3Com®

HomeConnect™ Cable Modem External Getting Started Guide

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1

BEFORE YOU BEGIN

Introduction

Congratulations! You have just purchased a modem featuring a pioneering new technology, making Internet access possible at speeds previously only imagined! This external cable modem is one part of a comprehensive communications system that utilizes the cable television network to deliver high-speed data to your computer. Data is requested and sent over the cable television network at burst rates of up to 38 megabits per second (Mbps)*. This chapter explains how to prepare your computer system for cable modem installation.

Actual speeds will vary depending on computer hardware, applications, service offered by your Broadband Service Provider, and network traffic.

Cable Modem Features

■ Cable line bandwidth allows user data rates of up to 38 megabits per second (Mbps)*, faster than 56K analog modems, ISDN, or ADSL

■ Two-way design means that the cable modem sends and receives data over the cable line

■ Plug and play operation ensures easy setup and installation

■ DOCSIS-compliance ensures interoperability with cable suppliers

■ 3Com's extensive technical support organization provides you with the quick answers you need to get up and running

NOTE: Please note that the following factors affect the speeds you may experience: (1) your computer equipment and configuration, including the speed of your processor, the amount of RAM on your system, and your available

hard disk space; (2) applications running simultaneously with the modem which use varying amounts of your computer's resources; (3) the capacity of the Internet service you order from your provider; (4) changing network traffic levels depending when and where you go online.

Contacting Your Local Cable Provider

In order to use your cable modem, you need to set up an Internet access account with your local cable provider. Before contacting your cable provider to setup an account, have the following information handy:

- The modem's serial number, model number, and Media Access Control (MAC) address. The serial number appears on the white bar code label on the back of the modem and consists of 10 characters preceded by the text "SN=". In the following example label image, the serial number is 6LZ1377410. Your cable modem's model number is **3CR29220**. In the following example label image, the model number is 20-0591-000. The MAC address appears on the white bar code label on the back of the modem and consists of 12 characters preceded by the text "EA =". In the following example label image, the MAC address is 00104B377410. Write all three of these numbers in the following blanks for future reference.

```
SN = 6LZ1377410
|||||||||||||||||||||||||
PN = 20-0591-000
EA = 00104B377410
|||||||||||||||||||||||||
```

Serial number: SN= _____
Model number: 3CR29220
MAC address: EA = _____

You should now contact your local cable provider and verify the following:

- The cable service to your home supports two-way cable modem access. If your cable company does not provide

two-way service, this modem will not be able to communicate with your cable company's Internet access service. You should immediately consult your cable company and place of purchase to determine the proper 3Com cable modem to use. You can also visit the following URL for additional information:

http://www.3com.com/cablemodem

- You have a cable line near your PC and it has been prepared for cable modem service. If you do not have a cable line in your home that supports two-way cable modem access, or if your current cable connection is not conveniently located near your computer, your cable provider can install one. If you use your current cable line for cable television access, your cable company can also install an additional line for use with your cable modem.

- Your cable provider has set up your cable Internet access account. Your cable provider will set up an Internet access account that will allow you to send and receive e-mail, access the World Wide Web, and receive other Internet services. This account must be set up before you can use your cable modem.

Preparing Your Workspace

- Position your computer so that it is located near your cable outlet.

- The cable modem should be located near your computer and the cable outlet. There should be plenty of room to guide the cables away from the modem without crimping them.

- Airflow around the modem should not be restricted.

- The temperature in the room where the cable modem will be operating should be between 0 and 40°C (32 and 104°F). Relative humidity should be between 5% and 95%, non-condensing.

- Familiarize yourself with all of the materials supplied with the modem. Please read these installation instructions thoroughly before installing the modem.

⚠ *CAUTION: Your cable provider will provide a cable connection. Do not attempt any rewiring without first contacting your cable provider.*

You Will Need These Items

Supplied

- Cable modem
- Cable modem power supply
- RJ-45 network cable
- This *Getting Started Guide*

You will also need the following

- A PC running Windows® 95 operating system (or later) or a Macintosh® computer running System 7.5 (or later) with TCP/IP protocol installed (see the following two sections for more information on installing TCP/IP)
- An active two-way cable line
- An active Ethernet port, network interface card (NIC) installed in your computer, or USB network interface (Windows 98 or later only)
- An adjustable wrench for securing the cable line to the modem

Configuring the TCP/IP Protocol

ⓘ *NOTE: If you are using a Macintosh computer, turn to the instructions on page 9.*

Configuring the TCP/IP Protocol on a Windows PC

You need to have an Ethernet Network Interface Card (NIC) or USB network interface and the TCP/IP communications protocol installed on your system before you install your

cable modem. Follow these instructions to verify that
TCP/IP is installed and configured correctly.

1 Right-click the **Network Neighborhood** icon on your
desktop and then click **Properties**.

2 A list of installed network components appears. Look for
an entry named "TCP/IP". This entry may be followed by an
arrow and a description of the NIC hardware device or USB
network interface installed in your computer. If an entry
similar to this is present, go to step 9.
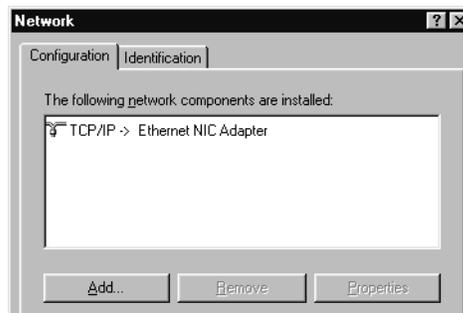
3 If a similar entry is ***NOT*** present, click **Add...**

4 Click Protocol, and then click **Add...**

5 Click **Microsoft** in the "Manufacturers:" list and then click
TCP/IP in the "Network Protocols:" list. Click **OK**.
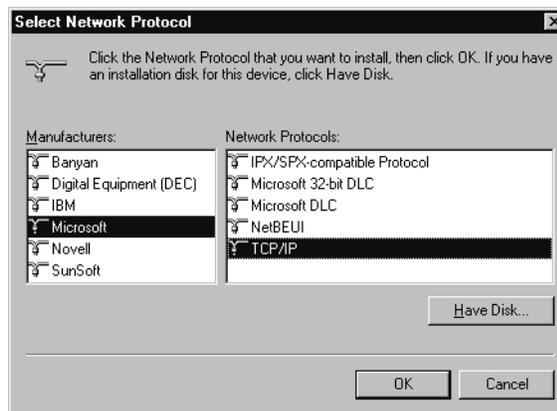
6 "TCP/IP" will appear in the list of installed network
components. Click **OK**.

7   Windows will now ask you if you would like to restart your computer. It is very important that you click **No**.

8   Right-click on the **Network Neighborhood** icon on your desktop then click **Properties** in the drop-down menu that appears.

9   Double-click the entry in the "Configuration" menu named "TCP/IP". This entry may be followed by an arrow and a description of your NIC or dialup adapter.

10 Click the "Advanced" tab and then make sure the box next to "Set this protocol to be the default protocol." is checked. If it is not, click the box to put a check in it. (If this option is grayed out, then TCP/IP is already the default protocol.)

11 Click **OK** and then click **OK** again.

12 Reboot your PC by clicking Windows **Start**, clicking **Shut Down**, clicking "Restart the computer?" and then clicking **Yes**.

13 When your desktop reappears, click the Windows **Start** button and then click **Run**.

14 When the "Run" screen appears, type **winipcfg** in the text field and click the **OK** button.

15 The "IP Configuration" window will appear. Click the **Release** button. A line of zeros will appear in the "IP Address" and "Subnet Mask" fields.
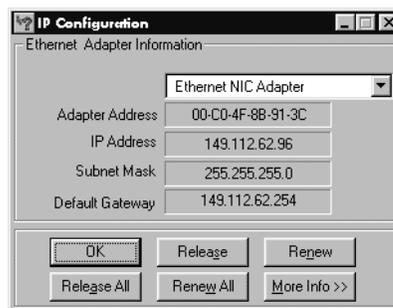
16 Click the **Renew** button. Numbers will replace the zeros. Click **OK** and turn to the next chapter, "Hardware and Software Installation".

i *NOTE: The numbers on your screen SHOULD be different than those shown in the preceding example.*

Configuring the TCP/IP Protocol on a Macintosh PC

You need to make sure the TCP/IP communications protocol and an Ethernet device is installed on your system before you install your cable modem. Many Macintosh computers have Ethernet devices installed at the factory.

1 Click the **Apple** icon in the upper left corner of the Finder. Scroll down to **Control Panels**, and click **TCP/IP**.
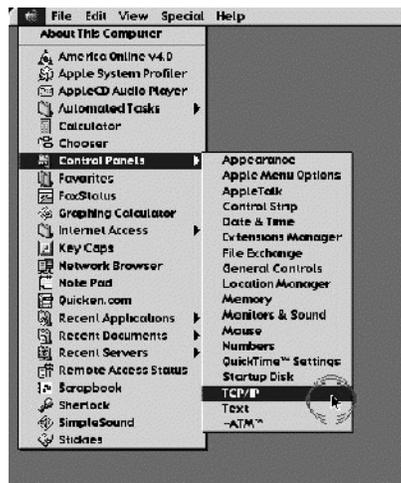
2 Click **Edit** on the Finder (gray bar) at the top of the screen. Scroll down to the bottom of the menu and click **User Mode**.
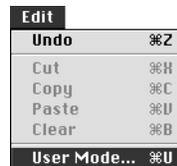
3 Click the **Advanced** button then click **OK**.
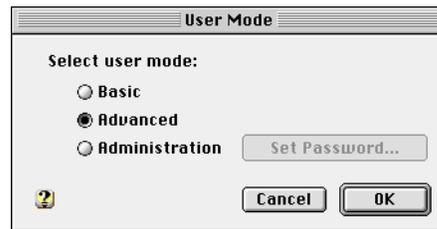
4 Click the **Up/Down** selector arrows (to the right of "Connect Via") and click "Using DHCP Server".
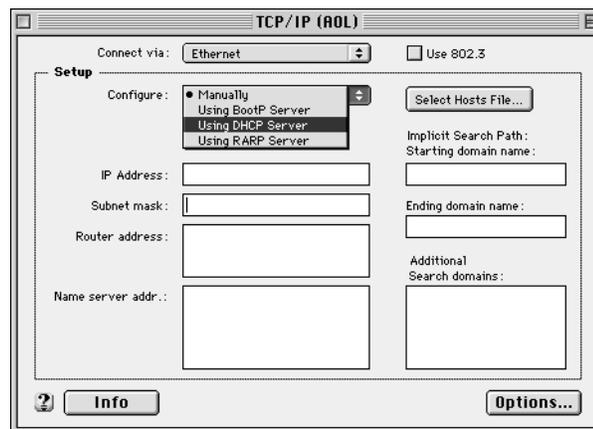
5 Click the **Options** button. Then click the **Active** button.

*NOTE: In some cases, the **Load only when needed** button will not appear. If it is visible, click the box. A check mark should appear in the box.*
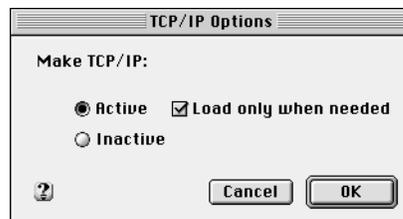
6 Verify that the "Use 802.3" box is unchecked (circled in the following image). If there is a check mark in the box, click it

to remove the check mark. Then click the Info button in the lower left corner.
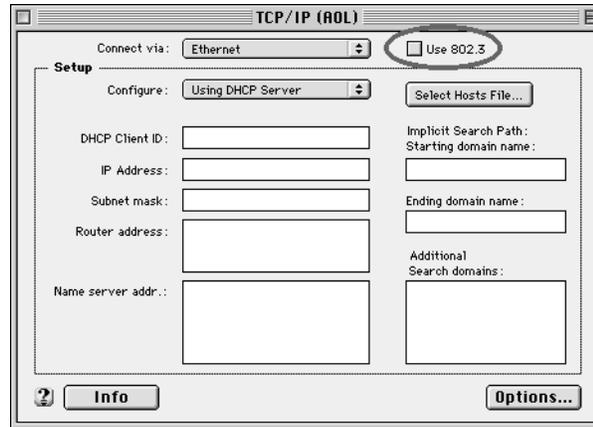
7 Ensure there is a Hardware Address listed in this window. If there is, click the **OK** button and close the "TCP/IP Control Panel" (click **File** and scroll down to click **Close**). If there is no Hardware Address, you must shut down and power off your Macintosh. With the power off, simultaneously depress and hold down the **Command** (**Apple**), **Option**, **P**, and **R** keys on your keyboard. Keeping those keys depressed, power on the Macintosh. The machine will start and you will hear the Apple chime. Keep these keys depressed for up to 3 chimes, then release the keys and allow the computer to start-up. When fully rebooted, ensure that all TCP/IP settings match those in the preceding instructions. If your computer still does not have a Hardware Address, please contact your local Apple authorized dealer or Apple support.

TCP/IP Info

Addresses:

This Macintosh: **167.206.192.19**
Hardware address: 00 05 02 B1 64 71
Router: < not available >

Versions:

Open Transport: 2.0.3
TCP/IP 2.0.3

OK
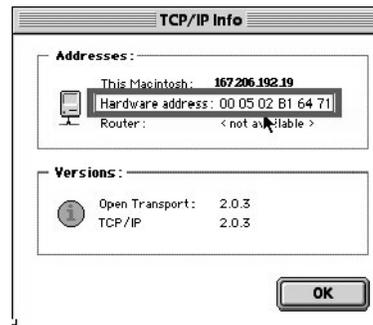
2

HARDWARE AND SOFTWARE INSTALLATION

Connecting the Cable Modem to Your Computer

TIP: Before you unplug any cords, label them or make a sketch of how they are connected. This can be helpful when you plug them back in later.

CAUTION: To avoid risk of electric shock, make sure your computer and all peripheral devices are turned off and unplugged from electrical sockets.

NOTE: Refer to the diagram on page 15 while following these steps.

1 Switch off your computer and unplug it from the electrical socket.

2 Using the illustration at the end of this chapter as a guide, make the following connections:

- Connect your cable line to the cable modem's CATV cable connector. Be careful not to bend the wire in the center of the cable line when you connect it to the cable modem. After hand-tightening the CATV cable connector, use your adjustable wrench to firmly tighten it. Be careful not to over-tighten the connector or you may damage either the connector or your cable modem. If you plan to have your cable line connected to your television as well as your cable modem, you will need a cable line splitter (not included). See the illustration at the end of this chapter for more information.

- Plug the cable modem's power supply into a wall socket or surge protector and into the cable modem's power jack.

- Plug one end of the RJ-45 network cable into the cable modem's RJ-45 jack and the other end into the existing network interface card or USB network interface installed in your computer.

3 Verify that your cable modem starts up and initializes properly. You can tell that your modem is operating properly if the cable modem Power and Link Status LEDs

3Com **power**

link status

are lit a solid green. If you are powering up your cable modem for the first time, allow 15 minutes for this process to complete. Consult the chapter titled "Cable Modem Operation" for a more in-depth description of the front panel LED indicators.

4 Plug the computer's power cord back into the computer. Switch on the computer. When installation is complete, your setup should resemble the diagram on page 15.

Installing the Cable *Connections*™ CD-ROM

Although you do not need to install the included Cable *Connections*™ CD-ROM to use your cable modem, you will want to discover the valuable free software products and Internet service provider offers included on the CD-ROM. To install the Cable *Connections* CD, follow the instructions inside the CD's jacket or on the CD-ROM itself.

RJ-45 Ethernet cable

NIC Install: *Plug this cable into the RJ-45 jack on your NIC or into your computer's built-in Ethernet port and into the cable modem's RJ-45 jack.*

USB network interace Install: *Plug this cable into your USB network interface's RJ-45 jack and into the cable modem's RJ-45 jack.*

USB cable

USB network interface Install: *Plug this cable into an available USB port on your computer and into the USB network interface's USB jack.*

computer

cable-ready TV/VCR or set-top cable box

USB network interface

power supply

cable splitter

CABLE MODEM OPERATION

Once your cable modem is properly installed and the power supply is connected to AC power, it will automatically scan for the active cable modem channel from your cable company's server. Once the front panel LEDs indicate the modem is connected to the server, all you need to do is launch your Internet or e-mail software and you're ready to work online.

Interpreting Your Cable Modem's LEDs

Here's a quick overview of the LED lights on the front of your modem and what they can tell you about the performance of your modem and the condition of your connection.

LEDs on the Front of the Modem

1 **Power** - Indicates power is applied to the cable modem. This light is solid green when the modem is on. You will also hear an audio notification once power is applied.

3Com **power**

2 **Link Status -** This LED indicates the modem's connection status. It blinks steadily until the modem has established a connection. Once a connection is established, the LED is lighted solid green. You will also hear an audio notification once a connection is established.

link status

3 **Data Rate** - Indicates data is being transmitted over the cable network. This LED should blink when data is being

transmitted over the RF interface and at a rate dependent on data throughput.

data rate

4 **Multifunction** - The function of this LED will be determined by your cable company. Depending on how your Broadband Service Provider utilizes this LED, there may or may not be an audio notification associated with this LED, as well.

multifunction

LED on the Back of the Modem

The LED on the back of your cable modem (located by the power adapter jack) is a status LED. The following chart explains how to interpret it's activity:

Table 1

LED STATE	REPEATING	DESCRIPTION
SHORT OFF, LONG ORANGE	YES	Startup, power on self test
ORANGE	NO	Failed power on self test
SHORT OFF, SHORT ORANGE	YES	Downstream hunt
LONG ORANGE, SHORT GREEN	YES	Acquisition in process
SHORT OFF, SHORT GREEN	YES	Offline/not authorized for service
GREEN	NO	Fully operational state

Connectors and Switches on the Back of Your Cable Modem

The following paragraphs are numbered so that they refer to the diagram below.

1 **Cable RF Connector:** This is where you connect the coaxial cable that leads to your splitter or your cable wall jack.

2 **RJ-45 Jack:** This is where you plug the included RJ-45 Ethernet cable. The other end connects to the RJ-45 jack on your NIC or to the RJ-45 jack on your USB network interface, depending on the type of installation you chose.

3 **Power Jack:** This is where you plug in the power adapter that came with your cable modem. Remember to use only the power supply that came with your cable modem.
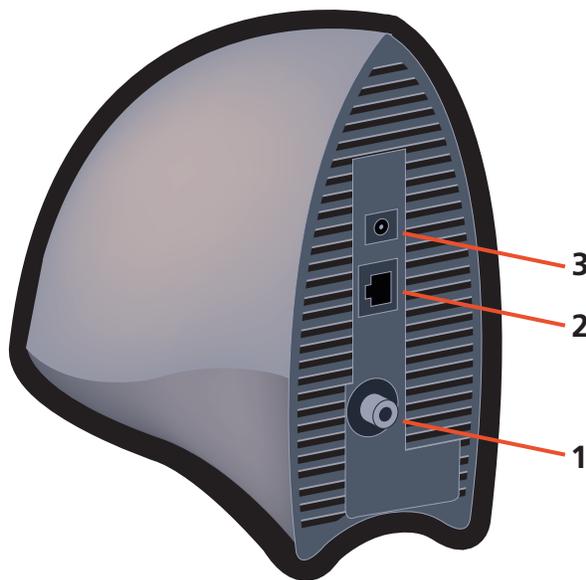
4   CONFIGURING YOUR CABLE MODEM

Your cable modem can be configured using our Web-based configuration software.

NOTE: If you do not currently have a Web browser installed on your computer, you can find the two most popular browsers, Netscape Navigator and Microsoft's Internet Explorer, on the Cable Connections CD-ROM included with your kit.

1 Open your Web browser and point it to the following URL:

http://149.112.50.65

2 The "Configuration Screens" menu is the first that appears.

Here's an overview of the options on the "Configuration Screens" menu.

- **Cable Modem Configuration:** Clicking this option launches the "Cable Modem Configuration" screen, which displays your cable modem's MAC address, serial number, software version, hardware version, and type of cable modem.

3Com | **3Com HomeConnect**
Home External 2-Way Cable Modem

Cable Modem Configuration

Modem

Type: External 2-way
Cable modem: 3Com Inc. External Cable Modem
MAC address: 00:50:DA:C5:3E:65
Serial number: haz1c53e65
Software version: 0.49
Hardware version: 02:00

- **Session Status:** This screen displays both the cable modem status and operational parameters. The status describes the downstream and upstream characteristics. The valid range of "Transmit Power Level" is 8 dbmV to 58 dbmV. The value range of "Upstream Channel ID" is from 1 to 255.

3Com | **3Com HomeConnect**
Home External 2-Way Cable Modem

Cable Modem Status

Downstream Status

Downstream Lock: Locked
Downstream Frequency: 237012500 Hz
Downstream Modulation: 256 QAM
Downstream Interleave Depth: 8,16,8
Downstream Receive Power Level: 36 dB

Upstream Status

Upstream Channel ID: 45
Upstream Frequency: 30000000 Hz
Upstream Modulation: QPSK
Upstream Symbol Rate: 1280 ksym/sec
Upstream Transmit Power Level: 35 dB

- **Operation Configuration:** The operational parameters displayed on this screen describe important aspects of your cable modem's configuration file.

Cable Modem Operation Configuration

Operation Configuration

Network Access: *Enabled*
Maximum Downstream Data Rate: *Not Present*
Maximum Upstream Data Rate: *Not Present*
Maximum Upstream Channel Burst: *Not Present*
Modem Capability: *Concatenation Disabled*
Software Upgrade File Name: *3com_29220_v0_49_0a.bin*
DHCP server IP Address: *20.20.20.3*
Maximum Number of CPEs: *5*

- **URL Configuration:** You can change the URL that you use to access these screens in this page. Once you change this setting, you can type the text entered here into your browser's URL window to access the configuration screens.

Change Cable Modem URL

Please enter Cable Modem URL: [3comcablemodem]

[Set] [Default]

- **Volume Control:** This page allows you to adjust the volume of the sounds emitted by your cable modem.

Cable Modem Sound Control

Volume
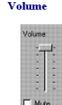
☐ Mute

○ Mute ○ Low ○ Medium ◉ High

[SetVolume] [Test]

5 TROUBLESHOOTING AND SUPPORT RESOURCES

Troubleshooting

I cannot access my e-mail or Internet service.

- Check all connections. Make sure the cable line is securely connected to the cable jack on the back of the modem. Verify that the RJ-45 cable is securely plugged into both the modem and your network interface card. Make sure your power supply is properly plugged into both the modem and a wall outlet or surge protector. If your cable modem is properly connected, the "Cable Modem Power", "Cable Modem Status", and "PC Link Status" indicator lights on the front of the modem should all be a solid color.

- Power cycle your cable modem by removing the power adapter from its outlet and then plugging it back into the outlet. Then try reconnecting to your Broadband Service Provider (BSP).

- Call your cable service provider to verify that their service is two-way. This modem is designed for use with two-way cable plants.

- Your network interface card or USB network interface may be malfunctioning. Refer to its documentation for troubleshooting information.

- Make sure that TCP/IP is the default protocol in use by your system. See the section entitled "Configuring the TCP/IP Protocol" for more information.

- If you are using a cable line splitter so that you can connect the cable modem and a television at the same time, try removing the splitter and reconnecting your cables so that your cable modem is connected directly to your cable wall jack. Then try reconnecting to your BSP.

■ Right-click the My Computer icon on your desktop. Then click Properties. Click the Device Manager tab and look for a yellow exclamation point or red X over your NIC in the "Network adapters" field. If you see either, you have an IRQ conflict. Click on your NIC's description to highlight it and then click Remove. Then double-click Computer. A list of used IRQs appears. If all of the IRQs between 0 and 15 are in use, you will need to remove a device to free an IRQ for your NIC before you can reinstall it (by restarting your computer).

The Cable Status LED never stops blinking.

The signal from your cable company's equipment may be too weak or the cable line may not be properly attached to the modem. If the cable line is properly connected to the modem, call your cable company to verify whether or not a weak signal may be the problem.

All four of the LEDs on the front of my cable modem are lighted and blinking.

Call your BSP or 3Com's technical support for assistance.

All of the LEDs on the front of my modem look right, but I still can't access the Internet.

■ If the Power, Link Status LEDs, and Data Rate LEDs are lighted, your cable modem is operating properly. Try shutting down and powering off your computer and then turning it back on. This will cause your computer to re-establish communications with your cable company's computer.

■ Power cycle your cable modem by removing the power adapter from it's outlet and then plugging it back into the outlet. Then try reconnecting to your Broadband Service Provider (BSP).

■ You may not have installed TCP/IP properly or the TCP/IP parameters provided by your cable company may not be correct for your computer.

■ If you are using a cable line splitter so that you can connect the cable modem and a television at the same time, try removing the splitter and reconnecting your

cables so that your cable modem is connected directly to your cable wall jack. Then try reconnecting to your BSP.

The power on my modem goes on and off sporadically. The Link Status light never stops blinking.

You may be using the wrong power supply. Check that the power supply you are using is the one that came with your cable modem.

Support Resources

Internet FTP

Our FTP site provides a free library containing the same files as the BBS site. FTP to:

ftp://consumerftp.3com.com

World Wide Web

To visit our online support home page, log on to:

http://consumer.3com.com/cable/

You can send a message to technical support by clicking **Contact Us** in the "Site Tools" section of this Web site.

90-Day Free Installation Support

3Com offers free installation support for this product 90 days after purchase. Please call the following toll-free number.

888-877-5040

After the 90-day limit, refer to our regular technical support hotline.

Technical Support Hotline

Technical questions about 3Com cable modems can also be answered by technical support representatives. Regular long distance charges will apply if you are outside the 847 area code. The hours service is available are 8:00 am - 6:00 pm CST Monday through Friday and 9:00AM until 11:00PM CST Saturday through Sunday.

847-262-2550

If You Are Still Having Problems

- Review this manual.
- Call or visit your modem dealer. They may be able to assist you.
- If your dealer can't help you, contact 3Com Technical Support. When you call, specify your modem's serial number (found on the modem and on the outside of the box) and the software being used.

If You Need to Return the Modem to Us

Contact 3Com Customer Support. If the support representative determines that you need to return the modem, you will receive a USO (User Service Order) number. You must have a USO number before returning the modem to us. Ship the unit, postage paid, in a strong box made of corrugated cardboard with plenty of packing material. DO NOT send the modem back in the original box. Send ONLY the modem (NOT manuals, diskettes, etc.). Include your USO number, name, and address on the shipping label as well as inside the package. If possible, send the package via a courier capable of tracking the progress of the shipment. Ship to the following address:

3Com
USO #_____
Dock 15
1800 W. Central Ave.
Mount Prospect, IL 60056

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REGULATORY INFORMATION AND LIMITED WARRANTY

Manufacturer's Declaration of Conformity

3Com
3800 Golf Road
Rolling Meadows, IL 60008
U.S.A.

declares that the product 3Com HomeConnect Cable Modem External conforms to the FCC's specifications:

Part 15

Operation is subject to the following two conditions:

(1) this device may not cause harmful electromagnetic interference, and

(2) this device must accept any interference received including interference that may cause undesired operations.

Caution to the User

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Performance Specifications

This equipment has a bit-error rate (BER) less than 10^{-8} when the signal-to-noise ratio (SNR) is 23.5 dB or greater when operating in 64 QAM mode, and when the SNR is 30.0 dB or greater when operating in 256 QAM mode.

Export Notices

- Unlawful to export from the US or Canada without an approved US Department of Commerce export license.

■ The hardware contained in this product contains encryption software which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license.

License Agreement

You agree that you will not export or re-export the Software or accompanying documentation (or any copies thereof) or any products utilizing the Software or such documentation in violation of any applicable laws or regulations of the United States or the country in which you obtained them.

The software covered by this agreement may contain strong data encryption code that cannot be exported outside of the U.S. or Canada. You agree that you will not export/re-export, either physically or electronically, the encryption software or accompanying documentation (or copies thereof) or any products utilizing the encryption software or such documentation without obtaining written authorization from the U.S. Department of Commerce.

Industry Canada (IC)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled Digital Apparatus, ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B préscrites dans la norme sur le matèriel brouilleur: Appareils Numériques, NMB-003 édictée par l'Industrie Canada.

UL Listing/CUL Listing

This information technology equipment is UL-Listed and CUL-Listed for use with UL-Listed personal computers that have installation instructions detailing user installation of card cage accessories.

Radio and Television Interference

This equipment generates and uses radio frequency energy and if not installed and used properly, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. This device has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause interference to radio or television reception, which you can determine by monitoring reception when the modem is installed and when it is removed from the computer, try to correct the problem with one or more of the following measures:

■ Reorient the receiving antenna (for televisions with antenna reception only) or cable input device.

■ Relocate the computer with respect to the receiver.

■ Relocate the computer and/or the receiver so that they are on separate branch circuits.

If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet, prepared by the Federal Communications Commission, helpful:

How to Identify and Resolve Radio-TV Interference Problems
Stock No. 004-000-0345-4
U.S. Government Printing Office
Washington, DC 20402

In accordance with Part 15 of the FCC rules, the user is cautioned that any changes or modifications to the equipment described in this manual that are not expressly approved by 3Com could void the user's authority to operate the equipment.

3Com Corporation Limited Warranty

Hardware

3Com warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for the following length of time from the date of purchase from 3Com or its authorized reseller:

3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

Software

3Com warrants to Customer that each software program licensed from it will perform in substantial conformance to its program specifications, for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the

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Year 2000 Warranty

In addition to the Hardware Warranty stated above, 3Com warrants that each product sold or licensed to Customer on and after January 1, 1998 that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site,

http://www.3com.com/products/yr2000.html

as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the

foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

Obtaining Warranty Service

Customer must contact a 3Com Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase from 3Com or its authorized reseller may be required. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a User Service Order (USO) number marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured or sent by a method that provides for tracking of the package. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after 3Com receives the defective product.

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Governing Law

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