 card. When connecting phone lines to the ISI5634PCI-4, be sure to use the first four receptacles on ISI5634PCI-4 card, *starting at the*

edge of the board with the screw-hole for attaching the card to the computer chassis.

13. Turn on the power to the computer. You now are ready to install your drivers.

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

Note: *The Federal Communications Commission (FCC) and Industry Canada impose certain restrictions on equipment connected to public telephone systems. Refer to Appendix A—Regulatory Information in the User Guide for more information.*

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Chapter 3 — Driver Installation

Introduction

The ISI5634PCI card ships with drivers for each of the following operating systems: Windows® 2000, Windows NT, Windows 95, Windows 98, Windows Me, Novell Netware version 5.x, SCO Open Server 5, and Linux. This chapter describes the installation of these drivers.

In most cases, you will receive the ISI drivers on a CD-ROM. In certain situations, however, software may be downloaded from the MultiTech web site, often onto diskette, and then installed. The instructions in this chapter generally presume that the driver files are being installed from CD-ROM and therefore show driver files being loaded from locations on the ISI Family CD-ROM. If installation is from diskette, you will be loading driver files from file path locations on that diskette. For example, a driver file found at `E:\servcard\drivers\win2000\` when installing from CD-ROM, might be located simply at `A:\` if installation is from diskette.

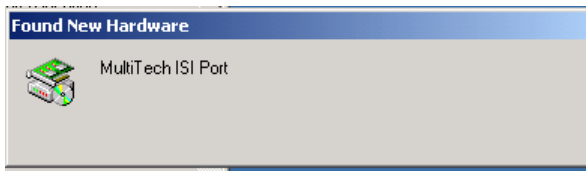
Installing a device driver modifies your system. For this reason, only the *super user* (system administrator) is allowed to perform the installation. If you cannot login as **administrator**, find the person in your organization with this authorization (i.e., password). To begin driver installation, login as **administrator**. Then proceed with the appropriate section: Windows 2000, Windows NT or Windows 95/98/Me. For Novell Netware, you need rights to read and write to the SYSTEM directory. The Unix-based operating systems, SCO and Linux, similarly require such administrative rights.

Windows 2000: Driver Installation

NOTE: A series of ‘installation wizard’ screens will appear repeatedly during this procedure (steps 11 through 15). This is not an error. Do not discontinue the procedure when the ‘installation wizard’ screens repeatedly appear.

1. Ensure that your ISI5634PCI card has been installed according to the Hardware Installation Procedures in Chapter 2.
2. Turn on the PC and start Windows 2000.

3. Insert the ISI Family CD-ROM into the CD-ROM drive (if drivers have been downloaded from the MultiTech web site, they will typically be on diskette; in that case, insert diskette into floppy drive).
4. Windows 2000 will detect the ISI5634PCI card. The **Found New Hardware Wizard- Welcome** screen will appear. Click **Next**.
5. The **Install Hardware Device Drivers** screen appears. Select "Search for a suitable driver ..." and click **Next**.
6. The **Locate Driver Files** screen appears (Windows 2000 is seeking the driver for the ISI5634PCI card). Select "CD-ROM drives" and click **Next**.
7. The **Driver File Search Results** screen appears. Click **Next**.
8. A progress screen will appear briefly while files are being copied.
9. A completion screen will appear. Click **Finish**.
10. Immediately after the ISI driver installation has been completed, another **Found New Hardware** screen will appear briefly indicating that the "MultiTech ISI Port" has been detected.



A second sequence of ‘installation wizard’ screens appears. This sequence of screens deals with the setting up of ISI ports. The first screen in this sequence is the **Found New Hardware Wizard -- Welcome** screen.



The **Found New Hardware -- MultiTech ISI Port** screen will appear once for each modem on the ISI5634PCI card:

- 8 times for the ISI5634PCI-8; or,
- 4 times for the ISI5634PCI-4.

11. The **Install Hardware Device Drivers** screen appears.

Select “Search for a suitable driver ... “ and click **Next**.

12. The **Locate Driver Files** screen appears (Windows 2000 is seeking the ISI Port device driver). Select “CD-ROM drives” and click **Next**.

13. The **Driver Files Search Results** screen will indicate that the “isiport.inf” file has been found on the CD-ROM. Click **Next**.

14. A completion screen will appear. It will indicate that the first “MultiTech ISI Port” has been set up successfully.



Click **Finish**.

Notice that the auto-detection facility of Windows 2000 will repeat the “ISI Port” installation sequence 3 more times for ISI5634PCI-4, or 7 more times for ISI5634PCI-8. That is, the **Found New Hardware -- MultiTech ISI Port** screen will appear many times after the ISI driver has been located. On this screen, the messages “Found New Hardware” and “Installing ...” will appear alternately.

Please understand that the repetition of these screen sequences is normal and is not an error. It does not indicate any problem with your PC, or with the MultiTech ISI card, or its driver software.

15. Driver installation for the ISI5634PCI card is complete.

Windows 2000: Installing Modems to COM Ports

Pre-Requisite: Installation of Windows 2000 driver software must be completed before you can install the modems of the ISI5634PCI card.

1. Go to **Start | Settings | Control Panel | Phone and Modem Options**.

2. The **Location Information** screen appears.

Enter the appropriate area code and access number. Click **OK**.

3. At the **Phone and Modem Options** screen, click on the **Modems** tab and click **Add**.

4. At the **Install New Modem** screen, click on "Don't detect my modem ... " and click **Next**.

5. If the ISI Family CD-ROM (or other media, in cases of using drivers downloaded from the MultiTech web site) is not already in the appropriate disk drive in the PC, insert it now.

6. The **Add/Remove Hardware Wizard** screen will appear.

Click "Have Disk"

7. The **Install from Disk** screen will appear.

Type or browse for the file path of the modem software (for example, E:\servcard\drivers\win2000). Click **OK**.

8. The **Install New Modem** screen will appear.

Highlight "ISI5634PCI -8 PCI 56K Modem." Click **Next**.

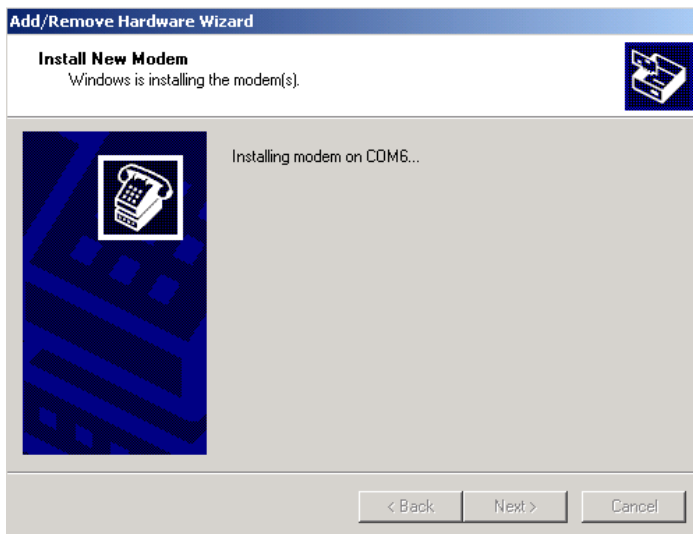
9. The '**Install New Modem - port list**' screen will appear.

Highlight the COM ports on which you want modems to be installed. You must allocate 4 ports for the ISI5634PCI-4, or 8 ports for the ISI5634PCI-8.

Click **Next**.

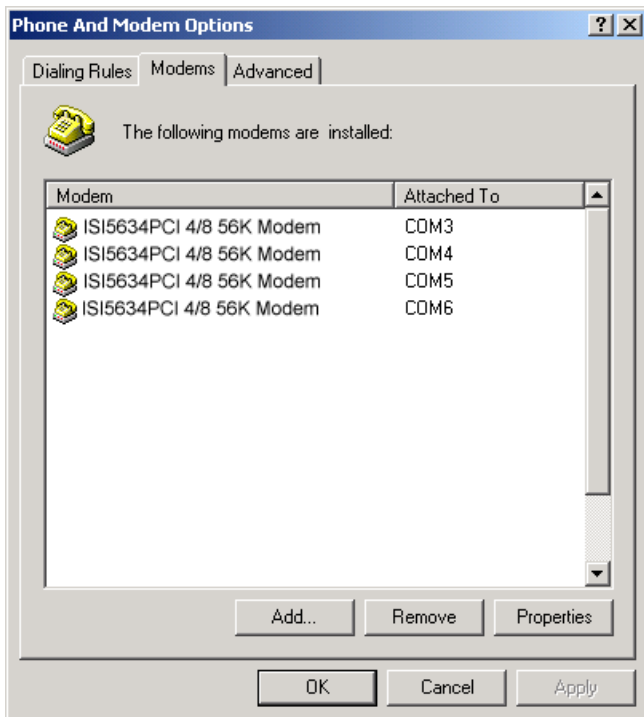
10. A progress screen will appear as modem installation begins.

11. Screens denoting the installation of modems to specific COM ports will appear for each modem installed.



12. A completion screen will appear. Click **Finish**.

13. The **Phone and Modems Options** screen (**Modems** tab) will re-appear and display the modems that have just been assigned to COM ports.



Installation of modems to COM ports in Windows 2000 is now complete.

Windows 2000: Removing ISI5634PCI Driver

1. Go to **Start | Settings | Control Panel**.
2. Click on **Add/Remove Hardware**. Click **Next**.
3. Click on “Uninstall/Unplug a device” and click **Next**.
4. In the subsequent screen, click on “Uninstall a device” and click **Next**.
5. At the **Add/Remove Hardware Wizard** screen, highlight the ISI driver file for the specific server card that you intend to remove. Click **Next**.
6. When you are asked to confirm removal, click on the **Yes** radio button and click **Next**.
7. Click **Finish**. You can remove the driver for only one ISI5634PCI card at a time.

Windows 2000: Installing ISI Management Software (server OSs only)

If you are using a Windows 2000 Server operating system ("Server" or "Advanced Server"), you must decide whether you want to use the MultiTech ISI Management Software in conjunction with your ISI5634PCI card. The ISI Management Software is shipped with the ISI card and, alternatively, can be downloaded from the MultiTech web site (www.multitech.com).

1. Turn on your computer and start Windows 2000.
2. Insert the ISI Family CD-ROM or diskette containing the ISI Management Software into your CD-ROM or floppy drive.
3. From **My Computer**, right click on the **CD-ROM icon**. The ISI Management Software is in the **Servcard | Utilities |Mgmt** folder. Double click on **Setup.exe** and the Install Shield Wizard loads the management software.
4. The **ISI Management Welcome** screen appears, click **Next**.
5. A progress screen appears while files are copied. If the **Error Creating Virtual WWW Server** message appears, it may indicate that there was an attempt to install the ISI Management Software on a client version of Windows 2000. (The ISI Management Software can be installed only in the *Windows 2000 Server* and *Windows 2000 Advanced Server* operating systems.)
6. A completion screen appears. Select "Yes, I want to restart my computer now" and click **Finish**.

After the computer has restarted, the installation of the ISI Management Software will be complete.

Windows NT: Driver Installation

The following procedure describes how to install the ISI5634PCI in a system operating Microsoft Windows NT 4.0 for use with Remote Access Service (RAS) server and other communications/fax server type applications.

1. Ensure that your ISI5634PCI card has been installed according to the Hardware Installation Procedures in Chapter 2.
2. Turn on the PC and start Windows NT.
3. Insert the ISI Family CD-ROM into the CD-ROM drive (if drivers have been downloaded from the MultiTech web site, they will typically be on diskette; in that case, insert diskette into floppy drive).
4. Click **Start, Settings, Control Panel**, and then double-click **Network**. In the **Network** dialog box, click the **Adapters** tab.



Click **Add**.

5. The **Select Network Adapter** dialog box appears. Click **Have Disk**.
6. The **Insert Disk** dialog box appears. Type in or browse for the path (file directory location) of the Windows NT driver (for example, E:\servcard\drivers\winnt\setup.exe). Click **OK**.
7. The **Select OEM Option** dialog box appears. Click **OK**. The driver files will be copied from the ISI Family CD-ROM.

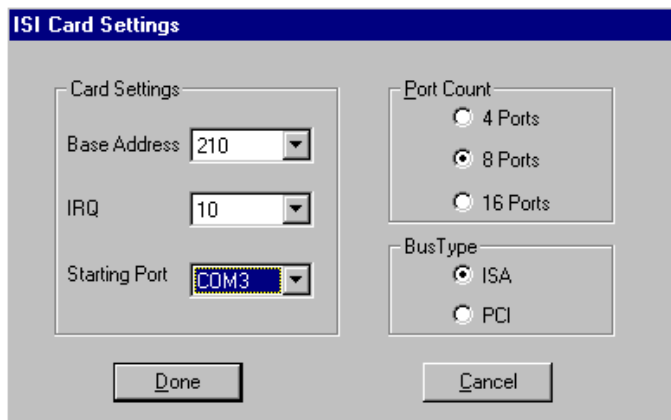
A transient dialog box will appear indicating the progress of the setup program.

8. The **ISI Cards** dialog box appears. Click **Add**.
9. Then the **ISI Card Settings** dialog box appears. In the **Port Count** field, enter the correct port count, as follows:
 - allocate 4 ports for the ISI5634PCI-4
 - allocate 8 ports for the ISI5634PCI-8

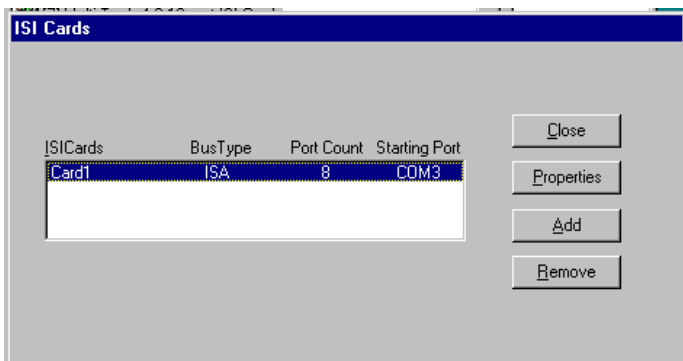
Select the first port number (**Starting Port** field) for ISI5634PCI modems. Typically, in a newly outfitted server, this will be COM3.

In the **Bus Type** field, select “PCI.”

When the correct settings have been made, click **Done**.



10. The **ISI Cards** dialog box appears again showing the port resource allocation that has just been made.



To add additional ISI5634PCI cards, click **Add** and repeat step 9. After the last ISI card has been added, click **Close** in the **ISI Cards** dialog box.

11. The **Multi-Tech 8-port PCI Card** appears in the **Network Adapters** dialog box. Click **Close**.
12. After bindings are reviewed and stored, the **Network Settings Change** dialog box appears. Click **Yes** to reboot your system.

The ISI5634PCI now is installed in Windows NT and you are ready to install modems.

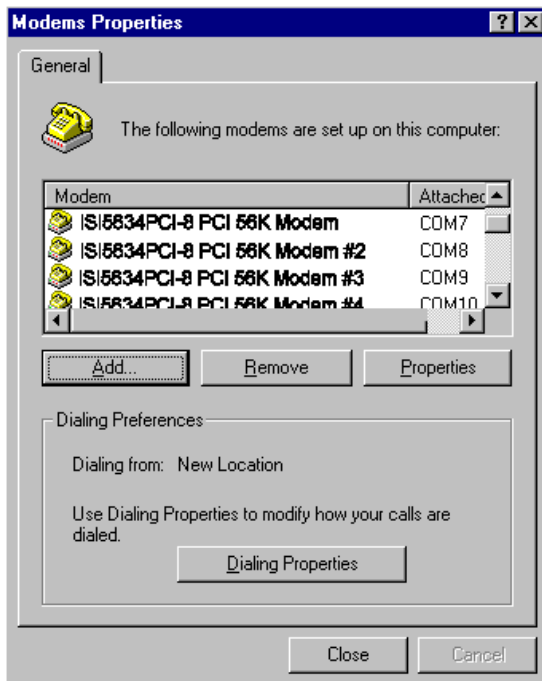
Windows NT: Installing Modems to COM Ports

1. Click **Start | Settings | Control Panel**, and double-click the **Modems** icon.
2. The **Modem Properties** dialog box appears. Click **Add**.
3. The **Install New Modem** dialog box appears. Check the box marked **Don't detect my modem; I will select it from a list** and click **Next**.
4. The **Install New Modem - Models** dialog box appears.

Highlight "ISI5634PCI-8 PCI 56K Modem" and click **Next**.

5. Select ports for modem use.
 - For the ISI5634PCI-4, you should have reserved four ports during driver installation. Highlight four ports in the list.
 - For the ISI5634PCI-8, you should have reserved 8 ports during driver installation. Highlight eight ports in the list.

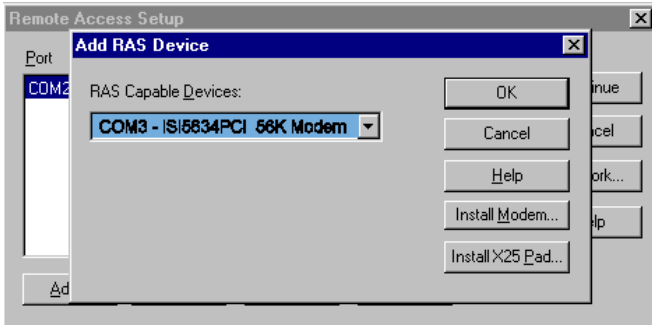
Click **Next**. The modems will be installed to the selected COM ports.
6. After the modems install to the ports, click **Finish** to return to the **General** tab.
7. To view COM port assignments (and make changes if necessary), use the **Modem Properties** dialog box.



8. When finished, close the **Modem Properties** dialog box. A message appears asking if you want to configure Dial-Up

Networking.
Click **Yes**.

9. The **Remote Access Setup** dialog box appears. Click **Add**.
10. Each COM port appears in a separate **Add RAS Device** dialog box. To add the highlighted device, click **OK**.



11. The **Remote Access Setup** dialog box displays again. Repeat steps 9 and 10 until all modems are added.
12. When all modems have been added (four modems for the ISI5634PCI-4; eight modems for the ISI5634PCI-8), click **Continue**.
13. After bindings have been reviewed and stored, you will be prompted to re-start your computer. Click **Yes**.

You have completed installation of modems to COM ports and configuration of RAS in Windows NT.

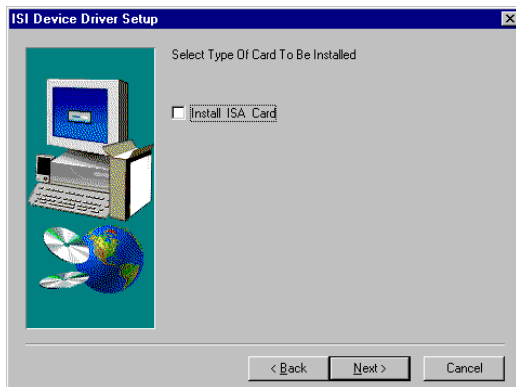
***Note:** By default, Microsoft sets the serial baud rate at 57,600 bps. For improved performance, you can raise the serial baud rate. To do so, go to **Start | Settings | Control Panel**. Click on the **Modems** icon. Then click on the **Properties** button of the **Modems Properties** dialog box. Reset the “Maximum Speed” as needed. A speed of 320,400 bps improves performance significantly without complications in most cases.*

Windows NT: Removing ISI5634PCI Driver

1. Click **Start**, **Settings**, **Control Panel**, and then double-click **Network**.
2. The **Network** dialog box appears. Click the **Adapters** tab.
3. Select **Multi-Tech 4, or 8-port ISI Card**, and then click **Remove**.
4. To complete an uninstall, reboot your computer.

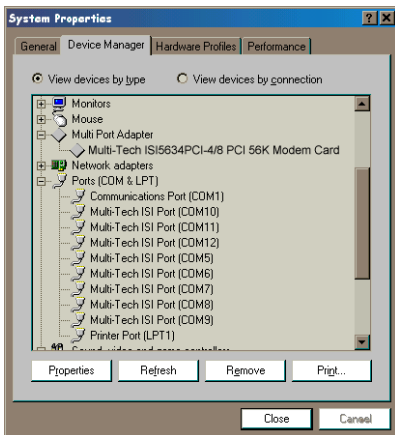
Windows 95/98/Me: Driver Installation

1. Ensure that your ISI5634PCI card has been installed according to the Hardware Installation Procedures in Chapter 2.
2. Turn on the PC and start Windows 95/98/Me.
3. Windows will autodetect the ISI5634PCI card. When the **Add New Hardware Wizard** screen appears, click **Cancel**.
4. Insert the ISI Family CD-ROM into the CD-ROM drive. (If driver was downloaded from MultiTech web site and placed on a diskette, insert diskette into floppy drive now.)
5. (Follow either 5A or 5B, but not both.)
 - A. From Windows Explorer, open the **95-98-Me** directory on the CD-ROM (for example, E:\SERVCARD\DRIVERS\95-98-ME\SETUP.EXE) or floppy drive that contains the ISI driver file. Highlight the file **setup.exe**.
 - B. From the **Start** menu, go to **Run**. Browse to the path of the **95-98-ME** directory (for example, E:\SERVCARD\DRIVERS\95-98-ME\).
6. Launch the setup program. (From Windows Explorer, double-click on **setup.exe**; from the **Run** menu, click **OK**.)
7. The installation wizard will begin running. At the **Welcome** screen, click **Next**.
8. Under **Select Type of Card**, do not check the **Install ISA Card** box.



Click **Next**.

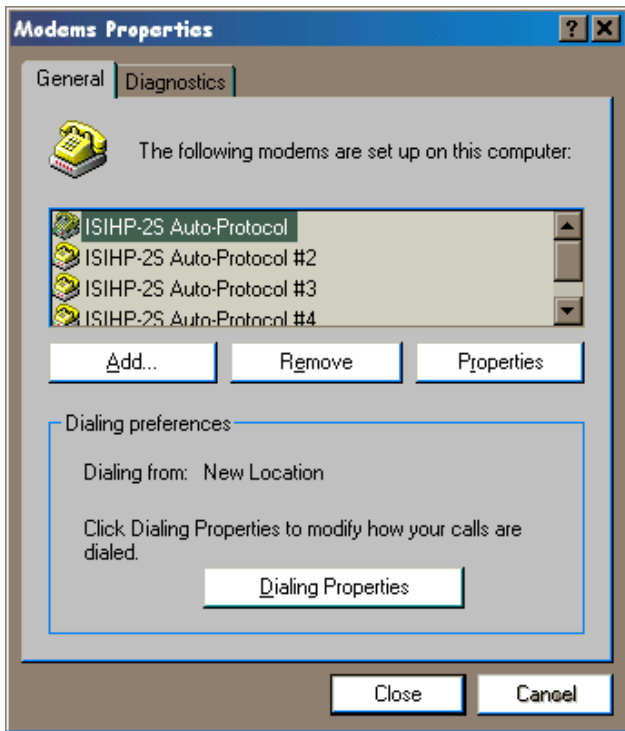
9. A completion screen appears.
10. When prompted to restart your computer, click **Yes** and click **OK**.
11. During the re-start process, Windows 95/98/Me will detect the ISI5634PCI card. The **Add New Hardware Wizard** screen will appear. Click **Next**.
12. The next screen asks, **What do you want Windows to do?** Click on **Search for the best driver for your device**. Click **Next**.
13. When asked for the location at which Windows 95/98/Me should search for the new driver, check **Specify a Location** and enter the path (file directory location) of the driver.
14. Windows will indicate that the .INF file for the ISI5634PCI card has been found. Click **Finish** to complete device driver installation.
15. Windows will now detect and create COM ports (for ISI5634PCI-4, 4 ports are made; for ISI5634PCI-8, 8 ports are made).
16. After the COM ports have been created, you must re-boot your PC (remove the diskette from the floppy drive before re-booting).
17. To view the COM ports, click **Control Panel** and double-click **System**. The **System Properties** dialog box appears.



The **MultiTech PCI ISI Card** is located under **Multi Port Adapter**. Click **Ports (COM & LPT)** to view the ports. Click **OK** to close.

Windows 95/98/Me: Installing Modems to COM Ports

1. Click **Start, Settings, Control Panel**, and then double-click the **Modems** icon. In the **General** tab, click **Add**.

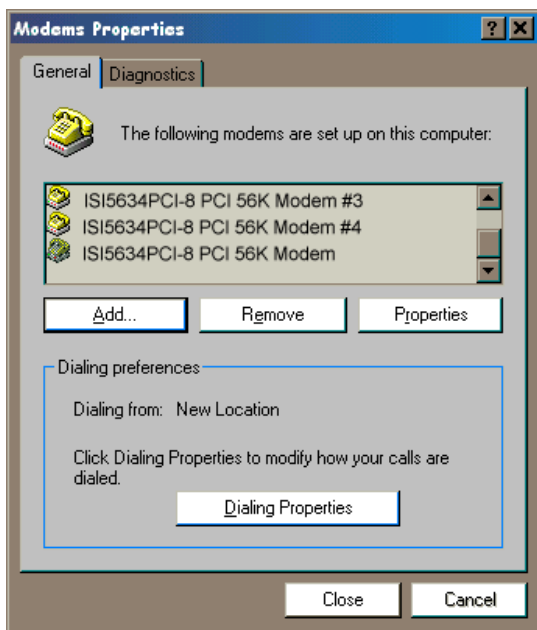


2. The **Install New Modem** dialog box will appear. Check the box marked "Don't detect my modem; I will select it from a list." Then click **Next**.
3. The **Install New Modem - Manufacturers** dialog box appears. In the **Manufacturers** list, scroll down and highlight "MultiTech Systems." In the **Models** list, highlight the modem type used on the ISI board. Highlight "ISI5634PCI-8 PCI 56K Modem" and click **Next**.
4. The **Install New Modem** dialog box appears. Select the numbered COM ports onto which you want to install the modems.

For the ISI5634PCI-4, select four COM ports (COM6 through COM9 are shown in this example). For the ISI5634PCI-8, select eight COM ports.

Click **Next**. The modems will be installed to the designated COM ports.

- When installing the first ISI modem, the **Location Information** screen will appear (it does not appear when additional modems or terminal adapters are installed). Fill in the appropriate area code and phone number information.
- After the modem installs to the port, click **Finish**.
- Return to the **General** tab to view COM port assignments (and make changes if necessary).



- Click **Add** and repeat installation steps 2–7 to install modems (one at a time)
 - to the last three modem ports of the ISI5634PCI-4, OR
 - to the last seven modem ports of the ISI5634PCI-8.

Windows 95/98/Me: Removing ISI5634PCI Driver

1. Click **Settings, Control Panel**, and then double-click **Add/Remove Programs**.
2. From the list box, select **MultiTech ISI Driver Device**.
3. Click **Add/Remove** and follow screen instructions.

NetWare Driver Installation

Multi-Tech Systems provides AIO drivers for the ISI5634PCI cards, so they can function with Novell compatible asynchronous applications (e.g., NetWare Connect). The AIO driver is simply an NLM (NetWare Loadable Module) that runs on the file server. Drivers must be loaded on the file server where the card is installed. Drivers can be loaded from the file server's console prompt or incorporated for autoloading in the AUTOEXEC.NCF file.

The file AIOMTS.MDC contains Novell (version 3.12 and higher) initialization strings for ISI products not previously listed for use with BorderManager and Netware Connect. The file AIOMTS.MDC is included on the ISI Family CD. To benefit from the AIOMTS.MDC file, you must copy it from the CD to the appropriate directory on your computer.

To use AIOMTS.MDC under Border Manager, RAS, NIAS in 4.2 or 5.x:
Copy AIOMTS.MDC to your System directory.

To use AIOMTS.MDC under Novell NetWare 3.x, 4.1, 4.11 with NetWare Connect 2.0.28 or higher:

Copy AIOMTS.MDC to your System and System/AIO directory.

To install the Multi-Tech AIO driver, copy the file *AIOISIX.NLM* to the system directory of the file server from a workstation on the network. To copy, you can use the following command:

```
COPY E:\SERVCARD\DRIVERS\NOVELL\AIOISIX.NLM  
F:\SYSTEM
```

If you have downloaded the ISI driver from the MultiTech web site onto a diskette, use this command:

```
COPY A:\NOVELL\AIOISIX.NLM F:\SYSTEM
```

To load the driver, go to the system or PC console (where the ISI card is installed) and enter the following at the prompt:

```
LOAD AIOISIX [port=W] [interrupt=X] [name=Y] [note=Z]
```

Because the ISI5634PCI models are PCI-bus cards, Netware will set up the interrupt (IRQ) and I/O address automatically.

To install the ISI card scripts, copy **aiomdms.mdc** to **f:\system\aiod\directory**. Click **Yes** to overwrite the existing aiomdms.mdc file.

Configuring Ports for NetWare Connect

When the driver is installed, it will allocate consecutive ports for the ISI card as follows:

- 8 consecutive ports for the ISI5634PCI-8
- 4 consecutive ports for the ISI5634PCI-4

To set up NetWare Connect ports, enter **LOAD NWCCON** at the NetWare console prompt. **LOAD NWCCON** opens the NetWare Connect Configuration Utility. Select the appropriate menu options (modem type, speed, flow control, etc.).

Removing the Driver (Novell)

In Novell, remove file **AIOISIX.NLM** from the system directory and make the appropriate changes to the *Autoexec.ncf* file.

SCO Open Server 5 Driver Installation

The ISI driver for SCO Open Server 5 is shipped on ISI Family CD-ROM (FAT file system) and can also be downloaded from the Multi-Tech web site. In both cases, the driver files are compressed (“tarred”). Users installing from the CD-ROM should begin at “To install from CD-ROM” directly below. Users installing from a floppy disk should skip down to “To install driver from floppy disk” later in this section. The filename of the SCO5 driver in its tarred form is **sco50x.tar**.

This present installation section is task-oriented with minimal explanation of procedural steps. The section *Multi-Tech Installation Script*, which immediately follows this section, presents additional details to aid in installation.

To install from CD-ROM:

```
# mount -r /dev/cd0 /mnt
# cd /mnt
# cd servcard/drivers/sco50x
#cp sco50x.tar /
# cd <ENTER>
```

To format a floppy disk for SCO5:

1. At the Unix prompt, run the **scosh** program.
2. Select **Manager**.
3. Select **Archive**.
4. Select **Format**.
5. Make sure that Device is pointed to the floppy drive.
6. Select **Continue**.

To untar the driver file and copy files onto floppy disk:

1. Make a temporary directory for the ISI driver files..

```
# mkdir /isi
```

2. Copy the tarred isi driver file into the temporary directory.


```
# cp sco50x.tar /isi
```

3. Untar this file and put its contents into the temporary directory.

```
# cd /isi
```

```
# tar xvf sco50x.tar
```

4. Copy the untarred (inflated or non-compressed) files to a floppy disk

```
# cd /isi/unifiedinstimg301
```

```
#scosh
```

- Select **Manager**.

- Select **Archive**.

- Select **Create**.

- Press space bar to highlight tmp/ and usr/ directories.

- Press <ENTER> to copy.

- Make sure Device is pointed to the floppy disk.

- Make sure that the “Type” is cpio.

- Select **Continue**.

5. To verify that the files have been copied onto the floppy disk, use these commands:

```
# scosh
```

- Select **Manager**.

- Select **Archive**.

- Select **List**.

- Make sure Device is pointed to the floppy disk.

- Select **Continue**.

To install driver from floppy disk

(Users starting with the unbarred SCO5 driver on a floppy disk can begin the installation here).

1. Run the **custom** utility.
2. Select **Software**.
3. Select **Install New**.
4. Highlight driver file from local host and select **Continue**.
5. Select as the Media Device “Floppy Disk Drive.”
6. Select **Continue**.
7. Highlight “Multi-Tech ISA/PCI ...” and select **Install**.
8. Enter **Y** (yes) to continue installing the ISI driver.
9. As many as four ISI cards can be installed in the server.

Regardless of how many cards you will install in your server, type **0**. (Because the ISI5634PCI cards are PCI-equipped, SCO can detect the cards and will set up I/O addresses and IRQ values as needed.

For further details see *MultiTech Installation Script* step 1.

10. Type the number of pseudo-devices to be created.
For the ISI5634PCI-4, type **4**.
For the ISI5634PCI-8, type **8**.

For further details see *MultiTech Installation Script* step 2.

11. Type **Y** (yes) to accept the prefix for tty ports. For further details see *MultiTech Installation Script* step 3.
12. Type **Y** (yes) to confirm the selection. For further details see *MultiTech Installation Script* step 4.
13. After the driver is installed, press <ENTER> to continue. For further details see *MultiTech Installation Script* step 4(last paragraph) and step 5.
14. Exit the **custom** utility. For further details see *MultiTech Installation Script* step 6.
15. Remove the floppy disk and reboot your computer. For further details see *MultiTech Installation Script* step 7.

MultiTech Installation Script

The Multi-Tech Installation Script for SCO Open Server 5 systems requests information about how many boards you want to install, designations for communication ports and printer ports, and how many pseudo devices you want to create for Multi_View utility. Based on this information, the appropriate driver files will be installed and linked with your system's kernel.

1. This text appears on the screen:

```
You can install up to 4 ISA/PCI cards in a
system. The PCI cards will be autodetected
on bootup [ISI5634PCI is a PCI card, i.e.,
it has a PCI bus]. Enter the number of ISA
cards you want to install and configure on
your system (0-4):
```

Select **0** if your computer has a PCI bus. This tells the SCO operating system to autodetect the ISI cards.

2. The following text appears on the screen:

```
Multi_View is a utility which will allow you
to have multiple sessions on terminals that
have multiple pages of physical memory. In
order for this utility to work with
MultiTech's serial cards, pseudo devices
have to be created in your /dev directory.
These devices are system-wide resources.
```

```
Enter the number of pseudo-devices to be
created for the use of Multi_View utility
(1 - 256).
```

The Multi_View utility initializes the multiple-page capability of terminals with multiple pages of memory. The number specified here is the total number of devices (between 1 and 256) available to all Multi-Tech terminals and it's the number of pseudo devices available to the Multi_View utility.

Specify **8** pseudo devices for each ISI5634PCI-8 card installed;

specify **4** devices for each ISI5634PCI-4 card installed.

For example, if the computer contains three ISI5634PCI-8 cards, you would enter **24**.

3. This text appears on the screen and relates to the “/dev” directory.

```
This script also creates the devices in your
system to communicate with the ports of
ISICOM. The default prefix for the tty
ports is ttyl. The default prefix for the
printer is prnl. Is this acceptable? (y/n/q) .
```

For most users, it's best to select **y**, which entails accepting the default values. Then proceed to step 4.

Details for use of non-default port/printer values. The /dev directory holds device-information files used by the kernel to access the hardware. When you add an ISI card, you must give the ISI ports unique names so they do not conflict with existing ports or with other devices known to your system. If a device name has already been assigned to an existing device and the operator assigns that name to a new device, then the existing device will be *deleted* when the ISI port using its name is created.

- a. To use a non-default base name, type **N** and then enter a basename having less than five characters. The base name you select will be used for all ports on each card you install. ISI port designations will have this form:

[basename prefix][board number][port letter].

basename: Length is one to four characters.

board number: Values will be 1, 2, 3, or 4, depending on how many ISI cards are installed in your computer.

port letter: For ISI5634PCI-4, use letters A through D for modems. For ISI5634PCI-8, use letters A through H for modems. (For terminal control devices, use lower-case letters as port identifiers.)

Device basename selected: _____

- b. After you select a device basename, you are prompted for a printer base name. This prefix identifies each port that supports a terminal with a printer attached to its auxiliary port (for transparent printing). Specify a unique printer base name (printer parameters are outlined in the Multi_Setup Utility section in this manual).

Printer base name selected: _____

When you have specified the device base name and the printer base name, press ENTER to continue.

4. The confirmation screen lists the values you have selected. The following text appears on the screen (default values are shown):

```
You have chosen the following setup
The tty prefix is ttyl.
The printer prefix is prnl.
Number of Multi_View pseudo devices
[user-specified number].
```

If these values are correct, type **Y** and the installation process will continue. If there is an error in any of the values displayed, type **N** and the first screen displays. Then re-enter the information for each card.

When you accept the confirmation list (by typing **Y**), a series of messages displays while the driver is being installed and the kernel rebuilt. After the terminals have been added to the Terminal Control database, and when the display says "**Press <Enter> to continue:**", then press ENTER. When **Installation complete** displays, press ENTER again.

5. Select **Host** and press ENTER . Remove diskette from the drive.
6. Select **Exit** and press ENTER .
7. To reboot the system (required), enter the following commands:

Type **shutdown -g0-y** and press ENTER

OR

Type **init 6** and press ENTER .

Driver installation for the ISI5634PCI card now is complete.

Activating Ports in SCO Open Server 5

SCO Open Server 5 provides a device database that monitors the activity of serial ports through which users can log onto the host. If your ISI ports are used by terminals (e.g., to allow users to log onto your host), you must create an entry in the system's device database that furnishes specific information for the terminals that will be used on each ISI port. The database is referenced each time a user attempts to log in. If there is no database entry for a particular terminal, access to the host is denied.

1. Turn on your system and verify that the firmware for each ISI5634PCI card loads successfully. If the firmware for a given ISI5634PCI card does not load, none of its ports will be accessible.
2. Type the complete name of the first device you want to create in **usr/lib/uucp/Devices**. Substitute the specific base name, board number, and port letter for the generic parameters in the expression **ttylbx**. Use a lower-case **x** value for local DTE (terminal) support and an upper case **X** value for modem control for each port you want to enable. Example: **ttyl2A** denotes the second ISI card (2) and the first port on that card (A). The port status can be altered later, but one setting must be selected at this time. The ACU line would read as follows:
ACU ttylbX - 9600 dialer name. Replace **b**, **X** and **dialer-name** with appropriate values.
3. Repeat this process for each port on each board you have installed. **Record the setting you select for each port.**
4. Using device names created in the previous section, type the following command for each port you want to activate: **enable ttylbx**
5. Repeat this command for each port you want to activate, using the lower case letter for local terminal use or upper case for modem control.

***Note:** Only one of the options (e.g., modem control or local terminal access) should be enabled for any port at one time. For example, you cannot enable `tty11a` and then enable `tty11A`. To change the status of a port, disable the current status (`disable tty11a`) and then enable it for the desired status (`enable tty11A`).*

Removing the Driver (SCO Open Server 5)

To remove the ISI Driver, enter the configuration utility (e.g., custom for SCO Open Server 5) and follow instructions to remove the entire driver and rebuild the kernel without the ISI driver. If it is necessary to reinstall the driver due to I/O address or IRQ overlap, remove the driver first.

Note: Remove the driver before permanently removing the ISI card from the computer.

Linux Driver for ISI5634PCI-4/8

This is the standard installation procedure for Linux and is applicable to all Linux operating systems of the correct kernel level (2.0, 2.2, or 2.4). The next major section of this manual, *RedHat Linux 6.2/7.0 RPM Drivers for ISI Server Cards (PCI bus only)*, is an alternative installation procedure applicable only to RedHat Linux 6.2 and 7.0 using the RedHat Package Management System (RPM). Note that RedHat Linux versions 6.2 and 7.0 both use the Linux 2.2 kernel and the applicable ISI driver can be installed using this standard installation procedure, as well.

LINUX: Pre-Installation Issues

When unpacking the Linux driver, there are two choices, one driver for the 2.0.x kernel (at this writing, it is filename L300_20X.TAR), and one driver that works for both the 2.2.x kernel and the 2.4.x kernel, (at this writing, it is filename L305_22X_24X.TAR). Be absolutely positive about which kernel you have! Note that updated driver files may be issued from time to time.

The 'make' utility, GNU C compiler, and the kernel sources need to be installed on your system. If any of these are missing, the compilation will fail. Most later Linux OSs install these elements automatically .

LINUX: Copying the driver from the media

The Linux drivers (2.0 and 2.2/2.4 kernel) are shipped in compressed ('tarred') form on the ISI Family CD-ROM formatted with the FAT file system. In some cases, users may download Linux ISI drivers from the MultiTech web site onto diskette (in ext2 format). We present instructions for both situations below.

LINUX: Copying and untarring the driver from CD-ROM

1. Mount the CD-ROM using this command:

```
mount -r /dev/cdrom /mnt/cdrom
```

2. Change directory

```
cd /mnt/cdrom
```


3. List the files on the CD-ROM and locate the directory for the kernel in use (2.0 or 2.2/2.4), using this command

```
ls
```

4. Untar the appropriate Linux driver using this command:

```
> tar vxf {filename}/tmp
```

At this writing, the filename will be either L300_20X.TAR or L305_22X_24X.TAR.

LINUX: Copying and untarring the driver from a floppy

The ISI driver *.tar* file can be copied from a DOS formatted floppy using the 'mcopy' command if the 'mtools' have been installed. Issue 'mcopy a:isilinux.tar <destination folder>' to copy the isilinux.tar (or current driver name) file to the destination folder. As an alternative, the floppy can be manually mounted and the file copied to the required destination folder.

NOTE: To read from a DOS formatted floppy, a kernel with support for the FAT file system (either statically linked in the kernel or as modules) is required.

Steps for copying the driver from a floppy:

1. Linux floppy disks are in ext2 format.
2. Insert Linux driver in drive A: and mount floppy drive.
3. Copy files from floppy to a temporary directory on hard drive.

```
> mkdir /isi
```

```
> cd /isi
```

```
> cp /mnt/floppy/kernel_2.2.x/* /isi
```

After you have copied the installation tar file to a folder, use the command 'tar xvf isilinux.tar' to untar (unzip or decompress) the installation files in that folder.

LINUX: Driver installation and loading

Execute the 'Install' script to build the driver and to copy the driver and firmware files to the required folder.

```
> cd /isi  
> ./Install
```

For ISI cards with the ISA bus, the installation script requires the user to type in the I/O address and the IRQ to be used. However, for ISI cards with the PCI bus (ISI5634PCI cards have the PCI bus), simply press ENTER when asked for addresses and IRQs. The installation creates the script file 'ISICOMStart' in the destination folder. 'ISICOMStart' automates the loading process for the driver and firmware.

To view busy I/O address space on your system, enter

```
cat /proc/ioports
```

To view busy IRQs, enter:

```
cat /proc/interrupts
```

You must load the driver before you can load the firmware. You can load the driver manually using the 'insmod' utility. For ISI cards with the ISA bus, the I/O base address and the IRQ required by the card also need to be passed as parameters to insmod (this does not apply to ISI5634PCI cards because they are equipped with the PCI bus).

```
insmod isicom io=card1, ... card4 irq=card1,  
... card4
```

The PCI cards and their configurations will be auto-detected by the driver.

You can manually load the firmware into all of the installed ISI cards simultaneously by executing the 'frml'd' utility in the installation folder. The firmware to all the installed cards can be manually loaded by executing the 'firml'd' utility in the installation folder. This utility requires the firmware files (.bin) to be located in the /usr/local/ISICOM/ folder.

LINUX: Setting the baud rate

The 'stty' utility can be used to set the baud rate of a particular port. For example, to set the baud rate of the first port on the first card (ttyM1a) to 38400 bps, execute 'stty 38400 < /dev/ttyM1a'.

The current baud rate can be viewed by executing 'stty < /dev/ttyM1a'.

LINUX: Verifying the ports

Terminal utilities like 'minicom' can be used to verify the ports, 'talk' to the modem, and dial out.

To configure 'minicom' for a particular port, run it with the '-s' option. In the 'serial port setup' menu option, set the serial device to the required ISI port device (for example, '/dev/ttyM1a' for the first port on the first card). Save the configuration for a particular port using the 'save setup as' menu option as, for example, '1a' for the port /dev/ttyM1a. To connect to the port /dev/ttyM1a using minicom the next time, 'minicom 1a' needs to be executed.

LINUX: TTY Devices Created by the Drivers:

Device files corresponding to ports on the ISI card are created in the /dev folder. Use **ttymxy** for normal ports and **cumxy** for corresponding callout ports. Normal ports (**ttym**) are configured for dial-in connections. Callout ports (**cum**) are used for dial-out connections.

In these expressions (**ttymxy** and **cumxy**), the letter **x** is the card number (1-4), and **y** is the port designator (a, b, c, ...).

The ISI Linux driver creates the following TTY devices in /dev directory:

- /dev/ttyM1a TO /dev/ttyM1p for the first ISI card
- /dev/ttyM2a TO /dev/ttyM2p for the second ISI card
- /dev/ttyM3a TO /dev/ttyM3p for the third ISI card
- /dev/ttyM4a TO /dev/ttyM4p for the fourth ISI card

For the ISI5634PCI-4, it uses the following:

- /dev/ttyM1a TO /dev/ttyM1d for the first card
- /dev/ttyM2a TO /dev/ttyM2d for the second card
- /dev/ttyM3a TO /dev/ttyM3d for the third card
- /dev/ttyM4a TO /dev/ttyM4d for the fourth card

For the ISI5634PCI-8, it uses the following:

- /dev/ttyM1a TO /dev/ttyM1h for the first card
- /dev/ttyM2a TO /dev/ttyM2h for the second card
- /dev/ttyM3a TO /dev/ttyM3h for the third card
- /dev/ttyM4a TO /dev/ttyM4h for the fourth card

Devices mapped for modem cards (ISI5634PCI-4 and ISI5634PCI-8 cards):

For ISI5634PCI-4 cards (4 ports):

- /dev/ttyM1a to /dev/ttyM1d *for modem ports.*

For ISI5634PCI-8 cards (8 ports):

- /dev/ttyM1a to /dev/ttyM1h *for modem ports.*

LINUX -- Dial-in configuration:

To configure a particular port for dial-in, utilities like 'mgetty' need to be installed on the system. If, for example, the port /dev/ttyM2c needs to be configured for a remote-access dial-in connection, an entry of the form 'M2c:12345:respawn:/sbin/mgetty ttyM2c' needs to be added in the /etc/inittab file. After you have made the change, execute 'init q' so that the 'init' process re-reads the inittab file and spawns the mgetty process to wait for an incoming connection. Users can then dial in, use their user names and passwords to log in, and access their accounts on the machine.

To disable dial-in access on a particular port, change the entry in the /etc/inittab file to 'M2c:12345:off:/sbin/mgetty ttyM2c' or just comment-out that entry by prefixing a '#' to the entry on the line.

LINUX -- PPP setup:

The 'PPP-HOWTO' (a document that is available as a part of the 'HOWTO' documentation on most of the distributions under /usr/doc/HOWTO) explains in detail the procedure for configuring a Linux machine as a PPP server. This information is also available at

<http://www.interweft.com.au/other/ppp-howto/ppp-howto.html>.

The documentation in the PPP-HOWTO is directly applicable to ISI ports.

Note: A base I/O address of 0, e.g., ISIBaseX=0x0, or omission of these parameters for any card X, disables that particular card.

Miscellaneous:

Device files corresponding to ports on the ISI5634PCI cards are created in the /dev folder. Use **ttymxy** for normal ports and **cumxy** for corresponding callout ports. The letter **x** is the card number (1–4), and **y** is the port number, (a–d) for 4-port cards or (a–h) for 8-port cards.

Normal ports (**ttym**) are configured for dial-in connections. Callout ports (**cum**) are used for dial-out connections.

To view busy I/O address space on your system, enter:

```
cat /proc/ioports
```

To view busy IRQs, enter:

```
cat /proc/interrupts
```

To load the driver manually, use `insmod`.

Example: To load two ISI cards configured with base I/O addresses 0x210 and 0x200 and IRQs 5 and 10, enter the following in the destination folder:

```
insmod isicom
ISIBase1=0x210
Irq1=5
ISIBase2=0x200
Irq2=10
```

To remove the driver manually, enter `rmmod isicom`. This removes the driver only if no ISI ports are in use.

Removing the ISI Driver (Linux)

1. Type `cd /usr/local`. Press ENTER.
2. Type `rm -r ISICOM`. Press ENTER.
3. This will remove driver for all ISI5634PCI cards in that Linux server.
4. Remove the `isictl` file by typing “`rm isictl`” in the `/dev` directory.
5. Remove all devices that start with `ttyM1x`, `ttyM2x`, `ttyM3x` and `ttyM4x` in the `/dev` directory.

```
“rm ttyM1*”
```

```
“rm ttyM2*”
```

```
“rm ttyM3*”
```

```
“rm ttyM4*”
```

RedHat Linux 6.2/7.0 RPM Drivers for ISI5634PCI-4/8 Server Cards

This installation procedure applies only to RedHat Linux versions 6.2 and 7.0. The standard ISI5634PCI Linux installation procedure (“Linux Driver for Multi-Tech ISI Server Cards (for PCI and ISA busses)”) can still be used for any Linux operating system of the correct kernel level (including RedHat Linux versions 6.2 and 7.0, if so desired). Note that RedHat Linux versions 6.2 and 7.0 both use the Linux 2.2 level kernel.

LINUX-RPM: Pre-Installation Issues

The 'make' utility, GNU C compiler, and the kernel sources need to be installed on your system. If any of these are missing, the compilation will fail. Most later Linux OSs install these elements automatically .

LINUX-RPM: Copying the driver from the media

The RedHat Linux RPM drivers are on the ISI-Family Installation CD-ROM in separate directories, ServCard/Drivers/Linux/RPMS/70RPM for version 7.0 and ServCard/Drivers/Linux/RPMS/62RPM for version 6.2. In some cases, users may download RPM drivers from the MultiTech web site onto diskette (in ext2 format). We present instructions for both situations below.

LINUX-RPM: Copying the driver from CD-ROM

1. Mount the CD-ROM using this command:

```
mount -r /dev/cdrom /mnt/cdrom
```

2. Change directory

```
cd /mnt/cdrom
```

3. List the RPM files on the CD-ROM using this command:

```
ls
```

LINUX-RPM: Copying the driver from a floppy

The ISI driver *.rpm* file can be copied from a DOS formatted floppy using the 'mcopy' command if the 'mtools' have been installed.

For RPM version 6.2, issue the command
'`mkdir a:isicom-1.1-3.src.rpm <destination folder>`' to copy the isicom-1.1-3.src.rpm (or current driver name) file to the destination folder.

For RPM version 7.0, issue the command
'`mkdir a:isicom-1.2-3.src.rpm <destination folder>`' to copy the isicom-1.2-3.src.rpm (or current driver name) file to the destination folder.

As an alternative, the floppy can be manually mounted and the file copied to the required destination folder.

NOTE: To read from a DOS formatted floppy, a kernel with support for the FAT file system (either statically linked in the kernel or as modules) is required.

Steps for copying the driver from a floppy:

1. Linux floppy disks are in ext2 format.
2. Insert Linux driver in drive A: and mount floppy drive.

```
> mount -t ext2 /dev/fd0 /mnt/floppy
```
3. Copy files from floppy to a temporary directory on hard drive.

```
> mkdir /isi  
> cd /isi
```
4. The current isicom.o file should be backed up before installing the RPM. The easiest way is simply to rename it or copy it into another file. For example, "`cp (or mv) isicom.o isicom.original`". It is usually located in the /usr/local/ISICOM directory. For the version 7 RPM, you will need to use the '--force' option in the RPM command as in step 5b below.
- 5a. For RPM version 6.2:
Copy the RPM to a temporary folder. In this example, we'll use /isi. Installation is in three parts, building the 'isicom-smp.spec' file from the source file, then building the actual RPM from that "spec" file, and finally, installing the RPM. Do not type the quotation marks shown in the commands below.

- Run “rpm -i /isi/isicom-1.1-3.src.rpm”.
- Run “rpm -ba /usr/src/redhat/SPECS/isicom-smp.spec”.
- Run “rpm -ihv /usr/src/redhat/RPMS/i386/isicom-1.1-3.i386.rpm”
- Reboot the system, either using the command “init 6 <ENTER>” or your favorite method.

5b. For RPM version 7.0:

Copy the RPM to a temporary folder. In this example, we'll use /isi. Installation is in three parts, building the 'isicom-smp.spec' file from the source file, then building the actual RPM from that “spec” file, and finally, installing the RPM. Do not type the quotation marks shown in the commands below. Replace the x below with the actual version numbers being used.

- Run “rpm -i /isi/isicom-1.2-3.src.rpm”.
- Run “rpm -ba /usr/src/redhat/SPECS/isicom-rh7.spec”.
- Run “rpm -ihv --force /usr/src/redhat/RPMS/i386/isicom-1.2-3.i386.rpm”.
- Reboot the system, using either the command “init 6 <ENTER>” or your favorite method.

LINUX-RPM: Verifying the ports

To test the installation, you can use the terminal program ‘minicom’. Use the command “minicom -s” to set up the tty port that you will use to communicate.

1. In the **Configuration** window, select “Serial Port Setup.”
2. Select **A** to set the Serial Device (for example, /dev/ttyM1a).
3. Select **E** to set the baud rate.
4. Press Escape (**Esc**) to exit.
5. Select **Exit** to communicate with the port.
6. Issue AT commands and make sure it returns “OK”.

LINUX-RPM: TTY Devices Created by the Drivers

Device files corresponding to ports on the ISI card are created in the `/dev` folder. Use `ttymxy` for normal ports. Normal ports (`ttym`) are configured for dial-in connections.

In these expressions (`ttymxy`), the letter `x` is the card number (1-4), and `y` is the port designator (a, b, c, ...).

The ISI Linux driver creates the following TTY devices in `/dev` directory:

- `/dev/ttym1a` TO `/dev/ttym1p` for the first ISI card
- `/dev/ttym2a` TO `/dev/ttym2p` for the second ISI card
- `/dev/ttym3a` TO `/dev/ttym3p` for the third ISI card
- `/dev/ttym4a` TO `/dev/ttym4p` for the fourth ISI card

For the ISI5634PCI-4, it uses the following:

- `/dev/ttym1a` TO `/dev/ttym1d` for the first card
- `/dev/ttym2a` TO `/dev/ttym2d` for the second card
- `/dev/ttym3a` TO `/dev/ttym3d` for the third card
- `/dev/ttym4a` TO `/dev/ttym4d` for the fourth card

For the ISI5634PCI-8, it uses the following:

- `/dev/ttym1a` TO `/dev/ttym1h` for the first card
- `/dev/ttym2a` TO `/dev/ttym2h` for the second card
- `/dev/ttym3a` TO `/dev/ttym3h` for the third card
- `/dev/ttym4a` TO `/dev/ttym4h` for the fourth card

Devices mapped for modem cards (ISI5634PCI-4 and ISI5634PCI-8 cards):

For ISI5634PCI-4 cards (4 ports):

- `/dev/ttym1a` to `/dev/ttym1d` for modem ports.

For ISI5634PCI-8 cards (8 ports):

- `/dev/ttym1a` to `/dev/ttym1h` for modem ports.

LINUX-RPM -- Dial-in configuration:

To configure a particular port for dial-in, utilities like 'mgetty' need to be installed on the system. If, for example, the port /dev/ttyM2c needs to be configured for a remote-access dial-in connection, an entry of the form 'M2c:12345:respawn:/sbin/mgetty ttyM2c /dev/ttyM2c' needs to be added in the /etc/inittab file. After you have made the change, execute 'init q' so that the 'init' process re-reads the inittab file and spawns the mgetty process to wait for an incoming connection. Users can then dial in, use their user names and passwords to log in, and access their accounts on the machine.

To disable dial-in access on a particular port, change the entry in the /etc/inittab file to 'M2c:12345:off:/sbin/mgetty ttyM2c' or just comment-out that entry by prefixing a '#' to the entry on the line.

LINUX-RPM -- PPP setup:

The 'PPP-HOWTO' (a document that is available as a part of the 'HOWTO' documentation on most of the distributions under /usr/doc/HOWTO) explains in detail the procedure for configuring a Linux machine as a PPP server. This information is also available at

<http://www.interweft.com.au/other/ppp-howto/ppp-howto.html>.

The documentation in the PPP-HOWTO is directly applicable to ISI ports.

Removing the ISI Driver (Linux-RPM)

1. To remove the ISI driver, type `rpm -e isicom`

If more than one instance of the isicom file exists in the system, an error message will be returned. To resolve this, type `rpm -q isicom`. Press ENTER. All isicom RPM modules will be listed. Decide which of these files you want to delete. Then type `rpm -e filename` to delete those files.

Comm Software Using AT Commands

You must have communications software installed in your computer to use the Multi-Tech modems on the ISI5634PCI card. If you want to use communications software that is already installed, you should reconfigure it for your new modem. Otherwise, install the data and fax communications software provided with your ISI5634PCI.

1. Turn on your computer and run your communications software.
2. Find the dialog box or menu that allows you to specify your modem. See different data communications examples below:
 - In Windows Terminal, select **Settings** and then **Modem Commands**
 - In HyperTerminal, select **File, Properties**, and then **Phone Number**
3. Select your modem from the software's modem list. If not 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 should include the **&D0** command.
 - If you don't want the modem to always answer the phone, add **S0=0** to the string.

***Note:** To change the modem's default configuration, type new commands in the software'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 where the modem is connected (normally starts at COM5).
6. Select your serial port speed and label it *maximum speed*, *DTE bps*, or *baud rate*.
 - If you use data compression, 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.
 - Set the serial port baud rate to 320,400 bps.
7. If the software has an autobaud selection make sure it is disabled. Autobaud applies only to older modems and can cause problems if enabled.
8. If the software allows you to edit the no connect messages (NO CARRIER, BUSY, NO ANSWER, NO DIALTONE), make sure there is space between DIAL and TONE in NO DIALTONE.

Intelligent
Serial *Interface*

**Chapter 4—Warranty, Service, and
Tech Support**

Limited Warranty

Multi-Tech Systems, Inc. (*MTS*) warrants that its products will be free from defects in material or workmanship for a period of two years from the date of purchase, or if proof of purchase is not provided, two years from 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 which have been damaged by lightning storms, water, or power surges or which 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 which 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 transportation prepaid.

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



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