About the Apple Ethernet CS II Card

The Apple Ethernet CS II Card expands the communication capabilities of models of Macintosh computers that have a communication slot II (CS II). The card is designed for networks that conform to the IEEE 802.3 standard for Ethernet.

There are three configurations of the Apple Ethernet CS II Card, each with a connector for a different type of Ethernet cable. These are
- twisted pair
- thin coaxial ("coax")
- AAUI (universal connector)

This manual provides instructions for all three configurations of the card.

You begin by installing the card and then connecting it to your network. You should also install the latest version of the Ethernet software if a disk is included with the card.

The Apple Ethernet CS II Card requires System 7.5.3 or a later version. For best performance your system should have 8 megabytes (MB) minimum of random-access memory (RAM).

What's in the box
- One Apple Ethernet CS II Card with either a twisted-pair connector, a thin coaxial connector (with T-connector attached), or an AAUI connector
  Note: Keep the card inside its antistatic bag in the protective cardboard box until you're ready to install it.
- One floppy disk containing Ethernet CS II software
- Warranty card
- User's guide

IMPORTANT If you purchased a new Macintosh and this booklet came in the box, your Apple Ethernet CS II Card and software may already be installed, and no disk containing the Ethernet CS II software is included. Skip ahead to "Installing Your Ethernet Software" for information about setting up your software.

Installing Your Apple Ethernet CS II Card

Note: You'll need to obtain the specific cable for your network separately. If you are not sure which transceiver you need, see your network administrator or support person.

> **WARNING** To avoid damage to the card and to your other computer equipment, be sure that you've turned off power to the computer before beginning installation procedures.

Your Apple Ethernet CS II card has one of three types of network connectors: twisted pair, coaxial, or AAUI connector. No matter which type of connector your card has, the procedure for installing your card in a Macintosh is the same. Perform the steps in the following procedure. Note that the Ethernet card illustrations may look slightly different from your Apple Ethernet CS II card.

1. **Follow the specific setup information that came with your Macintosh to open the back panel or lid and locate the communication slot II inside the computer.**

   The material that comes with your Macintosh includes instructions to help you avoid damage to your computer's components when installing the card. Be sure you've shut down and turned off the power to your computer before starting the installation.

2. **Remove the cover from the opening for the communication slot II on the computer's back panel.**

   Check the manual that came with your computer for specific instructions.

3. **Remove the card from its antistatic bag.**

   Handle the card by its edges and avoid touching the components and connector as much as possible.

IMPORTANT If you're installing the Apple Ethernet CS II Thin Coax Card, a T-connector is connected to your card. Before you install the card, twist the T-connector to unlock it from your card and set it aside.
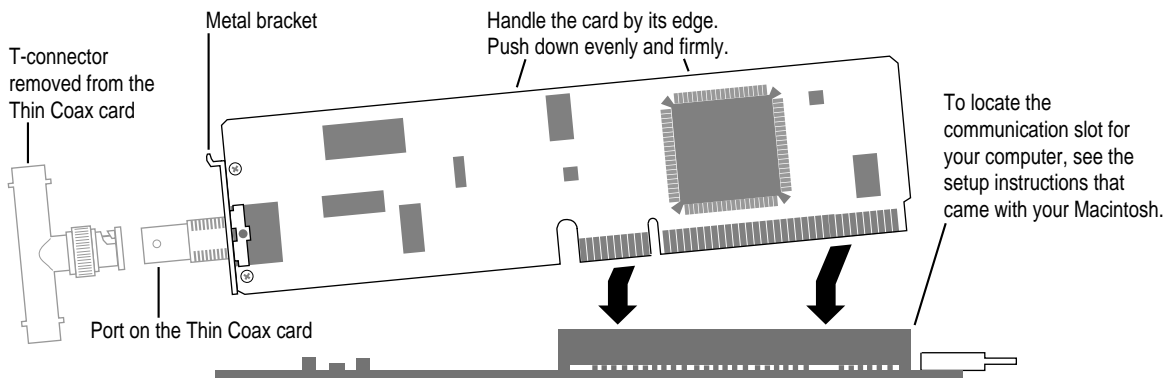
4. **Tilt the card to fit the connector through the back panel's opening and hook the small metal bracket at the top of the card to the edge of the opening.**

5. **Align the card over the communications slot and press down firmly and evenly on both ends until the card fits snugly into place.**

   You can test to see if the card is properly connected by lifting the card slightly. If it resists and stays in place, it's connected.

6. **Follow the directions that came with your computer to replace the back panel or lid and reattach any cables you removed earlier.**

   This procedure depends on the model you have.

Metal bracket

Handle the card by its edge.
Push down evenly and firmly.

T-connector removed from the Thin Coax card

To locate the communication slot for your computer, see the setup instructions that came with your Macintosh.

Port on the Thin Coax card

Connecting Your Card to the Network

To connect your card to the network, follow the instructions for your specific card. Check the illustration below to determine your card type.

CS II Thin
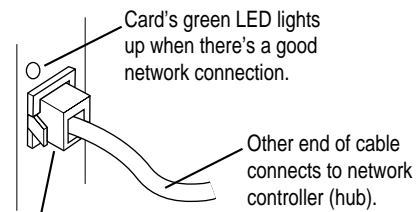Coax Card

CS II Twisted-
Pair Card
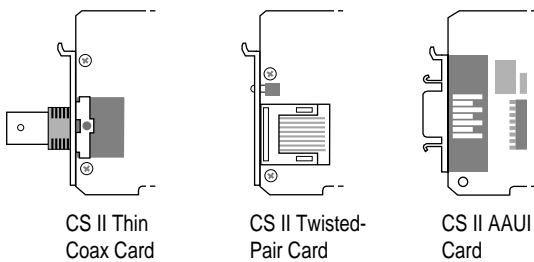
CS II AAUI
Card

Refer to the following pages for instructions on how to connect your card:

- Apple Ethernet CS II Twisted Pair Card: page 4
- Apple Ethernet CS II Coax Card: page 5
- Apple Ethernet CS II AAUI Card: page 7

Connecting an Apple Ethernet CS II Twisted Pair Card

1. **Plug the twisted-pair cable from your network into the RJ-45 port on your card.**

   Just as with a telephone wire connector, you'll hear a "click" when you plug in the cable.

Card's green LED lights up when there's a good network connection.

Other end of cable connects to network controller (hub).

RJ-45 connector clicks when you attach it to the port.

2. **Turn on the computer's power switch and start up the computer.**

   You've made the hardware connections. Turn to "Installing Your Ethernet Software" later in this booklet for software installation instructions.

Connecting an Apple Ethernet CS II Coax Card

IMPORTANT Connecting your computer to the network will temporarily disrupt services to other users, so work quickly. To minimize the disruption, alert your network administrator before continuing these instructions.

1. **Attach one end of the new cable for your computer to the T-connector you removed from your card.**

   Be sure to twist and lock the cable's connector to your T-connector.

2. **On the computer closest to your computer, detach the network cable (or terminator) from the T-connector.**

   This disrupts network services for other users.

   Note: You can add a computer in the middle or at either end of the network.

3. **Lock the free end of the new cable to the T-connector on the other computer.**

4. **If you are adding your computer somewhere in the middle of the network, lock the unattached network cable to your T-connector. Otherwise, lock a terminator to your T-connector.**

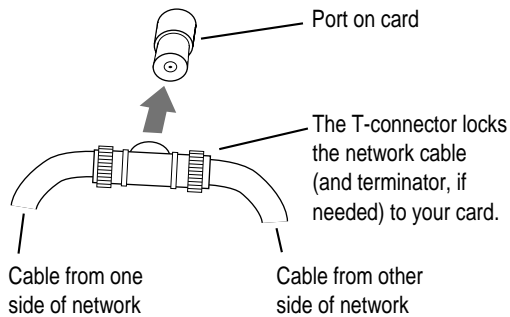   This restores network services for other users.

When you add your Thin Coax Card, you must use a T-connector in one of these two ways:

Twist to lock both cables to a T-connector in the middle of the network.

Lock a terminator to a T-connector at the end of the network.

Network continues
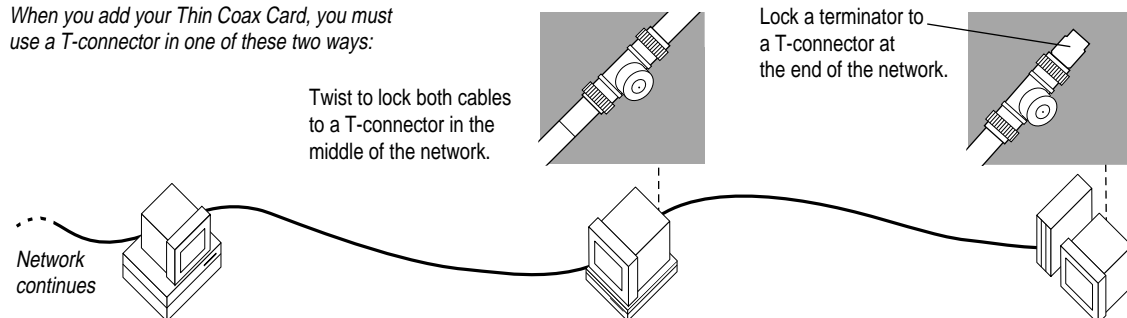
5. Attach your T-connector to the port on your card.

It may help to use two hands. With one hand, push the T-connector on the port. While still holding the T-connector, use the fingers on your other hand to lock the connector into place.

Pull the T-connector to test that it is locked securely to the port.

Port on card

The T-connector locks the network cable (and terminator, if needed) to your card.

Cable from one side of network

Cable from other side of network

6. Turn on your computer's power switch and start up the computer.

You've made all the necessary hardware connections. Next you'll install and set up your network communication software. For instructions, turn to "Installing Your Ethernet Software" later in this booklet.

Connecting an Apple Ethernet CS II AAUI Card

1. **Plug the AAUI connector from your network transceiver cable into the AAUI port on your card.**

   You need a specific AAUI-compatible transceiver for the kind of media used for your network: thick coax, twisted-pair, thin coax, fiber-optic, or twisted-pair hub. The transceiver connects your computer to the main network cable.

   The AAUI connector attaches to the card's port.
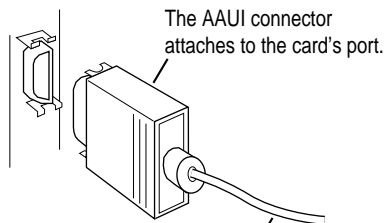
   The cable also connects to the appropriate AAUI-compatible transceiver for your network.

2. **Turn on the computer's power switch and start up the computer.**

   You've made all the necessary hardware connections. Next you'll install and set up your network communication software. For instructions, turn to "Installing Your Ethernet Software" later in this booklet.

Installing Your Software

If you purchased a new Macintosh with an Apple Ethernet CS II card, you may already have the required software installed.

If a *PCI Network Installer* disk is included with your card, perform the steps in "Installing the Software," next.

If no *PCI Network Installer* disk is included with your card, the latest software is already installed. Skip ahead to "Setting the Network Software Selector."

Installing the Ethernet software

To install the latest version of Ethernet software you need to use the Installer program on the *PCI Network Installer* disk, included with your card.

For safety, make sure that the Installer disk is locked before you use it. To lock a disk, slide the tab on the back side so that the square hole is open.

Keep the Installer disk after installation in case you need to reinstall Ethernet software some time in the future.
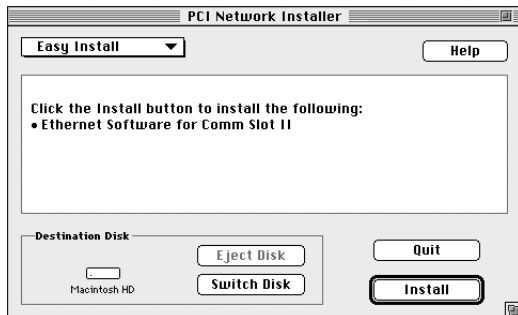
Close all open applications before installing.

To install Ethernet software:

1. **Insert the *PCI Network Installer* disk in your Macintosh and double-click the disk's icon to open it.**

   The Apple Ethernet CS II cards require the versions of software supplied on the *PCI Network Installer* disk.

2. **Open the Installer program, review the Welcome screen, and click Continue.**

   The Easy Install dialog box appears.

   ```
   ═══════════ PCI Network Installer ═══════════

   ┌─ Easy Install      ▼ ┐              ┌─ Help ─┐

   ┌─────────────────────────────────────────────┐
   │ Click the Install button to install the following: │
   │ • Ethernet Software for Comm Slot II          │
   │                                                │
   │                                                │
   └─────────────────────────────────────────────┘

   ┌─ Destination Disk ─┐       ┌─ Eject Disk ─┐      ┌─ Quit ──┐
   │    [▭]             │       └──────────────┘
   │  Macintosh HD      │       ┌─ Switch Disk ┐      ┌─ Install ┐
   └────────────────────┘       └──────────────┘      └──────────┘
   ```

3. **Make sure that the disk indicated in the Installer's dialog box is your current startup disk. Then click Install.**

   If you see a message indicating that the software cannot be installed while other programs are running, click Continue.

4. **When you see a message reporting that the installation was successful, click Restart.**

   Before you can use services on an Ethernet network, you need to specify that you're using an Open Transport network configuration. You then set two control panels for Ethernet networking. The next section shows how.

Setting the Network Software Selector

To use your Apple Ethernet CS II card, you must set your computer to use Open Transport Networking, which provides advanced networking services and compatibility. You use the Network Software Selector application to select Open Transport Networking.

For more information about Open Transport, see the "Networks" topic area of the Macintosh Guide, available in the Guide (⍰) menu.
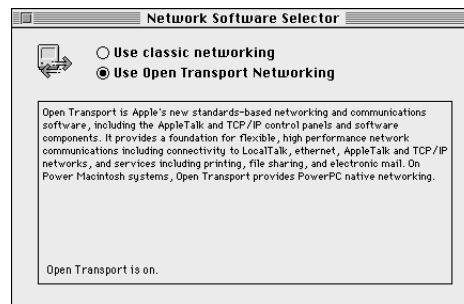
Follow these steps:

1. **Open the Apple Extras folder.**

2. **Double-click the Network Software Selector application to open it.**

Network Software Selector

3. **Click "Use Open Transport Networking" button to select it, if necessary.**

4. **Choose Quit from the File menu.**

   If you changed the selected option in the Network Software Selector, you must now restart your computer to have your changes take effect. If Open Transport was already selected, you don't need to restart.

5. **Choose Restart from the Special menu, if necessary.**

Setting your control panels for Ethernet

You must next set the AppleTalk and TCP/IP control panels for Ethernet.

Setting the AppleTalk control panel

A Macintosh computer's AppleTalk network connection is preset for LocalTalk connected to either the printer port or the modem port. To connect to an Ethernet network using AppleTalk, you need to change the setting in the AppleTalk control panel.
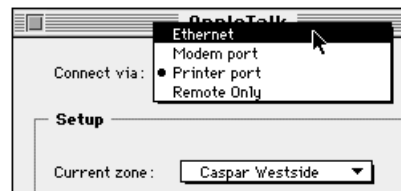
Follow these steps:

1. **Choose Control Panels from the Apple (⌘) menu.**

2. **Double-click the AppleTalk control panel to open it.**

3. **Choose Ethernet from the pop-up menu.**

   (You may have different network-connection choices from those shown in the figure.)

4. If you see a pop-up menu that lists zones, select the zone you want.
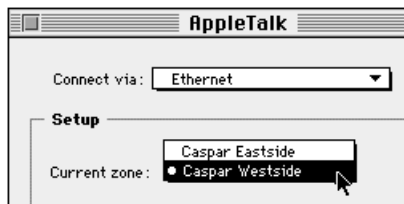
If your network has been set up to allow you to choose a zone but you have not yet done so, the menu lists choices, with your designated zone selected. The zone you select determines the default location for any network services provided by your computer and listed in the Chooser (such as file sharing). Before you select a zone different from the one already highlighted, consult your network administrator.

5. Make any changes you want to the AppleTalk address.

Consult your network administrator if you need assistance with this information.

6. Close the AppleTalk control panel.

A dialog box asks you to confirm your changes.

7. Click Save to save the changes you made in the AppleTalk connection.

You are now ready to use AppleTalk services available on your Ethernet network.

For Apple Ethernet CS II Twisted Pair and Coax Cards only:

8. Check that the LED light on the card (above the port) indicates that the card is working properly.

Twisted Pair Card: The light is pale green when the connection is good. The green light blinks brightly when data is being transmitted from the card.

Coax Card: The light is pale green when the card is selected in either the AppleTalk or the TCP/IP control panel. The green light blinks brightly when data is being transmitted from the card.

Setting the TCP/IP control panel for Ethernet

If you want to connect to an Ethernet network using TCP/IP network protocols, you need to change the setting in the TCP/IP control panel.
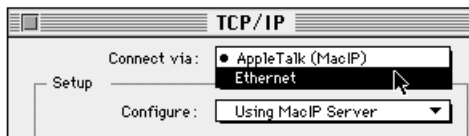
Follow these steps:

1. **Choose Control Panels from the Apple (🍎) menu.**

2. **Double-click the TCP/IP control panel to open it.**

3. **Choose Ethernet from the pop-up menu.**

    (You may have different network-connection choices from those shown in the figure.)

4. **Make any changes you want to the configuration or the IP address.**

Consult your network administrator if you need assistance with this information.

5. **Close the TCP/IP control panel.**

    A dialog box asks you to confirm your changes.

6. **Click Save to save the changes you made in the TCP/IP connection.**

    You are now ready to use TCP/IP services available on your Ethernet network.

For Apple Ethernet CS II Twisted Pair and Coax Cards only:

7. **Check that the LED light on the card (above the port) indicates that the card is working properly.**

    Twisted Pair Card: The light is pale green when the connection is good. The green light blinks brightly when data is being transmitted from the card.

    Coax Card: The light is pale green when the card is selected in either the TCP/IP or the AppleTalk control panel. The green light blinks brightly when data is being transmitted from the card.

You've now completed setting up your Apple Ethernet CS II software for networking.

13

Disconnecting and Moving Your Computer

To disconnect your computer from the network, shut down your system and unplug the network cable's connector from the port on the Ethernet card. Do not disconnect the network cable or terminator.

If you plan to move your computer and reconnect to the network at a new location, notify your network administrator before you move.

14

Troubleshooting

Following are guidelines for handling common problems. If these suggestions don't help you fix the problem, contact your network administrator.

IMPORTANT The first step in troubleshooting any problem with your network connection is to check each of the following items.

- The computer's power is on.
- The card is installed correctly.
- The Ethernet cable's connector is securely fastened to your card.
- The network cable is in good condition and locked to the connector.
- If your card is configured for a thin coax cable and your computer is on either end of the network, be sure that a terminator is locked to the T-connector.
- Your Ethernet network is working properly—no one else is having problems with the network.

If the AppleTalk or TCP/IP control panel icon is missing:

The AppleTalk or TCP/IP control panel may have been moved from the Control Panels folder. Look for it on your hard disk, drag it to the Control Panels folder, and restart your Macintosh.
Also check to see whether your software is set to use Open Transport networking. See the instructions in "Setting the Network Software Selector."

Your Ethernet software may not have been installed properly. If you can't find the AppleTalk or TCP/IP control panel, you'll need to reinstall the network software according to the instructions in this guide.

If Ethernet doesn't appear in the AppleTalk or TCP/IP control panel:

Make sure that you have installed your Apple Ethernet CS II card in your communications slot II. Also, there may have been a problem with the network software installation. Reinstall your network software according to the instructions in this guide.

If you can't select Ethernet in the AppleTalk or TCP/IP control panel:

You can only select Ethernet when the network cable is installed properly and the network is operating correctly. Be sure that the network cable is properly attached. If you are still unable to select Ethernet, there may have been a problem with the network software installation. Reinstall your network software according to the instructions in this booklet.

On the Apple Ethernet CS II Twisted Pair Card, the external LED will light when a proper network connection is established. If the LED doesn't light, the network is not responding to your card. See you network administrator for help.

If you don't see network services listed in the Chooser:

Make sure your network connection is set correctly. Open the AppleTalk control panel and choose Ethernet. (If the Chooser is open, close and reopen it to update its information.)

On the Apple Ethernet CSII Twisted Pair Card, the external LED will light when a proper network connection is established. If the LED doesn't light,the network is not responding to the card. See your network administrator.

If you can access some services but can't access a particular service (printing, for example), the device providing that service might be located in a different AppleTalk zone, or it might be malfunctioning, switched off, or disconnected from the network. There may also be a break somewhere in the network cables between your Macintosh and the missing service.

If your system can't load Ethernet at startup and reverts to LocalTalk:

Your System file may be damaged or your Ethernet installation was unsuccessful. Try reinstalling the network software. Also check that your network cable is properly attached and terminated, if necessary. Check that your card is properly installed.

If the system won't let you change the network connection:

You may be using essential services (such as file sharing) or applications that might prohibit the change. Quit the service named in the system's alert message and try changing the network connection again. You can also try quitting all application programs. If this doesn't work, and it's all right for you to disrupt services, shut down your Macintosh using the Shut Down command. Restart the computer, change the network connection, and start the service or application again.

If your card is defective or you have a problem with the installation and your network administrator cannot help:

In the United States, contact the Apple Assistance Center at 800-SOS-APPL. In Canada, call 1-800-263-3394. Outside the United States and Canada, contact your local Apple-authorized reseller.

Specifications

Apple Ethernet CS II Thin Coax Card

Connector   Ethernet IEEE 802.3– compliant BNC port

Cable   RG-58/U; 2-meter minimum
                           length between devices

Terminator   50 ohm, BNC-type

Ethernet transmit/   10 megabits per second maximum
receive data rate

Power dissipation   Less than 2.5 watts, with an average of
                           2.25 watts

Environmental   Operating temperature: 50˚ to 104˚ F
requirements   (10˚ to 40˚ C)

                           Humidity: 20% to 95% noncondensing

Ethernet controller   Digital Semiconductor DECchip 21041

Apple Ethernet CS II Twisted-Pair Card

Connector   Ethernet 10BASE-T– compliant
                           RJ-45 port

Recommended   Category 3, 26 gauge; 100 meters from
cable   card to hub, maximum

Ethernet transmit/   10 megabits per second data rate
receive   maximum

Power dissipation   Less than 1.25 watts, with an average of
                           .9 watt

Environmental   Operating temperature: 50˚ to 104˚ F (10˚
requirements   to 40˚ C)

                           Humidity: 20% to 95% noncondensing

Ethernet controller   Digital Semiconductor DECchip 21041

Apple Ethernet CS II AAUI Card

Connector Ethernet IEEE 802.3– compatible AAUI port

Ethernet transmit/ 10 megabits per second data
receive rate maximum

Power dissipation Less than .9 watts, with an average of
.75 watt (plus transceiver power dissipation.)

Environmental Operating temperature: 50˚ to 104˚ F
requirements (10˚ to 40˚ C)

Humidity: 20% to 95% noncondensing

Ethernet controller Digital Semiconductor DECchip 21041

For More Information

The following books from Apple Computer, published by Addison-Wesley, are available at computer bookstores.

Planning and Managing AppleTalk Networks provides comprehensive information on setting up, maintaining, and troubleshooting small- to medium-sized AppleTalk networks.

Inside AppleTalk, second edition, is the definitive technical guide to the protocol architecture of the AppleTalk network system.

Apple
Ethernet CS II Card
User's Guide

FCC statement for Apple Ethernet CS II Thin Coax Card

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to the specifications in Part 15 of Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation.

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

- Install a rooftop television antenna with a coaxial cable lead-in between the antenna and the television.

If necessary, consult an Apple-authorized service provider or Apple for assistance. See the service and support information that came with your Apple product. Or contact an experienced radio-television technician for additional suggestions. You may find helpful the following booklet, prepared by the FCC: *Interference Handbook* (stock number 004-000-00493-1). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC certification and negate your authority to operate the product. This product was tested for FCC compliance under conditions that included the use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cables through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Industry Canada

DOC Class B Compliance

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.

Observation des normes—Classe B

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe B prescrites dans les règlements sur le brouillage radioélectrique édictés par le Ministère des Communications du Canada.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第一情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域又はその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

EU statement

This equipment generates, uses, and may radiate radio-frequency energy and, if not properly installed and used in accordance with the instruction manual, may result in interference to radio communications.

This equipment has been designed, tested, and found compliant with the Class A limits for Information Technology Equipment of EN55022. These limits are designed to provide reasonable protection against radio interference when the equipment is operated in a commercial environment.

FCC statement for Apple Ethernet CS II Twisted-Pair Card and Apple Ethernet CS II AAUI Card

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at the user's own expense, will be required to correct the interference.

IMPORTANT Changes or modifications to this product are not authorized by Apple Computer, Inc., and could void the FCC certification and negate your authority to operate the product. This product was tested for FCC compliance under conditions that included the use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cables through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Industry Canada

DOC Class A Compliance

This class A digital device meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第一情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域又はその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

EU statement

This equipment generates, uses, and may radiate radio-frequency energy and, if not properly installed and used in accordance with the instruction manual, may result in interference to radio communications.

This equipment has been designed, tested, and found compliant with the Class A limits for Information Technology Equipment of EN55022. These limits are designed to provide reasonable protection against radio interference when the equipment is operated in a commercial environment.

Contents

v