IBM 10/100 EtherJet™ Mini-PCI Adapter with 56K Modem

User's Guide

OPTIONS by IBM

Safety information

Before installing this product, read the Safety Information.

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Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
(安全信息)。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

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본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

Note: Before using this information and the product it supports, be sure to read the information under Appendix B, “Product warranties and notices” on page 30.

Contents

Registering your option

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About this book

This manual contains instructions for installing and using your IBM® 10/100 EtherJet Mini-PCI Adapter with 56K Modem. The manual is divided into two parts:

Part 1: Installation and usage guide

This section contains the product description, installation instructions, and usage information.

Part 2: Appendixes

This section contains help and service information, the product warranties, and notices.

Note: The illustrations in this manual might be slightly different from your hardware.

Using the IBM 10/100 EtherJet Mini-PCI Adapter with 56K Modem

This book provides instructions for using the IBM® 10/100 EtherJet™ Mini-PCI Adapter with 56K Modem (hereafter called Combo card in this manual). The Combo card has features for a LAN and for a modem.

The device drivers are as follows:

For the LAN: Intel® PRO/100+ Mini PCI

For the modem: Xircom MPCI+ Modem 56 WinGlobal

When you set up a modem or a network, select one of them in the Device Manager, Modem properties, or Network properties window.

To use these features, you need to install each driver in your computer after you install the Combo card. This book has sections on installing drivers and on troubleshooting. It also provides advanced information.

Using the LAN

After you install the Combo card in your computer, connect a Twisted Pair Ethernet (TPE) network cable to the Ethernet connector at the rear of the computer.

Note: You need to purchase the network cable.

Put the MAC address label on your computer. The other one can be used whatever it is needed—for example, by the system administrator.

Notes:

1. For 100BASE-TX, use Category 5 twisted-pair wiring cable. If you plan to run the adapter at 100 Mbps, it must be connected to a 100 BASE-TX hub or switch (not a 100 BASE-T4 hub).
2. For 10BASE-T, use Category 3, 4, or 5 twisted-pair wiring cable. If you want to use this adapter in a residential environment, you must use a Category 5 cable.

Fast Ethernet wiring

100BASE-TX Specification: The 100BASE-TX specification supports 100 Mbps transmission over two pairs of Category 5 twisted-pair Ethernet (TPE) wiring. One pair is for transmission, the other for reception. Segment lengths are limited to 100 meters with 100BASE-TX for signal timing reasons. This complies with the EIA 568 wiring standard.

Installing the driver

The installation of the driver is specific to your operating system. Go to the appropriate section.

- To install device drivers for Microsoft® Windows® 95, see “For Windows 95”
- To install device drivers for Microsoft Windows 98, see “For Windows 98” on page 4
- To install device drivers for Microsoft Windows 2000, see “For Windows 2000” on page 5
- To install device drivers for Microsoft Windows NT® Workstation, see “For Windows NT” on page 5

For Windows 95

Have your Windows 95 CD or diskettes available; you will need them during the installation. To install the driver, do as follows:

For Windows 95 OSR0 or OSR1

To install the driver, do as follows:

1 Start Windows 95.

The “New Hardware Found” dialog box appears.

2 Click **Driver from disk provided by hardware manufacturer**.

3. Click **OK**.
4. Insert the drivers CD-ROM.
5. When you are prompted to specify the path that the device driver is in, type `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
6. Click **OK**.
7. Follow the instructions on the screen.
8. When you are prompted to specify the path that the device driver is in, type `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
9. Follow the instructions on the screen.
10. When you are prompted, restart your system.

Hints

If you can't connect to a server, or if Windows 95 reports an error after you double-click **Network Neighborhood**, do as follows:

- Make sure that you're using the drivers from the driver CD shipped with the Combo card.
- Make sure that the driver is loaded and the protocols are bound. Check the **Device Properties** list for trouble indicators (if there is trouble, an X or ! symbol appears beside the icon).
- Ask your LAN administrator whether you need to install additional networking software.

If the problem persists, go to “Troubleshooting” on page 7.

For Windows 95 OSR2.1 or OSR2.5

Have your Windows 95 CD or diskettes available; you will need them during the installation. To install the driver, do as follows:

1. Start Windows 95.

   The “Update Device Driver Wizard” dialog box appears.
2. Insert the drivers CD-ROM.
3. Click **Next**.
4. Click **Other Location...**
5. Specify `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
6. When the “Windows found the following update driver for this device: Intel(R) PRO/100+ MiniPCI” message appears, click **Finish**.
7. When you are prompted to specify the path that the device driver is in, type `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
8. Click **OK**.

9. Follow the instructions on the screen.
10. When you are prompted, restart your system.

Hints

If you can't connect to a server, or if Windows 95 reports an error after you double-click **Network Neighborhood**, do as follows:

- Make sure that you're using the drivers from the driver CD shipped with the Combo card.
- Make sure that the driver is loaded and the protocols are bound. Check the **Device Properties** list for trouble indicators (if there is trouble, an X or ! symbol appears beside the icon).
- Ask your LAN administrator whether you need to install additional networking software.

If the problem persists, go to "Troubleshooting" on page 7.

For Windows 98

To install the driver, do as follows:

1. Start Windows 98.

   The "Add New Hardware Wizard" dialog box for the PCI Ethernet Controller appears.
2. Click **Next**.
3. Insert the drivers CD-ROM.
4. Select **Search for the best driver for your driver**.
5. Click **Next**.
6. Select **Specify a location:** and specify `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
7. Click **Next**.
8. Follow the instructions on the screen.
9. When you are prompted to specify the path that the device driver is in, type `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.
10. When you are prompted, restart your system.

Hints

If you can't connect to a server, or if Windows 98 reports an error after you double-click **Network Neighborhood**, do as follows:

- Make sure that you're using the drivers from the drivers CD-ROM shipped with the Combo card.
- Make sure that the driver is loaded and the protocols are bound. Check the Device Properties list for trouble indicators (if there is trouble, an X or ! symbol appears beside the icon).
- Ask your LAN administrator whether you need to install additional networking software.

If the problem persists, go to "Troubleshooting" on page 7.

For Windows 2000

To install the driver, do as follows:

1. Start Windows 2000.

   The "Found New Hardware Wizard" appears.

2. Click **Next**.

3. Select **Search for a suitable driver for my device (recommended)**, and click **Next**.

4. Select **Specify a location**, and click **Next**.

5. When prompted, insert the drivers CD-ROM.

6. Specify `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive, and click **OK**.

7. Follow the instructions on the screen.

8. When you are prompted, restart your system.

For Windows NT

To install the driver, do as follows:

1. Start Windows NT.

2. Open **Control Panel**, and then **Network**.

3. If this is the first time to configure the Network, the message appears and saying "Windows NT Networking is not installed. Do you want to install it now?." Click **Yes**. If not, go to step 12 on page 6.

4. Select "Wired to the network" and click **Next**.

5. Click **Select from list...** and **Have Disk...**.

6. Insert the drivers CD-ROM.

7. Specify `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive.

8. Click **OK**.
9. Follow the instructions on the screen. When you are prompted to point Windows NT files, specify `C:\I386`
10. When the adapter is listed in the "Network Adapter," click **Close**.
11. When you are prompted, restart your system. You have installed the driver.
12. Click the **Adapters** tab.
13. Click **Add**.
14. Insert the drivers CD-ROM, and click **Have Disk...**
15. Specify `x:\ETHERNET`, where `x` is the drive letter of the CD-ROM drive, and click **OK**.
16. Click **OK**.
17. Click **Close** to finish.
18. When you are prompted, restart your system.

Hint

If Windows NT reports an error, or you can't connect to the network, do as follows:

- Make sure that you're using the drivers that are on the driver CD shipped with the Combo card.
- Make sure that the driver is loaded and the protocols are bound. Check the **Settings** in the **Control Panel**'s "Network/Bindings" dialog box.
- Check the Windows NT Event Viewer for error messages.
- If you are attaching to a NetWare network, check your frame type and verify that NetWare client or server software has been installed.
- Ask your LAN administrator whether you need to install supplemental networking software.

If the problem persists, go to "Troubleshooting" on page 7.

To install the Ethernet Power Management driver for Windows NT, do as follows:

1. Start Windows NT.
2. Open **Control Panel**, and then **Network**.
3. Click the **Protocols** tab, and click **Add...**
4. Insert the drivers CD-ROM, and click **Have Disk**.
5. Specify `x:\ETHERNET\NPMINT40`, and click **OK**.
6. Click **OK**.
7. Click **Close**.

8 When you are prompted, restart your system.

Troubleshooting

Problem	Action
The Combo card can't connect to the Network.	• Make sure that the cable is installed properly. The network cable must be securely attached to the Ethernet connector and hub. The maximum allowable distance from adapter to hub is 100 meters. If the problem persists though the cable is attached and the distance is within acceptable limits, try a different cable. If you're directly connecting two computers without a hub or a switch, use a crossover cable. • Make sure that you're using the correct drivers. • Make sure that you're using the drivers that come with the Combo card. • Make sure that the switch port and the adapter have the same duplex setting. If you configured the adapter for full duplex, make sure that the switch port is also configured for full duplex. Setting the wrong duplex mode can degrade performance, cause data loss, or result in lost connections.
The connection fails or errors occur.	• At 100 Mbps, use Category 5 wiring and make sure that the network cable is securely attached. • At 100 Mbps, connect to a 100BASE-TX hub/switch (not 100BASE-T4). • Make sure that the duplex mode setting on the adapter matches the setting on the switch.
The adapter stopped working without apparent cause.	• The network driver files may be corrupt or missing. Remove the drivers and then reinstall them.
The Wake on LAN (WOL) feature is not working.	• Check the BIOS for its WOL setting. • Make sure that the network cable is fully attached to the adapter.
Resuming normal operation from hibernation or suspend mode takes a long time.	• This is not a problem. If you have not connect the network cable, the computer queries the Ethernet until the timeout timer is reached. Connect the network.

Advanced information

This section presents advanced information about tasks to be handled only by the system administrator.

Push installation for Windows 95

You can set up a server-based push installation of Windows 95 as defined in the Microsoft Windows 95 Resource Kit. You'll need to follow additional steps for the Combo card. See the W9XPUSH.TXT readme file in the `x:\ethernet\push` directory in the drivers CD.

Advanced adapter features

To access the advanced features of the adapter, do as follows:

1. In the Control Panel, double-click **Network**.
2. Select the adapter and click **Properties**.
3. Click the **Advanced** tab.

The Combo card has following advanced features:

- **802.1p/802.1Q Tagging**
  IEEE 802.1p is a new IEEE standard for tagging packets— that is, assigning packets priorities. Each packet is tagged with four additional bytes, which increase its size and indicate its priority—from 0 (low) to 7 (high). This process is called priority packet tagging or traffic class expediting. It enables the adapter, working with the switches and routers in the network, to send packets with higher priorities first.

  To use priority packet tagging, your network infrastructure—specifically, the routing devices that receive and transfer packets, and the adapters for those devices—must support 802.1 p/802.1Q tagging. Using the Priority Packet utility, set up the priority filter. Then set the 802.1p/802.1Q tagging option to **Enabled**.

  If the priority filter is set up but the setting is **Disabled**, the tagged packets will still be processed by priority, if the Combo card uses a Intel 82558 or later Ethernet controller.

  There are two requirements for using IEEE 802.1p tagging effectively:

  – The other devices receiving and routing 802.1p tagged packets must support 802.1p.

  – The adapters must support 802.1p.

- **ACPI Wake On LAN**
  Enables or disables the Magic Packet service for Wake on LAN when used in Microsoft Windows 98 version 4.10.1998 without the Service Pack. If you are using a later version of Windows 98, or have Service Pack 1 or later installed, this option will be ignored and you will be using the ACPI Wake on LAN services.

  Note: To determine your version of Windows 98: From the Windows 98 desktop, right-click on **My Computer** and choose **Properties**. The System Properties window appears; your Windows 98 version is listed under "System."

- **Enable PME**
  Use this setting to adjust the power management compatibility of the adapter. The default setting is **Disable**. To explicitly allow wake up with a Magic Packet from shutdown under APM power management mode, change the setting to **Enable**. To explicitly turn the 82559 LAN controller off in shutdown under ACPI power management mode, leave the setting at to **Disable**.

- **Adaptive Inter-Frame Spacing**
  This is a performance setting that compensates for excessive Ethernet packet collisions on your network. For most computers and networks, the default setting works best, by dynamically adapting to the network traffic conditions. However, in some rare cases you may obtain better performance by setting the spacing manually. Setting a value forces a static gap between packets. Increasing the value increases the delay between frames being transmitted.

  Default: 1
  Range: 1 – 255

- **Adaptive Technology**
  Recommended value, On
  This parameter either enables or disables the Adaptive Technology performance enhancement feature. To enable the feature, click ON. To disable the feature, click OFF. To minimize CPU use for better system performance, leave this parameter ON.

- **Adaptive Transmit Threshold**
  Recommended value: 16.
  Specifies the number of bytes before the adapter empties its internal transmit FIFO onto the wire. The value is multiplied by 8 to produce the number of bytes. For example, if Transmit Threshold = 200, the number of bytes is 1600. Because this is greater than the maximum packet size for Ethernet, the adapter won't attempt early transmits. Although this is the safest setting, the best performance is achieved when the threshold parameter is as low as possible without producing underruns. To experiment, set the parameter to 16. Then, if performance drops significantly, increase the value in small increments.

- **Coalesce Buffers**
  Recommended value: 8. Range: 1 – 32.
  Specifies the number of memory buffers available to the driver in case the driver runs out of available Map Registers. This buffer area is also used when a packet consists of many fragments. If no coalesce buffers or map registers are available, the driver will be forced to queue the packet for later transmission. The most effective method of transmitting data, however, is to use map registers.

- **Link Speed & Duplex**
  Recommended setting: Auto Detect (default).
  This parameter lets the adapter know what speed to use on the Ethernet wire, and how to send and receive packets, either full or half duplex. The following options are available:

  - Auto Detect
    The adapter detects whether its environment can support a speed of 100Mbps, and uses that speed if possible, also it negotiates with the switch on whether to send and receive packets at full or half duplex.
  - 10Mbps/Half Duplex
    The adapter uses a speed of 10Mbps and performs one operation at a time. It either sends or receives.
  - 10Mbps/Full Duplex
    The adapter uses a speed of 10Mbps and sends and receives packets at the same time. This improves the performance of your adapter. Select this mode only if you have a full duplex switch.
  - 100Mbps/Half Duplex
    The adapter uses a spped of 100Mbps and performs one operation at a time. It either sends or receives.
  - 100Mbps/Full Duplex
    The adapter uses a speed of 100Mbps and sends and receives packets at the same time. This improves the performance of your adapter. Select this mode only if you have a full duplex switch.

- **Locally Administered Address (LAA)**
  You can optionally override the factory default network address of the adapter. To enter a new network address, type a 12-digit hexadecimal number in this box. The address entered should be in the range of 000000000000 ? FFFFFFFFFFFF. Exceptions: Do not use a multicast address (LSB of the high byte = 1). For example, in the address 0X123456789AB, X cannot be an odd number. A value of 000000000000 will default to the address set at the factory.

- **PCI Bus Efficiency**
  When enabled, this option causes all transmit packets to be coalesced into a single buffer before being sent to the network card. Because the entire frame requires only one PCI transaction, the PCI bus is more efficient but transmit time is slightly longer. When the option is disabled, the packets are not coalesced, and each packet requires several PCI transactions. The PCI bus is less efficient, but transmit time is faster.

- **Receive Buffers**
  Recommended value: 32. Range: 1 – 1024.
  Specifies how many buffers the driver is to use when copying data to the protocol memory. When the network load is high, increasing receive buffers can increase performance. The tradeoff is that this also increases the amount of system memory used by the driver. If too few receive buffers are used, performance will suffer. If too many are used, the driver will unnecessarily consume memory resources.

- **Transmit Control Blocks**
  Recommended value: 16. Range: 1 – 80.
  Specifies how many transmit control blocks the driver allocates for adapter use. This directly corresponds to how many outstanding packets the driver can have in its "send" queue. If too few transmit control blocks are used, performance will suffer. If too many transmit control blocks are used, the driver will unnecessarily consume memory resources. Transmit Control Blocks range: 1-80

- **Smart Power Down**
  Recommended value: Enabled.
  Designed for mobile computers, this feature helps extend battery life. When the feature is enabled, the adapter automatically removes power from the adapter when the LAN cable is disconnected from the adapter. Later, when the LAN cable is connected, power to the adapter is restored. If the feature is off, power is applied to the adapter at all times.

Intel Priority Packet: An Overview

Priority Packet is a traffic-prioritization utility that enables you to set up filters to process high-priority traffic before normal traffic. Using Priority Packet, you can set up filters to give priority to critical applications or users.

Prioritizing network traffic

To set up priority filters so that information from critical nodes or applications will be sent according to priority, use Intel's Priority Packet. When traffic is prioritized at the host or entry point of the network, network devices can base forwarding decisions on priority information defined in the packet.

Priority Packet prioritizes traffic on the basis of priority filters—parameters you assign to be applied to outgoing (transmit) packets. Using the Priority Filter Wizard, you can set up predefined or custom priority filters on the basis of node (MAC) address, Ethernet type, or various properties of the protocol and port. Priority Packet provides two methods for prioritizing traffic, IEEE_802.1p tagging and Intel High Priority Queue. To use Priority Packet, you need to enable the IEEE_802.1p Tagging and then install the Priority Packet.

To enable IEEE_802.1p tagging on an adapter, do as follows:

1. In the Control Panel, double-click **Network**.
2. Select the adapter and click **Properties**.
3. Select the **Advanced** tab and enable IEEE_802.1p tagging.

To install Priority Packet, run the setup program on the Drivers CD. It is at `x:\prtpkt\setup.exe`, where `x` is the drive letter of the CD-ROM drive.

Note: IEEE_802.1p tagging increases the size of the packets it tags. Some hubs and switches won't recognize the larger packets and will drop them. Check the documentation for your hubs and switches to see whether they support 802.1p. If they don't or if you're not sure, you have two choices: (1) you can use High Priority Queue (HPQ) instead (see the next section) (2) you can configure the switch to strip the tags from the packets and send them on to the next destination as normal traffic.

Intel High Priority Queue

If your network infrastructure devices don't support IEEE_802.1p, or if you're not sure, you can still define filters and send packets as high priority by assigning them to the High Priority Queue (HPQ). To do this, you use Priority Packet when you create or assign a filter. This method doesn't provide the precise priority levels of 802.1p tagging, but it does assign high or low priority to traffic and send packet with high priority first. Therefore, if there are multiple applications on a system sending packets, the packets from the application with a filter are sent out first. HPQ doesn't change network routing, nor does it add any information to the packets.

Using Wake on LAN

The Wake on LAN (WOL) feature operates according to a published specification. In simple terms, the specification enables designers to build network adapters that are capable of “listening” to network activity even when the computer is turned off. WOL adapters have a special low-power standby mode that is active when the rest of the computer is without power. The adapter will respond to a special wake-up packet sent by another computer or network device. Typically this wake-up packet causes the adapter to signal the computer to power up and run a predefined program.

Virtual LAN

A Virtual LAN (VLAN) is a logical grouping of network devices put together as a LAN regardless of their physical grouping or collision domains.

If you use the VLAN, the following is required:

- Windows NT 4.0 with Service Pack 4.0 (or later) or Service Pack 3.0 and the NDIS driver hotfix from Microsoft.

When a VLAN is used, a user see and access only specified network segments. This improves network performance and improves network security. VLANs offer the ability to group users and stations together into logical work-groups. This can simplify network administration when clients are connecting to servers that are geographically dispersed across a building, a campus, or an enterprise network.

Typically, VLANs consist of co-workers within the same department but in different locations, groups of users running the same network protocol, or a cross-functional team working on a joint project. Joining workers with VLANs forms logical working groups. Normally, VLANs are configured at the switch and any computer can be a member of one VLAN per installed network adapter. The PRO/100 adapter supersedes this by communicating directly with a switch, so that up to 64 VLANs can be on a single adapter. To set up VLAN membership, your adapter must be attached to a switch that has VLAN capability.

How to join a VLAN from Windows NT 4.0

To join a VLAN, do as follows:

1. Create a VLAN on the switch. Use the parameters you assign there to join the VLAN from the server. For more information for your switch, see the documentation.
2. Double-click **Network** in Control Panel.
3. On the Adapters tab, select the adapter you want to be on a VLAN.

4. Click **Properties**.
5. In PROSet, click **Join VLAN**.
6. Type the **VLAN ID** and the **VLAN Name**.

   Note: The VLAN ID must match the VLAN ID on the switch. The Valid ID range is from 0–4095. The VLAN Name is for informational purposes only and doesn't have to match the name on the switch.

7. Click **Join VLAN**.
8. Repeat steps 3 to 6 for each VLAN you want the server to join. The VLANs you add are listed on the **Adapters** tab.
9. Click **Close** and restart the computer.

Boot agent

The Boot Agent is a utility program that is stored in a flash memory chip on the adapter, enabling the adapter to remotely boot the system from the network by either of two methods. The default method is PXE, a remote boot procedure defined by the “Wired for Management” specifications and used by powerful network management programs, such as Intel LANDesk Management suite. The alternative method is RPL, an established industry standard historically used for remote booting of diskless workstations from network operating systems such as NetWare and Windows NT Server.

When you power on the computer in Diagnostic POST Mode (by pressing the Esc key while the IBM ThinkPad logo screen is being displayed), the Boot Agent executes and displays the following message (version number may change);

> To initialize the Intel Boot Agent Version 2.6,
> press Ctrl+S to enter into the Setup Program.

By default, this message displays for 2 seconds, and then the adapter attempts to boot the system from a local drive. If the attempt fails, the adapter attempts to boot the system remotely. To change the configuration of the Boot Agent, press Ctrl+S while this message is displayed. This opens the Boot Agent configuration screen.

There are seven configurable parameters. To select and change one of them, and save your changes, follow the on-screen instructions. They are as follows, with their options:

- **Boot Protocol**
  PXE (default): For Wired for Management compliant network management programs, such as Intel LANDesk Management Suite.
  RPL: For legacy-style remote booting.
- **PnP/BEV Boot**
  Enable (default): For normal remote boot operation.
  Disable: To use the Intel Boot Agent boot sequence rather than the computer **BIOS**.
- **Default Boot**
  Local (default): The Boot Agent attempts first to boot from a local drive, and then, if that attempt fails, to boot from the network.
  Network: The Boot Agent attempts to boot from the network first.
- **Local Boot**

Enable (default): The system boots from a local diskette drive or hard drive.
Disable: The system cannot boot from a local drive, regardless of the setting for Default Boot.

- **Prompt Time**
  The selection are **2** (default), **3**, **5**, and **8**. Choose a number to specify how many seconds the message, "Initialization Intel Boot Agent Version 2.6—Press Ctrl+S to enter the Setup Program," will be displayed when the system is booted.

- **Setup Message**
  Enable (default): The message, "Initializing Intel Boot Agent Version 2.6–Press Ctrl+S to enter the Setup program," will be displayed when the system is booted in Diagnostic POST mode.
  Disable: Only the message, "Initializing Intel Boot Agent Version 2.6" will appear. However, you can still enter the setup program by entering Ctrl+S.

- **Power Management**
  ACPI (default):
  APM: Changing from the default setting to **APM** increases the power consumption of the computer in standby state.

Using the modem

After you install the Combo card in your computer, connect a modem cable to the modem connector at the rear of the computer.

Installing the modem driver

To install the modem driver, do as follows:

1. Start Windows.

   The "New Hardware Found" dialog or the "Update Device Driver Wizard" dialog appears.

2. Click **Cancel**.

3. Insert the IBM 10/100 EtherJet Mini-PCI Adapter with 56K Modem drivers CD-ROM.

4. Click **Start** and **Run**.

5. Type `x:\MODEM\setup.exe`
   where `x` is the drive letter of the CD-ROM drive.

6. Follow the instructions on the screen.

7. Restart the system.

As you configure your communication software, you will be prompted to select a modem. Select **Xircom MPCI Modem 56 WinGlobal**.

Note: When you reinstall the Mini PCI, reinstall the drivers, too.

Using the modem abroad

This section provides the information for using the modem outside of your country. For the list of the regions of support the use of the Combo card, see the online information on your computer.

Setting up the dialing properties

When you use the Combo card outside of the country where it was set up, reset the dialing properties, as follows:

1. Click **Start** and move the cursor to **Settings**; then click **Control Panel**.

2. Double-click **Modem**.

3. Double-click **Dialing Properties**.

4. In the **Country/Region** section, select the region where you are going to use the modem.

The regions where IBM supports the use of your modem are listed in the on-line manual. If you select a region not on that list, your modem might not work correctly.

Troubleshooting

Problem	Action
Your modem does not work properly after you install the driver.	Check the following: • The cable is connected to the modem card correctly. • You selected **Xircom MPCI+ Modem 56 WinGlobal** in the application setting. • You are using the driver that is on the drivers CD shipped with the Combo card. • For Windows 95, Windows 98, or Windows 2000, the trouble indicator (an X or ! symbol) appears on the modem icon in the "Device Manager." • For Windows NT 4.0, the Windows NT 4.0 Event Viewer shows an error message. If these items are OK, do the following: 1. Click **Start**. 2. Move the cursor to **Settings**, and click **Control Panel**. 3. Double-click **Modem**. 4. Click **Properties**. 5. Click the **Connection** tab. 6. Clear the **Wait for dial tone before dialing** check box. 7. Click **Advanced**. 8. Clear the **Use error control** check box. 9. Select the **Use flow control** check box, and make sure that **Hardware (RTS/CTS)** is selected. 10. Click the **OK** button to return to the **Modem Properties** window. 11. Click **Dialing Properties**, and click either **Tone dialing** or **Pulse dialing**. Most telephones today use tone dialing. 12. Close all the windows opened in this process.

Advanced information

Command Set

- V.250
- TIA-602
- Identification: +GMI, +GMM, +GMR
- Port control: +IPR, +ICF, +IFC, +Ilrr
- Modulation: +MS, +MR, +MA
- Error control: +ES, +ER, +EB, +ESR, +ETBM
- Data compression: +DS, +DR
- V.251

Modem AT Commands

Command	Description
+++	Escape sequence: Exit data mode and enter on-line command mode.
A/	Repeat last command: Repeat the preceding command. Note: Do not precede with AT or follow with Enter.
A	Answer command: Answer an incoming call.
Bn	Communication standard setting: Determines CCITT vs. Bell standard **B0:** Selects ITU/CCITT V.22 mode @ 1200 bps. **B1:** Selects BELL 212A @ 1200 bps (defaults). **B2:** Unselects V23 reverse channel (same as B3). **B3:** Unselects V23 reverse channel (same as B2). **B15:** Selects ITU/CCITT V.21mode @ 300 bps. **B16:** Selects BELL 103J mode @ 300 bps.
Cn	Carrier control: **C0:** Transmit carrier always off. **C1:** Normal transmit carrier switching.
Dn	Dial command: Dial a telephone number n (n=0-9, A-D, #, *) automatically. You can also assign the following: **s=L:** Redials the last number dialed. **s=P:** Specifies pulse dial. **s=T:** Specifies tone dial (default). **s=W** Waits for a second dial tone. **s=,** Specifies pause. **s=@** Waits for 5 seconds of silence. **s=!** Specifies flash. **s=;** Returns to command mode after dialing. **s=$** Detects bong tone.
DS=n	Dial command: Dial one of four telephone numbers (n=0-3) stored in the modem's nonvolatile memory.

Command	Description
En	Echo command: **E0:** Disables echo to the computer. **E1:** Enables echo to the computer (default).
Fn	Online data character echo command: Determines whether the modem will echo data from the DTE. **F0:** Online data character echo enabled (NOT SUPPORTED). **F1:** Online data character echo disabled.
Hn	Hook control: Controls on-hook/off-hook. **H0:** Modem goes on-hook (default). **H1:** Modem goes off-hook.
I	Request ID information: Displays specific product information about the modem. **I0:** Specifies the firmware and device ID. **I1:** Specifies the checksum code. **I2:** Start the ROM test and verifies the checksum. **I3:** Specifies the firmware and device ID (same as I0). **I4:** Specifies the firmware version for data pump. **I5:** Specifies the code version, board ID, country ID, and subsystem vendor ID in hex. **I6-8:** Returns OK for compatibility. **I9:** Specifies country ID in English. **I11:** Displays connection information.
L	Monitor speaker volume: Sets speaker volume. **L0:** Selects low volume. **L1:** Selects low volume. **L2:** Selects medium volume (default). **L3:** Selects high volume.
M	Monitor speaker mode: Controls speaker mode. **M0:** The speaker is off. **M1:** The speaker is on until the modem detect the carrier signal (default). **M2:** The speaker is always on when modem is off-hook. **M3:** The speaker is on until the carrier is detected, except when dialing.
N	Modulation handshake: Controls whether the local modem performs a negotiated handshake. **N0:** Disables auto mode, with the modem handshake speed specified by S37. **N1:** Enables auto mode, with the modem handshake speed specified by S37 (default).
O	Return to on-line data mode: **O0:** Returns to data mode. **O1:** Starts an equalizer retain and return to data mode. **O3:** Starts a rate renegotiation and return to data mode.
P	Select pulse dialing.
Q	Result code control: Turns result code on or off. **Q0:** Enables result codes (default). **Q1:** Disables result codes.

<table>
<tr><th>Command</th><th>Description</th></tr>
<tr><td>Sn</td><td>Control S register:

Sn?: Read the S register n?, where n=0-110.
Sn=r: Set the S register n to value r (n=0-110, r=0-255).</td></tr>
<tr><td>T</td><td>Select tone dialing.</td></tr>
<tr><td>V</td><td>DCE response format:
Control the result code format.

V0: Displays result code as digits.
V1: Displays result code as text (default).</td></tr>
<tr><td>W</td><td>Result code option:

W0: CONNECT result code reports DTE receive speed. Disable protocol result codes.
W1: CONNECT result code reports DTE receive speed. Enable protocol result codes.
W2: CONNECT result code reports DCE receive speed. Enable protocol result codes (defaults).</td></tr>
<tr><td>X</td><td>Result code selection and call progress monitoring:
Control the tone detection option used in the dialing process.

<table>
<tr><th></th><th>Ext. Result Code</th><th>Dial Tone Detect</th><th>Busy Tone Detect</th></tr>
<tr><td>X0</td><td>Disable</td><td>Disable</td><td>Disable</td></tr>
<tr><td>X1</td><td>Enable</td><td>Disable</td><td>Disable</td></tr>
<tr><td>X2</td><td>Enable</td><td>Enable</td><td>Disable</td></tr>
<tr><td>X3</td><td>Enable</td><td>Disable</td><td>Enable</td></tr>
<tr><td>X4</td><td>Enable</td><td>Enable</td><td>Enable (default)</td></tr>
<tr><td>X5</td><td>Enable</td><td>Enable</td><td>Enable</td></tr>
<tr><td>X6</td><td>Enable</td><td>Enable</td><td>Enable</td></tr>
<tr><td>X7</td><td>Disable</td><td>Enable</td><td>Enable</td></tr>
</table>
</td></tr>
<tr><td>Y</td><td>Long-space disconnect:
Long space disconnect is always disabled.

Y0: Disable long space disconnect (default).
Y1: Enable long space disconnect (NOT SUPPORTED).</td></tr>
<tr><td>Z</td><td>Reset and recall stored profile.</td></tr>
<tr><td>&B</td><td>V.32 auto retrain:
This modem always auto retrains.

&B0: Disable V.32 auto retrain (NOT SUPPORTED).
&B1: Enable V.32 auto retrain (default).</td></tr>
<tr><td>&C</td><td>Data carrier detect (DCD) control:

&C0: Specifies that carrier detect (CD) is always on.
&C1: Turns on CD when the remote carrier is present (default).</td></tr>
<tr><td>&D</td><td>Data terminal ready (DTR):

&D0: Ignores the DTR signal.
&D1: Return the modem to command mode after a DTR toggle.
&D2: Hangs up the modem and returns to command mode after a DTR toggle (default).
&D3: Resets the modem after a DTR toggle.</td></tr>
<tr><td>&F</td><td>Local factory settings:
Loads the factory default configuration.</td></tr>
<tr><td>&G</td><td>V.22bis guard tone control:
Determines which guard tone to transmit while transmitting in the high band.

&G0: Disable the guard tone (default).
&G1: Enables a 550-Hz guard tone.
&G2: Enables a 1800-Hz guard tone.</td></tr>
</table>

Command	Description
&J	Auxiliary relay option: **&J0:** The auxiliary relay is never closed (default). **&J1:** NOT SUPPORTED.
&K	Local flow control selection: **&K0:** Disables flow control. **&K1:** Reserved. **&K2:** Reserved. **&K3:** Enable RTS/CTS (hardware) flow control (default). **&K4:** Enable XON/XOFF flow control.
&M	Asynchronous communications mode: **&M0:** Asynchronous mode (default). **&M1:** Reserved. **&M2:** Reserved. **&M3:** Reserved. **&M4:** Reserved.
&Pn	Pulse dial make-to-break ratio selection: This command is effective only for Japan. **&P0:** 39/61 make/break ratio, 10PPS. **&P1:** 33/67 make/break ratio, 10PPS (default). **&P2:** 33/67 make/break ratio, 20PPS.
&Q	Asynchronous communications mode. **&Q0:** Asynchronous mode, buffered. Same as \N0. **&Q5:** Error control mode, buffered (default). Same as \N3. **&Q6:** Asynchronous mode, buffered. Same as \No. **&Q8:** MNP error control mode. If an MNP error control protocol is not established, the modem will fall back according to the current user setting in S36. **&Q9:** V.42 or MNP error control mode. If neither error control protocol is established, the modem will fall back according to the current user setting in S36.
&S	Data set ready (DSR) option: This command selects DSR action. **&S0:** DSR always ON (default). **&S1:** DSR comes on when a connection is established, and goes off when the connection ends.
&T	Self-test commands: Perform diagnostic tests on the modem. **&T0:** Abort. Stops any test in progress. **&T1:** Local analog loop. **&T3:** Local digital loopback test. **&T6:** Remote digital loopback test.
&V	View the active configuration: This command is used to display the active profiles.
&W	Store current configuration: Store certain command options and S-register value except S3, S4, S5.
&Y	Select stored profile for hard reset: For compatibility with applications that issue the &Y0 command. **&Y0:** Select stored profile 0 on power-up. **&Y1:** ERROR.
&Z	Store telephone number: Store up to 4 dialing strings.

Command	Description
\A	Select maximum MNP block size: **\A0:** 64 characters. **\A1:** 128 characters. **\A2:** 192 characters. **\A3:** 256 characters.
\B	Transmit break to remote: **\Bn:** Break length in 100ms units (n=1-9, default: 3).
\G	Modem port flow control: **\G0:** Modem process XON/XOFF flow control characters locally (default). **\G1:** Modem process XON/XOFF flow control characters.
\J	Adjust bits rate control: **\J0:** Buffer mode. Error control selected by \Nn command (default). **\J1:** Force the max DCE rate to the DTE rate.
\K	Send break control: • When the modem, operating in data transfer mode, receives a break from the DTE. **\K0:** Enter on-line command mode: do not send break to the remote modem. **\K1:** Clear data buffers and send break to remote modem. **\K2:** Same as 0. **\K3:** Send break to remote modem immediately. **\K4:** Same as 0. **\K5:** Send break to remote modem in sequence with transmitted data (default). • When the modem is in the on-line command state during a data connection, and the \B is received in order to send a break to the remote modem. **\K0:** Clear data buffers and send break to remote modem. **\K1:** Clear data buffers and send break to remote modem (same as 0). **\K2:** Send break to remote modem immediately. **\K3:** Send break to remote modem immediately (same as 2). **\K4:** Send break to remote modem in sequence with data. **\K5:** Send break to remote modem in sequence with data. (same as 4) (default) • When there a break is received from a remote modem during a connection. **\K0:** Clear data buffers and send break to the DTE. **\K1:** Clear data buffers and send break to the DTE (same as 0). **\K2:** Send break to remote modem immediately. **\K3:** Send break to remote modem immediately (same as 1). **\K4:** Send break in sequence with received data to DTE. **\K5:** Send break in sequence with received data to DTE (same as 4) (default).
\N	Error control mode selection: **\N0:** Buffer mode. No error control (same as &Q6). **\N1:** Direct mode. **\N2:** MNP or disconnect mode. **\N3:** V.42, MNP or buffer (default). **\N4:** V.42 or disconnect. **\N5:** V.42, MNP or buffer (same as \N3). **\N7:** V.42, MNP or buffer (same as \N3).

Command	Description
\Q	Local flow control selection: **\Q0:** Disable flow control. Same as &K0. **\Q1:** XON/XOFF software control. Same as &K4. **\Q2:** CTS-only flow control. This is not supported and the response is ERROR. **\Q3:** RTS/CTS to DTE (default). Same as &K3.
\R	Ring indicator off after answer: **\R0:** Ring indicator signal if off after the telephone call is answered.
\T	Inactivity timer: **\T0:** Inactivity timer disabled (default). **\Tn:** Inactivity timer, n minutes (n=1-255).
\V	Protocol result code: **\V0:** Disable protocol result code appended to DCE speed. **\V1:** Enable protocol result code appended to DCE speed (default). **\V2:** Same as \V1.
\X	XON/XOFF pass through: **\X0:** Modem process XON/XOFF flow control characters locally (default). **\X1:** Modem passes XON/XOFF flow control characters.
%B	View numbers in blacklist: Displays the numbers for which the last call attempted in the passed two hours failed.
%C	Data compression control: **%C0:** V.42bis/MNP5 disabled. No data compression. **%C1:** V.42bis/MNP5 enabled. Data compression enabled (default).
%E	Automatic rate change: **%E0:** Disable fallback or fall forward. **%E1:** Enable fallback, disable fall forward. **%E2:** Enable fallback or fall forward (default).
-C	Data calling tone: **-C0:** Disabled (default). **-C1:** Enabled
-V90	Enable/disable V.90 setting: **-V90=0:** Disables V.90. **-V90=1:** Enables V.90 auto rate (default). **-V90=n:** Controls the downstream rate (2-23). **-V90=?:** Shows the range of n. **-V90?:** Shows the current value.

Modem S Registers

Register	Function	Register/Units
S0	Auto Answer Ring Number	0-255 rings
S1	Ring Counter	0-255 rings
S2	AT Escape Character (user-defined)	0-127 ASCII

Register	Function	Register/Units
S3	Command Line Termination Character (user-defined)	0-127 ASCII
S4	Response Formatting Character (user-defined)	0-127 ASCII
S5	Command Line Editing Character (user-defined)	0-127 ASCII
S6	Wait Before Dialing	2-65 seconds
S7	Connection Completion Time-Out	1-255 seconds
S8	Comma Dial Modifier Time	0-65 seconds
S10	Automatic Disconnect Delay	1-254/10ths of a second
S11	DTMF Dialing Speed	50-150 ms
S12	Escape Guard Time	0-255/50ths of a second
S14	General Bit Mapped Options Status	Only bit 2 and bit 6 are used. Bit 3: Result codes (Vn) • 0=Numeric(V0) • 1=Verbose(V1) Bit 6: Pulse dial PPS selection (&Pn) • 0=10 PPS (&p0, &p1) • 1=20 PPS (&p2)
S21	V.24/General Bit Mapped Options Status	Only bits 3, 4, and 5 are used. Bits 3-4: DTR behavior (&Dn) • 0=&D0 selected • 1=&D1 selected • 2=&D2 selected • 3=&D3 selected Bit 5: DCD behavior (&Cn) • 0=&C0 selected • 1=&C1 selected
S22	Results Bit Mapped Options Status	Only bits 4, 5, and 6 are used. Bits 4-5: result codes (Xn) • 0=X0 selected • 4=X4 selected • 5=X5 selected • 6=X6 selected • 7=X7 selected
S24	Timer to Control Sleep Mode	0, 5-65 seconds
S28	V.34 Modulation Enable/Disable	• 0=Disabled • 1=Enabled
S30	Inactivity Timer	0-255 minutes
S32	Synthetic Ring Volume	0-255
S33	Synthetic Ring Frequency	0-5

Register	Function	Register/Units
S35	Data Calling Tone • 0=Disabled • 1=Enabled	
S36	Negotiation Fallback	See S48
S37	Dial Line Rate	• 0=Auto Rate • 1=reserved • 2=1200/75 bit/s (V.23) • 3=300 bit/s • 4=reserved • 5=1200 bit/s • 6=2400 bit/s • 7=4800 bit/s • 8=7200 bit/s • 9=9600 bit/s • 10=12000 bit/s • 11=14400 bit/s • 12=16800 bit/s • 13=19200 bit/s • 14=21600 bit/s • 15=24000 bit/s • 16=26400 bit/s • 17=28800 bit/s • 18=31200 bit/s • 19=33600 bit/s
S38	K56flex Downstream Rate	• 0=Disable K56flex • 1=Automatic rate selection • 2=32 kbit/s • 3=34 kbit/s • 4=36 kbit/s • 5=38 kbit/s • 6=40 kbit/s • 7=42 kbit/s • 8=44 kbit/s • 9=46 kbit/s • 10=48 kbit/s • 11=50 kbit/s • 12=52 kbit/s • 13=54 kbit/s • 14=56 kbit/s
S42	Auto Rate	This command is used for testing and debugging only. • 0=Disabled • 1=Enabled
S43	Auto Mode	This command is used for testing and debugging only. • 0=Disabled • 1=Enabled

Register	Function	Register/Units
S48	LAPM Error Control and Feature Negotiation	• 7=Enabled • 128=Disabled • S48=7 • S48=128 • S36=0, 2: LAPM or hangup; do not use • S36=1, 3: LAPM or async • S36=4, 6: LAPM, MNP, hangup MNP, or hangup • S36=5, 7: LAPM, MN,P async MNP, or async
S89	Timer to Control Sleep Mode	0, 5-65 seconds
S90	Read-only Local Phone	• 0=on-hook • 1=off-hook
S91	Line Transmit Level	6-15 dB
S108	Network Codec Type	• 22=μ-Law • 33=A-Law • 7=V.8 information. Or choose on the basis of its country ID.

Modem Messages

Result Code	Numeric	Description
OK	0	Command executed
CONNECT	1	Modem connected to line
RING	2	A ring signal has been detected
NO CARRIER	3	Modem lost carrier signal, or does not detect carrier signal, or does not detect answer tone
ERROR	4	Invalid command
CONNECT 1200EC	5	Connection at 1200 bit/s
NO DIALTONE	6	No dial tone detected
BUSY	7	Busy signal detected
NO ANSWER	8	Remote end never answered
CONNECT 2400 EC	10	Connection at 2400 bit/s
CONNECT 4800 EC	11	Connection at 4800 bit/s
CONNECT 9600 EC	12	Connection at 9600 bit/s
CONNECT 14400 EC	13	Connection at 14400 bit/s
CONNECT 19200 EC	14	Connection at 19200 bit/s

Result Code	Numeric	Description
CONNECT 7200 EC	24	Connection at 7200 bit/s
CONNECT 12000 EC	25	Connection at 12000 bit/s
CONNECT 16800 EC	86	Connection at 16800 bit/s
CONNECT 300 EC	40	Connection at 300 bit/s
CONNECT 21600 EC	55	Connection at 21600 bit/s
CONNECT 24000 EC	56	Connection at 24000 bit/s
CONNECT 26400 EC	57	Connection at 26400 bit/s
CONNECT 28800 EC	58	Connection at 28800 bit/s
CONNECT 31200 EC	59	Connection at 31200 bit/s
CONNECT 33600 EC	60	Connection at 33600 bit/s
CONNECT 38400 EC	28	Connection at 38400 bit/s (DTE rate)
CONNECT 57600 EC	18	Connection at 57600 bit/s (DTE rate)
CONNECT 115200 EC	87	Connection at 115200 bit/s (DTE rate)
DELAYED	88	Delay is in effect for the dialed number
BLACKLISTED	89	Dialed number is blacklisted
BLACKLIST FULL	90	Blacklist is full
CONNECT 32000 EC	70	Connection at 32000 bit/s (K56flex mode or V.90)
CONNECT 34000 EC	71	Connection at 34000 bit/s (K56flex mode)
CONNECT 36000 EC	72	Connection at 36000 bit/s (K56flex mode or V.90)
CONNECT 38000 EC	73	Connection at 38000 bit/s (K56flex mode)
CONNECT 40000 EC	74	Connection at 40000 bit/s (K56flex mode or V.90)
CONNECT 42000 EC	75	Connection at 42000 bit/s (K56flex mode)
CONNECT 44000 EC	76	Connection at 44000 bit/s (K56flex mode or V.90)
CONNECT 46000 EC	77	Connection at 46000 bit/s (K56flex mode)
CONNECT 48000 EC	78	Connection at 48000 bit/s (K56flex mode or V.90)
CONNECT 50000 EC	79	Connection at 50000 bit/s (K56flex mode)
CONNECT 52000 EC	80	Connection at 52000 bit/s (K56flex mode or V.90)
CONNECT 54000 EC	81	Connection at 54000 bit/s (K56flex mode)
CONNECT 56000 EC	82	Connection at 56000 bit/s (K56flex mode or V.90)
CONNECT 28000 EC	100	Connection at 28000 bit/s (V.90 mode)
CONNECT 29333 EC	101	Connection at 29333 bit/s (V.90 mode)
CONNECT 30666 EC	102	Connection at 30666 bit/s (V.90 mode)
CONNECT 33333 EC	103	Connection at 33333 bit/s (V.90 mode)
CONNECT 34666 EC	104	Connection at 34666 bit/s (V.90 mode)

Result Code	Numeric	Description
CONNECT 37333 EC	105	Connection at 37333 bit/s (V.90 mode)
CONNECT 38666 EC	106	Connection at 38666 bit/s (V.90 mode)
CONNECT 41333 EC	107	Connection at 41333 bit/s (V.90 mode)
CONNECT 42666 EC	108	Connection at 42666 bit/s (V.90 mode)
CONNECT 45333 EC	109	Connection at 45333 bit/s (V.90 mode)
CONNECT 46666 EC	110	Connection at 46666 bit/s (V.90 mode)
CONNECT 49333 EC	111	Connection at 49333 bit/s (V.90 mode)
CONNECT 50666 EC	112	Connection at 50666 bit/s (V.90 mode)
CONNECT 53333 EC	113	Connection at 53333 bit/s (V.90 mode)
CONNECT 54666 EC	114	Connection at 54666 bit/s (V.90 mode)

Appendix A. Help and service information

This section contains information on how to obtain online and telephone technical support.

Online technical support

Online technical support is available during the life of your product. Online assistance can be obtained through the Personal Computing Support Web site and the IBM Automated Fax System.

Online technical support	
IBM Personal Computing Support Web Site	http://www.ibm.com/pc/support
IBM Automated Fax System	1-800-426-3395 (U.S. and Canada)

During the warranty period, assistance for replacement or exchange of defective components is available. In addition, if your IBM option is installed in an IBM computer, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

Telephone technical support

Marketing, installation, and configuration support through the HelpCenter will be withdrawn or made available for a fee, at IBM's discretion, 90 days after the option has been withdrawn from marketing. Additional support offerings, including step-by-step installation assistance, are available for a nominal fee.

To assist the technical support representative, have available as much of the following information as possible:

1. Option name
2. Option number
3. Proof of purchase
4. Computer manufacturer, model, serial number (if IBM), and manual
5. Exact wording of the error message (if any)
6. Description of the problem
7. Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

For the support telephone number and support hours by country, refer to the following table or to the enclosed technical support insert. If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

Support 24 hours a day, 7 days a week	
Canada (Toronto only)	416-383-3344
Canada (all other)	1-800-565-3344
U.S.A./Puerto Rico	1-800-772-2227

Appendix B. Product warranties and notices

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for both statements. Be sure to read both the Part 1 that applies to your country and Part 2.

- **United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**
  (Part 1 - General terms on page 30)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
  (Part 1 - General terms on page 32)
- **Worldwide country-unique terms**
  (Part 2 - Country-unique terms on page 34)

IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 - General Terms)

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-Unique Terms. **The terms of Part 2 may replace or modify those of Part 1**. *The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.*

Machine - IBM 10/100 EtherJet Mini-PCI Adapter with 56K Modem

Warranty Period* - One year

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for on-site warranty service depending on the country where service is performed.*

The IBM warranty for machines
IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of warranty
The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items not covered by warranty
IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty service
To obtain warranty service for the Machine, contact your reseller or IBM. In the United States, call IBM at 1-800-772-2227. In Canada, call IBM at 1-800-565-3344. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
   a) follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
   b) secure all programs, data, and funds contained in a Machine,
   c) provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
   d) inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production status
Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of liability
Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. $100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

   This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 - General Terms)

This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-Unique Terms. **The terms of Part 2 may replace or modify those of Part 1**. *The warranties provided by IBM in this Statement of Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.*

Machine - IBM 10/100 EtherJet Mini-PCI Adapter with 56K Modem

Warranty Period* - One year

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for on-site warranty service depending on the country where service is performed.*

The IBM warranty for machines
IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of warranty
The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for

which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items not covered by warranty
IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty service
To obtain warranty service for the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
   a) follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
   b) secure all programs, data, and funds contained in a Machine,
   c) provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
   d) inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production status
Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of liability
Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. $100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

   This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Part 2 - Worldwide Country-Unique Terms

ASIA PACIFIC

AUSTRALIA: The IBM warranty for machines: The following paragraph is added to this Section:
The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other legislation and are only limited to the extent permitted by the applicable legislation.

Extent of warranty: The following replaces the first and second sentences of this Section:
The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

Limitation of liability: The following is added to this Section:
Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

PEOPLE'S REPUBLIC OF CHINA: Governing law: The following is added to this Statement:
The laws of the State of New York govern this Statement.

INDIA: Limitation of liability: The following replaces items 1 and 2 of this Section:
1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

NEW ZEALAND: The IBM warranty for machines: The following paragraph is added to this Section:

The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of liability: The following is added to this Section:
Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

The following terms apply to all EMEA countries.

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

Warranty service
If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

The applicable laws, country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

The following terms apply to the country specified:

EGYPT: Limitation of liability: The following replaces item 2 in this Section:
2. as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

FRANCE: Limitation of liability: The following replaces the second sentence of the first paragraph of this Section:
In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

GERMANY: The IBM warranty for machines: The following replaces the first sentence of the first paragraph of this Section:
The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:
The minimum warranty period for Machines is six months.

In case IBM or your reseller are unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of warranty: The second paragraph does not apply.

Warranty service: The following is added to this Section:
During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Production status: The following paragraph replaces this Section:
Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

Limitation of liability: The following is added to this Section:
The limitations and exclusions specified in the Statement of Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

In item 2, replace “U.S. $100,000” with “1.000.000 DM.”

The following sentence is added to the end of the first paragraph of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND: Extent of warranty: The following is added to this Section:
Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of liability: The following replaces items one and two of the first paragraph of this Section:
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and 2. the amount of any other actual direct damages, up to the greater of Irish Pounds 75,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY: Limitation of liability: The following replaces the second sentence in the first paragraph:
In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2)as to any other actual damage arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:
Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: (items 1 and 2 unchanged) 3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO, AND SWAZILAND: Limitation of liability:
The following is added to this Section:
IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKIYE: Production status: The following replaces this Section:
IBM fulfils customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

UNITED KINGDOM: Limitation of liability: The following replaces items 1 and 2 of the first paragraph of this Section:
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to the greater of Pounds Sterling 150,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

The following item is added to this paragraph:
3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default will be limited to damages.

NORTH AMERICA

CANADA: Warranty service: The following is added to this Section:
To obtain warranty service from IBM, call **1-800-565-3344**.

UNITED STATES OF AMERICA: Warranty service: The following is added to this Section:
To obtain warranty service from IBM, call **1-800-772-2227**.

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Subject to IBM's valid intellectual property or other legally protectable rights, any functionally equivalent product, program, or service may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

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Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

HelpCenter IBM EtherJet

Microsoft and Windows are trademarks of Microsoft Corporation in the United States or other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

Appendix C. Regulatory Agency Notices

FCC Regulations - Part 15

Declaration of Conformity (DoC)

Xircom, Inc. declares that the equipment described in this document is within the requirements of the Code of Federal Regulations listed below: Title 47 Part 15, Subpart B, Class B for a digital device. This declaration is based upon compliance of the Xircom Mini PCI Modem 56 model MPCI3A56G-100 to the above standards. Xircom has determined that model MPCI3A56G-100 has been shown to comply with the applicable technical standards if no unauthorized change is made in the equipment and if the equipment is properly maintained and operated. These units are identical to the units tested and found acceptable with the applicable standards. Records maintained by Xircom continue to reflect that units being produced under this Declaration of Conformity, within the variation that can be expected due to quantity production and tested on a statistical basis, continue to comply with the applicable technical standards.

Authorized Signature:

R.W. Bass
Vice President, Operations
Xircom, Inc.
2300 Corporate Center Drive
Thousand Oaks, California 91320
U.S.A.

FCC Rules and Regulations - Part 15

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. The Xircom Mini PCI Modem 56 complies with the FCC Rules for a Class B digital device. As required by FCC Rules and Regulations, the following Class B information is provided for the guidance of the user.

Warning: This equipment has been tested and found to comply with the limits for Class B digital devices 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 the 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. Changes or modifications to the digital device not expressly approved by Xircom Inc. could void the user's authority to operate the equipment.

It is suggested that only shielded and grounded cables be used with the equipment to ensure compliance with FCC rules.

Responsible party: Xircom, Inc.
2300 Corporate Center Drive
Thousand Oaks, CA 91320-1420 U.S.A.
Telephone 1-805-376-9300

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Industry Canada Class B emission compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de classe B est conforme à la norme NMB-003 du Canada.

Deutsche EMV-Direktive (electromagnetische Verträglichkeit)

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

European Union - emission directive

This product is in conformity with the protection requirements of EU Council Directive 89/366/ECC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Union Européenne - Directive Conformité électromagnétique

Ce produit est conforme aux exigences de protection de la Directive 89/336/EEC du Conseil de l'UE sur le rapprochement des lois des États membres en matière de compatibilité électromagnétique.

IBM ne peut accepter aucune responsabilité pour le manquement aux exigences de protection résultant d'une modification non recommandée du produit, y compris l'installation de cartes autres que les cartes IBM.

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe B en vertu de CISPR22 / Standard européen EN 55022. Les conditions pour l'équipement de Classe B ont été définies en fonction d'un contexte résidentiel ordinaire afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

Unione Europea - Directiva EMC (Conformidad électromagnética)

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislatura de los Estados Miembros sobre compatibilidad electromagnética se refiere.

IBM no puede aceptar responsabilidad alguna si este producto deja de satisfacer dichos requisitos de protección como resultado de una modificación no recomendada del producto, incluyendo el ajuste de tarjetas de opción que no sean IBM.

Este producto ha sido probado y satisface los límites para Equipos Informáticos Clase B de conformidad con el Estándar CISPR22 y el Estándar Europeo EN 55022. Los límites para los equipos de Clase B se han establecido para entornos residenciales típicos a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

Union Europea - Normativa EMC

Questo prodotto è conforme alle normative di protezione ai sensi della Direttiva del Consiglio dell'Unione Europea 89/336/CEE sull'armonizzazione legislativa degli stati membri in materia di compatibilità elettromagnetica.

IBM non accetta responsabilità alcuna per la mancata conformità alle normative di protezione dovuta a modifiche non consigliate al prodotto, compresa l'installazione di schede e componenti di marca diversa da IBM.

Le prove effettuate sul presente prodotto hanno accertato che esso rientra nei limiti stabiliti per le le apparecchiature di informatica Classe B ai sensi del CISPR 22 / Norma Europea EN 55022. I limiti delle apparecchiature della Classe B sono stati stabiliti al fine di fornire ragionevole protezione da interferenze mediante dispositivi di comunicazione in concessione in ambienti residenziali tipici.

Korean B급 규격 증명서

이 장치는 옥내용으로 보증되었으며 모든 환경에서 사용할 수 있습니다.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

FCC Regulations - Part 68

To comply with the Federal Communications Commission (FCC) Rules and Regulations, Part 68, these instructions must be followed:

1. Your modem must not be connected to a party line or coin-operated telephone.
2. If a problem occurs on the telephone line, your modem must be disconnected from the telephone line until it has been determined that your modem is not the cause of the problem.
3. All repairs to your modem must be made by Xircom, Inc. Unauthorized or unorthodox repair methods can alter the modem's radio frequency emissions and other characteristics sufficiently to void your authority to operate the modem over a public telephone network.
4. If requested, you must be prepared to provide the telephone company with the following information:

   Equipment Manufacturer: Xircom, Inc.
   2300 Corporate Center Drive
   Thousand Oaks, CA 91320-1420 U.S.A.

   Model: MPCI3A56G-100

   FCC Registration Number: See the unit labeling.

   Ringer Equivalency Number:
   1.0 (B)

This equipment complies with Part 68 of the FCC Rules. On the Xircom Mini PCI Modem 56 is a label that contains, among other information,the FCC Registration Number and Ringer Equivalency Number (REN) for this equipment. You must, upon request, provide this information to your telephone company. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all those devices ring when

your telephone number is called. In most but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact Xircom, Inc. at (805) 376-9200 for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. There are no user serviceable parts contained in this equipment.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic devices, including fax machines, to send any message 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. (The telephone number provided may not be a 900 number or any other for which charges exceeds local or long-distance transmission charges.) In order to program this information into your fax software, you should refer to the manual of the Fax software being used.

Canadian Department of Communications

Industry Canada (IC) Notice

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Le présent appareil numérique n'émet pas de bruits radioelectriques depassant les limites applicables aux appareils numériques de Classe B prescrites dans le rèlement sur le brouillage radioelectrique edicte par le Ministère des Communications du Canada.

NOTICE: The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's 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. 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 coordinated by a representative designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telephone communications 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.

Attention: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

REN: 0.5 (A)

European Community –CE Mark

Declaration of Conformity

Xircom, Inc. declares that the equipment described in this document is in conformance with the requirements of the European Council Directive listed below:

73/23/EEC Low Voltage Directive with Amendment

93/68/EEC

89/336/EEC EMC Directive with Amendments

92/31/EEC and 93/68/EEC

98/13/EC Telecommunications Terminal Equipment and Satellite Earth Station Equipment with Council Decision 98/482/EC for pan-European single terminal connection to the public switched network (PSTN).

This declaration is based upon compliance of the product to the following standards:

EN 60950 (1992 w/ A1, 2, 3, 4, &11) Product Safety

EN 55022 (C.I.S.P.R. 22 Class B) RF Emissions Control

EN 50082-1 (IEC 801-2, 3, & 4) Immunity to Electromagnetic Disturbances

CTR21 (TBR21) pan-European PSTN

Xircom, Inc. also declares its awareness of the Advisory Notes contained in E.T.S.I. Guides EG 201 120 & EG 201 121, including any amendments thereto.

Product Description: Mini PCI Modem 56 +10/100 Ethernet

Model: MPCI3A56G-100

Responsible party: R.W. Bass,
Vice President, Operations Xircom, Inc.
2300 Corporate Center Drive
Thousand Oaks, California 91320 U.S.A.

The CE Mark approval is indicated on your Xircom modem by the CE Mark logo on the back of the card. Country-specific approval numbers are no longer required. The CE Mark logo indicates that the Xircom product has been tested and found to be compliant with the appropriate regulations as listed in the Declaration of Conformity above, and therefore can be used in any of the countries of the EU.

Note: These regulations do not affect GlobalACCESS features of the Xircom modem, including use on networks of countries outside the European Union.

Compliance Notice

The equipment has been approved in accordance with Council Decision 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity. This device is telecommunications terminal equipment intended to be connected directly to the public telecommunications network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point. In the event of problems, contact your equipment supplier in the first instance.

Network Compatibility Declaration

The manufacturer: Xircom Inc, 2300 Corporate Center Drive Thousand Oaks, California 91329 USA, declares its awareness of the Advisory Notes contained in ETSI Guides EG 201 120 and EG 201 121, including any amendments thereto, and indicates below the networks with which the product MPCI3A56G-100 is designed to work and any notified networks with which there may be interworking difficulties.

These products are designed to work on PSTNs in the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland, The Netherlands, United Kingdom. Use the Xircom country selection features of provide with your Xircom modem to configure your modem for these countries.

New Zealand Telepermit Compliance Notes

General

The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

Important Notice

Under power failure conditions, this telephone may not operate. Please ensure that a separate telephone, not dependent on local power, is available for emergency use.

Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. The associated equipment shall be set to operate within the following limits for compliance with Telecom's Specification:

- There shall be no more than 10 call attempts to the same number in any 30 minute period for any single manual call initiation, and
- The equipment shall go on-hook for a period of not less than 30 seconds between the end of one call attempt and the beginning of the next attempt.

- Where automatic calls are made to different numbers, the equipment shall go off-line for a period of not less than 5 seconds between the end of one call attempt and the beginning of the next attempt.
- When used in the automatic answer mode, the equipment shall be set to answer within 3 and 30 seconds of the receipt of ringing. This can be achieved by setting the AT 0 register between 2 and 10.

Appendix D. User Notices

- This card is intended for use with UL1950/EN60950/IEC60950 (or other NTRL) listed ITE computers that contain a Mini PCI type 3A connector.
- Care should be taken to avoid damaging the insulation tape on the Xircom Mini PCI Modem 56 + 10/100 Ethernet card. Do not cut, tear, pierce, or remove the insulation tape.
- (English) ATTENTION: To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

  (Francais) ATTENTION: Pour réduire le risque d'incendie, utiliser uniquement des conducteurs de telecommunications 26 AWG ou de section supérieure.

Germany

The MPCI3A56G-100 is designed only for connection to the analogue public switched telephone network (PSTN). Please connect the cable from the MPCI3A56G-100 with the wired plug connector code F with the wire down in the wall socket (TAE 6) code F. The MPCI3A56G-100 can be used as a single device.