

**SONY®**

# **VAIO Digital Studio™ System Reference Manual**



## NOTICE

© 2002 Sony Electronics Inc. Reproduction in whole or in part without written permission is prohibited. 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 is governed by the terms of a separate user license agreement.

This product contains software owned by Sony and licensed by third parties. Use of such software is subject to the terms and conditions of license agreements enclosed with this product. Some of the software may not be transported or used outside the United States. Software specifications are subject to change without notice and may not necessarily be identical to current retail versions.

Updates and additions to software may require an additional charge. Subscriptions to online service providers may require a fee and credit card information. Financial services may require prior arrangements with participating financial institutions.

Sony, VAIO, the VAIO logo, VAIO Digital Studio, VAIO Smart, VisualFlow, Media Bar, MovieShaker, DVgate, PictureGear, and i.LINK are trademarks or registered trademarks of Sony.

Memory Stick and  are trademarks of Sony Corporation.

Intel, Pentium, and Celeron are trademarks or registered trademarks of the Intel Corporation. Microsoft, Windows, and the Windows logo are trademarks or registered trademarks of Microsoft Corporation. PS/2 is a registered trademark of IBM Corporation.

All other trademarks are trademarks or registered trademarks of their respective owners.

## Owner's Record

The model number and serial number are located on either the front or back panel of your Sony VAIO computer. Record the model and serial number in the space provided here, and keep in a secure location. Refer to the model and serial numbers when you call your Sony Service Center.

Model Number:	
Serial Number:	

## Safety Information and Caution

Your computer's installed optical drives may vary, depending on the system configuration you have purchased. See the Specifications sheet for details on your installed optical drives.

### DVD-RW Laser Diode Properties

<b>Laser Output</b>	1.3 mW (CD-Read)
	1.1 mW (DVD-Read)
	42.3 mW (DVD-Write)
	21.9 mW (CD-Write)
<b>Wave Length</b>	650-662 nm (DVD)
	773-797 nm (CD)

### DVD-ROM Laser Diode Properties

<b>Laser Output</b>	0.55 mW (DVD)
	0.39 mW (CD)
<b>Wave Length</b>	635-665 nm (DVD)
	770-810 nm (CD)

### CD-RW Laser Diode Properties

<b>Laser Output</b>	2.0 mW (Read)
	53.0 mW (Write)
<b>Wave Length</b>	778-790 nm

### CD-ROM Laser Diode Properties

<b>Laser Output</b>	0.2 mW
<b>Wave Length</b>	760-810 nm

- ❑ To prevent fire or shock hazard, do not expose your desktop to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.
- ❑ 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 socket outlet shall be installed near the equipment and shall be easily accessible.

! **To change the backup battery, please contact your nearest Sony Service Center.**

! **Caution: The use of optical instruments with this product will increase eye hazard. As the laser beam used in this product is harmful to the eyes, do not attempt to disassemble the drive cabinet. Refer servicing to qualified personnel only.**

! **Danger: Visible and invisible laser radiation when open. Avoid direct exposure to beam.**

! **For DVD-RW: Danger—Visible laser radiation when open. Avoid direct exposure to beam.**

! **For CD-RW: Danger—Visible and invisible laser radiation when open. Avoid direct exposure to beam.**

**! Caution: For ADSL, HomePNA and V.90 modem models; to reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.**

- ❑ Pour prévenir tout risque d'incendie ou d'électrocution, garder cet appareil à l'abri de la pluie et de l'humidité.
- ❑ Pour prévenir tout risque d'électrocution, ne pas ouvrir le châssis de cet appareil et ne confier son entretien qu'à une personne qualifiée.
- ❑ Ne jamais effectuer l'installation de fil modem ou téléphone durant un orage électrique.
- ❑ Ne jamais effectuer l'installation d'une prise téléphonique dans un endroit mouillé à moins que la prise soit conçue à cet effet.
- ❑ Ne jamais toucher un fil téléphonique à découvert ou un terminal à moins que la ligne téléphonique n'ait été débranché de l'interface réseau.
- ❑ Soyez très prudent lorsque vous installez ou modifiez les lignes téléphoniques.
- ❑ Évitez d'utiliser le modem durant un orage électrique.
- ❑ N'utilisez pas le modem ni le téléphone pour prévenir d'une fuite de gaz vous êtes près de la fuite.
- ❑ L'appareil doit être le plus près possible d'une prise murale pour en faciliter l'accès.

**! Pour changer la pile de rechange, veuillez contacter votre centre de service Sony le plus près.**

**! Avertissement : L'utilisation d'instruments optiques avec ce produit augmente les risques pour les yeux. Puisque le faisceau laser utilisé dans ce produit est dommageable pour les yeux, ne tentez pas de désassembler le boîtier. Adressez-vous à un agent de service qualifié.**

**! Danger : Radiation laser visible et invisible si ouvert. Évitez l'exposition directe au faisceau.**

**! Pour les DVD-RW : Danger—  
Radiation laser visible si ouvert.  
Évitez l'exposition directe au faisceau.**

**! Pour les CD-RW : Danger—  
Radiation laser visible et invisible si ouvert. Évitez l'exposition directe au faisceau.**

**! Attention : Pour ADSL, HomePNA, et V.90 modele modem; afin de réduire les risques d'incendie, n'utilisez qu'un cordon de communication NO. 26 AWG ou plus gros.**

For questions regarding your product or for the Sony Service Center nearest you, call 1-888-476-6972 in the United States or 1-800-961-7669 in Canada.

Sony Customer Support can be reached at <http://www.sony.com/pcsupport>.

## Regulatory Information

### Declaration of Conformity

Trade Name: SONY

Model No.: PCV-7744

Responsible Party: Sony Electronics Inc.

Address: 680 Kinderkamack Rd  
Oradell, NJ 07649

Telephone: 201-930-6972

This phone number is for FCC-related matters only.

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

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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 noncompliant 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 FCC Ringer Equivalence Number (REN) for this equipment is 0.79B. If requested, this information must be provided to the telephone company.

This modem uses the USOC RJ-11 telephone jack.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs 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 RENs 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 RENs, contact the telephone company to determine the maximum REN for the calling area.

If the terminal equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer 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 provide advance notice 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 1-888-4-SONY-PC, or write to the Sony Customer Information Center, 12451 Gateway Blvd., Fort Myers, FL 33913. If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

Repair of this equipment should be made only by a Sony Service Center or Sony authorized agent. For the Sony Service Center nearest you, call 1-888-4-SONY-PC (1-888-476-6972).

This equipment cannot be used on public coin service provided by the telephone company. Connection to Party Line Service is subject to state and possible provincial tariffs. (Contact the state or provincial utility service commission, public service commission, or corporation commission for information.)

## **Telephone Consumer Protection Act of 1991 (United States)**

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 machine, see your fax software documentation.

## **Telephone Consumer Guidelines (Canada)**

Please refer to your telephone directory under 'Privacy Issues' and/or 'Terms of Service.' For more detailed information, please contact:

CRTC

Terrasses de la Chaudière, Tour centrale  
1 promenade du Portage, 5 étage Hull PQ K1A 0N2.

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

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

## Disposal of Lithium Battery

You can return your unwanted lithium batteries to your nearest Sony Service Center or Factory Service Center.



In some areas the disposal of lithium batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you, call 1-888-476-6972 in the United States or 1-800-961-7669 in Canada.

**! Do not handle damaged or leaking lithium batteries.**

**! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.**

**! The battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 212°F (100°C), or incinerate. Dispose of used battery promptly. Keep away from children.**

**! Ne pas manipuler les batteries au lithium qui fuient ou sont endommagées.**

**! Une batterie non conforme présente un danger d'explosion. La remplacer seulement par une batterie identique ou de type équivalent recommandé par le fabricant. Évacuer les batteries usées selon les directives du fabricant.**

**! La manutention incorrecte du module de batterie de cet appareil présente un risque d'incendie ou de brûlures chimiques. Ne pas démonter, incinérer ou exposer à une température de plus de 100°C. Évacuer promptement la batterie usée. Garder hors de portée des enfants.**

## Industry Canada Notice

**NOTICE:** The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection.

The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Equipment malfunctions or any repairs or alterations made by the user to this equipment may give the telecommunications company cause to request that the user disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

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

**NOTICE:** The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5. The Ringer Equivalence Number for this equipment is 0.79B.

## Avis de l'Industrie Canada

**AVIS :** L'étiquette d'Industrie Canada identifie le matériel homologué.

Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

**Avertissement :** L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

**AVIS :** L'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface.

La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5. L'indice d'équivalence de la sonnerie de ce matériel est de 0.79B.



# Contents

NOTICE .....	ii
Owner's Record .....	ii
Safety Information and Caution .....	iii
Regulatory Information.....	v
FCC Part 68 .....	v
Telephone Consumer Protection Act of 1991 (United States) .....	vi
Telephone Consumer Guidelines (Canada).....	vi
Disposal of Lithium Battery .....	vii
Industry Canada Notice.....	viii
Avis de l'Industrie Canada.....	viii
 <i>Chapter 1 — Identifying Components.....</i>	 <i>1</i>
Front View .....	2
Drives.....	3
Buttons and Switches .....	4
Indicators.....	5
Connectors .....	6
Rear View .....	7
Icons .....	8
I/O Connectors .....	10
Expansion Slots .....	14
 <i>Chapter 2 — Configuring Your System .....</i>	 <i>15</i>
Accessing the BIOS Setup Utility .....	16
Changing the Display's Power Management Settings.....	17

<b>Chapter 3 — Removing, Installing, and Replacing Components</b>	<b>23</b>
Removing the Side Cover	24
Replacing the Side Cover	25
Removing a PCI Add-in Card	26
Installing a PCI Add-In Card	28
Installing an Add-On AGP Card	30
Replacing the Lithium Battery	32
Removing a Memory Module	35
Installing System Memory	37
Removing a Slot Cover	40
Covering an Open I/O Slot	41
Installing a 3.5-inch Internal Hard Disk Drive	42
To identify additional hard disk space	46
Removing the Power Supply	47
Replacing the Power Supply	48
<b>Chapter 4 — System Board</b>	<b>49</b>
Memory Module (DDR-DIMM) Slots	50
Power Supply Header	51
CLR CMOS Jumper	52
<b>Chapter 5 — CMOS Setup Options</b>	<b>53</b>
Main Screen	55
Advanced Screen	57
Power Screen	58
Boot Screen	59
Exit Screen	60
<b>Chapter 6 — Miscellaneous Technical Information</b>	<b>61</b>
User and Supervisor Passwords	62
Beep Code Error Messages	63
PCI Configuration Status and Error Messages	64
DMA Channel Assignments	65
System I/O Address Map	66
Memory Map	68
IRQ Settings	69

<i>Chapter 7 — Specifications</i> .....	71
Processor .....	71
Chipset .....	71
PCI Bus .....	71
AGP Bus .....	71
Memory Modules .....	72
Memory Configurations .....	72
L2 Cache .....	72
Graphics .....	72
Audio .....	73
Communications .....	73
I/O and Expansion Slots .....	74
Floppy Disk Drive and Controller .....	74
Hard Drives and Controller .....	74
Optical Drives .....	75
System BIOS .....	75
<i>Index</i> .....	77

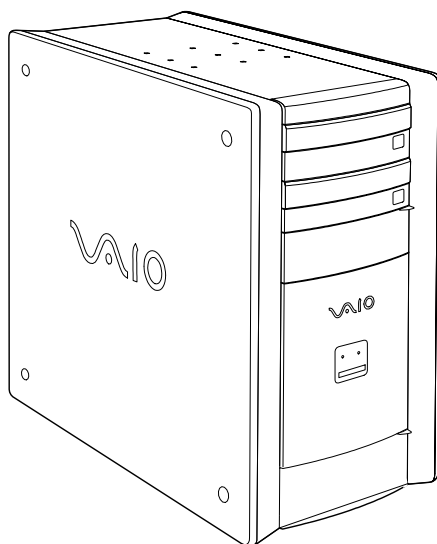


# *Chapter 1*

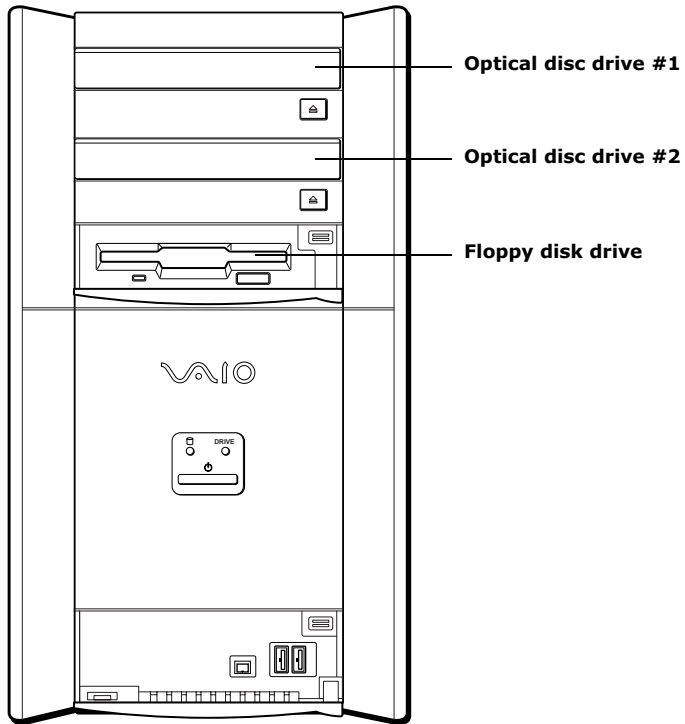
## *Identifying Components*

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 another section of this manual.

## Front View



## Drives



<i>Drive</i>	<i>Description</i>
--------------	--------------------

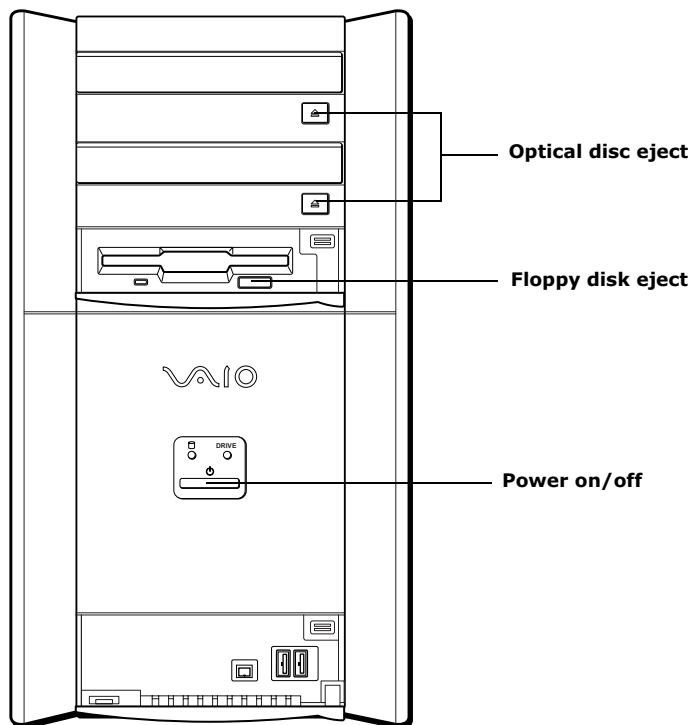
Optical disc drive #1	See Specifications sheet for details.*
-----------------------	--

Optical disc drive #2	See Specifications sheet for details.*
-----------------------	--

Floppy disk drive	3.5-inch, 1.44 MB.
-------------------	--------------------

\* The Specifications sheet is supplied with your computer's original documentation.

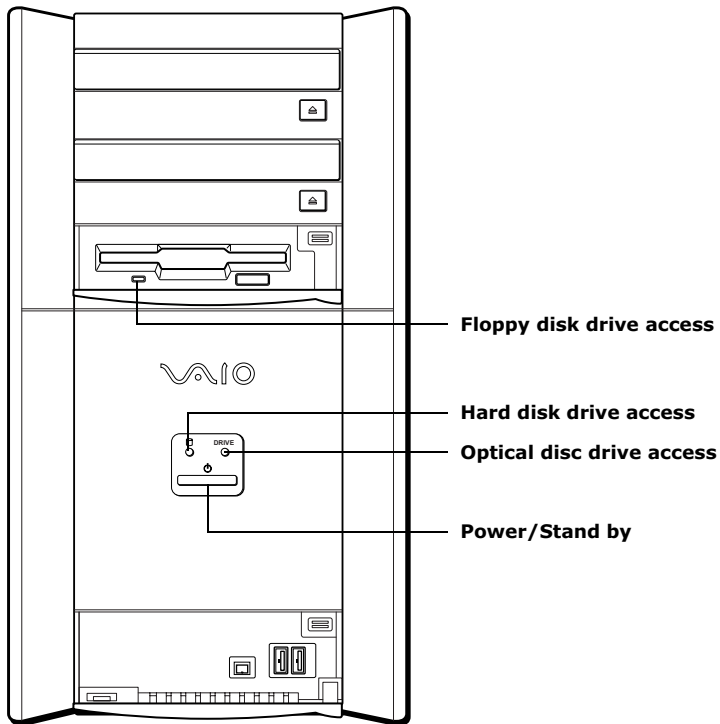
## Buttons and Switches



<i>Button or switch</i>	<i>Description</i>
Optical disc eject button	Automatically opens and closes the assigned optical drive tray.
Floppy disk eject button	Ejects a floppy disk.
Power on/off switch	Turns system power on, off, or into Stand by mode.

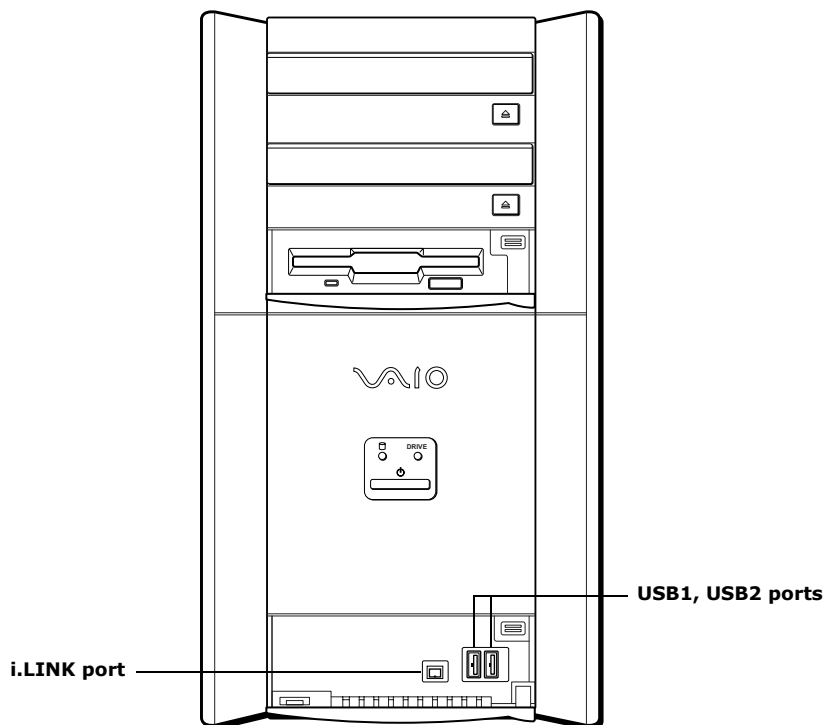


## Indicators



Indicator	Description
Floppy disk drive access indicator	On (green) indicates floppy disk drive activity.
Hard disk drive access indicator	On (red) indicates hard disk drive activity.
Optical drive access indicator	On (red) indicates optical disc activity.
Power/Stand by indicator	Stand by (amber) indicates the computer is in Stand by mode. On (blue) indicates the computer is out of Stand by mode, ready to use. Off (no color) indicates the computer is turned off or in Hibernation mode.

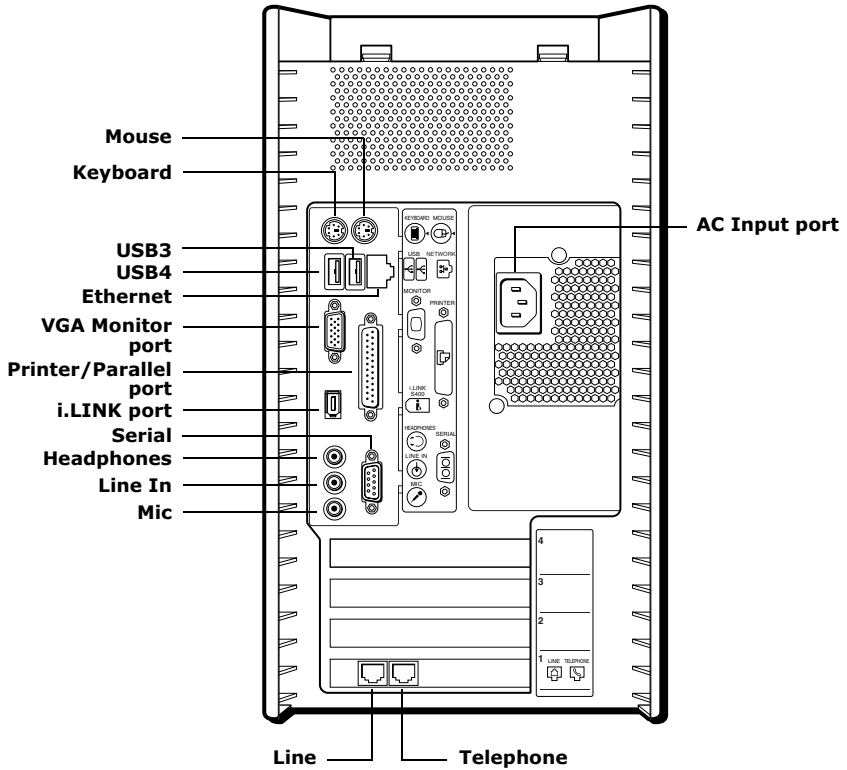
## Connectors



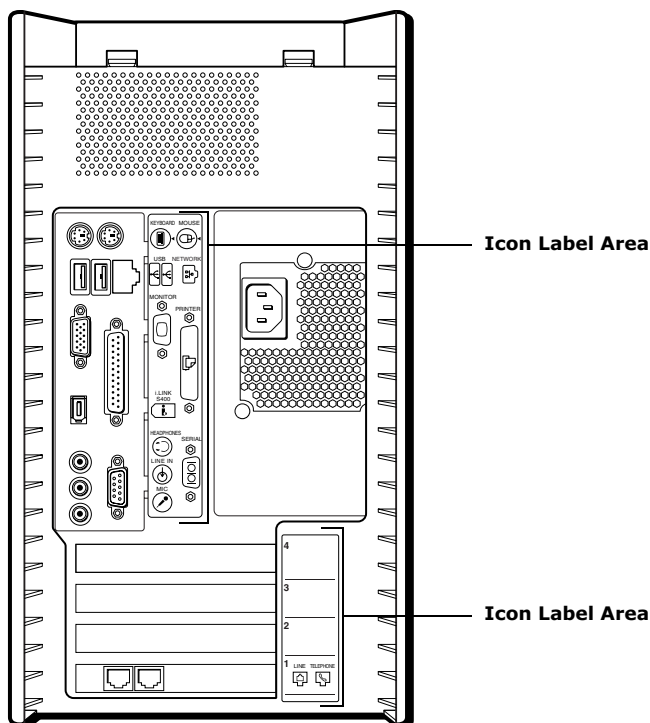
Connector	Description
i.LINK® port (IEEE 1394)*	Connects to a digital device that has a 4-pin i.LINK connector.
USB1, USB2 ports	Connects to USB devices.







- \* To connect to a 6-pin i.LINK device, use the i.LINK port 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 port. A 4-pin i.LINK connector cannot supply power to the device.








## Rear View



## Icons



Icon	Description
	Mouse port
	Keyboard port
	Universal Serial Bus (USB) port
	Ethernet port (for LAN connection only)
	VGA Monitor port
	Printer/Parallel port

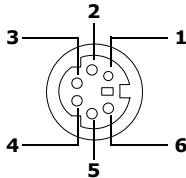
<i>Icon</i>	<i>Description</i>
	i.LINK® (IEEE 1394) port
	Headphones jack
	Line In jack (audio)
	Mic (microphone) jack
	Serial port
	Line jack
	Telephone jack

## I/O Connectors

The following section identifies the various I/O connectors.

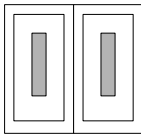
### Keyboard and Mouse Ports

The keyboard and mouse ports are physically identical and have the same pinout. They are standard 6-pin PS/2® compatible female ports.



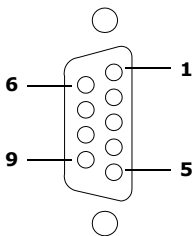
### USB Ports

The USB ports are standard 4-pin USB ports. Two USB ports are located at the front, and two at the rear of the system.



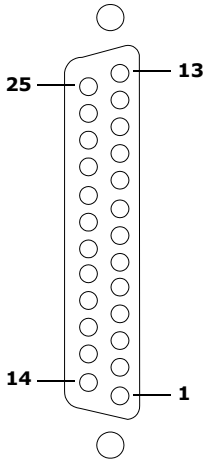
### Serial Ports

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



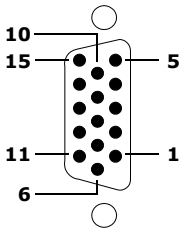
### Printer/Parallel Port

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



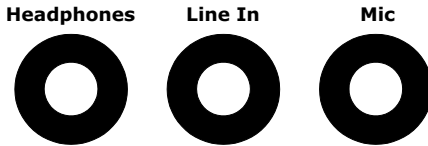
### VGA Monitor Port

The monitor port is a standard 15-pin female high-density VGA-type port.



### *Mic, Line In, and Headphones Jacks*

The microphone, line in, and headphones jacks are physically identical, but have different connections. They are standard 3.5 mm stereo mini-jacks.

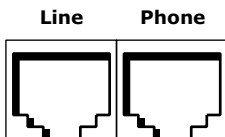


<i>Connector</i>	<i>Description</i>
Headphones	1.0 Vrms (typical).
Mic	Electret condenser microphone input.
Line In	1.0 Vrms (typical), 10 Kohm impedance.

### *Telephone and Line Jacks*

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.


The modem installed on your computer may differ depending on the configuration you purchased.






### *i.LINK (IEEE 1394) Ports*

The 6-pin i.LINK® port 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 port. The 6-pin port supplies 10 V to 12 V and a maximum power of 6 watts.

 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connection. The i.LINK connection may vary, depending on the software applications, operating system and compatible i.LINK devices. All products with an i.LINK connection may not communicate with each other.

 Refer to the documentation that came with your compatible i.LINK device for information on operating conditions and proper connections. Before connecting compatible i.LINK PC peripherals to your system, such as an optical disk or hard disk drive, confirm their operating system compatibility and required operating conditions.

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

**6-pin i.LINK port  
(IEEE 1394)**



**On back of  
system**

**4-pin i.LINK port  
(IEEE 1394)**



**At bottom of  
front panel**

### *Ethernet Port*

The Ethernet port on the rear of the system is used to connect to a 100BASE-TX/10BASE-T Ethernet network.

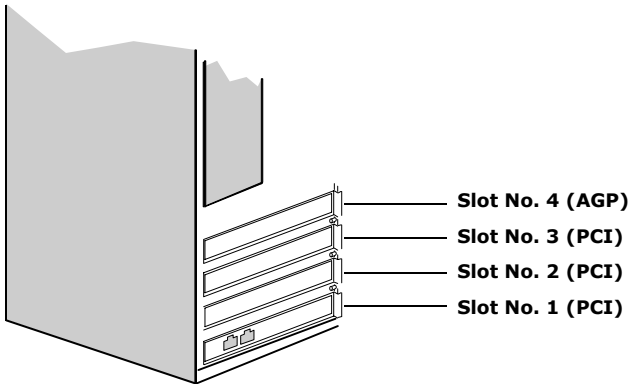
**Ethernet**



**On back of  
system**

### Expansion Slots

There are three PCI slots, two of which are available for expansion (PCI No. 2 and No. 3). The other PCI slot is occupied by the fax/modem card (PCI No. 1). There is one AGP slot that is available for expansion.



# *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.

## Accessing the BIOS Setup Utility

You must access the BIOS Setup Utility to make changes to the BIOS settings (see “CMOS Setup Options” on page 53 for information on BIOS settings).

**! Before rebooting the system, save and close all open files, and exit open applications.**

- 1 Reboot your computer by selecting Shut Down... from the Start menu, then selecting Restart.
- 2 When the Sony logo appears, press F2.
- 3 The AwardBIOS Setup Utility screen appears.

Each menu presents options for modifying the system configuration. Use the left and right arrow keys to select a menu from the menu bar. Use the up and down arrow keys to select items within a menu. Once an item is highlighted, use the plus/minus (+/-) keys to modify a setting.

If an item has a triangle (▸) to its left, this indicates that a sub-menu of options is available. Press ENTER to access a sub-menu. If a sub-menu contains items with a triangle, there is another layer of options from which to select.

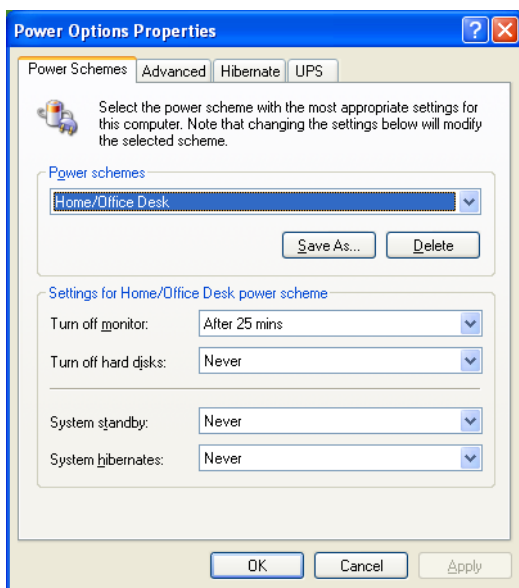
- 4 Once you select an option, press ESC to back out of each menu until you reach the top level, where the menu bar appears.
- 5 To exit the BIOS setup utility, press ESC from any top-level screen and follow the prompts.

## 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, Control Panel, then click Power Options.

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



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

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

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.

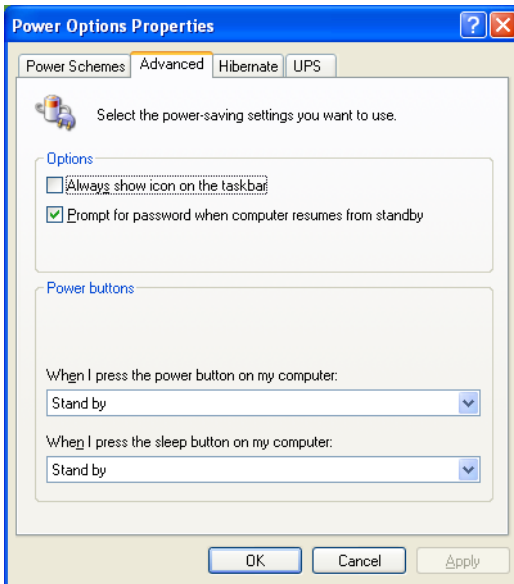
The Turn off hard disks option allows you to specify the period of inactivity (in minutes) that you want to elapse before your hard disks turn off when your computer is running on AC power.

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

The System hibernates option allows you to specify the period of inactivity (in minutes) before your computer goes into the hibernate state. Power is reactivated when you push the power button.

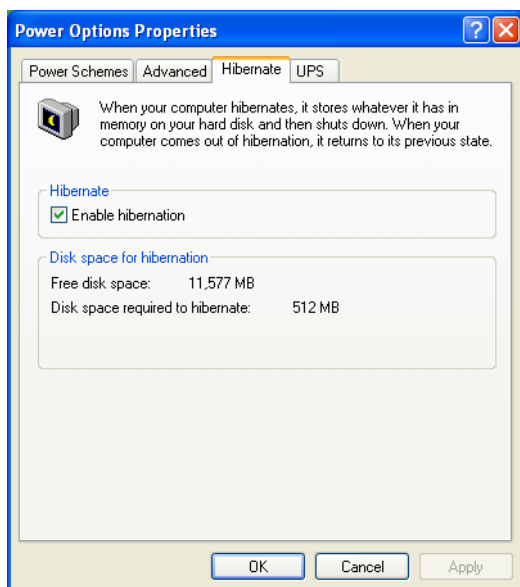
- 3 To save a new power scheme, first modify the settings, click Save As, type a descriptive name, and then click OK.

- 4 Click the Advanced tab.



- 5 Select the desired settings.

- 6 Click the Hibernate tab.




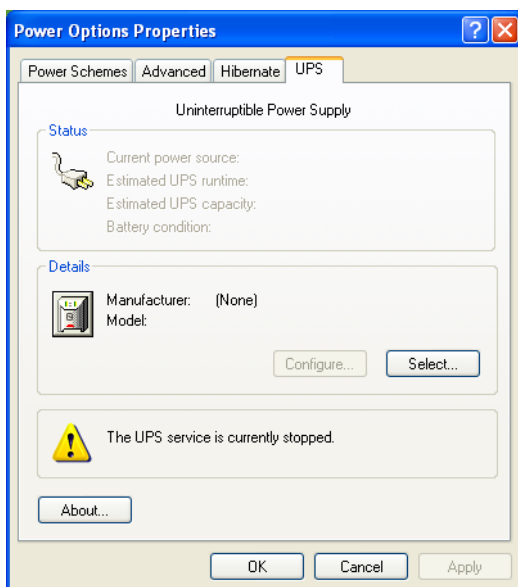
- 7 Select the settings most appropriate for your system.



8 Click the UPS tab.

The UPS tab enables you to select and configure an Uninterruptible Power Supply (UPS) device for your system.

 A UPS device is an optional accessory not currently supplied with your system.



9 Select and configure the settings most appropriate for your system and click OK. For more information about configuring a UPS device, refer to your Microsoft® Windows® XP operating system Help.




# Chapter 3

## *Removing, Installing, and Replacing Components*

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

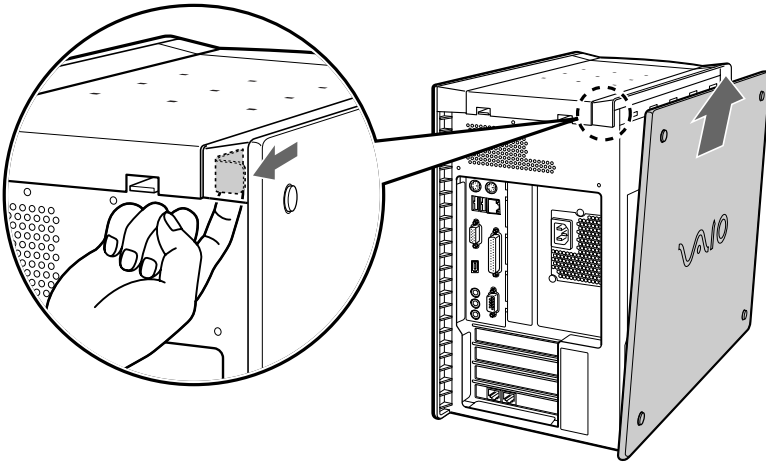
**! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.**

 Systems differ by model, so your system may appear different from the illustrations in this chapter.

## Removing the Side Cover

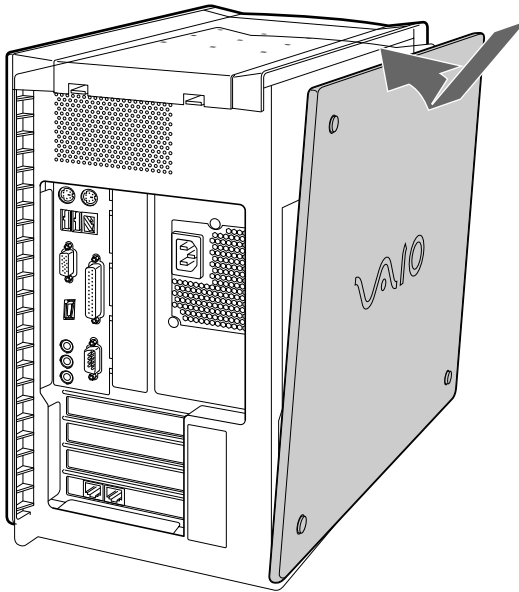
You must remove the side cover to access the system board, add-in cards, power supply, battery, memory, and internal drives.

- 1 From the rear of the unit, pull the metal tab shown in the next diagram.
- 2 Pull the top of the side cover away from the unit about two inches, then gently lift out the side cover.



## Replacing the Side Cover

- 1 From the rear of the unit, align the bottom of the side cover so that it slips into the lip on the bottom of the unit.
- 2 Push the top of the side cover up against the top of the unit until the side cover snaps into position.



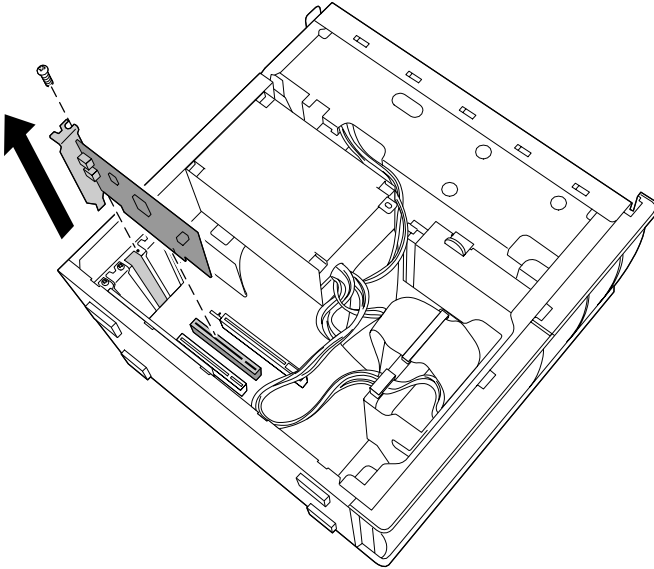
## Removing a PCI Add-in Card


**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Remove the side cover (see “[Removing the Side 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.

**!** 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.

- 4 Remove the add-in card from the PCI slot and store the card in an anti-static wrapper for future use.




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

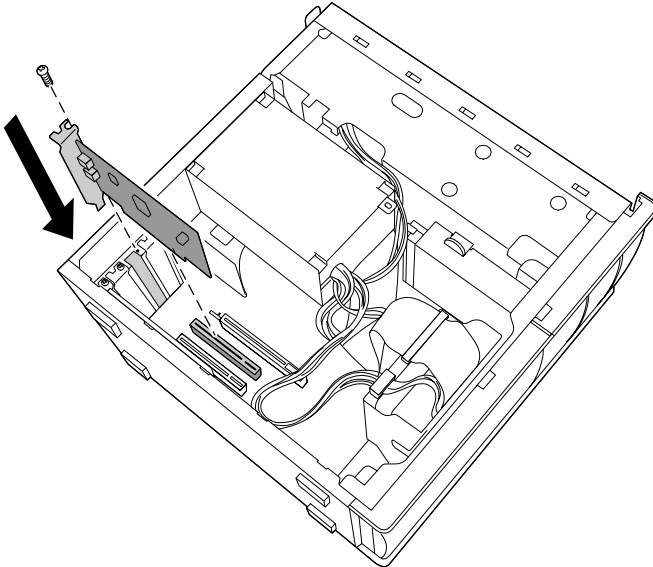
- 5 If you do not replace the card or install another add-in card, install a slot cover over the vacant slot at the rear of the chassis (see [“Covering an Open I/O Slot”](#) on page 41).
- 6 Replace the side cover (see [“Replacing the Side Cover”](#) on page 25).

## Installing a PCI Add-In Card

**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Remove the side cover (see [“Removing the Side Cover”](#) on page 24).
- 2 Locate an available expansion slot.
- 3 Remove the slot cover adjacent to the selected slot (see [“Removing a Slot Cover”](#) on page 40).
- 4 Insert the add-in card into the PCI slot. 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. Make sure that the top of the bracket fits snugly against the chassis lip after the card is fully inserted.





- 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 side cover (see [“Replacing the Side Cover”](#) on page 25).
- 8 Turn on the computer and follow any instructions that came with the add-in card.

## Installing an Add-On AGP Card

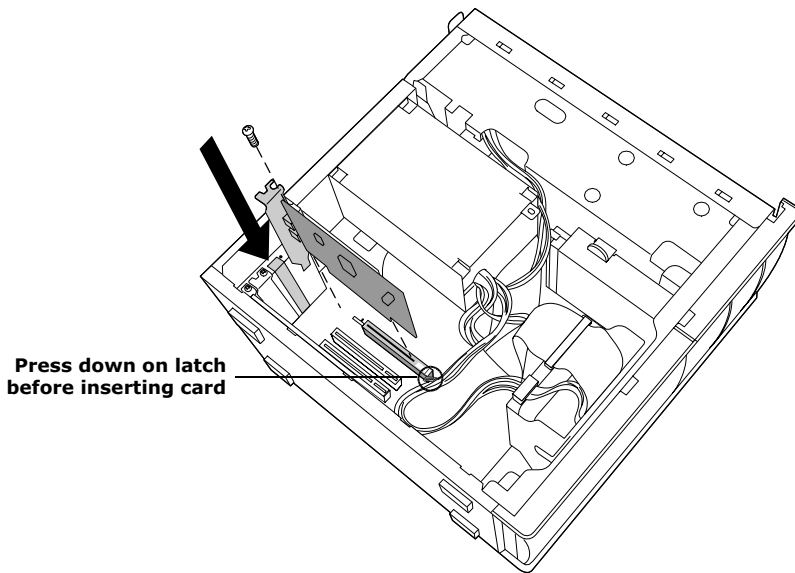
Your computer has one open AGP expansion slot. This slot enables you to install an AGP card to enhance your system's graphics capabilities. The length of the AGP card should not exceed 9.05 inches.



Installing an AGP card disables the internal graphics. Your system supports AGP 4X enabled graphics cards.

**! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.**

- 1 Remove the side cover (see [“Removing the Side Cover”](#) on page 24).
- 2 Remove the slot cover from the AGP slot (see [“Removing a Slot Cover”](#) on page 40).
- 3 Press down on the end latch (see diagram) before inserting the AGP card.



- 4 Firmly insert the AGP card into the slot.

- 5 Lift up the end latch if the latch does not automatically lock back into place.
- 6 Secure the AGP card with the screw removed in step 2.
- 7 Replace the side cover (see [“Replacing the Side Cover”](#) on page 25).
- 8 Attach the monitor cable to the monitor port on the AGP card.
- 9 Turn on the computer.
- 10 Follow the instructions that came with the AGP card to install the AGP card driver.

## 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 16).

**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.
- 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 53). Make a list of all the BIOS options that are different from their default values. 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.

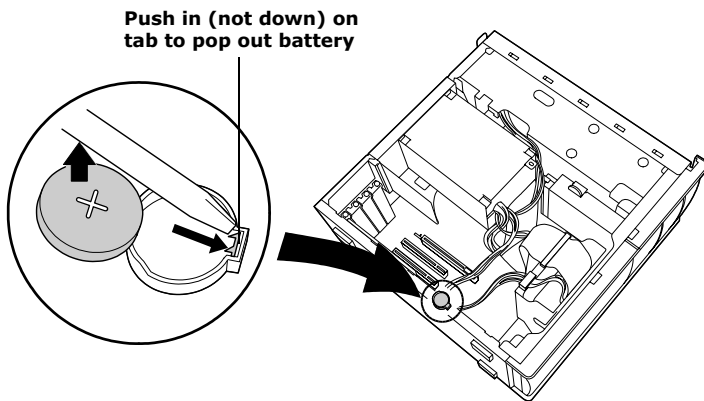
**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

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


- 8 If necessary, remove any add-in cards (see [“Installing an Add-On AGP Card”](#) on page 30) to gain access to the battery. You may also need to disconnect some cables.

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

- 9 Use a small flathead screwdriver or your finger to push in (not down) against the small tab at one end of the battery holder to pop out the battery.



- 10 Gently lift out the battery 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, and press down until the battery is secure.

 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 side cover (see [“Replacing the Side Cover”](#) on page 25).
- 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 53).
- 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.

## 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 and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

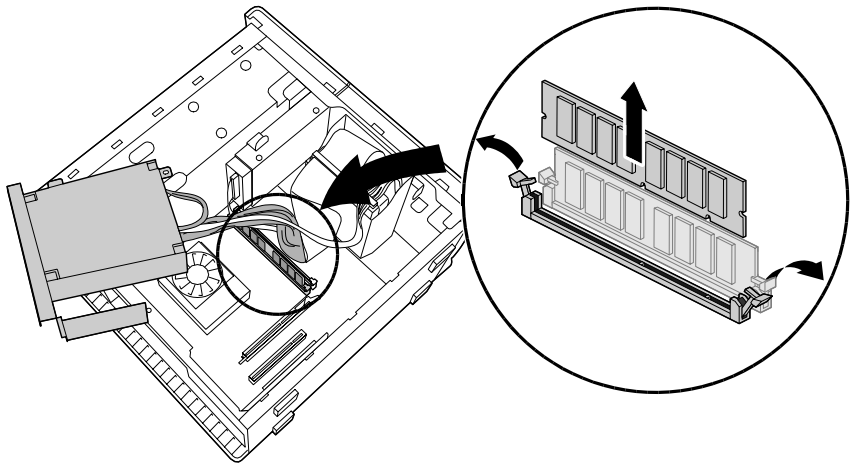
- 1 Remove the side cover (see “[Removing the Side Cover](#)” on page 24).

 The memory modules are located beneath the power supply. You need to remove the power supply to reach the memory modules.

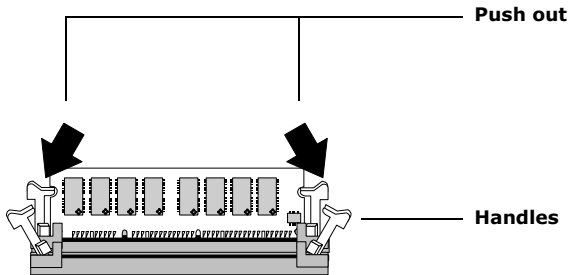
- 2 Remove the power supply (see “[Removing the Power Supply](#)” on page 47).

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

- 3 Locate the memory module you wish to remove.



- 4 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 slot.



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



## Installing System Memory


**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 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 512 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, 256	0, 8, 16, 32, 64, 128, 256

\* Your computer ships with at least 256 MB. SDRAM is expandable to 512 MB. Your model may ship with more than 256 MB SDRAM depending on the configuration you purchased.

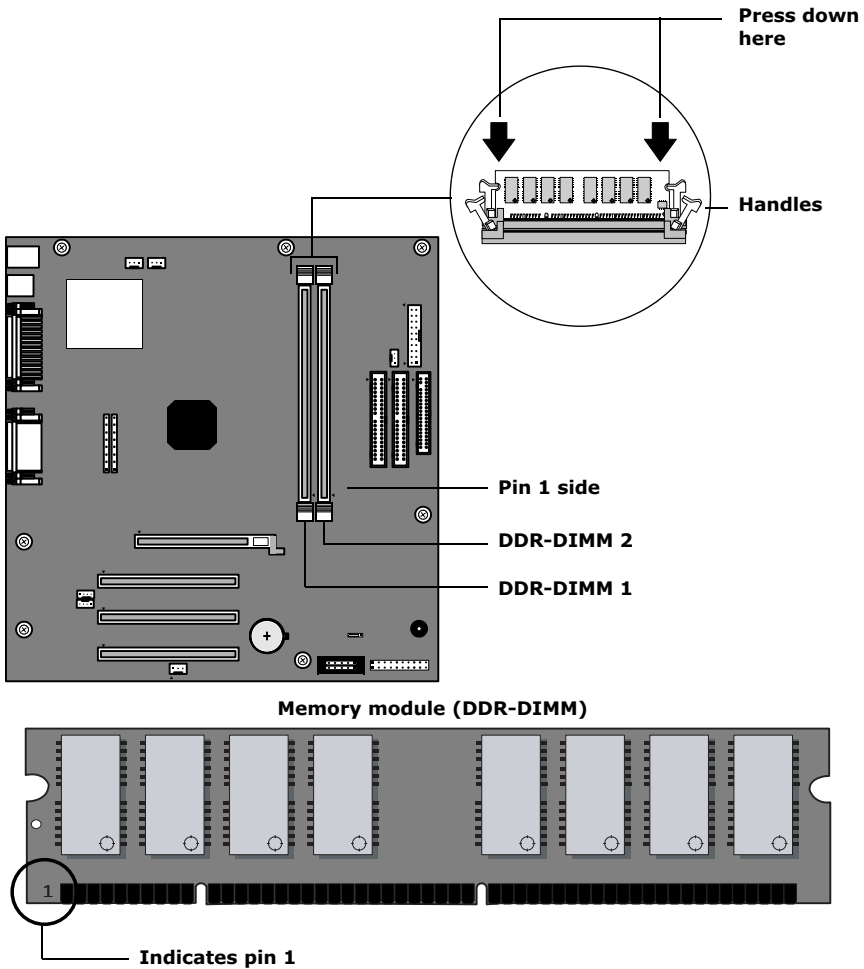
 Use only 133 Mhz unbuffered FSB-supported memory. PC133 (CL3) does not support EDO or buffered SDRAM memory.

- 2 Remove the side cover (see [“Removing the Side Cover”](#) on page 24).
- 3 Remove the power supply (see [“Removing the Power Supply”](#) on page 47).
- 4 If necessary, remove the memory module you wish to replace (see [“Removing a Memory Module”](#) on page 35).

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


- 5 If necessary, remove any previously installed AGP cards.
- 6 Remove the new memory module(s) from its anti-static package. Hold the memory module only by its edges to prevent static-electricity damage.

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



- 8 Carefully but firmly insert the edge of the module into the slot.

- 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 48).
- 11 Replace the side cover (see “[Replacing the Side Cover](#)” on page 25).
- 12 Reconnect the power cord and turn on the computer.

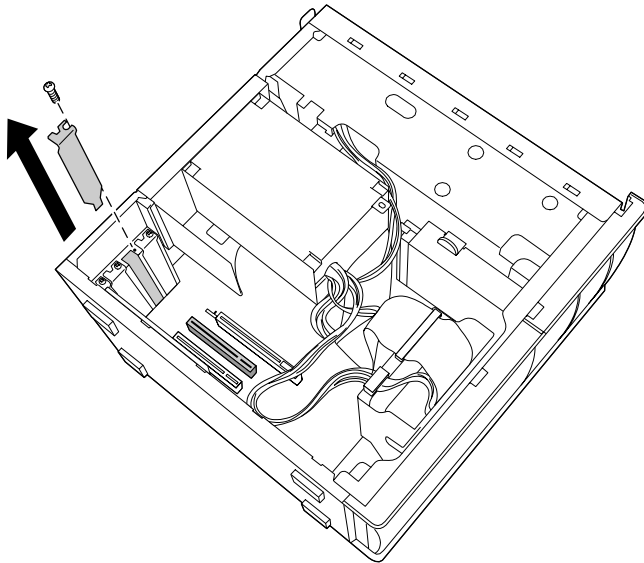
Your computer automatically recognizes the extra memory and will configure itself accordingly when you turn on the computer. No further action is required.

## Removing a Slot Cover

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

**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

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

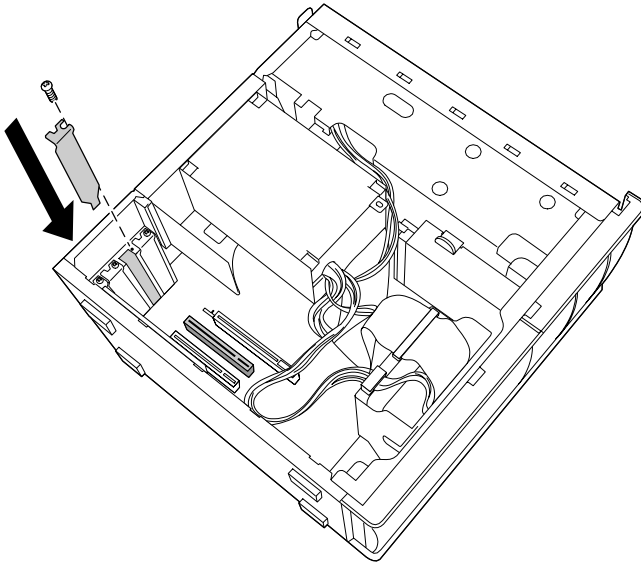


## Covering an Open I/O Slot

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).

**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.


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



- 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.

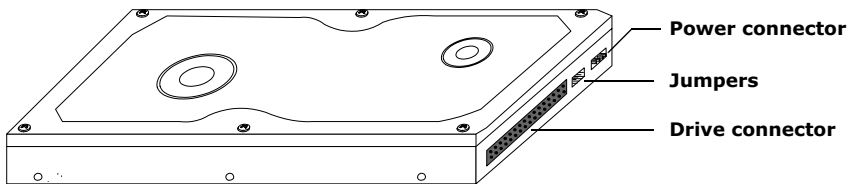
## Installing a 3.5-inch Internal Hard Disk Drive

Your system comes with an available bay to hold an additional 3.5-inch 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.

 Some models, such as Configure-to-Order (CTO) systems, may already have a second hard disk drive installed.

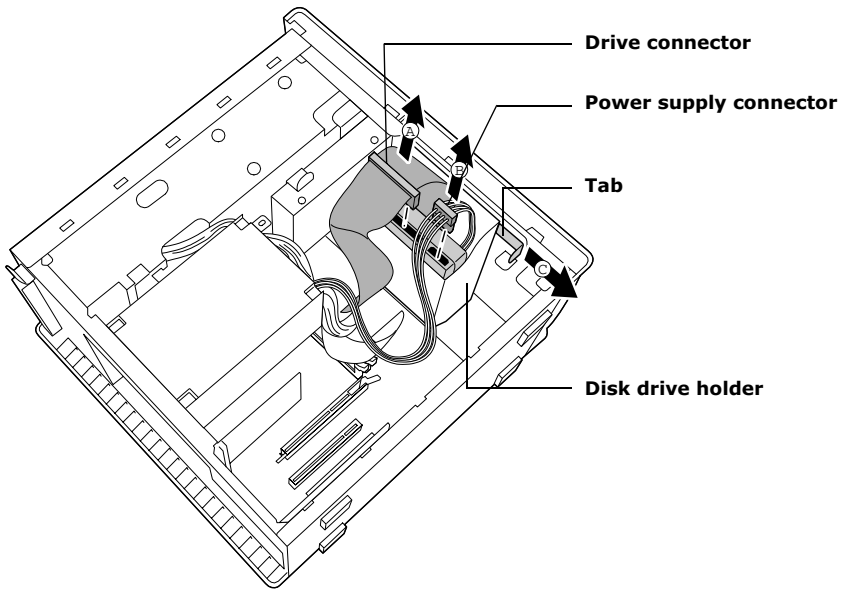
**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

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



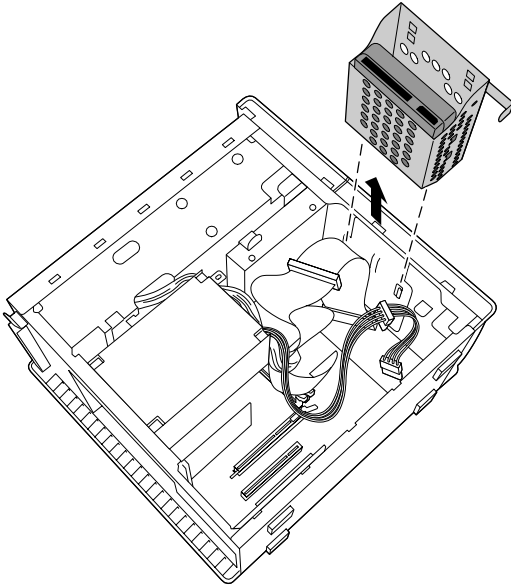
- 2 Remove the side cover (see [“Removing the Side Cover”](#) on page 24).

- 3 Disconnect the drive connector (A in diagram).

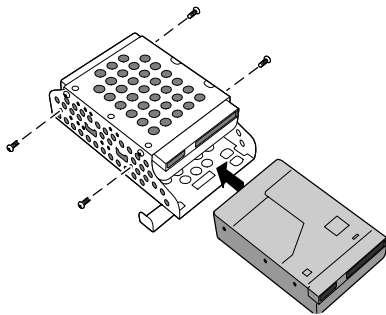


- 4 Disconnect the power connector (B in diagram).
- 5 Pull out on the tab (C) that secures the drive holder to the chassis.

- 6 Slide the drive holder up and out.



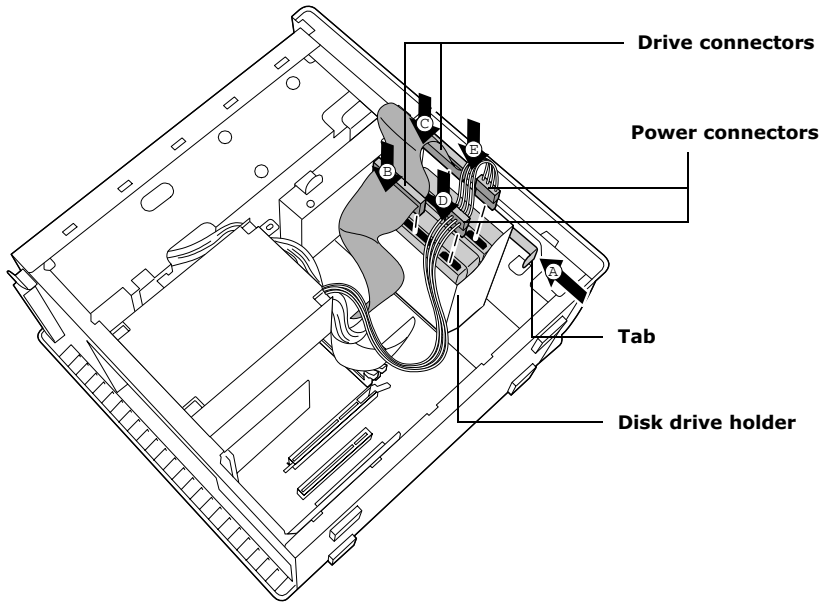
- 7 Slide the new drive into the bottom part of the drive holder and align the holes on each side of the drive holder.



- 8 Secure the drive to the drive holder using screws in each of the two holes on each side of the drive holder (screws are provided with the new drive). Do not overtighten the screws.



- 9 Slide the drive holder back into the chassis so that the edge of the holder is flush with the chassis.
- 10 Push in on the tab (A) to securely latch the holder to the chassis.



- 11 Connect the inner drive cable connector (B) to the first drive.
- 12 Connect the outer drive cable connector (C) to the second drive.
- 13 Connect the first power connector (D) to the first drive.
- 14 Connect the second power connector (E) to the second drive.
- 15 Replace the side cover (see [“Replacing the Side Cover”](#) on page 25).
- 16 Reconnect the power cord to the system and then turn on your computer.

### *To identify additional hard disk space*

When you initialize the new hard disk drive, it must be configured as an extended partition in Windows NT file system (NTFS) format.

- 1 Log on in Windows® as Administrator.
- 2 Click Start in the Windows taskbar and right-click on My Computer. A shortcut menu appears.
- 3 Select Manage. The Computer Management window appears.
- 4 From the file directory on the right, go to Storage and then select Disk Management.
- 5 Right-click on the newly installed, unformatted drive (Disk label identified with red marking), and from the shortcut menu, select Initialize Disk.
- 6 Click on the Unallocated area of the drive and then right-click to display the shortcut menu.
- 7 Select New Partition. The New Partition wizard appears.
- 8 Follow the onscreen instructions to complete the process.

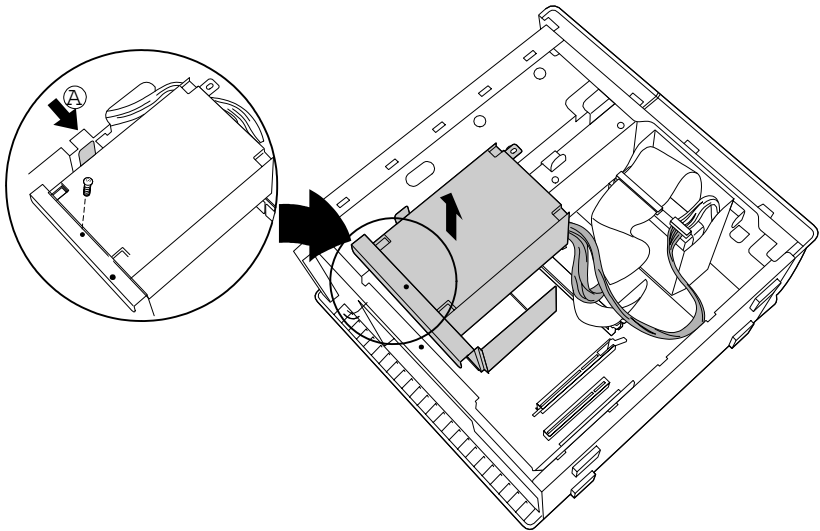
The Windows® XP operating system recognizes the new hard disk drive and applies the NTFS format.

## Removing the Power Supply

You remove the power supply when you insert a memory module (see “Installing System Memory” on page 37).

**!** Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Remove the screw that secures the power supply to the rear of the chassis.
- 2 Pull the tab (A) that latches the power supply to the chassis.



- 3 Slide the power supply up until the power supply clears the chassis.
- 4 Rotate the power supply upside down and rest it on top of the chassis where the hard drive is located.

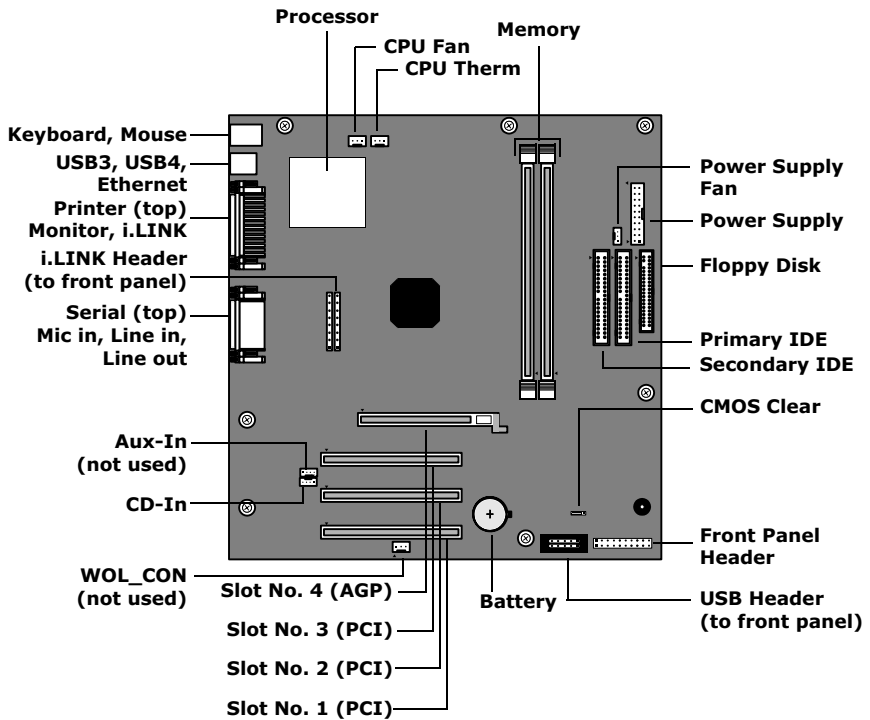
## *Replacing the Power Supply*

- 1 Rotate the power supply down and slide it into the chassis along the rails to each side of the chassis until the tab snaps into position.
- 2 Replace the screw that secures the power supply to the rear of the chassis.

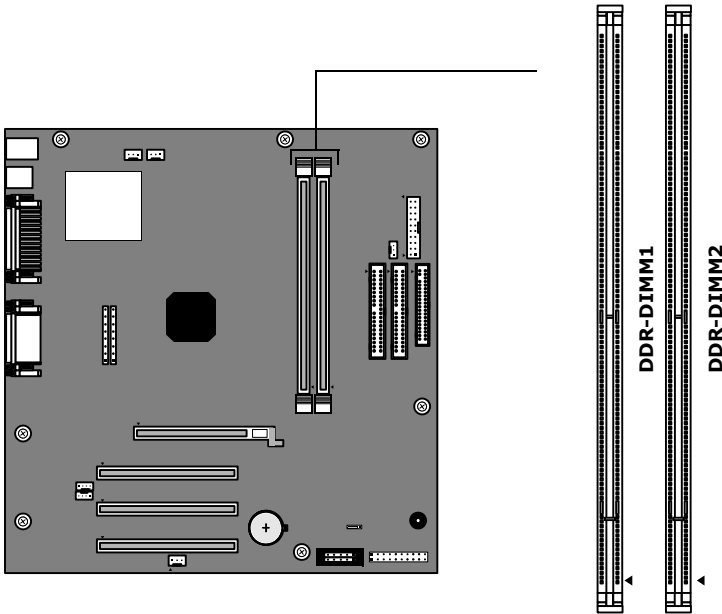
# Chapter 4

## System Board

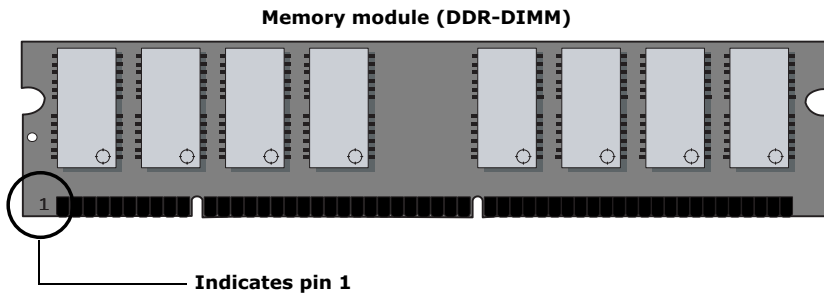
This chapter identifies and describes components on the system board.



## Memory Module (DDR-DIMM) Slots

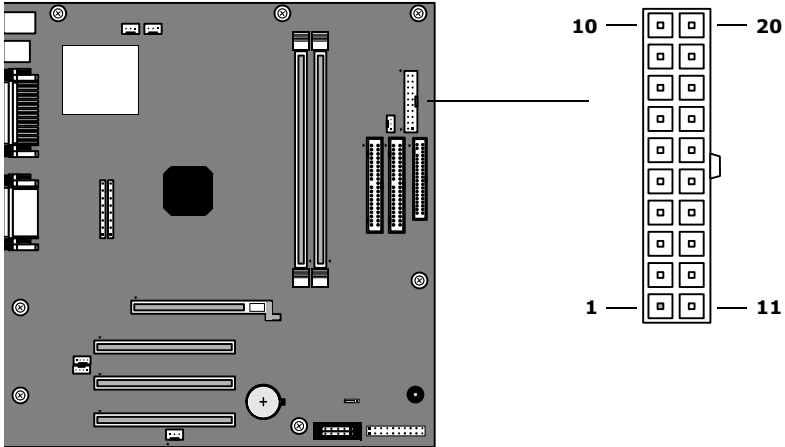


Both sides of each Double-data rate, Dual Inline Memory Module (DDR-DIMM) look very similar. The side with pin 1 has a small "1" to the left of pin 1. Be sure to orient the memory module correctly in the DDR-DIMM slot (a small triangle on the slot indicates pin 1).



## Power Supply Header

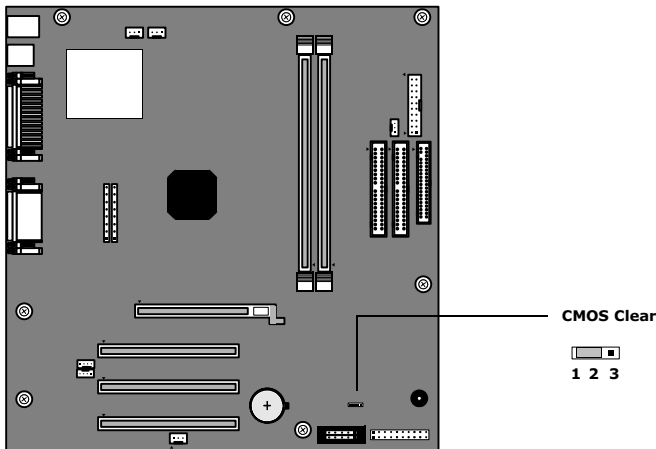
The power supply header on the system board connects to the power supply connector labelled P1.



## CLR CMOS Jumper

There is one user-configurable jumper for CMOS Clear.

The computer ships with CMOS Clear in the Normal position. Do not change the position of this jumper unless directed by a technical support person.



### CMOS Clear Jumper settings

<i>Jumper Plug Position</i>	<i>Function</i>
1-2	Normal
2-3	Clear



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



# Chapter 5

## CMOS Setup Options

This chapter describes each screen in the Award BIOS Setup Utility (see “[Accessing the BIOS Setup Utility](#)” on page 16).

The Award BIOS setup has five menu items on the menu bar. These are:

- ❑ Main
- ❑ Advanced
- ❑ Power
- ❑ Boot
- ❑ Exit

Options that you can change are enclosed in brackets. Text that is not enclosed in brackets cannot be changed.

A small triangle (▸) indicates that there is a sub-menu with additional information and options. Press Enter to display the sub-menu. The information and options in a sub-menu are context-sensitive (they appear or disappear, depending on which options you select).

The item shown in [brackets] in this guide is the default option. The option shown in [brackets] on the screen is the option currently set for your system.

The other available options for each item are shown without brackets directly below the default option in this guide. The available options are listed in the order they occur when you press the + key.

Use the left and right arrow keys to choose a menu item. Use the up and down arrow keys to select an option. Press Enter to display a list of options, or press the + or - key to cycle through the other options.

If you display the list of options, use the up and down arrow keys to select an option in the list, then press Enter to choose the selection.

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 keys to use for navigation and control.

## Main Screen

System Time	[00:00:00]
System Date	[01/01/2001]
▶Primary Master (see “IDE Sub-Menus” on page 56)	
▶Primary Slave (see “IDE Sub-Menus” on page 56)	
▶Secondary Master (see “IDE Sub-Menus” on page 56)	
▶Secondary Slave (see “IDE Sub-Menus” on page 56)	
Supervisor Password	[Disabled]
User Password	[Disabled]
Installed Memory	See Specifications sheet for details.*
BIOS Revision	1002

---

\* The Specifications sheet is supplied with your computer's original documentation.

## ►IDE Sub-Menus

Type	[Auto] User Type HDD CD-ROM LS-120 ZIP-100 MO Other ATAPI Device None
Translation Method*	[LBA] Large Normal Match Partition Table Manual
Cylinders <sup>†</sup>	[1024]
Heads <sup>†</sup>	[255]
Sectors <sup>‡</sup>	[63]
CHS Capacity*	8422 MB
Maximum LBA Capacity*	30735 MB
Multi-Sector Transfers*	[Maximum] Disabled 2 Sectors 4 Sectors 8 Sectors 16 Sectors 32 Sectors
SMART Monitoring*	[Disabled] Enabled
PIO Mode**	[4]
ULTRA DMA Mode <sup>†</sup>	[5]
Set Device As <sup>††</sup>	[Auto] Floppy Hard Disk

---

\* This option appears when Type is set to User Type HDD. Actual capacity depends on product.

† This option appears when Type is set to Auto or User Type HDD.

‡ This option appears when Type is set to Auto or User Type HDD.

\*\* This option appears when Type is not set to None.

†† This option appears when Type is set to ZIP-100 or MO.

## Advanced Screen

CPU Speed See Specifications sheet for details.\*

### ► I/O Device Configuration

Onboard AC97 Audio Controller	[Enabled] Disabled
Onboard 1394 Controller	[Enabled] Disabled
Onboard LAN Controller	[Enabled] Disabled
Onboard Serial Port 1	[3F8H/IRQ4] 2F8H/IRQ3 3E8H/IRQ4 2E8H/IRQ10 Disabled
Onboard Parallel Port	[378H/IRQ7] 278H/IRQ5 Disabled 3BCH/IRQ7
Parallel Port Mode	[Normal] EPP ECP ECP+EPP

### ► PCI Configuration

Slot 1 IRQ to Slot 3 IRQ	[Auto] NA 3 4 5 7 9 10 11 12 14 15
Onboard LAN Boot ROM	[Disabled] Enabled

\* The Specifications sheet is supplied with your computer's original documentation.

## Power Screen

### ▶Power Up Control

AC Power Loss Restart	[Disabled] Enabled
Power Up On Modem Act	[Disabled] Enabled
Wake On LAN	[Disabled] Enabled

### ▶Hardware Monitor

MB Temperature	[(displays actual temperature)] Ignore
CPU Temperature	[(displays actual temperature)] Ignore
CPU Fan Speed	[(displays actual RPM)] Ignore
Power Fan Speed	[(displays actual RPM)] Ignore
VCORE Voltage	[(displays actual voltage)] Ignore
+3.3V Voltage	[(displays actual voltage)] Ignore
+5V Voltage	[(displays actual voltage)] Ignore
+12V Voltage	[(displays actual voltage)] Ignore
-12V Voltage	[(displays actual voltage)] Ignore

## Boot Screen

- |                      |   |
|----------------------|---|
| 1. ATAPI CD-ROM      | [(displays installed drive)]<br>Disabled                    |
| 2. Removable Device  | [Legacy Floppy]<br>LS120<br>ZIP-100<br>ATAPI MO<br>Disabled |
| 3. IDE Hard Drive    | [(displays installed drive)]<br>Disabled                    |
| 4. Other Boot Device | [Disabled]<br>Network<br>SCSI Boot Device                   |
| Silent Boot          | [Enabled]<br>Disabled                                       |

## *Exit Screen*

Exit Saving Changes

Exit Discarding Changes

Load Setup Defaults

Discard Changes

Save Changes



# *Chapter 6*

## *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
- ❑ System I/O address map
- ❑ Memory map
- ❑ IRQ settings

## 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 needs 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 floppy disk controller has requested a resource that is already in use.
CMOS Checksum Error, CMOS Cleared	The CMOS data was reinitialized due to a CMOS checksum error.
CMOS Data Invalid, CMOS Cleared	Invalid entry in the CMOS.
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, floppy disk 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 device has requested a resource that is already in use.
System Board Device Resource Conflict	A device has requested a resource that is already in use.

## *DMA Channel Assignments*

This shows the factory default values. The Windows® operating system reassigns resources to best meet the needs of a particular configuration.

<i>DMA Channel</i>	<i>Default Assignment</i>
------------------------	---------------------------

Channel 4	Direct memory access controller
-----------	---------------------------------

Channel 2	Standard floppy disk controller
-----------	---------------------------------

## System I/O Address Map

<i>Address Range (hex)</i>	<i>Description</i>
0x00000000-0x00000CF7	PCI bus
0x00000000-0x00000CF7	Direct memory access controller
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000022-0x0000002D	Motherboard resources
0x00000030-0x0000003F	Motherboard resources
0x00000040-0x00000043	System timer
0x00000044-0x0000005F	Motherboard resources
0x00000060-0x00000060	Standard 101/102-Key or Microsoft® Natural PS/2® Keyboard
0x00000061-0x00000061	System speaker
0x00000062-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000065-0x0000006F	Motherboard resources
0x00000070-0x00000073	System CMOS/real time clock
0x00000074-0x0000007F	Motherboard resources
0x00000080-0x00000090	Direct memory access controller
0x00000091-0x00000093	Motherboard resources
0x00000094-0x0000009F	Direct memory access controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A2-0x000000BF	Motherboard resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000EF	Motherboard resources
0x000000F0-0x000000FF	Numeric data processor
0x00000170-0x00000177	Secondary IDE Channel
0x000001F0-0x000001F7	Primary IDE Channel
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x00000376-0x00000376	Secondary IDE Channel
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003B0-0x000003BB	Intel® 82815 Graphics Controller
0x000003C0-0x000003DF	Intel® 82815 Graphics Controller
0x000003F2-0x000003F5	Standard floppy disk controller

<i>Address Range (hex)</i>	<i>Description</i>
0x000003F6-0x000003F6	Primary IDE Channel
0x000003F7-0x000003F7	Standard floppy disk controller
0x000003F8-0x000003FF	Communications Port (COM1)
0x000004D0-0x000004D1	Motherboard resources
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000D00-0x0000FFFF	PCI bus
0x0000B000-0x0000B01F	Intel® 82801BA/BAM USB Universal Host Controller – 2444
0x0000B400-0x0000B41F	Intel® 82801BA/BAM USB Universal Host Controller – 2442
0x0000B800-0x0000B80F	Intel® 82801BA Bus Master IDE Controller
0x0000D000-0x0000D0FF	Realtek RTL8139 Family PCI Fast Ethernet NIC
0x0000D400-0x0000D4FF	Lucent Win Modem
0x0000D800-0x0000D807	Lucent Win Modem
0x0000E000-0x0000E0FF	SoundMAX® Integrated Digital Audio
0x0000E100-0x0000E13F	SoundMAX Integrated Digital Audio
0x0000E400-0x0000E47F	Motherboard resources
0x0000E800-0x0000E81F	Motherboard resources
0x0000EC00-0x0000EC3F	Motherboard resources



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

## Memory Map

<i>Address range</i>	<i>Default configuration</i>
0x0000-0x9FFFF	System board
0xF0000-0xFFFFF	System board
0x100000-0x1FEFFFFF	System board
0xFEC00000-0xFEC000FF	System board
0xFEE00000-0xFEE00FFF	System board
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Intel® 82815 Graphics Controller
0xC8000-0xDFFFF	PCI bus
0x1FF00000-0xFFFFFFFF	PCI bus
0xF8000000-0xFBFFFFFF	Intel® 82815 Graphics Controller
0xF7800000-0xF787FFFF	Intel® 82815 Graphics Controller
0xF7000000-0xF70000FF	Lucent Win Modem
0xF6800000-0xF68000FF	Realtek RTL8139 Family PCI Fast Ethernet NIC
0xF6000000-0xF60007FF	Texas Instruments OHCI Compliant IEEE 1394 Host Controller
0xF5800000-0xF5803FFF	Texas Instruments OHCI Compliant IEEE 1394 Host Controller
0xFFF80000-0xFFFFFFFF	Motherboard resources
0xFFB80000-0xFFBFFFFFF	Motherboard resources



## IRQ Settings

<i>IRQ</i>	<i>Description</i>
0	System timer
1	Standard 101/102-Key or Microsoft® Natural PS/2® Keyboard
4	Communications Port (COM1)
6	Standard floppy disk controller
8	System CMOS/real time clock
12	PS/2® Compatible Mouse
13	Numeric data processor
14	Primary IDE Channel
15	Secondary IDE Channel
17	SoundMAX® Integrated Digital Audio
18	Texas Instruments OHCI Compliant IEEE 1394 Host Controller
19	Intel® 82801BA/BAM USB Universal Host Controller - 2442
21	Realtek RTL8139 Family PCI Fast Ethernet NIC
22	Microsoft ACPI-Compliant System
23	Lucent Win Modem
23	Intel® 82801BA/BAM USB Universal Host Controller - 2444



# Chapter 7

## Specifications

This chapter describes the technical specifications for your VAIO Digital Studio™ computer.

### Processor

See Specifications sheet for details.\*

### Chipset

---

Intel 815E chipset

---

### PCI Bus

---

PCI Level 2.2, 33 MHz zero wait state

---

3 PCI slots, 2 open. Not all PCI slots are available for expansion.  
(See Specifications sheet for details.)\*

---

### AGP Bus

---

AGP interface specification, rev. 2.0 compliance (supports 2x/4x)

---

1 AGP slot (open)

---

---

\* The Specifications sheet is supplied with your computer's original documentation.

## Memory Modules

Installed memory	See Specifications sheet for details.**
Maximum memory	512 MB (256 MB in each socket)
Voltage	3.3 V memory only
Pins	168-pins with gold-plated contacts
Memory type	3.3 V PC-133 MHz unrestricted CS latency 2, unbuffered, 64 bits (Non-ECC) DDR-SDRAM DIMM modules

## Memory Configurations

<i>DIMM1*</i>	<i>DIMM2*</i>
0, 8, 16, 32, 64, 128, 256	0, 8, 16, 32, 64, 128, 256

- \* Your computer is shipped with at least 256 MB. SDRAM is expandable to 512 MB. Computer SDRAM is unbuffered DDR-DIMM, specification Rev. 1.0 or later. Supports SDRAM memory. Does not support EDO memory or buffered DDR-DIMM memory. Memory can be installed in either socket. Memory size can vary between sockets. DDR-DIMMs can be single- or double-sided. DDR-DIMMs must be 3.3 V unbuffered 4-clock, between sockets. 64 bit or 72 bit 133 MHz SDRAM modules.

## L2 Cache

Installed	256 KB
-----------	--------

## Graphics

Chipset	Intel 815E Graphics
Video memory	See Specifications sheet for details.**
Resolution (displayed resolution depends on the video monitor you use)*	
True color (24 bits)	Up to 1280 x 1024 at 85 Hz non-interfaced
High color (16 bits)	Up to 1280 x 1024 at 85 Hz non-interfaced
256 colors (8 bits)	Up to 1600 x 1200 at 75 Hz non-interfaced

- \* The use of 1024 x 768 True color (24 bits) or High color (16 bits) at 75 Hz or lower refresh rate is recommended for video playback applications.

\*\* The Specifications sheet is supplied with your computer's original documentation.

## Audio

Sound chip	SoundMAX Integrated Digital Audio AD1881A
Wave synthesis	Software synthesis
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 headphones)

## Communications

Modem <sup>*</sup>	V.90 compatible data/fax modem <sup>†</sup>
Fax	14.4 Kbps maximum
i.LINK® (IEEE 1394)	400 Mbps, OHCI chipset
Ethernet	10BASE-T/100BASE-TX

\* Installed modem may vary, depending on the system configuration you purchased.

† This modem is capable of downloading at 56 Kbps. 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
Modem ports	Two RJ-11 connectors (for line and phone)
USB ports	USB1 and USB2 (on front panel) USB3 and USB4 (on rear panel)
PCI slots	Two available slots. Not all PCI slots are available for expansion. (See Specifications sheet for details.)**
AGP slot	One available slot. Maximum length for add-in cards is 9.05 inches
IDE headers	Primary and secondary (each supports two ATA-100 IDE drives)
i.LINK® (IEEE 1394) ports	One 4-pin port on front panel One 6-pin port on rear panel

## Floppy Disk Drive and Controller

<i>Drive</i>	<i>Description</i>
Floppy disk controller	82077-compatible (supports up to 2.88 MB)
Floppy disk drive	3.5-inch, 1.44 MB

## Hard Drives and Controller

<i>Drive</i>	<i>Description</i>
EIDE controller	Supports up to four EIDE drives (supports PIO Mode 4 EIDE drives and Ultra DMA/100 Mode drives)
IDE hard drive*	See Specifications sheet for details.**

\* Bus-mastering EIDE driver installed.

\*\* The Specifications sheet is supplied with your computer's original documentation.

## Optical Drives

<i>Drive</i>	<i>Description</i>
Optical disc drive #1	See Specifications sheet for details.**
Optical disc drive #2	See Specifications sheet for details.**

## System BIOS

Make and model	Award-based
ROM	2 Mb flash-ROM*
Passwords	User and supervisor passwords 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-99 compliant, 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>.

\*\* The Specifications sheet is supplied with your computer's original documentation.





# Index

## A

- add-in card
  - installing 28
  - removing 26
- address map, system 66
- audio specifications 73

## B

- battery - See lithium battery
- beep codes 63
- BIOS setup utility 16
  - advanced screen 57
  - boot screen 59
  - exit screen 60
  - main screen 55
  - options 53
  - power screen 58
  - screens 53
- BIOS specifications 75

## C

- CMOS - See BIOS
- CMOS Clear configuration jumper 52
- codes, beeps 63
- communications, specifications 73
- computer
  - lithium battery vii
- configuration jumper, CMOS Clear 52
- configuring
  - BIOS setup utility 16
  - power management 17
- connectors
  - i.LINK 6
  - USB 6

## cover

- for slot 40
- removing 24
- replacing 25
- covering I/O slot 41
- CPU - See processor

## D

- DIMM - See memory module
- display, power management 17
- disposal of lithium battery vii
- DMA channel assignments 65
- drives
  - installing additional 3.5-inch drive 42

## E

- error messages
  - beep codes 63
  - PCI configuration 64
- expansion slots 14
  - specifications for 74
- expansion slots - See slots

## F

- fax/modem - See communications
- front view 2
  - buttons and switches 4
  - connectors 5, 6
  - drives 3
  - indicators 5

## G

- graphics controller - See graphics
- graphics specifications 72

## H

headphones connector 12

## I

i.LINK connector 6, 13

I/O

- address map 66

- slot specifications 74

I/O connectors

- headphones 12

- i.LINK 13

- keyboard 10

- line 12

- line in 12

- mic 12

- monitor 11

- mouse 10

- printer 11

- serial 10

- telephone 12

- USB 10

I/O slot covering 41

icons, description of 8

IEEE 1394 - See i.LINK

installing

- 3.5-inch hard disk drive 42

- add-in card 28

- system memory 37

IRQ settings 69

## K

keyboard connector 10

## L

L2 cache specifications 72

line in connector 12

lithium battery

- disposal vii

- replacing 32

- safety precautions vii

## M

map - See I/O address map and  
memory map

memory - See system memory

memory module

- connector 50

- removing 35

- specifications for 72

messages

- error 63

- status and error 64

mic connector 12

microprocessor - See processor

modem - See communications

monitor - See display

monitor connector 11

mouse connector 10

## O

optical disc drive

- location of 3

- performance of discs 3, 75

## P

passwords, user and supervisor 62

power management, configuring 17

printer connector 11

## R

RAM - See system memory

rear view 7

- I/O connectors 10

- icons 8

removing

- add-in card 26

- cover 24

- memory module 35

- slot cover 40

replacing cover 25

replacing lithium battery 32

resolution - See graphics

## S

serial connector 10

setup, BIOS 16

slot - See I/O slot

slot cover, removing 40

## specifications

- AGP bus 71
- audio 73
- BIOS 75
- chipset 71
- communications 73
- DIMM configurations 72
- floppy disk drive and controller 74
- graphics 72
- hard drives and controllers 74
- I/O and expansion slots 74
- L2 cache 72
- memory module 72
- optical drives 75
- PCI bus 71
- processor 71

- system BIOS 75

- status and error messages 64

- supervisor password 62

- system board

- configuration jumper 52

- memory module connector 50

- system I/O address map 66

- system memory, installing 37

## T

- telephone connector 12

## U

- USB connectors 6, 10

- user password 62

