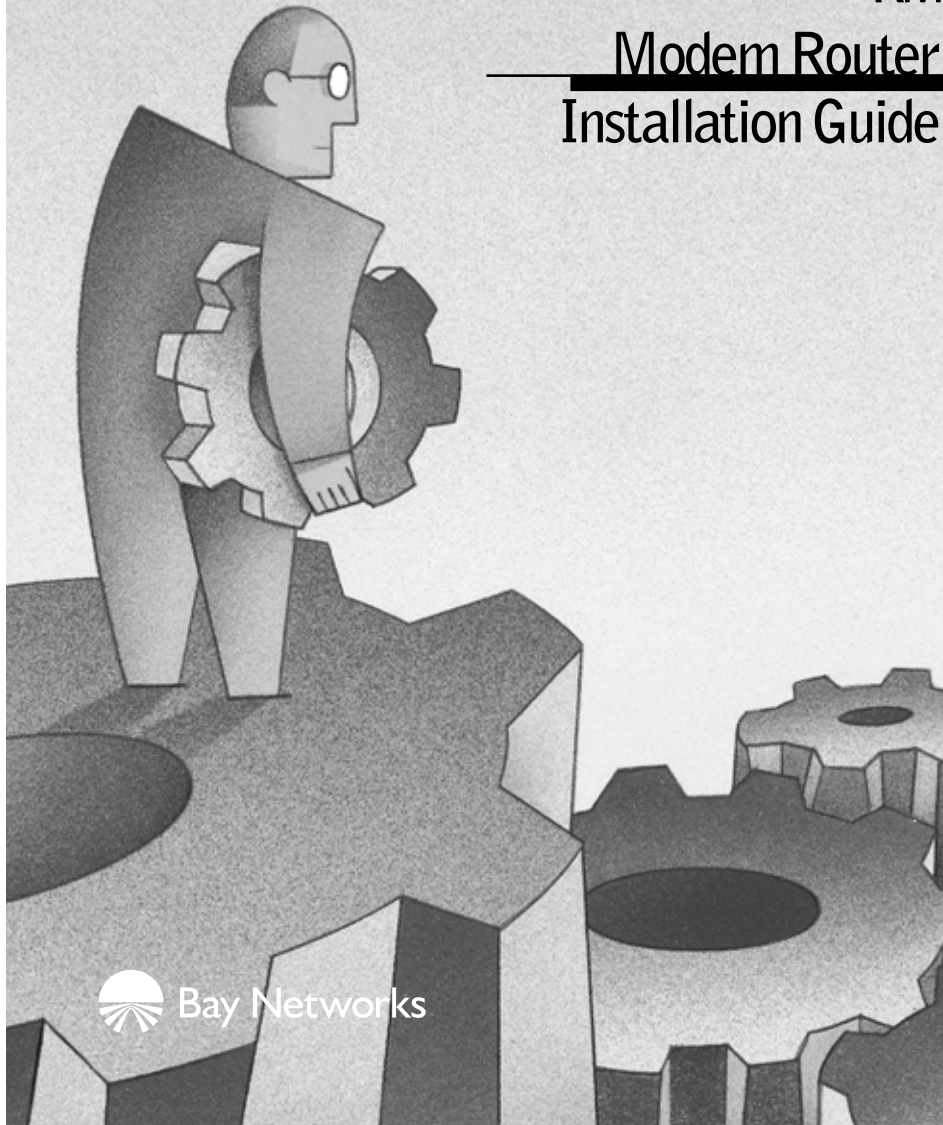



NETGEAR

MODEL RM 356

Modem Router Installation Guide



 Bay Networks

 **Start Here**

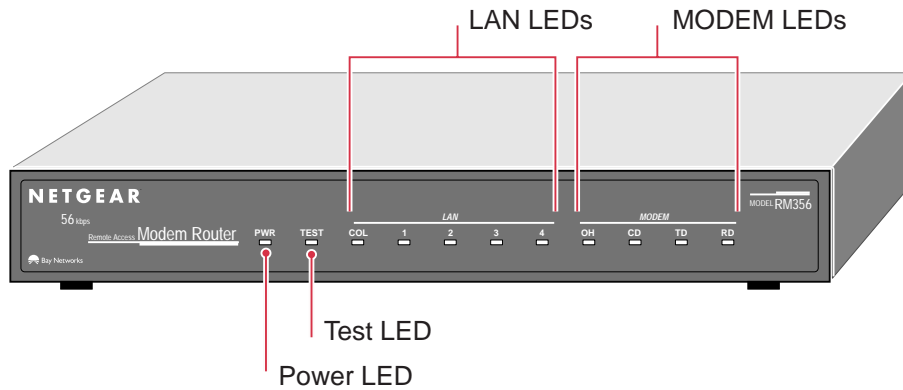
 **Product Illustrations**

Congratulations on your purchase of a NETGEAR™ Model RM356 Modem Router.

These instructions show you how to configure your Windows® PC network and your NETGEAR router for basic Internet access through an Internet service provider (ISP). For more detailed information about installing your router or configuring advanced features, refer to *Reference Guide for the Model RM356 Modem Router*.

Front Panel of the Router

The front panel of the Model RM356 router contains status LEDs. Refer to the illustration and table below for descriptions of the LEDs on the front panel of the router.



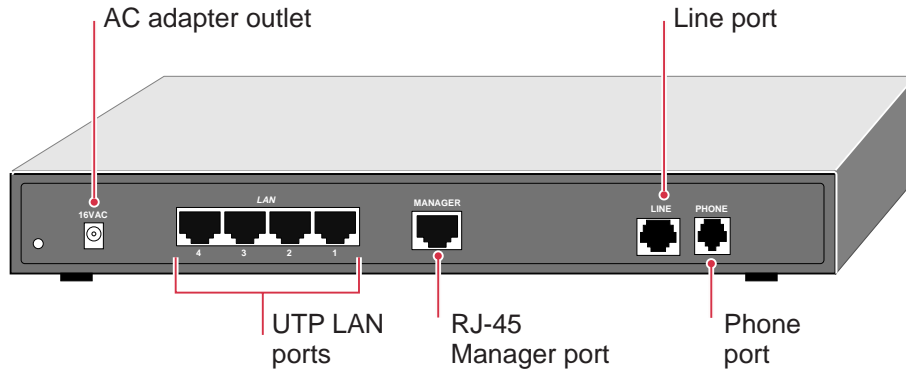
Front Panel of the Model RM356 Modem Router

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Label	Activity	Description
PWR (Power)	On	Power is supplied to the router.
TEST	Blinking/Off	The router is functioning properly. This LED blinks during initialization and then turns off.
LAN COL (Collision) 1-4	Blinking On	Data collision is occurring on the LAN. The numbered LAN port is synchronized with an attached device.
	Blinking	Data is being received on the LAN port.
MODEM OH (Off Hook) CD (Carrier Detect)	On On	The modem is in use. A valid carrier is present on the line.
TX (Transmit)	Blinking	Data is being transmitted on the MODEM port.
RX (Receive)	Blinking	Data is being received on the MODEM port.

Rear Panel

Refer to this diagram to identify all of the ports on the router when you attempt to make any connections. The Model RM356 router has four UTP LAN ports for connecting to PCs or hubs and a Manager port for connecting to a management terminal (optional). The line port connects to your phone jack, and the phone port allows a phone or fax machine to share the phone line with the router.



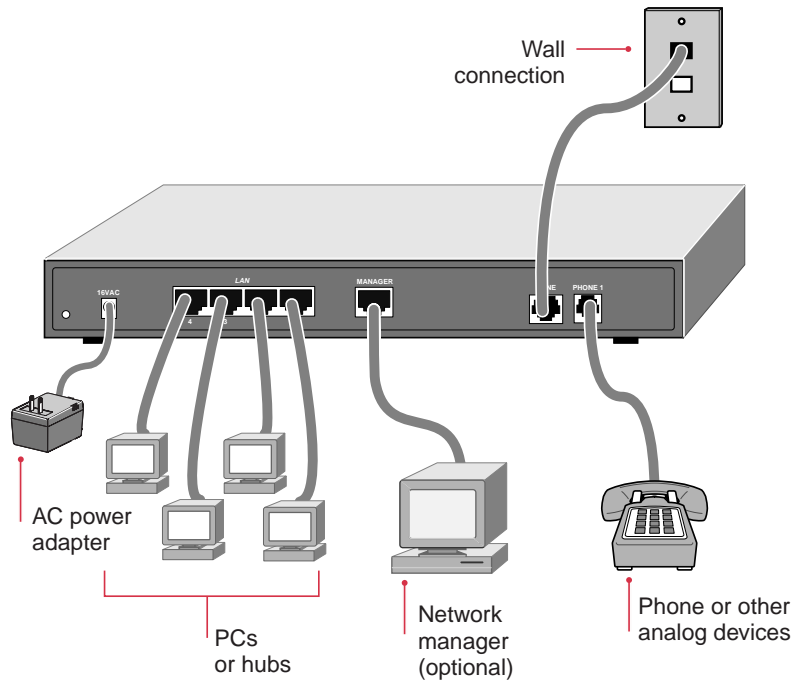
Rear Panel of the Model RM356 Modem Router

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Hardware Installation

Refer to the following illustration for installing and connecting your Model RM356 Modem Router. Configuration by FirstGear is performed from a PC attached to a LAN port. The network manager terminal is only necessary for installing software upgrades.



Installing the Model RM356 Modem Router

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Setup and Preparation

Telephone Line Checklist

The Model RM356 Modem Router connects to the Public Switched Telephone Network (PSTN) using a standard analog voice line. When ordering telephone service, the following information should be verified:

- **Line Quality**

Though the modem is capable of 56 Kbps download performance, the condition of your telephone line and your local public telephone infrastructure may limit your actual data rate. For example:

- FCC rules limit the data rate to 53 Kbps in the United States.
- The use of repeaters between your premises and the central office will limit your performance to 33 Kbps.

If your data rate is substantially less than 50 Kbps, you may want to consult your telephone company regarding the quality of your line.

- **Calling Line Identification (CLID)**

If you require CLID for security, you must order CLID for your line from your local carrier.

ISP Checklist

If you will be contracting with an Internet service provider (ISP) for Internet access, you must choose between a single-user account and a multiuser LAN account. You can connect a multiuser network through a single-user account by using the Network Address Translator (NAT) feature of your router.

Single-User Account

In a single-user account, you are assigned only one registered Internet Protocol (IP) address. This address may be a permanent fixed address or it may be a different address assigned dynamically each time you log in to the account. The NAT feature of your router will map the IP addresses of your network to this address for accessing the Internet. Some applications may be incompatible with NAT.

LAN Account

In a LAN account, you will be assigned a registered IP address for your router and one for each PC or workstation in your local network. A LAN account is typically more expensive than a single-user account.

Account Information

Your ISP should give you the following basic information for your account whether it is a single-user or LAN account:

- A local phone number for accessing the ISP
- A login name
- A password
- IP address(es) unless dynamically assigned
- DNS server IP address(es) of the ISP

Network Checklist

The Model RM356 Modem Router uses the Internet Protocol (IP). The IP configuration has the following requirements:

- All PCs must have TCP/IP manually installed and manually selected as the networking protocol. See “Configuring TCP/IP” for further instructions.
- All PCs and the router must be assigned IP addresses. If your ISP or network administrator has not assigned these, use private addresses as described below. If you are using the default Dynamic Host Configuration Protocol (DHCP) function of the router, these private addresses are assigned automatically by the router when the PCs are rebooted.
- All PCs must have the IP address of the router defined as the default gateway. If you are using the default DHCP function of the router, this IP address is assigned automatically by the router when the PCs are rebooted.

Using Private Internet Protocol (IP) Addresses

If you will be using the private addressing scheme recommended by NETGEAR, your IP addresses will be assigned as follows:

- 192.168.0.1—local IP address of your router and default gateway for the PCs
- 192.168.0.2 through 192.168.0.32—IP addresses of your PCs
- 255.255.255.0—netmask for your router and PCs

This information may be entered manually to each device or it may be assigned automatically by the default DHCP function of the router when the PCs are rebooted.

Connecting the Router

Connect the router to a power source, to your local area network (LAN), and to your telephone line as shown in “Hardware Installation.”

For your telephone line connection, use the **black** cable provided.

For your LAN connection, use the **white** straight-through cable provided to connect your Model RM356 router either to a PC or to the Uplink port of an Ethernet hub.



Configuring TCP/IP

Configuring Windows 95 for IP Networking

All PCs must have an Ethernet network adapter card installed and must have the TCP/IP networking protocol installed and configured as their networking protocol. TCP/IP installation must be done manually as described here.

To configure Microsoft® Windows 95 for IP networking:

1. Click on “Start” from the Windows tool bar (located at the bottom of the screen).
2. Select “Settings.”
3. Select “Control Panel.”
4. Select “Network.”

In the displayed list of installed components, you must have an Ethernet adapter, the TCP/IP protocol, and Client for Microsoft Networks.

If you need the adapter:

- a. Click on the “Add” button.
- b. Select “Adapter,” and then click on “Add” again.
- c. Select the manufacturer and model of your Ethernet adapter, and click on “OK.”

If you need TCP/IP:

- a. Click on the “Add” button.
- b. Select “Protocol,” and then click on “Add” again.
- c. Select “Microsoft.”
- d. Select “TCP/IP,” and click on “OK.”

If you need Client for Microsoft Networks:

- a. Click on the “Add” button.
- b. Select “Client,” and then click on “Add” again.
- c. Select “Microsoft.”
- d. Select “Client for Microsoft Networks,” and click on “OK.”

Refer to your Windows 95 manual for further instructions.

Configuring TCP/IP Properties

At this point, your PC is configured to obtain its TCP/IP configuration information automatically from a DHCP server on the local network. The Model RM356 router is shipped preconfigured as a DHCP server and will assign the TCP/IP configuration information described in the previous section.

Configuring TCP/IP Properties by DHCP

If you will be using the configuration recommended by NETGEAR:

1. Turn on the router. Be sure the router has been on for at least one minute before continuing to step 2.
2. Reboot your PC.

For additional configuration information, such as DNS addresses, you can either add the information to the DHCP setup of the router and reboot the PC again or enter the information manually to the PC as described in the following section.

Configuring TCP/IP Properties Manually

If you choose not to configure your PC by DHCP, you must manually enter the following information in the TCP/IP Properties section of the Network Control Panel of your PC:

- IP address and subnet mask (choose from your assigned IP addresses or private IP addresses)
- Gateway (enter the IP address of the router)
- DNS server addresses (enter IP addresses provided by your ISP)

Verifying TCP/IP Properties

After your PC has been configured and rebooted, you can check the TCP/IP configuration using the Windows utility winipcfg.exe (for Windows NT[®] systems, use ipconfig.exe). From the “Start” button, open the Run window, type winipcfg, and click on “OK.”



Note: In addition to displaying the current TCP/IP properties, the winipcfg utility allows you to release and renew DHCP-assigned information without rebooting the PC.



Running FirstGear

To run the FirstGear™ configuration software:

1. **Install the FirstGear software on any PC with an Ethernet connection to the router by inserting the diskette and running the Setup program.**
 - a. Click on “Start” from the Windows tool bar.
 - b. Click on “Run.”
 - c. Type `a:setup`
 - d. Click on “OK” in the Run window.
 - e. Follow the setup instructions.

Be sure the router has been on for at least one minute before launching FirstGear.

2. **Double-click on the FirstGear icon that now appears on your desktop.**
3. **If you need to change the netmask or IP address of your router, enter the new information and click on “Apply.”**

If your password has been previously changed from the factory default of 1234, you will be prompted to enter the current password.

4. **Click on “Return” in the “Find Router” screen.**
5. **Click on “Quick” to Run the Quick Configuration procedure.**

Follow the instructions in each screen.

For detailed information about data to be entered in each screen, click on the “Help” button at the bottom of the screen.

6. **At the last screen, send the configuration to the router by clicking on “Send to Router.”**

Wait for the router to reboot.
7. **Click on “Test.”**

The router will place a call to your ISP and log in to your account. If the test is not successful, a trace will be displayed containing information that should help in troubleshooting. Refer to the Troubleshooting sections in the *Reference Guide for the Model RM356 Modem Router* and *Getting Started Using FirstGear for the Model RM356 Modem Router*.

8. **Click on “Finish.”**

If you have made changes in the DHCP setup of your router, you will be prompted to reboot your PC so that it can obtain the new DHCP information from the router. Reboot any other PCs on the local network.

Your Model RM356 router is now fully configured to provide Internet access for your network.

For more information about installing your router, refer to *Reference Guide for the Model RM356 Modem Router* and *Getting Started Using FirstGear for the Model RM356 Modem Router*.



Accessing the Internet

When your router and PCs are configured correctly, your router places a call automatically whenever an application requires access to the Internet. The router also disconnects from the Internet when the connection has been idle for a period of time. It is not necessary for you to run a dialer application such as Dial-Up Networking to connect, log in, or disconnect. These functions are performed by the router as needed.

To access the Internet, launch a browser application such as Microsoft Internet Explorer or Netscape Navigator. On the router, you should see the Offhook (OH) LED illuminate, followed shortly by the Carrier Detect (CD) LED. Soon the data transmit and receive LEDs (TD and RD) will begin to flicker, indicating communication between your router and your ISP. The browser should then begin to display a page. This process may take up to one minute.

After about five minutes of inactivity, the router will disconnect the call. Upon further browser activity, the router will redial automatically.



Common Problems

Here are a few common problems and likely causes:

- If FirstGear cannot find your router, check the Ethernet connection between your PC and router. The link LED on your Ethernet card and the corresponding port LED on the router should be on.
- If the connection test fails after the Quick Configuration, look in the displayed trace for details. Recheck your ISP account phone number, login name, and password.
- If the router does not place a call when you launch your browser, your PC might not have the router configured as its TCP/IP gateway. If the PC gets its information from the router by DHCP, reboot the PC and verify the gateway address as described in “Verifying TCP/IP Properties.”
- If the router connects but you cannot load pages from the Internet, the PC might not know any DNS server addresses. A DNS server is a host on the Internet that translates Internet names (such as www addresses) to numeric IP addresses. Typically your ISP will provide the addresses of one or two DNS servers for your use. If you entered a DNS address during the Quick Configuration, reboot your PC and verify the DNS address as described in “Verifying TCP/IP Properties.” You can also configure your PC manually with DNS addresses as explained in “Configuring TCP/IP.”

More detailed information can be found in the Troubleshooting sections of *Reference Guide for the Model RM356 Modem Router* and *Getting Started Using FirstGear for the Model RM356 Modem Router*.

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Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETGEAR reserves the right to make changes to the products described in this document without notice.

NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Certificate of the Manufacturer/Importer

It is hereby certified that the Model RM356 Modem Router has been suppressed in accordance with the conditions set out in the BMPT-AmtsblVfg 243/1991 and Vfg 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions.

Federal Office for Telecommunications Approvals has been notified of the placing of this equipment on the market and has been granted the right to test the series for compliance with the regulations.

VCCI-2 Statement

This equipment is in the 2nd Class category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential areas.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read instructions for correct handling.

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Note: 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. 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 that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Part 68 Compliance Statement

This equipment complies with Part 68 of FCC Rules. All direct connections to telephone network lines must be made using standard plugs and jacks compliant with FCC Part 68.

EN 55 022 Declaration of Conformance

This is to certify that the Model RM356 Modem Router is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class B (CISPR 22).

Bestätigung des Herstellers/Importeurs

Es wird hiermit bestätigt, daß das Model RM356 Modem Router gemäß der im BMPT-AmtsblVfg 243/1991 und Vfg 46/1992 aufgeführten Bestimmungen entworfen ist. Das vorschriftsmäßige Betreiben einiger Geräte (z.B. Testsender) kann jedoch gewissen Beschränkungen unterliegen. Lesen Sie dazu bitte die Anmerkungen in der Betriebsanleitung.

Das Bundesamt für Zulassungen in der Telekommunikation wurde davon unterrichtet, daß dieses Gerät auf den Markt gebracht wurde und es ist berechtigt, die Serie auf die Erfüllung der Vorschriften hin zu überprüfen.

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Internet/World Wide Web

The NETGEAR Web page is at <http://NETGEAR.baynetworks.com>.

Defective or damaged merchandise can be returned to your point-of-sale representative.

