

**SONY.**

# **VAIO Digital Studio™ Reference Manual**

**PCV-R522DS/PCV-R526DS/PCV-R528DS**



## Notice to Users

© 1998 Sony Electronics Inc. All rights reserved. This manual and the software described herein, in whole or in part, may not be reproduced, translated, or reduced to any machine-readable form without prior written approval.

SONY ELECTRONICS INC. PROVIDES NO WARRANTY WITH REGARD TO THIS MANUAL, THE SOFTWARE, OR OTHER INFORMATION CONTAINED HEREIN AND HEREBY EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WITH REGARD TO THIS MANUAL, THE SOFTWARE, OR SUCH OTHER INFORMATION. IN NO EVENT SHALL SONY ELECTRONICS INC. BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, WHETHER BASED ON TORT, CONTRACT, OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THIS MANUAL, THE SOFTWARE, OR OTHER INFORMATION CONTAINED HEREIN OR THE USE THEREOF.

Sony Electronics Inc. reserves the right to make any modification to this manual or the information contained herein at any time without notice. The software described herein may also be governed by the terms of a separate user license agreement.

Sony, VAIO, VAIO Digital Studio and the VAIO logo are trademarks of Sony. Microsoft, Windows, and the Windows 98 logo are registered trademarks of Microsoft Corporation. Intel and Pentium are trademarks of Intel Corporation. K56flex is a trademark of Lucent Technologies Inc. and Rockwell International. All other trademarks are trademarks of their respective owners.

## Safety Information

### Owner's Record

The model number and serial number are located on the back of your VAIO computer. Record the serial number in the space provided here. Refer to the model and serial number when you call your Sony Service Center.

Model Number: PCV-R522DS/PCV-R526DS/PCV-R528DS

Serial Number: \_\_\_\_\_

### WARNING

- To prevent fire or shock hazard, do not expose your VAIO computer to rain or moisture.
- Never install modem or telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations
- Never touch uninsulated telephone wire or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using the modem during an electrical storm.
- Do not use the modem or a telephone to report a gas leak in the vicinity of the leak.

**!** The use of optical instruments with this product will increase eye hazard.

## Regulatory Information

### Declaration of Conformity

Trade Name: SONY  
Model No.: PCV-R522DS/  
PCV-R526DS/PCV-R528DS  
Responsible Party:  
Sony Electronics Inc.  
Address:  
1 Sony Drive  
Park Ridge, NJ 07656  
Telephone No: 201-930-6970

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

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from

that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with non-compliant peripherals is likely to result in interference to radio and television reception.

All cables used to connect peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded, may result in interference to radio and television reception.

## *FCC Part 68*

This equipment complies with Part 68 of the FCC rules. The ringer equivalence number (REN) and the FCC registration number are printed on the modem board. If requested, this information must be supplied to the telephone company.

The REN is used to determine the quantity of devices which may be connected to the phone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's, contact the telephone company to determine the maximum REN for the calling area.

This modem uses the USOC RJ-11 telephone jack.

If this equipment causes harm to the telephone network, the telephone company will, when practical, notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operations of the equipment. If this happens, the telephone company will notify you in advance, in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this modem, for repair or warranty information, please contact 1-888-4SONYPC, or write to the Sony Customer Information Center, One Sony Drive, Park Ridge, NJ 07656.

This equipment cannot be used on telephone-company-provided coin service. Connection to Party Line Service is subject to state tariffs.

Repair of the modem should be made only by a Sony Service Center or Sony authorized agent. For the Sony Service Center nearest you, call 1-800-222-SONY (1-800-222-7669).

## *Telephone Consumer Protection Act of 1991*

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone facsimile machine unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business, other entity, or individual sending the message, and the telephone number of the sending machine or such business, other entity, or individual.

In order to program this information into your facsimile, see your fax software documentation.



You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

# Contents

Notice to Users .....	ii
Safety Information .....	ii
Regulatory Information.....	iii
FCC Part 68 .....	iv
Telephone Consumer Protection Act of 1991.....	iv

## *Chapter 1 — Identifying Components*

Front View .....	2
Drives .....	3
Buttons and Switches .....	4
Indicators .....	5
Connectors .....	6
Rear View .....	7
Icons .....	8
I/O Connectors .....	10
Expansion Slots .....	15

## *Chapter 2 — Configuring Your System*

Accessing the BIOS Setup Utility .....	18
Changing the Display's Power Management Settings .....	19
Configuring the System Board .....	21

## *Chapter 3 — Removing, Installing, and Replacing Components*

Removing the Cover .....	24
Removing the Front Panel .....	26
Replacing the Front Panel.....	27
Replacing the Cover .....	28

Installing an Add-In Card .....	30
Removing an Add-in Card .....	31
Replacing the Lithium Battery .....	33
Installing System Memory .....	36
Removing a Memory Module .....	39
Removing a Slot Cover .....	41
Covering an Open I/O Slot .....	42
Installing a 3½" Internal Hard Disk Drive.....	43
Installing a 5¼" Internal Hard Disk Drive.....	47
Removing the Power Supply .....	50
Replacing the Power Supply .....	53

## Chapter 4 — System Board

Connectors.....	56
Front Panel Header (J25) .....	56
Diskette Drive Connector .....	57
Memory Module (DIMM) Connectors .....	58
PCI Slot Connectors.....	59
AGP Connector .....	60
IDE Connectors .....	61
Power Connector .....	61
Keyboard and Mouse Connectors .....	62
USB Connectors .....	63
Serial 1, Printer, and i.LINK Connectors .....	64
Fan Connectors .....	67
Game Connector.....	68
Headphones, Line In, Mic Connectors.....	69
i.LINK Header Connectors .....	70
CD-IN Connector .....	71
AUX-IN Connector .....	72
Configuration Settings .....	73

## Chapter 5 — Fax/Modem Card

Connectors .....	75
------------------	----

## Chapter 6 — CMOS Setup Options

STANDARD CMOS SETUP Screen .....	78
BIOS FEATURES SETUP Screen.....	79
CHIPSET FEATURES SETUP Screen.....	81
POWER MANAGEMENT SETUP Screen.....	83
PNP AND PCI SETUP Screen .....	85
LOAD SETUP DEFAULTS Screen .....	87
SUPERVISOR PASSWORD Screen .....	87
USER PASSWORD Screen.....	87
IDE HDD AUTO DETECTION Screen.....	87
SAVE & EXIT SETUP Screen.....	87
EXIT WITHOUT SAVING Screen .....	87

## Chapter 7 — Miscellaneous Technical Information

About User and Supervisor Passwords .....	90
Beep Code Error Messages .....	91
PCI Configuration Status and Error Messages .....	92
DMA Channel Assignments .....	94
System I/O Address Map .....	95
Memory Map .....	98

## Chapter 8 — Specifications

Processors .....	99
Chipset .....	99
PCI Bus .....	99
Memory Modules (DIMMs) .....	99
DIMM Configurations .....	100
L2 Cache .....	100
Graphics .....	100
Audio .....	101
Communications .....	101
I/O and Expansion Slots .....	101
Drives and Controllers .....	102
System BIOS .....	103



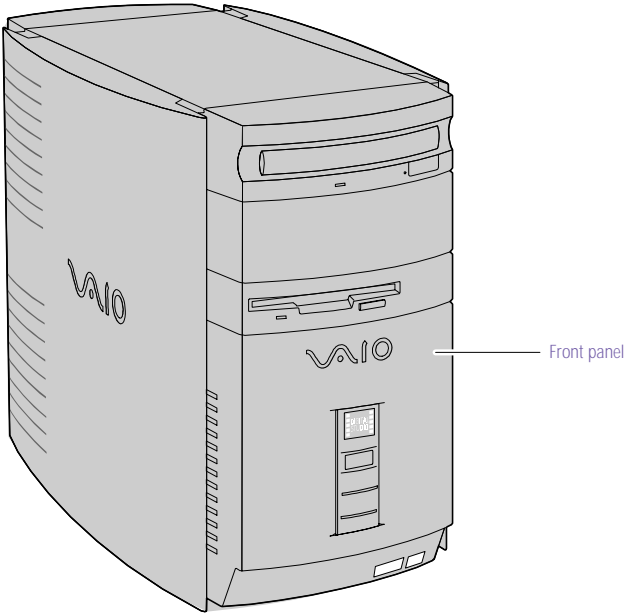


# *Chapter 1*

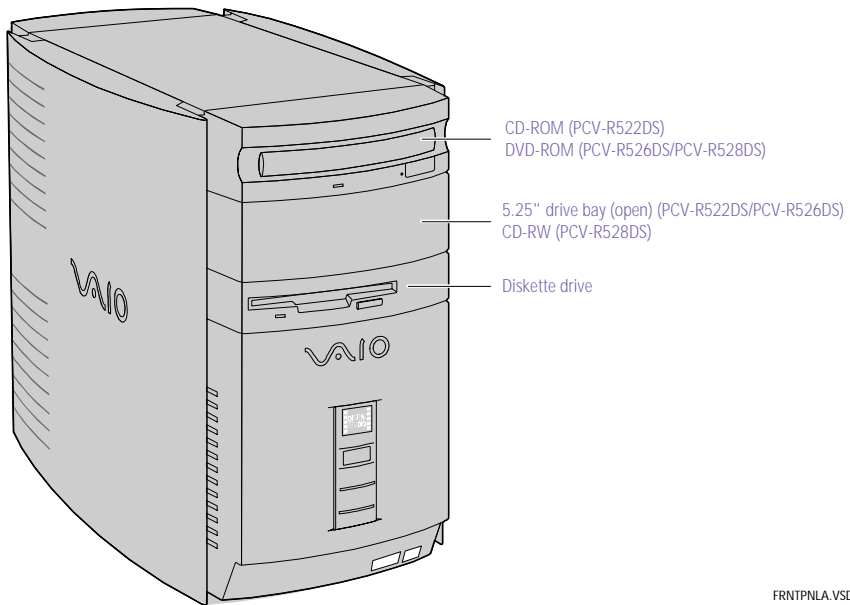
## *Identifying Components*

The following sections identify and describe each component that is visible from the exterior of the VAIO Digital Studio™ Computer. Internal components are identified in the appropriate section of this manual.

## Front View



## Drives

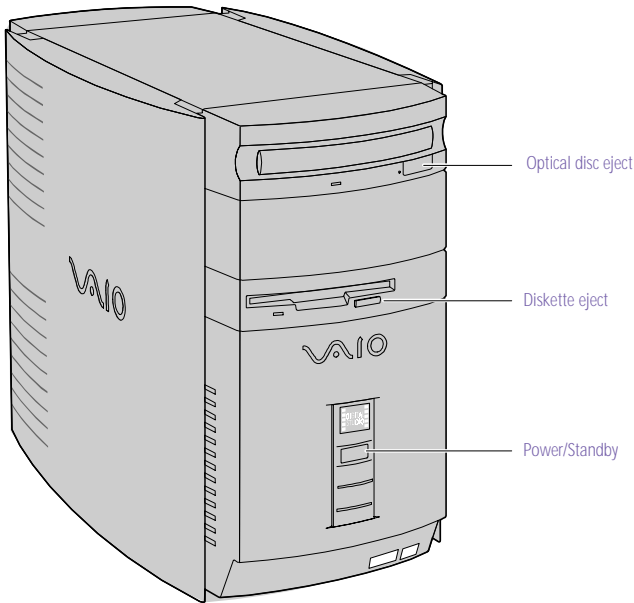


<i>Drive</i>	<i>Description</i>
Diskette drive	3.5-inch, 1.44 Mbyte.
CD-ROM drive (PCV-R522DS only)	CD-ROM read: 32X (maximum performance).*
DVD-ROM drive (PCV-R526DS/ PCV-R528DS only)	DVD-ROM read: 6X (maximum performance). <sup>†</sup> CD-ROM read: 24X (maximum performance).
CD-RW drive (PCV-R528DS only)	CD-RW read: 8X (maximum performance). CD-RW write: 2X (maximum performance). CD-ROM read: 24X (maximum performance).

\* Data on a CD-ROM is read at a variable transfer rate, ranging from 14X at the innermost track to 32X at the outermost track (the data transfer standard 1X rate is 150 kbytes/s). The average data transfer rate is 23X (3450 kbytes/s).

† Data on a DVD-ROM is read at a variable transfer rate, ranging from 2.5X at the innermost track to 6X at the outermost track (the data transfer standard 1X rate is 1385 kbytes/s). The average data transfer rate is 4.25X (5886.25 kbytes/s). Data on a CD-ROM is read at a variable transfer rate, ranging from 10X at the innermost track to 24X at the outermost track (the data transfer standard 1X rate is 150 kbytes/s). The average data transfer rate is 17X (2550 kbytes/s).

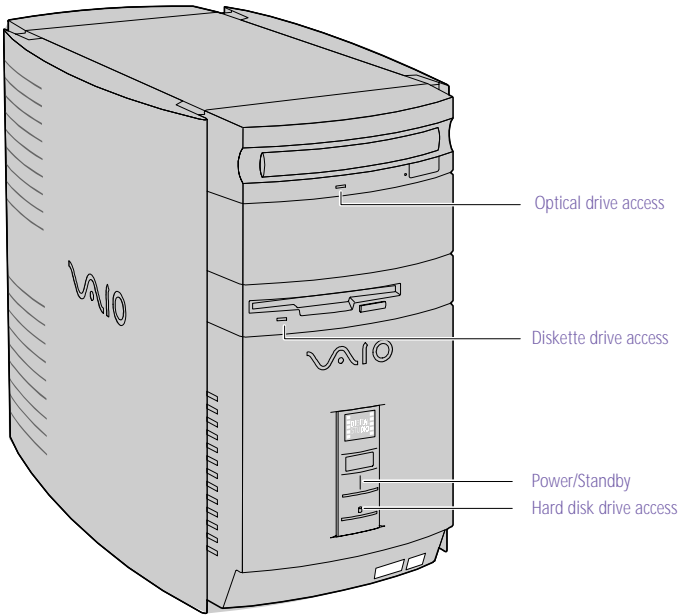
## Buttons and Switches



FRNTPNLB.VSD

<i>Button or switch</i>	<i>Description</i>
Power/Standby switch	Turns system power on, off, or into standby mode.
Diskette eject button	Ejects a diskette.
Optical disc eject button	Automatically opens and closes the optical drive tray.

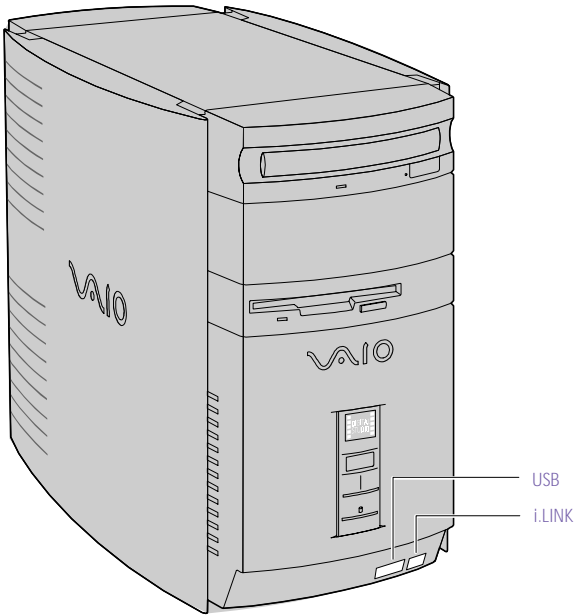
## Indicators



FRNTPNLC.VSD

<i>Indicator</i>	<i>Description</i>
Power/Standby indicator	Standby (amber) indicates the computer is in standby mode. On (green) indicates the computer is out of standby mode, ready to use. Off (no color) indicates the computer is turned off.
Diskette drive access indicator	On (green) indicates diskette drive activity.
Optical drive access indicator	On (orange) indicates CD-ROM activity.
Hard disk drive access indicator	On (orange) indicates hard disk drive activity.

## Connectors

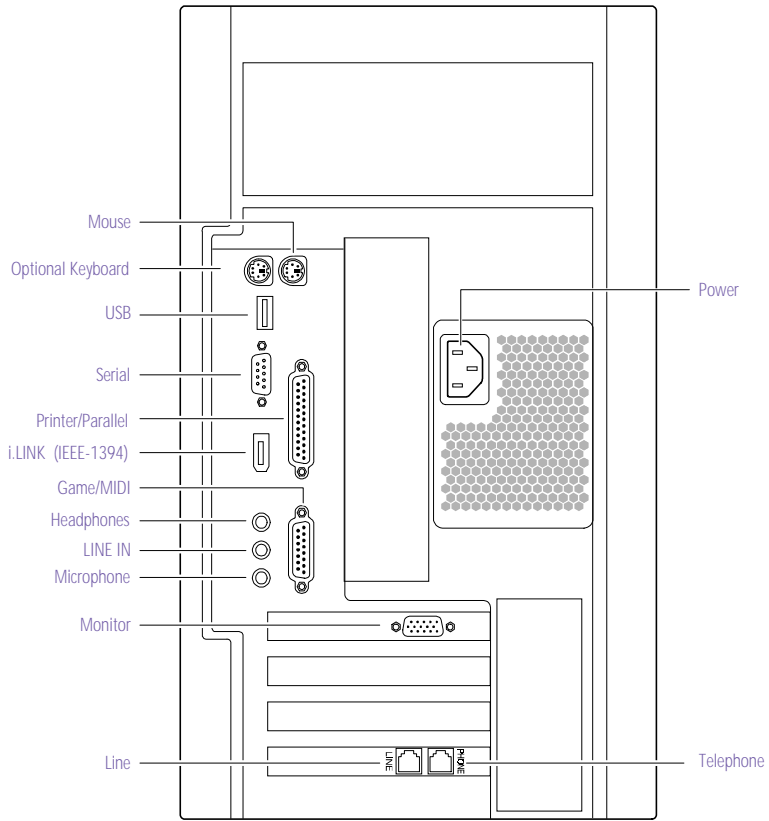


FRNTPNLD.VSD

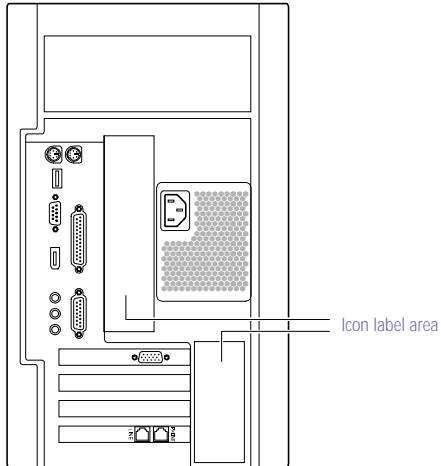
<i>Connector</i>	<i>Description</i>
i.LINK (IEEE-1394)*	Connects to a digital device that has a 4-pin i.LINK connector.
USB	Connects to USB devices.

\* To connect to a 6-pin i.LINK device, use the i.LINK connector on the back of the system. A 6-pin i.LINK connector can supply power from the computer to the device if the device also has a 6-pin i.LINK connector. A 4-pin i.LINK connector cannot supply power to the device.












## Rear View





## Icons



OM04692X.VSE

<i>Icon</i>	<i>Description</i>
	Mouse connector
	Optional Keyboard connector
	Universal Serial Bus (USB) connector
	Serial port connector
	Printer port connector
	Game/MIDI port connector
	Headphones
	LINE IN jack (audio)
	Microphone jack
	Monitor connector
	Line (for telephone line from primary service jack)



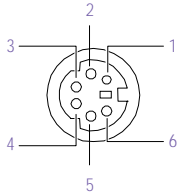
<i>Icon</i>	<i>Description</i>
	Telephone (for phone)
	i.LINK (IEEE-1394)

## I/O Connectors

The following section identifies the various I/O connectors.

### Optional Keyboard and Mouse

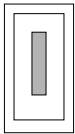
The optional keyboard and mouse connectors are physically identical and have the same pinout. They are standard 6-pin PS/2<sup>®</sup>-type female connectors.



KY0002.VSD

### USB Ports

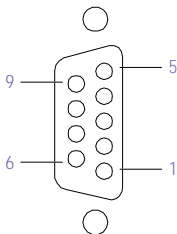
The USB ports are standard 4-pin USB connectors. A USB connector is located at the front and rear of the system.



KY0003.V:

### Serial Port

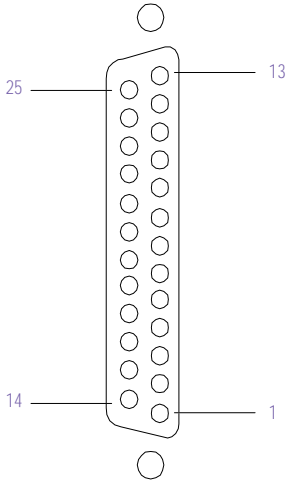
The serial port is a standard 9-pin DB-9 male connector.



KY0057.VSD

### Printer/Parallel Port

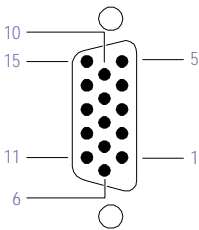
The printer/parallel port is a standard 25-pin DB-25 female connector.



KY0005.VSD

### Monitor

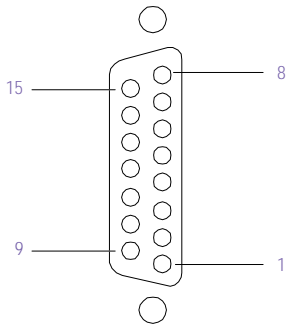
The Monitor connector is a standard 15-pin female high-density VGA-type connector.



KY0004.VSD

### Game Port

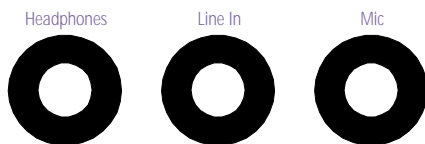
The Game port is a standard 15-pin DB-15 female connector. This port is also used to connect MIDI devices.



KY0012.VSD

### Mic, Line In, and Headphones

The Mic, Line In, and Headphones jacks are physically identical, but have different connections. They are standard 3.5 mm stereo mini-jacks.

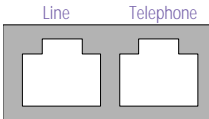


KY0013.VSC

Connector	Description
Headphones	1.0 Vrms (typical).
Mic	Electrolet condenser microphone input.
Line In	1.0 Vrms (typical), 10 Kohm impedance.

### *Telephone and Line*

The Telephone and Line jacks are physically identical and have identical connections. They are standard RJ-11 female phone jacks. However, the Line jack is for connecting to a telephone line that comes from the wall, and the Telephone jack is for connecting the computer to a telephone.



KY0014.VSD



Accidentally plugging a phone line from the wall into the modem's Telephone jack, and a telephone into the Line jack, will not damage the modem card or telephone equipment. However, the modem will not work correctly.

### *i.LINK® (IEEE-1394) Connectors*

The 6-pin i.LINK connector on the back of the system can supply power from the computer to a device if the device also has a 6-pin i.LINK connector. The 6-pin connector supplies 10V to 12V and a maximum power of 6 watts.

The 4-pin i.LINK connector at the bottom of the front panel does not supply power.

6-pin i.LINK  
(IEEE-1394)



On back of  
system

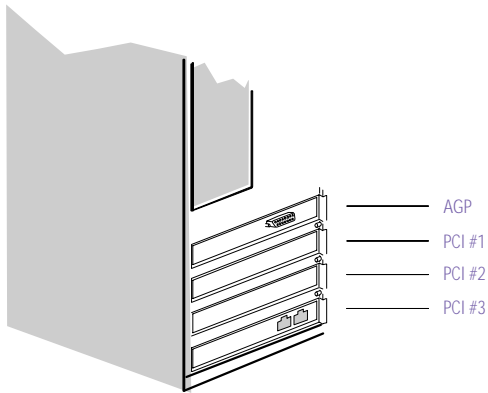
4-pin i.LINK  
(IEEE-1394)



At bottom of  
front panel

### Expansion Slots

There are three PCI slots, two of which are available for expansion. The other PCI slot is occupied by the fax/modem card.







# *Chapter 2*

## *Configuring Your System*

This chapter contains information on configuring your system. Configuring your system can consist of the following:

- ❑ Making changes to the BIOS settings
- ❑ Making changes to the display's power management settings
- ❑ Changing the system board jumper position

## Accessing the BIOS Setup Utility

You must access the CMOS Setup Utility to make changes to the BIOS settings (see “CMOS Setup Options” on page 77 for information on BIOS settings).

! Before rebooting the system, save any open files and exit Windows®.

- 1 Reboot the system.
- 2 Press F2 after the progress bar starts.
- 3 Use the arrow keys to select an item from the main menu.
- 4 Press Enter to display the options for the selected item.
- 5 Use the arrow keys to select an option.
- 6 Press Page Up or Page Down to modify the setting.
- 7 Press ESC to return to the main menu.
- 8 Select SAVE & EXIT SETUP, then press Enter. Follow the on-screen prompts.

## Changing the Display's Power Management Settings

A display that has power management capability is designed to operate on reduced power or shut itself off after the system has been idle for a specified period of time.

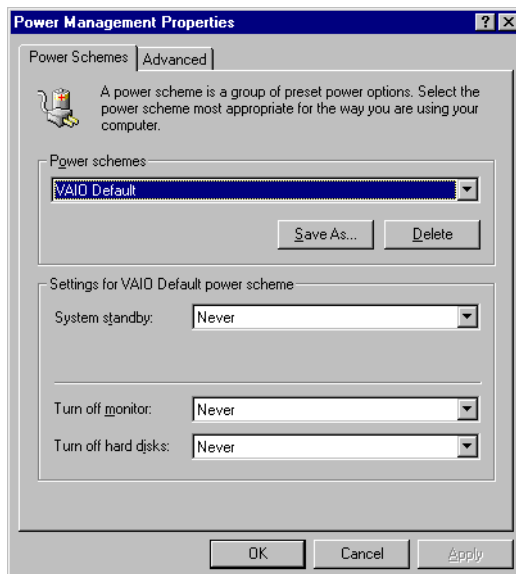
- 1 From the Start menu, point to Settings, then click Control Panel.
- 2 Double-click the Display icon.
- 3 Click the Screen Saver tab.

If your display is Energy-Star compliant or has other energy-saving features, the Energy saving features of the monitor dialog box appear. Otherwise, the options in the dialog box are grayed out.



- 4 Click Settings.

The Power Management Properties dialog box opens, with the Power Schemes tab displayed.



- 5 Select the power scheme that is most appropriate for the way you use your computer.

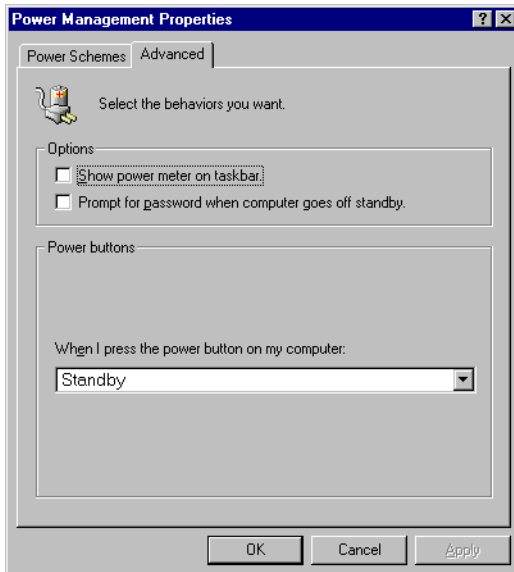
To change a power scheme, change the settings for System standby, Turn off monitor, and Turn off hard disks.

The System standby option allows you to specify the period of inactivity (in minutes) that you want to elapse before your computer goes on standby when your computer is running on AC power. Power is reactivated when you click the left mouse button or press a key.

The Turn off monitor option allows you to specify the period of inactivity (in minutes) that you want to elapse before your monitor turns off when your computer is running on AC power. The display reactivates when you move the mouse or press a key.

The Turn off hard disks option allows you to specify the period of inactivity (in minutes) that you want to elapse before your hard disks turn off when your computer is running on AC power.

- 6 To save a new power scheme, first modify the settings, click Save As, type a descriptive name, and then click OK.
- 7 Click the Advanced tab.



- 8 Select the desired settings, and then click OK.

## Configuring the System Board

The system board contains five configuration switches that provide the following:

- ❑ Switch 1: Normal mode and Clear CMOS mode.
- ❑ Switches 2 through 5: CPU Frequency multiplier.

Normal mode allows normal access to the BIOS Setup Utility. The Central Processing Unit (CPU) input clock is forced to remain at 100 MHz (fast mode), and the Basic Input/Output System (BIOS) uses the User CMOS settings (as opposed to the System CMOS settings). The CMOS and NVRAM settings are only cleared if the checksum test returns false. Access to specific setup fields is controlled by a supervisor password or user password.

The Clear CMOS mode removes the password that is stored in CMOS. No other parameters are cleared.

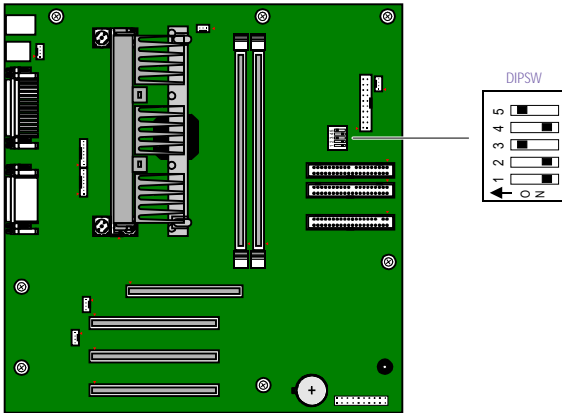


The configuration jumpers should never need changing unless otherwise directed by a technical support or service technician.

**!** Before opening the system, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and unplug the power cord.

- 1 Remove the cover (see “[Removing the Cover](#)” on page 24).

- 2 Set the switches as directed by a service technician (also see “Configuration Settings” on page 73).



OM04588.VSD

- 3 Reinstall the cover (see “Replacing the Cover” on page 28).
- 4 Reinstall the front panel (see “Replacing the Front Panel” on page 27).

# *Chapter 3*

## *Removing, Installing, and Replacing Components*

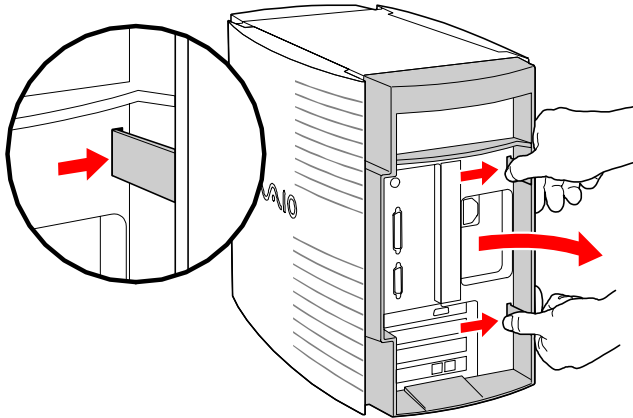
This chapter describes removing, installing, and replacing major components for upgrading, reconfiguring, and troubleshooting the components.

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

## Removing the Cover

You must remove the cover to access the system board, add-in cards, power supply, battery, memory, and internal drives.

- 1 From the rear of the unit, press the two tabs on the right side.
- 2 Remove the frame from the unit by gently pulling it from left to right.

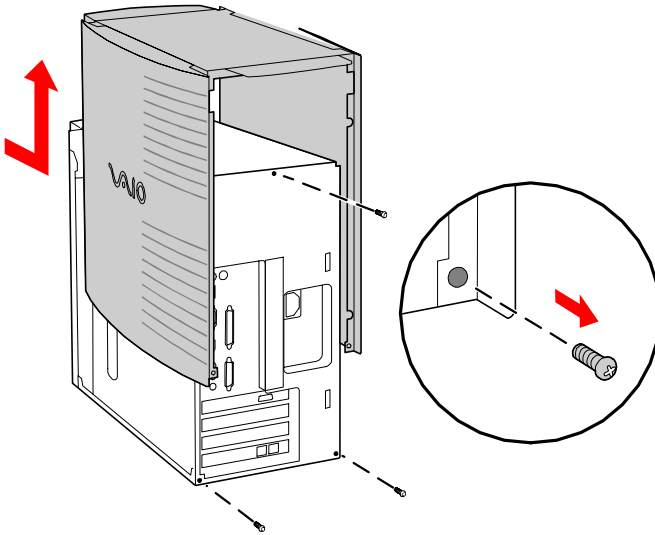


KY0064B.VSD

- 3 Remove the three screws from the metal back plate. The screws are located at the top center, and the lower left and right corners.



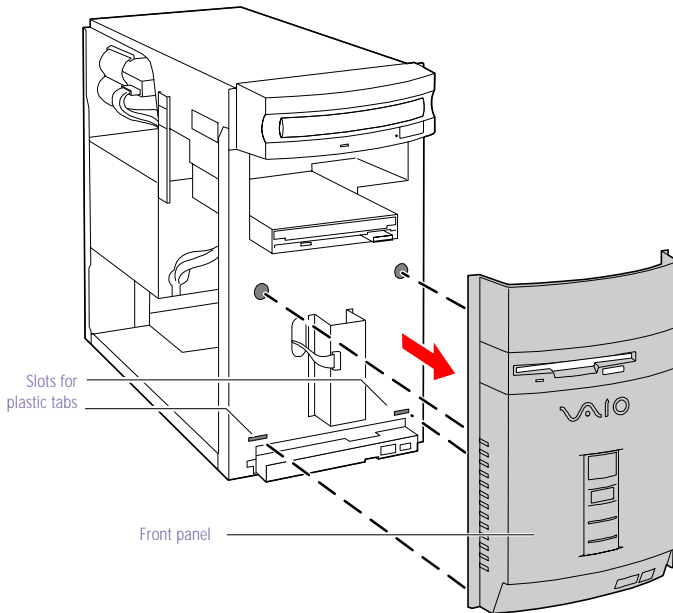
- 4 Lift the three-sided outer panel up and over the unit by pulling up on the large tab that extends from the top rear.



## Removing the Front Panel

You must remove the front panel to install a 5¼" device.

- 1 Remove the cover (see "Removing the Cover" on page 24).
- 2 Push down and out on the two plastic tabs from inside the bottom of the chassis to release the bottom end of the front panel.

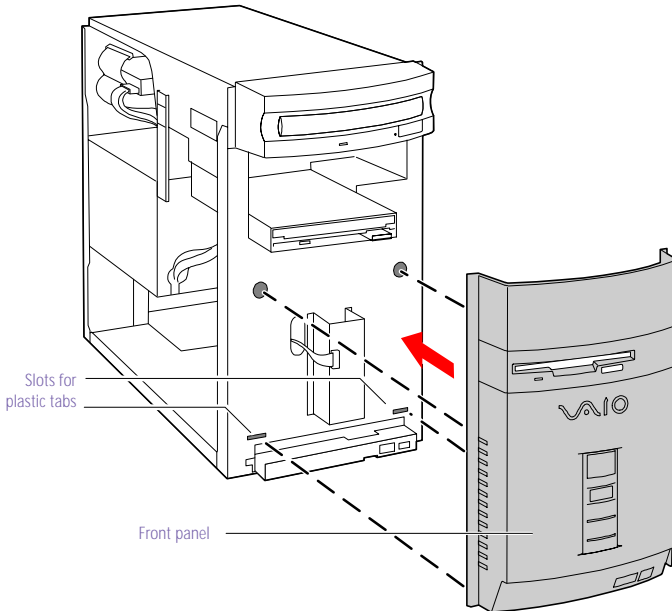


KY0091.VSD

- 3 Pull out the top end of the front panel to remove it.

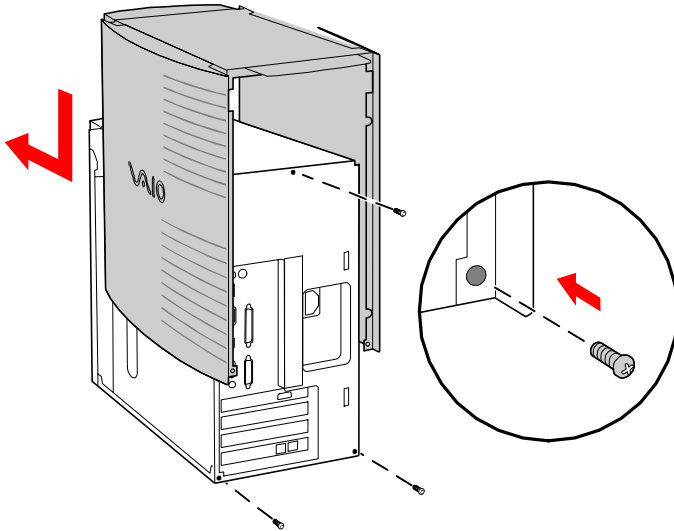
## Replacing the Front Panel

- 1 Insert the two plastic tabs (located on the bottom of the front panel) into the slots at the bottom of the chassis.
- 2 Push the bottom of the front panel in until the tabs snap into place.
- 3 Push the top of the front panel in until it is flush with the chassis .



## Replacing the Cover

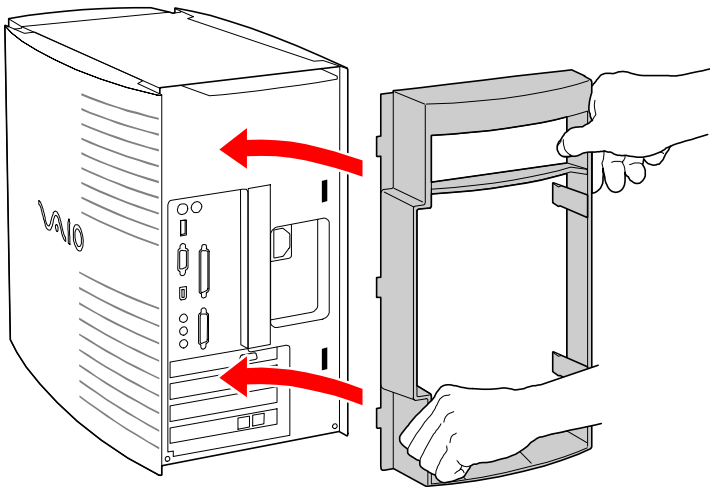
- 1 Align the three-sided outer panel over the chassis and lower it onto the unit so that the tabs slip into the lips on the unit.
- 2 Insert the three screws (removed earlier) to secure the panel.



KY0067.VSD

- 3 Insert the three small tabs on the frame into the slots on the left side of the unit.
- 4 Slip the two larger tabs on the frame into the slots on the right side of the unit.

- 5 Gently press the frame in until it clicks into position.




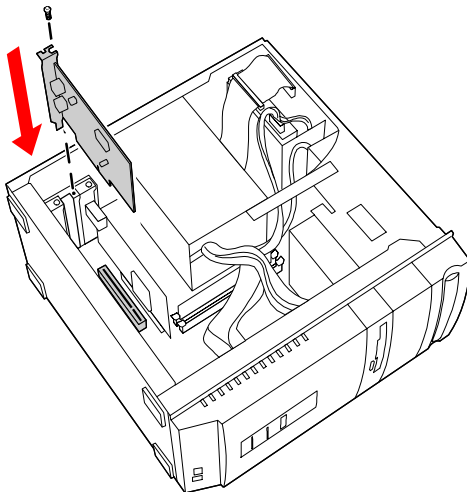
KY0068.VSD

## Installing an Add-In Card

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

- 1 Remove the cover (see “[Removing the Cover](#)” on page 24).
- 2 Locate an available expansion slot connector.
- 3 Remove the slot cover adjacent to the selected slot connector (see “[Removing a Slot Cover](#)” on page 41).
- 4 Insert the add-in card into the PCI slot connector. Use a gentle rocking motion, pressing down until the card is fully seated.

 Align the card's bracket so that the bottom of the bracket fits into the slot at the bottom of the chassis. Assure that the top of the bracket fits snugly against the chassis lip after the card is fully inserted.



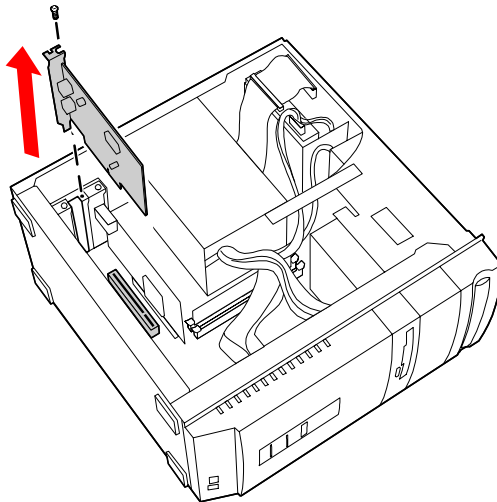
KY0070.VSD

- 5 Replace the screw that secures the card.
- 6 Attach any necessary cables to the card (see the instructions that came with the add-in card).
- 7 Replace the cover (see “[Replacing the Cover](#)” on page 28).
- 8 Turn on the computer and follow any instructions that came with the add-in card.


## Removing an Add-in Card

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

- 1 Remove the cover (see “Removing the Cover” on page 24).
- 2 Disconnect any cables attached to the add-in card you want to remove.
- 3 Remove the screw that secures the add-in card to the chassis.
- 4 Remove the add-in card from the PCI slot connector and store the card in an anti-static wrapper for future use.



KY0071.VSD

 Grasp the card with one hand on each end, and gently pull up as you rock the card from side to side.

! Hold the add-in card by its edges and do not touch any components or connector contacts on the card. Static electricity in your body may damage sensitive components on the card. As a precaution, touch any exposed metal part on the metal chassis (preferably the metal part on the power supply) before handling an add-in card to discharge any static electricity in your body.

- 5 If you do not replace the card or install another add-in card, install a slot cover over the vacant slot at the rear of the chassis (see “[Covering an Open I/O Slot](#)” on page 42).
- 6 Replace the cover (see “[Replacing the Cover](#)” on page 28).



## Replacing the Lithium Battery

You may need to replace the lithium battery if your computer consistently loses the date or time settings after turning it off. The lithium battery has a typical life of three years, after which the battery may be too weak to power the CMOS memory.

! When you remove the lithium battery, all values stored in the CMOS memory (BIOS setup values and Plug and Play values) may be lost. Although the computer can hold the charge for a short time while replacing the battery, it is safer to assume that the settings will be lost. When the values are lost, the BIOS values revert to their factory-default settings (see “[Accessing the BIOS Setup Utility](#)” on page 18).

Do not handle damaged or leaking batteries.

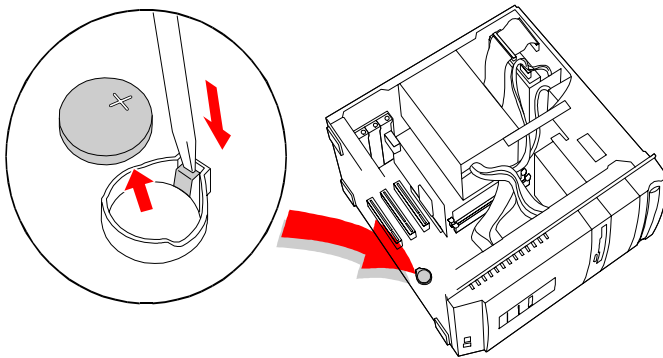
The lithium battery may explode if mistreated. Do not disassemble it or dispose of it in fire.

- 1 Reboot your computer by selecting Shut Down... from the Start menu, and then selecting Restart the computer.
- 2 If the error message “Error: Check date and time settings” appears during the reboot sequence, press F2 during the reboot process to access the BIOS Setup Utility. Otherwise it is not necessary to replace the battery at this time, and you can skip all remaining steps.
- 3 Compare all the BIOS options to their default settings (see “[CMOS Setup Options](#)” on page 77). Make a list of all the BIOS options that are different from their default values. You will refer to this list when you restore the BIOS settings later.
- 4 Select Exit Discarding Changes from the main menu using the right arrow key.
- 5 Press Enter, type Y when prompted to discard changes, then press Enter to exit the BIOS Setup Utility.
- 6 Turn off the computer and unplug the power cord.
- 7 Remove the cover (see “[Removing the Cover](#)” on page 24).

- 8 If necessary, remove any add-in cards (see “[Removing an Add-in Card](#)” on page 31) to gain access to the battery. You may also need to disconnect some cables.

! Touch any exposed metal part of chassis to discharge static electricity in your body before handling an add-in card or other sensitive electronic component.

- 9 Insert a small flathead screwdriver into the small space at the top of the battery holder.



KY0072.VSD

- 10 Gently pry the battery out and dispose of it according to the instructions that came with the new battery.
- 11 Insert the new battery into the battery holder, with the plus (+) side up.



The Sony CR2032 battery is recommended. Using a type of battery other than a CR2032 may present a risk of fire or explosion.

- 12 Replace any add-in cards that were removed.
- 13 Reconnect any cables that were disconnected.
- 14 Replace the cover (see “[Replacing the Cover](#)” on page 28).
- 15 Reconnect the power cord and turn on the computer.

- 16 If the error message “Error: Check date and time settings.” appears during the reboot sequence, press F2 during the reboot process to access the BIOS Setup Utility. If no error message displays, the computer’s BIOS settings were retained during the battery replacement and you can skip the remaining steps.
- 17 Refer to the list you made in step 3 and restore any non-default BIOS settings (see “[CMOS Setup Options](#)” on page 77).
- 18 Select Exit Saving Changes from the main menu using the right arrow key.
- 19 Press Enter; type Y when prompted to discard changes, then press Enter to exit the BIOS Setup Utility.

The computer’s BIOS settings are now restored.

## Installing System Memory

**!** Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

- 1 If necessary, remove the memory module you wish to replace (see “Removing a Memory Module” on page 39).
- 2 Remove the new memory module(s) from its anti-static package. Hold the memory module only by its edges to prevent static-electricity damage.
- 3 Choose the size of the memory module and configuration as shown in the following table. Memory modules can vary in size and speed between sockets. The minimum memory size is 8 MB; the maximum memory size is 256 MB. The BIOS automatically detects the type, size and speed of the memory modules.

### Memory module configurations (MB)\*

<i>DIMM1</i>	<i>DIMM2</i>
0, 8, 16, 32, 64, 128	0, 8, 16, 32, 64, 128

\* The PCV-R522DS ships with 64 MB. The PCV-R526DS and PCV-R528DS ships with 128 MB. SDRAM is expandable to 256 MB.

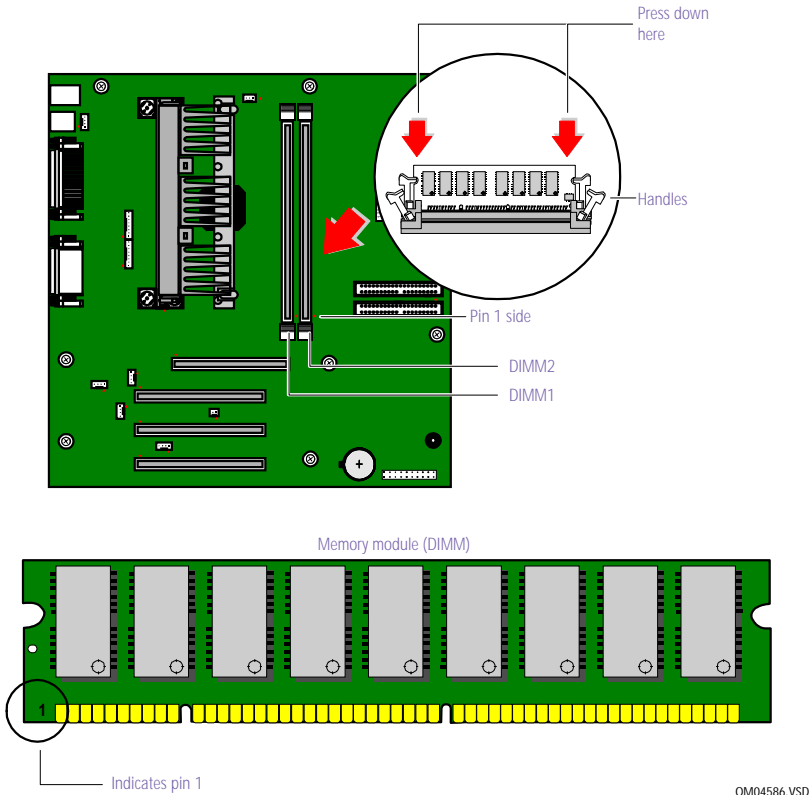
**!** Touch any exposed metal part of the chassis to discharge static electricity in your body before handling a memory module.




Use only 100 MHz FSB-supported memory. Do not mix 66 MHz memory with 100 MHz memory. Supports SDRAM memory. Does not support EDO memory or buffered DIMM memory.

- 4 Disconnect the power cord from the computer.
- 5 Remove the cover (see “Removing the Cover” on page 24).
- 6 Remove the power supply (see “Removing the Power Supply” on page 50).

- 7 Align the module over the appropriate socket, noting the location of pin 1 on the module and pin 1 on the socket.



- 8 Carefully but firmly insert the edge of the module into the socket.
- 9 Press down firmly and evenly at both corners until the module is fully seated.

 When the module is fully seated, the handles on each side are straight up and locked into the slot on each side of the module. If the handles are not totally straight upright, continue to press down on each side of the module until the handles lock into place.

- 10 Replace the power supply (see “Replacing the Power Supply” on page 53).
- 11 Replace the cover (see “Replacing the Cover” on page 28).

12 Reconnect the power cord and turn on the computer.

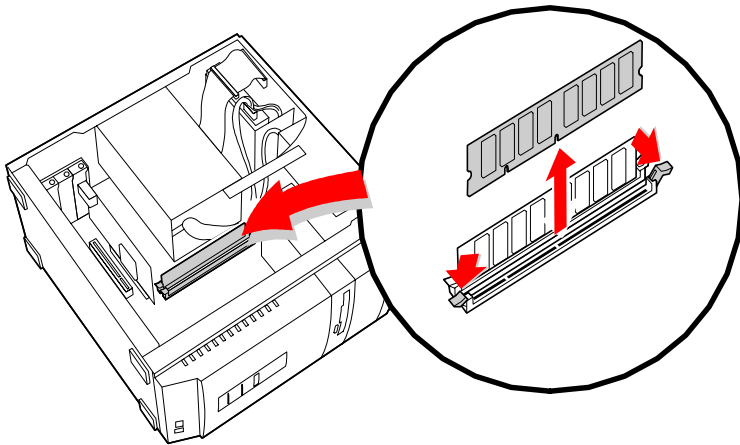
Your computer automatically recognizes the extra memory and will configure itself accordingly when you turn on the computer. No further action is required.

## Removing a Memory Module

You may need to remove a memory module if you change the memory configuration or replace a bad module.

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

- 13 Remove the cover (see “Removing the Cover” on page 24).
- 14 Locate the memory module you wish to remove.

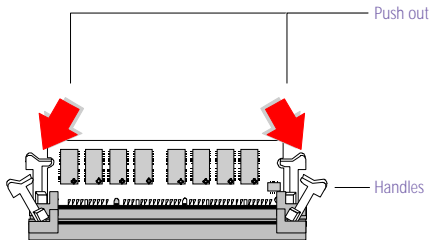


KY0073.VSD



The memory modules are located beneath the power supply. You do not need to remove the power supply to reach the memory modules.

- 15 Reach around each side of the power supply and push down the handle on each side of the memory module to eject the module from its socket.



KY0042.VSD

- 16 Grasp one edge of the memory module and lift out. Store the module in a static-free bag.

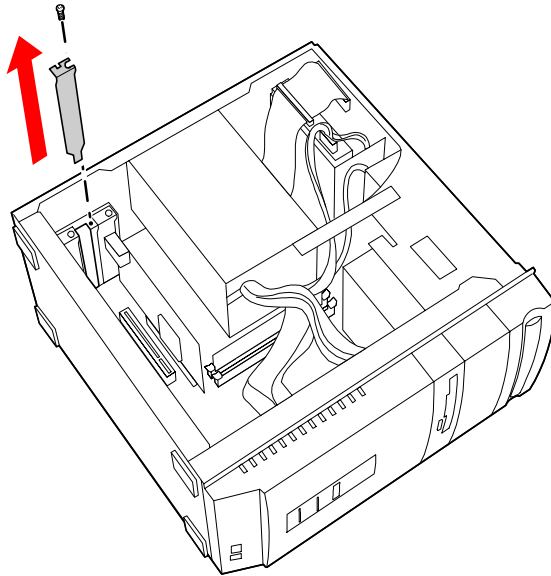
**!** Touch any exposed metal part of the chassis to discharge static electricity in your body before handling the memory module.



## Removing a Slot Cover

You remove a slot cover when you install an add-in card that occupies a previously-empty slot.

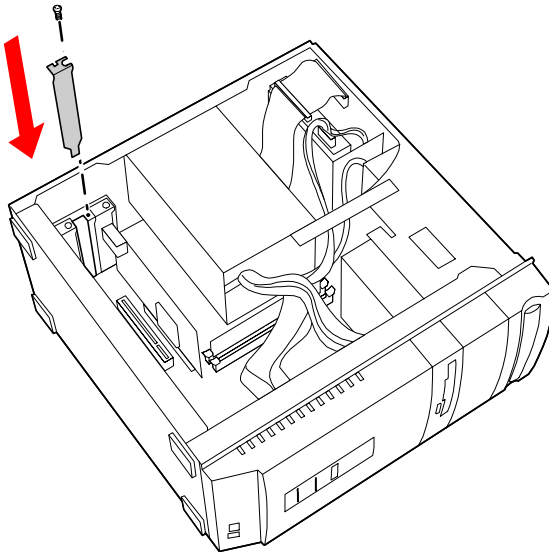
- 1 Disconnect the power cord from the computer.
- 2 Remove the cover (see “[Removing the Cover](#)” on page 24).
- 3 Locate the slot whose cover you want to remove.
- 4 Lay the system on its side.
- 5 Remove the screw from the slot cover.
- 6 Remove the loose slot cover and retain it for future use.



## Covering an Open I/O Slot

Slot covers prevent air from escaping through the empty hole. If air escapes, the components inside the computer cannot be properly cooled. This may damage some components, especially the main processor (which generates the most heat).

- 1 Slide the tip of the slot cover (removed earlier) between the chassis and system board.



KY0076.VSD

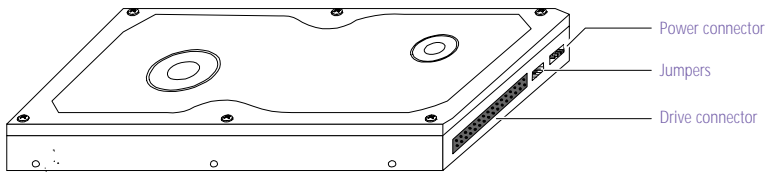
- 2 Push the slot cover down until it rests firmly on the lip in the chassis. All add-in card brackets and slot covers rest on this lip.
- 3 Replace the screw (removed earlier) to secure the I/O slot cover.

## Installing a 3½" Internal Hard Disk Drive

Your system comes with an available bay to hold an additional 3½" hard disk drive. The drive you install must not require front panel access. The hard disk drive access light blinks when either internal drive is active.

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

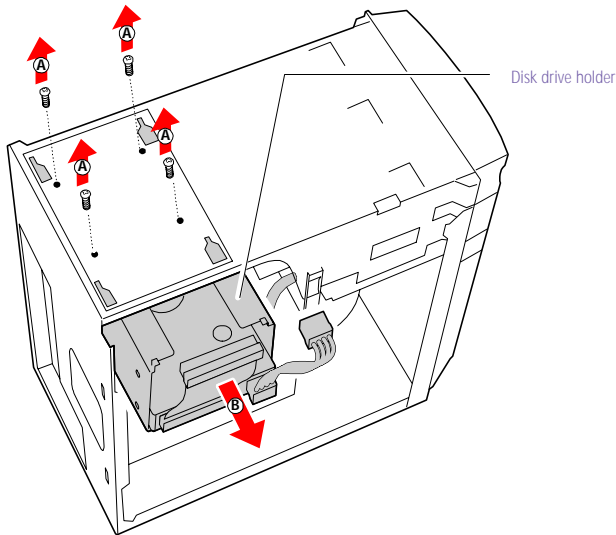
- 1 Configure the jumpers on the new drive as a primary slave (see your drive's documentation for configuration instructions).



KY0084.VSD

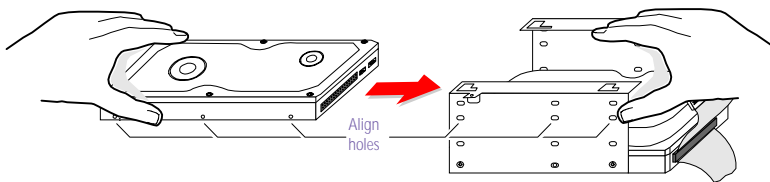
- 2 Disconnect the power cord from the computer.
- 3 Remove the cover (see “[Removing the Cover](#)” on page 24).
- 4 Remove the four screws (A in next diagram) that secure the drive holder to the top of the chassis.

- 5 Slide the drive holder forward (B), and then out.



KY0081.VSD

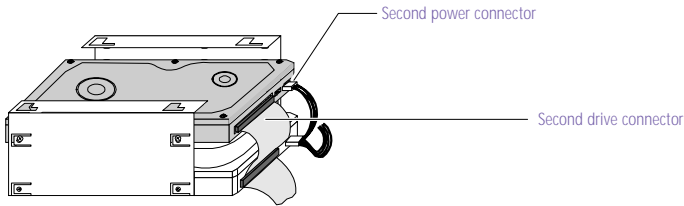
- 6 Place the drive holder on top of the power supply.
- 7 Slide the new drive into the drive holder and align the holes on each side of the drive holder.



KY0083.VSD

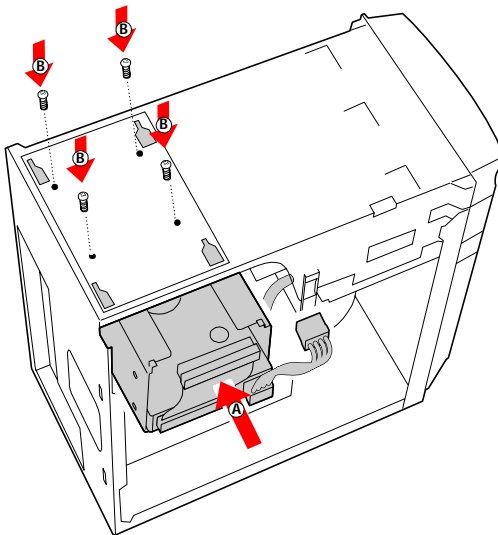
- 8 Secure the drive to the drive holder using the two holes on each side of the drive holder (screws are provided with the new drive). Do not overtighten the screws.
- 9 Connect the second drive connector to the new drive (see next diagram).

- 10 Connect the second power connector to the new drive.



KY0085.VSD

- 11 Make sure the drive connector is connected securely to the motherboard.
- 12 Lower the drive holder down and slide it back into the chassis (A in next diagram). Be sure to align all four slots on the drive holder with the tabs on top of the chassis.
- 13 Slide the drive holder back so that the tabs slip into the notches.



KY0086.VSD

- 14 Replace the four screws (B) that secure the drive holder to the chassis.
- 15 Replace the cover (see “Replacing the Cover” on page 28).

16 Reconnect the power cord and then turn on your computer.

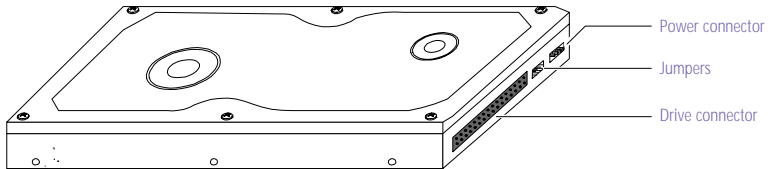
Your computer automatically recognizes the new drive and configures itself accordingly when you turn it on. Format and partition the new drive following the instructions provided with the drive.

## Installing a 5¼" Internal Hard Disk Drive

Your system comes with an available 5¼" bay to hold an additional 3½" or 5¼" hard disk drive. The drive you install can access the front panel. The hard disk drive access light blinks when either internal drive is active.

! Before opening the system unit, save any open files, exit Windows, turn off the power of the computer and all attached peripherals, and then unplug the power cord.

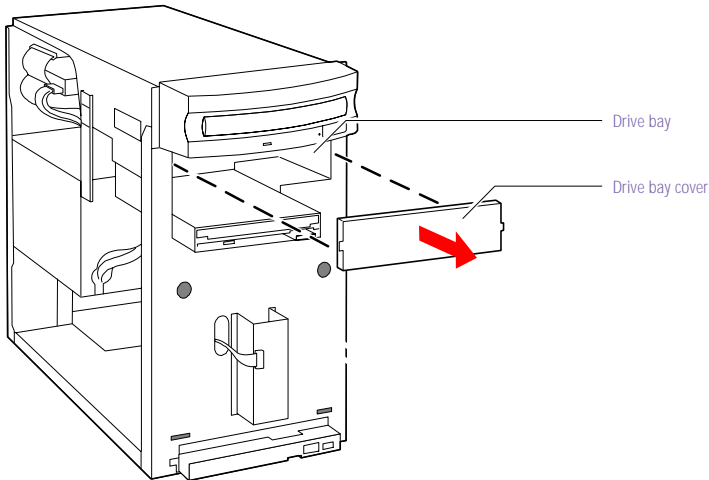
- 1 Configure the jumpers on the new drive as a secondary slave (see your drive's documentation for configuration instructions).



KY0084.VSD

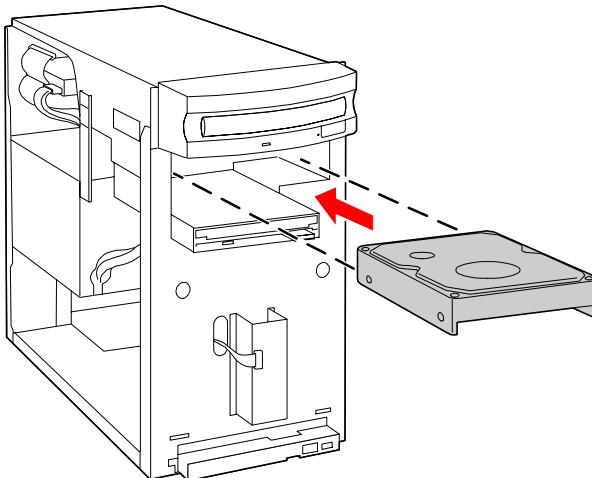
- 2 Disconnect the power cord from the computer.
- 3 Remove the cover (see "Removing the Cover" on page 24).
- 4 Remove the front panel (see "Removing the Front Panel" on page 26).
- 5 Lay the system on its side (see following diagram).

- 6 Remove the drive bay cover (shiny and silver) by pushing it from behind (use a long object or your finger). Store for future use.




KY0092.VSD

- 7 Slide the drive into the drive bay until the holes on each side of the drive align with the holes on each side of the chassis.

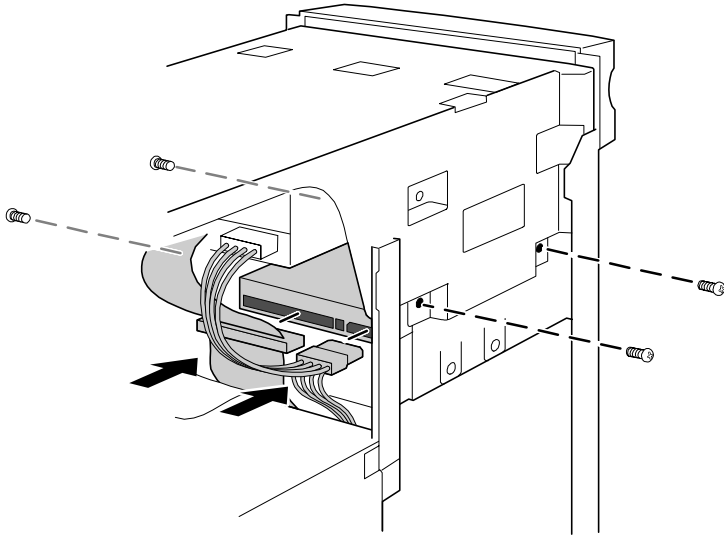


KY0094.VSD

 If the drive you are installing is a 3½" drive, you must attach conversion brackets so that the 3½" drive can fit inside of a 5¼" bay. See the instructions that came with your new drive.



- Secure the drive with four screws (provided with new drive). Do not overtighten the screws.



KY0095\_VSD

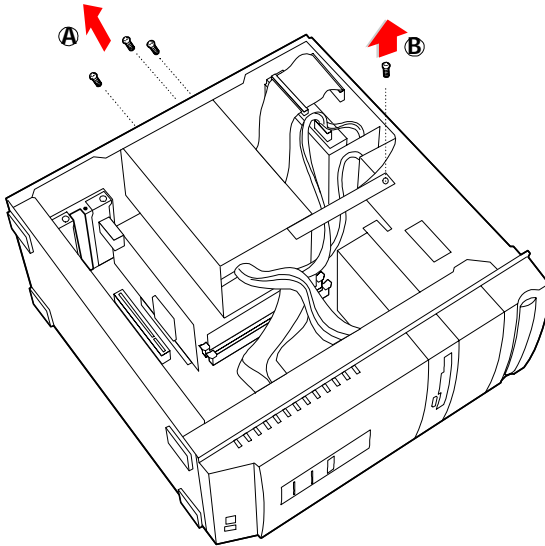
- Attach the drive connector and power cable to the drive. Make sure the drive connector is connected securely to the motherboard.
- Replace the cover (see [“Replacing the Cover”](#) on page 28).
- Replace the front panel (see [“Replacing the Front Panel”](#) on page 27).
- Reconnect the power cord and then turn on your computer.

Your computer automatically recognizes the new drive and configures itself accordingly when you turn it on. Format and partition the new drive following the instructions provided with the drive.

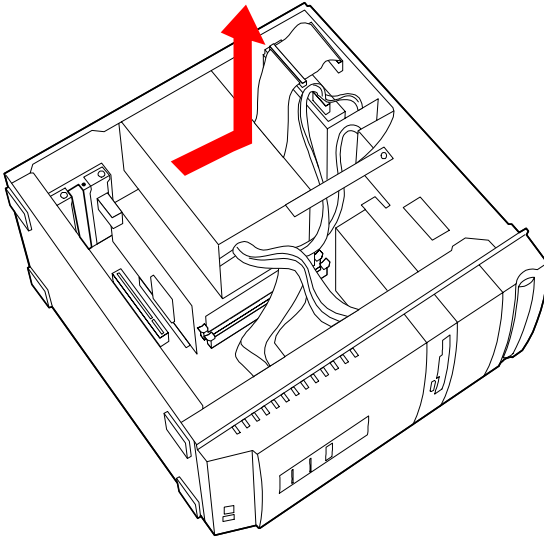
## Removing the Power Supply

You remove the power supply when you insert a memory module (see “Installing System Memory” on page 36).

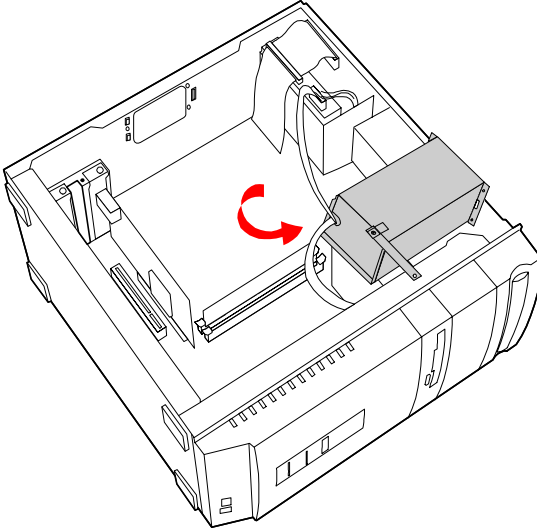
- 1 Remove the three screws (A in next diagram) from the rear of the chassis.
- 2 Remove the screw (B) from the power supply bracket.



- 3 Slide the power supply back (towards the 3½" drive bay) about ½" (or until the power supply detaches from the chassis tabs), then lift up until the power supply clears the chassis lip.



- 4 Rotate the power supply horizontally by 180 degrees counterclockwise and rest it on top of the chassis where the CD-ROM/DVD-ROM drive is located.



## *Replacing the Power Supply*

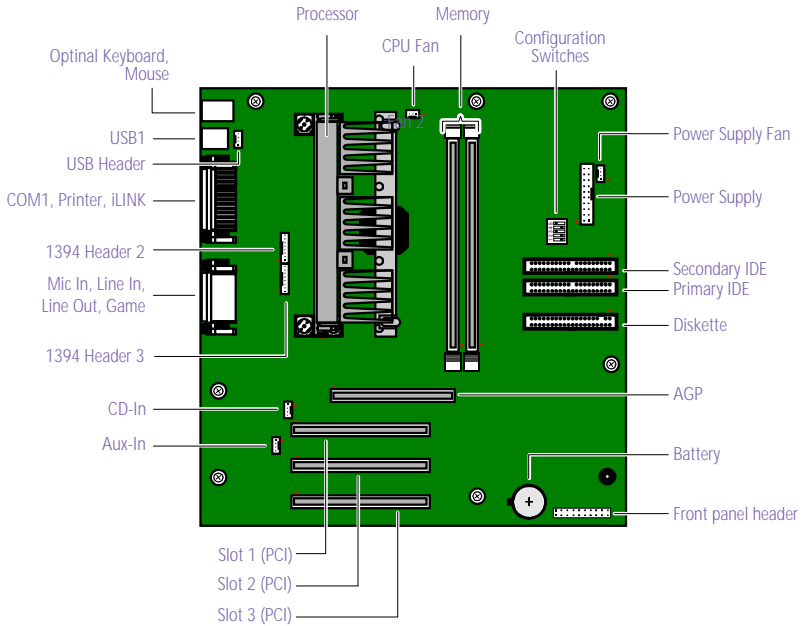
- 1 Rotate the power supply horizontally by 180 degrees clockwise and lower it into the chassis until it is flush against the square hole at the rear of the chassis.
- 2 Slide the power supply forward (away from the 3½" drive bay) until the power supply latches onto the chassis tabs.
- 3 Replace the three screws that secure the power supply to the rear of the chassis.
- 4 Replace the screen that secures the power supply bracket to the chassis.



# Chapter 4

## System Board

This chapter identifies each component on the system board and provides a detailed description of each connector, jumper, and switch on the system board.

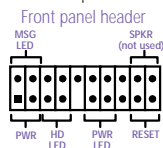
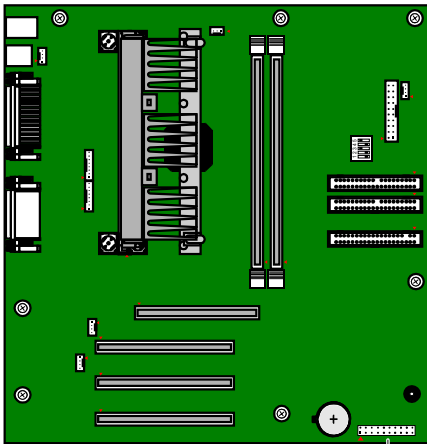


OM04581.VSD

## Connectors

### Front Panel Header (J25)

The front panel header is a 20-pin header (1 pin is removed for the key) that provides connections to various front panel functions. A 20-pin connector with only eight wires is used to interface the system board to the front panel.

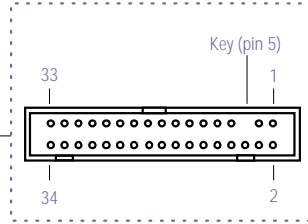
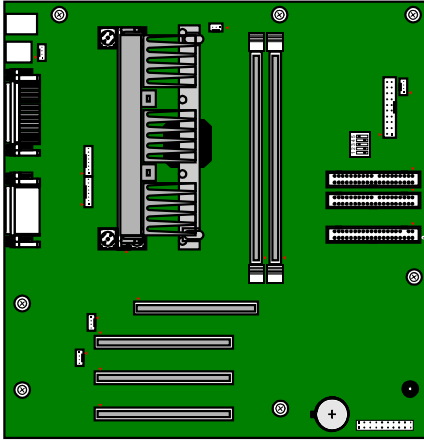


KY0031.VSD

<i>Name</i>	<i>Description</i>
SPEAKER	(not used)
PWR LED	Connects to the power-on indicator light on the front panel
HD LED	Connects to the hard disk drive access light on the front panel
SLEEP	(not used)
PWR	Connects to the power-on switch on the front panel
RESET	(not used)
MSG LED	Connects to the standby indicator light on the front panel.

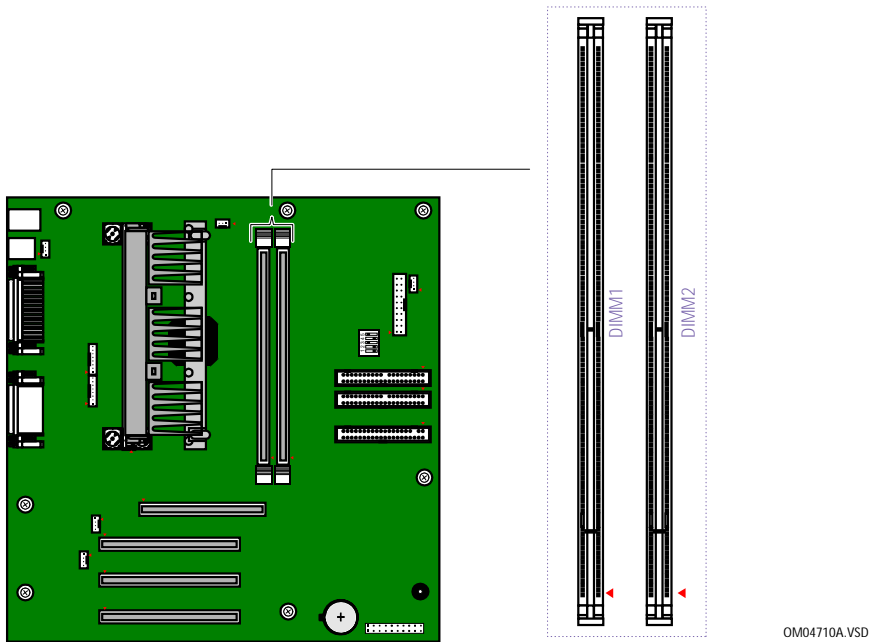


### Diskette Drive Connector

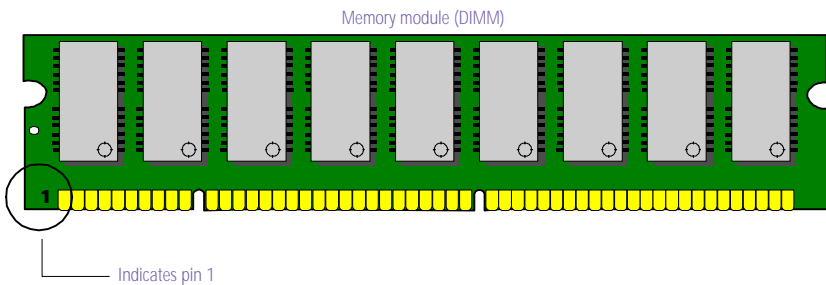


OM04701H.VSD

## Memory Module (DIMM) Connectors

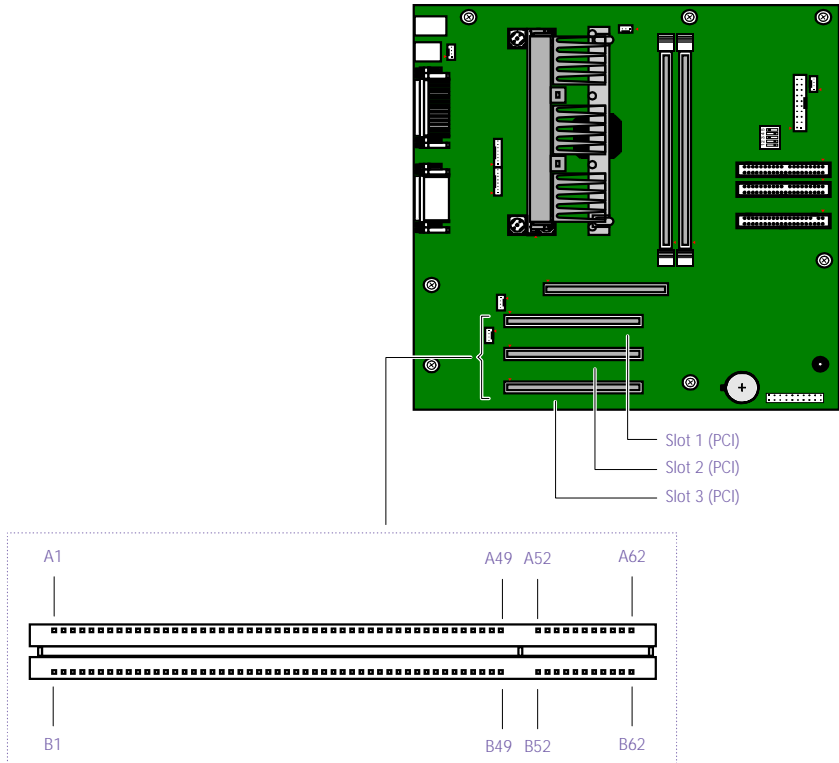


Both sides of each Dual Inline Memory Module (DIMM) look very similar. The side with pin 1 has a small "1" to the left of pin 1. Be sure to orient a DIMM correctly in the DIMM connector (a small triangle on the connector indicates pin 1).



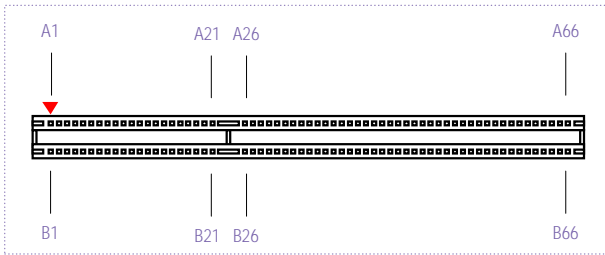
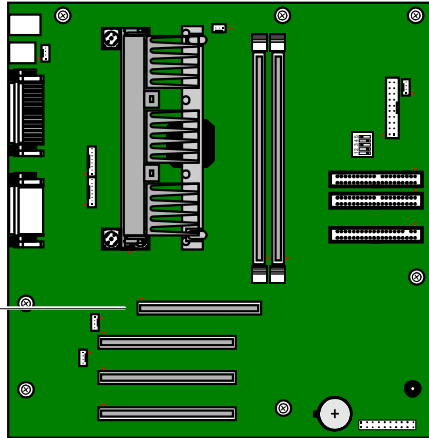
### PCI Slot Connectors

There are a total of three PCI slot connectors (slot #1 to #3). Two PCI slots connector (#1 and #2) are available. The PCI slots support 32-bit 5V and Universal (3.3/5V) PCI add-in cards.



### AGP Connector

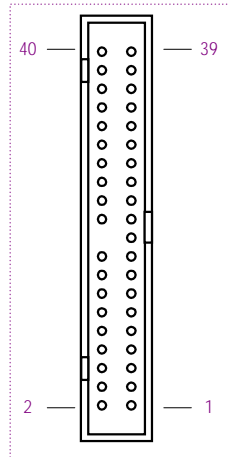
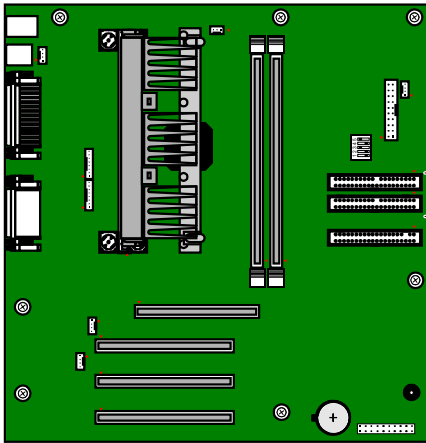
There is one AGP slot connector that supports a 2x AGP graphics card or an AGP retention module.



### IDE Connectors

There are two IDE (Integrated Drive Electronics) connectors on the system board: a Primary IDE and a Secondary IDE connector.

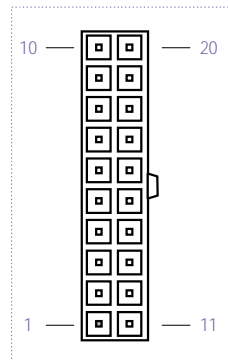
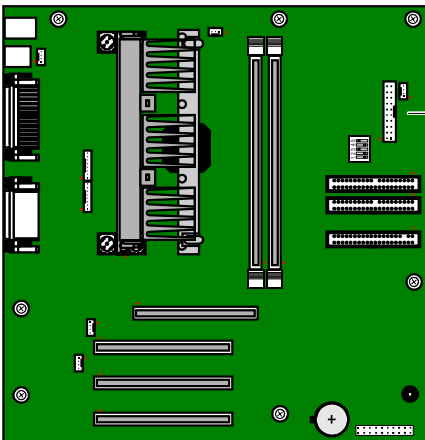
Each IDE connector supports up to two IDE drives using a ribbon cable with two connectors.



OM04701G.VSD

### Power Connector

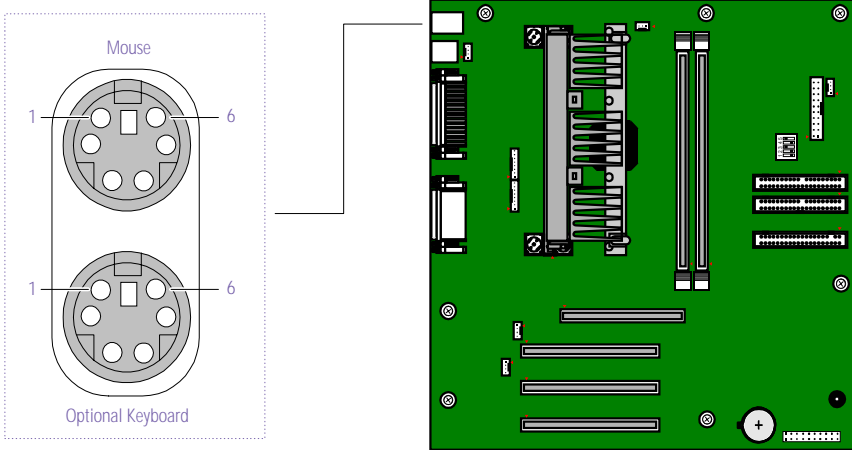
The power supply connector on the system board connects to the power supply connector labelled P1.



OM04701I.VSD

### Keyboard and Mouse Connectors

The keyboard connector and the mouse connector are 6-pin female PS/2-type (mini-DIN) connectors. They have identical pinouts.



KY0032.VSD

### Keyboard and Mouse

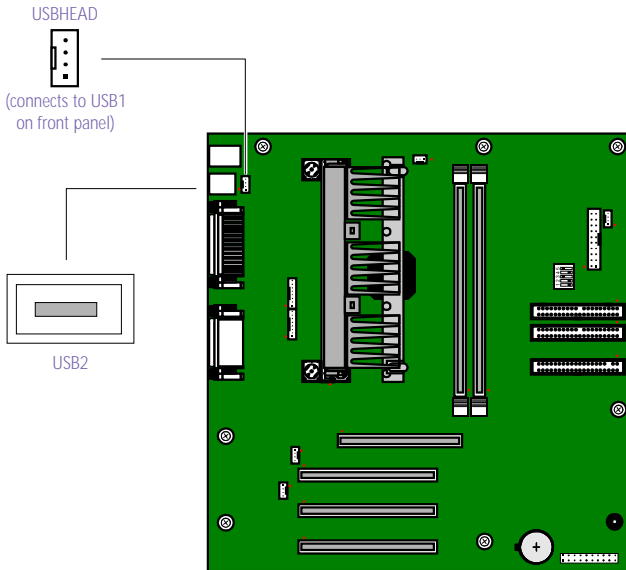
Pin	Signal Name
1	DATA
2	NC
3	LOGIC GND
4	+5V (fused)
5	CLOCK
6	NC

## USB Connectors

There are two USB ports that permit connection of two USB peripheral devices directly to the system without having to use an external hub.

USB2 is a standard USB connector accessible from the rear panel. USBHEAD is a 4-pin single-line header that connects to a standard USB connector (USB1) accessible at the bottom of the front panel. An internal cable connects USBHEAD to an interface board behind the front panel.

If more USB devices are needed, connect an external hub to either USB1 or USB2.



KY0033.VSD

### USBHEAD (connects to USB1 on front panel)

Pin	Signal Name
1	USBVCC2
2	USBP1#
3	USBP1
4	Ground

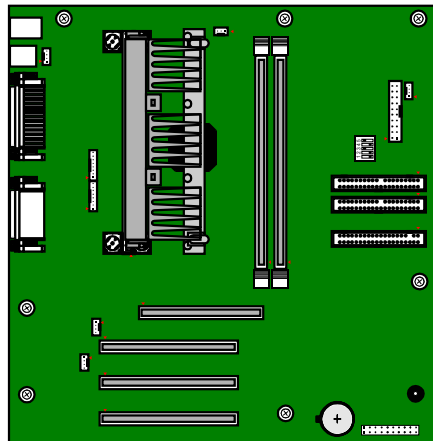
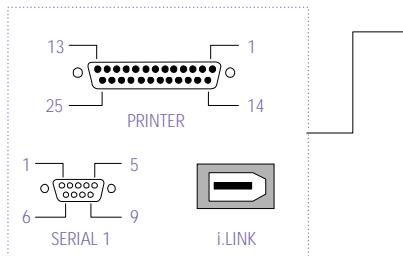
**USB2**

Pin	Signal Name
1	USBVCC1*
2	USBP0#
3	USBP0
4	Ground
5	USBVCC2*
6	USBP1#
7	USBP1
8	Ground

\* Uses over-current protector.

**Serial 1, Printer, and i.LINK Connectors**

The Serial, Printer, and i.LINK connectors are mounted in a single bracket on the system board. The Serial 1 connector is a DB-9 male connector. The Printer connector is a DB-25 female connector. The i.LINK connector is a 6-pin standard IEEE-1394 connector.



OM04701D.VSD

**Serial 1 connector**

Pin	Signal Name
1	DCD
2	RXD
3	TXD
4	DTR



---

5	LOGIC GND
6	DSR
7	RTS
8	CTS
9	RI

---

**Printer connector***Pin Signal Name*

---

1	STROBE -
2	DATA BIT 0
3	DATA BIT 1
4	DATA BIT 2
5	DATA BIT 3
6	DATA BIT 4
7	DATA BIT 5
8	DATA BIT 6
9	DATA BIT 7
10	ACK -
11	BUSY
12	PE
13	SELECT
14	AUTO-FEED -
15	ERROR -
16	INIT -
17	SELECT-IN -
18	LOGIC GND
19	LOGIC GND
20	LOGIC GND
21	LOGIC GND
22	LOGIC GND
23	LOGIC GND
24	LOGIC GND
25	LOGIC GND

---

---

**i.LINK connector**

---

*Pin*    *Signal Name*

---

1      Ground VP (Power)\*

---

2      Ground

---

3      TPB\*

---

4      TPB

---

5      TPA\*

---

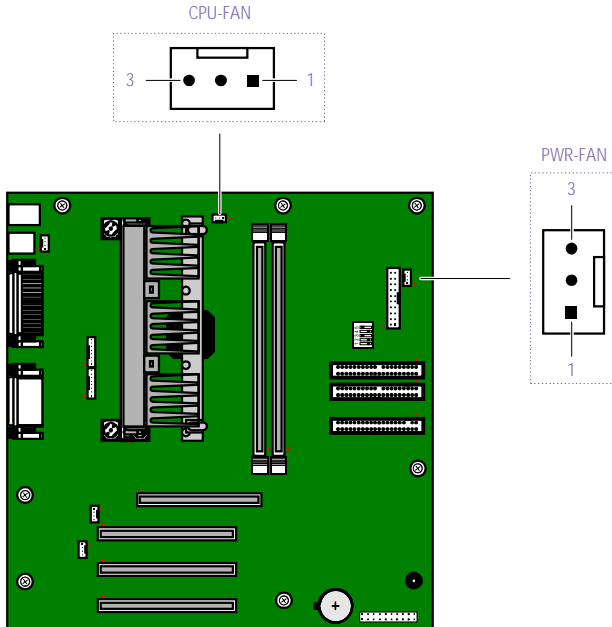
6      Ground TPA

---

\* Uses over-current protector.

## Fan Connectors

The CPU-FAN and PWR-FAN connectors are 1 x 3-pin straight header connectors. CPU-FAN controls the cooling fan on the CPU. PWR-FAN controls the cooling fan in the power supply.



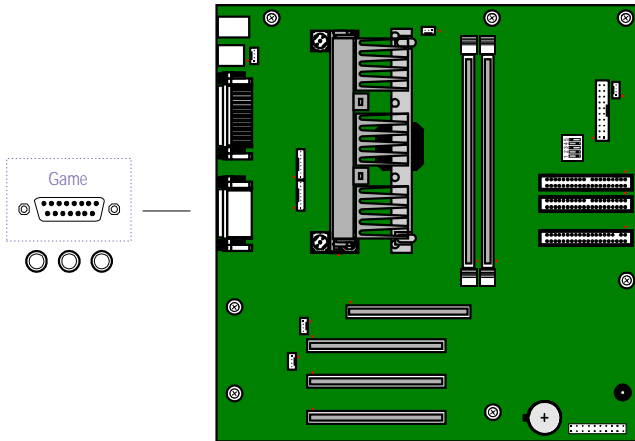
KY0034.VSD

### CPU-FAN and PWR-FAN Connector

Pin	Signal Name
1	Ground
2	FAN_CTRL (+12V)
3	FAN_SEN

## Game Connector

The Game connector is a female DB-15 connector for connecting to a game controller/joystick or MIDI device.



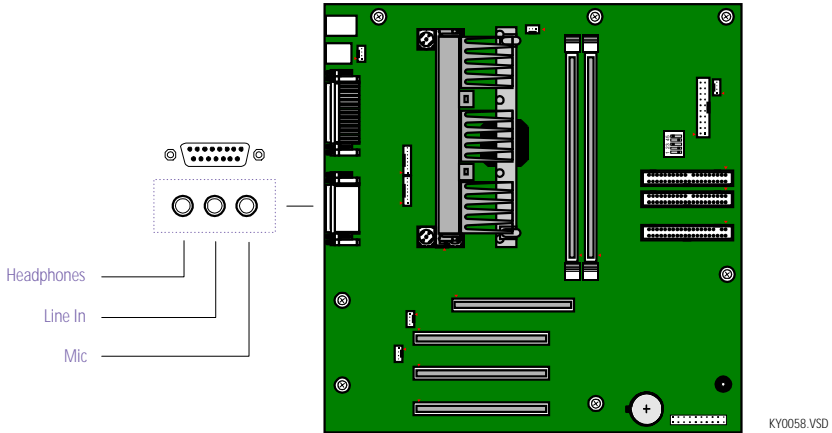
KY0056.VSD

### Game Connector

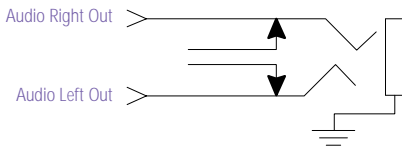
Pin	Signal Name
1	GAMEVCC
2	JPYB0
3	JOYA0
4	GND
5	GND
6	JOYA1
7	JOYA2
8	GAMEVCC
9	GAMEVCC
10	JOYB2
11	JOYA2
12	MIDI_TxD
13	JOYA3
14	JOYB3
15	MIDI_RxD

## Headphones, Line In, Mic Connectors

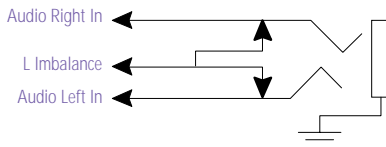
The Headphones jack is a stereo mini-jack (3.5 mm) that connects to headphones. The Line In jack is a stereo mini-jack (3.5 mm) that connects to a stereo audio source (not an audio source from a video device). The Mic In jack is a stereo mini-jack (3.5 mm) that connects to a microphone.



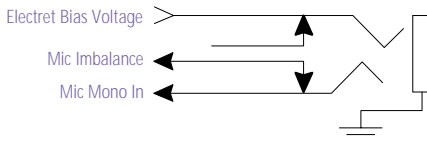
### Headphones



### Line In



### Mic

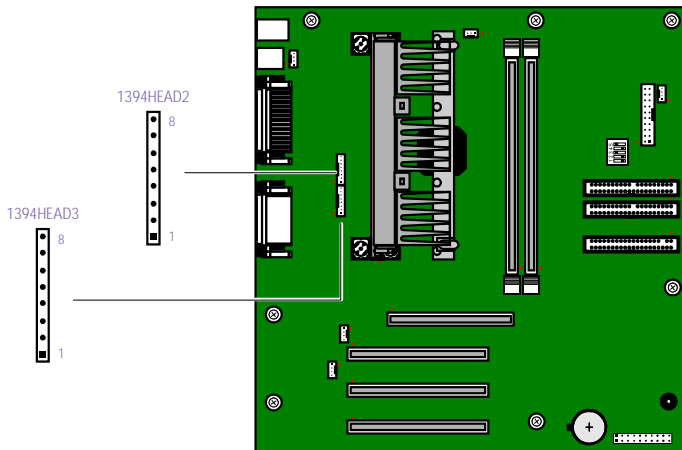


### *i.LINK Header Connectors*

The system board has two i.LINK header connectors: 1394HEAD2 and 1394HEAD3.

A cable connects the 8-pin header connector (1394HEAD3) to an interface unit mounted behind the front of the chassis. The interface unit connects to the 4-pin i.LINK (IEEE-1394) connector at the bottom of the front panel.

The other 8-pin header connector (1394HEAD2) is not used.



KY0099.VSD

### **i.LINK Header Connectors (1394HEAD2 and 1394HEAD3)**

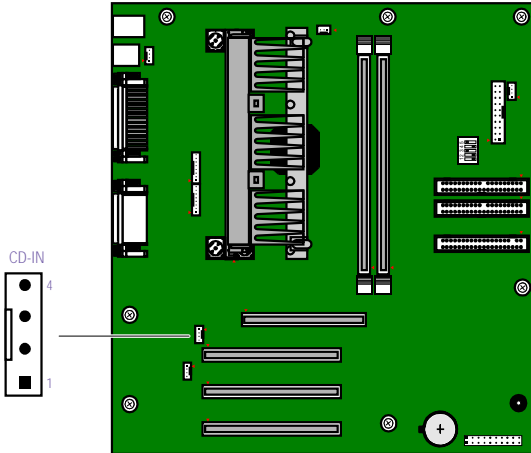
*Pin*    *Signal Name*

1	Shell Ground
2	Ground
3	TPA
4	TPB*
5	TPB
6	GroundTPB*
7	Ground
8	VP (Power)*

\* Uses over-current protection.

### CD-IN Connector

The CD-IN connector on the system board is a 1 x 4-pin header connector that connects to the CD-ROM/DVD-ROM drive's audio output connector.



KY0062.VSD

---

#### CD-IN

---

<i>Pin</i>	<i>Signal Name</i>
------------	--------------------

---

1	Left Line In
---	--------------

---

2	Ground
---	--------

---

3	Ground
---	--------

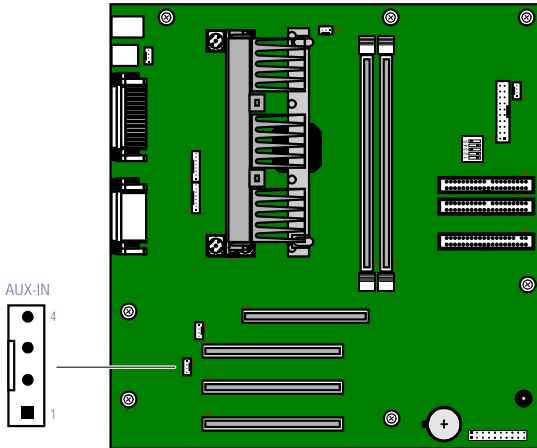
---

4	Right Line In
---	---------------

---

### AUX-IN Connector

The AUX-IN connector on the system board is a 1 x 4-pin header connector that connects to the CD-RW drive's (PCV-R528DS only) audio output connector.



KY0062B.VSD

### AUX-IN

<i>Pin</i>	<i>Signal Name</i>
------------	--------------------

1	Left Line In
---	--------------

2	Ground
---	--------

3	Ground
---	--------

4	Right Line In
---	---------------

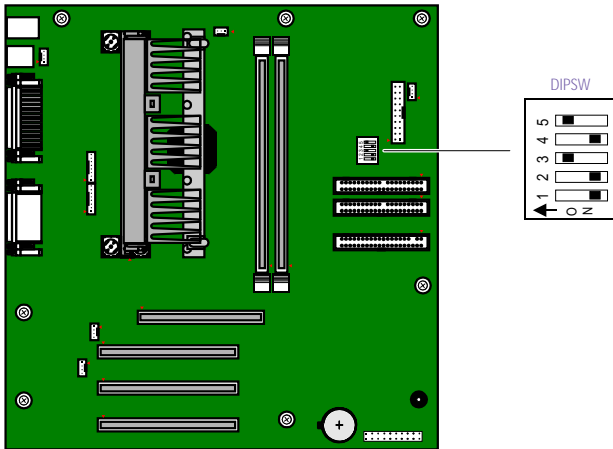


## Configuration Settings

A 5-switch dual inline package (DIP) provides configuration settings for FREQ Ratio (CPU frequency multiplier) and Clear CMOS.

The computer ships with the CMOS Clear (Switch 1) set to OFF (Normal). Do not change the position of Switch 1 unless directed by a technical support person.

The computer ships with the FREQ Ratio multiplier set to X4.5 (see DIPSW table for positions of Switches 2 through 5).



OM04588.VSD

### DIPSW

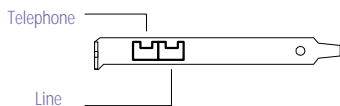
Function	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
Clear CMOS	ON	N/A	N/A	N/A	N/A
Normal	OFF	N/A	N/A	N/A	N/A
FREQ Ratio = X3.0	N/A	ON	OFF	ON	ON
FREQ Ratio = X3.5	N/A	OFF	OFF	ON	ON
FREQ Ratio = X4.0	N/A	ON	ON	OFF	ON
FREQ Ratio = X4.5	N/A	OFF	ON	OFF	ON
FREQ Ratio = X5.0	N/A	ON	OFF	OFF	ON
FREQ Ratio = X5.5	N/A	OFF	OFF	OFF	ON
FREQ Ratio = X6.0	N/A	ON	ON	ON	OFF
FREQ Ratio = X6.5	N/A	OFF	ON	ON	OFF
FREQ Ratio = X7.0	N/A	ON	OFF	ON	OFF



# Chapter 5

## Fax/Modem Card

The fax/modem card occupies PCI slot #3. There are two RJ-11 jacks: one to connect a telephone line, and one to connect a phone.



KY0038.VSC

### Connectors

<i>Name</i>	<i>Connector Type</i>	<i>Description</i>
Telephone	RJ-11	Connects to phone
Line	RJ-11	Connects to telephone line



# Chapter 6

## CMOS Setup Options

This chapter describes each screen in the CMOS SETUP UTILITY (see “Accessing the BIOS Setup Utility” on page 18).

The CMOS Setup Utility presents the following menu items on the main screen:

- ❑ STANDARD CMOS SETUP
- ❑ BIOS FEATURES SETUP
- ❑ CHIPSET FEATURES SETUP
- ❑ POWER MANAGEMENT SETUP
- ❑ PNP AND PCI SETUP
- ❑ LOAD SETUP DEFAULTS
- ❑ SUPERVISOR PASSWORDS
- ❑ USER PASSWORD
- ❑ IDE HDD AUTO DETECTION
- ❑ SAVE & EXIT SETUP
- ❑ EXIT WITHOUT SAVING

Use the arrow keys to choose a menu item. Press Enter to display the item’s options. Use the arrow keys to select an option. Use the Page Up or Page Down keys to modify a setting.

Press Esc to go back to the main menu. Press F10 to save the changes and exit, or press Esc to discard the changes. Follow the on-screen prompts for other choices. The bottom of the screen presents a summary of the keyboard keys to use for navigation and control.

The current setting is shown in [brackets] unless the item cannot be modified. Items beneath the current setting indicate available settings.

## STANDARD CMOS SETUP Screen

Day	[Sunday]
Date (mm:dd:yy):	[Mar 15 1999]
Time (hh:mm:ss):	[15:45:56]
HARD DISKS	
Primary Master:	
Primary Slave:	
Secondary Master:	
Secondary Slave:	
Type	[Auto] User None
Mode	[AUTO] LBA LARGE NORMAL
Drive A:	[1.44M, 3.5 in.] 2.88M, 3.5 in. None 360K, 5.25 in. 1.2M, 5.25 in. 720K, 3.5 in.
Drive B:	[None] 360K, 5.25 in. 1.2M, 5.25 in. 720K, 3.5 in. 1.44M, 3.5 in. 2.88M, 3.5 in.
Floppy 3 Mode Support:	[Disabled] Drive A Drive B Both
Video:	[EGA/VGA] CGA 40 CGA 80 MONO
Halt On:	[All, But Keyboard] All, But Diskette All, But Disk/Key All Errors No Errors

## BIOS FEATURES SETUP Screen

CPU Internal Core Speed:	450MHz
Boot Virus Detection:	[Enabled] Disabled
Processor Serial Number:	[Disabled] Enabled
BIOS Update:	[Enabled] Disabled
Quick Power On Self Test:	[Enabled] Disabled
HDD Sequence SCSI/IDE First:	[IDE] SCSI
Boot Sequence:	CDROM, A, C D, A E, A F, A C only LS/ZIP, C LAN, A, C A, C A, CDROM, C CDROM, C, A
Floppy Disk Access Control:	[R/W] Read Only
IDE HDD Block Mode Sectors:	[HDD MAX] Disabled 2 4 8 16 32
HDD S.M.A.R.T. capability:	[Disabled] Enabled
Silent Boot:	[Enabled] Disabled
Boot Up Sound:	[Enabled] Disabled
Boot Up Volume: *	[Medium] High Mute

\* Becomes enabled only when Boot Up Sound is enabled.

	Low
PCI/VGA Palette Snoop:	[Disabled] Enabled
Video ROM BIOS Shadow:	[Enabled] Disabled
C8000 - CBFFF Shadow:	[Disabled] Enabled
CC000 - CFFFF Shadow:	[Disabled] Enabled
D0000 - D3FFF Shadow:	[Disabled] Enabled
D4000 - D7FFF Shadow:	[Disabled] Enabled
D8000 - DBFFF Shadow:	[Disabled] Enabled
DC000 - DFFFF Shadow:	[Disabled] Enabled
Boot Up NumLock Status:	[On] Off
Typematic Rate Setting:	[Disabled] Enabled
Typematic Rate (Chars/Sec):	[6] 8 10 12 15 20 24 30
Typematic Delay (Msec):	[250] 500 750 1000
Security Option:	[System] Setup
PS/2 Mouse Function Control:	[Auto] Enabled



## CHIPSET FEATURES SETUP Screen

SDRAM Configuration:	[By SPD] Disabled 7ns (143MHz) 8ns (125MHz)
SDRAM CAS Latency:	[3T] 2T
SDRAM RAS to CAS Delay:*	[2T] 3T
SDRAM RAS Precharge Time:*	[2T] 3T
DRAM Idle Timer:*	[10T] 12T 16T 32T Infinite 0T 2T 4T 8T
SDRAM MA Wait State:	[Normal] Slow Fast
Graphics Aperture Size:	[64MB] 128MB 256MB 4MB 8MB 16MB 32MB
Video Memory Cache Mode:	[UC] USWC
PCI 2.1 Support:	[Enabled] Disabled
DRAM are 64 (Not 72) bits wide	
Data Integrity Mode:	Non-ECC
Onboard FDC Controller:	[Enabled] Disabled

---

\* These settings depend on the setting in SDRAM Configuration, and become enabled only when SDRAM Configuration is Disabled.

Onboard Serial Port 1:	[3F8H/IRQ4] 2F8H/IRQ3 3E8H/IRQ4 2E8H/IRQ10 Disabled
Onboard Serial Port 2:	[Disabled] 3F8H/IRQ4 2F8H/IRQ3 3E8H/IRQ4 2E8H/IRQ10
Onboard Parallel Port:	[378H/IRQ7] 278H/IRQ5 Disabled 3BCH/IRQ7
Parallel Port Mode:	[Bi-direct] EPP ECP ECP+EPP Normal
ECP DMA Select: *	[Disabled] 1 3
Onboard PCI IDE Enable:	[Both] Primary Secondary Disable
IDE Ultra DMA Mode:	[Auto] Disable
IDE0 Master PIO/DMA Mode:	[Auto]
IDE0 Slave PIO/DMA Mode:	[Auto]
IDE1 Master PIO/DMA Mode:	[Auto]
IDE1 Slave PIO/DMA Mode:	[Auto] 0/0 1/0 2/0 3/1 4/2

---

\* Enabled when Parallel Port Mode is ECP or ECP+EPP.

## POWER MANAGEMENT SETUP Screen

Power Management: [User Define]  
Disable  
Min Saving  
Max Saving

Video Off Option: [Suspend -> Off]  
Always On

Video Off Method: [DPMS OFF]  
DPMS Reduce ON  
Blank Screen  
V/H SYNC+Blank  
DPMS Standby  
DPMS Suspend

### \*\* PM Timers \*\*

HDD Power Down: [Disable]  
1 Min  
2 Min  
3 Min  
4 Min  
5 Min  
6 Min  
7 Min  
8 Min  
9 Min  
10 Min  
11 Min  
12 Min  
13 Min  
14 Min  
15 Min

Suspend Mode: \* [Disable]  
30 Sec  
1 Min  
2 Min  
4 Min  
8 Min  
20 Min  
30 Min  
40 Min  
1 Hour

### \*\*ACPI\*\*

ACPI Mode [S1]  
S3

---

\* Enabled only when Power Management is not Disable.

**\*\* Power Up Control \*\***

PWR Button < 4 Secs:	[Suspend] Soft Off
AC PWR Loss Restart:	[Disabled] Enabled
Wake On LAN:	[Disabled] Enabled
Automatic Power Up:	[Disabled] Everyday By Date

## PNP AND PCI SETUP Screen

PNP OS Installed: [No]  
Yes

Slot 1 IRQ:  
Slot 2 IRQ:  
Slot 3 IRQ: [Auto]  
NA  
3  
4  
5  
7  
9  
10  
11  
12  
14  
15

PCI Latency Timer: [32] PCI Clock  
.  
.  
.  
255 PCI Clock  
0 PCI Clock  
1 PCI Clock  
.  
.  
.  
31 PCI Clock

IRQ 3 Used By ISA: [Yes]  
No/ICU

IRQ 4 Used By ISA: [No/ICU]  
Yes

IRQ 5 Used By ISA: [Yes]  
No/ICU

IRQ 7 Used By ISA: [No/ICU]  
Yes

IRQ 9 Used By ISA: [No/ICU]  
Yes

IRQ 10 Used By ISA: [No/ICU]  
Yes

IRQ 11 Used By ISA: [No/ICU]  
Yes

IRQ 12 Used By ISA: [No/ICU]

	Yes
IRQ 14 Used By ISA:	[No/ICU] Yes
IRQ 15 Used By ISA:	[No/ICU] Yes
DMA 1 Used By ISA:	[No/ICU] Yes
DMA 3 Used By ISA:	[No/ICU] Yes
DMA 5 Used By ISA:	[No/ICU] Yes
ISA MEM Block BASE:	[No/ICU] C800 CC00 D000 D400 D800 DC00
USB IRQ:	[Enabled] Disabled
VGA BIOS Sequence:	[PCI/AGP] AGP/PCI
Onboard Audio:	[Enabled] Disabled]
Onboard 1394:	[Enabled] Disabled

### *LOAD SETUP DEFAULTS Screen*

Press Enter to load setup defaults except standard CMOS setup.

### *SUPERVISOR PASSWORD Screen*

Press Enter to change, set, or disable the supervisor password. Follow the prompts.

### *USER PASSWORD Screen*

Press Enter to change, set, or disable the user password. Follow the prompts.

### *IDE HDD AUTO DETECTION Screen*

Press Enter to auto-configure the hard disk drives.

### *SAVE & EXIT SETUP Screen*

Press Enter to save changes in the CMOS and exit CMOS Setup Utility. Follow the prompts.

### *EXIT WITHOUT SAVING Screen*

Press Enter to exit CMOS Setup Utility without saving the changes. Follow the prompts.





# *Chapter 7*

## *Miscellaneous Technical Information*

This chapter contains information on the following subjects:

- ❑ User and Supervisor password
- ❑ Beep code error messages
- ❑ PCI configuration status and error messages
- ❑ DMA channel assignments
- ❑ IRQ assignments
- ❑ System I/O address map
- ❑ Memory map
- ❑ PCI configuration space map

## About User and Supervisor Passwords

The system allows you to specify up to two passwords (a User password and a Supervisor password) in the CMOS Setup Utility. The User password is required; the Supervisor password is optional.

Access to the CMOS Setup Utility depends on which passwords were previously set, as indicated next.

<i>If you set these passwords...</i>	<i>...the following passwords are required:</i>
User password only	User password is required at bootup.
Supervisor password only	No password is required at bootup. Supervisor password is required by most setup options.
Both passwords	User password is required at bootup. Supervisor password is required by most setup options.

## *Beep Code Error Messages*

During a normal bootup, a single short beep signifies that the system is OK. Other beep patterns signify errors. The number of beeps indicates the specific error that occurred.

The Sony Online Support technical representative will need to know how many beeps your system produces if there is an error, so be sure to count the number of beeps before calling for support.

## PCI Configuration Status and Error Messages

The following is a list of status and error messages that may appear on your system from time to time.

<i>Message</i>	<i>Meaning</i>
Floppy Disk Controller Resource Conflict	The diskette controller has requested a resource that is already in use.
NVRAM Checksum Error, NVRAM Cleared	The NVRAM data was reinitialized due to an NVRAM checksum error.
NVRAM Cleared By Jumper	The Clear CMOS jumper block has been changed to the clear position.
NVRAM Data Invalid, NVRAM Cleared	Invalid entry in the NVRAM.
Parallel Port Resource Conflict	The parallel port has requested a resource that is already in use.
PCI Error Log is Full	This message is displayed when more than 15 PCI conflict errors are detected. No additional PCI errors can be logged.
PCI I/O Port Conflict	Two devices requested the same resource, resulting in a conflict.
PCI IRQ Conflict	Two devices requested the same resource, resulting in a conflict.
PCI Memory Conflict	Two devices requested the same resource, resulting in a conflict.
Primary Boot Device Not Found	The designated primary boot device (hard disk drive, diskette drive, CD-ROM drive, or network drive) could not be found.
Primary IDE Controller Resource Conflict	The primary IDE controller has requested a resource that is already in use.
Primary Input Device Not Found	The designated primary input device (keyboard, mouse, or other, if input is redirected) could not be found.
Primary Output Device Not Found	The designated primary output device (display, serial port, or other, if input is redirected) could not be found.
Secondary IDE Controller Resource Conflict	The secondary IDE controller has requested a resource that is already in use.
Serial Port 1 Resource Conflict	Serial port 1 has requested a resource that is already in use.

---

Static Device Resource Conflict	A non-Plug and Play ISA card has requested a resource that is already in use.
System Board Device Resource Conflict	A non-Plug and-Play ISA card has requested a resource that is already in use.

---

## *DMA Channel Assignments*

This shows the factory default values. Windows 98 reassigns resources to best meet the needs of a particular configuration.

<i>DMA Channel</i>	<i>Plug &amp; Play</i>	<i>Default Assignment</i>
0	Yes	Open
1	Yes	Sound
2	Yes	Standard diskette drive controller
3	Yes	Sound
4	N/A	Direct Memory Access controller
5		Open
6		Open
7		Open

## System I/O Address Map

<i>Address Range (hex)</i>	<i>Description</i>
0000 - 000F	DMA controller
0010 - 001F	System board resources
0020 - 0021	Programmable interrupt controller
0022 - 003F	System board resources
0040 - 0043	System timer
0044 - 005F	System board resources
0060	Standard 101/102-key or Microsoft Natural Keyboard
0061	System speaker
0062 - 0063	System board resources
0064	Standard 101/102-key or Microsoft Natural Keyboard
0065 - 006F	System board resources
0070 - 0073	System CMOS/Real-time clock
0074 - 007F	System board resources
0080 - 0090	DMA controller
0090 - 0093	System board resources
0094 - 009F	DMA controller
00A0 - 00A1	Programmable interrupt controller
00A2 - 00BF	System board resources
00C0 - 00DF	DMA controller
00E0 - 00EF	System board resources
00F0 - 00FF	Numeric data processor
0170 - 0177	Intel 82371AB/EB PCI bus master IDE controller Secondary IDE controller (dual FIFO)
01F0 - 01F7	Intel 82371AB/EB PCI bus master IDE controller Primary IDE controller (dual FIFO)
0201	Vortex AU8830 Sound Blaster Pro emulation
0220-022F	Vortex AU8830 Sound Blaster Pro emulation
0290 - 0297	System board resources
0330 - 033F	Vortex AU8830 MPU 401 interface
0376	Intel 82371AB/EB PCI bus master IDE controller Secondary IDE controller (dual FIFO)
0378 - 037F	Printer port (LPT1)
0388 - 038B	Vortex AU8830 Sound Blaster Pro emulation

<i>Address Range (hex)</i>	<i>Description</i>
03B0 - 03BB	ATI Rage 128 GL/VR* SD AGP 2X (English)
03C0 - 03DF	ATI Rage 128 GL/VR* SD AGP 2X (English)
03F0 - 03F1	System board resources
03F2 - 03F5	Standard floppy diskette controller
03F6	Intel 82371AB/EB PCI bus master IDE controller Primary IDE controller (dual FIFO)
03F7	Standard floppy diskette controller
03F8 - 03FF	Communications port (COM1)
04D0 - 04D1	System board resources
0570 - 0577	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO) Alias of primary IDE controller (dual FIFO)
0776	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO)
0780 - 07BB	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)
07C0 - 07DF	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)
07F6	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of primary IDE controller (dual FIFO)
0970 - 0977	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO)
09F0 - 09F7	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of primary IDE controller (dual FIFO)
0B76	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO)
0BB0 - 0BBB	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)
0BC0 - 0BDF	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)
0BF6	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of primary IDE controller (dual FIFO)
0CF8 - 0CFF	PCI bus
0D70 - 0D77	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO)
0DF0 - 0DF7	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of primary IDE controller (dual FIFO)
0F76	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of secondary IDE controller (dual FIFO)
0FB0 - 0FBB	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)



<i>Address Range (hex)</i>	<i>Description</i>
<b>0FC0 - 0FDF</b>	Alias of ATI Rage 128 GL/VR* SD AGP 2X (English)
<b>0FF6</b>	Alias of Intel 82371AB/EB PCI bus master IDE controller Alias of primary IDE controller (dual FIFO)

\* ATI Rage 128 VR for PCV-R522DS and PCV-R526DS. ATI Rage 128 GL for PCV-R528DS.

## Memory Map

<i>Address range</i>	<i>Default configuration</i>
00000000 - 0009FFFF	System board extension for ACPI BIOS
000A0000 - 000AFFFF	ATI Rage 128 GL/VR* SD AGP 2X (English)
000B0000 - 000BFFFF	ATI Rage 128 GL/VR* SD AGP 2X (English)
000C0000 - 000C7FFF	ATI Rage 128 GL/VR* SD AGP 2X (English)
000C8000 - 000CBFFF	Not available
000F0000 - 000FFFFF	System board extension for ACPI BIOS
00100000 - 07FFFFFF	System board extension for ACPI BIOS

\* ATI Rage 128 VR for PCV-R522DS and PCV-R526DS. ATI Rage 128 GL for PCV-R528DS.



I/O addresses that may be used by add-in cards are not listed.

# Chapter 8

## Specifications

This chapter describes the technical specifications for the Sony PCV-R522DS, PCV-R526DS, and PCV-R528DS computers.

### Processors

---

PCV-R522DS	466 MHz Intel Celeron <sup>®</sup> processor (with 66 MHz FSB)
PCV-R526DS	450 MHz Intel Pentium <sup>®</sup> III processor (with 100 MHz FSB)
PCV-R528DS	500 MHz Intel Pentium <sup>®</sup> III processor (with 100 MHz FSB)

---

### Chipset

---

82440BX-100 AGP/PCI/ISA chipset

---

### PCI Bus

---

PCI Level 2.1, 33 MHz zero wait state

---

3 PCI slots (2 open)

---

### Memory Modules (DIMMs)

---

Installed memory	PCV-R522DS: 64 Mbytes PC-100 SDRAM (100 MHz) PCV-R526DS: 128 Mbytes PC-100 SDRAM (100 MHz) PCV-R528DS: 128 Mbytes PC-100 SDRAM (100 MHz)
Maximum memory	256 Mbytes (128Mbytes in each socket)
Voltage	3.3 V memory only
Pins	168-pins with gold-plated contacts
SDRAM type	PC-100, 60 ns, unrestricted CAS latency 3, unbuffered, Intel 4-clock, 64 bits (non-ECC)

---

## DIMM Configurations

<i>DIMM1*</i>	<i>DIMM2*</i>
0, 8, 16, 32, 64, 128	0, 8, 16, 32, 64, 128

\* The PCV-R522DS is shipped with 64 MB. The PCV-R526DS and PCV-R528DS are shipped with 128 MB. SDRAM is expandable to 256 MB. Computer SDRAM is unbuffered DIMM, specification Rev. 1.0 or later. Supports SDRAM memory. Does not support EDO memory or buffered DIMM memory. Memory can be installed in either socket. Memory size can vary between sockets. DIMMs can be single- or double-sided. DIMMs must be 3.3V unbuffered 4-clock, 64-bit or 72-bit 66 MHz (PCV-R522DS or PCV-R526DS) or 100 MHz (PCV-R528DS) SDRAM module. Use only 100 MHz FSB-supported memory for PCV-R528DS. Do not mix 66 MHz memory with 100 MHz memory.

## L2 Cache

Installed	512 kbytes secondary write-back cache (in processor), direct-mapped organization, BSB cache
Controller	Intel 440BX Host Bridge/Controller

## Graphics

AGP Controller*	PCV-R522DS: ATI Rage 128VR PCV-R526DS: ATI Rage 128VR PCV-R528DS: ATI Rage 128GL
Video memory	PCV-R522DS: 8 Mbytes SDRAM @ 125 MHz PCV-R526DS: 8 Mbytes SDRAM @ 125 MHz PCV-R528DS: 16 Mbytes SDRAM @ 125 MHz
Resolution (displayed resolution depends on the graphics display you use)	
True color (32 bits)	Up to 1920 x 1080 at 70 Hz non-interlaced
True color (24 bits)	Up to 1920 x 1080 at 70 Hz non-interlaced
High color (16 bits)	Up to 1920 x 1200 at 70 Hz non-interlaced
256 colors (8 bits)	Up to 1920 x 1200 at 70 Hz non-interlaced

\* Supports DDC-1 and DDC-2b standards for Plug and Play displays.

## Audio

Sound chip	Aureal 8830 plus AC97
Wave synthesis	Aureal wavetable synthesis effect
Sound effects	A3D stereo
Audio sampling rate	Up to 48 kHz at 16 bits
Rear panel connectors	Mic (for microphone) Line In (from stereo audio source) Headphones (for stereo headphone)

## Communications

Modem	V.90-compatible data/fax modem*
Fax	14.4 kbps maximum
i.LINK (IEEE-1394)	400 Mbps, OHCI chip set

\* Your modem is capable of downloading at 56 Kbps using K56flex™ technology/V.90. Your phone service, online service, or Internet Service Provider may not support this technology or operate at this speed.

## I/O and Expansion Slots

Serial ports	One high-speed NS16C550-compatible port
Parallel port	One high-speed bi-directional Centronics-compatible port with ECP and EPP modes
MIDI/game port	One (supports MIDI in/out or two joysticks — adapter cable not supplied)
Modem ports	Two RJ-11 connectors (for line and phone)
USB ports	USB1 (front panel) and USB2 (rear panel)
PCI slots	Two available slots. Maximum length for add-in cards is 7.75 inches
IDE connectors	Primary and secondary (each supports two IDE drives)

## Drives and Controllers

Diskette controller	765A-compatible (supports up to 2.88 MByte)
Diskette drive	1.44 MByte 3.5-inch MFDD
EIDE controller	Supports up to four EIDE drives (supports PIO Mode 4 EIDE drives and Ultra DMA/33 Mode drives)
IDE hard drive*	PCV-R522DS: 10 GByte PCV-R526DS: 10 GByte PCV-R528DS: 13 GByte
CD-ROM drive (PCV-R522DS)	CD-ROM disc: 32X (maximum performance). <sup>†</sup>
DVD-ROM drive (PCV-R526DS, PCV-R528DS)	DVD-ROM: 6X (maximum performance). <sup>‡</sup> CD-ROM: 24X (maximum performance).
CD-RW drive (PCV-R528DS)	CD-RW read: 8X (maximum performance). <sup>**</sup> CD-RW write: 2X (maximum performance). <sup>†</sup> CD-ROM: 24X (maximum performance). <sup>††</sup>

\* Bus-mastering EIDE driver installed.

† Data on a CD-ROM is read at a variable transfer rate, ranging from 14X at the innermost track to 32X at the outermost track (the data transfer standard 1X rate is 150 kbytes/s). The average data transfer rate is 23X (3450 kbytes/s).

‡ DVD-ROM drive also plays CD-ROMs. Data on the DVD-ROM is read at a variable transfer rate, ranging from 2.5X at the innermost track to 6X at the outermost track (the data transfer standard 1X rate is 1385 kbytes/s). The average data transfer rate is either 4.25X (5886.25 kbytes/s). Data on a CD-ROM is read at a variable transfer rate, ranging from 10X at the innermost track to 24X at the outermost track (the data transfer standard 1X rate is 150 kbytes/s). The average data transfer rate is 17X (2250 kbytes/s).

\*\* Data on a CD-RW is written at a fixed transfer rate of 2X (the data transfer standard 1X rate is 100 kbytes/s), and is read at a fixed transfer rate of 8X (the data transfer standard 1X rate is 150 kbytes/s).

†† Data on a CD-ROM is read at a variable transfer rate, ranging from 10X at the innermost track to 24X at the outermost track (the data transfer standard 1X rate is 150 kbytes/s). The average data transfer rate is 17X (2550 kbytes/s).

## System BIOS

Make and model	Award-based
ROM	2Mbit flash-ROM*
Passwords	User and supervisor passwords supported
Recovery boot block	Supported
Power management	APM 1.2
Advanced features	ACPI-1.0 compliant hardware for use with APM and PNP BIOS APIs
Plug and Play devices	Supported with steerable DMA channels and interrupts
Special features	PC-98 ready, multi-boot, PCI add-in card auto-configure

\* Flash-ROM update utility is available from Sony's web site at <http://www.sony.com/pcsupport>.





# Index

## A

- add-in card
  - installing 30
  - removing 31
- address map, system 95
- AGP slot connector 60
- audio specifications 101
- AUX-IN connector 72

## B

- battery - See lithium battery
- beep codes 91
- BIOS features setup screen 79
- BIOS Setup Utility
  - See CMOS Setup Utility
- BIOS specifications 103

## C

- card
  - modem 75
- CD-IN connector 71
- CD-ROM - See DVD-ROM drive
- CD-ROM disc - See DVD-ROM drive
- CD-ROM drive
  - performance of discs 3
- CD-RW drive
  - location of 3
  - performance of discs 3, 102
  - plays CD-ROMs 102
  - specifications 102
- CMOS - See Also BIOS
- CMOS Setup Utility 18
  - BIOS features setup screen 79
  - menu items 77
  - PNP and PCI setup screen 85

- standard CMOS setup 78
- codes, beeps 91
- COM1 port - See Serial
- communications, specifications 101
- computer safety information ii
- configuration switch
  - password clear 73
- configuration switches
  - CPU frequency multiplier 73
- configuring
  - power management 19
  - system board 21
- connectors
  - 4-pin on modem card 75
  - AUX-IN 72
  - CD-IN 71
  - fan 67
  - game 68
  - headphones, line in, mic 69
  - i.LINK 6, 64, 70
  - IDE 61
  - keyboard 62
  - line 75
  - modem card 75
  - monitor 11
  - mouse 62
  - power 61
  - printer 64
  - telephone 75
  - USB 6, 63
- cover 28
  - removing 24
- cover, slot 41
- covering I/O slot 42
- CPU - See processor

**D**

- DIMM - See memory module
- diskette drive
  - connector 57
- display, power management 19
- DMA channel assignments 94
- drive
  - CD-RW specifications 102
  - IDE connectors 61
  - installing an additional 3½" drive 43
  - installing an additional 3½" or 5¼" drive 47
  - specifications 102
- DVD-ROM drive
  - performance of discs 3, 102
  - plays CD-ROMs 102

**E**

- error messages
  - beep codes 91
  - PCI configuration 92
- expansion slots 15
  - specifications for 101
- expansion slots - See Also slots

**F**

- fan connectors 67
  - CPU-FAN 67
  - PWR-FAN 67
- fax card - See modem card
- fax/modem - See Also communications
- FCC Part 68 iv
- front panel
  - removing 26
  - replacing 27
- front panel header 56
- front view 2
  - buttons and switches 4
  - connectors 5, 6
  - drives 3
  - indicators 5

**G**

- Game connector 68
- graphics controller - See graphics
- graphics specifications 100

**H**

- header - See front panel header
- headphones, line in, mic connectors 69

**I**

- i.LINK connector 6, 64
- i.LINK header connectors 70
- I/O address map 95
- I/O connectors
  - game port 12
  - i.LINK 14
  - keyboard and mouse 10
  - mic, line in, headphones 12
  - monitor 11
  - printer port 11
  - serial port 1 10
  - telephone and line 13
  - USB ports 10, 63
- I/O slot covering 42
- I/O slot specifications 101
- icons, description of 8
- IDE

- connectors 61
- specifications 102

IEEE-1394 - See i.LINK

input devices iii

installing

- 3½" hard disk drive 43
- 3½" or 5¼" hard disk drive 47
- add-in card 30
- system memory 36

interference iii

**J**

jumper - See system board

**K**

keyboard connector 62

**L**

L2 cache specifications 100  
lithium battery, replacing 33

**M**

map - See Also I/O address map and  
memory map  
memory - See Also system memory  
memory module  
connector 58  
removing 39  
specifications 99  
messages  
error 91  
status and error 92  
microprocessor - See processor  
model numbers ii  
modem - See Also communications  
modem card  
connectors 75  
view of 75  
monitor - See display  
monitor connector 11  
mouse connector 62

**N**

notice to users ii

**O**

output devices iii

**P**

panel, front 26, 27  
passwords, user and supervisor 90  
PCI  
slot connectors 59  
PNP and PCI setup screen 85  
power connector 61  
power management, configuring 19  
printer connector 64  
processor specifications 99

**R**

radio interference iii  
RAM - See Also system memory

rear view 7  
I/O connectors 10  
icons 8  
recording ii  
regulatory information iii  
removing  
add-in card 31  
cover 24  
front panel 26  
memory module 39  
slot cover 41  
replacing 28  
cover 28  
front panel 27  
replacing lithium battery 33  
resolution - See graphics

**S**

safety information ii  
Serial connector 64  
serial numbers ii  
serial port - See Serial  
slot - See Also I/O slot  
slot cover, removing 41  
specifications  
audio 101  
BIOS 103  
communications 101  
drives and controllers 102  
graphics 100  
I/O and expansion slots 101  
L2 cache 100  
memory module 99  
processor 99  
status and error messages 92  
supervisor password 90  
system board  
AGP slot connector 60  
AUX-IN connector 72  
CD-IN connector 71  
configuration switches 73  
configuring 21  
diskette drive connector 57  
fan connectors 67  
front panel header 56  
game connector 68

headphones, line in, mic  
connectors **69**

i.LINK connector **64**

i.LINK header connectors **70**

IDE connectors **61**

keyboard connector **62**

memory module connector **58**

mouse connector **62**

PCI slot connectors **59**

power connector **61**

printer connector **64**

Serial connector **64**

USB connectors **63**

system I/O address map **95**

system memory, installing **36**

## *T*

Telephone Consumer Protection Act of  
1991 **iv**

TV interference **iii**

## *U*

USB connectors **6, 63**

user password **90**