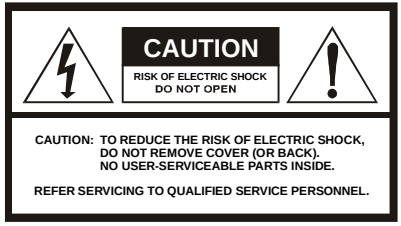
CG3500 Communications Gateway

User Guide

MOTOROLA

REGULATORY INFORMATION



CAUTION

These servicing instructions are for use by qualified personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that contained in the Installation and Troubleshooting Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Special Symbols that Might Appear on the Equipment

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important installation, servicing, and operating instructions in the documents accompanying the equipment.

WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

USE ONLY MAINS LINE CORD THAT COMPLIES WITH THE COUNTRY'S PRODUCT SAFETY REQUIREMENTS.

Declaration of Conformity

We **Motorola, Inc.**
Broadband Communication Sector

of: 3850 North Wilkes Road
Arlington Heights, Illinois 60004-1271

and: Imperium
Imperial Way
Reading Berkshire, England
United Kingdom

declare that the product:

Communications Gateway CG3500

to which this declaration relates, is in compliance with the following:

Council Directive 89/336/ECC (EMC Directive) as amended by:
Council Directive 93/68/ECC, Article 5
Council Directive 92/31/EEC

The product having been evaluated against the following Standards:

EN 50082-1: 1992
EN 55022: 1994 + A1: 1995 + A2: 1997 / CISPR 22: 1993
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998
EN 61000-3-3: 1995

and further it is declared to be in compliance with the following:

Council Directive 73/23/ECC (Low Voltage Directive) as amended by:
93/68/EEC, Article 13

The product having been evaluated against the following Standards:

EN 60950: 1992 + A1: 1993 + A2: 1993 + A3: 1995 + A4: 1997 + A11: 1997/
IEC 950: 1991 + A1: 1992 + A2: 1993 + A3: 1995 + A4: 1996

Repairs

If repair is necessary, contact your cable modem service provider.

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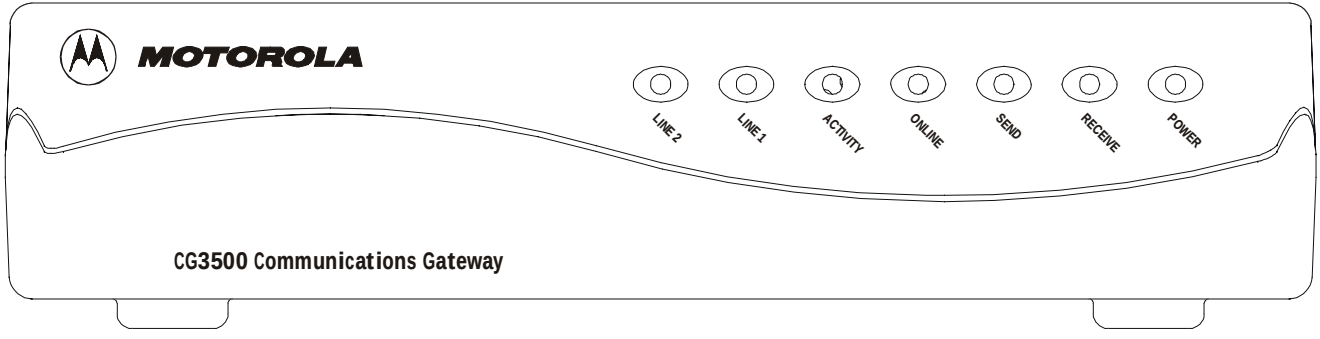
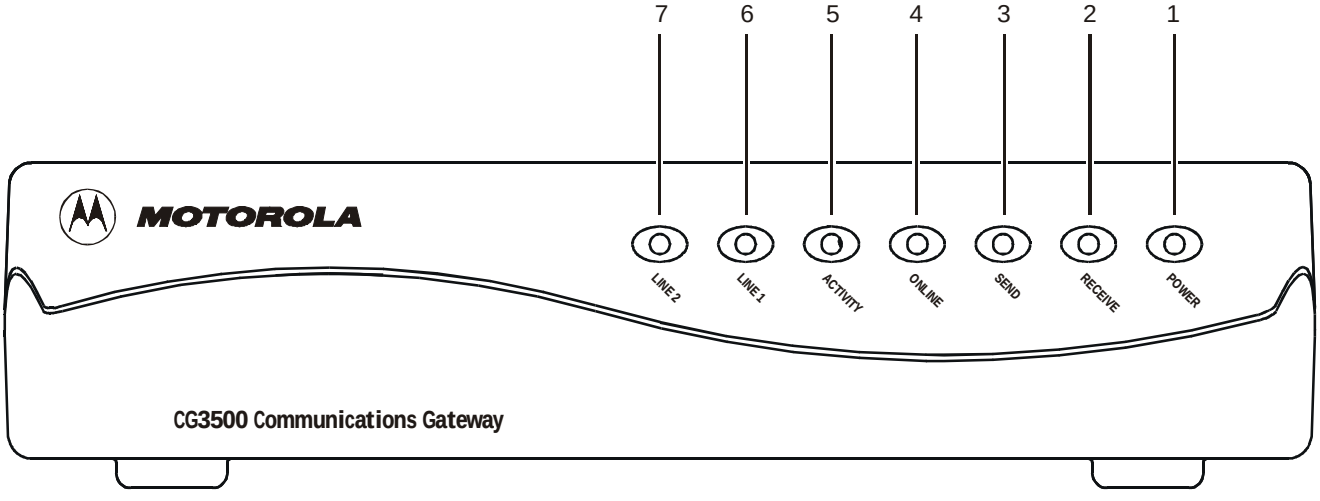
INTRODUCTION

The Motorola CG3500 Communications Gateway cable modem enables you to connect your home or business computer to a high-speed Data Over Cable Service Interface Specification (DOCSIS) 1.0 or 1.1 compliant data network. The CG3500 provides high-speed, bi-directional data access with Radio Frequency (RF) downstream transfer rates up to 38 Mbps and RF upstream rates up to 10 Mbps. It also provides telephony voice communication features using the Internet Protocol (IP) known as Voice over IP (VoIP).

Unlike a dial-up modem, the CG3500 is always online. Just open your browser and surf.



Front Panel


7
6
5
4
3
2
1
MOTOROLA
LINE 2
LINE 1
ACTIVITY
ONLINE
SEND
RECEIVE
POWER
CG3500 Communications Gateway

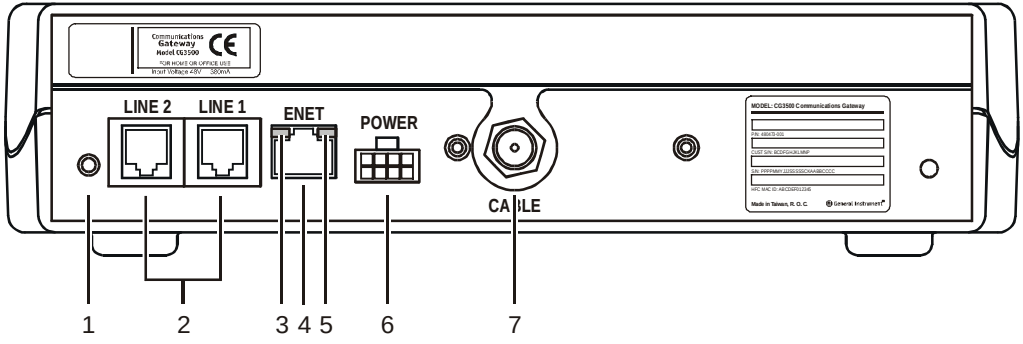
Front Panel

The seven front panel lights provide information about power, communications, and errors.

	Light	Color	Description
1	Power	Green	When the light is flashing, startup diagnostics are being performed. A solid light indicates the CG3500 is on.
2	Receive	Green	When the light is flashing, the CG3500 is scanning for the downstream frequency. A solid light indicates the downstream channel is acquired.
3	Send	Green	When the light is flashing, the CG3500 is scanning for the upstream frequency. A solid light indicates the upstream channel is acquired.
4	Online	Green	When the light is flashing, the CG3500 is scanning for the network connection. A solid light indicates the network connection is acquired.
5	Activity	Amber	When the light is flashing, the CG3500 is transmitting or receiving data. When the light is off, the CG3500 is not transferring data.
6	Line 1	Amber	A solid amber light indicates that telephone line 1 is active.
7	Line 2	Amber	A solid amber light indicates that telephone line 2 is active.

If an error occurs, the lights provide a quick way of detecting the problem. See Troubleshooting for more information.

Rear Panel



Rear Panel

The rear panel provides Ethernet activity and link status lights, the reset button, and all the connectors.

	Item	Description
1		This is the recessed reset button.
2	LINE 2	These ports transfer data to and from analog phone lines. They are RJ-11 connectors.
3		When this yellow light flashes, the Ethernet connection is transferring data.
4	ENET	This port transfers data to and from your computer. This is an RJ-45 connector.
5		When this green light is on, the Ethernet connection is available.
6	POWER	This connector provides power to the CG3500.
7	CABLE	This port provides RF connectivity to and from your service provider. This is an F-type connector.

BEFORE YOU BEGIN

Before you begin the installation, check that you received:

One 10Base-T Ethernet cable	Required to connect your computer to the CG3500.
Power supply and cable	The CG3500 is powered by an Uninterruptible Power Supply (UPS)

You need to purchase a 75-ohm coaxial cable with F-type connectors for connecting to the nearest cable outlet. If you have a TV set attached to the cable outlet, you may need a 5-900 MHz splitter to use both the TV and the CG3500.

BEFORE YOU BEGIN

NOTE

The Ethernet card must be installed before the CG3500. If it isn't, follow the installation instructions that came with your Ethernet card.

To use all the features of the CG3500, you will need the following:

Telephone(s) with standard RJ-11 connectors	Required to use the telephony features of the CG3500.
Service Provider	You must sign up with a data service provider who provides access to the Internet and other online services.
Computer	Your computer must support Ethernet and the TCP/IP protocol to access the CG3500. The CG3500 is compatible with Microsoft®, Macintosh®, and UNIX® operating systems. You don't need special software to operate the CG3500.
Ethernet card	Any standard 10Base-T Ethernet card operates with the CG3500. Your computer must be configured for TCP/IP and have an IP address for the CG3500 to operate. Your Internet service provider furnishes the IP address.
HTML Browser	Any standard HTML (web) browser works with the CG3500.

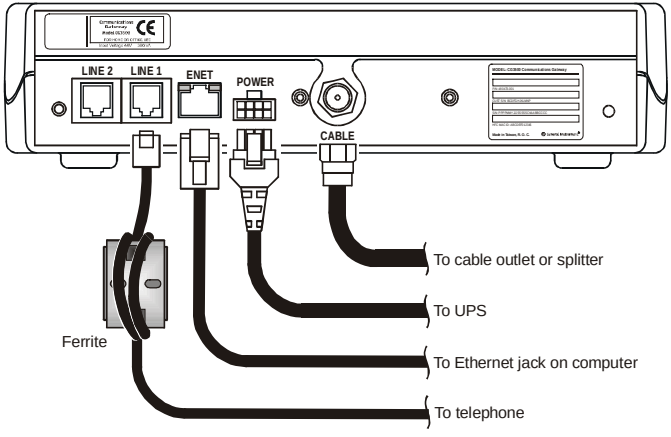
INSTALLATION

The installation of the CG3500 can be completed in a matter of minutes. After you attach the cables, you must configure your computer.

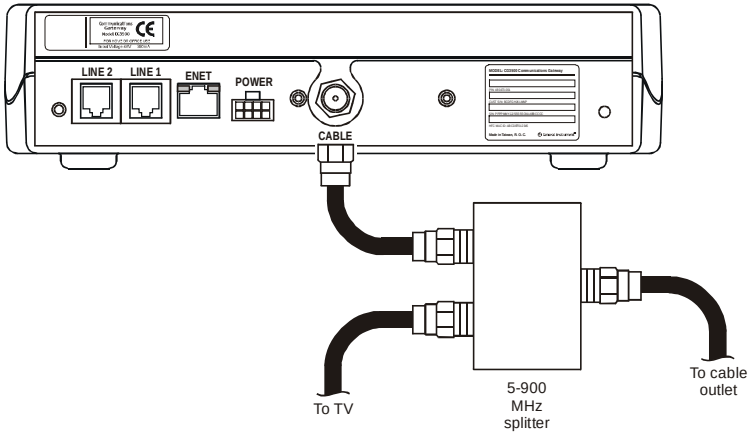
The CG3500 installation steps must be performed in the order shown in the following pages.

For a Single User

1 Connect the coaxial cable to a cable outlet in your home. Connect the other end to the CG3500 connector marked CABLE, as shown below. *Hand-tighten the connectors to avoid damaging them.*



If you already have a TV connected to the cable outlet, you will need to use a 5-900 MHz splitter. Connect the coaxial cable as shown below:



2 Connect the 10Base-T Ethernet cable to the CG3500 connector marked ENET and the other end to the Ethernet jack on the back of your computer.

3 Connect your telephone to the CG3500 connector marked LINE 1. A separate phone line can be connected to the CG3500 connector marked LINE 2. *Each line connector on the CG3500 supports up to five telephones (one REN per telephone).*

4 Connect the UPS cable to the CG3500 connector marked POWER as shown in the following sections.

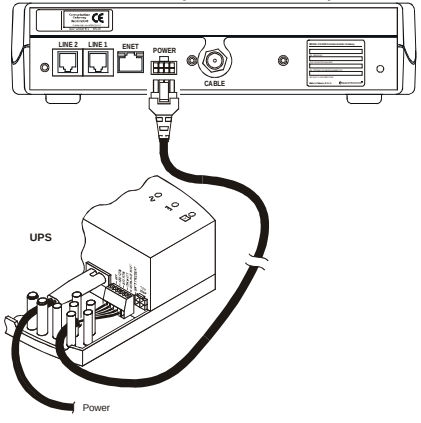
Connecting the Power Supply

Prepare the UPS according to the manufacturer's instructions. *You must use the cable provided with the CG3500 to connect the UPS to the CG3500. Do not substitute another cable.*

Do not connect the battery until you have connected the UPS to the CG3500.

1 Connect the UPS to the CG3500 connector marked POWER.

2 Connect the battery to the UPS per the manufacturer's instructions.



NOTE

To turn on your CG3500, simply plug it in. It is not necessary to unplug it when not in use.

Powering Up the First Time

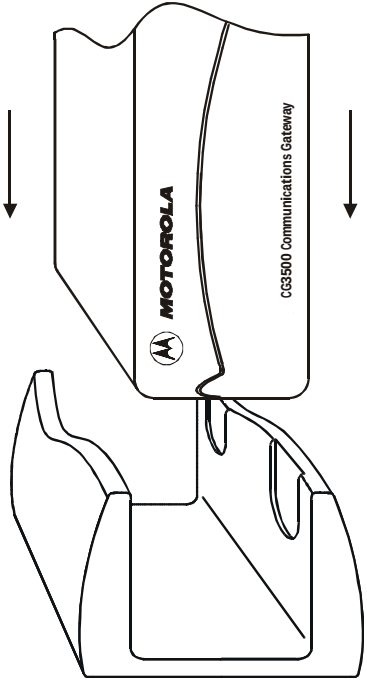
You must allow 5 to 30 minutes to power up the first time because the CG3500 must find and lock on the appropriate channels for communications.

1 Be sure that your computer is on and that the CG3500 is unplugged.

2 Plug in the AC power cord for the external UPS. Notice that the lights on the front panel cycle through this sequence:

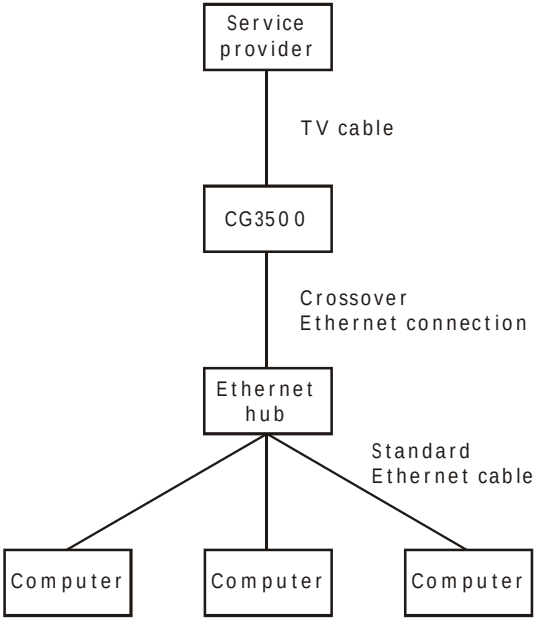
- Power flashes during a self-test. When the self-test is successfully complete, the light is solid green.
- Receive flashes while the CG3500 scans for the downstream channel. When the downstream channel is locked, the light is solid green.
- Send flashes while the CG3500 scans for the upstream channel. When the upstream channel is locked, the LED is solid green.
- Online flashes while the CG3500 is obtaining configuration information. When the configuration information is obtained, the LED is solid green.

During normal operation, the Power, Receive, Send, and Online lights are on and the Activity light flashes.



Using the Optional Cradle

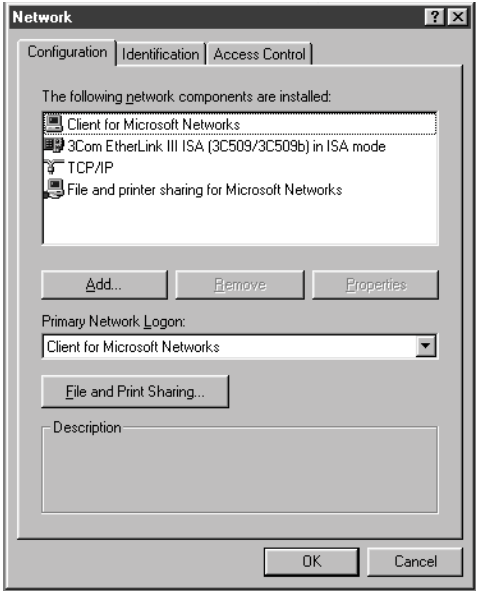
The CG3500 may come with an optional cradle that enables the modem to stand vertically on a flat surface, such as a desktop. To use the cradle, insert the modem into the cradle until the modem's feet fully engage with the grooves.



For Multiple Users

The CG3500 can easily serve as a gateway to the Internet for up to 32 users. The users must be on the same Local Area Network (LAN), and the CG3500 must be attached to the LAN and the cable system.

The network administrator at your service provider configures your modem for multiple users.



The CG3500 contains all necessary software. You don't need to configure the CG3500, but you must configure your computer for TCP/IP and check for an IP address. Your service provider may provide additional instructions for setting up your computer. The following basic instructions are for Windows™ 95 or Windows 98. If you are using a different operating system, refer to that user guide.

Configuring for TCP/IP

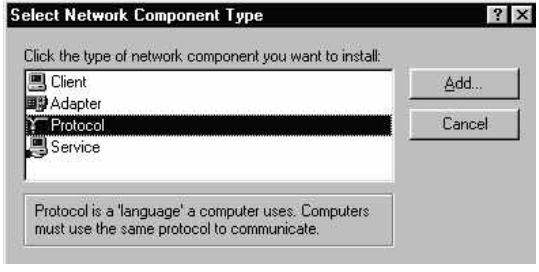
1 On the Windows Desktop, click Start.

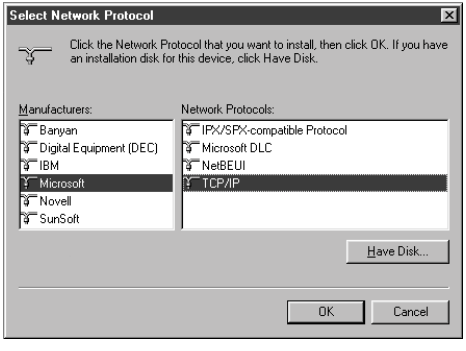
2 Select Settings and then Control Panel from the pop-up menus.

3 Double-click the Network icon on the Control Panel window.

4 Select the Configuration tab on the Network window.

5 Check to see if TCP/IP has been installed for the Ethernet card. If TCP/IP appears in the list of network components, it is installed and you can proceed to step 10. If it doesn't appear on the list, continue with step 6.



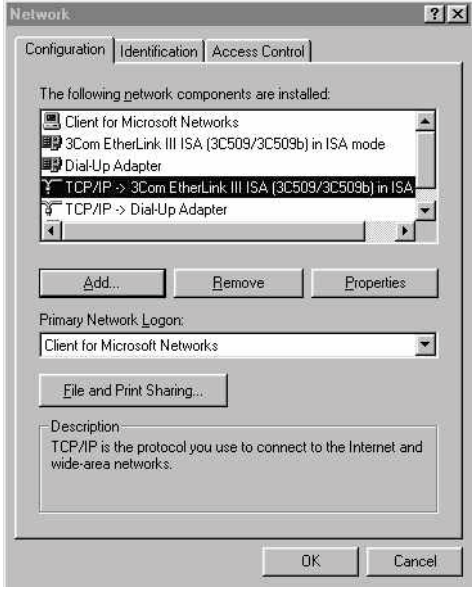


6 Click Add.

7 Double-click the Protocol option on Select Network Component Type window.

8 Click Microsoft in the Manufacturers section and then click TCP/IP in the Network Protocol section of Select Network Protocol window.

9 Click OK.



10 Click TCP/IP on the Network window. If you have more than one TCP/IP entry, choose the one associated with the Ethernet card connected to the CG3500.

11 Click Properties.

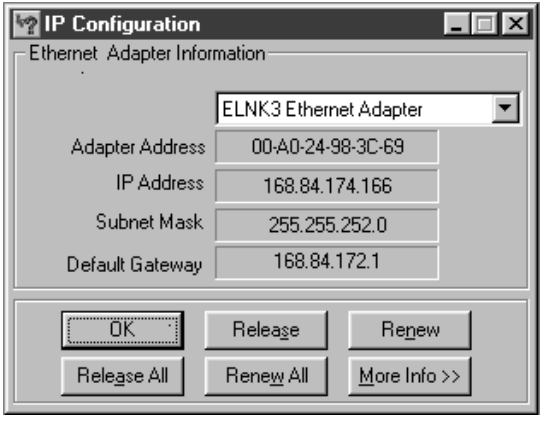
12 Select the IP Address tab on the TCP/IP window.

13 Click Obtain an IP address automatically.

14 Click OK to accept the TCP/IP settings.

15 Click OK to close the Network window.

16 Click OK when a prompt to restart your computer is displayed and then click OK again.



Verifying Your IP Address

The following basic instructions are for Windows 95 or Windows 98. If you are using a different operating system, refer to that user guide. To check the IP address:

1. On the Windows Desktop, click Start.
2. Select Run.
3. Type winipcfg.exe. A window similar to the example is displayed.
4. Select your adapter name.
5. Click Renew.
6. Click OK after the system displays an IP address.

If after performing this procedure, your computer doesn't access the internet, call your service provider. They will assist in verifying your configuration.

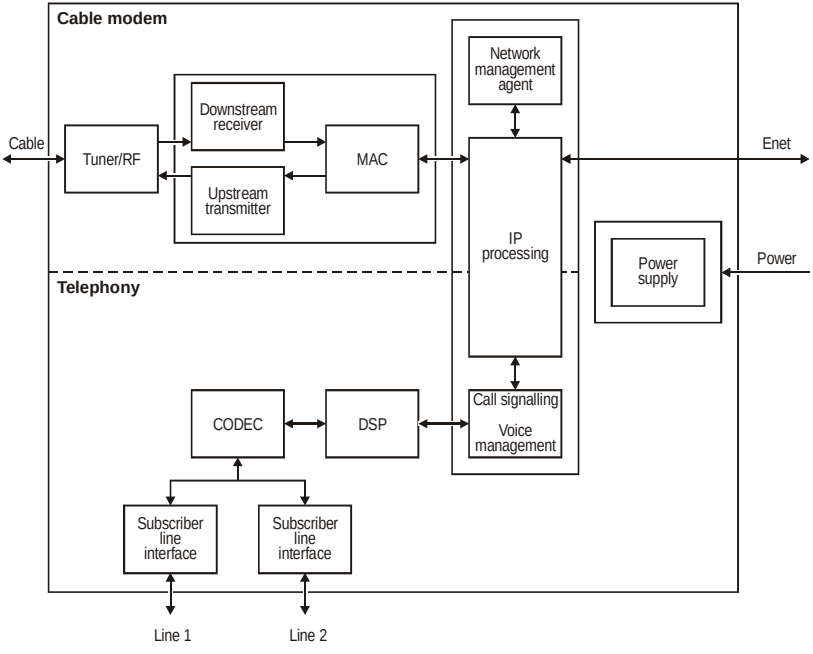
TROUBLESHOOTING

This information is to help you quickly solve a problem. Before calling your service provider, try pressing the reset button. Resetting the CG3500 may take 5 to 30 minutes. Your service provider will need to know the status of the front-panel lights.

The problem	Possible Solution
Green POWER light is off	Check that the power cord is properly plugged into the wall outlet and to the rear panel of the CG3500. Call your service provider.
Cannot receive or send data	Check the lights on the front-panel. Note the first light from top to bottom that is off. This light indicates where the error occurred. If the first light that is off is: **Receive** During normal operation, the downstream channel is lost. During startup, the downstream channel is not acquired. **Send** During normal operation, the upstream channel is lost. During startup, the upstream channel is not acquired. **Online** During normal operations, the IP registration is lost. During startup, the IP registration was not successful. Check that your TV is working, that you have cable TV, and that you have a clear TV picture. If you aren't receiving your regular TV channels, your data service will not function. Check the coaxial cable at the rear panel and outlet and hand-tighten if necessary. Check the IP address (follow the steps on page 17); call your service provider if you need an IP address.

TROUBLESHOOTING

The CG3500 has two major functional blocks — cable modem and telephony — as illustrated in the following block diagram:



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