

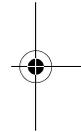
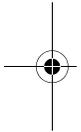


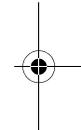
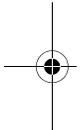
# Intel® EtherExpress™ PRO/100 Mobile CardBus Adapter *User's Guide*

For information on DOS, IBM OS/2, 32-bit ODI drivers, and Windows 3.x, and supplementary information on Windows 95, see the Windows Help file **HELP-DOCS.HLP** on the Intel Installation Disk. Also view the **README.TXT** file on the Intel Installation Disk.

Visit the Intel website at <http://support.intel.com> for software updates and supplementary technical information.

See **Appendix A. Support Services** in this User's Guide for worldwide access to Intel Customer Support.





Copyright © 1998 Intel Corporation. All rights reserved.

Intel Corporation  
5200 N.E. Elam Young Parkway  
Hillsboro, OR 97124-6497

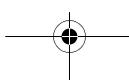
Intel Corporation assumes no responsibility for errors or omissions in this guide. Nor does Intel make any commitment to update the information contained herein.

\* Other product and corporate names may be trademarks of other companies and are used only for explanation and to the owners' benefit, without intent to infringe.

Third edition

August 1998

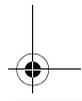
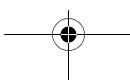
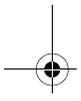
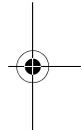
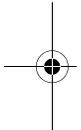
668559-003





# Contents

- Hardware Installation ..... 5**
  - Installation Overview ..... 5
  - Before Installing Hardware..... 5
  - Installing the Hardware ..... 6
  
- Windows 95 and 98 Installation ..... 9**
  - Plug and Play Installation..... 9
  - Installing Under Windows 95 ..... 9
  - Windows 95 Driver Parameters Reference ..... 11
  - Installing Under Windows 98 ..... 12
  
- Windows NT Installation ..... 15**
  - Drivers Available ..... 15
  - Card and Socket Services Software ..... 15
  - Which Driver to Use ..... 16
  - Installing Under NT 4.0 ..... 16
  - Installing Under NT 3.51 ..... 17
  - Windows NT Driver Parameters..... 18
  
- Diagnostics and Troubleshooting..... 21**
  - LED Indicators ..... 21
  - Diagnostic Self Test (MS-DOS)..... 22
  - Troubleshooting Checklist ..... 23
  - Keyword Reference (All Drivers) ..... 24
  
- Intel Automated Customer Support..... 29**
- Specifications ..... 31**
- Limited Lifetime Hardware Warranty ..... 33**
- Software License Agreement ..... 35**
- Regulatory Agency Notices..... 37**

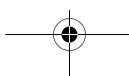
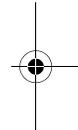
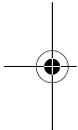




4 PRO/100 Cardbus Adapter User's Guide



**Index ..... 39**



## CHAPTER 1

# Hardware Installation

## Installation Overview

Follow the instructions in this chapter to install the Intel® EtherExpress™ PRO/100 Mobile CardBus adapter hardware and network cabling. Then proceed to the software installation chapter for your operating system environment, as follows:

Chapter 2. Windows 95 and 98 Installation

Chapter 3. Windows NT Installation

Chapter 4. Diagnostics and Troubleshooting

For information on Windows 3.x, IBM OS/2, and 32-bit ODI installation and troubleshooting, and supplementary information for other operating systems, see the Windows Help file HELPDOCS.HLP on the Intel Installation Disk.

The PRO/100 CardBus adapter provides access to both 10 Mbps and 100 Mbps networks with a single adapter cable, and auto-negotiates 10 Mbps or 100 Mbps network speed.

Category 5 (data grade) unshielded twisted pair (UTP) cabling is required for 100Mbps or Category 3 or 5 for 10Mbps.

## Before Installing Hardware

### Check Package Contents:

- PRO/100 CardBus adapter
- LAN adapter cable with 15-pin PC Card connector at one end and a female RJ-45 connector at the other
- Software on two 3.5-inch diskettes
- User's Guide
- Product registration card (in User's Guide)

Please fill out the Product Registration Card and mail or fax it immediately to the Intel office indicated on the card.

### Verify Other Required Equipment

To install the PRO/100 CardBus adapter, you need the following:

- 1 A portable PC with a CardBus PC Card slot.
- 2 A local area network supporting 10 or 100Mbps Ethernet, as required,

## 6 PRO/100 Cardbus Adapter User's Guide

and a network operating system supported by the PRO/100 CardBus adapter.

Since the PRO/100 CardBus adapter automatically detects the speed of the network to which it is connected, it may be safely connected to either a 100Base-TX or 10Base-T network, as specified in items 3 and 4 below.

- 3 For connection to a 100Base-TX 100Mbps Ethernet network, you need a Category 5** (data grade) unshielded twisted pair (UTP) network cable terminating in a male RJ-45 connector and connected to a 100Mbps hub or switch.
- 4 For connection to a 10Base-T twisted pair Ethernet network, you need a category 3 or 5 UTP network cable terminating in a male RJ-45 connector and connected to a 10Mbps hub or switch.**

### Determine System Requirements

During installation of the PRO/100 CardBus adapter hardware, the computer should be ON and your standard operating software should be loaded. If configured to do so, your system will detect the PRO/100 CardBus adapter. For details on how to install driver software, see the chapter for your operating system environment.

The PRO/100 CardBus adapter hardware is compatible with Types II and III PC Card slots that support CardBus technology. Installation and removal procedures may vary on different computers.

### Installing the Hardware

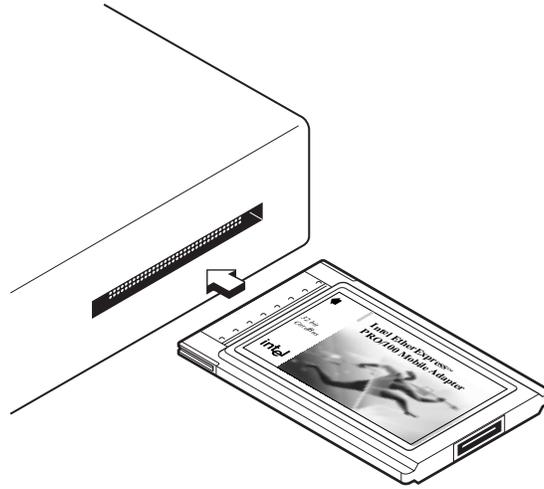
Windows 95 and Windows 98 Users: Before proceeding with the following instructions, make sure your laptop is on and that Windows is running.

#### Insert the PRO/100 CardBus Adapter

- Grasp the CardBus by the edges with the Intel label facing upward and the wide PC Card connector next to the insert slot.
- Insert the card into a CardBus slot and push it in until it is firmly seated.

The PRO/100 CardBus adapter can only be used in CardBus-compliant PC Card slots.

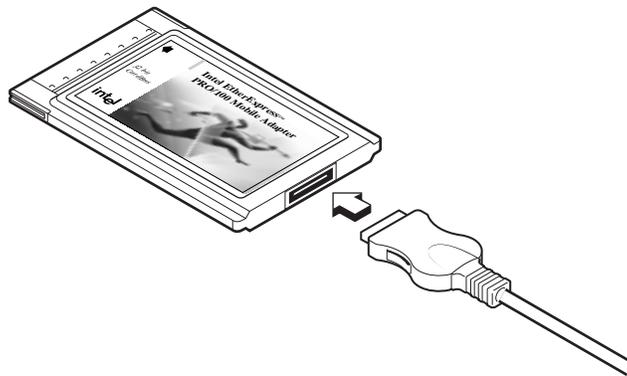
Windows 98 Users: The moment you insert the PRO/100 CardBus adapter into a CardBus slot, Windows 98 may automatically display the New Hardware Found window and install a driver for the adapter. If so, the driver supplied by Windows 98 is outdated and needs to be updated. Update instructions for Windows 98 are included in Chapter 2.



*Inserting the PRO/100 CardBus into the Computer*

### **Connecting the LAN Adapter Cable to the Card**

- Attach the 15-pin connector at the end of the Intel adapter cable to the mating connector on the end of the PRO/100 CardBus adapter. Press the cable connector gently into the connector on the card until it clicks into place. Do not force the connection.

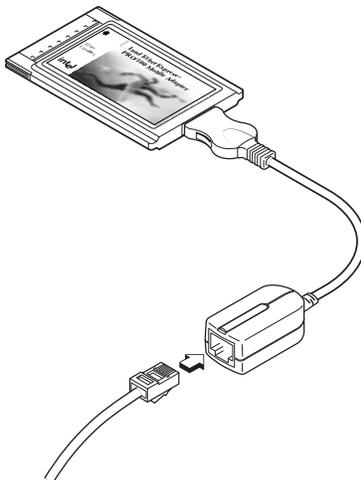


*Connecting the LAN adapter cable to the PRO/100 CardBus adapter*

## 8 PRO/100 Cardbus Adapter User's Guide

### Connecting the Network Cable to the LAN Adapter Cable

- Plug the network cable into the female RJ-45 connector, as shown in the figure.



*Connecting to the network cable to LAN adapter cable*

### Disconnecting Adapter Cable from the Card

- Squeeze the metal buttons on the sides of the small connector with the thumb and forefinger to free the adapter cable from the card.

**IMPORTANT:** Do not attempt to pull the adapter cable from the card without squeezing the metal buttons on the sides of the small connector. Doing so may damage the card and result in inoperability.

## Chapter 2

# Windows 95 and 98 Installation

## Plug and Play Installation

Most CardBus-enabled computers support plug and play installation of the PRO/100 CardBus adapter under Windows 95 and Windows 98. However, early versions of Windows 95 (950 or 950a) require manual installation. Both types of installation are described in this chapter. Troubleshooting and keyword information is also provided.

### Drivers Available

The following drivers for Windows 95 and Windows 98 are supplied with the PRO/100 CardBus adapter:

- NDIS3 driver (M32A.SYS)
- NDIS4 driver (M32A4.SYS)
- 32-bit ODI driver (M32A.LAN) with promiscuous support

The NDIS3 driver M32A.SYS is installed by default using the procedures described in this chapter. For NDIS4 instructions, see the README.TXT file on the Intel Installation Disk.

### 32-Bit ODI Driver

If your environment requires use of the 32-bit ODI client driver under Windows 95 (as indicated by your network administrator), see the Windows Help file **HELPDOCS.HLP** on the Intel Installation Disk.

## Installing under Windows 95

### Insert the CardBus Adapter

- 1 **With Windows 95 running, insert the CardBus Ethernet Adapter into the CardBus PC Card slot and connect cables as shown in Chapter 1. Hardware Installation.** Proceed to step 2.

### Plug and Play Installation (Versions 950b OSR2 and later)

- 2 If Windows 95 displays the New Hardware Found window, follow the instructions on the screen to complete the installation. No further steps are necessary. If the New Hardware Found window does NOT appear, proceed to step 3.

## 10 PRO/100 Cardbus Adapter User's Guide

If the New Hardware Found window appears, but the Card-Bus Ethernet Adapter does not initialize or shows conflicts in Device Manager, see Windows 95 Troubleshooting later in this chapter.

### Manual Installation (Windows 95 versions 950 or 950a)

- 3 If the New Hardware Found window does NOT appear, proceed to step 4 and complete the remaining steps to configure the adapter (but see the note below on Toshiba computers).  
If you are installing on a Toshiba portable computer and the New Hardware Found window did not appear, see the Windows Help file HELPDOCS.HLP on the Intel Installation Disk for instructions.
- 4 Click Start, select Settings, then click Control Panel.
- 5 In the Control Panel, double-click Network.
- 6 In the Network window, Configuration tab, click Add.
- 7 In the Select Network Component Type window, double-click Adapter.
- 8 In the Select Network Adapter window, click Have Disk.
- 9 Insert the Intel Network Drivers Disk.
- 10 With A:\ in the input box, click OK (or type correct path and click OK).
- 11 In the Select Network Adapter window, under "Manufacturers", click "Intel".
- 12 Select "Intel EtherExpress PRO/100 Mobile CardBus 32 manual load" and click OK.
- 13 In the Network window, click OK. The Intel dialog box displays various settings. An asterisk in any field indicates that the current setting is incorrect. Use the Up or Down arrow to adjust the setting until the asterisk disappears.
- 14 Click OK. The Copying Files window opens.
- 15 Insert your original Windows 95 CD or disk (identify the drive that holds the CD or disk) and click OK. The System Settings window opens.  
NOTE: If Windows 95 was pre-installed, the necessary files are located in the following directory: c:\windows\options\cabs
- 16 When finished, remove the disk from the A: drive and click Yes when prompted to restart the computer. NOTE: If you hear a Windows 95 "error" beep on reboot, ignore it.

## Windows 95 Driver Parameters Reference

### M32A.SYS (NDIS3) and M32A4.SYS (NDIS4) Driver Settings

M32A.SYS is an NDIS3 driver. M32A4.SYS is an NDIS4 driver. Both conform to the Microsoft Network Driver Interface Specification (NDIS).

The files necessary for using M32A.SYS with Windows 95 include:

- NETM32A.INF Installation file for Windows 95
- M32A.SYS NDIS3 driver for Windows 95

There are user-configurable parameters to the M32A.SYS and M32A4.SYS drivers which can be modified using the Network Control Panel built into Windows 95. This applet queries the user for parameter selections and sets the corresponding parameters in the registry. The user-configurable parameters are as follows:

Parameter	Default	Valid Values	Reg. Value
DirectEnable	AutoDetect	OFF	1
		ON	2
		AutoDetect	0
EarlyTransmit	ON	OFF	0
		ON	1
InterruptStyle	0	AutoDetect	0
		PCI-IRQ	1
		ISA-IRQ	2
LineSpeed	Auto	AutoDetect	0
		10 Mbps	1
		100 Mbps	2
LineMode	0	AutoDetect	0
		Half-Duplex	1
		Full-Duplex	2
Network Address	See Network Administrators note below.		
Socket	0	AutoDetect	0

**For Network Administrators Only.** The network node address can be modified by specifying a value for Network Address such as 00A0C9112233. If the user does NOT specify a Network Address, then the M32A.SYS driver uses the network node address contained in the PRO/100 CardBus Adapter Card Information Structure.

For definitions of the keywords above, see the Keyword Reference in Chapter 4. Diagnostics and Troubleshooting.

## Installing under Windows 98

These instructions assume that you have inserted the PRO/100 CardBus adapter into a CardBus slot as described in Chapter 1.

When the PRO/100 CardBus adapter is inserted, Windows 98 automatically brings up the New Hardware Found window and installs a driver for the adapter.

To ensure proper operation, however, you must update this driver with the driver found on the Intel Network Drivers Disk.

### Updating the Windows 98 Driver

- 1 Click Start, select Settings, then click Control Panel.
- 2 In the Control Panel, double-click the System icon.  
The System Properties dialog box appears.
- 3 In the System Properties dialog box, click the Device Manager tab.  
A list of devices appears.
- 4 Double-click the Network adapters device to display the adapters below it.
- 5 Double-click the Intel EtherExpress PRO/100 Mobile CardBus 32 Adapter.  
A Properties dialog box appears for the adapter.
- 6 In the Intel EtherExpress PRO/100 Mobile CardBus 32 Properties dialog box, click the Driver tab.  
You'll notice that the driver which Windows 98 installed has the date 5-11-98. This needs to be updated with the driver on the Intel Network Drivers Disk which has a date of 7/28/98.
- 7 Click the Update Driver button.  
The Update Device Driver Wizard dialog box appears.
- 8 Click Next.
- 9 At the prompt "What do you want Windows to do?", select the option "Display a list of all the drivers in a specific location, so you can select the driver you want." and click Next.
- 10 Select Network adapters as the type of device and click Next.  
The Select Device dialog box appears.
- 11 Select the Intel EtherExpress PRO/100 Mobile CardBus 32 (5-11-1998) adapter and click Have Disk.
- 12 Insert the Intel Network Drivers Disk in the floppy drive and at the Install from Disk dialog box, specify that drive and click OK.  
A new Select Device dialog box appears.
- 13 Click OK.



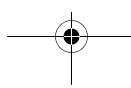
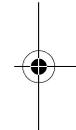
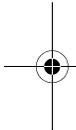
The Select Device dialog boxes close, and the Update Device Driver Wizard dialog box lists the driver it will install: NETM32A.INF.

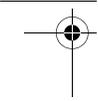
14 Click Next.

15 The driver is installed from the Intel Network Drivers Disk, along with files from your original Windows 98 CD or disk (you'll need to identify the drive that holds the CD or disk) and click OK.

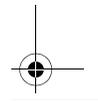
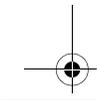
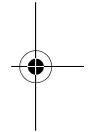
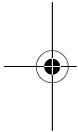
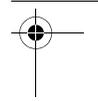
NOTE: If Windows 98 was pre-installed, the necessary files are located in the following directory:  
c:\windows\options\cabs

16 When finished, remove the disk from the A: drive and click Yes when prompted to restart the computer. NOTE: If you hear a Windows 98 "error" beep on reboot, ignore it.





# 14 PRO/100 Cardbus Adapter User's Guide



## Chapter 3

# Windows NT Installation

The PRO/100 CardBus adapter supports manual installation under Microsoft Windows NT 3.51 and NT 4.0. Plug and Play installation and hot swapping of PRO/100 CardBus adapters are not directly supported by Windows NT, but may be supported through third-party Card and Socket services software.

When the PRO/100 CardBus adapter is installed, the other PC Card slot is available for use by another PC Card.

## Drivers Available

The following drivers for Windows NT can be found on the **Intel disk noted:**

- M32A.SYS - NDIS3 driver (Intel Network Drivers Disk)
- M32A187.SYS - Card and Socket Services driver (Intel Installation Disk)
- M32AN4.SYS - NDIS4 driver (Intel Installation Disk)

The NDIS3 driver M32A.SYS and M32ANT.SYS drivers are described in this chapter. For NDIS4 instructions, see the README.TXT file on the Intel Installation Disk.

For the latest information on PRO/100 CardBus adapter support in Windows NT, review the README.TXT file on the Intel Installation Disk.

## Card and Socket Services Software

Some Windows NT 4.0 installations include third-party Card and Socket Services software designed to improve PC Card installation and to support hot swapping. In addition to its standard NDIS3 and NDIS4 drivers, Intel has also developed M32A187.SYS to provide additional support for certain Card and Socket Services software.

The PRO/100 CardBus adapter supports the following Windows NT 4.0 Card and Socket Services software at press time:

### CardExecutive for NT 4.0 from Phoenix Technologies

Support for Phoenix CardExecutive is provided by the special Card and Socket Services driver M32A187.SYS.

### CardWare for Windows NT 4.0 from Award Software

For instructions on using Award CardWare, see the README.TXT file on the Intel Installation Disk.

## 16 PRO/100 Cardbus Adapter User's Guide

### **CardWizard for NT 4.0 from SystemSoft Corporation**

Support for SystemSoft CardWizard is provided in the NDIS3 driver M32A.SYS.

### **PC Card Controller for NT from Softex Incorporated**

Softex PC Card Controller for NT provides functionality similar to Phoenix CardExecutive. If using Softex, follow the instructions for Phoenix CardExecutive.

## **Which Driver to Use**

See below to determine which driver to use in your environment

### **M32A.SYS**

For use under NT 3.51 and 4.0 without Card and Socket Services, and for use under NT 4.0 with SystemSoft CardWizard for NT 4.0

### **M32A187.SYS**

For use under NT 4.0 with Phoenix CardExecutive and Softex PC Card Controller for NT.

### **M32A4.SYS**

See the README.TXT file on the Intel Installation Disk.

## **Installing under NT 4.0**

- 1 Insert the PRO/100 CardBus adapter into the CardBus PC Card slot.
  - Adapter detected: If the PRO/100 CardBus adapter is detected, proceed to the section "Installation under NT 4.0 Using Card and Socket Services."
  - Adapter not detected: If the PRO/100 CardBus adapter is not detected, proceed to the section "Manual Installation under NT 4.0 without Card and Socket Services."

### **Installation under NT 4.0 Using Card and Socket Services**

- 2 Once the Card Services software has detected the adapter, follow the onscreen installation instructions for your Card and Socket Services software. Use of default resource settings is recommended.
- 3 If the Card Services software includes a driver for the PRO/100 CardBus adapter, install that driver. To verify that you have the latest Intel driver, visit the Intel support website. Otherwise, follow the guidelines below:
  - SystemSoft CardWizard Card Services software will display a CardWizard icon on the task bar when you insert the CardBus. Use the driver M32A.SYS, located in the root of the Intel Network Drivers Disk (A:).

- Phoenix CardExecutive and Softex PC Card Controller use the driver M32A187.SYS, located in the \M32A187 directory on the Intel Installation Disk. When the Card Services software prompts for the driver disk, enter the path A:\M32A187\.
- Award CardWare instructions can be found in the README.TXT file on the Intel Installation Disk.

### Installation under NT 4.0 without Card and Socket Services

Use these instructions if the PRO/100 CardBus adapter was not detected upon insertion, indicating that no Card and Socket Services software is in use.

- 1 With the PRO/100 CardBus adapter in the PC Card slot, click Start, click Settings, and select the Control Panel. The Control Panel opens.
- 2 Double-click the Network icon. The Network Settings window opens.
- 3 Click the Adapters tab. The Network Adapters window opens.
- 4 Click Add. The Select Network Adapter window opens.
- 5 Click Have Disk and insert the Intel Network Drivers Disk.
- 6 Click OK. The Select OEM Option window opens.
- 7 Click OK. The Windows NT Setup window briefly displays.
- 8 The Intel EtherExpress PRO/100 Mobile CardBus adapter Settings window opens, displaying the default settings.  
In most circumstances, the default settings will properly operate the PRO/100 CardBus adapter.
- 9 Click OK. The Network Settings window redisplay.
- 10 Click Close. If any dialog boxes appear related to setting up network protocols, click Cancel, and contact your Network Administrator.
- 11 When the Network Settings Change window opens, click Yes to restart the computer.

### Installing under NT 3.51

- 1 Insert the PRO/100 CardBus adapter.
- 2 Double-click the Control Panel. The Control Panel opens.
- 3 Double-click the Network icon. Network Settings opens.
- 4 Click Add Adapter. The Add Network Adapters window opens.
- 5 Scroll to select "Other (requires disk from manufacturer)."
- 6 Click Continue. The Insert Disk windows opens.
- 7 Insert the Intel Network Drivers Disk .
- 8 Click OK. The Select OEM Option window opens.
- 9 Click OK.

## 18 PRO/100 Cardbus Adapter User's Guide

- 10 The Intel EtherExpress PRO/100 Mobile CardBus Adapter Setup window opens, displaying the default settings.
- 11 Click OK. The Network Settings window reopens.
- 12 Click OK. The Network Settings Change window opens.
- 13 Click Restart Now to restart your computer.

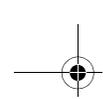
## Windows NT Driver Parameters

M32A.SYS, M32ANT.SYS, and M32AN4.SYS driver parameters can be modified using the Windows NT Network Control Panel. This applet uses the OEMSETNT.INF file to set the corresponding parameters in the registry.

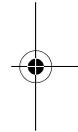
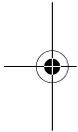
For definitions of the keywords listed, see the section Keyword Reference in Chapter 4. Diagnostics and Troubleshooting.

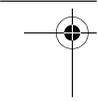
Parameter	Default	Valid Values	Registry Value
DirectEnable	0	AutoDetect	0
		OFF	1
		ON	2
EarlyTransmit	0	OFF	0
		ON	1
Interrupt Number	11	3 - 15	same
InterruptStyle	0	AutoDetect	0
		PCI IRQ	1
		ISA IRQ	2
IOBase Address	0xF800	0x1000-0xF800	same
LineMode	1	AutoDetect	0
		Half-Duplex	1
		Full-Duplex	2
LineSpeed	0	AutoDetect	0
		10 Mbps	1
		100 Mbps	2
LinkIntegrity	1	OFF	0
		ON	1
MemoryMapped BaseAddress		5B80000	0xC0000-B000C000
Socket	0	AutoDetect	0
		1	1
		2	2
		3	3

**For Network Administrators Only.** The network node address can be modified manually. Using the Run command, type regedit and press return. Select HKEY\_LOCAL\_MACHINE, System, CurrentControlSet, Services, M32A.

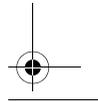
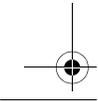
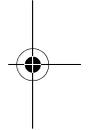
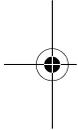
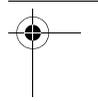


Click on the Edit menu, select New, String Value. Rename the new value NetworkAddress (no spaces, case sensitive) and hit enter. Then double click NetworkAddress and enter the 12 digit address (no spaces) in the "Value Data" box and click OK.





20 PRO/100 Cardbus Adapter User's Guide





## Chapter 4

# Diagnostics and Troubleshooting

This chapter contains supplementary diagnostics and troubleshooting information for the PRO/100 CardBus adapter. For troubleshooting information specific to your operating environment, see the appropriate installation chapter. This supplementary information is intended for users or network administrators who are already familiar with the PRO/100 CardBus adapter and its user documentation, and who have run into difficulties **after having completed the appropriate installation and troubleshooting procedures for their operating environment.**

For additional troubleshooting information, see the Windows Help file HELPDOCS.HLP on the Intel Installation Disk.

The following topics are covered in this chapter:

- LED Indicators
- Diagnostic Test
- Troubleshooting Checklist
- Keyword Reference (All Drivers)

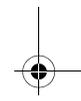
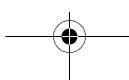
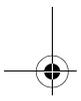
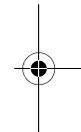
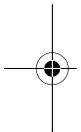
### Additional Sources of Information

Consult your computer and network documentation as needed. For the latest technical notes on the PRO/100 CardBus adapter, see the **README.TXT** file on the Intel Installation diskette.

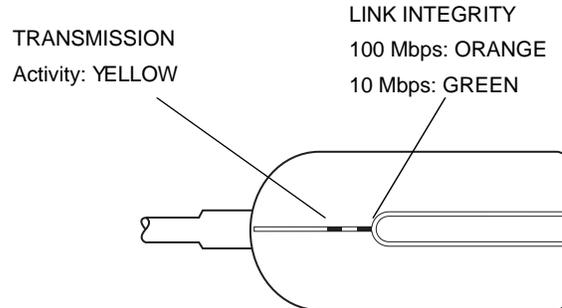
See **Appendix A** in this User's Guide for Intel support services access information.

## LED Indicators

The LED indicators on the PRO/100 CardBus adapter media module operate under the following conditions: (1) the card is inserted into a PC Card slot and (2) connected to the network, (3) computer is powered on, and (4) network driver has been loaded.



## 22 PRO/100 Cardbus Adapter User's Guide

*PRO/100 CardBus adapter TPE connector and LEDs***Diagnostic Self Test (MS-DOS)**

Intel provides a DOS-based self test diagnostics program. This program, located on the Intel Network Drivers Disk, tests several PRO/100 CardBus adapter functions. It also reports test results, the serial number of the unit, and the node address.

M32ATEST can only be run from the MS-DOS command line. It cannot be run from a DOS box within Windows. To reach a DOS prompt under Windows 95 and Windows NT, power down the computer and perform a clean boot to the MS-DOS prompt (under Windows 95, press Shift+F5 at the message Starting Windows 95 . . . ).

This utility is intended to be a diagnostic tool in troubleshooting CardBus configuration errors. The program can run without a CardBus adapter, or even a CardBus machine, and still provide some functionality. The program is dynamic. This means cards can be inserted and removed at any time. Multiple cards can be tested and different configurations can be tested.

**Executing the Self Test**

Use the following steps to execute the self test.

- 1 Install the PRO/100 CardBus adapter according to the instructions contained in Chapter 1. Hardware Installation.
- 2 Power down and restart the computer from MS-DOS (use Shift+F5 under Windows 95). DO NOT load a network driver.  
Do not run M32ATEST with a network driver loaded. Loading a network driver before running M32ATEST may cause unpredictable results when exiting the test utility.
- 3 Run the diagnostic test by typing M32ATEST at the MS-DOS prompt, then press Enter.

## Main Screen

The program consists of several function buttons and a view pane. Pressing or invoking a function will bring up the corresponding screen in the view pane. This view remains until another is selected. To exit M32ATEST type x or push the Exit button.

When a function is active, the button appears to remain down or pushed. Once the button pops up, the function is completed and the screen is a passive results display.

Nine functions can be invoked by pushing the associated button on the main screen, using the highlighted letter indicated on the button, or the left mouse button. Online help is provided.

Write down the PRO/100 CardBus adapter model and serial numbers for reference.

## Troubleshooting Checklist

- For Windows 3.x installation and troubleshooting information, see HELPDOCS.HLP on the Installation Disk.
- Review the README.TXT file on the Installation Disk.
- Be sure you have the current drivers for your adapter. You can check the version numbers on the Intel website at [support.intel.com](http://support.intel.com).
- When loading drivers or running the test utility, keep the LAN adapter cable attached to the CardBus adapter.
- Under Novell, ensure that the FRAME TYPE you are using is the same as that of the file server. The server frame type should be specified as the first frame type in the NET.CFG.
- In a twisted pair environment, try plugging directly into the hub or concentrator.
- Plug in to a known working network connection.
- Try using the PRO/100 CardBus adapter on a different computer.
- Try another PRO/100 CardBus adapter if available.
- If your computer has multiple PC Card sockets, move the adapter to another socket.
- If you have more than one PC Card device in your computer, remove the non-Intel PC Card devices.
- Test the PRO/100 CardBus adapter without loading Card and Socket Services to prevent conflicts between the Intel adapter and Card and Socket Services. The interrupt, memory address location, and I/O address for Card and Socket service drivers must match the Intel configurations in NET.CFG or PROTOCOL.INI (if used).

## 24 PRO/100 Cardbus Adapter User's Guide

- Make sure that the PRO/100 CardBus adapter interrupt, memory address, and I/O address do not conflict with other installed hardware (such as sounds cards, CD-ROM drives and PEN devices).
- Try loading the CardBus drivers at different memory locations (i.e.: C800, CC00, D400, D800).
- Try using different interrupt locations (i.e.: 5, 10, 11).
- Try using different port addresses (i.e.: 280, 290, 310, 320).
- In Windows 95, change autodetect to specific frame type.
- In NT (mostly), change the interrupt settings if you experience steady on/off blinking of link light on cable connector, or if you experience sporadic mouse movement.

## Keyword Reference (All Drivers)

Configuration keywords for all PRO/100 CardBus adapter drivers are listed in alphabetical order. See the information on each operating system for keywords specific to that environment. For Windows 3.x, IBM OS/2, and 32-bit ODI, see the file HELPDOCS.HLP on the Intel Installation Disk.

**CACHE** sets system cache line size on the CardBus bridge. Values are system dependent and may include only 0 (cache disabled), 4, 8, 16, or 32. Changes could affect network performance.

**DIRECTENABLE (32-bit NDIS3 Driver M32A.SYS)** forces method used by driver to determine if a PRO/100 CardBus adapter is present. Valid parameters are AutoDetect, Off, and On. AutoDetect allows the driver to determine if the CardBus bridge has already been set up by another enabler such as Socket and Card Services. If so, driver will use the current configuration. On forces the driver to enable the CardBus bridge without checking its current state.

**DRIVERNAME=INTEL\$** required as first item in the INTEL section of the PROTOCOL.INI file for the M32ANDIS driver.

**EARLYRECEIVE** see NOEARLYRX.

**EARLYTRANSMIT** see NOEARLYTX.

**ERT** specifies Advanced Look-ahead Pipelining threshold. Valid settings are LOW, MEDIUM, and HIGH. Changing this value will affect network performance, depending on the computer system.

**INT, INTERRUPTNUMBER** see IRQ.

**INTERRUPTSTYLE** (For 32-bit NDIS3 Driver M32A.SYS only) forces the driver to use ISA IRQ routing or PCI IRQ routing. Some CardBus bridges have the capability of supporting both PCI and ISA style IRQ routing. Valid parameters are AutoDetect, PCI-IRQ, and ISA-IRQ. The default keyword is AutoDetect.

**IOADDRESS, IOBASEADDRESS** specifies the base I/O address of the Intel adapter I/O ports, in hexadecimal notation. The PRO/100 CardBus adapter requires 128 contiguous I/O addresses if run in I/O mode. If using memory-mapped I/O mode, no I/O ports are necessary. If this parameter is not specified the driver will detect an I/O port automatically.

**I/O PORT** see IOADDRESS

**IRQ** specifies a hardware interrupt for the adapter. If PCI interrupts are used on the CardBus bridge, this parameter is ignored (unless the ISAIRQ keyword is used as an override). If this parameter is not specified the driver will detect an IRQ automatically.

**ISAIRQ** use this keyword to force the driver to use ISA IRQ routing. Some CardBus bridges have the capability of supporting both PCI and ISA style IRQ routing. The driver automatically determines the best choice for this option unless this keyword is used as an override.

**LATENCY** specifies the latency timer for the CardBus Bridge. This parameter affects the bus mastering capabilities of the CardBus adapter. Changing this parameter may affect system performance. The range is a decimal number between 1 and 255. The default is 32. The latency should be lowered if more than one peripheral device, such as a modem, is being used. If the PRO/100 CardBus adapter is the only peripheral being used, use a higher latency, such as 255.

**LINEMODE (For 16-bit DOS Drivers)** selects either half-duplex or full-duplex mode for the network. Valid parameters are AUTO, HALF or FULL. Selecting full-duplex enables the PRO/100 CardBus adapter to send and receive data simultaneously when connected to a full-duplex hub. Default is AUTO.

**LINEMODE (For 32-bit NDIS3 Driver M32A.SYS)** selects either half-duplex or full-duplex mode for the network. Valid parameters are AutoDetect, Half Duplex, and Full-Duplex. Selecting full-duplex enables the PRO/100 CardBus adapter to send and receive data simultaneously when connected to a full-duplex hub. Default is keyword is AutoDetect.

**LINESPEED (For 16-bit DOS Drivers)** forces operation to 10 or 100Mbps. If the keyword is not present the line speed will be automatically detected (default).

**LINESPEED (For 32-bit NDIS3 Driver M32A.SYS)** forces operation to 10 or 100Mbps. Valid parameters are AutoDetect, 10Mbps, and 100Mbps. Default is AutoDetect.

**LINKDISABLE** disables link integrity for non-IEEE 10BASE-T networks such as StarLAN 10. Without this keyword in the driver command line, the driver defaults to link integrity ENABLED.

**MEM, MEMORY** specifies the host PC memory location for the PRO/100 CardBus adapter in hexadecimal notation, when MODE MEMORY (memory-mapped I/O) is being used (see MODE). The memory block occupies 4 Kbytes of host memory.

## 26 PRO/100 Cardbus Adapter User's Guide

**MODE** when set to IO disables requests for memory-mapped mode on systems that only support an I/O-driven card. The **MEMORY** setting provides increased performance on computers that allow simultaneous availability of memory and I/O resources.

**NETWORKADDRESS** allows user to override adapter's unique network node address by specifying a different node address.

**NOBURST** disables burst mode reads on the PRO/100 CardBus adapter. Using this keyword will force the adapter to initiate a bus-master request for each read, negatively impacting performance

**NOCHECK** disables verification of adapter resources. If the driver detection and verification code is causing problems when loading, this keyword can be used to turn the feature off.

**NODEADDRESS** *see NETWORKADDRESS.*

**NOEARLYRX** disables Advanced Look-ahead Pipelining features of the adapter. This keyword may be used to troubleshoot systems that have inexplicable network problems. Using this keyword may negatively impact performance.

**NOEARLYTX** disables early transmit capability of the Adapter. This keyword may be used to troubleshoot systems with inexplicable network problems. Keyword could negatively impact performance.

**NOLED** turns off LED indicators to conserve power.

**NOPREFETCH** disables prefetching in memory-mapped I/O mode by turning off this capability on the CardBus bridge. Using this keyword may negatively impact performance.

**NOWRITEPOST** disables prefetching in memory-mapped I/O mode by turning off this capability on the CardBus bridge. Using this keyword may negatively impact performance.

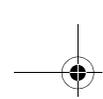
**PCIIRQ** forces the driver to use PCI IRQ routing. Some CardBus bridges have the capability of supporting both PCI and ISA style IRQ routing. The driver automatically determines the best choice for this option unless this keyword is used as an override.

**PORT** (ODI driver) *see IOADDRESS.*

**RXBUFFERSIZE** sets size of the adapter receive packet buffer. This is a number in decimal in the range 1 - 30 for 16-bit drivers and 1 - 100 for the 32-bit ODI driver. Each packet adds approximately 1520 bytes to the resident size of the driver. The default is 15 packets.

**SINT** (Packet Driver) is a number from hexadecimal 60 to 80 designating a software interrupt. Default is 60.

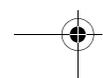
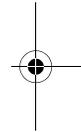
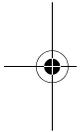
**SOCKET (16-bit DOS Drivers)** identifies number of host computer PC Card slot into which the PRO/100 CardBus adapter is inserted. If a socket number is specified, only the specified socket is checked for the PRO/100 CardBus adapter. If no socket is specified, all sockets are searched until the PRO/100 CardBus adapter is found.

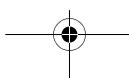
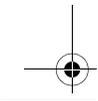
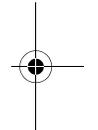
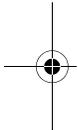
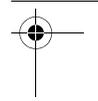
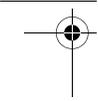


**SOCKET (For 32-bit NDIS3 Driver M32A.SYS)** identifies the number of the host computer's PC slot or socket into which the PRO/100 CardBus adapter is inserted. Valid parameters are AutoDetect, 1, 2, 3, and 4. If a socket number is specified, only the specified socket is checked for the PRO/100 CardBus adapter. The default keyword is AutoDetect, and the driver will then automatically check all slots for the PRO/100 CardBus adapter.

**TXBUFFERSIZE** sets the size of the adapter transmit packet buffer. This is the number of transmit packets in decimal in the range 1 - 10 for 16-bit drivers and 1 - 100 for the 32-bit ODI driver. Each packet adds approximately 1520 bytes to the resident size of the driver. The default is 2 packets.

**VERBOSE** displays additional configuration information when the driver loads, including information about the CardBus controller on the PCI to CardBus bridge on the host computer.





## Appendix A

# Intel Automated Customer Support

You can reach Intel's automated support services 24 hours a day, every day at no charge. The services contain the most up-to-date information about Intel products. You can access installation instructions, troubleshooting information, and general product information.

### Readme Files on Your Product Disk

Review the topics in the README.TXT file on the diskettes.

### Web and Internet Sites

Support: <http://support.intel.com>

Network Products: <http://www.intel.com/network>

Corporate: <http://www.intel.com>

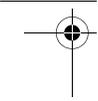
FTP Host: <ftp://download.intel.com>

FTP Directory: `/support/etherexpress/`

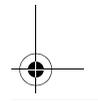
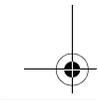
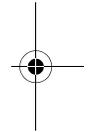
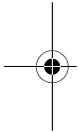
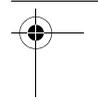
### Customer Support Technicians

US and Canada: 1-916-377-7000 (7:00 - 17:00 M-F Pacific Time)

Worldwide access: Intel has technical support centers worldwide. Many of the centers are staffed by technicians who speak the local languages. For a list of all Intel support centers, the telephone numbers, and the times they are open, download document 9089 from one of the automated services.



30 PRO/100 Cardbus Adapter User's Guide



## Appendix B

# Specifications

## General Specifications

### Model MBLA3200

Cable: 100Base-TX unshielded twisted pair for use on Category 5 (data grade) cabling; 10Base-T unshielded twisted pair (UTP)

Connector: RJ-45

Operating Distance: 328 ft (100 m)

### Ethernet Specifications

Ethernet IEEE 802.3 for 10 Mbps, 802.3u for 100 Mbps

Type II CardBus PC Card

10/100 Mbps full-duplex

**Size:** 3.37 in (86 mm) x 2.13 in (54.0 mm) x 0.20 in (5.0 mm)  
excluding adapter cable and network connection

**Weight:** 0.85 oz (24 g)

### Power Requirements:

10Base-T 3.3V DC, 360 mA typical

100Base-TX 3.3V DC, 285 mA typical

### Power Management:

Supports ACPI and CardBus Power Management Specification

### Temperature Range:

**Operating:** 32°F to 131°F (0°C to 55°C)

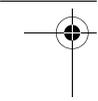
**Storage:** -4°F to 149°F (-20°C to 65°C)

**Humidity:** 95% max. noncondensing

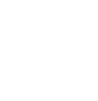
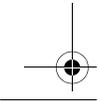
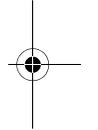
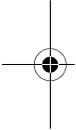
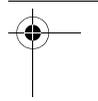
### LEDs:

Link integrity, transmission activity

**Certification:** FCC Code of Federal Regulations, Title 47,  
Part 15, Subpart B, Class A  
CE Mark (EN 55022, Class A, EN50082)



32 PRO/100 Cardbus Adapter User's Guide



## Appendix C

# Limited Lifetime Hardware Warranty

Intel warrants to the original owner that the adapter product delivered in this package will be free from defects in material and workmanship. This warranty does not cover the adapter product if it is damaged in the process of being installed or improperly used.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF NONINFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

This warranty does not cover replacement of adapter products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation, or improper testing. If the adapter product is found to be defective, Intel, at its option, will replace or repair the hardware product at no charge except as set forth below, or refund your purchase price provided that you deliver the adapter product along with a Return Material Authorization (RMA) number (see below), along with proof of purchase (if not registered), either to the dealer from whom you purchased it or to Intel with an explanation of any deficiency. If you ship the adapter product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge.

Intel may replace or repair the adapter product with either new or reconditioned parts, and any adapter product, or part thereof replaced by Intel becomes Intel's property. Repaired or replaced adapter products will be returned to you at the same revision level as received or higher, at Intel's option. Intel reserves the right to replace discontinued adapter products with an equivalent current generation adapter product.

## Returning a Defective Product

### From North America:

Before returning any adapter product, contact Intel Customer Support and obtain a Return Material Authorization (RMA) number by calling +1 916-377-7000.

If the Customer Support Group verifies that the adapter product is defective, they will have the RMA department issue you an RMA number to place on the outer package of the adapter product. Intel cannot accept any product without an RMA number on the package.

### All Other Locations:

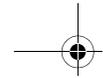
Return the adapter product to the place of purchase for a refund or replacement.

## Intel Adapter Money-Back Guarantee (North America Only)

Intel wants you to be completely satisfied with the Intel adapter product that you have purchased. Any time within ninety (90) days of purchase, you may return your Intel adapter to the original place of purchase for a full refund of the purchase price from your dealer. Resellers and distributors, respectively, accepting returns and refunding money back to their customers may return Intel adapters to their original place of purchase. Intel guarantees that it will accept returns under this policy and refund the original purchase price to customers purchasing directly from Intel.

## Limitation of Liability and Remedies

INTEL'S SOLE LIABILITY HEREUNDER SHALL BE LIMITED TO DIRECT, OBJECTIVELY MEASURABLE DAMAGES. IN NO EVENT SHALL INTEL HAVE ANY LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL, AND SPECIAL DAMAGES) INCLUDING, BUT NOT LIMITED TO, INFRINGEMENT OF INTELLECTUAL PROPERTY, REPROCUREMENT COSTS, LOSS OF USE, BUSINESS INTERRUPTIONS, LOSS OF GOODWILL, AND LOSS OF PROFITS, WHETHER ANY SUCH DAMAGES ARISE OUT OF CONTRACT NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, INTEL'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE



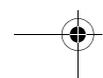
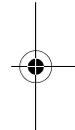
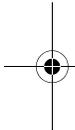
### 34 PRO/100 Cardbus Adapter User's Guide

PRODUCT PRICE. INTEL NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

**Critical Control Applications:** Intel specifically disclaims liability for use of the adapter product in critical control applications (including, for example only, safety or health care control systems, nuclear energy control systems, or air or ground traffic control systems) by Licensee or Sublicensees, and such use is entirely at the user's risk. Licensee agrees to defend, indemnify, and hold Intel harmless from and against any and all claims arising out of use of the adapter product in such applications by Licensee or Sublicensees.

**Software:** Software provided with the adapter product is not covered under the hardware warranty described above. See the applicable software license agreement which shipped with the adapter product for details on any software warranty.



## Appendix D

# Software License Agreement

BY USING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT. DO NOT USE THIS SOFTWARE UNTIL YOU HAVE CAREFULLY READ AND AGREED TO THE FOLLOWING TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY RETURN THE SOFTWARE PACKAGE AND ANY ACCOMPANYING ITEMS.

LICENSE: Intel Corporation ("Intel") grants you the non-exclusive right to use the enclosed software program (the "Software"). You will not use, copy, modify, rent, sell or transfer the Software or any portion thereof except as provided in this Agreement.

You may:

1. Install/use the Software on a single computer or on a single local area network ("LAN") server;
2. Copy the Software solely for backup or archival purposes, including copying the Software into memory.

RESTRICTIONS:

You **Will Not**:

1. Sublicense the Software;
2. Reverse engineer, decompile, or disassemble the Software;
3. Copy the Software, in whole or in part, except as provided in this Agreement.

TRANSFER: You may transfer the Software to another party if the receiving party agrees to the terms of this Agreement and you retain no copies of the Software and accompanying documentation. Transfer of the Software terminates your right to use the Software.

OWNERSHIP AND COPYRIGHT OF SOFTWARE: Title to the Software and all copies thereof remain with Intel or its vendors. The Software is copyrighted and is protected by United States and international copyright laws. You will not remove the copyright notice from the Software. You agree to prevent any unauthorized copying of the Software.

DUAL MEDIA SOFTWARE: If the Software package contains multiple media, you may only use the disks appropriate for your single-user computer or LAN.

WARRANTY: The Software is provided "AS IS." Intel warrants that the media on which the Software is furnished will be free from defects in material and workmanship for a period of one (1) year from the date of purchase. Upon return of such defective media, Intel's entire liability and your exclusive remedy shall be the replacement of the Software.

THE ABOVE WARRANTIES ARE THE ONLY WARRANTIES OF ANY KIND EITHER EXPRESS OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: NEITHER INTEL NOR ITS VENDORS SHALL BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF USE, LOSS OF DATA, INTERRUPTIONS OF BUSINESS, NOR FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND WHETHER UNDER THIS AGREEMENT OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

AUDIT: Intel reserves the right to have audits conducted to verify your compliance with this Agreement.

TERMINATION OF THIS LICENSE: Intel may terminate this license at any time if you are in breach of any of its terms and conditions. Upon termination, you will immediately destroy the Software or return all copies of the Software and documentation to Intel.

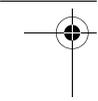
U.S. GOVERNMENT RESTRICTED RIGHTS: The Software and documentation were developed at private expense and are provided with "RESTRICTED RIGHTS." Use, duplication, or disclosure by the Government is subject to restrictions as set forth in FAR 52.227-14 and DFAR 252.227-7013 et seq. or its successor.

EXPORT LAWS: You agree that the distribution and export/re-export of the Software is in compliance with the laws, regulations, orders or other restrictions of the U.S. Export Administration Regulations.

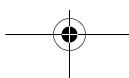
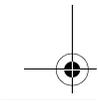
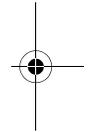
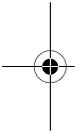
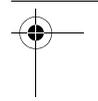
APPLICABLE LAW: This Agreement is governed by the laws of the State of California and the United States, including patent and copyright laws. Any claim arising out of this Agreement will be brought in Santa Clara County, California. PLEASE REVIEW THE LICENSE AGREEMENT BELOW. BY OPENING THIS SOFTWARE OR PACKAGE OR OTHERWISE DOWNLOADING OR COPYING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT. DO NOT USE THIS SOFTWARE UNTIL YOU HAVE CAREFULLY READ AND AGREED TO THE FOLLOWING TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, DO NOT INSTALL OR USE THIS SOFTWARE.

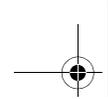
## Year 2000 Statement

An Intel product, when used in accordance with its associated documentation, is "Year 2000 Capable" when, upon installation, it accurately stores, displays, processes, provides, and/or receives date data from, into, and between the twentieth and twenty-first centuries, including leap year calculations, provided that all other technology used in combination with said product properly exchanges date data with it. See <http://www.intel.com/support/year2000> for more information.



36 PRO/100 Cardbus Adapter User's Guide





## APPENDIX E

# Regulatory Agency Notices

## FCC Compliance Statement

### FCC Rules and Regulations - Part 15

This product has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Installed correctly, it probably will not interfere with radio or TV reception. However, we do not guarantee the absence of interference.

This product generates and uses energy of about the same frequency as radio and TV broadcasts. Installed incorrectly, it may interfere with reception of radio and TV broadcasts.

If you suspect this product is causing interference, turn your computer on and off while the radio or TV is showing interference. If the interference disappears when you turn the computer off and reappears when you turn the computer on, something in the computer is causing interference.

To reduce interference, try these suggestions:

- **Change the direction of the radio or TV antenna.**
- Move the computer, radio or TV. For example, if the computer is to the right of the TV, move it to the left of the TV. Or move them farther apart.
- Plug the computer into a different electrical outlet than the radio or TV.
- Ensure that all expansion slots (on the back or side of the computer) are covered. Also ensure that all metal retaining brackets are tightly attached to the computer.

#### NOTE

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.

#### CAUTION

If the device is changed or modified without permission from Intel, the user may void his or her authority to operate the equipment.

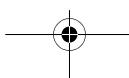
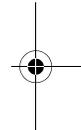
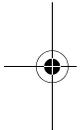
### FCC Rules and Regulations - Part 68

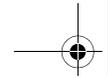
This equipment complies with Part 68 of the FCC Rules. On the back of the Intel® PRO/100 32-Bit Mobile adapter is a label that contains, among other information, the FCC Registration Number and Ringer Equivalency Number (REN) for this equipment. You must, upon request, provide this information to your 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





## 38 PRO/100 Cardbus Adapter User's Guide

give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact Intel Customer Support, at 916-377-7000 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.

## Canadian Compliance (Industry Canada)

When tested in at least one intended host:

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

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Class B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

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.

Caution: 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.

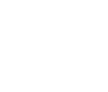
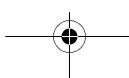
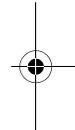
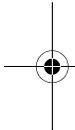
REN: See back of unit.

## Manufacturer Declaration

This certifies that Intel PRO/100 Mobile Adapters comply with the EU Directive 89/336/EEC, using the EMC standards EN55022 (Class B) and EN50082-1. This product also meets or exceeds EN60950 safety requirements.

This product has been tested and verified to meet CISPR 22 Class B requirements.

Intel Corporation  
Network Products Division - MS JF3-446  
2111 N.E. 25th Ave.  
Hillsboro, Oregon 97124



## Index

- 100Base-TX ..... 31
- 10Base-T ..... 31
- 15-pin connector ..... 5, 7
- 32-bit ODI driver ..... 9
- A**
- Auto-detection of
  - PC Card ..... 6
- Auto-negotiation,
  - speed ..... 5
- C**
- Cabling
  - Category ..... 5, 6
  - data grade ..... 5
- Cabling, installation ..... 5
- Card and Socket
  - Services software ..... 15
- CardBus compliance ..... 6
- CardExecutive for NT ..... 15
- CardWare for
  - Windows NT ..... 15
- CardWizard for NT ..... 16
- Category 5 cabling ..... 6
- D**
- Diagnostics ..... 21
  - self test ..... 22
- Driver parameters
  - Windows 95 ..... 10
  - Windows NT ..... 18
- Drivers available
  - Windows 95 ..... 9
  - Windows NT ..... 15
- E**
- Equipment, required ..... 5
- F**
- FCC notice ..... 37
- H**
- Hardware installation ..... 5
- I**
- IBM OS/2 ..... 5
- Installation overview ..... 5
- K**
- Keyword reference ..... 24
- L**
- LED indicators ..... 21
- M**
- M32A.LAN ..... 9
- M32A.SYS ..... 9, 15
- M32A4.SYS ..... 9, 15
- M32A187.SYS ..... 15
- M32ATEST ..... 22
- N**
- NDIS drivers
  - NDIS3 driver ..... 10, 15
  - NDIS4 driver ..... 10, 15
  - parameters ..... 10
  - Windows 95 ..... 9
  - Windows NT ..... 15
- Network address ..... 11, 18
- Network cabling
  - installation ..... 5
- Node address ..... 22
- O**
- OS/2 ..... 5
- P**
- Package contents ..... 5
- Parameters, driver ..... 24
- PC Card Controller for
  - NT ..... 16
- PC Card slots ..... 6
- Plug and Play ..... 9
- Product registration card ..... 5
- Promiscuous support ..... 9
- R**
- Required equipment ..... 5
- RJ-45 connector ..... 5, 8
- S**
- Self test ..... 22
- Serial number ..... 22
- Slots, PC Card ..... 6
- Specifications ..... 31



40 PRO/100 Cardbus Adapter User's Guide

**T**

Toshiba computer,  
 Windows 95 ..... 10  
 Troubleshooting ..... 21  
 checklist ..... 23

**W**

Windows 3.x ..... 5  
 Windows 95  
 driver parameters ..... 10  
 installation ..... 9  
 manual installation ..... 10

version 950/950a ..... 10  
 Windows NT  
 Card and Socket  
 Services ..... 15  
 CardExecutive ..... 15  
 CardWare ..... 15  
 CardWizard ..... 16  
 driver parameters ..... 18  
 installation ..... 15, 17  
 PC Card Controller ..... 16

