Motorola™

iM1000

Data Modem

for Windows™ 95,
Windows™ 98
and Windows™ NT

User Guide

August 5, 1999

68P02953C65-O

iM1000 - Data Modem

Congratulations on purchasing your Motorola iM1000 stand-alone data modem.

Your iM1000 offers wireless access to the internet. This data modem offers the following features:

- Packet Data transfer for IP DTE.
- Packet Data transfer for non-IP DTE.
- Fax and Data Transfer for circuit data faxes and file transfer.
-

The iDEN Wireless Data Services solution provides you with the capability of connecting to the Internet and corporate intranets using your laptop computer (or compatible hand-held computing device) and your iM1000 stand-alone data modem.

With wireless data services, you can perform your most important laptop computer activities outside your office or home.

Figure 1. iM1000 Data Modem

Overview

The iDEN Wireless Data Services solution provides you with the capability of connecting to the Internet and corporate intranets using your laptop computer (or compatible hand-held computing device) and your iM1000 data modem.

The iM1000 enables packet and circuit-data connections.

- **Packet data:** A wireless modem connection for accessing the Internet, sending and receiving e-mail, and transferring small files over the packet data network using standard IP protocols.

  Data is sent in bursts. Packet data transmits packets (blocks) of data at high speed. After the data is transmitted, you can remain connected indefinitely yet not be charged for the idle time.

- **Circuit data:** A wireless modem connection for sending and receiving faxes over the circuit-switched cellular channel.

  Data is sent as a continuous stream through the network to another modem.

> **NOTE**
>
> You may use the following information as a fast path to installation.

To prepare your computer and iM1000 data modem for wireless data use, the following procedures are necessary.

- **Connect the cable.**
  Connect the modem to the computer via the data cable.

  For more information see “Installation Instructions” on page 15.

- **Turn on the data modem.**
  Turn on the modem before you proceed with the installation and configuration.

- **Set up Windows Components.**
  Use these instructions to verify that Dial-Up Networking and the TCP/IP protocol are installed on your computer. If not, follow the procedure provided to install them.

  For more information, see “Verifying and Installing Dial-Up Networking” on page 9 and “Verifying and Installing the TCP/IP Protocol” on page 12.

- **Install the software.**
  Use the installation software to install the modem configuration data software.

  For more information, see “Installing the Software” on page 16.

- **Configure your iM1000 data modem.**
  Enter settings provided by your iDEN carrier.

  For more information, see “Configuring Your MODEM” on page 29.

- **Connect to the Internet.**
  Start the Dial-Up Networking session. Be sure that the phone is connected to the computer with the data cable. After the connection is made, the floppy disk icon will be present on the phone's display.

  For more information, see "Starting the Internet Connection" on page 42.

After successful installation, you can surf the Internet, send and receives faxes and e-mail messages, and transfer files.

Installation Requirements

To run the installation program, you need the following:

- An iM1000 data modem
- An iDEN PC data cable for your data modem
- An IBM®-compatible PC with:
  - An Intel® 486 (or higher) processor
  - Microsoft® Windows® 95 installed, Windows® 98 or Windows® NT
  - Minimum 8 MB of addressable RAM
  - 1.44 MB 3.5-inch disk drive or CD-ROM drive
  - 3 MB free hard-disk space
  - Recommended: Mouse or compatible pointing device
- The installation software that came with your package
- Communication software
- An account with an iDEN carrier

HARDWARE INSTALLATION

Introduction

Hardware installation has to be carried out by experienced technicians familiar with installing similar types of equipment.

Before You Start Installing

Ignition Sense Cable

Note: The iM1000 will not operate without the Ignition Sense Cable installed or an ignition plug connected.

Installation Planning

Planning is the key to fast, easy iM1000 installation. Before a hole is drilled or a wire is run, inspect the vehicle and determine how and where you intend to mount the antenna, iM1000, and accessories. Plan wire and cable runs to provide maximum protection from pinching, crushing, and overheating.

Recommended Tools For Installation

The following tools, screws, and washers are recommended for proper installation of your iM1000.

- Portable Drill
- Hammer
- Center Punch
- Four screws M4
- Four self drilling screws M4
- Four flat washers M4
- Four spring washers M4
- Phillips #2 Screwdriver

Antenna Mounting

The best mounting location for the antenna is in the center of a large, flat conductive surface. In almost all vehicles, these requirements are best satisfied by mounting the antenna at the center of the roof. Some vehicles have a large trunk lid that provides a good antenna location. If the trunk lid is used, connect grounding straps between the trunk lid and vehicle chassis to insure the trunk lid is at chassis ground.

iM1000 Mounting

The standard mounting of the iM1000 can be mounted on different types of mounting surfaces. Be sure the mounting surface is able to adequately support the weight of the iM1000. Allow sufficient space around the iM1000 for free air flow for cooling. Be sure the unit is close enough to the vehicle operator to permit easy access to operating indicators. Although the iM1000 can be mounted to a plastic dashboard, it is recommended that the mounting screws be located so they penetrate the supporting metal frame of the dashboard.

DC Power Cable Installation

The iM1000 must be operated only in negative ground electrical systems. Reverse polarity does not damage the iM1000; however, iM1000 protection circuits cause the cable fuse to open. Check the ground polarity before you begin installation to prevent wasted time and effort.

The DC power cable shipped with the iM1000 is long enough for installation in most vehicles. Begin the power cable installation in the following manner.

1. Determine a routing plan for the power cable with reference to where the iM1000 is to be mounted.

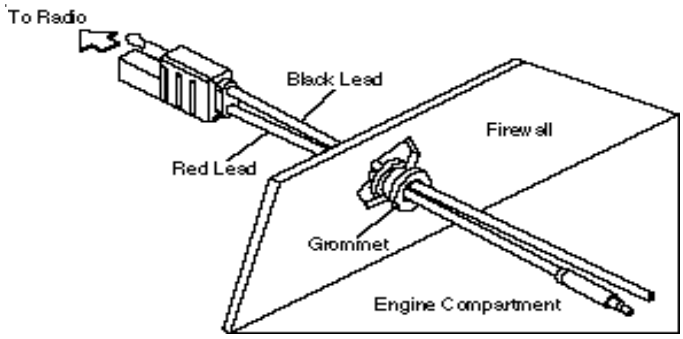

Figure 2. - Power Cable Routing Into the Engine Compartment

2. Locate the nearest available chassis ground mounting point and shorten the black lead to remove excess cable length.
3. Locate the fuse holder as close to the battery as possible and away from

any hot component. Mount the fuse holder using the provided mounting hole and dress wires as necessary. Connect the fuse holder red adapter lead plus to the mating receptacle on the red lead of the power cable. See Figure 3..

4. Connect the power cable black lead directly to the chassis ground.
5. Connect the power cable red lead from the fuse holder to the positive (+) battery terminal. Make sure the adapter cable is connected to the main power cable red lead.
6. Plug fuse into in-line fuse holder as shown in figure 2 Figure 3..

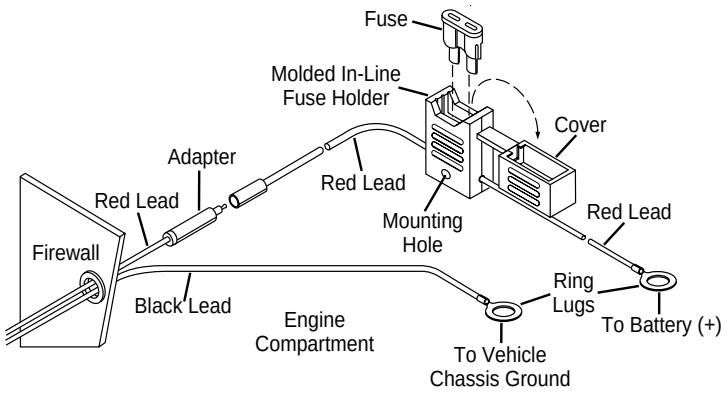

Figure 3. - Power Cable Assembly

Mounting iM1000 - Vehicle Installation

1. Select the location to mount your iM1000 - either on the transmission hump or under the dashboard. By mounting the iM1000 on the transmission hump ensure that the transmission housing is not affected.
2. Use the iM1000 mounting bracket as a template, mark the positions of the holes on the mounting surface.
3. Secure the iM1000 mounting flinges to the surface with the four (4M) screws provided.
4. Mount the antenna using the instructions provided with the antenna kit. Run the coaxial cable to the iM1000 mounting location. if necessary, cut off the access cable and install the cable connector.
5. To assure compliance with United States FCC regulations on RF exposure, the user of the equipment must position the antenna in such a way to maintain a separation of at least 8 inches (20 cms) between the antenna and the body of any user and nearby person.
6. Ensure that the antenna is properly installed external to the vehicle and in accordance with the requirements of the antenna manufacturer/supplier

7. Connect the antenna cable connector to the radio antenna connector on the rear of the iM1000. See Figure 4..
8. Plug the power cable into the iM1000 power connector.

TBD

Figure 4. - Connections to iM1000 Rear Panel

Power Configuration

To turn ON the iM1000 modem, an ignition signal is required at the ignition connector. It can be supplied in two ways.

Switched Power Connection

When installed in a vehicle, the modem receives the ignition signal from the vehicle's ignition switch. However, the modem can be operated only when the car switch is ON.

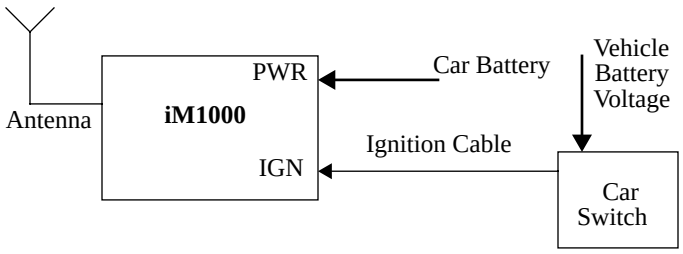

Figure 5. Switched Power Connection

Perform the following steps to install the iM1000 modem in a vehicle:

1. Prepare a routing plan for the ignition cable after determining where the iM1000 is to be mounted.
2. Connect the free end of the ignition cable to the vehicle ignition switch, and the other end (with the plug) to the iM1000 ignition connector.

Continuous Power Connection

An ignition plug is permanently plugged into the ignition connector. When the power is supplied to the iM1000 DC Power Connector, the modem turns ON.

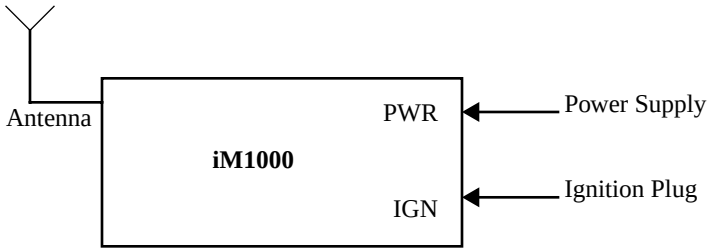

Figure 6. Continuous Power Connection

SETTING UP WINDOWS COMPONENTS

The Installation software automatically installs the packet data application on your IBM PC-compatible computer with Windows installed.

Windows must have Dial-Up Networking Version 1.3 or later and the TCP/IP protocol installed.

NOTE

If your version of Dial-up Networking is earlier than Version 1.3, you can go to the Microsoft™ web site, www.microsoft.com, to get the upgrade.

- If Dial-Up Networking and the TCP/IP protocol are installed, skip this section and go to “Installation Instructions” on page 15.
- If you are not sure if they are installed, or if they are not installed, proceed with the rest of these instructions.

IMPORTANT

If your computer has a network card or a security program that prevents IP address changes, see your system administrator before attempting to install this program.

If your computer is connected to a network, be sure not to remove the existing network protocols during Packet Data installation.

Verifying and Installing Dial-Up Networking

This section provides the procedure for setting up Dial-Up Networking on your Windows computer.

Make sure that your Windows installation media (CD or disk) is available. You may be asked to insert it later in the installation procedure.

1. From your Windows desktop, double-click “My Computer”.
2. Double-click “Control Panel”.
3. Double-click “Add/Remove Programs”. The Add/Remove Programs Properties window opens.
4. Click the Windows Setup tab.

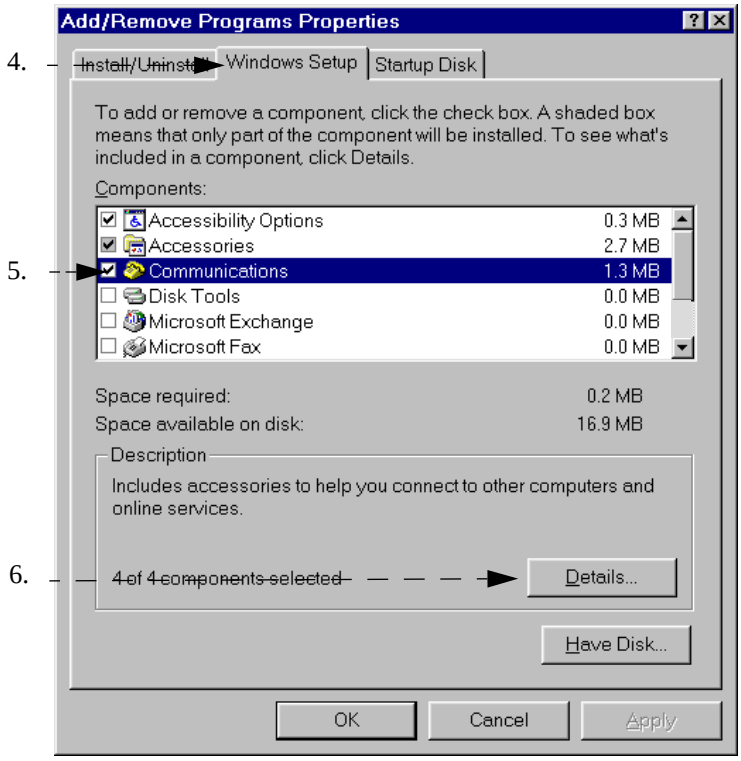

Figure 7. Add/Remove Programs - Windows Setup Window

5. Highlight “Communications” in the Components box.
6. Click “Details”. The Communications window opens.

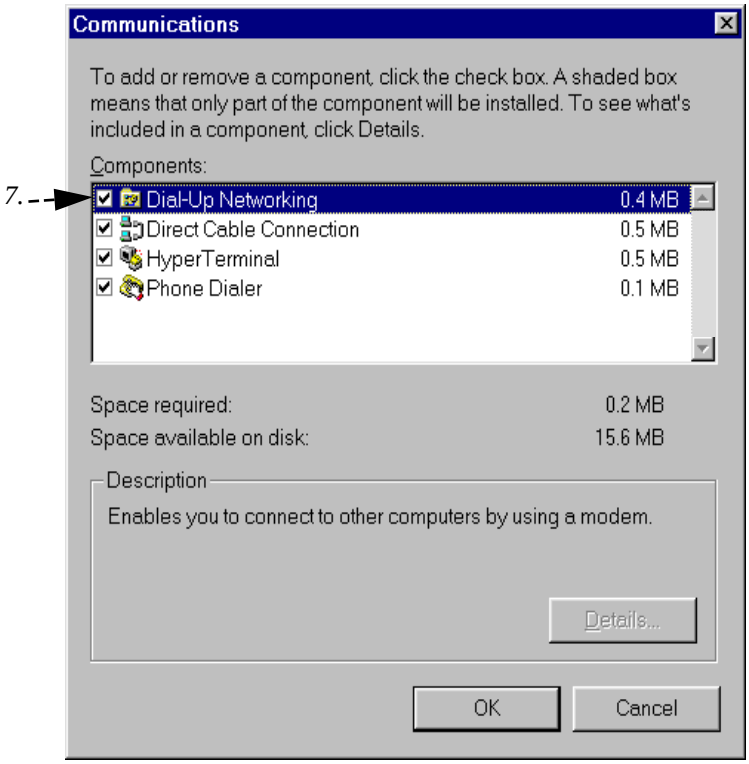

Figure 8. Communications Window

7. In the Communications window, do one of the following:
   a. If the selection box to the left of “Dial Up Networking” has a check mark in it, click “Cancel” to close the window. Click “Cancel” again to close the Add/Remove Programs Properties window.
   b. If the selection box to the left of “Dial Up Networking” does not have a check mark in it, click the selection box to place a check mark in it. Click “OK” to close the window and then click “OK” again to close the Add/Remove Programs Properties window. Restart your computer.
8. Continue with “Verifying and Installing the TCP/IP Protocol” on page 12.

Verifying and Installing the TCP/IP Protocol

Use this procedure to ensure that your computer has the TCP/IP protocol installed.

1. From the Control Panel on your desktop, double-click “Network”. The Network window opens. *Your screen might not look exactly like the one illustrated*.

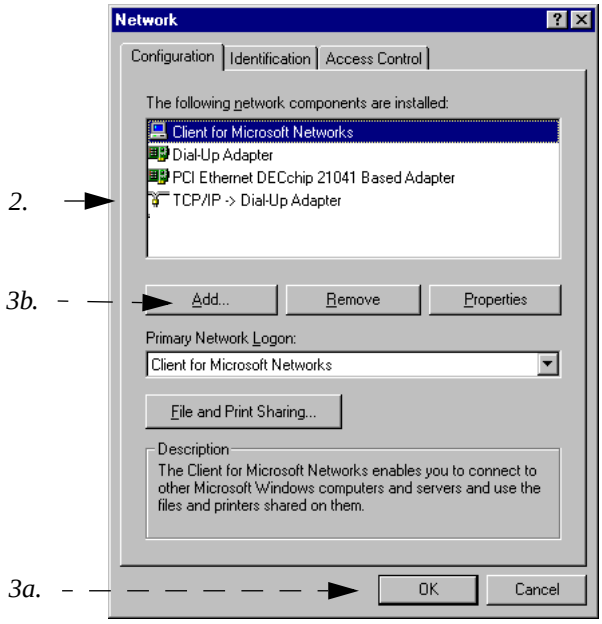

Figure 9. Network Window

2. Scroll down the list to find “TCP/IP Dial-Up Adapter”.
3. Do one of the following:
   a. If you see “TCP/IP -> Dial-Up Adapter” in the list, click “OK”. Skip this section and go to “Installation Instructions” on page 15.
   b. If you do not see “TCP/IP -> Dial-Up Adapter” in the list, click “Add”. The Select Network Component Type window opens.

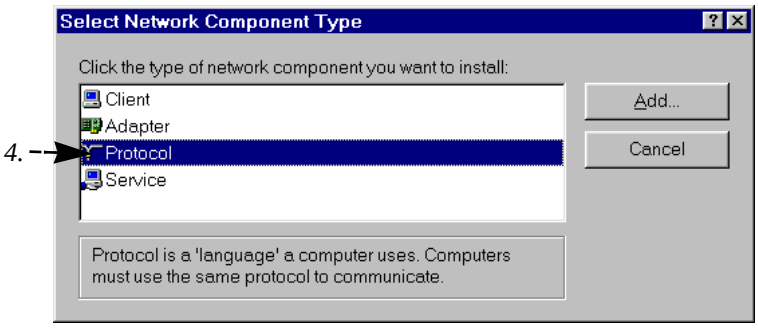

Figure 10. Select Network Component Type Window

4. Highlight “Protocol” then click “Add”. The Select Network Protocol window opens.

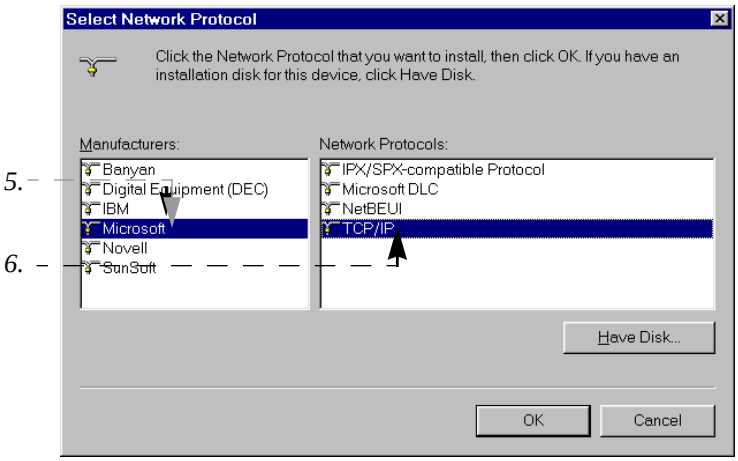

Figure 11. Select Network Protocol Window

5. Under Manufacturer, select “Microsoft”.
6. Under Network Protocol, select “TCP/IP”, then click “OK”. The TCP/IP Dial-Up Adapter appears in the list.

   If the Dial-Up Adapter does not appear in the list, you do not have a Dial-Up Adapter installed. You can install one. Use the procedure for “Installing the Dial-Up Adapter” on page 14.
7. To close, click “OK”.
8. If the Dial-Up Networking adapter is installed, continue with “Installation Instructions” on page 15.

Installing the Dial-Up Adapter

When you select "TCP/IP Protocol", you are asked to select a network adapter. If you receive a message that you do not have one installed, use the following procedure to install one. If you have a Dial-Up Adapter installed, skip this section and go to "Installation Instructions" on page 15.

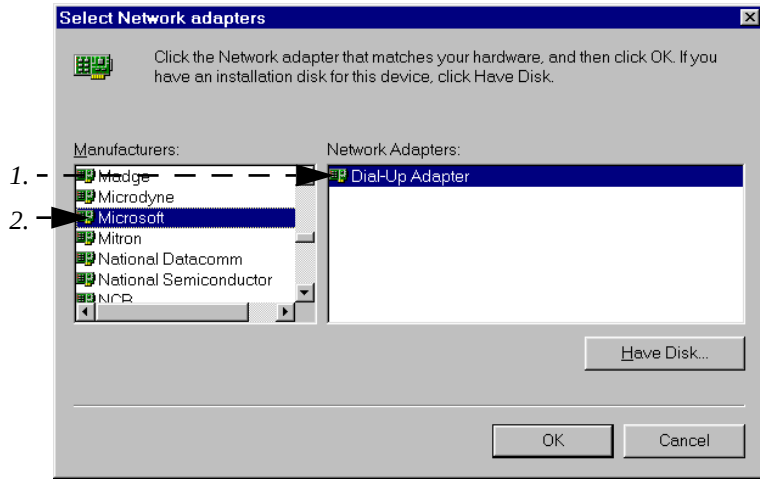

Figure 12. Select Network Adapter Window

1. At the Select Network Adapter window, under Network Adapters, highlight "Dial-Up Adapter".
2. Under Manufacturers, highlight "Microsoft".
3. Click "OK". The Select Network Component Type window opens.

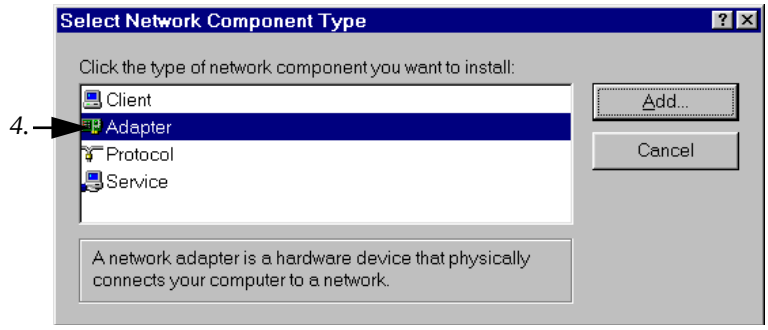

Figure 13. Select Network Component Type Window

4. Highlight "Adapter" then click "Add". The Select Network Adapters window opens.
5. To verify that the adapter was added, from the Control Panel, click Network. Look for "Dial-Up Adapter" on the Network Configuration screen.

INSTALLATION INSTRUCTIONS

This section provides information for connecting the data cable and installing the software.

> **NOTE**
>
> To instal the Wireless Data Services software on a computer or hand-held device that does not have Windows installed, or if you do not have the installation disks, proceed to "Configuring the Modem for Packet Data— without the Disk" on page 66.

Connecting the Cable

Your computer and your modem can be turned on or turned off when you connect the cable.

To connect the data cable:

1. Connect the data cable to the accessory connector on your modem.
2. Attach the other end of the cable to a serial communication (COM) port on your computer or hand-held computing device.
3. Position the antenna of the radio product at least 8 inches (20cms) away from the body of any person when transmitting.

To remove the cable:

1. Disconnect the data cable from your modem.
2. Disconnect the data cable from your computer.

Installing the Software

The Installation software enables packet data service.

> **IMPORTANT**
> During installation, if you receive a message that you do not have one or more of the required Windows components installed, see “HARDWARE INSTALLATION” on page 4.

To install the packet data software:

1. Turn on your modem.
2. Turn on your computer and start Windows 95, Windows 98 or Windows NT.
3. Insert the Installation CD-ROM in your CD-ROM drive.
4. Select “Start”, then select “Run”.
5. Type **d:\setup** (or substitute the correct drive letter).
6. Click “OK”. The Setup progress window opens. After it closes, the Welcome window opens.

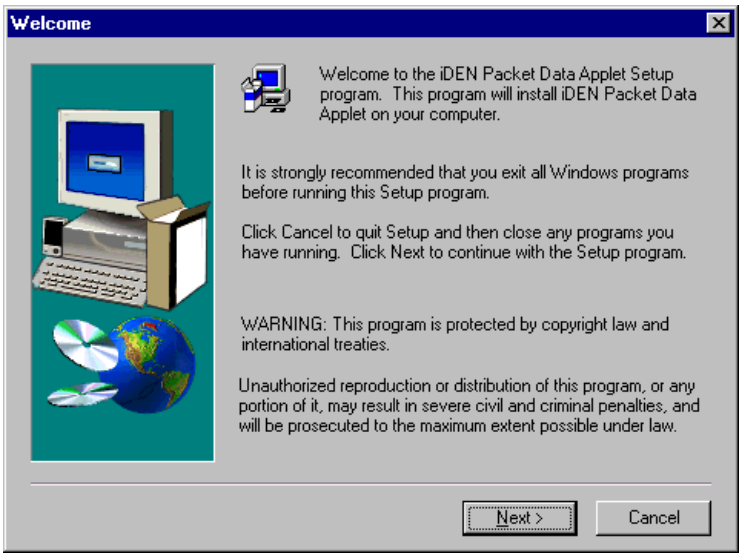

Figure 14. Installation Welcome Window

7. Click “Next”. The User Information window opens.

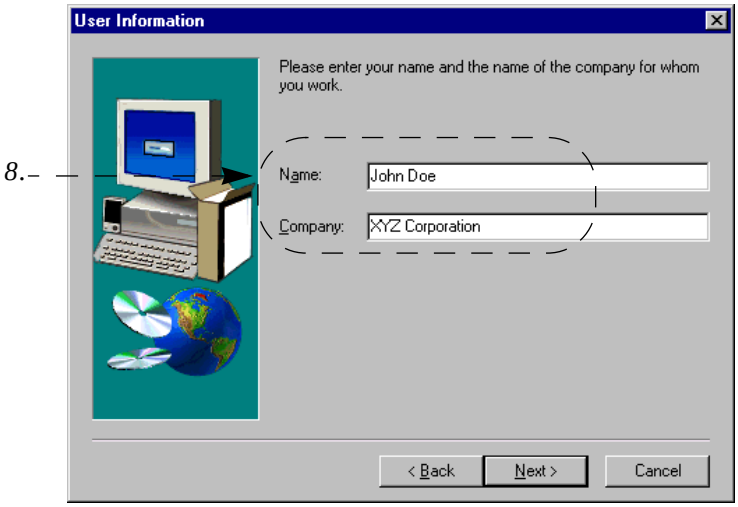

Figure 15. User Information Window

8. Enter your name and company, if it doesn't automatically display.
9. Click "Next". The Choose Destination Location window opens.

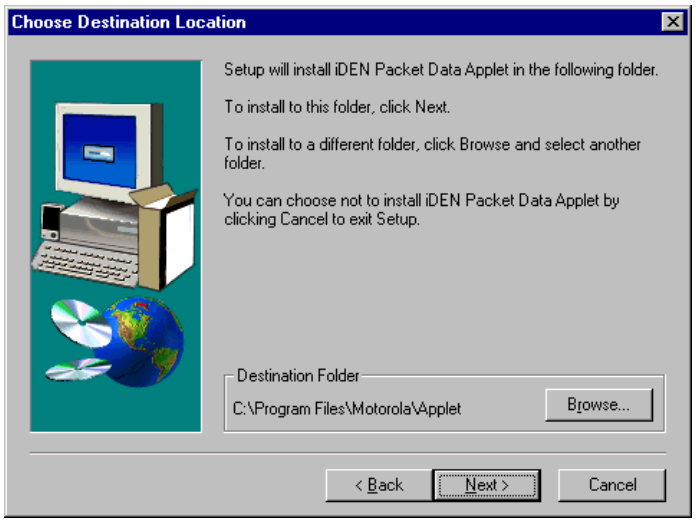

Figure 16. Choose Destination Location Window

10. Click "Next" to accept the default Destination Folder. The Select Program Folder window opens. "iDEN Packet Data Applet" is highlighted.

Figure 17. Select Program Folder Window

11. Click “Next” to accept the default Program Folder, iDEN Packet Data Applet.

    The installation program starts. A status window opens while the files are copying.

    After the files are copied, you can add a shortcut to your Windows desktop.

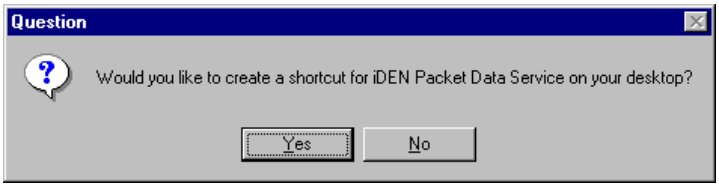

Figure 18. Add a Shortcut

12. Select “Yes” to add a shortcut.
13. Make sure your modem is connected and turned on before you continue the installation.

> **NOTE**
>
> To configure your system for Windows NT, proceed with Steps 14 through 38. For Windows 95 and Windows 98, skip to Step 39.

Windows NT Installation Only (Steps 14 - 38)

14. For Windows NT, an information window opens with a message that wireless modems will be installed.

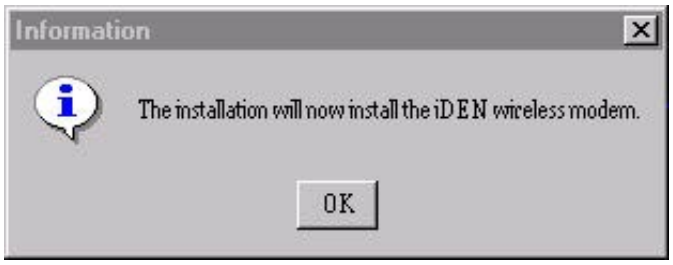

Figure 19. Begin Modem Installation

15. Click “OK”. The Installing New Modem window opens.

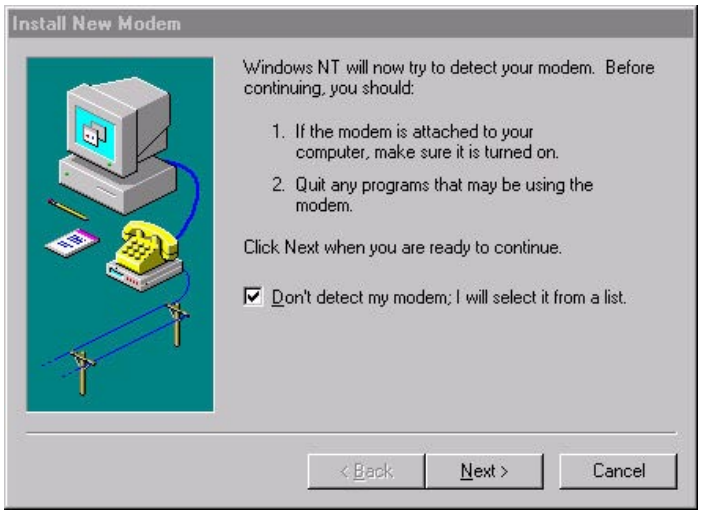

Figure 20. Modem Detect Window

16. If you do not want the system to take the time to search for a modem, click “Don’t detect my modem. I will select it from a list”.
17. Click “Next” to continue. The Modem Selection Window opens.

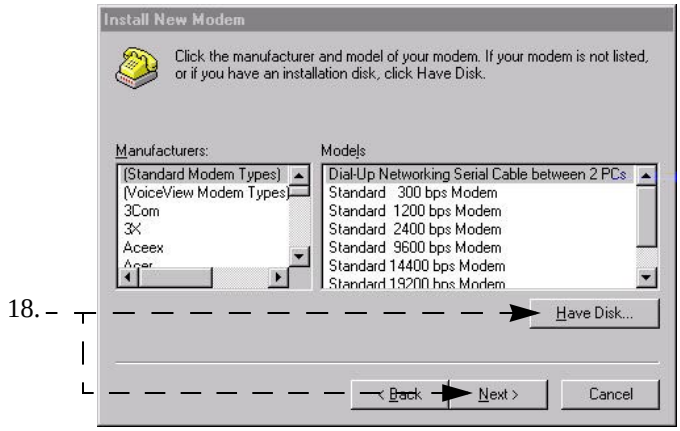

Figure 21. Modem Selection Window

18. Click “Have Disk”, then click “Next”. The Install From Disk window opens.

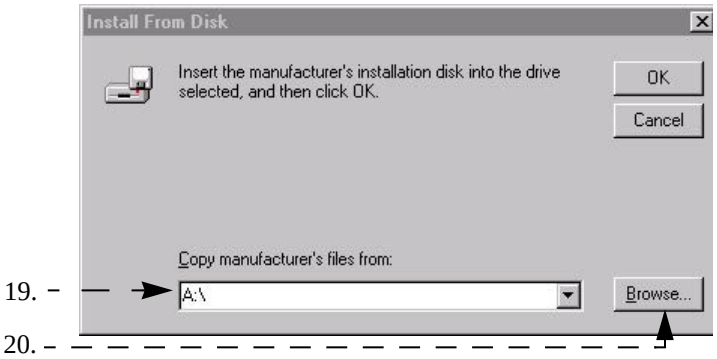

Figure 22. Install From Disk Window

19. Type the name of the drive that contains the manufacturer’s disk.
20. Click Browse. The Locate File Window opens.

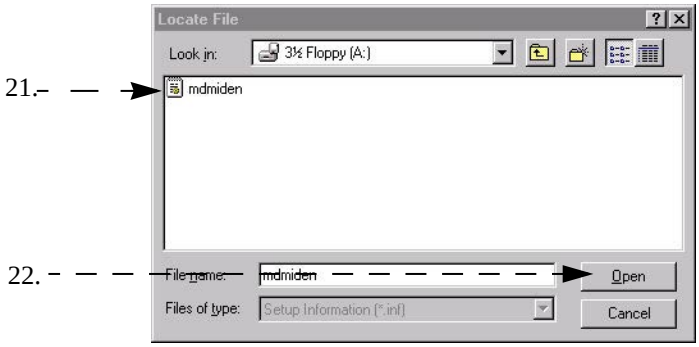

Figure 23. Locate File Window

21. Highlight the “mdmiden” file.
22. Click “Open”. The Locate File window opens again.
23. Click “OK”. The Install New Modem window opens.

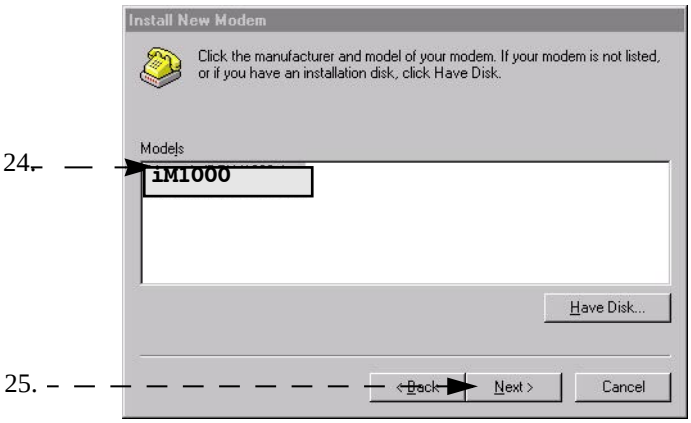

Figure 24. Install New Modem Window

24. Make sure “iM1000” is highlighted.
25. Click “Next”. The Port Selection Window opens.

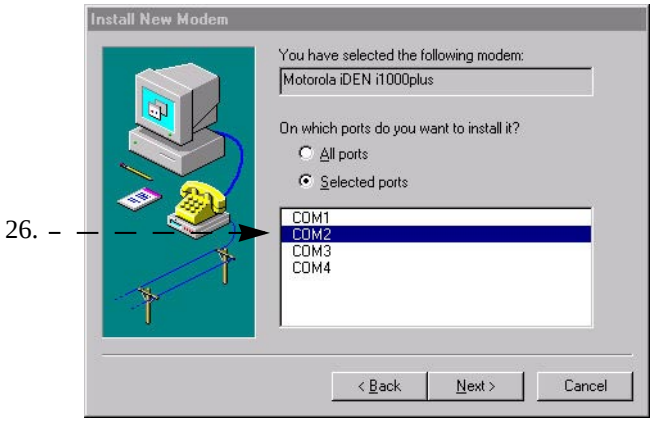

Figure 25. Port Selection Window

26. Highlight the COM port to which your modem is to be connected and click “Next”. The Modem Installation Finish window opens.

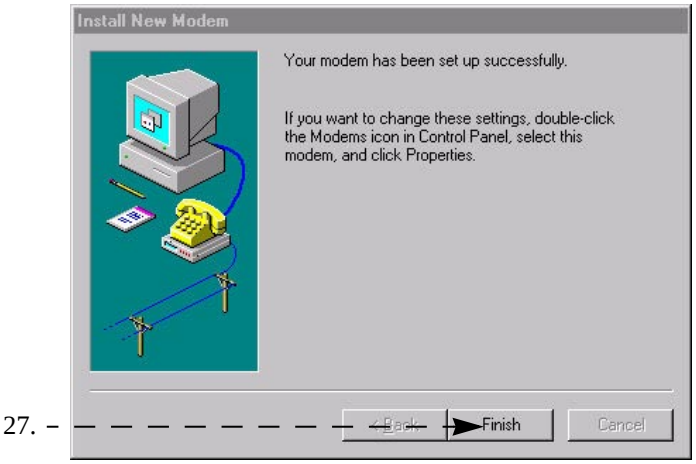

Figure 26. Modem Installation Finish Window

27. Click “Finish”. The Did You Install the Modem Yet window opens.

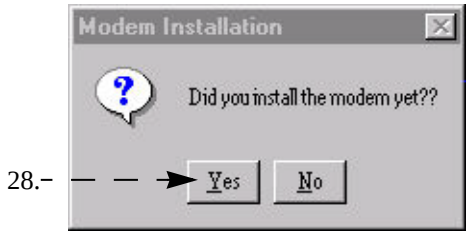

Figure 27. Did You Install the Modem Yet Window

28. Click “Yes”. The Configure the Data-capable Modem in RAS Manager window opens.

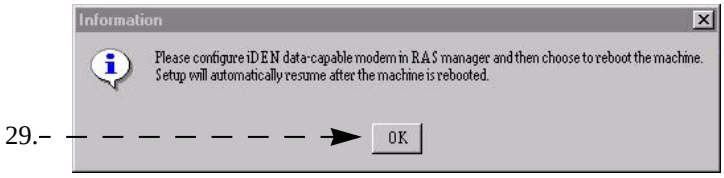

Figure 28. Configure the Data-capable Modem in RAS Manager Window

29. Click “OK”. The Network Configuration window opens.

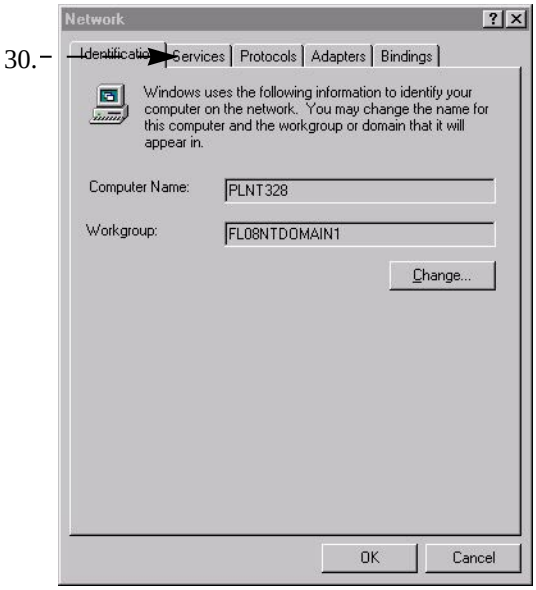

Figure 29. Network Configuration Window

30. Click “Services”. The Network Services Selection window opens.

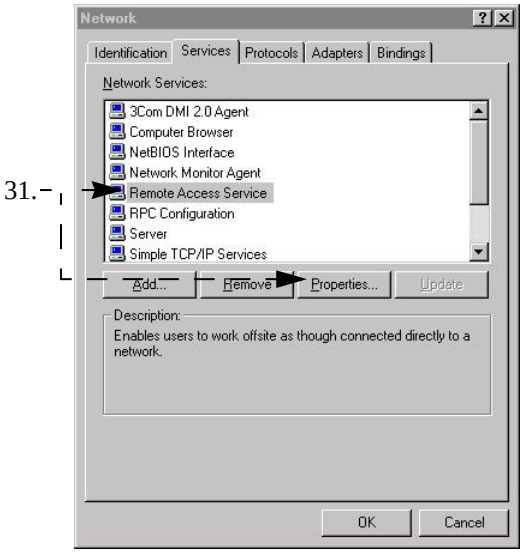

Figure 30. Network Services Selection Window

31. Highlight “Remote Access Service” and click “Properties”. The Remote Access Setup window opens.

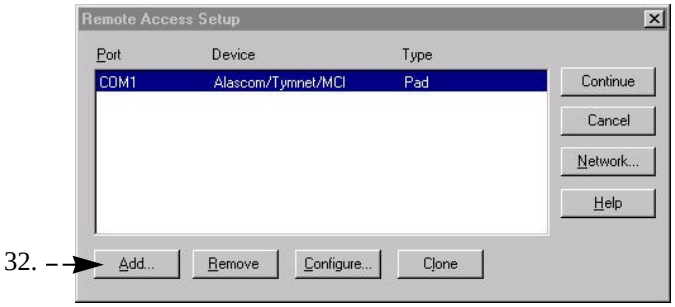

Figure 31. RAS Access Setup Window

32. Click “Add”. The Add RAS Device window opens.

N O T E

If a modem is already inserted in the same COM port as the data-capable modem, click “Remove” to remove it and then click “Add”.

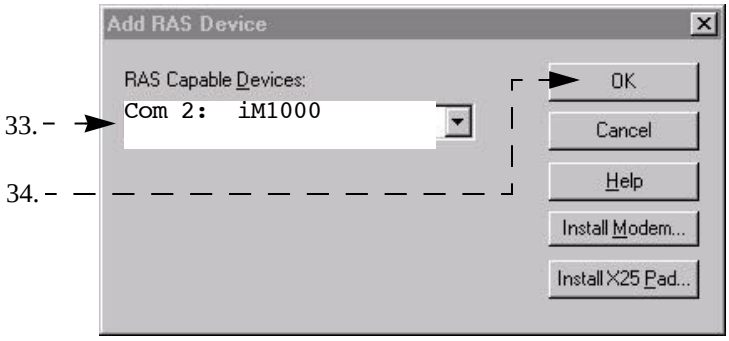

Figure 32. Add RAS Devices Window

33. Make sure the COM port for your iDEN data-capable phone is selected (COM2 in this example).
34. Click “OK”. The Remote Access Setup window now shows the added COM port. Click “Continue”.
35. Click “Close” on the Network Services Selection window.
36. The Computer Restart window opens. Click “Yes”.

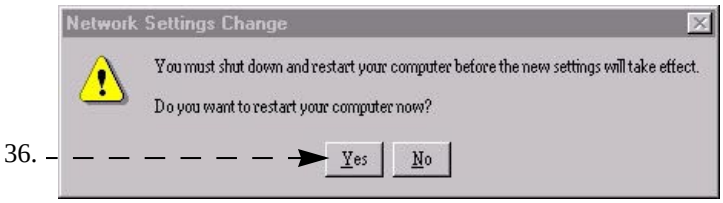

Figure 33. Computer Restart Window

37. When the Windows banner appears during the computer restart, “log on”.
38. The installation will automatically resume.

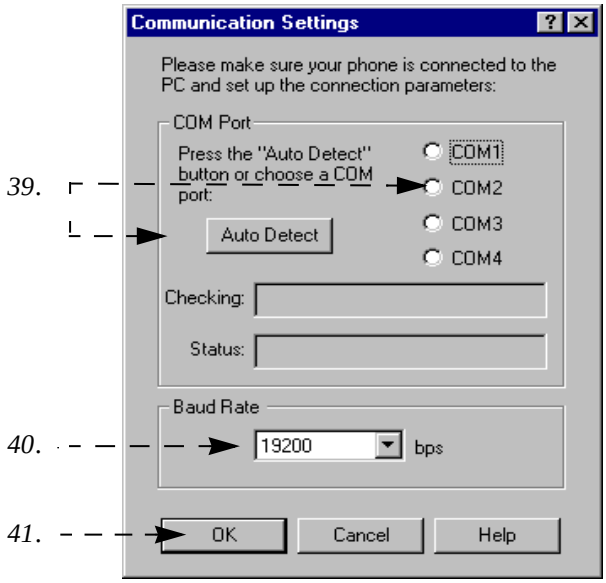

Figure 34. Communication Settings Window.

> **IMPORTANT**
>
> There is a baud rate setting for your computer and a baud rate setting for your phone. If you do not choose AutoDetect and accept the default baud rate of 19200, be sure the settings for the computer and the phone are the same. If they are not, your computer might have a problem connecting with the modem.

39. At the Communications Settings window, do one of the following:
    - Click “Auto Detect” to have the program automatically detect the communication port to which your phone is connected and set the corresponding COM port button.
    - Or, select a COM port by clicking its selection button.

> **TIP**
>
> Make a note of the selected COM port. You will need it later in the installation when you add the circuit-data modem.

40. *Optional:* If you want to change the baud rate, click the down arrow next to 19200 and make another selection.

    Be sure that "Done" appears in the Status box before you continue

41. Click "OK". The Packet Data Configuration window opens.

Packet Data Configuration Window

42. Do one of the following:

    a. To configure your phone now, click "Yes".

    b. To configure your phone later, click "No". *This would also be your choice if your phone was previously configured*. Setup is complete.

43. Click "Next". The Packet Data Configuration-2 window opens.

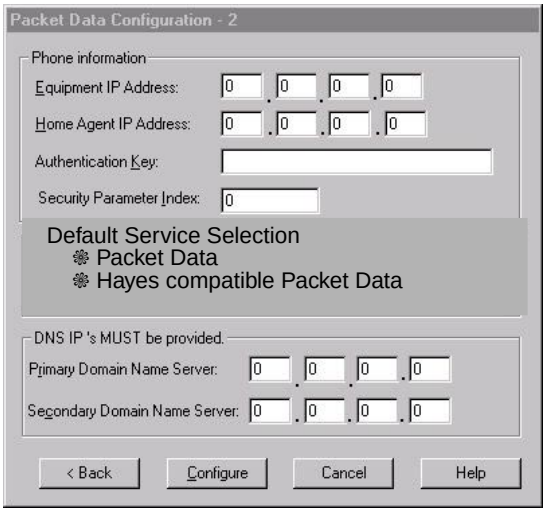

Figure 35. Packet Data Configuration-2 Window

44. Enter the following information: *Some of this information may already be entered for you.*
    - Equipment IP Address
    - Home Agent IP Address
    - Authentication Key
    - Security Parameter Index
    - Default Service Selection
    - Primary Domain Main Server
    - Secondary Domain Name Server

45. Click “Configure”. The Configure Status window opens.

Figure 36. Configuration Status Window

46. Click “OK”.

    When you finish, you will receive a message that your phone was successfully configured.

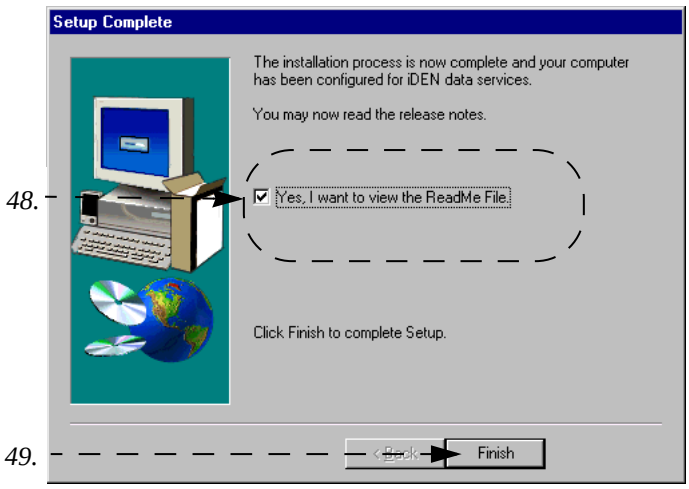

Figure 37. Setup Complete Window

47. At the Setup Complete window, to read the ReadMe file now, leave the check mark. To read it later, remove the check mark.
48. Click “Finish”. The iDEN Packet Data Applet window appears on your desktop.
49. Continue with “Configuring Your MODEM” on page 29.

NOTE

If you want to use the data cable and your computer to run applications, continue with “Configuring Your MODEM” on page 29.
Otherwise, installation is complete.

SAFETY AND GENERAL INFORMATION

IMPORTANT INFORMATION ON SAFE AND EFFICIENT OPERATION.
READ THIS INFORMATION BEFORE USING YOUR INTEGRATED MULTI-SERVICE RADIO PRODUCT.

For the Safe and Efficient Operation of Your Radio, Observe These Guidelines:

Your radio product contains a transmitter and a receiver. When it is *ON*, it receives and transmits radio frequency (RF) energy. The radio operates in the frequency range of 806 MHz to 866 MHz and employs digital modulation techniques.This radio product is authorized under FCC Rule Part 47CFR 2.1091 (b), which states that it should be used in such a way that a separation distance of at least 8 inches (20 cm) is normally maintained between the radio's antenna and the body of the user or nearby persons. When you use your radio product, the system handling your call controls the power level at which your radio product transmits. The output power level typically may vary over a range from 0.0024 watts to 0.7 watts.

Exposure To Radio Frequency Energy

Your Motorola Radio Product is designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) IEEE. C95. 1-1992
- National Council on Radiation Protection and Measurements (NCRP). Report 86
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- European Committee for Electrotechnical Standardization (CENELEC), ENV 50166-2, 1995 E
- National Radiological Protection Board of the United Kingdom, GS 11, 1988
- Verband Deutscher Elektrotechniker (VDE) DIN-0848
- Department of Health and Welfare Canada. Safety Code 6

Antenna and Installation Considerations

- All equipment must be properly installed in accordance with Motorola installation instructions.
- This radio product is authorized under FCC Rule Part 47 CFR 2.1091(b), which states that it should be installed in such a way that a separation distance of at least 8 inches (20 cm) is normally maintained between the radio's antenna and the body of the user or nearby persons.
- Ensure that the antenna is properly installed external to the vehicle and in accordance with the requirements of the antenna manufacturer/supplier.
- Use only the supplied or an approved antenna. Unauthorized antennas, modifications, or attachments could impair call quality, damage the modem, or result in non-compliance to FCC Rules applicable to this product.

Interference to Medical and Personal Electronic Devices

Most electronic equipment is shielded from RF energy. However, certain equipment may not be shielded against the RF signals from your radio product.

Pacemakers

Do not operate the radio when any person is within 6 inches (0.15 meters) of the antenna. That person may be using a pacemaker, a hearing aid or other personal electronic device which may not be adequately shielded.

Hearing Aids

Some radio products may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information.

Interference to Other Electronic Devices

RF energy may affect improperly installed or inadequately shielded electronic operating and entertainment systems in motor vehicles. Check with the manufacturer or representative to determine if these systems are adequately shielded from external RF energy. Also check with the manufacturer of any equipment that has been added to the vehicle.

Safety and General

Use While Driving

Check the laws and regulations on the use of radio products in the area where you drive. Always obey them.

When using the radio product while driving, please:

- Give full attention to driving and to the road
- Pull off the road and park before using the product if driving conditions so require.

WARNING

OPERATIONAL WARNINGS

POTENTIALLY EXPLOSIVE ATMOSPHERES

Turn off your radio product when you are in any area with a potentially explosive atmosphere, unless it is a radio product type especially qualified for use in such areas (for example, Factory Mutual Approved). Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury, or even death.

Note: *The areas with potentially explosive atmospheres referred to above include fueling areas such as: below decks on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles such as grain, dust or metal powders; and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often, but not always posted.*

Do not transport or store flammable gas, liquid, or explosives in the compartment of your vehicle which contains your radio or accessories.

In the United States, Vehicles powered by liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association. One Batterymarch Park, Quincy, MA 02269, Attn: Publications Sales Division.

WARNING

OPERATIONAL WARNINGS

BLASTING CAPS AND AREAS

To avoid possible interference with blasting operations, turn off your radio product when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio". Obey all signs and instructions.

FOR VEHICLES EQUIPPED WITH AN AIR BAG

An air bag inflates with great force. DO NOT place objects, including communication equipment, in the area over the air bag or in the air bag deployment area. If the communication equipment is improperly installed and the air bag inflates, this could cause serious injury.

Installation of vehicle communication equipment should be performed by a professional installer/technician qualified in the requirements for such installations. An air bag's size, shape, and deployment area can vary by vehicle make, model, and front compartment configuration (for example, bench seat vs. bucket seats).

Contact the vehicle manufacturer's corporate headquarters, if necessary, for specific air bag information for the vehicle make, model, and front compartment configuration involved in your communication equipment installation.

Caution

OPERATIONAL CAUTIONS

DAMAGED ANTENNAS

Do not use any radio product with a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.

Cleaning Instructions

Clean the external surfaces of the radio product with a damp cloth, using a mild solution of dishwashing detergent and water. Some household cleaners may contain chemicals that could seriously damage the radio product. Avoid the use of any petroleum-based solvent cleaners. Also, avoid applying liquids directly on the radio product.

THIS PAGE LEFT BLANK INTENTIONALLY