



# 3Com 10/100 LAN+56K Modem CardBus PC Card User Guide

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# 1

## INSTALLING AND CONNECTING THE CARD

### Identifying the LAN+Modem Card Ports

The dual-function LAN+Modem card has a LAN port and modem port. The connectors and card ports are color coded. Take care to connect each cable to the correct card port.



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

Figure 1 LAN and Modem Ports



## 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.*

Figure 2 Inserting the LAN+Modem Card

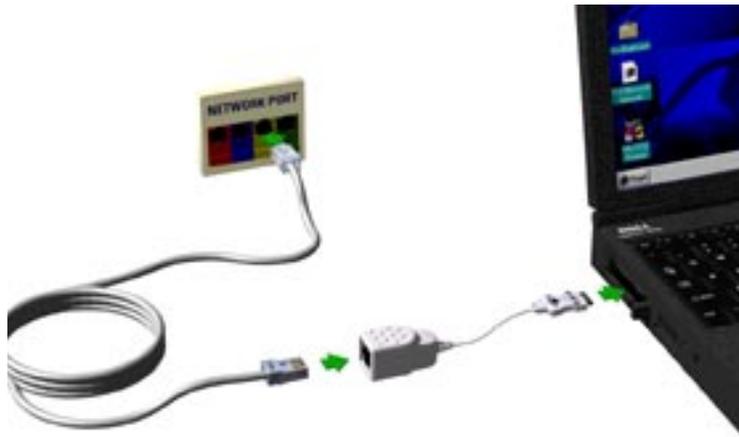


## Connecting to a Network

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

- 1 Attach the network connector at the end of the network cable to the LAN port (See "Identifying the LAN+Modem Card Ports" on page 1) on the LAN+Modem card.
- 2 Connect one end of the RJ-45 extension cable to the network connector and the other end to the network segment.

Figure 3 Connecting the Twisted-Pair Adapter



## LAN Connector LEDs

The LEDs on the network connector display the status of your network link.

Figure 4 LEDs

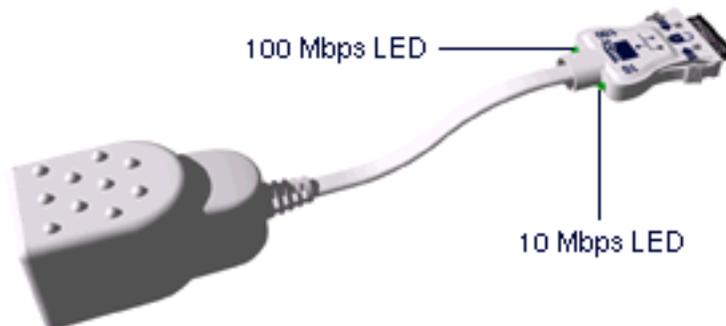


Table 1 LAN Connector LEDs

LED	Description	Steady	Off
10 LNK	Link integrity	Good 10BASE-T connection between PC Card and hub	No connection between card and hub. (Off when 100 LNK LED is on.)
100 LNK	Link integrity	Good 100BASE-TX connection between PC Card and hub	No connection between card and hub. (Off when 10 LNK LED is on.)

You can use the LEDs to verify link integrity, but the LAN+Modem card must be connected to the network and the network drivers must be installed. For information on installing drivers, see:

- "Windows 95" on page 7
- "Windows 98" on page 15
- "Windows NT" on page 21

## Connecting to a Telephone Line

To connect the LAN+Modem card to a telephone line, attach the modem adapter to the modem port (See "Identifying the LAN+Modem Card Ports" on page 1). The line port on the modem cable connector is labeled with an RJ-11 (modular telephone plug) icon. Attach the connector with the icon facing up. Next, attach the RJ-11 adapter at the other end of the modem cable to the telephone wall plug.

Figure 5 Connecting the Modem Adapter to the Telephone Line



## Disconnecting the Cables

The LAN and modem cables are designed to lock in place when you connect them to the card. To release the cable from the card, squeeze the release clips located on the sides of the connector .



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

Figure 6 Disconnecting Cables from the Card



## Installing Diagnostics

If you did not install the diagnostics utilities when you installed this manual, you should do so now. In addition to installing the manual, the Setup program installs LAN Diagnostics, Modem Diagnostics, and a PDF version of this guide.

- 1 Insert *User Guide and Diagnostics Installation Disk 1* in the floppy drive and click *Start*.
- 2 Click *Run* and type `a:\setup [Enter]` to begin installation. Choose which options to install and follow the instructions as they appear.

A PDF version of the *User Guide* is also provided. The file is called *For Print - LAN+Modem Card User Guide.PDF* and is suitable for viewing or printing with the Acrobat Reader. If you do not have a copy of the Acrobat Reader, you can obtain the program at no cost from the Adobe World Wide Web site at [www.adobe.com](http://www.adobe.com).

For information on running diagnostics, see “Diagnostics” on page 55.

# 2

## WINDOWS 95



NOTE: *If you are reinstalling the card, make sure you have completed the procedures for "Uninstalling the Card" on page 11.*

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### 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 Interface

- Setup Procedure
- Installing Network Software Components
- Confirming Installation

### Setup Procedure

Before installing the network interface, insert the LAN+Modem card and connect to the network as described in “Installing and Connecting the Card” on page 1. Obtain the following information from your MIS department:

- For Windows 95 networking, your computer name and workgroup name.
- For your network account, your user name and password.

To set up the network interface:

- 1 Turn on the computer and start Windows 95. Windows 95 detects the card during startup.
- 2 Follow the instructions in the *Update Device Driver Wizard* dialog box. Insert the LAN+Modem card *Windows 95/98 Installation Disk* in the floppy drive and click *Next*.
- 3 After the system finds the installation files on the disk, it displays the card name, *3Com 10-100 LAN + 56K Modem CardBus PC Card (Ethernet interface)*, 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 “3Com 10-100 LAN + 56k Modem PC Card 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*. Windows 95 will detect and install the modem interface when it reboots.

If you choose not to reboot after installing the network interface, you must install the modem interface manually when Windows 95 discovers the modem. See “Installing the Modem Interface” on page 10.

### Installing 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.

Some networks do not require all four components. Table 2 shows which components are required for four widely used network types.

Table 2 Adding Network Software Components

Type of Network	Component	Manufacturer	Option to Select
Microsoft Networking and Netware	Adapter	3Com	3Com 10/100 LAN + 56K Modem CardBus PC Card
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 (for UNIX® networking)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	TCP/IP

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

- 3 Each time you add one of these components, Windows 95 creates a new entry in the Network window. As these 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 will need to add or customize for network operation under Windows 95 can be found under the Properties tab for the network components you added.

### Confirming Installation

- 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 the *Cancel* button to return to System Properties.
- 8 Click *OK* to exit System Properties.

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### Installing the Modem Interface

- Setup Procedure
- Confirming the Installation
- Testing the Modem

#### Setup Procedure

If you choose not to reboot after installing the network interface, you must install the modem interface manually when Windows 95 discovers the modem.

- 1 Windows 95 displays a *New Hardware Found* dialog box and identifies the modem interface.
- 2 Insert the LAN+Modem card *Windows 95/98 Installation Disk* in the floppy drive.
- 3 Select the floppy drive as the location of the modem driver files and click *NEXT*.
- 4 When configuration is complete, Windows 95 displays the card name, *3Com 10-100 LAN + 56K Modem PC Card (Modem interface)*.
- 5 Click *Finish* to quit the installation program.

The installation program installs a *3Com Modem Setting* application in the Control Panel. Use *Modem Setting* to change COM port assignments for the modem. The default is COM5. Change the COM port to a lower number if you are using older software that does not recognize COM ports higher than 4.



**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 11.*

### Confirming the Installation

To confirm modem installation.

- 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 3Com 10-100+56K CardBus PC Card.
- 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 will display a white box with a list of AT commands. This will confirm that the modem is functioning properly.

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### Uninstalling the Card

If the card installation is unsuccessful for any reason, your best course may be to remove the card and its software and repeat the installation procedures with a fresh installation of the operating system.

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.

### Removing the Card

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



**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 LAN portion of the card from the Device Manager will uninstall the card, software and documentation.

Be sure to remove both the LAN interface and the modem.

## Troubleshooting

Symptom	Solution
Basic Troubleshooting, applicable for all problem situations.	<p>Inspect all cables and connections.</p> <p>Check whether your card is fully inserted into the slot.</p> <p>Verify whether you have the latest BIOS for your system. If not, check the Web site for your computer, download the newest BIOS version, and follow the upgrade instructions.</p> <p>Check for multiple installations of the card.</p> <p>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.</p> <p>Check the Control Panel/PC Card application to confirm that your card is recognized by the system.</p> <p>In the Control Panel/Network application, make sure that you have appropriate clients and protocols installed.</p>
System shows a valid COM-Port setting for the modem, but your application does not recognize it.	Use the <i>3Com Modem Setting</i> application in the control panel to change the COM port assignment. The default is COM5. Use a lower number if you are have older software that does not recognize COM ports higher than 4.
The LAN device is not functional. LED on the connector is off or mismatches the real network speed.	<p>Use Control Panel – Device Manager to inspect the status of your LAN card.</p> <p>If you see a red X, enable the card and set the Properties.</p> <p>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 (e.g. disable the infrared port), then remove and reinstall the card.</p>
After you remove the card from the system and then inserted back – Windows runs 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	<p>Earlier versions of Windows (Windows 95 and Windows 95a) are not supported. Upgrade your system to Windows 95b (OSR2) or Windows 98.</p> <p>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 OSR2.</p>
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.
After reboot in Dell Latitude CP the card does not come up.	A temporary solution is to remove the card from the slot and then insert it again. For a permanent solution, use the original Dell Windows 95 installation CD or obtain QFE 515, 567 and 599 from Microsoft or Dell. Copy these files into the Windows/System folder.

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Updating Windows 95 Drivers Use the following procedure to update the drivers on your system.

#### 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 *3Com 10-100 LAN + 56K Modem CardBus PC Card (Ethernet interface)*.
- 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 *3Com 10-100 LAN + 56K Modem CardBus PC Card (Ethernet interface)*.
- 5 Open the Driver tab and click *Update Driver*.
- 6 Choose *NO: 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.



# 3

## WINDOWS 98



NOTE: If you are reinstalling the card, make sure you have completed the procedures for "Uninstalling the Card" on page 19.

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### Installing the Network Interface

- Setup Procedure
- Installing Network Software Components
- Confirming Installation

#### Setup Procedure

Before installing the network interface, insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1. Obtain the following information from your MIS department:

- For Windows 98 networking, your computer name and workgroup name.
- For your network account, your user name and password.

To set up the network interface:

- 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 LAN+Modem card *Windows 95/98 Installation Disk*, and click *Next*.
- 4 After finding the installation files on the diskette, the hardware wizard displays the card name, *3Com 10-100 LAN + 56K Modem PC Card (Ethernet interface)*. 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*.

Upon rebooting, Windows 98 automatically detects the modem interface of the card. See "Installing the Modem Interface" on page 17.

### Installing 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.

Some networks do not require all four components. Table 3 shows which components are required for four widely used network types.

Table 3 Adding Network Software Components

Type of Network	Component	Manufacturer	Option to Select
Microsoft Networking and Netware	Adapter	3Com	3Com 10/100 LAN + 56K Modem CardBus PC Card
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 (for UNIX® networking)	Client	Microsoft	Microsoft Client for Microsoft Networks
	Protocol	Microsoft	TCP/IP

\* Download software from the indicated manufacturer's BBS or World Wide 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-ROM
  - Windows 98 system installation files on hard disk, floppy diskettes, or CD-ROM
  - The *Windows 95/98 Installation Disk* that came with your LAN+Modem cardEach 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 will need to add or customize for network operation under Windows 98 can be found under the Properties tab for the network components you added.

### Confirming Installation

- 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 the *Cancel* button to return to System Properties.
- 8 Click *OK* to exit System Properties.

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### Installing the Modem Interface

- Setup Procedure
- Confirming Installation
- Testing the Modem

#### Setup Procedure

Once the system is rebooted with the LAN+Modem card installed, Windows 98 automatically detects the modem interface.

- 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 diskette, it displays the card name, *3Com 10-100 LAN + 56K Modem PC Card (Modem interface)*. 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. Dell's 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.



*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 LAN+Modem card 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 19.*

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.

### Confirming Installation

- 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 3Com 10-100+56K CardBus PC Card.
- 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 will display a white box with a list of AT commands. This will confirm that the modem is functioning properly.

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**Uninstalling the Card** If the card installation is unsuccessful for any reason, your best course may be to remove the card and its software and repeat the installation procedures with a fresh installation of the operating system. A fresh install will also solve problems that can arise from removing the card or shutting down 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 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.

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



*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 LAN portion of the card from the Device Manager will uninstall the card, software and documentation.

Be sure to remove both the LAN interface and the modem.

## Troubleshooting

Symptom	Solution
Basic Troubleshooting, applicable for all problem situations	<p>Inspect all cables and connections.</p> <p>Check whether your card is fully inserted into the slot</p> <p>Verify whether you have the latest BIOS for your system. If not, check the Web site for your computer, download the newest BIOS version, and follow the upgrade instructions.</p> <p>Check for multiple installations of the card.</p> <p>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.</p> <p>Check the Control Panel/PC Card application to confirm that your card is recognized by the system.</p> <p>In the Control Panel/Network application, make sure that you have appropriate Clients and Protocols installed.</p>
System shows a valid COM-Port setting for the modem, but your application does not recognize it.	Use the <i>3Com Modem Setting</i> application in the control panel to change the COM port assignment. The default is COM5. Change the COM port to a lower number if you are using older software that does not recognize COM ports higher than 4.
The LAN device is not functional. LED on the connector is off or mismatches the real network speed	<p>Use Control Panel – Device Manager to inspect the status of your LAN card.</p> <p>If it comes with a red cross – enable the card checking the appropriate box under Properties</p> <p>If it comes up with 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 (e.g. disable the infrared port), then remove and reinstall the card.</p>
After you remove the card from the system and then inserted back – Windows runs 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 95/98 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 PCI device.	<p>During a fresh installation of Windows 98 with the card installed in the slot, the system detects the card as PCI device and does not ask for the driver disk. This happens only when you reply "No" when asked whether the card is used for Windows installation.</p> <p>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.</p>

# 4

## WINDOWS NT



NOTE: *If you are reinstalling the card, make sure you have completed the procedures for "Uninstalling the Card" on page 23. For Windows NT 4.0 installation, you must have Service Pack 3 (or later) installed on your computer. After installation, reinstall Service Pack 3 to update NT network files and eliminate error messages in the Event Viewer. Contact your Network Administrator or Microsoft if you do not have Service Pack 3.*

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### Installing the Network Interface

This procedure assumes that you are installing the LAN+Modem card on a system that does not have NT networking installed. If networking is installed, some steps will not apply and some of the prompts will be slightly different. Refer to your MIS department for instructions.

Before installing the network interface, insert the LAN+Modem card and connect to the network as described in "Installing and Connecting the Card" on page 1. Also, obtain the following information from your MIS department:

- Your computer name and workgroup or domain name. This is required for Windows NT networking.
- Your user name and password. This is required for your network account.

To install the network interface:

- 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*.
- 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*. Insert the LAN+Modem card *Windows 95/98 Installation Disk* into the floppy drive. Specify *a:INT40* and click *OK*.
- 6 When the Select OEM Option window opens, select *3Com 10-100 LAN + 56K Modem PC Card (Ethernet interface)* and click *OK*.
- 7 The *Network Adapters* list shows the 3Com LAN+Modem card checked with a check mark. 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 a:\NT40 and click *Continue*.
- 12 In the 3Com LAN+Modem card dialog box, accept the default settings and click *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 *Windows 95/98 Installation Disk* from the floppy drive and click *Yes*.

---

## Installing the Modem Interface

For modem installation, you must be ready to assign a COM port to the modem. The following procedure assumes you will create a new COM port for this purpose. If you plan to use an existing COM port, make sure it is not being used by another device, such as a built-in infrared port.

- 1 Open the Control Panel and select *Ports*.
- 2 Click *Add* to create a new COM port.
- 3 Set the COM port number to 5 or higher. (Do not give the new port the same number as an existing COM port.)
- 4 Accept the default settings for the new port (typically, IRQ 15 and I/O 3f8) and click *OK*.
- 5 *Do not* reboot the system when prompted. Select *Do not reboot now* and continue with the procedure.
- 6 Open the Control Panel and select *Modem*.
- 7 Select *Do not detect my modem...* and click *Next*.
- 8 Click *Have Disk*. Insert the LAN+Modem card *Windows 95/98 Installation Disk* into the floppy drive. Specify a:\NT40 as the location of the modem files and click *OK*.
- 9 Select *3Com 10/100 LAN + 56K Modem CardBus PC Card* and click *Next*.
- 10 Select the COM port created in steps 1 through 4 above and click *Next*.
- 11 If prompted for dialing options, specify the settings you will use and click *Next*.
- 12 In the *Modem Properties* window, review the modem settings and click *Close*.
- 13 Remove the *Windows 95/98 Installation Disk* from the floppy drive. You do not have to reboot the computer.

**Uninstalling the Card** To remove the card and card software from your system, use the Windows NT Remove Hardware utility.

## Troubleshooting

Symptom	Solution
Basic Troubleshooting, applicable for all problem situations.	<p>Inspect all cables and connections.</p> <p>Check whether your card is fully inserted into the slot.</p> <p>Verify whether you have the latest BIOS for your system. If not - check the appropriate Web site, download and upgrade to the newest BIOS version.</p> <p>If you are not using the Softex PC Card Controller, reinstall Service Pack 3 after installing drivers for the LAN+Modem card.</p> <p>The event log lists any problems found during system operation. To check the event log for errors, select Programs/Admin Tools/Event Viewer from the Start menu.</p>
Driver not loading correctly.	<p>Service Pack 3 should be installed before you install the Softex PC Card Controller. If you are using Softex without Service Pack 3, you will have to follow these steps in order:</p> <ol style="list-style-type: none"> <li>1 Remove the card.</li> <li>2 Uninstall the Softex software.</li> <li>3 Install Service Pack 3.</li> <li>4 Reinstall the Softex software.</li> <li>5 Reinstall the card.</li> </ol> <p>You can download the latest Service Pack from Microsoft (Service Pack 3 or newer).</p>
Application cannot find the modem.	<p>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).</p>
Modem will not fax.	<p>Most Windows fax software will not work with Windows NT. Contact Microsoft for information about software for sending faxes.</p>
Failure after Suspend/Resume.	<p>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.</p>
Card not functioning.	<p>Open Windows NT Diagnostics. From Start menu, select Programs/Admin Tools/Windows NT Diagnostics.</p> <p>Windows NT Diagnostics lets you see where the drivers are loading in I/O, IRQ, MEM ranges.</p> <p>Check for resource conflicts and make sure the settings for the LAN+Modem card are valid.</p>
Modem driver does not load properly	<p>If your modem did not install correctly, make sure you installed the driver from the a:\NT40 subdirectory of the Windows 95/98 installation disk. If not, remove and reinstall the driver using the location a:\NT40.</p>



# 5

## USING THE MODEM

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### 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, for example:

```
ATDT*70 151217288528
```

Contact your phone company if you need more information.

- 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/NO). You can also try disabling data compression (AT/CO).

---

### 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.

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### 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.

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. For more information, see "S Registers" on page 32.

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## Making a Call with HyperTerminal

HyperTerminal is the resident telecommunication application supplied with Windows 95 and Windows NT 4.0. This section shows you how 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 example 151217288528 ("1" followed by the area code and number of the Dell BBS).
- 6 In the *Connect Using* menu, be sure that you have selected the 3Com 10/100 + 56K PC Card. 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.

---

## Making 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

Try the following suggestions for restoring the standard dial tone:

- Clear your voice mail.
- Press the dial or line button on your telephone.
- Access an outside line before dialing.
- 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.

---

## Additional Modem Features

- Redialing
- Dialing Stored Numbers
- Call Progress Detection
- Fax Support

**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.

**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.

## 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.

### Entering AT Commands

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.
- Use a carriage return [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.

### A: Answer Mode

Causes the modem to attempt a handshake in answer mode.

### D: Dial Number

Instructs the modem to go off-hook and execute the dial string which follows the D. Commands which may be part of the dial string are listed below. Any unrecognized character in the dial string is ignored. Once dialing is complete, the modem attempts a handshake in originate mode (unless the R parameter is given).

0-9 Any number simply dials that number.	
A, B, C, D, # or * (tone dial only) dials the indicated symbol.	
P	Causes subsequent numbers to be pulse dialed.
T	Causes subsequent numbers to be tone dialed.
R	Forces the modem to dial a call in answer mode.
W	Causes the modem to wait for a dial tone using S7 as a time out.

,	Causes a delay, determined by S8, before the modem proceeds with the next command or digit.
=	Same as the ',' modifier except that the delay is doubled.
!	Causes the modem to go on-hook for .5 second and then off-hook for .5 second before continuing.
@	Causes the modem to wait until it detects 5 seconds of silence before continuing.
;	Causes the modem to go to the command mode when the number is dialed. In order to proceed with channel establishment mode ATO or ATD must be entered. Any characters that follow this parameter are treated as AT commands.
^	Do not send calling tone.
#	Causes a 0.5 second delay before the modem dials the digits (DTMF) following this modifier.
L	Causes the last telephone number that was dialed by the modem to be re-dialed.
S	Causes the modem to dial the number in stored position "n" Format is S=n or Sn. If S41 is set to a value other than 0, the modem will attempt a maximum of S41 redials upon call failure. In error correction mode S38 dictates the delay before terminating a call (matched with S10).

#### E: Echo Commands

Defines whether characters are echoed back from the modem to the DTE when in command mode.

E0	Command echo inhibited.
E1	Command echo enabled.

#### H: Hook Switch Control

Controls the modem's hook switch relay.

H0	Terminates a call.
H1	Causes the modem to go off-hook.

#### I: Interrogate Modem Status

I0	Requests the modem code.
I1	Requests that a checksum calculation be performed on the software ROM. The answer is displayed as four hexadecimal digits.

I2	The modem performs a ROM checksum, compares the result against a stored value, and returns an OK or ERROR message depending on the success of the comparison.
I3	The modem sends its ROM Part Numbers and Revision Levels.
I4	The modem sends its ASCII string test.
I5	The modem sends its data pump chipset revision.
I7	The modem sends platform specific information.

#### N: Handshaking

Selects whether a connection will be forced to a specific speed.

N0	Sets the required connection speed to that set under S37.
N1	If S-register S37 is not equal to 255 it allows handshaking at the highest speed supported by both modems. If S-register S37 equals 255 it allows handshaking at the highest speed supported by both modems and DTE.
N2	If S-register S37 is not equal to 255 it allows handshaking at the highest speed defined by S37. If S-register S37 equals 255 it allows handshaking at the highest speed supported by both modems and DTE.

#### O: Return to On-Line State

Applicable when a physical connection with a remote unit exists and the modem is in the on-line command state.

O0	Returns the modem to the on-line state.
O1	As O0 except that when a 2400 bits/s or higher connection is established an equalizer retrain sequence is transmitted.

#### Q: Return Result Codes

Defines whether the modem will issue result codes to the DTE.

Q0	Result codes returned.
Q1	Result codes not returned.
Q2	Result codes returned in originate mode only.

#### V: Verbose mode

Defines the form of result codes returned by the modem.

V0	Numeric form responses enabled.
V1	Verbose responses enabled (English responses).

## W: Connection Result Codes

Defines the type of (extended) negotiation result codes to return.

W0	Negotiation codes not reported.
W1	Negotiation codes reported in 3 line format (Hayes format).
W2	Negotiation codes reported in 1 line format (Microcom format).
W3	Negotiation codes reported in 1 line format (Microcom format). The receive and transmit bit rates will be displayed, Rx/Tx bit rates.

## X: Result Code Set/Call Progress

X0	Causes the modem to ignore any network tones and omit the connection speed message.
X1	As above but enables the connection speed result codes.
X2	Causes the modem to detect dial tone.
X3	Causes the modem to detect busy tone.
X4	Causes the modem to detect busy and dial tones.
X5	Causes the modem to report ringing, to detect busy but dial tone is ignored.
X6	Causes the modem to perform adaptive dialing (automatically determine if dialing can be performed using DTMF signaling), to report ringing, to detect busy and dial tones.

## Z: Recall User Configuration

The user configuration stored in non-volatile memory is recalled to become the active configuration.	
Z0	Resets modem and recalls user profile 0.
Z1	Resets modem and recalls user profile 1.
Z2	Resets modem and recalls user profile 2.
Z3	Resets modem and recalls user profile 3.
Note: The actual amount of profiles depends on the size of the non-volatile memory that a platform contains.	

---

## 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.

All values are in decimal format. Default values indicated in bold type are those written after execution of the `&F0` command. If the register TYPE is Nonstorable, this default value will also be written whenever the modem is reset. For storable register, however, the value after reset will be set to that stored in the appropriate stored profile.

- Common Registers.  
Registers S0 to S49 are common to all modems (although some of these registers are reserved).
- Analog Modem Registers.  
Registers S50 to S89 are exclusive to analog modem operations.

Register not listed are reserved.

## Common Registers

S0	Ring To Answer On. 0 = No auto answer. Any other = Modem answers after this number of rings. Default = 0. Storable.
S1	Ring Count. This register is reset to 0 if 8 seconds elapse since receipt of the previous ring. Default = 0. Nonstorable.
S2	Escape Sequence Character. If the value is greater than 127, escape sequence is disabled. Default = 43 (+). Value: 0 - 127. Nonstorable.
S3	Carriage Return Character. Default = 13 (ASCII CR). Value: 0 - 127. Nonstorable.
S4	Line Feed Character. Default = 10 (ASCII LF). Nonstorable.
S5	Backspace Character. Value: 0 - 255. Default = 8 (ASCII BS). Nonstorable.
S6	Wait Time For Dial Tone Or Before Dialing. Value: 2 - 255. Default = 2. Storable.
S7	Wait Time For Carrier / Second Dial Tone. Value: 1 - 255. Default = 30. Storable.
S8	Duration for Pause (,) Dial Modifier. Value: 0 - 255. Default = 2. Storable.
S9	Carrier Detect Response Time. Value: 1 - 255 (seconds). Default = 1. Storable.
S10	Delay Between Lost Carrier And Hang Up. S10 = 255 implies infinite delay. Value: 1 - 255 (seconds). Default = 14. Storable.
S11	DTMF Tone Duration and Silence Time Between Tones. Value: 50 - 255 (ms). Default = 95. Storable.
S12	Escape Sequence Prompt Time. 55 in 20 ms increments (0 - 5.1 s). 0 = Do not check guard time. Value: 0 - 2w. Default = 50. Storable.
S13	Caller ID. Storable. Bit 0 is used to enable/disable modem caller ID display and log. <ul style="list-style-type: none"> <li>■ 0 = Disable modem caller ID display and log</li> <li>■ 1 = Enable modem caller ID display and log</li> </ul> Bits 1-2 are used for caller ID display format <ul style="list-style-type: none"> <li>■ 0 = Basic caller display</li> <li>■ 1 = Extended caller display</li> <li>■ 2 = Rockwell formatted display</li> <li>■ 3 = Rockwell unformatted display</li> </ul>

S14	<p>Bit-mapped. Storable. Bit 1. Echo command characters (E CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No echo</li> <li>■ 1 = Echo</li> </ul> <p>Bits 2 and 4 generate result codes (Q CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Enable result codes</li> <li>■ 1 = No result codes</li> <li>■ 2 = Result codes enabled only when originate mode in effect</li> </ul> <p>Bit 3. Verbose/numeric result codes (V CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Numeric result codes</li> <li>■ 1 = Verbose result codes</li> </ul> <p>Bit 5. Tone / Dial (P and T CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Tone dialing (T CMD) toner</li> <li>■ 1 = Pulse dialing (P CMD)</li> </ul> <p>Bit 7. Current operating mode.</p> <ul style="list-style-type: none"> <li>■ 0 = Answer mode</li> <li>■ 1 = Originate mode</li> </ul>
S16	<p>Test Status (Bit-mapped). Nonstorable. Bit 0 is Analog loopback (&amp;T1 CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No Analog loopback</li> <li>■ 1 = Analog loopback active</li> </ul> <p>Bit 2. Digital loopback (&amp;T3 CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No Local digital loopback</li> <li>■ 1 = Local digital loopback active</li> </ul> <p>Bit 3. Status of Local digital loopback initiated by remote mode</p> <ul style="list-style-type: none"> <li>■ 0 = No Local digital loopback</li> <li>■ 1 = Local digital loopback initiated by remote modem active</li> </ul> <p>Bit 4. Remote digital loopback (&amp;T6 CMD)</p> <p>0 = No Remote digital loopback active</p> <p>1 = Remote digital loopback initiated and granted by remote</p> <p>Bit 5. Remote digital loopback with self test (&amp;T7 CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No Remote digital loopback active</li> <li>■ 1 = Remote digital loopback with self test initiated and granted by remote</li> </ul> <p>Bit 6. Analog loopback with self test (&amp;T8 command)</p> <ul style="list-style-type: none"> <li>■ 0 = No Analog loopback</li> <li>■ 1 = Analog loopback with self test active</li> </ul>
S18	<p>Test Timer. 0 = Infinite test time. Any other value specifies the duration of the test. Value: 0 - 255. Default = 0. Storable.</p>
S19	<p>Bit-mapped. Nonstorable.</p> <p>Bit 0</p> <ul style="list-style-type: none"> <li>■ 0 Mu-Law codec</li> <li>■ 1 A-Law codec</li> </ul> <p>Bits 1-2 are Auto Rob bit signalling mode detection</p> <ul style="list-style-type: none"> <li>■ 00 Enable.</li> <li>■ 01 Disable (64K).</li> <li>■ 10 Enable (56K).</li> </ul>

S20	Bit-mapped. storable. Bits 7-0 set the modem DTE speed.	
	Bit value	DTE Speed
	00000000	2400
	00000001	300
	00000010	1200
	00000011	2400
	00000100	4800
	00000101	7200
	00000110	9600
	00000111	12000
	00001000	14400
	00001001	16800
	00001010	19200
	00001011	21600
	00001100	24000
	00001101	26400
	00001110	28800
	00001111	31200
	00010000	32000
	00010001	33600
	00010010	34000
	00010011	36000
	00010100	38000
	00010101	38400
	00010110	40000
	00010111	42000
	00011000	44000
	00011001	46000
	00011010	48000
	00011011	50000
	00011100	52000
	00011101	54000
	00011110	56000
	00011111	57600
	00100000	64000
	00100001	72000 but no connect mess available
	00100010	76800 but no connect mess available
	00100011	96000 but no connect mess available
	00100100	115200
	00100101	128000
	00100110	230400
	00100111	460800
	00101000	reserved for future use
	00101001	691200
	00101010	reserved for future use
	00101011	reserved for future use
	00101100	921600

S21	<p>Bit-mapped. Storable. Bit 0: Telephone Jack (&amp;J CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = RJ11</li> <li>■ 1 = RJ12</li> </ul> <p>Bit 1. IF DRS Follows DCD:</p> <ul style="list-style-type: none"> <li>■ 0 = DSR as per bit 6.</li> <li>■ 1 = DSR follows DCD all the time.</li> </ul> <p>Bit 2. CTS control (&amp;R CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = CTS follows RTS</li> <li>■ 1 = CTS always on</li> </ul> <p>Bit 4,3. DTR control (&amp;D CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Ignore DTR</li> <li>■ 1 = Command state</li> <li>■ 2 = Hang up</li> <li>■ 3 = Reset</li> </ul> <p>Bit 5. DCD control (&amp;C CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = DCD always on</li> <li>■ 1 = DCD controlled by modem</li> </ul> <p>Bit 6. DSR control (&amp;S CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = DSR always on</li> <li>■ 1 = DSR controlled by modem</li> </ul> <p>Bit 7. Long space disconnect (Y CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disabled</li> <li>■ 1 = Enabled</li> </ul>
S22	<p>Bit-mapped. Storable.</p> <p>Bit 1,0. Speaker volume control (L CMD)</p> <ul style="list-style-type: none"> <li>■ 0=Low</li> <li>■ 1=Low</li> <li>■ 2=Medium</li> <li>■ 3=High</li> </ul> <p>Bit 3,2. Speaker control (M CMD).</p> <ul style="list-style-type: none"> <li>■ 0=Always off</li> <li>■ 1=On until carrier detected</li> <li>■ 2=Always on when off hook</li> <li>■ 3=Off during dialing and after carrier detected.</li> </ul> <p>Bit 6,5,4. Extended response codes (X CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Ignore GSTN status and do not report connection speed - (X0)</li> <li>■ 1 = Detect busy and ringing tones and report connection speed - (X5)</li> <li>■ 2 = As for X5 and also detect dial tone and perform adaptive dialing - (X6)</li> <li>■ 3 = As for X6 - (X7)</li> <li>■ 4 = As for X0 and also report connection speed - (X1)</li> <li>■ 5 = Detect dial tone and report connection speed - (X2)</li> <li>■ 6 = Detect busy tone and report connection speed - (X3)</li> <li>■ 7 = Detect dial and busy tones and report connection speed - (X4)</li> </ul> <p>Bit 7. Make/break ratio for pulse dialing (&amp;P CMD). 0= S (39%/61%). 1=UK (33%/67%)</p>

S23	<p>Bit-mapped. Storable.</p> <p>Bit 0. Detect RDLB (&amp;T4 and &amp;T5 CMD)</p> <ul style="list-style-type: none"><li>■ 0 = Deny RDLB (&amp;T5 CMD)</li><li>■ 1 = Accept RDLB (&amp;T4 CMD)</li></ul> <p>Bit 3,2,1. DTE port communications speed (bits/s)</p> <ul style="list-style-type: none"><li>■ 0 = 300</li><li>■ 4 = 4800</li><li>■ 1 = 57600</li><li>■ 5 = 9600</li><li>■ 2 = 1200</li><li>■ 6 = 19200</li><li>■ 3 = 2400</li><li>■ 7 = 38400</li></ul> <p>Note: bits 3,2 and 1 of S23 are only valid if bits 3,2 &amp; 1 of S19 = 0.</p> <p>Bit 5,4. Parity</p> <ul style="list-style-type: none"><li>■ 0 = Even</li><li>■ 2 = Odd</li><li>■ 1 = Space / none</li><li>■ 3 = Mark</li></ul> <p>Bit 7,6. Guard Tone (&amp;G CMD)</p> <ul style="list-style-type: none"><li>■ 0 = None</li><li>■ 2 = 1800 Hz</li><li>■ 1 = 550 Hz</li><li>■ 3 = Not used</li></ul>
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S24	<p>Bit-mapped. Storable.</p> <p>Bit 0. Error control fallback character (&amp;N, \ C CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No fallback character</li> <li>■ 1 = Enable fallback character in S46</li> </ul> <p>Bit 1. Error control buffer control (&amp;O, \C CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Don't buffer incoming data during negotiation</li> <li>■ 1 = Buffer data</li> </ul> <p>Bit 2. Data compression control (&amp;U,%C CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 3. DCE speed to be negotiated during handshake (N CMD). Optimum speed up to DTE if S37 = 255</p> <ul style="list-style-type: none"> <li>■ 0 = negotiation followed bit 4</li> <li>■ 1 = Optimum speed up to S37 if S37!= 255.</li> </ul> <p>Bit 4. DCE speed to be negotiated during handshake (N CMD). Optimum speed up to DTE if S37 = 255</p> <ul style="list-style-type: none"> <li>■ 0 = S37 speed</li> <li>■ 1 = Optimum speed if S37!= 255.</li> </ul> <p>Bit 6,5. Extended connection result code (W, \V CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = No extended result code</li> <li>■ 1 = Hayes extended result code</li> <li>■ 2 = Microcom extended result code</li> <li>■ 3 = Not used</li> </ul> <p>Bit 7. DTE speed after handshake completed (&amp;B, \J CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = DTE set to DCE speed</li> <li>■ 1 = DTE speed not changed by DCE</li> </ul>
S25	DTR Detection. Value: 0 - 255 in .01 second or in 1 second increments (0 - 2.55 seconds or 0 - 255 seconds) see &D command description. Default = 5. Storable.
S26	RTS To CTS Delay. Value: 0 - 255 in .01 second increments (0 - 2.55 seconds). Default = 1. Storable.

S27	<p>Bit-mapped. V.25ter not enabled. Storable.</p> <p>Bit 3,1,0. Communication mode (&amp;Q, \N CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Normal asynchronous</li> <li>■ 1 = Sync mode 1</li> <li>■ 2 = Sync mode 2</li> <li>■ 3 = Sync mode 3</li> <li>■ 4 = Direct</li> <li>■ 5 = MNP</li> <li>■ 6 = MNP/V.42</li> <li>■ 7 = V.42</li> <li>■ V.25ter enabled</li> </ul> <p>Bit 3. Not used</p> <ul style="list-style-type: none"> <li>■ Bits 1-0. Communication mode (&amp;Q, \N command). 1 = Lease line</li> <li>■ 00 use S36 communication mode setting</li> <li>■ 01 synchronous mode 1</li> <li>■ 10 synchronous mode 2</li> <li>■ 11 synchronous mode 3</li> </ul> <p>Bit 2. Leased line (&amp;L CMD)</p> <ul style="list-style-type: none"> <li>■ 0 =GSTN</li> </ul> <p>Bit 5,4. Synchronous transmit clock source (&amp;X CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Internal</li> <li>■ 1 = External</li> <li>■ 2 = Derive from receiver (slave)</li> </ul> <p>Bit 6. Bell / CCITT (B CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = CCITT</li> <li>■ 1 = Bell</li> </ul> <p>Bit 7. Reserved</p>
S28	<p>Bit-mapped. Storable.</p> <p>Bit 1,0. Error Correction Maximum Block Size (\A CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = 64 bytes</li> <li>■ 2 = 192 bytes</li> <li>■ 1 = 128 bytes</li> <li>■ 3 = 256 bytes</li> </ul> <p>Bit 6,5,4,3,2. V.42 detection period (T400) in 50 milliseconds increments (%G CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Infinite</li> <li>■ 1 to 155 = number times.05 second</li> </ul> <p>Default = 16 for.8 seconds</p> <p>Bit 7. ODP/ADP (&amp;A CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Do not use ODP/ADP when initiating a reliable V.42 handshake</li> <li>■ 1 = Use ODP/ADP when initiating a reliable V.42 handshake</li> </ul>

S29	<p>Bit-mapped. Default = 0 for 4 seconds. Stored</p> <p>Bits 5-0. V.42 acknowledgment timer (T401)(%W CMD). These six bits are interpreted as an integer that specifies the number of 100 millisecond increments which are added to the base value of four seconds in order to arrive at the T401 value. Because of the way it is specified here, the minimum value of T401 is 4 seconds and the maximum value of T401 is 10.3 seconds. The default value is zero which corresponds to a T401 value of 4 seconds.</p> <p>Bit 6. V.42 frame check sequence (%R CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Always use CRC-16</li> <li>■ 1 = Attempt use if CRC-32</li> </ul> <p>Bit 7. V.42 selective reject (%S CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disabled</li> <li>■ 1 = Enabled</li> </ul>
S30	<p>Bit-Mapped. Default = 15 packet. Storable.</p> <p>Bits 4-0. V.42 windows size (k) (%K command). These 5 bits are interpreted as an integer that specifies the maximum number of unacknowledged packets that V.42 and MNP will allow at anytime. Although the bits may be set to any value between 0 and 31 a setting of zero is undefined and should not be used. The default value is 01111 (binary) = 15 (decimal).</p> <p>Bit 5. Negative ADP (%P CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disabled</li> <li>■ 1 = Enabled</li> </ul> <p>Bit 6. Force asynchronous MNP (Class 2)(%Y CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Do not force asynchronous MNP</li> <li>■ 1 = Force asynchronous MNP</li> </ul> <p>Bit 7. V.42 remote loopback test (%T CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Ignore loopback frame received from remote</li> <li>■ 1 = Process loopback frame received from remote</li> </ul>

S31	<p>Bit-mapped. Storable.</p> <p>Bits 1-0. V.25bis selection (%V CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Asynchronous V.25 (%V1)</li> <li>■ 2 = HDLC V.25bis NRZ (%V3)</li> <li>■ 1 = Bisync V.25bis NRZ(%V2)</li> <li>■ 3 = HDLC V.25bis NRZI (%V4)</li> </ul> <p>Bit 2. Synchronous mode V.13 operation (&amp;C CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Enabled</li> <li>■ 1 = Disabled</li> </ul> <p>Bit 3. Ignore keyboard abort on answer (%Q CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Enabled</li> <li>■ 1 = Disabled</li> </ul> <p>Bit 4. DTE Autobauding (%B CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Enabled</li> <li>■ 1 = Disabled</li> </ul> <p>Bits 5. Reserved</p> <p>Bit 7,6. Command set selection (%V)</p> <ul style="list-style-type: none"> <li>■ 00 = AT command set (%VO)</li> <li>■ 10 = V.25bis enabled as per bits 1,0 (for other than%V1 -%V4)</li> <li>■ 01 = V.25ter (%V5)</li> <li>■ 11 = Not defined</li> </ul>
S32	<p>Bit-mapped. Storable.</p> <p>Bits 1-0. Encryption mode select (#S CMD)</p> <ul style="list-style-type: none"> <li>■ 00 No encryption (#S0)</li> <li>■ 10 Reserved for later use</li> <li>■ 01 Force V.42bis encryption(#S1)</li> <li>■ 11 Reserved for later use</li> </ul> <p>Bits 3-2. MNP Extended Services (-K CMD)</p> <ul style="list-style-type: none"> <li>■ 00 Disabled (-K0)</li> <li>■ 10 Enabled without MNP indication during the answer detect phase. (-K2)</li> <li>■ 01 Enabled (-K1)</li> </ul> <p>Bit 4. Power level adjustment setting (M command)</p> <ul style="list-style-type: none"> <li>■ 0 Disable M0</li> <li>■ 1 Enabled M</li> </ul> <p>Bits 6-5. Force an initial connection speed (*H CMD)</p> <ul style="list-style-type: none"> <li>■ 00 Highest supported (*H0)</li> <li>■ 01 1200 bps (*H1)</li> <li>■ 10 4800 bps (*H2)</li> </ul> <p>Bit 7. MNP10 Select (N CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Enabled</li> <li>■ 1 = Disabled</li> </ul>
S33	Cellular Transmit Level. Value: 0 - 35. Default = 26. Storable.
S34	Answer Log-on Sequence. If set to 255, no log on in answer. Value: 0 - 9. Default = 0. Storable.
S35	Transmit Level (dBm). Value: 0 - 20. Default = 9. Storable.

S36	<p>Error Correction Negotiation Failure Treatment (V.25ter not enabled). Storable.</p> <ul style="list-style-type: none"> <li>■ 0 = Disconnect</li> <li>■ 1 = Normal asynchronous (no error control)</li> </ul>		
S36	<p>Communication Mode Setting for V.25ter, Nonstorable.</p> <p>Bits 3-0. Communication mode setting for originate mode</p> <p>Bit 0. Direct mode</p> <p>Bit 1. Asynchronous mode</p> <p>Bit 2. MNP</p> <p>Bit 3. V42</p> <p>Bits 7- 4. Communication mode setting for answer mode</p> <p>Bit 4. Direct mode</p> <p>Bit 5. Asynchronous mode</p> <p>Bit 6. MNP</p> <p>Bit 7. V42</p>		
S37	<p>Desired DCE Speed. Values marked by M are reserved exclusively for analog modem features. Those marked by I are used only for ISDN V.110 data calls. Values with no symbol can be used for analog modems and V.110 calls. For V.110 calls, the corresponding speed value is used disregarding the modulation specified. (e.g. S37=18 will result in a V.110 connection at 12000 bps.). Storable.</p> <p>For NO command:</p> <table border="1" data-bbox="553 1010 1446 1829"> <tr> <td data-bbox="553 1010 1000 1829"> <ul style="list-style-type: none"> <li>■ 0 = Last AT command speed</li> <li>■ 1 = M 300 (Bell 103)</li> <li>■ 2 = M 300 (Bell 103)</li> <li>■ 3 = M 300 (Bell 103)</li> <li>■ 4 = 400 (V.110)</li> <li>■ 5 = 1200 (V.22 or B212 or V.110)</li> <li>■ 6 = 2400 (V.22bis or V.110)</li> <li>■ 7 = M V.32 4800</li> <li>■ 8 = reserved</li> <li>■ 9 = M V.32 9600 with Trellis Coded Modulation (TCM)</li> <li>■ 10 = M V.32 9600 without TCM</li> <li>■ 11 = M 300 (V.21)</li> <li>■ 12 = M 1200 (V.23)</li> <li>■ 13 = reserved</li> <li>■ 14 = I 3600</li> <li>■ 15 = V.32bis 4800 (or V.110, 4800)</li> <li>■ 16 = V.32bis 7200 (or V.110, 7200)</li> <li>■ 17 = V.32bis 9600 (or V.110, 9600)</li> <li>■ 18 = V.32bis 12000 (or V.110, 12000)</li> <li>■ 19 = V.32bis 14400 (or V.110, 14400)</li> <li>■ 20 = M V.34 - 2400</li> </ul> </td> <td data-bbox="1000 1010 1446 1829"> <ul style="list-style-type: none"> <li>■ 21 = M V.34 - 4800</li> <li>■ 22 = M V.34 - 7200</li> <li>■ 23 = M V.34 - 9600</li> <li>■ 24 = M V.34 - 12000</li> <li>■ 25 = M V.34 - 14400</li> <li>■ 26 = M V.34 - 16800</li> <li>■ 27 = V.34 - 19200 (or V.110, 19200)</li> <li>■ 28 = M V.34 - 21600</li> <li>■ 29 = M V.34 - 24000</li> <li>■ 30 = M V.34 - 26400</li> <li>■ 31 = M V.34 - 28800</li> <li>■ 32 = M V.34 - 31200</li> <li>■ 33 = M V.34 - 33600</li> <li>■ 34 to 49 = reserved</li> <li>■ 50 = I 38400 (V.110)</li> <li>■ 51 = I h48000</li> <li>■ 52 = I h56000</li> <li>■ 53 = I h64000</li> <li>■ 54 to 254 = reserved</li> <li>■ 255 = Last AT command speed</li> </ul> </td> </tr> </table> <p>For N1 command:</p> <ul style="list-style-type: none"> <li>■ 0 to 254 = Connect at the highest possible speed regardless of the DTE speed.</li> <li>■ 255 = Connect at the highest possible speed up to the last AT command speed.</li> </ul>	<ul style="list-style-type: none"> <li>■ 0 = Last AT command speed</li> <li>■ 1 = M 300 (Bell 103)</li> <li>■ 2 = M 300 (Bell 103)</li> <li>■ 3 = M 300 (Bell 103)</li> <li>■ 4 = 400 (V.110)</li> <li>■ 5 = 1200 (V.22 or B212 or V.110)</li> <li>■ 6 = 2400 (V.22bis or V.110)</li> <li>■ 7 = M V.32 4800</li> <li>■ 8 = reserved</li> <li>■ 9 = M V.32 9600 with Trellis Coded Modulation (TCM)</li> <li>■ 10 = M V.32 9600 without TCM</li> <li>■ 11 = M 300 (V.21)</li> <li>■ 12 = M 1200 (V.23)</li> <li>■ 13 = reserved</li> <li>■ 14 = I 3600</li> <li>■ 15 = V.32bis 4800 (or V.110, 4800)</li> <li>■ 16 = V.32bis 7200 (or V.110, 7200)</li> <li>■ 17 = V.32bis 9600 (or V.110, 9600)</li> <li>■ 18 = V.32bis 12000 (or V.110, 12000)</li> <li>■ 19 = V.32bis 14400 (or V.110, 14400)</li> <li>■ 20 = M V.34 - 2400</li> </ul>	<ul style="list-style-type: none"> <li>■ 21 = M V.34 - 4800</li> <li>■ 22 = M V.34 - 7200</li> <li>■ 23 = M V.34 - 9600</li> <li>■ 24 = M V.34 - 12000</li> <li>■ 25 = M V.34 - 14400</li> <li>■ 26 = M V.34 - 16800</li> <li>■ 27 = V.34 - 19200 (or V.110, 19200)</li> <li>■ 28 = M V.34 - 21600</li> <li>■ 29 = M V.34 - 24000</li> <li>■ 30 = M V.34 - 26400</li> <li>■ 31 = M V.34 - 28800</li> <li>■ 32 = M V.34 - 31200</li> <li>■ 33 = M V.34 - 33600</li> <li>■ 34 to 49 = reserved</li> <li>■ 50 = I 38400 (V.110)</li> <li>■ 51 = I h48000</li> <li>■ 52 = I h56000</li> <li>■ 53 = I h64000</li> <li>■ 54 to 254 = reserved</li> <li>■ 255 = Last AT command speed</li> </ul>
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S38	Reliable Link Delay Before Forced Hang Up. Value: 0 - 255 s. Default = 20. Storable.
S39	<p>Bit-mapped. Storable.</p> <p>Bit 0. Upshift rate renegotiations (&amp;E CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 1. Downshift rate renegotiations (&amp;E CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bits 3,2. Port communications speed (bits/s)</p> <ul style="list-style-type: none"> <li>■ 00 = as set per S23 bits 1,2 and 3</li> <li>■ 01 = 115 200</li> <li>■ 10 = 230 400</li> <li>■ 11 = 460 800</li> </ul> <p>Bit 5,4. Break handling (&amp;I, \K CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Non-destructive / non-expedited</li> <li>■ 1 = Non-destructive / expedited</li> <li>■ 2 = Destructive / expedited</li> </ul> <p>Bit 6. EIA loopback test control (&amp;T9, &amp;T10 CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Ignore EIA loopback test (&amp;T10)</li> <li>■ 1 = Process EIA loopback test (&amp;T9)</li> </ul> <p>Bit 7. Auto retrain (&amp;E CMD)</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul>
S40	Inactivity Timer. 0 = Inactivity timer disabled. Value: 0 - 255 minutes. Default = 0. Storable.
S41	Dial Retry. Value: 0 - 10. Default = 0 (No retry). Nonstorable.

S42	<p>Bit-mapped. Nonstorable.</p> <p>Bit 0. Length field in L-SIGNAL (UI) frames (V.25ter only)</p> <ul style="list-style-type: none"> <li>■ 0 do not indicate break signal length in UI frame.</li> <li>■ 1 indicate break length in L_SIGNAL (UI) frames</li> </ul> <p>Bit 1. Break handling option 2 (V.25ter only)</p> <ul style="list-style-type: none"> <li>■ 0 ignore breaks from DTE</li> <li>■ 1 process break (bits 4-5 of S39)</li> </ul> <p>Bits 3-2. TD buffer option when DTE ask for disconnection in V42 mode (V25ter only)</p> <ul style="list-style-type: none"> <li>■ 00 Discard all buffered data immediately</li> <li>■ 01 Attempt until all data is delivered</li> <li>■ 10 Attempt until all data is delivered or timer expires (timer is set by S38)</li> </ul> <p>Bits 5-4. RD buffer option when remote DCE disconnect in V42 mode (V.25ter only)</p> <ul style="list-style-type: none"> <li>■ 00 Discard all buffered data immediately</li> <li>■ 10 Attempt until all data is delivered or timer expires (timer is set by S38)</li> <li>■ 01 Attempt until all data is delivered</li> </ul> <p>Bits 7-6. V42bis compression option (V.25ter only)</p> <ul style="list-style-type: none"> <li>■ 00 No compression</li> <li>■ 10 Decompression only</li> <li>■ 01 Compression only</li> <li>■ 11 Both direction</li> </ul>
S43	<p>Break length transmitted to DTE when not specified in UI frame (in 10 ms) (V.25ter only). Default = 30. Nonstorable.</p>
S44	<p>Error Correction in Use. Nonstorable.</p> <ul style="list-style-type: none"> <li>■ 0 = No error correction</li> <li>■ 5 = MNP class 5</li> <li>■ 2 = MNP class 2</li> <li>■ 6 = V.42</li> <li>■ 3 = MNP class 3</li> <li>■ 7 = V.42 bis</li> <li>■ 4 = MNP class 4</li> <li>■ 8 = V.42bis over an MNP link</li> </ul>
S45	<p>Reserved for internal use. Nonstorable.</p>
S46	<p>Fallback Character For Error Correction Negotiation. Value: 0 - 127. Default 13 (ASCII CR). Storable.</p>
S47	<p>XON Character. Value: 0 - 127. Default = 17. Storable.</p>
S48	<p>XOFF Character. Value: 0 - 127. Default = 19. Storable.</p>

S49	<p>Bit-mapped. Storable.</p> <p>Bit 4,3,2,1,0. Flow Control (&amp;K CMD)</p> <ul style="list-style-type: none"><li>■ 0 = No flow control</li><li>■ 3 = Hardware flow control</li><li>■ 4 = Modem to DTE, bidirectional flow control</li><li>■ 8 = Modem to DTE, unidirectional flow control</li><li>■ 12 = Modem to DTE, bidirectional, transparent flow control</li><li>■ 16 = Modem to remote modem, bidirectional flow control</li><li>■ 20 = DTE to modem to remote modem bidirectional flow control</li></ul> <p>Bit 5. Reserved.</p> <p>Bit 6. Dumb mode.</p> <ul style="list-style-type: none"><li>■ 0 = Smart mode</li><li>■ 1 = Dumb mode</li></ul> <p>Bit 7. Compromise equalizer (%E CMD)</p> <ul style="list-style-type: none"><li>■ 0 = Compromise equalizer enabled</li><li>■ 1 = Compromise equalizer disabled</li></ul>
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## Analog Modem Registers

S52	<p>Bit-mapped. Storable.</p> <p>Bit 7-6. V.34 Rate Selection</p> <ul style="list-style-type: none"><li>■ 0 = Low (conservative)</li><li>■ 2 = Aggressive</li><li>■ 1 = Medium</li></ul> <p>Bit 5. V.34 precoding</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul> <p>Bit 4. V.34 shaping</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul> <p>Bit 3. V.34 pre-emphasis filter</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul> <p>Bit 2. V.34 non-linear encoding (warping)</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul> <p>Bit 1. V.34 transmit power control</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul> <p>Bit 0. V.34 asymmetric bit rates</p> <ul style="list-style-type: none"><li>■ 0 = Disable</li><li>■ 1 = Enable</li></ul>
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S53	<p>Bit-mapped. Storable.</p> <p>Bit 7. V.34 3000 High Carrier Frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 6. V.34 3000 Low Carrier Frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 5. V.34 2800 high carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 4. V.34 2800 low carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 3. V.34 2743 high carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 2. V.34 2743 low carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 1. V.34 2400 high carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 0. V.34 2400 low carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul>
S54	<p>Bit-mapped. Storable.</p> <p>Bit 7,6,5,4,3. Not used.</p> <p>Bit 2. V.34 3429 Carrier Frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 1. V.34 3200 high carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 0. V.34 3200 low carrier frequency.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul>

S55	<p>Bit-mapped (V.8 Options).</p> <p>Bit 7,6,5. Not used</p> <p>Bit 4. The local side is a cellular connection.</p> <ul style="list-style-type: none"> <li>■ 0 = Do not indicate</li> <li>■ 1 = Indicate</li> </ul> <p>Bit 3. Indicates if V.42 is enabled.</p> <ul style="list-style-type: none"> <li>■ 0 = Do not indicate</li> <li>■ 1 = Indicate</li> </ul> <p>Bit 2. Enable transmission of V.8 GSTN octet.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 1. Enable transmission of V.8 protocol octet</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul> <p>Bit 0. Enable V.8 for non-V.34 answer.</p> <ul style="list-style-type: none"> <li>■ 0 = Disable</li> <li>■ 1 = Enable</li> </ul>
S60	<p>Modulation Bit Map (V.25ter only). Default to all enabled. Nonstorable.</p> <p>Bit 0. Enable/disable Bell 103 and Bell 212</p> <p>Bit 1. Enable/disable V.21</p> <p>Bit 2. Enable/disable V.22 and V.22bis</p> <p>Bit 3. Enable/disable V.23</p> <p>Bit 4. Enable/disable V.32</p> <p>Bit 5. Enable/disable V.32bis and V.32terbo</p> <p>Bit 6. Enable/disable V.34 and V.34+</p> <p>Bit 7. Not defined.</p>
S62	<p>Data Rates Bit Map (V.25ter only). Default to 0. Nonstorable.</p> <p>Bit 0. 600 and below</p> <p>Bit 1. 1200</p> <p>Bit 2. 2400</p> <p>Bit 3. 4800</p> <p>Bit 4. 7200</p> <p>Bit 5. 9600</p> <p>Bit 6. 12000</p> <p>Bit 7. 14400</p>

S63	Data Rates Bit Map (V.25ter only). Default to 0. Nonstorable. Bit 0. 16800 Bit 1. 19200 Bit 2. 21600 Bit 3. 24000 Bit 4. 26400 Bit 5. 28800 Bit 6. 31200 Bit 7. 33600
S65	Data Rates Bit Map (V.25ter only). Default to 0. Nonstorable. Bit 0. 600 and below Bit 1. 1200 Bit 2. 2400 Bit 3. 4800 Bit 4. 7200 Bit 5. 9600 Bit 6. 12000 Bit 7. 14400
S66	Data Rates Bit Map (V.25ter only). Default to 0. Nonstorable. Bit 0. 16800 Bit 1. 19200 Bit 2. 21600 Bit 3. 24000 Bit 4. 26400 Bit 5. 28800 Bit 6. 31200 Bit 7. 33600
S70	V.25ter Reporting Messages. Default to 0. Nonstorable. Bit 0. Enable modulation reporting Bit 1. Enable error correction reporting Bit 2. Enable data compression reporting Bit 3. Enable local rate reporting Bits 7-4. Not used

S71	<p>Bit-Mapped. Nonstorable.</p> <p>Bits 7-4. Not used</p> <p>Bits 3-2. Communication mode setting for answer mode</p> <ul style="list-style-type: none"> <li>■ 00 Synchronous mode</li> <li>■ 01 Frame Tunneling Mode</li> <li>■ 10 Synchronous Access Mode</li> <li>■ 11 not used</li> </ul> <p>Bits 1-0. Communication mode setting for originate mode</p> <ul style="list-style-type: none"> <li>■ 00 Synchronous mode</li> <li>■ 01 Frame Tunneling Mode</li> <li>■ 10 Synchronous Access Mode</li> <li>■ 11 not used</li> </ul>
S72	<p>V.80 Status of the V24 Circuit Reporting (Section 1). Default to Report All. Nonstorable.</p> <p>Bits 1-0. In-band Control Selection</p> <ul style="list-style-type: none"> <li>■ 00 In-band control disabled</li> <li>■ 01 In-band control allowed with 7 bits codes</li> <li>■ 10 in-Band Control Allowed with 7 and 8 bits codes</li> <li>■ 11 not used</li> </ul> <p>Bit 2. Report circuit 105</p> <p>Bit 3. Report circuit 106</p> <p>Bit 4. Report circuit 107</p> <p>Bit 5. Report circuit 108</p> <p>Bit 6. Report circuit 109</p> <p>Bit 7. Report circuit 110</p>
S73	<p>V.80 Status of the V24 Circuit Reporting (Section 2). Default to Report All. Nonstorable.</p> <p>Bit 0. Report circuit 125</p> <p>Bit 1. Report circuit 132</p> <p>Bit 2. Report circuit 133</p> <p>Bit 3. Report circuit 135</p> <p>Bit 4. Report circuit 142</p> <p>Bit 5. Report line connect status</p> <p>Bit 6. Not used</p> <p>Bit 7. Not used</p>

S74	<p>V.80 Synchronous Access Mode Sub-parameters. Nonstorable.</p> <p>Bits 1-0. Character transmitted on idle in transmit mode</p> <ul style="list-style-type: none"> <li>■ 00 Transmit 8 bits SYN. the receiver does not hunt for synchronization sequence.</li> <li>■ 01 Transmit 8 bits SYN. the receiver hunt for 8 bits SYN sequence.</li> <li>■ 10 Transmit 16 bits SYN. the receiver hunt for 16 bits SYN sequence.</li> </ul> <p>Bit 2. Character transmitted on idle in framed mode</p> <ul style="list-style-type: none"> <li>■ 0 Transmit HDLC flags</li> <li>■ 1 Transmit marks</li> </ul> <p>Bit 3. Character transmitted on underrun in framed mode</p> <ul style="list-style-type: none"> <li>■ 0 Transmit abort</li> <li>■ 1 Transmit flag</li> </ul> <p>Bit 4. Half duplex option (not used)</p> <p>Bits 6-5. CRC type</p> <ul style="list-style-type: none"> <li>■ 00 CRC generation and checking disabled</li> <li>■ 01 Use 16 bits CRC</li> <li>■ 10 Use 32 bits CRC</li> <li>■ 11 not used</li> </ul> <p>Bit 7. NRZI encoding</p>
S75	<p>V.80 Synchronization Sequence (first byte). Synchronization sequence used while in synchronous access mode. When using 16 bits SYN, this register represent the first 8 bits. Nonstorable. Default is 256</p>
S76	<p>V.80 Synchronization Sequence (second byte). Last 8 bits of a 16 bits SYN sequence. Nonstorable. Default is 256.</p>
S77	<p>Report period of the nb of octets in rx buffer. Nonstorable. Default is 256.</p>
S78	<p>Bits 7-6. V.42 Dictionary size (V25ter only). Nonstorable. Default is 256.</p> <p>00 512 characters</p> <ul style="list-style-type: none"> <li>■ 10 2048 characters</li> <li>■ 01 1024 characters</li> <li>■ 11 Maximum dictionary size characters</li> </ul> <p>Bits 5-0. Max coded string length (V25ter only) 6 to 64, other value reserved.</p>

## Modem Troubleshooting

Symptom	Solution
COM Port Conflict	Indicates a conflict between two drivers claiming the same IRQs. Change one of the IRQs. Remember that the modem interface of the LAN+Modem card is a Winmodem and uses COM5 or higher.
Cannot hear modem or speaker	<p>Make sure your computer's speaker is turned on (ATM1). Turn your speaker volume on (ATL3).</p> <p>With the default audio settings for Windows 98, the sound may be disabled. To enable the sound, use the following procedure:</p> <ol style="list-style-type: none"> <li>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</li> <li>2 Double click the speaker icon in the system tray.</li> <li>3 When the Master Out window opens, select Options.</li> <li>4 Choose Properties and make sure the Mono In box is checked. Click OK.</li> <li>5 When the Master Out window is redisplayed, check Mono In Balance. Ensure that the mute box is unchecked.</li> </ol>
<i>Error Message</i>	<p>Make sure you selected the correct COM port in your software.</p> <p>If you are typing from the command line in terminal mode, retype the command.</p> <p>Make sure you are issuing the correct command.</p>
Modem does not dial correctly	<p>Make sure you have entered the telephone number correctly if you are using the dialing directory.</p> <p>Make sure the number you dialed is correct if you are dialing in terminal mode.</p> <p>Be sure you added any required prefix (such as 1) before your number when dialing long distance.</p> <p>The other line could be busy or not answering. Make sure it is available to answer before calling.</p> <p>If you are dialing internationally, your modem may not recognize the dial tone. Try the command ATX3DT and the telephone number.</p>
Modem not responding	<p>Check your computer's BIOS setup. If it requires certain settings for modems, be sure they have been turned on.</p> <p>Make sure you have selected the correct COM port in your software setup.</p> <p>Make sure the modem has been connected completely. Check all your connections and make sure they are all secure.</p> <p>Reboot your system.</p>

Modem does not dial	<p>Check your phone line and cable connections. See "Installing and Connecting the Card" on page 1.</p> <p>Make sure no other phone extension has been picked up on the same line.</p> <p>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.</p> <p>Listen for a normal dial tone on the line. If the dial tone sounds different than normal, find another line.</p>
Modem cannot connect to remote access server.	<p>When connecting to a remote access server running V.34 protocol (up to 33.6 Kbps) with devices such as 3Com Access Builder, 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.</p>
Modem does not fax	<p>Make sure you have selected the correct fax class.</p> <p>Make sure that you do not have another communications program open.</p> <p>Be sure you selected the correct printer driver in your word processing program.</p> <p>Turn off all power management.</p>
Modem does not connect	<p>Make sure the parity, modem speed, word length, and stop bits are set up according to specifications.</p> <p>Try removing all of the error correction and data compression.</p>
<i>No Dial Tone Message</i>	<p>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.</p> <p>Make sure the telephone line you are using is not in use by someone else.</p> <p>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.</p> <p>Make sure the phone line is in working order by connecting a standard telephone and listening for a dial tone.</p>
<i>Digital Line Error Message</i>	<p>You are trying to connect to a digital phone system or a PBX. Change lines to connect to a standard analog telephone line.</p>
Modem clicks repeatedly, but no connection is made	<p>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.</p> <p>The cable may not be seated securely. Check both cable connections to the modem and to the phone jack or cellular phone.</p> <p>Tip and Ring may be reversed. Try another telephone port.</p>



# 6

## DIAGNOSTICS

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### LAN Diagnostics

The LAN Diagnostics utility includes a self-test program, echo test procedures, and a Card Properties viewer.

- 1 Click the Windows *Start* menu.
- 2 Select *Programs*.
- 3 Select *3Com PC Card Utilities*.
- 4 Select *LAN Diagnostics*.

A separate Help utility is available for each page in the diagnostic interface. Help includes descriptions of how to get information about your card and how to run and interpret LAN diagnostics tests.



**CAUTION:** *If you remove the card or shut down your computer while diagnostics are running, you may have to remove and reinstall the card. See the appropriate procedures in the section of this manual on your operating system.*

*Do not attempt to run other applications while diagnostics are running. After running LAN Diagnostics and the self-test, reboot your computer before attempting to resume normal card operation.*

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### Modem Diagnostics

The Modem Diagnostics utility collects information about your card, performs PC card tests (including a dial-up test for Windows 95 and Windows 98), maintains a detailed log file, and provides utilities for editing system files.

- 1 Click the *Windows Start* menu.
- 2 Select *Programs*.
- 3 Select *3Com PC Card Utilities*.
- 4 Select *Modem Diagnostics*.

Modem diagnostics includes a separate Help utility with information on how to run modem diagnostics tests.



## DELL TECHNICAL SUPPORT

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Internet Site	HTTP://WWW.DELL.COM
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FTP Site	FTP.DELL.COM
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Bulletin Board System	<p>The Dell Bulletin Board System (BBS) lets you read and send electronic mail, upload and download files, and exchange information on line with other callers.</p> <p>The Dell BBS supports a modem speed of up to 33,600bps with V.34+ and V.32bis, V.42 and V.42bis protocols. To access the Dell BBS, follow these steps:</p> <ol style="list-style-type: none"><li>1 Set your modem communications software as follows:<ul style="list-style-type: none"><li>■ Parity: NONE</li><li>■ Word Length: 8</li><li>■ Stop bits: 1</li></ul></li><li>2 Enter terminal mode in your communications software. The communications software is in terminal mode when you enter AT &lt;enter&gt; and the computer responds with OK on the screen.</li><li>3 Dial 1 512 728 8528 to access the Dell BBS.</li></ol> <p>Instructions on using the Dell BBS are on-line when you dial in. Refer to the user's manual for your communications software for instructions on uploading and downloading files.</p>
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Return Merchandise Authorizations	<p>If a Dell Support Representative instructs you to return the modem to Dell, you will receive a Return Merchandise Authorization (RMA) number. The RMA number tells the Receiving Department what type of equipment is inside the package and what action is necessary.</p> <p>If you need to return the LAN+Modem card:</p> <ol style="list-style-type: none"><li>1 Carefully place the modem or component in a protected box. Where possible, use the original or similar packaging. Include a note indicating the RMA number.</li><li>2 Write the RMA number on the outside of the package in large, legible letters and numbers. It is best to place the RMA number in two separate locations on the box. The complete number should be visible when the package is ready to mail.</li><li>3 Make sure the package is labeled FRAGILE in large letters.</li></ol> <p>You are responsible for shipping charges when you return merchandise to Dell. Dell will pay return shipping charges.</p>
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## WARRANTY AND REGULATORY INFORMATION

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### Dell LIMITED WARRANTY

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#### LIMITED ONE-YEAR WARRANTY (U.S. ONLY)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it sells will be free from defects in materials and workmanship. The warranty term is one year beginning on the date of delivery.

Damage due to shipping the products to you is covered under this warranty. Otherwise, this warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, and failure to perform required preventive maintenance. Dell will repair or replace products returned to Dell's facility. To request warranty service, you must call Dell customer service within the warranty period. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original packaging or equivalent, prepay shipping charges, and you must insure the shipment or accept the risk of loss or damage during shipment. Never return items to Dell without an RMA number. Return only the Dell equipment that is not functioning properly no software, manuals or cables unless you are instructed to include them. Only the equipment that is fixed or replaced will be returned to you. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in the United States (excluding Puerto Rico and U.S. possessions.) Shipments to other locations will be made freight collect.

Dell owns all parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs a product, its warranty term is not extended; if Dell replaces a product, the replacement is warranted for the remainder of the original term or 60 days, whichever is longer.

DELL MAKES NO EXPRESS WARRANTIES BEYOND THOSE STATED HERE. DELL DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THIS LIMITATION MAY NOT APPLY TO YOU. DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENTS AS SET FORTH ABOVE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's return-to-factory warranty only. For provisions of any on-site service contract covering your system, refer to the separate on-site service contract that you will receive.

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#### LIMITED ONE-YEAR WARRANTY (CANADA ONLY)

Dell Computer Corporation ("Dell") warrants that the hardware products it sells will be free from defects in materials and workmanship. The warranty term is one year beginning on the date of delivery. This warranty is transferable with the warranted products.

Damage due to shipping the products to you is covered under this warranty. Otherwise, the warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, and failure to perform required preventive maintenance.

Dell will repair or replace products returned to Dell's facility. To request warranty service, you must call Dell Customer Service within the warranty period. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original packaging or equivalent, prepay shipping charges, and you must insure the shipment or accept the risk of loss or damage during shipment. Do not return items to Dell without an RMA number. Return only the Dell equipment that is not functioning properly; no software, manuals or cables unless you are instructed to include them. Only the equipment that is fixed or replaced will be returned to you. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in Canada. Shipments to other locations will be made freight collect. Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs a product, its warranty term is not extended except as may be required by law; if Dell replaces a product, the replacement is warranted for the remainder of the original term or 60 days, whichever is longer.

DELL MAKES NO EXPRESS WARRANTIES BEYOND THOSE STATED HERE. DELL DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THIS LIMITATION MAY NOT APPLY TO YOU. DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR, REPLACEMENT, AND REFUND AS SET FORTH ABOVE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM ONE JURISDICTION TO ANOTHER.

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's return-to-factory warranty only. For provisions of any on-site service contract covering your system, refer to the separate on-site service contract that you will receive.

"Total Satisfaction" Return Policy (U.S. and Canada) If you bought products directly from Dell company, you may return them to Dell up to 30 days from the day they are delivered for a complete refund of the purchase price. If your company bought the products under a Corporate Performance Agreement with a Dell company, there are limits on when products may be returned to Dell under this policy. Please consult the person in your company that is the liaison with Dell for more information. To return products, you must call Dell customer service to receive a Credit Return Authorization Number. You must ship the products to Dell in their original packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Returned products must be in as-new condition, and all of the manuals, diskettes, power cables, and other items included with a product must be returned with it.

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FCC CLASS B CERTIFICATION  
STATEMENT

3Com Corporation  
Model No: 3CCFEM656  
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.

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FCC DECLARATION OF  
CONFORMITY

We declare under our sole responsibility that the

Model:	Description:
3CCFEM656	10/100 LAN + 56K 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

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FCC PART 68 STATEMENT

3Com Corporation  
Model No: 3CCFEM656  
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 Dell

Corporation. Contact details can be found in "Dell Technical Support" on page 57.

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#### 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.



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