3Com ®

3Com® **Megahertz**®
10/100 LAN + 56K Global Modem
CardBus PC Card User Guide

CONTENTS

7   RELEASE NOTES

8   3COM SUPPORT

REGULATORY COMPLIANCE

INDEX

INSTALLING AND CONNECTING THE CARD

Identifying the LAN+Modem Card Ports

The dual-function LAN+Modem card has an XJACK® LAN/modem port and an auxiliary LAN port. The XJACK connector accepts either an RJ-45 network jack or an RJ-11 telephone jack. For applications that require simultaneous LAN and modem connection, you can connect the modem to the XJACK while using the 6-inch network adapter cable to connect to the LAN through the auxiliary port.

Inserting the LAN+Modem Card

To install the card, slide it into the PC Card slot as shown below. The power to the computer can be on or off. Without forcing the card, push until it seats firmly.

⚠️ **CAUTION**: *Forcing the card into the slot may bend the pins. If you do not know how to insert cards in your computer, refer to the documentation supplied with your computer on using PC Card (PCMCIA) slots.*

Connecting to a Network

Before connecting the LAN+Modem card to the network, be sure that you have the network adapter cable appropriate for a network connection at your site.

1 Connect one end of the network adapter cable to the XJACK connector on the card, as shown in the following figure.

2 Connect the other end to the LAN port.

Connecting to a Telephone Line

The modem can be connected only through the XJACK connector.

1 Connect the modem cable to the XJACK connector (See "Identifying the LAN+Modem Card Ports" on page 1).

2 Connect the other end of the modem cable to the telephone wall jack.
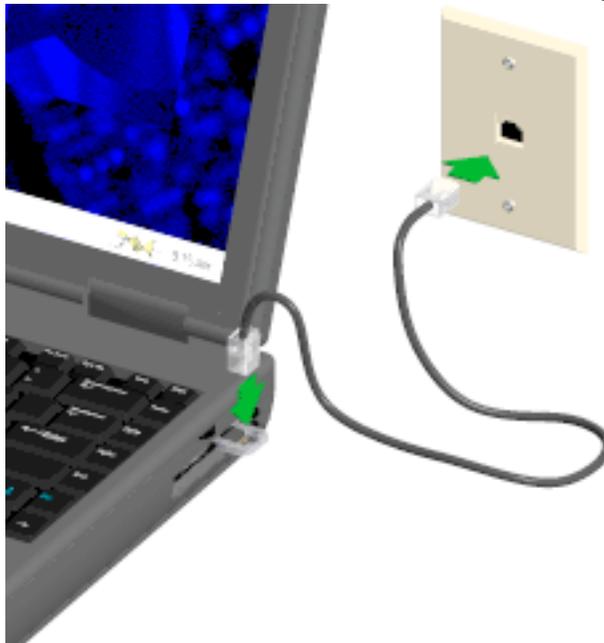
Simultaneous LAN and Modem Connections	For simultaneous operation, the modem connection must use 2-wire RJ-11 telephone cable. A telephone cable segment is provided with the LAN+Modem card.

To connect to a LAN and to a telephone line at the same time, you must use the auxiliary port.

1 Connect one end of the telephone cable segment to the XJACK connector and the other end to the telephone wall jack.

2 Connect the network adapter cable to the auxiliary network port on the card.

NOTE: *When attaching the network adapter cable to the LAN+Modem card, insert the connector with the icon side up. The connector should seat easily without forcing.*

CAUTION: *Do not connect the telephone line to the 6-inch network cable.*

3 Connect one end of the RJ-45 extension cable to the card and the other end to the network adapter cable.
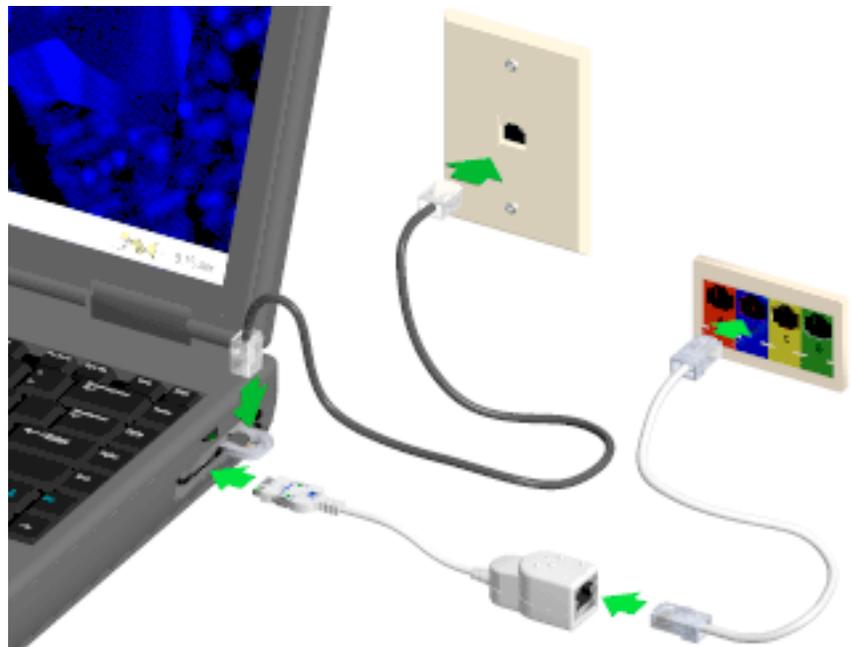
International Telephone Adapters	In some countries, the wall jack requires a telephone line adapter in order for it to accept the RJ-11 connector. Adapters for the United Kingdom, Germany, and France are included with the LAN+Modem card sold in Europe.
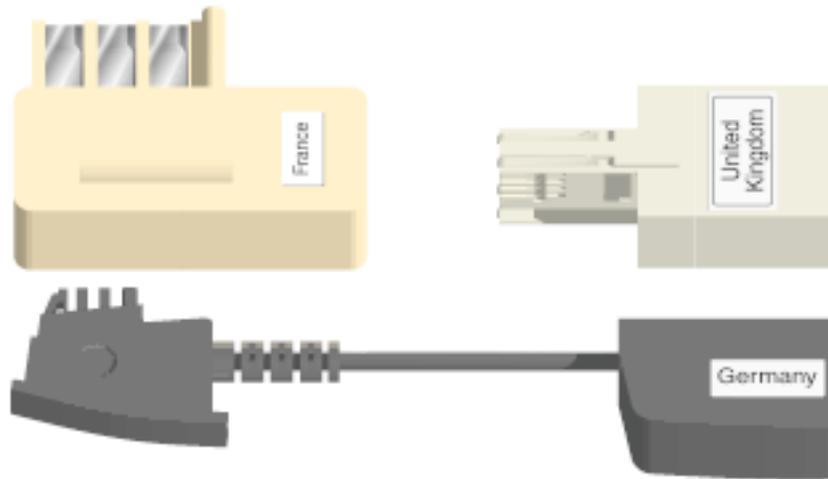
To order a line adapter for a specific country, contact TeleAdapt at one of the numbers listed below.

	USA	**United Kingdom**	**Australia**
Phone	877 835 3232	(44) (0) 181 233 3000	(61) (2) 9433 8363
Fax	408 965 1414	(44) (0) 181 233 3132	(61) (2) 9433 8369
Web Site		www.teleadapt.com	

Disconnecting the Cables

The network adapter cable locks in place when connected to the card. To release the adapter, squeeze the release clips located on the sides of the connector.

CAUTION*: Do not pull or attempt to disconnect the network adapter cable without squeezing the release clips. Otherwise, you may damage the card and make it inoperable.*

Modem Connector LEDs	When using the XJACK connector, the card LED displays the status of your modem link as follows:

- Blinking amber indicates that the connection is being established.

- Solid amber indicates that the connection is established.

LAN Connector LEDs	When using the XJACK connector, the card LED displays the status of your network link as follows:

- Steady indicates a good connection between the card and the hub.

- Blinking indicates a faulty connection. Alternatively, speed was set manually but connector attached to wrong speed.

- Off indicates that there is no connection between the card and the hub.
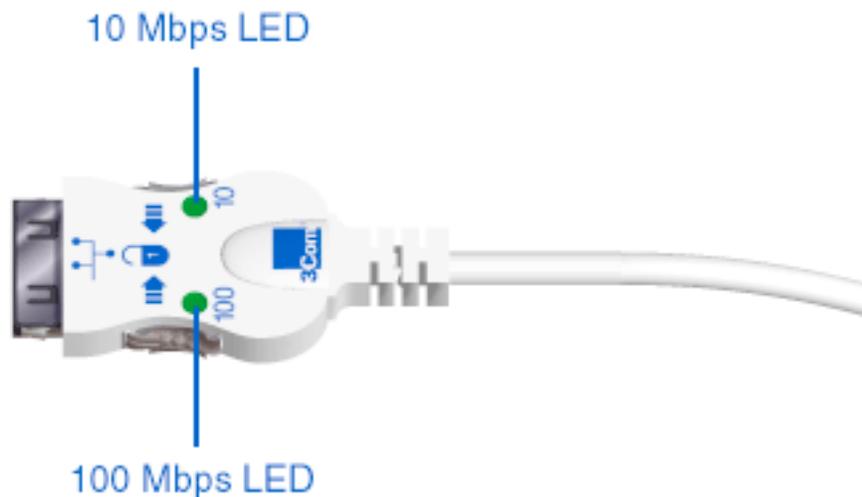
You can use the LEDs to verify link integrity when the LAN+Modem card is connected to the network and the network drivers are installed.

Installing 3Com Software Utilities

If you did not install the WorldPort country selection software when you installed this manual, do so now. You can also install a print version of this *Guide*.

To install the 3Com utilities and online documentation for Windows 98, Windows 95B (OSR 2), Windows 2000, and Windows NT 4.0:

1 Put the *Installation CD* in the CD-ROM drive and wait for the set-up program to start automatically.

For Windows 95 and Windows 98 users, the setup utility checks whether your operating system correctly manages multifunction CardBus cards. You may be asked to run a separate utility if there is a potential problem. If so, go to the following Web site:

http://support.3com.com/infodeli/tools/nic/3cxfem656c.htm

■ Select Additional Files.

■ Follow the link to "Updated Microsoft files for proper installation."

■ Follow the instructions for installing the Microsoft update.

2 Select which components to install. Typically, you will want to install the User Guide and the WorldPort country selection software.

3 To install a print version of this manual, select *User Guide — Print Version*. Acrobat Reader is required for printing. If you do not have Acrobat Reader installed on your computer, install it from the *Installation CD*:

■ Open D:*Acrobat*.

■ Double-click the Acrobat Reader installation file.

This installs the English version of Acrobat Reader. You can obtain versions of Acrobat Reader in languages other than English from the Adobe Web site at www.adobe.com.

Check with your MIS manager about whether to install other utilities included with the LAN+Modem card.

During the set-up process, you may be asked to restart the computer one or more times, depending on how current your operating system is configured and what features you choose to install.

Opening the HTML User Guide

To view the HTML *User Guide* in your browser:

1 Open the *Start* menu and select *Programs*.

2 Select *3Com PC Card Utilities*.

3 Select *3Com 3CXFEM656C*.

4 Select *User Guide*.

If you do not have a browser installed on your computer, install Internet Explorer from the *Installation CD*. Put the *Installation CD* in the CD-ROM drive (if the Setup program starts automatically, click *Cancel*), use the Explorer to find the V*nternet Explorer* folder on the CD, and install Internet Explorer from that location.

2

WINDOWS 2000

NOTE: *For the latest information on Windows 2000 support, see the Web site at:* http://support.3com.com/infodeli/tools/nic/3cxfem656c.htm.

Installing the Network Software Interface

Before installing the network software interface, insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1.

1 Turn on the computer and start Windows 2000.

Windows 2000 automatically detects the LAN function of the card. It displays a *New Hardware Found* dialog box and looks for information about the card.

2 When ready to configure the new hardware, Windows 2000 opens the *Add New Hardware Wizard.* Select *Search for the best driver for your device* and click *Next*.

3 Select *Floppy Drives,* insert the *Windows 2000 Installation* disk, and click *Next*.

4 After finding the installation files on the floppy disk, the hardware wizard displays the card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet).* Click *Next* to copy the required files.

5 Insert the Windows 2000 CD if prompted. Optionally, you may specify a location on the hard disk where the Windows 2000 files reside. Click *OK* to copy the files needed for the Ethernet interface.

There may be a period of inactivity while the system checks your current network configuration. How much time this takes depends on your settings for network software components.

6 Click *Finish*. When Windows 2000 prompts whether to reboot the computer, remove the *Windows 2000 Installation* disk from the floppy drive and click *Yes*.

Installing the Modem Software Interface

Once the system is rebooted with the LAN+Modem card installed, Windows 2000 automatically detects the modem software interface. It may install the modem software interface automatically. If it does not, follow these steps:

1 Windows 2000 opens the *Add New Hardware Wizard* dialog box and identifies the modem interface.

2 Select "Search for the best driver for your device" and click *Next*.

3 Select *Floppy Drives,* insert the *Windows 2000 Installation* disk and click *Next*.

4 After the hardware wizard finds the installation files on the floppy disk, it displays the card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem).* Click *Next*.

5 Click *Finish* when the system displays "Installation complete."

After installation is complete, a 3Com Modem Setting application is installed in the Control Panel. Open Modem Setting to change the COM port assignment for the LAN+Modem card. The default is COM5. You may need to change the COM port to a lower number if you are using older software that does not recognize COM ports higher than 4.

After installing the modem, be sure to select the country in which you will be using the Windows 2000 country selector.

Confirming Installation

Checking that the LAN Interface is Present

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon. The System Properties box appears, detailing your system setup.

4 Click the *Hardware* tab and then the *Device Manager* button. A list of devices appears, arranged by type.

5 Double-click *Network Adapters*. The LAN+Modem card name appears, confirming successful installation.

6 Double-click the entry for the LAN+Modem card to display a description of the card and its current status. The device status should indicate "This device is working properly."

7 Click *Cancel* to return to System Properties.

8 Click *OK* to exit System Properties.

Checking that the Modem is Present

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon. The System Properties box details your system setup.

4 Click the *Hardware* tab and then the *Device Manager* button. A list of devices appears, arranged by type.

5 Double-click *Modems*. It should display the entry for the *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)*.

6 Double-click the entry for the LAN+Modem card. It should confirm "This device is working properly."

7 Click *Cancel*, then click *OK* to exit System Properties.

Testing the Modem

1 Open the *Control Panel* and double-click *Telephones and Modems Options* icon.

2 Click the *Modem* tab, and then the *Properties* button.

3 Click *Modem Queries* If the modem is working properly, the test will display a white box with a list of AT commands. This will confirm that the modem is functioning properly.

Setting Up Network Software Components

You will need to install four types of network components: Client, Adapter, Protocol, and Service. These components are installed through the Network application in the Control Panel. The Network window lists which network components are currently installed.

Before installing network components, consult with your network manager or MIS representative for the options you require for your network.

1 Right click the *My Network* icon and select *Properties.*

2 Select your adapter from the list, and then select *Properties*.

3 Click *Install* to add new or additional network components. Your LAN+Modem card is already installed, so you will want to add only protocols, clients, and services.

Type of Network	Component	Manufacturer	Option to Select
Microsoft Networking and NetWare	Adapter	3Com	*FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*
Microsoft Networking	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	NetBEUI
	Service	Microsoft	File and printer sharing for Microsoft Networks
NetWare for Bindery (for NetWare 3.x and NetWare 4.x in bindery mode)	Client	Microsoft	Microsoft Client for NetWare Networks
	Protocol	Microsoft	IPX/SPX-compatible Protocol
NetWare Directory Services (NDS) (for NetWare 4.x)	Client	Microsoft	Microsoft Client for NetWare Networks*
		Novell	Novell NetWare 32-bit Client*
	Protocol	Microsoft	IPX/SPX-compatible Protocol*
		Novell	IPX/SPX Protocol*
	Service	Microsoft Novell	Service for NetWare Directory Services*
TCP/IP (Internet protocol)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	TCP/IP

* Download software from the indicated manufacturer's BBS or Web site.

4 As these components are added, you may be asked to provide:

- NetWare or Microsoft client software on hard disk, floppy diskettes, or CD
- Windows 2000 system installation files on hard disk, floppy diskettes, or CD
- *Windows 2000 Installation* disk that came with your LAN+Modem card

Each time you add one of these components, Windows 2000 creates a new entry in the Network window.

5 When all of these components have been added, you must modify their properties to comply with the network requirements for your site. The parameters you may need to customize for network operation under Windows 2000 can be found under the Properties tab for the network components you added.

Uninstalling the Card

If the card installation is unsuccessful for any reason, your best course may be to completely uninstall the LAN+Modem card and its software and repeat the installation procedures. A fresh install can also solve problems that can arise from removing the card or shutting off your computer while diagnostics were running.

Sometimes earlier installations or interrupted installation attempts leave problems that affect card operation. Possible problems include:

- One or both of the card functions not working.
- Windows 2000 not detecting the card.
- The system issuing a warning tone at startup.

If you are having any of these problems, remove the LAN+Modem card and software using the procedures below, then reinstall the card.

CAUTION*: Exit any communications or networking applications before removing the card.*

Removing Card Software

Open *Control Panel/System/Hardware/Device Manager.* Select the LAN+Modem card components and click *Remove*.

Using the Device Manager to remove the card will uninstall the card, software, and documentation. Be sure to remove both the LAN interface and the modem interface.

You can also remove the WorldPort software and the on-line User Guide separately.

1 Open *Control Panel/System/Hardware/Device Manager.*

2 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)* and click *Remove*.

3 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *Remove*.

4 Go to the Start menu and choose *Shutdown* or *Restart*.

Removing the Card   Check your computer manual for information on removing cards. Store the card in its original or similar packaging.

Troubleshooting

Symptom	Solution
Basic troubleshooting, applicable for all problem situations	Inspect all cables and connections.
	Check whether your card is fully inserted into the slot
	Check the Web site for your computer to verify whether you have the latest BIOS for your system. If not, download the newest BIOS version, and follow the upgrade instructions.
	Check for multiple installations of the card.
	Check whether your system's PC Card CardBus Controller is installed and running properly: go to *Control Panel/System/Hardware/Device Manager/PCMCIA Card* and verify that the controller is present and shows no errors.
	Check the *Control Panel/PC Card* application to confirm that your card is recognized by the system.
	In the *Control Panel/Network* application, make sure that you have appropriate Clients and Protocols installed.
	Check the *Control Panel/Network* application. Select the *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*, open the *Advanced* tab, and select *Check for cable*.
The LAN device is not functional. LED on the connector is off or mismatches the real network speed.	Use *Control Panel/System/Hardware/Device Manager* to inspect the status of your LAN card.
	If you see a red X, enable the card checking the appropriate box under Properties
	If you see a yellow exclamation point, click the icon to see what the conflict is. Verify that there are adequate system resources. Try to free system resources (for example, disable the infrared port), then remove and reinstall the card.
Losing network connection after disconnecting or changing the media speed when using NetWare servers and IPX/SPX protocol	This happens when the frame type is selected automatically. A temporary solution is to reboot the system after disconnecting /reconnecting the cable in NetWare networks. The permanent solution is to use specific frame types such as 802.2 or 802.3.
Modem appears installed, but functionality is inconsistent.	Ensure that the appropriate country is selected, using the Windows 2000 country selector.

3

WINDOWS 98

NOTE: *If you are reinstalling the card, make sure you have completed the procedures for "Uninstalling the Card" on page 17.*

ALSO NOTE: Your *version of Windows 98 might not properly support multifunction CardBus cards. For proper operation, you must download a software upgrade from Microsoft. For details, see "Downloading the QFE Patch" on page 41.*

Installing the Network Software Interface

Before installing the network software interface, insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1.

1 Turn on the computer and start Windows 98.

Windows 98 automatically detects the LAN function of the card. It displays a *New Hardware Found* dialog box and looks for information about the card.

2 When ready to configure the new hardware, Windows 98 opens the *Add New Hardware Wizard.* Select *Search for the best driver for your device* and click *Next*.

3 Select *Floppy Drives,* insert the *Windows 95/98 Installation* disk, and click *Next*.

4 After finding the installation files on the floppy disk, the hardware wizard displays the card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet).* Click *Next* to copy the required files.

5 Insert the Windows 98 CD if prompted. Optionally, you may specify a location on the hard disk where the Windows 98 files reside. Typically, this location is C:\WINDOWS\OPTIONS\CABS. Click *OK* to copy the files needed for the Ethernet interface.

There may be a period of inactivity while the system checks your current network configuration. How much time this takes depends on your settings for network software components.

6 Click *Finish*. When Windows 98 prompts whether to reboot the computer, remove the *Windows 95/98 Installation* disk from the floppy drive and click *Yes*.

Installing the Modem Software Interface	Once the system is rebooted with the LAN+Modem card installed, Windows 98 automatically detects the modem software interface. It may install the modem software interface automatically. If it does not, follow these steps:

1 Windows 98 opens the *Add New Hardware Wizard* dialog box and identifies the modem interface.

2 Select *Search for the best driver for your device* and click *Next*.

3 Select *Floppy Drives,* insert the LAN+Modem card *Windows 95/98 Installation* disk and click *Next*.

4 After the hardware wizard finds the installation files on the floppy disk, it displays the card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)*. Click *Next*.

5 Click *Finish* when the system displays "Installation complete."

After installing the modem, be sure to select the country in which you will be using the modem. Run the WorldPort country-selection utility as described in "Using WorldPort" on page 33.

NOTE: *If you remove the LAN+Modem card and reinstall it in another slot, Windows 98 will rediscover it in the new location, begin another installation procedure, and prompt for the Windows 95/98 Installation disk. You can install the card in both slots if you wish. If the double installation causes problems, uninstall one of the occurrences of the card. See "Uninstalling the Card" on page 17.*

Modifying Audio Settings	With the default audio settings for Windows 98, you may not hear the sound from the modem when you dial out. To enable the sound, use the following procedure:

1 Locate the speaker icon in the system tray.

If there is no speaker icon in the system tray, open the Control Panel and double-click *Multimedia.* On the Audio page, make sure *Show volume control on the task bar* is checked

2 Double click the *speaker* icon in the system tray.

3 When the *Master Out* window opens, select *Options*.

4 Choose *Properties* and make sure the *Mono In* box is checked. Click *OK*.

5 When the *Master Out* window is redisplayed, check *Mono In Balance*. Ensure that the mute box is unchecked.

If this does not solve the problem, refer to "Troubleshooting" on page 18.

Confirming Installation	**Checking that the LAN Interface is Present**

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon. The System Properties box appears, detailing your system setup.

4 Click the *Device Manager* tab. A list of devices appears, arranged by type.

5 Double-click *Network Adapters*. The LAN+Modem card name appears, confirming successful installation.

6 Double-click the entry for the LAN+Modem card to display a description of the card and its current status. The device status should indicate "This device is working properly."

7 Click *Cancel* to return to System Properties.

8 Click *OK* to exit System Properties.

Checking that the Modem is Present

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon. The System Properties box details your system setup.

4 Click the *Device Manager* tab. A list of devices appears, arranged by type.

5 Double-click *Modems*. It should display the entry for the *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)*.

6 Double-click the entry for the LAN+Modem card. It should confirm "This device is working properly."

7 Click *Cancel*, then click *OK* to exit System Properties.

Testing the Modem

1 Open the *Control Panel* and double-click *Modems*.

2 Select the *Diagnostics* tab.

3 Click the COM port assigned to the LAN+Modem card.

4 Click *More Info...* If the modem is working properly, the test will display a white box with a list of AT commands. This will confirm that the modem is functioning properly.

Setting Up Network Software Components

You will need to install four types of network components: Client, Adapter, Protocol, and Service. These components are installed through the Network application in the Control Panel. The Network window lists which network components are currently installed.

Before installing network components, consult with your network manager or MIS representative for the options you require for your network.

1 Open the Network window by double-clicking the Network icon in the Control Panel.

2 Click *Add* to add new or additional network components. Your LAN+Modem card is already installed, so you will want to add only protocols, clients, and services.

Type of Network	Component	Manufacturer	Option to Select
Microsoft Networking and NetWare	Adapter	3Com	*FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*
Microsoft Networking (for Windows 95, Windows NT, and Windows 98)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	NetBEUI
	Service	Microsoft	File and printer sharing for Microsoft Networks
NetWare for Bindery (for NetWare 3.x and NetWare 4.x in bindery mode)	Client	Microsoft	Microsoft Client for NetWare Networks
	Protocol	Microsoft	IPX/SPX-compatible Protocol
NetWare Directory Services (NDS) (for NetWare 4.x)	Client	Microsoft	Microsoft Client for NetWare Networks*
		Novell	Novell NetWare 32-bit Client*
	Protocol	Microsoft	IPX/SPX-compatible Protocol*
		Novell	IPX/SPX Protocol*
	Service	Microsoft Novell	Service for NetWare Directory Services*
TCP/IP (Internet protocol)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	TCP/IP

* Download software from the indicated manufacturer's BBS or Web site.

3 As these components are added, you may be asked to provide:

- NetWare or Microsoft client software on hard disk, floppy diskettes, or CD

- Windows 98 system installation files on hard disk, floppy diskettes, or CD

- *Windows 95/98 Installation* disk that came with your LAN+Modem card

Each time you add one of these components, Windows 98 creates a new entry in the Network window.

4 When all of these components have been added, you must modify their properties to comply with the network requirements for your site. The parameters you may need to customize for network operation under Windows 98 can be found under the Properties tab for the network components you added.

Uninstalling the Card

If the card installation is unsuccessful for any reason, your best course may be to completely uninstall the LAN+Modem card and its software and repeat the installation procedures.

Sometimes earlier installations or interrupted installation attempts leave problems that affect card operation. Possible problems include:

- One or both of the card functions not working.

- Windows 98 not detecting the card.

- The system issuing a warning tone at startup.

If you are having any of these problems, remove the LAN+Modem card and software using the procedures below, then reinstall the card.

CAUTION*: Exit any communications or networking applications before removing the card.*

Removing Card Software

Open *Control Panel/System/Device Manager.* Select the LAN+Modem card components and click *Remove.*

Using the Device Manager to remove the card will uninstall the card, software, and documentation. Be sure to remove both the LAN interface and the modem interface.

You can also remove the WorldPort software and the on-line User Guide separately.

1 Open *Control Panel/System/Device Manager.*

2 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)* and click *Remove.*

3 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *Remove.*

4 Go to the Start menu and choose *Shutdown* or *Restart.*

Removing the Card

Check your computer manual for information on removing cards. Store the card in its original or similar packaging.

Troubleshooting

Symptom	Solution
Basic troubleshooting, applicable for all problem situations	Inspect all cables and connections. Check whether your card is fully inserted into the slot Check the Web site for your computer to verify whether you have the latest BIOS for your system. If not, download the newest BIOS version, and follow the upgrade instructions. Check for multiple installations of the card. Check whether your system's PC Card CardBus Controller is installed and running properly: go to *Control Panel/System/Device Manager/PCMCIA Card* and verify that the controller is present and shows no errors. Check the *Control Panel/PC Card* application to confirm that your card is recognized by the system. In the *Control Panel/Network* application, make sure that you have appropriate Clients and Protocols installed.
The LAN device is not functional. LED on the connector is off or mismatches the real network speed.	Use Control Panel/System/Device Manager to inspect the status of your LAN card. If you see a red X, enable the card checking the appropriate box under Properties If you see a yellow exclamation mark, click the icon to see what the conflict is. Verify that there are adequate system resources. Try to free system resources (for example, disable the infrared port), then remove and reinstall the card.
After you remove the card from the system and then reinsert it, Windows runs the installation process again	This is normal behavior for Windows with PCI and CardBus cards installed. Windows 98 can install one instance of the card for every slot presented in the system. (If you proceed with this installation, you will need your LAN+Modem card Windows Installation disk.) You will have two instances of the card under the Network and Modem applications in Control Panel. After the second instance is installed – the hot swap from one slot to another will be smooth. Be sure to check your settings under Dial-up Networking and Hyperterminal to ensure that your preferred settings apply to the correct instance of the card.
Losing network connection after disconnecting or changing the media speed when using NetWare servers and IPX/SPX protocol	This happens when the frame type is selected automatically. A temporary solution is to reboot the system after disconnecting /reconnecting the cable in NetWare networks. The permanent solution is to use specific frame types such as 802.2 or 802.3.
After a fresh installation of Windows 98 with the card already installed, the system detects the card interface as a PCI device.	This happens only when you reply "No" when asked whether the card is used for Windows installation. Check *Control Panel/System/Device Manager*. Remove the "PCI Device" entry and reboot the system. Windows 98 will detect the card and prompt for the Windows 95/98 Installation disk.
Modem appears installed, but functionality is inconsistent.	Ensure that you ran the WorldPort country selection software and choose the country in which the modem is being used.
Previously installed software does not work with modem.	Make sure the COM port used by the application is the same as the COM port assigned to the modem during installation.

4

WINDOWS 95

NOTE: *If you are reinstalling the card, make sure you have completed the procedures for "*Uninstalling the Card*" on page 23.*

Determining Your Windows 95 Version

The LAN+Modem card runs under Windows 95 version B (OSR 2). If you do not know which version of Windows 95 is installed on your computer, follow these steps:

1 In the Windows 95 Control Panel, double-click *System* to display the System Properties dialog box.

2 Click the *General Tab* to display the Windows 95 version information.

3 Version B (also known as OSR 2) is identified as 4.00.950b.

NOTE: *Some versions of Windows 95 do not properly support multifunction CardBus cards. For proper operation, you must download a software upgrade from Microsoft. For details, see "Downloading the QFE Patch" on page 41.*

About Windows 95 Prompts

During setup, Windows 95 may prompt for an installation disk or the Windows CD several times. Be sure that the path or device you supply to this prompt is correct. Here are some guidelines:

■ If Windows 95 prompts for a disk from the manufacturer, put the LAN+Modem card *Windows 95/98 Installation* disk in the floppy drive. On most systems, this will be drive A, so the path in the dialog box should point to A:\.

■ If Windows 95 prompts for the Windows CD, put the Windows 95 CD in your CD-ROM drive. Often, this will be drive D. If so, the path in the dialog box should point to D:\WIN95.

■ Some computers are delivered with Windows 95 installed, but no CD is supplied. If this is the case with your computer, you must supply the path where the Windows 95 software resides. Check your owner's manual for details. Often, this will be a subdirectory of your Windows folder. A common path for these driver files is C:\WINDOWS\OPTIONS\CABS, so you would supply this path in the dialog box.

Installing the Network Software Interface	Before installing the network software interface, insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1. You should also obtain the following information:

- For Windows 95 networking, your computer name and workgroup name.

- For your network account, your user name and password.

You should be able to obtain this information from your MIS department.

1 Turn on the computer. Windows 95 detects the card during startup.

2 Follow the instructions in the *Update Device Driver Wizard* dialog box. Put the *Windows 95/98 Installation* disk in the floppy drive and click *Next*.

3 After the system finds the installation files on the floppy disk, it displays the card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*, and prompts for the location of the driver files.

4 Click *Finish* to copy the files needed for the Ethernet interface.

- If prompted for the *Windows 95/98 Installation* disk, select the floppy drive as the location of the files.

- If prompted for Windows 95 files, supply your CD or type the path to the directory where your Windows 95 files reside. Normally, this path is C:\WINDOWS\OPTIONS\CABS.

Click *OK* to finish copying the required files.

5 If Windows 95 opens the Network Setup box, supply your computer name and workgroup name, then click *Close*.

6 When Windows 95 prompts whether to reboot the computer, remove the *Windows 95/98 Installation* disk from the floppy drive and click *Yes*.

Installing the Modem Software Interface	Once the card is inserted and the LAN interface installed, Windows 95 will detect and install the modem software interface when it reboots.

After the modem is installed, run the WorldPort country selection utility as described in "Using WorldPort" on page 33.

After installation is complete, a 3Com Modem Setting application is installed in the Control Panel. Open Modem Setting to change the COM port assignment for the LAN+Modem card. The default is COM5. You may need to change the COM port to a lower number if you are using older software that does not recognize COM ports higher than 4.

After installing the modem, be sure to select the country in which you will be using the modem. Run the WorldPort country-selection utility as described in "Using WorldPort" on page 33.

NOTE: *If you remove the LAN+Modem card and reinstall it in another slot, the first time Windows 95 rediscovers it in the new location it will start another installation.   If the double installation causes problems, uninstall one of the occurrences of the card. See "Uninstalling the Card" on page 23.*

Confirming Installation

Checking that the Network Interface is Present

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon. The System Properties box appears, detailing your system setup.

4 Click the *Device Manager* tab. A list of devices appears, arranged by type.

5 Double-click *Network Adapters*. The entry for the LAN+Modem card, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*, confirms successful installation.

6 Double-click the entry for the LAN+Modem card to display a description of the card and its current status. The device status should indicate "This device is working properly."

7 Click *Cancel* to return to System Properties.

8 Click *OK* to exit System Properties.

Checking that the Modem is Present

1 Open the *My Computer* folder.

2 Double-click *Control Panel*.

3 Double-click *System*. The System Properties box details your system setup.

4 Click the *Device Manager* tab. A list of devices appears, arranged by type.

5 Double-click *Modems*. It should display the entry for the *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)*.

6 Double-click the entry for the LAN+Modem card. It should confirm "This device is working properly."

7 Click *Cancel*, then click *OK* to exit System Properties.

Testing the Modem

1 Open the *Control Panel* and double-click *Modems*.

2 Select the *Diagnostics* tab.

3 Click on the COM port assigned to the LAN+Modem card.

4 Click *More Info...* If the modem is working properly, the test displays a white box with a list of AT commands. This confirms that the modem is functioning properly.

| **Setting Up Network Software Components** | You will need to install four types of network components for Windows 95 networking: Client, Adapter, Protocol, and Service. These components are installed through the Network application in the Control Panel. Open the Network application in the Control Panel to see which network components are currently installed. |

Before installing network components, consult with your network manager or MIS representative for the options you require for your network.

1 Open the Network window by double-clicking the *Network* icon in the Control Panel.

2 Click *Add* to add new or additional network components. Your LAN+Modem card is already installed, so you will want to add only protocols, clients, and services.

Type of Network	Component	Manufacturer	Option to Select
Microsoft Networking and NetWare	Adapter	3Com	*FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)*
Microsoft Networking (for Windows 95, Windows NT, and Windows 98)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	NetBEUI
	Service	Microsoft	File and printer sharing for Microsoft Networks
NetWare for Bindery (for NetWare 3.x and NetWare 4.x in bindery mode)	Client	Microsoft	Microsoft Client for NetWare Networks
	Protocol	Microsoft	IPX/SPX-compatible Protocol
NetWare Directory Services (NDS) (for NetWare 4.x)	Client	Microsoft	Microsoft Client for NetWare Networks*
		Novell	Novell NetWare 32-bit Client*
	Protocol	Microsoft	IPX/SPX-compatible Protocol*
		Novell	IPX/SPX Protocol*
	Service	Microsoft Novell	Service for NetWare Directory Services*
TCP/IP (Internet protocols)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	TCP/IP

* Download software from the indicated manufacturer's BBS or Web site.

3 Each time you add one of these components, Windows 95 creates a new entry in the Network window. As components are added, you may be asked to provide:

- NetWare or Microsoft client software on hard disk, floppy disks, or CD
- Windows 95 system installation files on hard disk, floppy disks, or CD
- The *Windows 95/98 Installation* disk that came with your LAN+Modem card

4 When all of these components have been added, modify their properties to comply with the network requirements for your site. The parameters you may need to add for network operation under Windows 95 can be found under the Properties tab for the network components you added.

Uninstalling the Card

If the card installation is unsuccessful for any reason, your best course may be to completely uninstall the LAN+Modem card and its software and repeat the installation procedures.

Sometimes earlier installations or interrupted installation attempts leave problems that affect card operation. Possible problems include:

- One or both of the card functions not working.
- Windows 95 not detecting the card.
- The system issuing a warning tone at startup.

If you are having any of these problems, remove the LAN+Modem card and software using the procedures below, then reinstall the card.

CAUTION*: Exit any communications or networking applications before removing the card.*

Removing Card Software

Open *Control Panel/System/Device Manager.* Select the LAN+Modem card components and click *Remove*.

Using the Device Manager to remove the card will uninstall the card, software, and documentation. Be sure to remove both the LAN interface and the modem interface.

You can also remove the WorldPort software and the on-line User Guide separately.

1 Open *Control Panel/System/Device Manager.*

2 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)* and click *Remove*.

3 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *Remove*.

4 Go to the Start menu and choose *Shutdown* or *Restart*.

Removing the Card

Check your computer manual for information on removing cards. Store the card in its original or similar packaging.

Troubleshooting

Symptom	Solution
Basic troubleshooting, applicable for all problem situations.	Inspect all cables and connections.
	Check whether your card is fully inserted into the slot.
	Check the Web site for your computer to verify whether you have the latest BIOS for your system. If not, download the newest BIOS version, and follow the upgrade instructions.
	Check for multiple installations of the card.
	Check whether your system's PC Card CardBus Controller is installed and running properly: go to Control Panel/System/Device Manager/PCMCIA Card and verify that the controller is present and shows no errors.
	Check the *Control Panel/PC Card* application to confirm that your card is recognized by the system.
	In the *Control Panel/Network* application, make sure that you have appropriate clients and protocols installed.
After installation, card not functional after reboot.	In some Windows 95 (OSR 2) computers, the card is accessed after reboot and the PCI devices are found, but the card slot is powered down. This problem may be due to the inability of some versions of Windows 95 to support multifunction cards. A temporary workaround is to remove the card and reinsert it. In order to support multifunction CardBus cards, Windows 95 OSR 2.x needs update files from Microsoft. See "Downloading the QFE Patch" on page 41.
System shows a valid COM port setting for the modem, but your application does not recognize it.	Use the *3Com Modem Setting* application in the control panel to change the COM port assignment. Use a lower number if you are have older software that does not recognize COM ports higher than 4.
LAN device is not functional. LED on the connector is off or mismatches the real network speed.	Use *Control Panel/System/Device Manager* to inspect the status of your LAN card.
	If you see a red X, enable the card and set the Properties.
	If you see a yellow exclamation mark, click on the icon to see what the conflict is. Verify that there are adequate system resources. Try to free system resources (for example, disable the infrared port), then remove and reinstall the card.
After you remove the card and reinsert it, Windows runs the installation process again.	This is normal behavior for Windows with PCI and CardBus cards installed. Windows 95 can install one instance of the card for every slot presented in the system. You will have two instances of the card under the Network and Modem applications in Control Panel. After the second instance is installed – the hot swap from one slot to another will be smooth. Be sure to check your settings under Dial-up Networking and Hyperterminal to ensure that your preferred settings apply to the correct instance of the card.
The card does not work in your system with Windows 95 or Windows 95a	Earlier versions of Windows (Windows 95 and Windows 95a) are not supported. Upgrade your system to Windows 95b (OSR 2) or Windows 98.
	To determine your version of Windows 95, open the Control Panel, select System, and look at System information under the General tab. If your release is identified as version 4.00.950 B, you are using OSR 2.
Losing network connection after disconnecting or changing the media speed when using NetWare servers and IPX/SPX protocol	This happens when the frame type is selected automatically. A temporary solution is to reboot after disconnecting and reconnecting the cable in NetWare networks. The permanent solution is to use specific frame types such as 802.2 or 802.3.
Modem appears installed, but functionality is inconsistent.	Ensure that you ran the WorldPort country selection software and choose the country in which the modem is being used.

Updating Windows 95 Drivers

Updating LAN Drivers

1 From the *Control Panel*, open the *System* application.

2 Select the *Device Manager* tab.

3 Double-click *Network Adapters*.

4 Double-click *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet).*

5 Open the Driver tab and click *Update Driver*.

6 Choose *Select Driver from list* and click *Next*.

7 Select *Have Disk*. Specify the location of the new driver files and click *OK*.

8 After Windows copies the files, click *Restart* for the changes to take effect.

Updating Modem Drivers

1 From the *Control Panel*, open the *System* application.

2 Select the *Device Manager* tab.

3 Double-click *Modems*.

4 Double-click *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem).*

5 Open the Driver tab and click *Update Driver*.

6 Choose *No, Select Driver from list* and click *Next*.

7 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)* and click *Finish*.

8 Click *OK* and specify the location of the new driver files. Click *OK* again to copy the files you need.

9 After Windows copies the files and finishes the update, restart the computer for the changes to take effect.

5

WINDOWS NT

NOTE: *If you are reinstalling the card, make sure you have completed the procedures for "Uninstalling the Card" on page 30. For Windows NT 4.0 installation, you must have Service Pack 3 or later installed on your computer. After installation, reinstall the Service Pack software to update NT network files and eliminate error messages in the Event Viewer. Contact your Network Administrator or Microsoft if you do not have the current Service Pack.*

Setup Using Softex Software

Use the following procedures if the Softex PC Card Controller for Windows NT 4.0 is installed on your system. If the Softex software is not installed, use the procedures for "Setup Using Point Enabler" on page 28.

For the following procedures:

- The computer must be running Windows NT 4.0.
- The Softex PC Card Controller for Windows NT 4.0 must be installed.
- Windows NT Service Pack 3 or later must be installed.

Installing the Network Interface

1 Insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1. The system will find the card and display a *PCMCIA Card Not Configured* dialog box.

2 Select *Install the driver that was provided with the PC Card.*

3 Insert the *Installation CD* and click *OK*.

4 Set the I/O Port, Memory Address, Interrupt, and Duplex Mode (the default values work in most instances) as required for your site and click *Continue*.

5 Set the Microsoft TCP/IP Properties as required for your site and click *OK*. The system will display a dialog box called *PCMCIA Reboot Needed*.

Consult with your MIS representative if you do not know what settings to use.

Once the procedure is completed, reboot for the changes to take effect.

Installing the Modem

For instructions on installing the modem, see "Installing the Modem Interface" on page 30.

Setup Using System Soft Software	For setup using System Soft Card and Socket Services:

1 Insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1. The system will find the card and display a *PCMCIA Card Not Configured* dialog box.

2 Click *Correct*. The card wizard for Windows NT will appear with instructions for installing the card.

3 Click *OK* and continue with the procedure described for "Setup Using Point Enabler" below.

Setup Using Point Enabler	Point-enabler installation is a basic, manual installation procedure that will work on nearly all configurations, including systems with System Soft Card and Socket services installed. If you are running the Softex software on your system, use the procedures for "Setup Using Softex Software" on page 27.

Installing the Network Interface	Before installing the network interface, insert the LAN+Modem card and connect to the network as described above. Obtain the following information from your MIS department:

- For Windows NT networking, your computer name and workgroup or domain name.

- For your network account, your user name and password.

The LAN+Modem card requires that Service Pack 3 (or a later version) be installed on your computer. Contact your network administrator or Microsoft if you do not have Service Pack 3 or later.

Setup With No Networking Installed

This procedure assumes that you have not already installed Windows NT networking on your notebook computer. If networking is installed, see "Setup With Networking Already Installed" on page 29.

1 In the Control Panel, double-click *Network*.

2 When the system prompts: "Windows NT Networking is not installed. Do you want to install it now?", click *Yes*. This opens the Network Setup Wizard.

If the Network Setup Wizard does not appear, refer to "Setup With Networking Already Installed" on page 29.

3 Check *Wired to the network* and click *Next*.

4 When the system prompts to have setup start searching for a network adapter, click *Select from List*.

5 Click *Have Disk*. Put the LAN+Modem card *Windows NT Installation* disk in the floppy drive and click *OK*.

6 When the Select OEM Option window opens, select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *OK*.

7 The *Network Adapters* list shows a check mark next to the 3Com LAN+Modem card. Click *Next* to continue.

8 In the Network Protocols list, place a check mark next to each network protocol required for your site and click *Next*.

9 In the Network Services window, place a check mark in the box next to each desired service. Unless you are following specific guidelines from your MIS department, select the default settings.

10 Click *Next* to install the selected components.

11 When prompted, enter the path to the Windows NT installation files (for example, D:\i386 on the NT CD) and click *Continue*.

When the system prompts again for NT files, specify the floppy drive and click *Continue*.

12 In the 3Com LAN+Modem card dialog box, accept the default settings and click *Continue*.

Depending on your computer's current settings, a TCP/IP setup windows may appear. Select the options that are required for your site and continue.

13 When the window for enabling or disabling protocols opens, click *Next*.

14 When NT is ready to start the network, click *Next* to copy the network files.

15 Provide your computer name and workgroup or domain name when prompted.

16 When the system displays "Networking has been installed on your computer," click *Finish*.

17 When prompted to reboot the computer, remove the LAN+Modem card *Windows NT Installation* disk from the floppy drive and click *Yes*.

Setup With Networking Already Installed

This procedure assumes that Windows NT networking is already installed on your notebook computer. If networking is not yet installed, see "Setup With No Networking Installed" on page 28.

1 In the Control Panel, double-click *Network*.

If the system prompts: "Windows NT Networking is not installed. Do you want to install it now?", use the procedure for "Setup With No Networking Installed" on page 28.

2 Open the *Adapter* tab and click *Add*.

3 Click *Have Disk*. Put the LAN+Modem card *Windows NT Installation* disk in the floppy drive and click *OK*.

4 When the Select OEM Option window opens, select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *OK*.

5 In the 3Com LAN card dialog box, accept the default settings and click *Continue*.

The default settings work in most instances. However, you may specify network link settings, auto polarity, and IRQ and I/O values.

6 After Windows copies all of the required files, it displays the LAN card name, *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet).* Click *Close*.

7 Depending on your current network settings, you may see the Microsoft TCP/IP Properties screen.

8 When prompted to reboot the computer, remove the *Windows NT Installation* disk from the floppy drive and click *Yes*.

Installing the Modem Interface

1 Put the Installation CD in the CD-ROM Drive.

2 From the Windows Start Menu select *Run*.

3 Use the Browse feature to find the WMSETUP.EXE program on the installation CD.

4 Select WMSETUP.EXE and Click *OK* to run the program.

5 In the setup window, select *Install*.

6 When prompted, set your COM port and click *OK*.

Uninstalling the Card

To remove the card and LAN software from your system:

1 From the Control Panel, open Network/Adapters.

2 Select *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Fast Ethernet)* and click *Remove*. Do not reboot until you have deleted the modem interface as described below.

3 Reboot.

To remove the modem:

1 Put the Installation CD in CD-ROM Drive or Floppy in floppy drive.

2 From the Windows Start Menu select *Run*.

3 Use the Browse feature to find the WMSETUP.EXE program on the installation CD.

4 Select WMSETUP.EXE and Click *OK* to run the program.

5 In the setup window, select *Uninstall*.

Troubleshooting For additional configuration information for the LAN+Modem card under Windows NT, see the file **NTConfig.txt**. This file also contains recommendations for configuring specific computer models.

Symptom	Solution
Basic troubleshooting, applicable for all problem situations.	Inspect all cables and connections.
	Check whether your card is fully inserted into the slot.
	Check the Web site for your computer to verify whether you have the latest BIOS for your system. If not, download the newest BIOS version and follow the upgrade instructions.
	If you are not using the Softex PC Card Controller, reinstall your Service Pack software after installing drivers for the LAN+Modem card.
	The event log lists any problems found during system operation. To check the event log for errors, select *Programs/Administrator Tools/Event Viewer* from the Start menu.
Computer not connecting to network.	The most common problems under NT 4.0 occur because system resources are not set correctly. If you are installing the LAN+Modem card using the point-enabler procedure, refer to the file NTConfig.txt.
	Remember that you can always use the Windows NT Diagnostics Resource tab to determine which resources are free.
Driver not loading correctly.	Service Pack 3 or a later version should be installed before you install the Softex PC Card Controller. If you are using Softex without any Service Pack software, complete the following procedure:
	1 Remove the card.
	2 Uninstall the Softex software.
	3 Install the Service Pack software. You can download the latest Service Pack from Microsoft.
	4 Reinstall the Softex software.
	5 Reinstall the card.
Application cannot find the modem.	An older application may not be aware of COM ports higher than COM4. If your modem is installed on COM5 or higher, reinstall the modem using one of the legacy COM ports (COM2, COM3, or COM4). See the file NTConfig.txt for more information.
Modem will not fax.	Most Windows fax software will not work with Windows NT. Contact Microsoft for information about software for sending faxes.
Failure after Suspend/Resume.	This usually indicates a power-management problem. Since Windows NT 4.0 does not support power management, we recommend that you disable power management in the BIOS. Make sure you have the latest BIOS for your computer or upgrade your software from Microsoft.
Card not functioning.	Open Windows NT Diagnostics. From the Start menu, select *Programs/Admin Tools/Windows NT Diagnostics.*
	Windows NT Diagnostics lets you see where the drivers are loading in I/O, IRQ, MEM ranges.
	Check for resource conflicts and make sure the settings for the LAN+Modem card are valid.
Modem driver does not load properly	If your modem did not install correctly, make sure you installed the driver from the LAN+Modem card Windows NT installation disk. If not, remove and reinstall the driver using the LAN+Modem Card Windows NT Installation disk.

The LAN+Modem card fails to function properly with SoftTex Card Services installed.	Make sure that you have the appropriate version of Softex installed for your machine and that you are using the Softex drivers located on the installation CD that shipped with the product.
The LAN+Modem card fails to function with SystemSoft Card Services installed.	SystemSoft version 4.10.13 was tested with the LAN+Modem card. It functions fully except that modem capabilities are not hotswappable. Make sure that you have properly installed the correct version of SystemSoft Card Services for your computer.
16-bit card fails to function after installing the LAN+Modem adapter.	Since the LAN+Modem Card is a CardBus adapter, it disables the PCMCIA service required for 16-bit adapters. To use a 16-bit adapter, Click *Control Panel/Devices/PCMCIA* and enable it on boot. This is not supported on Toshiba machines using the Topic 95/97 controllers since the controller needs to be in CardBus/16 to support the CardBus adapter. Windows NT 4.0 cannot enable PCMCIA services when the controller is in CardBus mode. To workaround this, you can either setup multiple hardware configurations or choose a 16-bit multifunction PC Card.

6

USING THE MODEM

Using WorldPort

Connecting in different countries may require trial and error until you determine exactly what you need. This is because a particular country may have multiple exchange systems that require different configurations. The information provided below provides some hints for connecting in different countries. Be sure to have the correct country adapter when you try to connect. See "International Telephone Adapters" on page 4.

WorldPort Country Select software lets you select a country, then automatically configures the modem for that country.

To change the modem configuration for another country:

1 Open the Start menu and select *Programs/3Com Utilities*.

2 In the WorldPort Country Select Software, locate the country you are connecting from.

3 Select your country and click *OK*.

If the country you want to select is not listed, and if the country does not require modem homologation, set the WorldPort Country Select Software to USA.

4 Try connecting.

Hints for Good Connections

Use the following information when you set up your communications software to help your modem connect at the highest possible speed:

- If you have call waiting, disable it. Call waiting generates a tone on the line that causes results similar to static. It also causes your modem to disconnect or report NO CARRIER if a call waiting signal comes when your modem is connected to another modem. Call waiting is usually disabled by using *70 in your dial string before the phone number.

  Contact your local phone company for information on how to disable any call waiting options.

- Telephone lines with static or noise slow down transmission and require error correction. If your phone line has a problem with noise, contact your telephone company to see if they can fix the problem.

- Don't use a splitter on your telephone line. A single connection from wall to modem produces the highest transfer speed.

- If the modems do not connect during the handshake, try disabling error correction (use the AT command AT\C0). You can also try disabling data compression (AT\N0).

Software Settings

Communications software setup requires information about the modem to make a call or send a fax using the modem. Enter the following settings with the modem software you are using:

- Select the highest transmission speed or baud rate listed, up to 115,200 bps
- Select fax Class 1
- Select NONE for parity
- Select a word length of 8
- Set the stop bits to 1
- Select either Hayes-compatible, Generic 28.8, or Generic 33.6 modem.

Setup for Communications Applications

Virtually all data or fax communications software packages will work if set up correctly for your modem. Read and follow the software installation and setup instructions supplied with your communications application.

If the LAN+Modem card is listed in your communications software, the correct initialization strings will be used. If the correct modem does not appear on the list, use the generic 28.8 or 33.6 modem setting. Alternatively, you can contact your software vendor for an updated list of supported modems.

For most applications, you can use the factory-default setting for the modem initialization string. To reset your modem to the factory defaults, use the AT command string **AT&F**.

Calls with HyperTerminal

HyperTerminal is the resident telecommunication application supplied with Windows 98, Windows 95 and Windows NT 4.0. To place a call using HyperTerminal.

1 Close any open applications you are not using. Be especially sure to close any communication programs.
2 Click on *Start/Programs/Accessories/HyperTerminal.*
3 Double-click the *HyperTerminal* icon to open the *New Connection* window.

   In Windows 95 and Windows NT, you can find the Hyperterminal icon in Start/Programs/Accessories/Hyperterminal.

   In Windows 98, look in Start/Programs/Accessories/Communications.
4 In the Connection Description dialog box, type a text description, such as an easy-to-remember name, for the connection and click *OK*.
5 In the Phone Number dialog box, type in the area code and phone number. For the 3Com BBS service, for example, type 18472626000 ("1", followed by the area code, followed by the number).
6 In the *Connect Using* menu, be sure that you have selected the *FEM656C - 3Com 10-100 LAN + 56K Global Modem CardBus PC Card-(Modem)*. If it does not appear, your modem is not installed correctly.
7 Click *OK*.

8 When the Connect dialog box appears, choose the location and the dialing properties (for example, dial a 9 to access an outside line, dial a 1 before long distance, wait for a dial tone, and so forth) you require to make the call from your site.

9 Click *Dial* to initiate the call and make the connection.

You may hear a brief handshaking as the modem tries to establish a connection.

Calls from a Hotel or Business PBX

Normally, your LAN+Modem card waits for a dial tone before dialing. In some cases, however, a modem cannot detect a dial tone even when voice calls can be completed. This problem can occur when:

■ Dialing into a standard telephone network using nonstandard dial tone conventions

■ Placing a call from a country outside of the United States, where a different dial tone is used

■ Dialing through a business or hotel PBX or a voice-mail system that indicates new mail with a unique dial tone (travelers often find that hotel PBXs have unique dial tones)

■ Using telephones (such as cellular telephones) that require you to press a button before the dial tone can be heard

If you cannot obtain a normal dial tone following the procedures provided for your phone, you may have to reconfigure the dialing options for your communications package. Most packages have a *Wait for Dial Tone Before Dialing* option that you can enable or disable if your modem is having trouble detecting a dial tone. You must disable this option to permit blind dialing.

ISDN Support

ISDN support will be available as an upgrade in some European countries and in the Far East.

For information on ISDN support, see the 3Com Web site at http://support.3com.com/infodeli/tools/nic/3cxfem656c/ISDNinfo.htm.

GSM Support

Global System for Mobile Communications (GSM) is the digital cellular telephone standard in Europe and Asia (except Japan) and a proposed global platform for digital wireless communications.

To use GSM data services, you must have a compatible mobile phone and subscribe to the GSM data service.

You can send and receive files, faxes, and access online services and the Internet. You can make these data transfers anywhere within your GSM mobile service provider's coverage area. Refer to your GSM documentation for information about configuring, connecting to, and using GSM.

For information on GSM and cellular support , see the 3Com Web site at http://support.3com.com/infodeli/tools/nic/3cxfem656c/cellular_gsm_info.htm.

Additional Modem Features

Redialing
Your modem stores each dialed number until another number is dialed. When you enter **ATDL**, the modem redials the last number dialed.

Dialing Stored Numbers
The modem can store up to four telephone numbers. For example, suppose you frequently call the number 555-5555. If this is the first number you want to store, enter **AT&Z1=5555555** and **ATDS1** to dial it. If it is the fourth number you want to store, you would type **AT&Z4=5555555** to store it and **ATDS4** to dial it.

Call Progress Detection
An optional set of result codes lets you know when:

- The telephone number you have dialed is busy
- The line has been picked up, but a modem is not answering the call
- There is no dial tone on the telephone line
- A call is coming in

These result codes, and the commands that enable or disable these result codes are controlled by the ATXn command. See "AT Commands" on page 37 for information on AT commands.

Fax Support
To send or receive faxes using the modem, you must have a facsimile software package, such as Microsoft Fax, provided with your notebook computer. In your fax software, select error-correcting mode (ECM) to provide more reliable fax connectivity. Your modem supports Class 1 and Class 2.0 faxing; for best results and compatibility, we recommend using Class 1 as your fax class.

NOTE*: The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.*

Attaching this information to faxes is known as *fax branding*. Refer to your fax communication software documentation for details on how to comply with the fax-branding requirement.

Faxing with Microsoft Fax
Microsoft Fax is the resident fax application supplied with Windows 95 and Windows 98. Before you can use Microsoft Fax, you may have to install it from your operating system CD or folder using the Add/Remove Programs utility in the Control Panel. It is available for Windows NT, but you will have to download it from the Microsoft Web site.

Microsoft Fax is configured to use an installed modem and set up as a printer-like device. Once installed, all you need to do to send a fax is select Microsoft Fax from

the Printer Setup menu of your text-processing application, then print the file. Microsoft Fax will prompt for the Fax number to dial.

AT Commands

AT commands are set at the factory (factory settings are called *defaults*) to perform specific modem functions in preselected ways. They can be used to display call status or send and receive data with communications software such as HyperTerminal.

AT commands are instructions typed at the command line of any communications application. A communications application is in command mode when the application is started but the modem has not yet dialed. When your application is in command mode, the AT commands you type are sent directly to the modem.

The most common way to enter AT commands is from terminal mode in your communications software. The basic rules for entering AT commands are:

- All AT command lines must begin with the prefix **AT**.
- Spaces between command characters (and option characters) are ignored.
- Command line parameters cannot exceed 255 characters.
- Press Enter to enter a command line. Commands take effect as soon as they are received.
- Type commands in either upper or lower case, not a combination.
- If you leave the number off a command, zero is assumed. For example, if you type **ATE**, **ATE0** is assumed.

See ATCommandRef.htm for a listing of AT commands.

S Registers

AT command settings are stored in S-Registers. S-Register values can be changed by AT command or by entering the new value of the S Register, preceded by AT. The command **ATSn=v** changes register n by setting its value to *v*.

For example, to change from manual answer to auto-answer after three rings, follow these steps:

1 Check the S-Register table for the register that controls Answering. The functions are listed in alphabetical order.

2 Start your communications software and enter Terminal mode.

3 Type ATS0=3 and press Enter. The modem will now answer a call after three rings.

See SRegisterRef.htm for a listing of S-Registers and their values.

Result Codes

Modem result codes are messages that appear on your computer screen to inform you of the status of modem actions or when an error has occurred. What result codes appear depends on the setting of the ATXn command (see ATXn ATCommandRef.htm).

See ResultCodeRef.htm for a listing of result codes.

Modem Troubleshooting

Symptom	Solution
COM Port Conflict	Indicates a conflict between two devices claiming the same IRQs. Change one of the IRQ. Try changing the IRQ assigned to one of the devices. The LAN+Modem card is a Winmodem and uses COM5 or higher.
Cannot hear modem or speaker	Make sure your computer's speaker is turned on (ATM1). With the default audio settings for Windows 98, the sound may be disabled. To enable the sound, use the following procedure: **1** Locate the speaker icon in the system tray. **2** If there is no speaker icon in the system tray, open the Control Panel and double-click Multimedia. On the Audio page, make sure Show volume control on the task bar is checked **3** Double click the speaker icon in the system tray. **4** When the Master Out Window opens, select Options. **5** Choose Properties and make sure the Mono In box is checked. Click *OK*. **6** When the Master Out window is redisplayed, check Mono In Balance. Ensure that the mute box is unchecked.
Modem does not dial correctly	Make sure that you have entered the telephone number correctly if you are using the dialing directory. Be sure that you added any required prefix (such as 1) before your number when dialing long distance. The other line could be busy or not answering. Make sure that the other line is available before calling. If you are dialing internationally, your modem may not recognize the dial tone. Before dialing the telephone number, enter the command ATX5 to ignore the dial tone.
Modem not responding	Check your computer's BIOS setup. If it requires certain settings for modems, be sure they have been turned on. Make sure you have selected the correct COM port in your software setup. Make sure the modem has been connected completely. Check all your connections and make sure they are all secure. Reboot your system.
Modem does not dial	Check your phone line and cable connections. See "Installing and Connecting the Card" on page 1. Make sure no other phone extension has been picked up on the same line. Make sure you are using a standard analog telephone line. You might receive an error if you are trying to connect to a digital phone system or PBX. Listen for a normal dial tone on the line. If the dial tone sounds different than normal, find another line.
Modem cannot connect to remote access server	When connecting to a remote access server running V.34 protocol (up to 33.6 Kbps) with devices such as 3Com AccessBuilder, configure your DUN settings to reflect the connection speed. We recommend 19200 or 38400 Kbps. Settings of 57600 or 115200 Kbps will cause a failure.

Modem does not fax	Make sure you have selected the correct fax class.
	Make sure that you do not have another communications program open.
	Be sure you selected the correct printer driver in your word processing program.
	Turn off all power management.
Modem does not connect	Make sure the parity, modem speed, word length, and stop bits are set up according to specifications.
	Try removing all of the error correction and data compression.
"No Dial Tone" Message	Check all the cable connections and make sure they are secure. The connection to the phone line could be incomplete or the phone cable could be bad.
	Make sure the telephone line you are using is not in use by someone else.
	Check to make sure you are using a standard analog telephone line. If you are trying to connect to a digital phone system or a PBX, you may receive an error message.
	Make sure the phone line is in working order by connecting a standard telephone and listening for a dial tone.
"Digital Line Error" Message	You are trying to connect to a digital phone system or a PBX. Change lines to connect to a standard analog telephone line.
Modem clicks repeatedly, but no connection is made	You are trying to connect to a digital phone system or a PBX. Change lines to connect to a standard analog telephone line. Ordinarily, you would get a DIGITAL LINE ERROR message, but if the current is under 100mA, the modem will click repeatedly but the message will not appear.
	The cable may not be seated securely. Check both cable connections to the modem and to the phone jack or cellular phone.
	Tip and Ring may be reversed. Try another telephone port.

7 RELEASE NOTES

Downloading the QFE Patch

In some computers running Windows 95 (OSR 2), the computer comes up on reboot with the card not working. The 3Com setup utility (SETUP.EXE) will check your system and tell you if you require the Microsoft update utility. (This update is not required for other operating systems.)

Without the Microsoft update, the card can be accessed and the PCI devices are found, but the card slot is powered down. If you remove the card and reinsert it, power is applied to the slot, Windows correctly allocates resources, making operation possible.

In order to properly support multifunction CardBus cards, Windows 95 OSR 2.x and Windows 98 needs to have the following files updated to compatible versions:

CBSS.VXD
PCCARD.VXD
PCI.VXD

Before updating these files, copy them to another location or rename them so that you can restore them again, if necessary.

These files, supported and distributed by Microsoft, could not be shipped with the LAN+Modem card. 3Com, however, provides links to the correct Microsoft Web page at http://support.3com.com/infodeli/tools/nic/micro.htm

You will need to reboot your computer after installing the upgrade.

If problems persist after installing the update, you may have to uninstall and reinstall the LAN+Modem card.

Making Your Own Installation Diskettes

To make your own installation disks from the *Installation CD*, format three diskettes and label them as follows:

- Disk1.W9X: *Windows 95/98 Installation*
- Disk2.NT: *Windows NT Installation*
- Disk3.W2K: *Windows 2000 Installation*

To create a *Windows 95/98 Installation* diskette:

1 Put the Installation CD in the CD-ROM drive (for example, Drive D).
2 Locate the folder D:\DISK1 on the Installation CD.
3 Put the diskette labeled Disk1.W9X in the floppy drive.
4 Copy the contents of D:\DISK1 to Disk1.W9X.

To create a *Windows NT Installation* diskette:

1 Put the Installation CD in the CD-ROM drive (for example, Drive D).

2 Locate the folder D:\DISK2 on the Installation CD.

3 Put the diskette labeled Disk2.NT in the floppy drive.

4 Copy the contents of D:\DISK2 to Disk2.NT.

To create a *Windows 2000 Installation* diskette:

1 Put the Installation CD in the CD-ROM drive (for example, Drive D).

2 Locate the folder D:\DISK3 on the Installation CD.

3 Put the diskette labeled Disk3.W2K in the floppy drive.

4 Copy the contents of D:\DISK3 to Disk3.W2K.

8

3COM SUPPORT

On-Line Support

For the latest information on the LAN+Modem card, try one of the following 3Com Web sites:

World Wide Web Site

http://www.3com.com

Access the latest networking information on the 3Com Corporation Web site by clicking the link above.

3Com Support Web Site

http://www.support.3Com.com

This link will take you directly to the 3Com web site for technical support.

3Com Software Library

http://support.3com.com/infodeli/tools/nic/3cxfem656c.htm

This link will take you directly to the Web site for software downloads (including the latest version of this manual) for all FEM656C-family products.

3Com KnowledgeBase

http://knowlegebase.3com.com/

This link takes you to the knowledge base for 3Com products. The link to the LAN and LAN+Modem PC Cards contains a list of known problems on specific computer models and suggests ways to solve the problems.

Frequently Asked Questions

http://support.3com.com/infodeli/inotes/techtran/cs_faq3cxfem656c.htm

This link takes you to the FAQ list for 3Com PC cards.

3Com FTP site for all FEM656C-Family files

ftp://ftp.3com.com/pub/nic/3cxfem656c

From this site, you can download drivers, patches, software, and MIBs from the 3Com public FTP site. Click the link above or use the host ID 192.156.136.12.

3Com Bulletin Board Service

The 3Com BBS contains patches, software, and drivers for 3Com products. To reach the service through a regular telephone line, set your modem to 8 data bits, no parity, and 1 stop bit, and dial one of the following numbers:

Country	Data Rate	Telephone Number
Australia	Up to 14,400 bps	61 2 9955 2073
Brazil	Up to 14,400 bps	55 11 5181 9666
France	Up to 14,400 bps	33 1 6986 6954
Germany	Up to 28,800 bps 53.333 Bit/s	4989 62732 188 089 95 77 196
Hong Kong	Up to 14,400 bps	852 2537 5601
Italy	Up to 14,400 bps	+39 (0) 0 225 301 575 or +39 (0) 0 225 301 574
Japan	Up to 14,400 bps	81 3 5977 7477
Mexico	Up to 28,800 bps	52 5 520 7835
P.R. of China	Up to 14,400 bps	86 10 684 92351
Taiwan, R.O.C.	Up to 14,400 bps	886 2 23775840
U.K.	Up to 28,800 bps	44 1442 438278
U.S.A.	Up to 53,333 bps	1 847 262 6000

For ISDN access up to 64 Kbps with a digital modem, dial **1 847 262 6000.**

3Com Facts Automated Fax Service

The 3Com Facts automated fax service provides technical articles, diagrams, and troubleshooting instructions. Call **1 408 727 7021** from a touch-tone telephone.

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Support from 3Com   If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. If you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number

- A description of your computer system hardware and software, including revision levels

- Relevant diagnostic error messages, plus details about recent configuration changes

- Topology of your network, including the type of network device (for example hub or switch) your computer is connected to

- Type of computer you are trying to connect to (for example, NetWare server, NT server or peer-to-peer networking)

Below is a list of worldwide technical telephone support numbers:

Country	Telephone Number
Asia Pacific Rim	
Australia	1 800 678 515
Hong Kong	800 933 486
India	61 2 9937 5085
Indonesia	001 800 61 009
Japan	81 3 3375 4356
Malaysia	1800 801 777
New Zealand	0800 446 398
Pakistan	61 2 9937 5085
Philippines	1235 61 266 2602
P.R. of China	10800 61 00137 or 021 6350 1590
Singapore	800 6161 463
S. Korea	
From anywhere in S. Korea:	82 2 3455 6455
From Seoul:	00798 611 2230
Taiwan, R.O.C.	0080 611 261
Thailand	001 800 611 2000
Europe	+31 (0)30 6029900 phone or +31 (0)30 6029999 fax
From the following European countries, use toll-free numbers:	
Austria	06 607468
Belgium	0800 71429
Denmark	800 17309
Finland	0800 113153
France	0800 917959
Germany	0130 821502
Hungary	00800 12813
Ireland	1 800 553117
Israel	177 3103794
Italy	1678 79489
Netherlands	0800 0227788
Norway	800 11376
Poland	0800 3111206
Portugal	05 05313416
South Africa	0800 995014
Spain	900 983125
Sweden	020 795482
Switzerland	0800 55 3072
U.K.	0800 966197

Country	Telephone Number
Latin America Argentina Brazil Chile Colombia Mexico Peru Puerto Rico Venezuela	AT&T +800 666 5065 0800 13 3266 1230 020 0645 98012 2127 01 800 CARE (01 800 2273) AT&T +800 666 5065 800 666 5065 AT&T +800 666 5065
North America	1 800 NET 3Com (1 800 638 3266)

Returning Products for Repair

Before returning a product to 3Com for repair, first obtain a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
Asia, Pacific Rim	65 543 6500	65 543 6348
Europe, South Africa, and Middle East	+ 44 1442 435860	+ 44 1442 435718
From the following European countries, you may call the toll-free numbers; select option 2 and then option 2:		
Austria Belgium Denmark Finland France Germany Hungary Ireland Israel Italy Netherlands Norway Poland Portugal South Africa Spain Sweden Switzerland U.K.	06 607468 0800 71429 800 17309 0800 113153 0800 917959 0130 821502 00800 12813 1800553117 177 3103794 1678 79489 0800 0227788 800 11376 00800 3111206 05 05313416 0800 995014 900 983125 020 795482 0800 55 3072 0800 966197	
Latin America	1 408 326 2927	1 408 326 3355
U.S.A. and Canada	1 800 NET 3Com (1 800 638 3266)	1 408 326 7120

Regulatory Compliance

3Com Corporation, 5400 Bayfront Plaza, Santa Clara, CA 95052-8145

FCC CLASS B CERTIFICATION STATEMENT

3Com Corporation
Model No: 3CXFEM656 C
Made in U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference, and

2 This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003.These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.

- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

FCC DECLARATION OF CONFORMITY

We declare under our sole responsibility that the

Model:	Description:
3CXFEM656C	3Com Megahertz 10/100 LAN+56K Global Modem CardBus PC Card

to which this declaration relates, is in conformity with the following standards or other normative documents:

- ANSI C63.4-1992 Methods of Measurement

- Federal Communications Commission 47 CFR Part 15, subpart B

15.107 (e) Class B Conducted Limits
15.109 (g) Class B Radiated Emissions Limits

FCC PART 68 STATEMENT

3Com Corporation
Model No: 3CXFEM656 C
Made in U.S.A.

This equipment complies with Part 68 of the Federal Communications Commission (FCC) rules. On the product is a label that contains the FCC registration number and Ringer Equivalence Number (REN) for this device. If requested, this information must be provided to the telephone company.

An FCC compliant telephone cord with a modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total REN's, contact the local telephone company.

If this device causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. The telephone company may request that you disconnect the equipment until the problem is resolved.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of this equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

This equipment cannot be used on telephone company provided coin service. Connection to party line service is subject to state tariffs. Contact the state public utility commission or public service commission for information.

When programming and/or making test calls to emergency numbers:

-- Remain on the line and briefly explain to the dispatcher the reason for the call.

-- Perform such activities in the off-peak hours such as early morning or late evenings.

Note: The United States Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending

machine or such business, other entity, or individual. Refer to your fax communication software documentation for details on how to comply with the fax-branding requirement.

If trouble is experienced with this equipment or for repair or warranty information in the U.S. and Canada, please contact your computer manufacturer or reseller.

CANADIAN NOTICE

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

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

CAUTION: Users should not attempt to make electrical ground connections by themselves, but should contact the appropriate inspection authority or an electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone line used by the device to prevent overloading. The termination of a line may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all devices does not exceed 100. The Load Number for this device appears on a label on the product.

CE NOTICE

Marking by the symbol CE0560X indicates compliance of this equipment to the EMC Directive 89/336/EEC, the Low Voltage Directive 73/23/EEC amended by 93/68/EEC, and the Telecom Terminal Equipment and Satellite Earth Stations Directive 98/13/EEC. Such marking is indicative that this equipment meets or exceeds the following technical standards:

- EN 55022--Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.
- EN 50082-1--Electromagnetic compatibility - Generic immunity standard Part 1: Residential, commercial, and light industrial.
- EN60950 (1992)--Safety of information technology equipment, including electrical business equipment.
- CTR 21 (1998)--Attachment requirements for Pan-European approval for connection to the analog Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting voice telephony services) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signaling.

WARNING: Although this equipment can use either loop discount (Pulse) or DTMF (Tone) signaling, only the performance of the DTMF (Tone) signaling is subject to regulatory requirements for correct operation. It is therefore strongly recommended that the equipment is set to use DTMF (Tone) signaling for access to public or private emergency services. DTMF signaling also provides faster call set up.

The safety status of the ports on this modem is as follows:

- Line Interface Port TNV
- PCMCIA Bus connector to PC SELV

Note that only SELV ports should be connected to other SELV ports or TNV ports to other TNV ports. Interconnection of ports with different safety status may invalidate the approval. If in doubt about making such a connection, advice should be sought from a competent engineer.

The user should ensure that the power drawn by the modem, together with the host and any auxiliary apparatus drawing power from the host is within the rating of the power supply.

The modem power requirement is: +5V @ ~230mA.

The user should be aware that it is the modem and not the host that is approved.

When the modem is supplied along with a host machine, the modem user instructions must also be supplied. Failure to do so will invalidate the modem approval.

Please consult the supplier or maintainer of the modem, not the network operator, if operational difficulties are experienced.

This equipment has been approved to Council Decision 98/482/EEC--"CTR 21" for Pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, or itself, give an unconditional assurance of successful operation on every PSTN termination point. In the event of problems, you should contact your equipment supplier in the first instance.

NEW ZEALAND

Not all phones connected to the phone port will respond to incoming ringing. Do not report this as a fault unless the same phone will not respond to ringing when connected to a standard phone socket.

This equipment shall not be set up to make automatic calls to the Telecom 111 Emergency Services.

The grant of a Telepermit for a device in no way indicates Telecom acceptance of responsibility for the correct operation of that device under all operating conditions. In particular, higher speeds at which this modem is capable of operating depend on a specific network implementation which is only one of many ways of delivering high quality voice telephony to customers. Failure to operate should not be reported as a fault to Telecom.

In addition to satisfactory line conditions a modem can only work properly if:

- It is compatible with the modem at the other end of the call and,
- The application using the modem is compatible with the application at the other end of the call – e.g. accessing the Internet requires suitable software in addition to a modem.

This equipment should not be used in a manner which could constitute a nuisance to other Telecom customers.

Some parameters required for compliance with Telecom's PTC Specifications are dependent on the equipment (PC) associated with this modem. The associated equipment shall be set up to operate within the following limits for compliance with Telecom specifications:

There shall be no more than 10 call attempts to the same number within any 30 minute period for a single manual call initiation

The equipment shall go back on-hook for a period of not less than 30 seconds between the end of one call attempt and the beginning of the next.

Automatic calls to different numbers shall be not less than 5 seconds apart.

When used in the Auto-Answer mode, the S0 register must be set with a value between 2 and 5. This ensures:

A person calling your modem will hear a short burst of ringing before the modem answers. This confirms that the call has been successfully switched through the network.

Caller identification information (which occurs between the first and second ring cadence) is not destroyed.

This equipment does not meet Telecom's impedance requirements. Performance limitations may occur when used in conjunction with some parts of the network. Telecom will accept no responsibility should difficulties arise in such circumstances.

The code for Call Waiting disable is *52 on the Telecom New Zealand telephone network.

INDEX