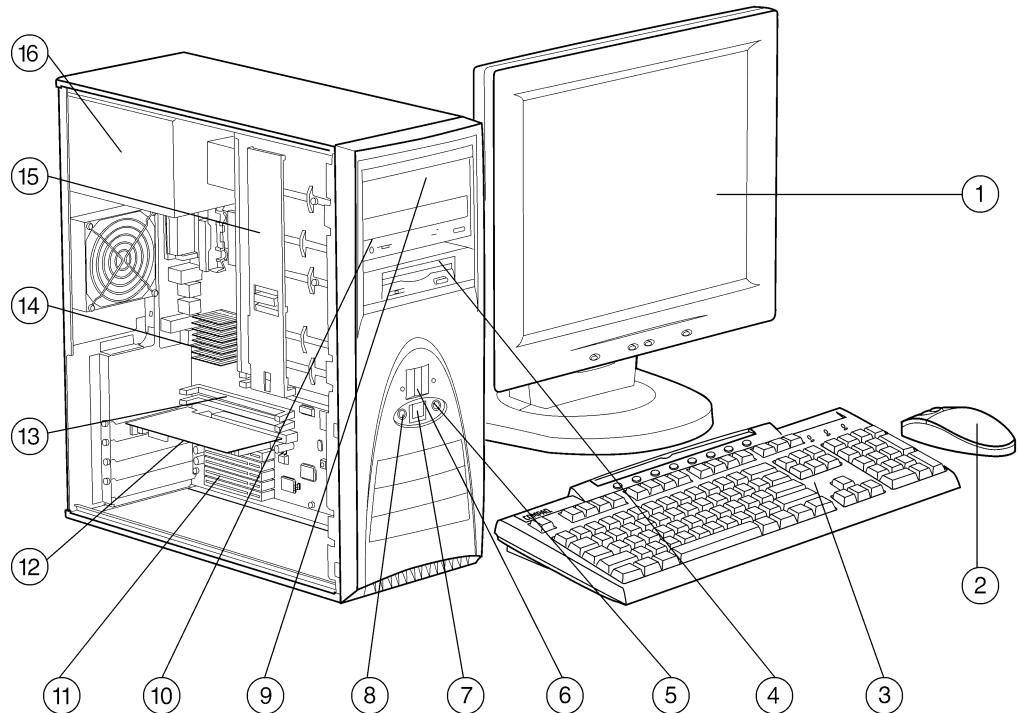


### Overview

#### At A Glance

- Convertible minitower form factor
- Supports single Intel® Pentium® 4 processor at speeds up to 2.8 GHz (533 front side bus)
- Intel 845E chipset with 533-MHz front side bus
- 512-KB L2 cache integrated on processor
- ECC DDR 266-MHz expandable to 2 GB
- High-performance Ultra ATA 7200 rpm, Ultra160 SCSI 10,000 rpm or optional 15,000 rpm hard drives
- Integrated Ultra ATA/100 controller, Ultra160 SCSI controller (on SCSI models)
- Up to 360 GB of high-performance internal storage
- Choice of NVIDIA® Quadro2 EX, NVIDIA Quadro4 550 XGL, NVIDIA Quadro4 750 XGL, NVIDIA Quadro4 900 XGL, NVIDIA Quadro4 200 NVS, NVIDIA Quadro4 400 NVS, ATI® Fire GL 8800, Matrox® Millennium G450, or Matrox Millennium G550
- Multiple display support
- Integrated Intel PRO/100 VM Network Connection
- Six total slots (five PCI and one AGP 4X)
- Five bays (three external and two internal)
- 48X Max CD-ROM drive, DVD-ROM, CD-RW drive or Combo drive CD-RW & DVD-ROM (depending on model)
- Two front USB ports and two front audio ports
- Integrated AC'97 audio with internal speaker
- Windows® XP Professional or Windows 2000 Professional and Compaq support software pre-installed
- Protected by Compaq Services, including a three-year, limited warranty— Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details. Three-year onsite and labor not available in all countries.



1. Compaq Monitor (optional)
2. 3-Button Mouse
3. Easy Access Keyboard
4. 1.44-MB Diskette Drive
5. Audio Port
6. On-Off Button
7. USB Ports
8. Audio Port
9. 5.25-in Drive Bay (available)
10. Optical Drive
11. PCI Slots
12. AGP 4x Slot
13. Memory Sockets
14. Processor
15. Drivelock
16. 250-Watt Power Supply

## Standard Features – Custom Configuration Models

<b>Processor</b> <i>(one of the following)</i>	Intel Pentium 4 processor 2.4 GHz/533 MHz front side bus Intel Pentium 4 processor 2.53 GHz/533 MHz front side bus Intel Pentium 4 processor 2.66 GHz/533 MHz front side bus Intel Pentium 4 processor 2.8 GHz/533 MHz front side bus	
<b>Cache Memory</b>	512-KB Level 2 cache	
<b>Upgradability</b>	Upgradable memory, graphics, and hard drives	
<b>Memory</b>	Maximum	2 GB (2 slots) <b>Note:</b> Do not mix ECC and non-ECC memory.
<b>Network Controller</b>	Integrated Intel PRO/100 VM Network Connection	
<b>Expansion Slots</b>	I/O (Total/available)	6/5
	PCI	5/5 (depending on model)
	AGP 4X	1/0 (depending on model)
<b>Expansion Bays</b>	(Total/Available)	5/2
	Internal	2/1
	External	3/1
<b>Storage</b>	Diskette Drives	1.44 MB
	ROM Drives	48X Max CD-ROM Drive 16X/40X DVD-ROM Drive
	Hard Drives	72-GB, 36-GB, 18-GB Ultra160 SCSI (10,000 rpm) 36-GB, 18-GB Ultra160 SCSI (15,000 rpm) 120-GB, 80-GB, 40-GB or 20-GB Ultra ATA/100 (7200 rpm)
	Removable Storage	48X/12X/48X CD-RW Drive 32X Combo Drive CD-RW & DVD-ROM or 4.7-GB DVD-RW Drive
<b>Interfaces</b>	Parallel	1 (rear)
	USB	4 (2 front, 2 rear)
	Serial	2 (rear)
	Ultra 160 SCSI	2 (1 68-pin internal) (rear) (on SCSI models)
	Ultra ATA/100	2 (1 primary, 1 secondary)
	Keyboard (PS/2)	1 (rear)
	Pointing Device (PS/2 mouse)	1 (rear)
	Video	1 (rear)
	Microphone Jack	1 (front)
	Headphone Jack	1 (front)
	Line-In Jack	1 (rear)
	Line-Out Jack	1 (rear)
	RJ-45	1 (rear)
	IEEE 1394 Firewire	2 (rear) (optional)
<b>Graphics</b> <i>One of the following:</i>	Matrox Millennium G450 (AGP) Matrox Millennium G550 (AGP) NVIDIA Quadro2 EX (AGP) NVIDIA Quadro4 200 NVS (AGP) NVIDIA Quadro4 400 NVS (PCI) NVIDIA Quadro4 550 XGL (AGP) NVIDIA Quadro4 750 XGL (AGP) NVIDIA Quadro4 900 XGL (AGP) ATI Fire GL 8800 (AGP)	

## Standard Features – Custom Configuration Models

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<b>Audio</b>	Integrated AC'97 audio Internal Speaker
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<b>Software</b>	Microsoft Windows XP Professional or Windows 2000 Professional Microsoft Service Pack 2 for Windows 2000 Professional Compaq Restore CD Compaq Management Agents Compaq PC Diagnostics via the Web ROM-based Setup Diagnostics for Windows XP Professional and Windows 2000 Microsoft Internet Explorer System Software Manager via the Web Altiris eXpress (30 Day Trial)
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<b>Intelligent Manageability</b>	Asset Control Alert on LAN (AoL) hardware ready Wake on LAN (WoL) Fault Management Security Management Pre-Failure Warranty (processors, hard drives and memory) <b>Remote Management</b> Remote Wakeup via Magic Packet Support Remote ROM Flash Remote Security Remote Shut Down <b>Bios Features</b> Advanced Configuration and Power Interface (ACPI) 1.0b Advanced Power Management (APM) 1.2 Desktop Management Interface (DMI) 2.1 System Management (SM) Bios 2.3
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<b>Security</b>	Diskette write and boot control Flash ROM lock Keyboard password Network server mode Parallel interface control Power-on password Serial interface control Setup password Cable lock provision Solenoid Sensor/Hood Lock (optional)
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<b>Power Supply</b>	250-Watt Power Supply (PFC)
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<b>Service and Support</b>	Protected by Compaq Services including a three-year, limited warranty with three-year parts coverage, three year, on-site service, and three-year labor; 7 x 24 hardware technical phone support and on-line support through the Internet; Pre-Failure Warranty coverage of hard drives, memory, and processors. <b>Note:</b> Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details. Three-year, onsite and labor not available in all countries.
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### Options

Memory (DDR)	1-GB Memory Module (ECC DDR 266 MHz)	267908-B21
	512-MB Memory Module (ECC DDR 266 MHz)	267907-B21
	256-MB Memory Module (ECC DDR 266 MHz)	267906-B21
	128-MB Memory Module (ECC DDR 266 MHz)	267905-B21
	1-GB Memory Module (Non-ECC DDR 266 MHz)	282436-B21
	512-MB Memory Module (Non-ECC DDR 266 MHz)	282435-B21
	256-MB Memory Module (Non-ECC DDR 266 MHz)	282434-B21
	128-MB Memory Module (Non-ECC DDR 266 MHz)	282433-B21
<b>Note:</b> Do not mix ECC and non-ECC memory.		

Monitors	Compaq TFT8030 Flat Panel Monitor (18-inch, Carbon/Silver)	234362-xxx
	Compaq TFT1720 Flat Panel Monitor (17-inch, Carbon/Silver, North America)	295926-003
	Compaq TFT1720 Flat Panel Monitor (17-inch, Carbon/Silver, outside North America)	D5064D-XXX
	Compaq TFT1720M Flat Panel Monitor (17-inch, (Carbon/Silver, includes speaker, USB port, headphone, North America)	301958-003
	Compaq TFT1720M Flat Panel Monitor (17-inch, (Carbon/Silver, includes speaker, USB port, headphone, outside North America)	D5064P-XXX
	Compaq TFT1501 Flat Panel Monitor (15-inch, Carbon/Silver, North America)	301042-003
	Compaq TFT1501 Flat Panel Monitor (15-inch, Carbon/Silver, Outside North America)	P4825D-XXX
	Compaq TFT1520M Flat Panel Monitor (15-inch, (Carbon/Silver includes speaker, USB port, headphone, North America)	301957-003
	Compaq TFT1520M Flat Panel Monitor (15-inch, (Carbon/Silver includes speaker, USB port, headphone, outside North America)	D5063P-XXX
	HP P1130 CRT Monitor (21-inch, Flat-screen, Carbon/Silver, North America)	302270-003
	HP P1130 CRT Monitor (21-inch, Flat-screen, Carbon/Silver, Outside North America)	P4819-XXX
	HP P930 CRT Monitor (19-inch, Flat-screen, Carbon/Silver, North America)	302268-003
	HP P930 CRT Monitor (19-inch, Flat-screen, Carbon/Silver, Outside North America)	P909W-XXX
	V7550 CRT Monitor (17-inch, Carbon/Silver)	261611-xxx
	S9500 CRT Monitor (19-inch, Carbon/Silver)	261615-xxx
	S7500 CRT Monitor (17-inch, Carbon/Silver)	261606-xxx
	S5500 CRT Monitor (15-inch Carbon/Silver)	261602-xxx
<b>Note:</b> AssetControl monitor. AssetControl features are accessible with Compaq Workstations featuring Intelligent Manageability.		

## Options

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Graphics	Matrox Millennium G450 (AGP)	202389-B21
	Matrox Millennium G550 (AGP)	250227-B21
	NVIDIA Quadro2 EX (AGP)	250066-B21
	NVIDIA Quadro4 550 XGL (AGP)	290648-B21
	NVIDIA Quadro4 750 XGL (AGP)	270731-B21
	NVIDIA Quadro4 900 XGL (AGP)	284279-B21
	NVIDIA Quadro4 200 NVS (AGP)	273304-B21
	DVI pigtail cable upgrade kit (used with Quadro4 200 NVS)	284281-B21
	NVIDIA Quadro4 400 NVS (PCI)	273305-B21
	DVI pigtail cable upgrade kit, quantity 2 (used with Quadro4 400 NVS)	284282-B21
	ATI Fire GL 8800 (AGP)	271686-B21
Hard Drives	<i>Ultra3 (Ultra160) SCSI Drives</i>	
	72-GB Ultra160 SCSI 10,000 rpm (1.0")	250023-B21
	36-GB Ultra160 SCSI 15,000 rpm	250022-B21
	36-GB Ultra160 SCSI 10,000 rpm	191189-B21
	18-GB Ultra160 SCSI 15,000 rpm	191188-B21
	18-GB Ultra160 SCSI 10,000 rpm	159764-B21
	<i>Ultra ATA Drives</i>	
	120-GB Ultra ATA 7200 rpm	250021-B21
	80-GB Ultra ATA 7200 rpm	250020-B21
	40-GB Ultra ATA 7200 rpm	201066-B21
	20-GB Ultra ATA 7200 rpm	251974-B21

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### Options

<b>Storage Controllers</b>	Adaptec 29160N Ultra160 Single Channel SCSI Controller	157810-B21
	Adaptec 2100S Ultra 160 (U3) Single Channel RAID Controller	192842-B21
	Ultra ATA 100 RAID Card	238051-B21
<b>Tape Drives</b>	33/66 GB VXA-1 IDE Tape Drive	237109-B22
	33/66 GB VXA-1 SCSI Tape Drive	237108-B22
	33/66 GB VXA-1 Media (2 pack)	237111-B21
	VXA-1 Cleaning Cartridge	237110-B21
<b>Biometrics</b>	Indentix BioTouch USB Fingerprint Reader	240238-B21
<b>Multimedia</b>	48X CD-ROM	187217-B22
	16X/40X DVD-ROM +R Read	303123-B22
	48X/12X/48X CD-RW Drive	303125-B22
	4.7-GB DVD+R/+RW Drive (2.4X/2.4X/8X DVD-RW and 12X10X32X CD-RW)	306816-B22
	32X Combo Drive CD-RW & DVD-ROM	303124-B22
	Labtec Spin-22 Carbon Speakers (NA)	246637-001
	Labtec Spin-22 Carbon Speakers (EMEA)	246637-022
	Labtec Spin-22 Carbon Speakers (APD)	246637-031
	1394 PCI DV and Adobe Software Kit	229966-xxx
	IEEE 1394 Firewire Controller	277824-B21
	<b>Communications</b>	Compaq NC7131 10/100/1000 Gigabit adapter
Lucent V.90 56K PCI Win Modem		239137-xx1
V.92 56K SftWin Modem (Philippines, India, Hungary, Russia, Slovakia)		259032-B24
Intel PRO/100 S Management Adapter (one pack)		212953-B21
Intel PRO/100 S Management Adapter (20 pack)		212954-B21
Broadcom NetXtreme Based 10/100/1000 Management Gb Adapter		266997-B21
<b>Uninterruptible Power Systems</b>	Compaq Tower UPS Model T1500h (high voltage, not available in North America)	242688-004
	Compaq Tower UPS Model T1500 (low voltage)	242688-003
	Compaq Tower UPS Model T1000h (high voltage, not available in North America)	242688-002
	Compaq Tower UPS Model T1000 (low voltage)	242688-001
	Compaq Tower UPS Model T700h (high voltage, not available in North America)	295372-B22
	Compaq Tower UPS Model T700 (low voltage)	295372-B21
<b>Other</b>	PS/2 2-Button Scroll Mouse	170299-B22
	PS/2 3-Button Mouse (carbon)	269192-B23
	USB 2-Button Scroll Mouse	195255-B25
	USB 2-Button Optical Scroll Mouse	265985-B21
	Compaq PS/2 Easy Access Keyboard	267145-xx8
	Compaq USB Easy Access Smartcard Keyboard	267147-xx8
	Logitech Cordless Desktop (Keyboard and Mouse)	251385-xx8
	Spaceball 4000 3D Motion Controller (carbon)	112138-B22
	Fixed Shelf for Rack	303606-B21
	Solenoid Hood lock/sensor	252076-B21
	Kensington Security Lock	294316-B21
	High-speed USB 2.0 PCI Card	287636-B21
<b>Support Software CD</b>	Annual Subscription	183426-xxx
	Single CD-ROM (current month)	272505-001

## Memory

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### Compaq Evo Workstation W4000 (128 MB)

#### STANDARD MEMORY

128-MB of ECC DDR 266-MHz is standard.

#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1128-MB of ECC DDR 266-MHz is available with the installation of optional Memory Kits.

#### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Support for up to 2-GB of ECC DDR 266-MHz is available with the removal of the standard 128-MB ECC DDR 266-MHz module and the installation of optional Memory Kits.

Following are memory options available from Compaq:

- |   |            |
|---|------------|
| • 1-GB Memory Kit (ECC DDR 266-MHz)       | 267908-B21 |
| • 512-MB Memory Kit (ECC DDR 266-MHz)     | 267907-B21 |
| • 256-MB Memory Kit (ECC DDR 266-MHz)     | 267906-B21 |
| • 128-MB Memory Kit (ECC DDR 266-MHz)     | 267905-B21 |
| • 1-GB Memory Kit (Non-ECC DDR 266-MHz)   | 282436-B21 |
| • 512-MB Memory Kit (Non-ECC DDR 266-MHz) | 282435-B21 |
| • 256-MB Memory Kit (Non-ECC DDR 266-MHz) | 282434-B21 |
| • 128-MB Memory Kit (Non-ECC DDR 266-MHz) | 282433-B21 |

**Note:** Do not mix ECC and non-ECC memory.

## Memory

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### Compaq Evo Workstation W4000 (256 MB)

#### STANDARD MEMORY

256-MB of ECC DDR 266-MHz is standard.

#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1256-MB of ECC DDR 266-MHz is available with the installation of optional Memory Kits.

#### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Support for up to 2-GB of ECC DDR 266-MHz is available with the removal of the standard 256-MB ECC DDR 266-MHz module and the installation of optional Memory Kits.

Following are memory options available from Compaq:

- |   |            |
|---|------------|
| • 1-GB Memory Kit (ECC DDR 266-MHz)       | 267908-B21 |
| • 512-MB Memory Kit (ECC DDR 266-MHz)     | 267907-B21 |
| • 256-MB Memory Kit (ECC DDR 266-MHz)     | 267906-B21 |
| • 128-MB Memory Kit (ECC DDR 266-MHz)     | 267905-B21 |
| • 1-GB Memory Kit (Non-ECC DDR 266-MHz)   | 282436-B21 |
| • 512-MB Memory Kit (Non-ECC DDR 266-MHz) | 282435-B21 |
| • 256-MB Memory Kit (Non-ECC DDR 266-MHz) | 282434-B21 |
| • 128-MB Memory Kit (Non-ECC DDR 266-MHz) | 282433-B21 |

**Note:** Do not mix ECC and non-ECC memory.



## Memory

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### Compaq Evo Workstation W4000 (512 MB)

#### STANDARD MEMORY

512-MB of ECC DDR 266-MHz is standard.

#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1.5-GB of ECC DDR 266-MHz is available with the installation of optional Memory Kits.

#### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

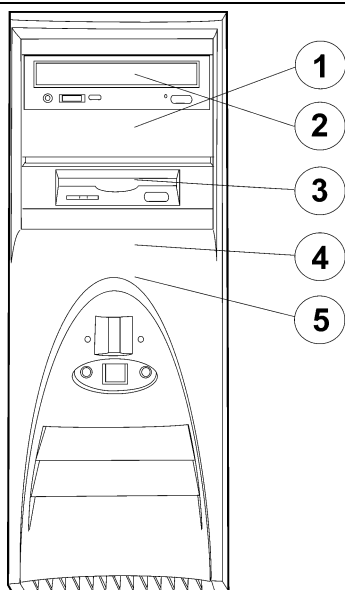
Support for up to 2-GB of ECC DDR 266-MHz is available with the removal of the standard 512-MB ECC DDR 266-MHz module and the installation of optional Memory Kits.

Following are memory options available from Compaq:

- 1-GB Memory Kit (ECC DDR 266-MHz) 267908-B21
- 512-MB Memory Kit (ECC DDR 266-MHz) 267907-B21
- 256-MB Memory Kit (ECC DDR 266-MHz) 267906-B21
- 128-MB Memory Kit (ECC DDR 266-MHz) 267905-B21
- 1-GB Memory Kit (Non-ECC DDR 266-MHz) 282436-B21
- 512-MB Memory Kit (Non-ECC DDR 266-MHz) 282435-B21
- 256-MB Memory Kit (Non-ECC DDR 266-MHz) 282434-B21
- 128-MB Memory Kit (Non-ECC DDR 266-MHz) 282433-B21

**Note:** Do not mix ECC and non-ECC memory.

## Storage



### DRIVE SUPPORT

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
1.44-MB Diskette Drive	Up to 1	1, 2, 3	Integrated
CD-ROM Drive	Up to 1	1, 2	Integrated EIDE
DVD-ROM Drive	Up to 1	1, 2	Integrated EIDE
CD-RW Drive	Up to 1	1, 2	Integrated EIDE
4.7-GB DVD-RW Drive	Up to 1	1	Integrated EIDE
Combo Drive CD-RW & DVD-ROM	Up to 1	1,2	Integrated EIDE
33/66GB VXA-1 IDE Tape Drive	Up to 1	1, 2	Integrated EIDE
33/66GB VXA-1 SCSI Tape Drive	Up to 1	1, 2	Ultra160 SCSI Controller (PCI)
<b>Hard Drives</b>			
<i>Ultra3 (Ultra 160) SCSI Drives</i>			
<b>1-inch</b>	Up to 3	1, 2, 4, 5	Ultra160 SCSI Controller (PCI)
72-GB 10,000 rpm			
36-GB 15,000 rpm			
36-GB 10,000 rpm			
18-GB 15,000 rpm			
18-GB 10,000 rpm			
<i>Ultra ATA Drives</i>			
<b>1-inch</b>	Up to 3	1, 2, 4, 5	Integrated EIDE
120-GB 7200 rpm			
80-GB 7200 rpm			
40-GB 7200 rpm			
20-GB 7200 rpm			
<b>Maximum Storage Capacity</b>			
Internal	360 GB (assumes two removable media drives installed)		

## Technical Specifications

<b>System Unit</b>	<b>Tower Dimensions (HxWxD)</b>	17.65 x 6.6 x 17.61 in/44.83 x 16.76 x 44.73 cm		
	<b>Weight (standard configuration)</b>	26 lb/12 kg		
	<b>Power Supply</b>	Operating Voltage Range	90 VAC to 264 VAC	
		Rated Voltage Range	100 VAC to 120 VAC; 200 VAC to 240 VAC	
		Rated Line Frequency	47 Hz to 63 Hz	
		Rated Input Current	4.5A @ 115 VAC; 3.0A @ 230 VAC	
		Maximum Rated Power	250-Watt output;	
		Physical Dimensions	5.15 x 3.85 x 6.05 in/13 x 9.8 x 15.4 cm	
		Weight	4.5 lb/2.05 kg	
	<b>Temperature (Values are subject to change)</b>	Operating	50° to 95° F/10° to 35° C	
Non-operating		4° to 140° F/-15° to 60° C		
<b>Humidity (non-condensing) (Values are subject to change)</b>	Operating	20% to 80%		
	Non-operating	10% to 90%		
<b>Maximum Altitude (non pressurized)</b>	Operating	10,000 ft/3,048 m		
	Non-operating	30,000 ft/9,144 m		
<b>Compaq Easy Access Keyboard</b>	<b>Dimensions (HxWxD)</b>	18.3 x 6.3 x 1.4 in/46.5 x 16 x 3.6 cm		
	<b>Weight</b>	Approximately 2 lb/0.9 kg		
	<b>Electrical</b>	Operating Voltage	+5VDC ± 5%	
		Power Consumption	50 mA maximum (with 3 LEDs on)	
		System Interface	PS/2 mini-din connector	
		ESD	CE level 4, 15 kV air discharge	
		EMI-RFI	Conforms to FCC rules for a Class B computing device	
		PC98	Functionally compliant	
	<b>Mechanical</b>	Languages	30+ available	
		Keycaps	Low-profile design	
		Switch Actuation	55 g nominal peak force with tactile feedback	
		Switch Life	20 million keystrokes (using Hasco modified tester)	
		Switch Type	Contamination resistant membrane	
		Key Leveling Mechanism	For all double wide and greater length keys	
		Cable Length	6 ft/1.8 m	
		PC98-99	Mechanically compliant	
	<b>Acoustics</b>	Acoustics	50 dBA maximum sound pressure level	
		<b>Environmental</b>	Operating Temperature	50° to 122° F/10° to 50° C
			Non-operating Temperature	-22° to 140° F/-30° to 60° C
Operating Humidity			10% to 90% (non condensing at ambient)	
Non-operating Humidity			20% to 80% (non condensing at ambient)	
Operating Shock			40 g, 6 surfaces	
Non-operating Shock			80 g, 6 surfaces	
Operating Vibration	2 g peak acceleration			

## Technical Specifications

<b>1.44-MB Diskette Drive</b>	<b>Diskette Size</b>	3.5 in		
	<b>LED Indicators (front panel)</b>	Green		
	<b>Read/Write Capacity per Diskette (high/low)</b>	1.44 MB/720 KB		
	<b>Drive Height</b>	One-third		
	<b>Drive Rotation</b>	300 rpm		
	<b>Transfer Rate (high/low)</b>	500/250 Kb/s		
	<b>Bytes/Sector</b>	512		
	<b>Sectors/Track (high/low)</b>	18/9		
	<b>Tracks/Side (high/low)</b>	80/80		
	<b>Access Times</b>	<b>Track-to-Track (high/low)</b>	3/6 ms	
		<b>Average (high/low)</b>	94/173 ms	
		<b>Settling Time</b>	15 ms	
		<b>Latency Average</b>	100 ms	
<b>Cylinders (high/low)</b>	80/80			
<b>Read/Write Heads</b>	Two			
<b>Compaq 3-Button Mouse</b>	<b>Dimensions/Weight</b>	<b>Height</b>	1.42 in/3.6 cm	
		<b>Length</b>	4.17 in/10.7 cm	
		<b>Width</b>	2.87 in/7.4 cm	
		<b>Weight</b>	5.20 oz/150 g	
	<b>Environmental</b>	<b>Operating Temperature</b>	32° to 104° F/0°C to 40° C	
		<b>Non-operating Temperature</b>	-4° to 140° F/-20° to 60° C	
		<b>Operating Humidity</b>	10% to 90% (non condensing at ambient)	
	<b>Mechanical</b>	<b>Resolution</b>	400 ± 20% DPI	
		<b>Tracking Speed</b>	10 in/s Maximum	
		<b>Tracking Mechanism Life</b>	300 miles/483 km at average speed of 10 in/s	
		<b>Switch Life</b>	1,000,000 operations (using Hasco modified tester)	
		<b>Switch Type</b>	Micro-switches	
		<b>Tracking Mechanism Life</b>	155 miles/250 km at average speed of 10 in/s	
		<b>Cable Length</b>	6 ft/1.8 m	
	<b>Regulatory Approvals</b>	<b>PC98-99</b>	Mechanically compliant	
		<b>Compliant</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick	

## Technical Specifications

Ultra160 SCSI Hard Drives <i>250023-B21</i>	<b>72 GB</b>	<b>Capacity</b>	72,000 MB	
		<b>Height</b>	1 in/25.4mm	
		<b>Width</b>	3.5 in/88.9 mm	
		<b>Interface</b>	Ultra160 SCSI	
		<b>Synchronous Transfer Rate (Maximum)</b>	160 MB/s	
		<b>Seek Time</b> (typical reads, including settling)	Single Track	0.6 ms
			Average	5.2 ms
			Full-Stroke	12 ms
			Rotational Speed	10,000 rpm
		<b>Logical Blocks</b>	142,264,000	
	<b>Operating Temperature</b>	50° to 95° F/10° to 35° C		
<b>36 GB</b> <i>250022-B21</i>		<b>Capacity</b>	36,400 MB	
		<b>Height</b>	1 in/25.4 mm	
		<b>Width</b>	4.0 in/101.6 mm	
		<b>Interface</b>	Ultra160 SCSI	
		<b>Synchronous Transfer Rate (Maximum)</b>	160 MB/s	
		<b>Seek Time</b> (typical reads, including settling)	Single Track	0.4 ms
			Average	4.7 ms
			Full-Stroke	7.0 ms
			Rotational Speed	15,000 rpm
		<b>Logical Blocks</b>	71,132,000	
	<b>Operating Temperature</b>	50° to 95° F/10° to 35° C		
<b>36 GB</b> <i>191189-B21</i>		<b>Capacity</b>	36,400 MB	
		<b>Height</b>	1.0 in/25.4 mm	
		<b>Width</b>	3.5 in/88.9 mm	
		<b>Interface</b>	Ultra160 SCSI	
		<b>Synchronous Transfer Rate (Maximum)</b>	160 MB/s	
		<b>Seek Time</b> (typical reads, including settling)	Single Track	0.6 ms
			Average	4.7 ms
			Full-Stroke	12 ms
			Rotational Speed	10,000 rpm
		<b>Logical Blocks</b>	71,132,000	
	<b>Operating Temperature</b>	50° to 95° F/10° to 35° C		

## Technical Specifications

<b>Ultra160 SCSI Hard Drives</b> <i>(continued)</i>	<b>18 GB</b> <i>191188-B21</i>	<b>Capacity</b>	18,209 MB
		<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra160 SCSI
		<b>Synchronous Transfer Rate (Maximum)</b>	160 MB/s
		<b>Seek Time (typical reads, including settling)</b>	Single Track 0.8 ms Average 4.1 ms Full-Stroke 7.7 ms
			Rotational Speed 15,000 rpm
		<b>Logical Blocks</b>	35,566,000
		<b>Operating Temperature</b>	50° to 95° F/10° to 35° C
	<b>18 GB</b> <i>159764-B21</i>	<b>Capacity</b>	18,209 MB
		<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra160 SCSI
		<b>Synchronous Transfer Rate (Maximum)</b>	160 MB/s
		<b>Seek Time (typical reads, including settling)</b>	Single Track 0.6 ms Average 4.7 ms Full-Stroke 12 ms
			Rotational Speed 10,000 rpm
		<b>Logical Blocks</b>	35,566,000
		<b>Operating Temperature</b>	50° to 95° F/10° to 35° C
<b>Ultra ATA Hard Drives</b>	<b>120 GB</b> <i>250021-B21</i>	<b>Capacity</b>	120,000 MB
		<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra ATA/100
		<b>Synchronous Transfer Rate (Maximum)</b>	100 MB/s
		<b>Seek Time (typical reads, including settling)</b>	Single Track 1.2 ms Average 8.0 ms Full-Stroke 18.0 ms
			Rotational Speed 7200 rpm
		<b>Logical Blocks</b>	157,278,240
		<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)
	<b>80 GB</b> <i>250020-B21</i>	<b>Capacity</b>	80,000 MB
		<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra ATA/100
		<b>Synchronous Transfer Rate (Maximum)</b>	100 MB/s
		<b>Seek Time (typical reads, including settling)</b>	Single Track 1.2 ms Average 8.0 ms Full-Stroke 18.0 ms
			Rotational Speed 7200 rpm
		<b>Logical Blocks</b>	157,278,240
		<b>Operating Temperature</b>	41° to 131° F/5° to 55° C

## Technical Specifications

Ultra ATA Hard Drives <i>(continued)</i>	<b>40 GB</b>	<b>Capacity</b>	40,000 MB
	<i>201066-B21</i>	<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra ATA/100
		<b>Synchronous Transfer Rate (Maximum)</b>	100 MB/s
		<b>Seek Time</b> (typical reads, including settling)	Single Track 1.2 ms
			Average 8 ms
			Full-Stroke 18.0 ms
			Rotational Speed 7200 rpm
		<b>Logical Blocks</b>	78,165,360
		<b>Operating Temperature</b>	41° to 131° F/5° to 55° C
	<b>20 GB</b>	<b>Capacity</b>	20,000 MB
	<i>251974-B21</i>	<b>Height</b>	1 in/25.4 mm
		<b>Width</b>	3.5 in/88.9 mm
		<b>Interface</b>	Ultra ATA/100
		<b>Synchronous Transfer Rate (Maximum)</b>	100 MB/s
		<b>Seek Time</b> (typical reads, including settling)	Single Track 1.2 ms
			Average 8 ms
			Full-Stroke 18.0 ms
			Rotational Speed 7200 rpm
		<b>Logical Blocks</b>	39,102,336
		<b>Operating Temperature</b>	41° to 131° F/5° to 55° C

## Technical Specifications

<b>4.7-GB DVD+R/+RW Drive</b>	<b>Recording Method</b>	Disc-at-once, Track-at-once, and Session-at-once; Variable Packet and Fixed Packet
	<b>Interface</b>	ATAPI ATA/ATAPI-5 and SFF-8090 Version 5
	<b>Disc Recording Capacity</b>	4.7 GB
	<b>Write Support</b>	DVD+R, DVD+RW, CD-R, CD-RW
	<b>Read Support</b>	DVD-ROM (single- and dual-layer), DVD+R, DVD+RW, DVD-R, DVD-RW, CD-ROM Mode 1, CD-ROM XA (Mode 2, forms 1 and 2), CD TEXT, Photo CD single- and multi-session), CD-DA (Audio CD), CD-Extra, CD-R, CD-RW (supports AM2)
	<b>Write Speed</b>	<b>DVD+R</b> 2.4X CLV (3250 KB/s)
		<b>DVD+RW</b> 2.4X CLV (3250 KB/s)
		<b>CD-R</b> 12X CLV (1800 KB/s)
		<b>CD-RW</b> 10X CLV (1500 KB/s)
	<b>Read Speed</b>	<b>DVD-ROM (single)</b> 8X CAV (2700 - 10800 KB/s)
		<b>DVD-ROM (dual)</b> 8X CAV (2700 - 10800 KB/s)
		<b>DVD+R, DVD+RW, DVD-R, DVD-RW</b> 8X CAV (2700 - 10800 KB/s)
		<b>CD-ROM</b> 32X CAV (2100 to 4800 KB/s)
		<b>CD-R, CD-RW</b> 32X CAV (2100 to 4800 KB/s)
		<b>CD-Audio</b> 32X CAV (2100 to 4800 KB/s)
	<b>Data Buffer</b>	<b>Read</b> 2 MB
		<b>Write</b> 2 MB
	<b>Access Time (random average)</b>	DVD-ROM — 145 ms CD-ROM — 80 ms (CD-ROM Mode 1 disc are used)
	<b>Data Transfer Rates</b>	2400 Kbytes/sec. (maximum) to CD-R media 1500 Kbytes/sec. (maximum) to CD-RW media
	<b>System Configuration</b>	Intel® Pentium® III Processor or later with 128 MB of memory (required); 256 MB recommended 2-D or 3-D graphics cards on primary disk drive for operating system and application software; second disk drive for audio and video data
	<b>Operating Systems Support</b>	Microsoft® Windows® 2000, Windows XP
	<b>Mounting Orientation</b>	Horizontal and vertical
	<b>Power Requirement</b>	5 V, +12 V (1.5A, .85A)
	<b>Size</b>	8 x 5.9 x 1.7 in (20.3 x 15.0 x 4.4 cm)
	<b>Front Panel Features</b>	Disc loading tray, forced eject hole read/write indicator, eject button
	<b>Rear Panel Features</b>	ATAPI interface, digital audio output 1, analog audio output, device configuration jumper, DC input, DC Power Connector, 4 pin; Line Out Connector, 4 pin; IDE Bus Connector, 40 pin; Configuration Jumper Pins; Label to identify each connector
	<b>Regulatory Approvals</b>	UL, CSA, CB Report, FIMKO, SEMKO, FCC Class B, FDA, CE Marking, C-Tick, CISPR-229, Korean EMC, Taiwan EMC



## Technical Specifications

48X/12X/48X CD-Drive RW	<b>Interface</b>	Atapi IDE		
	<b>Media formats written</b>	CD-R and CD-RW		
	<b>Media capacity</b>	700 MB		
	<b>Write methods</b>	Disc-at-once, track-at-once, session-at-once, fixed packet, and variable packet		
	<b>Recording/playing time</b>	80 minutes		
	<b>Data transfer rates</b>	<b>Sustained</b>	CD-R write—1,800 KB/s (12X) CD-R write—2400 KB/s (16X) CD-RW write (1-4X media) —600 KB/s (4X) CD-RW write (4-10X media) —1,500 KB/s (10X) CD-RW write (4-12X media) —1,800 KB/s (12X) CD-RW read—3,600 KB/s (24X)	
		<b>Variable</b>	Digital audio extraction (minimum) —7,200 KB/s (48X) CD-RW write—2,400 to 3,600 KB/s (16X to 24X) CD-RW write—2,400 to 4,800 KB/s (16X to 32X) CD-RW write—2,400 to 6,000 KB/s (16X to 40X) CD-RW write—2,400 to 7,200 KB/s (16X to 48X) CD-ROM, CD-R read—1,500 to 7,200 KB/s (10X to 48X)	
	<b>Data transfer modes</b>	ATA PIO mode 4—16.7 MB/s		
		ATA multi-word DMA mode 2—16.7 MB/s		
		ATA UltraDMA mode 0—16.7 MB/s		
		ATA UltraDMA mode 1—24 MB/s mode 2—33 MB/s (default)		
	<b>Media formats read</b>	audio, CD-ROM (modes 1 and 2), CD-ROM XA (mode 2, forms 1 and 2), single- or multi-session photo CD, CD-I, video CD, CD-text		
	<b>Access times</b>	<b>Random</b>	< 120 ms typical	
		<b>Full stroke</b>	< 200 ms typical	
<b>Start-up time</b>	<b>Single</b>	< 7 seconds typical		
	<b>Multi-session</b>	< 30 seconds typical		
	<b>Stop time</b>	< 4 seconds		
	<b>Block size</b>	Mode 1—2,048/2,352 bytes Mode 2, Form 1— 2,048/2,328/2,336/2,340/2,352 bytes Mode 2, Form 2—2,328/2,336/2,340/2,352 bytes CD-DA—2,352/2,368 bytes		
<b>Disc diameter</b>	120 mm or 80 mm			
<b>Track pitch</b>	1.6 µm			
<b>Disc loading mechanism</b>	Half-height, tray load			

## Technical Specifications

48X/12X/48X CD-Drive RW  
(continued)

<b>Operating conditions</b>	<b>Temperature</b>	Operating 41° to 122° F/5° to 50° C
	<b>Humidity</b>	10% to 85%
<b>Mounting orientation</b>	Horizontal or vertical	
<b>Dimensions</b>	Fits in a standard 5.25-inch drive bay	
<b>Weight</b>	1.2 kg (2.6 pounds)	
<b>Approvals/environmental</b>	UL 94 and 1950, CSA, CE, FDA	
<b>Operating systems supported</b>	Microsoft Windows XP, Microsoft Windows 2000, Microsoft Windows NT 4.0	
<b>Software supplied</b>	Roxio Easy CD Creator	

## Technical Specifications

<b>48X CD-ROM Drive</b>	<b>Disk</b>	<b>Applicable Disk</b>	CD-ROM (Mode 1 and 2), CD-R/W, CD-R Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CDI Ready, CD-XA Ready, CD TEXT, CD EXTRA	
		<b>Capacity</b>	540 MB (Mode 1, 12 cm) 650 MB (Mode 2, 12 cm)	
		<b>Rotational Speed</b>	8750 maximum	
		<b>Diameter</b>	4.7 in, 3.15 in/12 cm, 8 cm	
		<b>Center Hole</b>	0.6 in/15 mm diameter	
		<b>Thickness</b>	0.05 in/1.2 mm	
		<b>Track Pitch</b>	1.6 µm	
		<b>Block Size</b>	Mode 1 Mode 2 CD-DA CD-XA	2,048 bytes 2,340, 2,336 bytes 2,352 bytes 2,328 bytes
		<b>Interface</b>	IDE	
		<b>Access Times (typical)</b>	Random Full-Stroke	< 100 ms < 150 ms
		<b>Audio Output Level</b>	Line-Out	0.7 VRMS
		<b>Data Transfer Rate</b>	Sustained Variable	150 KB/s (1X, using audio disc) 3,000 to 7,200 KB/s
		<b>Cache Buffer</b>	128 KB minimum	
		<b>Start-up Time (typical)</b>	< 7 s	
	<b>Stop Time</b>	< 4 s		
	<b>Operating Conditions</b>	Temperature Humidity	41° to 113° F/5° to 45° C 10% to 80%	
	<b>Dimensions</b>	(HxWxD, maximum) Weight	1.7 x 5.9 x 8.19 in/4.32 x 15 x 20.8 cm 2.65 lb/1.2 kg	

## Technical Specifications

<b>32X Combo CD-RW/DVD-ROM</b>	<b>Height</b>	5.25-inch, half-height	
	<b>Interface type</b>	ATAPI	
	<b>Dimensions— External, Excluding Bezel (W x H x D)</b>	5.77 x 1.71 x 7.36 in/14.7 x 4.35 x 18.7 cm	
	<b>Disc diameter</b>	5 in, 3 in (12 cm, 8 cm)	
	<b>Disc thickness</b>	0.05 inch (1.2 mm)	
	<b>Track pitch</b>	1.6 $\mu$ m (CD), 0.74 $\mu$ m (DVD)	
	<b>Disc center hole diameter</b>	0.6 inch (15 mm)	
	<b>Reference scanning velocity</b>	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)	
	<b>Read only disc parameters</b>	<b>Formats and modes supported</b>	CD-ROM—Mode 1; CD-ROM XA—Mode 2 (forms 1 and 2); CD-Bridge; CD digital audio; CD Extra; CD-I—Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD; DVD (single- and double-layer); DVD-R; DVD-RW; DVD-RW Multi-Border; DVD+R; DVD+R Multi-Session, and DVD+RW
		<b>Capacity</b>	540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm); 180 MB (mode 2, 8 cm); 4.7 GB (DVD-5); 8.54 GB (DVD-9); 9.4 GB (DVD-10)
<b>Block size</b>		Mode 1—2,048 and 2,352 bytes; mode 2, form 1—2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2—2,328; 2,336; 2,340 and 2,352 bytes; CD-DA—2,352 bytes; DVD—2,048 bytes	
<b>Writeable disc parameters</b>		<b>Disc type</b>	CD-R and CD-RW
		<b>Write methods</b>	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	<b>Format and modes supported</b>	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD; CD-Bridge	
	<b>Capacity</b>	540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (mode 2, 12 cm); 180 MB (mode 2, 8 cm)	
<b>Access times (typical reads, including settling)</b>	<b>Block size</b>	CD-DA—2,352 bytes; mode 0— 2,336 and 2,352 bytes; mode 1—2,048 and 2,352 bytes; mode 2—2,336 and 2,352; mode 2, form 1—2,048 and 2,352 bytes; mode 2, form 2—2,324 and 2,352 bytes	
	<b>Random DVD</b>	< 130 ms (typical)	
	<b>Random CD</b>	< 90 ms, (typical)	
	<b>Full stroke DVD</b>	< 210 ms (seek)	
	<b>Full stroke CD</b>	< 160 ms (seek)	

### Technical Specifications

<b>32X Combo CD-RW/DVD-ROM</b> (continued)	<b>Data transfer rates</b>	<b>Sustained — CD-R write</b>	600 KB/s (4X), 1800 KB/s (12X)
		<b>Sustained — CD-RW write</b>	600 KB/s (4X, 1-4X media), 1500 KB/s (10X, 4-10X media)
		<b>Sustained — CD-RW read</b>	3600 KB/s (24X)
		<b>Sustained — Digital audio extraction (minimum)</b>	6000 KB/s (40X)
		<b>Variable — CD-R write</b>	2400 KB/s (16X), 3600 KB/s (24X), 4800 KB/s (32X)
		<b>Variable — CD-ROM, CD-R read</b>	1500 – 6000 KB/s (10X to 40X)
		<b>Variable — DVD ROM</b>	8112 - 21,632 KB/s (6X - 16X)
		<b>Variable — DVD Video</b>	1352 – 3268 KB/s (2.4X)
		<b>Variable — DVD-R, DVD-RW</b>	1352 – 3268 KB/s (2.4X)
		<b>Variable — DVD+R, DVD+RW</b>	1352 – 3268 KB/s (2.4X)
<b>Data transfer modes</b>	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s); ATA UltraDMA mode 1 (24 MB/s), mode 2 (33 MB/s), ATA UltraDMA Mode 3 44 MB/s (default)		
	<b>Cache buffer</b>	2 MB (minimum)	
	<b>Startup time (single)</b>	< 7 seconds (typical)	
	<b>Startup time (multi-session)</b>	< 30 seconds (typical)	
	<b>Stop time</b>	< 4 seconds	
	<b>Power</b>	<b>Source</b>	Four-pin, DC power receptacle
<b>DC power requirement</b>		5 VDC $\pm$ 5%—100 mV ripple p-p 12 VDC $\pm$ 5%—200 mV ripple p-p	
<b>DC current</b>		5 VDC (< 1000 mA typical, < 1500 mA maximum) 12 VDC (< 600 mA typical, < 1200 mA maximum)	
<b>Total drive power (standby mode)</b>		< 2.5 watt	
<b>Audio Output Level</b>		0.7 Vrms (typical)	
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes		
<b>Data interface connector</b>	40-pin, shrouded and keyed, flat ribbon		
<b>Environmental (all conditions non-condensing)</b>	<b>Temperature (operating)</b>	41° to 122° F/5° to 50° C	
	<b>Relative humidity (operating)</b>	10% to 85%	
	<b>Maximum wet bulb temperature (operating)</b>	86° F/30° C	
<b>Certifications, requirements</b>	MPC-3 compliant, multi-read requirements, ACA AS/NZS 3548, ANSI C63.4–1992, ATAPI Spec SFF-8020, ATA Spec X3T9.2, CB Bulletin No. 92A, CSA C22.2 No. 950-1995, C.I.S.P.R. Pub 22, EMKO-TSE 207/94, TUV or VDE EN60 950, EN60825-1, Microsoft PC2001 certification, Microsoft Logo for Windows XP, 2000, NT4, and 98		
<b>Operating systems supported</b>	Microsoft Windows 98, Microsoft Windows NT 4.0, Microsoft Windows 2000, Windows XP		

**Note:** MPEG video playback is not supported on Microsoft Windows NT.

## Technical Specifications

<b>Compaq Premier•Sound</b> featuring AC'97 Audio	<b>Type</b>	Embedded AC'97 2.1 Codec		
	<b>Sound Quality</b>	16-Bit Stereo Full-Duplex (CD Quality)		
	<b>Sampling</b>	Variable 7 kHz to 48 kHz		
	<b>Audio Compression/Decompression</b>	ESPCM and ADPCM compression		
	<b>Full Scale Input Voltage (RMS)</b>	Microphone Input	100 mVolts	
		Line Input	2.2 Volts	
	<b>Full Scale Output Voltage (RMS)</b>	Line Output	1.4 Volts	
		<b>Impedance (nominal)</b>	Line Output	800 ohms (typical)
		Line Input	10 Kohms (typical)	
	<b>Playback (PC-D-A)</b>	Dynamic Range	-91 dB (typical)	
		Total Harmonic Distortion+Noise	-69 dB (typical)	
		Frequency Response (-3 dB)	20 Hz to 20 kHz	
	<b>Line Output Crosstalk (10 kHz)</b>	-74 dB		
	<b>Headphone Maximum Output (1 kHz)</b>	60 mWrms into 32 ohms (THD+N < 1%)		
	<b>Internal Power Amplifier Rating</b>	Nominal: 1.5 Watts RMS @ 8 ohms		
		Maximum: 5 Watts RMS @ 8 ohms		
<b>Speaker</b>	Frequency Response	200 Hz to 15 kHz		
	Equalizer	5 stages of fixed equalization		
	Design	High-performance, infinite baffle loudspeaker		
<b>Connectors</b>	Line-in, line-out, microphone-in, headphone-out			
<b>Operating System Driver Support</b>	Windows NT 4.0, Windows 98, Windows 2000 and Windows XP Professional			

## Technical Specifications

<b>Integrated Intel PRO/100 VM Network Connection</b>	<b>Interface</b>	Intel SingleDriver technology (10/100 Mbps support)		
	<b>Connectors</b>	RJ-45		
	<b>Expansion Bus Architecture</b>	PCI 2.2		
	<b>Power Management</b>	ACPI 1.0		
	<b>Network Transfer Rate</b>	10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
		100Base-TX (Full-Duplex)	200 Mb/s	
	<b>Data Interface</b>	PCI, 32-bit bus mastering		
	<b>I/O Address</b>	Integrated connectivity with Intel I/O Controller Hub (ICH2)-based platforms		
	<b>Standards Compliance</b>	IEEE VLAN Support (802.1A)		
		IEEE 802.2		
		IEEE 802.3 & IEEE 802.3u (100-Mb/s Ethernet)		
		IEEE Intel Priority Packet (801.1p)		
<b>Remote Wakeup</b>	PME through PCI 2.2, no cable required			
<b>Boot PROM Support</b>	Yes, Intel PRO/100 Boot Agent (PXE 2.0, RPL)			
<b>F12 BIOS Support</b>	Yes			
<b>Proactive Alert Technology</b>	Yes, alert on LAN (transmit functionality only) requires management console software, such as HP OpenView. It also requires alert utilities for the management console, proxy client software, and client configuration software.			
<b>Environmental Requirements</b>				
Operating	Temperature	32° to 131° F/0° C to 55° C		
	Humidity (non-condensing)	85% at 131° F/55° C		
	Altitude	10,000 ft/3,048 m		
Nonoperating	Temperature	-40° to 158° F/-40° to 70° C		
	Altitude	50,000 ft/15,240 m		
<b>OS Driver Support</b>	Microsoft Windows NT 3.51 and 4.0 Microsoft Windows 95, 98, 2000, and Windows XP Professional Novell Netware 3.11, 3.12, & 4.1x 5 Server Sun™ Solaris™ SCO UnixWare® OpenDesktop OpenServer			
<b>Software Support</b>	Instrumentation support for CIM/WBEM SNMP, DMI, PXE 2.0, Intel PROSet utility for installation and configuration, Alert on LAN Software Developer Kit and same code			
<b>Special Features</b>	Digital adaptive equalization control, link status interrupt capability, boundary scan support, 3-port LED support (speed, link, activity), 10BASE-T auto polarity correction, diagnostic loopback mode, 1:1 transmit transformer ratio support, automatic detection of unplugged mode, remote monitoring (alerting)			

## Technical Specifications

<b>Matrox Millennium G550 AGP Graphics Controller</b>	<b>Form factor</b>	Low profile (LP) board with ATX bracket attached (kit also includes a Small Form Factor (SFF) bracket)																								
	<b>Bus type</b>	AGP 4X, AGP 2X, and AGP 1X																								
	<b>Standard memory</b>	32-MB, high-speed DDR																								
	<b>DAC speed</b>	360-MHz RAMDAC; secondary 230-MHz RAMDAC																								
	<b>Data path</b>	64-bit DDR external bus to frame buffer memory/256-bit internal																								
	<b>Internal bus width</b>	256-bit DualBus																								
	<b>Memory interface</b>	64-bit DDR Memory																								
	<b>Frame buffer</b>	32 MB																								
	<b>Operating systems supported</b>	Microsoft Windows XP Professional and Home Edition, Microsoft Windows 2000, Microsoft Me, Microsoft Windows 95/98, Microsoft Windows NT 4.0, Linux®																								
	<b>Two integrated RAMDACs</b>	Yes																								
	<b>Optional software bundles (not included)</b>	Matrox Virtual Presenter for Microsoft PowerPoint; Digimask™ System, HeadFone™ by LipSinc; The Matrox Software DVD Player; eDualHead browser enhancements (PageWrap, PageLog, and PageJump); Matrox PowerDesk																								
	<b>3-D engine acceleration</b>	Matrox HeadCasting* engine, two dual-textured 3-D pixels/clock for fast 3-D game play, dual pixel pipelines with dual texturing units per pipeline, floating point 3-D setup engine with dynamically re-allocatable resources; Microsoft DirectX Environment-Mapped Bump Mapping; Vibrant Color Quality rendering; bilinear, 8-sample-per-pixel trilinear, and anisotropic filtering; Microsoft DirectX and OpenGL alpha blending modes; Z-buffer support.																								
	<b>3-D features</b>	<table border="0"> <tr> <td>Single cycle multi-texturing</td> <td>Yes</td> </tr> <tr> <td>Environment-mapped bump mapping</td> <td>Yes</td> </tr> <tr> <td>Internal rendering</td> <td>32-bit</td> </tr> <tr> <td>Source textures</td> <td>Up to 32-bit</td> </tr> <tr> <td>Maximum texture size</td> <td>2048 x 2048</td> </tr> <tr> <td>32-bit color output</td> <td>Yes</td> </tr> <tr> <td>32-bit independent Z-buffer</td> <td>Yes</td> </tr> <tr> <td>Stencil buffering</td> <td>Yes</td> </tr> <tr> <td>AGP texturing</td> <td>Yes</td> </tr> <tr> <td>Trilinear filtering</td> <td>Yes</td> </tr> <tr> <td>Microsoft DirectX support</td> <td>Yes</td> </tr> <tr> <td>OpenGL support</td> <td>Yes, through Matrox</td> </tr> </table>	Single cycle multi-texturing	Yes	Environment-mapped bump mapping	Yes	Internal rendering	32-bit	Source textures	Up to 32-bit	Maximum texture size	2048 x 2048	32-bit color output	Yes	32-bit independent Z-buffer	Yes	Stencil buffering	Yes	AGP texturing	Yes	Trilinear filtering	Yes	Microsoft DirectX support	Yes	OpenGL support	Yes, through Matrox
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Microsoft DirectX support	Yes																									
OpenGL support	Yes, through Matrox																									
<b>DualHead 3-D display features</b>	HeadCasting, Microsoft DirectX compliant, dual texturing units per pixel pipeline, two pixel pipelines, single-cycle multi-texturing, environment-mapped bump mapping, 32-bit internal rendering precision, up to 32-bit source textures, 32-bit color output, bilinear, trilinear and anisotropic 3-D filtering, 32-bit independent Z-buffer, OpenGL support																									
<b>Other 3-D features</b>	Alpha blending, fogging, specular highlighting, environment mapping, stencil buffering, triple buffering, AGP texturing																									
<b>Other</b>	Texture mapping support; true color RGB, flat, and Gouraud shading; Direct3-D support; anisotropic filter; perspective-correct texture mapping; specular highlighting (any color); hardware dithering (including dithering of LUT textures); sort-dependent antialiasing; vertex and table fogging; dual texture mapping; Plug-and-Play; 0.18-micron technology (lower heat/power consumption); high-quality DVD playback with DVDMax; color space conversion; QuickDraw supported DCI and Microsoft DirectX and OpenGL blend modes; Microsoft DirectDraw support; support for picture-in-picture and multiple video windows; Unique Motion Video Rendering support																									
<b>Optional software bundles (not included)</b>	Matrox Virtual Presenter for Microsoft PowerPoint; Digimask™ System, HeadFone™ by LipSinc; The Matrox Software DVD Player; eDualHead browser enhancements (PageWrap, PageLog, and PageJump); Matrox PowerDesk																									



## Technical Specifications

Matrox Millennium G550 AGP Graphics Controller <i>(continued)</i>	DualHead configurations	VGA monitor/analog flat panel + VGA monitor/analog flat panel VGA monitor/analog flat panel + television Digital flat panel + VGA monitor/analog flat panel Digital flat panel + television
	DualHead 2-D display features	DualHead Multi-Display support; DualHead Browser Enhancement Suite, DualHead DVDMax, DualHead Zoom, DualHead Clone, DVDMax, DualHead MultiDesk, DualHead TV-out, DualHead Snapshot, Dual DVI support, ; True Multi-Display support with Microsoft Windows 2000
	DualHead display technology chip specifications	Multiple independent displays with a single AGP card: analog flat panel (RGB monitor)/analog flat panel (RGB monitor); digital flat panel/digital flat panel
<p><b>Note:</b> System recommendations for HeadCasting and DVD—450-MHz or higher computer; 128 MB RAM; 56-K or higher modem with minimum 40-K connection, microphone, and DVD-ROM; Internet Explorer 5.5 or higher, Microsoft PowerPoint 2000 or Microsoft PowerPoint XP (for Matrox Virtual Presenter)</p>		
<b>Resolutions Supported</b>	<b>Maximum Colors Supported</b>	<b>Refresh Rates</b>
640 x 480	16 million	200 Hz vertical, 130 kHz horizontal
800 x 600	16 million	200 Hz vertical, 130 kHz horizontal
1024 x 768	16 million	160 Hz vertical, 130 kHz horizontal
1152 x 864	16 million	140 Hz vertical, 130 kHz horizontal
1280 x 1024	16 million	120 Hz vertical, 130 kHz horizontal
1600 x 1200	16 million	100 Hz vertical, 130 kHz horizontal
1800 x 1440	16 million	90 Hz vertical, 120kHz horizontal
1920 x 1440	16 million	85 Hz vertical, 115 kHz horizontal
2048 x 1536	16 million	85 Hz vertical, 110 kHz horizontal
<b>Secondary Resolutions Supported</b>	<b>Maximum Color Depths (bpp)</b>	<b>Refresh Rates</b>
640 x 480	16 million	200 Hz vertical, 130 kHz horizontal
800 x 600	16 million	200 Hz vertical, 130 kHz horizontal
1024 x 768	16 million	160 Hz vertical, 130 kHz horizontal
1152 x 864	16 million	140 Hz vertical, 130 kHz horizontal
1280 x 1024	16 million	120 Hz vertical, 130 kHz horizontal
1600 x 1200	16 million	100 Hz vertical, 130 kHz horizontal

## Technical Specifications

<b>Matrox Millennium G450 Graphics Controllers</b>	<b>Form Factor</b>	ATX																									
	<b>Bus Type</b>	AGP 1X, 2X, 4X: PCI rev 2.2 bus specification																									
	<b>Standard Memory</b>	32 MB																									
	<b>DAC Speed</b>	360 MHz (secondary DAC: 200 MHz)																									
	<b>Data Path</b>	64-bit DDR External/256-bit Internal																									
	<b>Internal Bus Width</b>	256-bit DualBus																									
	<b>Memory Interface</b>	64-bit DDR Memory																									
	<b>Frame Buffer</b>	32 MB																									
	<b>Two Integrated RAMDACs</b>	Yes																									
	<b>Engine Acceleration</b>	3 ROP bitBLT, line draw, text, color expansion, basic video color conversion and scaling, triangle setup engine																									
	<b>Output</b>	Analog, 2 ports																									
	<b>OS Support</b>	Microsoft Windows 2000, Windows XP Professional, Windows 98 and Windows NT 4.0 available from Compaq.																									
	<b>Other</b>	PCI bus mastering, texture mapping support, flat and Gouraud shading, direct 3D support, Anisotropic Filter, perspective texture, specular highlighting, wireframe, dithering, full scene anti-aliasing, vertex fog, dual texture mapping, Plug-and-Play AGP 2X and AGP 4X, 0.18-micron technology (lower heat/power consumption), high-quality DVD playback with full access to Windows, Color Space Conversion, Quick Draw support, DCI and DirectX video playback, MS DirectDraw support																									
	<b>3D Features</b>	<table border="0"> <tr> <td>Single-cycle multi-texturing</td> <td>Yes</td> </tr> <tr> <td>Environment-Mapped Bump Mapping</td> <td>Yes</td> </tr> <tr> <td>Internal Rendering</td> <td>32-bit</td> </tr> <tr> <td>Source Textures</td> <td>Up to 32-bit</td> </tr> <tr> <td>Maximum Texture Size</td> <td>2048 x 2048</td> </tr> <tr> <td>Hardware non-power-of-2 textures</td> <td>Yes</td> </tr> <tr> <td>32-bit Color Output</td> <td>Yes</td> </tr> <tr> <td>32-bit Independent Z-buffer</td> <td>Yes</td> </tr> <tr> <td>Stencil Buffering</td> <td>Yes</td> </tr> <tr> <td>AGP Texturing</td> <td>Yes</td> </tr> <tr> <td>Trilinear Filtering</td> <td>Yes</td> </tr> <tr> <td>DirectX Support</td> <td>Yes</td> </tr> <tr> <td>OpenGL Support</td> <td>Yes</td> </tr> </table>	Single-cycle multi-texturing	Yes	Environment-Mapped Bump Mapping	Yes	Internal Rendering	32-bit	Source Textures	Up to 32-bit	Maximum Texture Size	2048 x 2048	Hardware non-power-of-2 textures	Yes	32-bit Color Output	Yes	32-bit Independent Z-buffer	Yes	Stencil Buffering	Yes	AGP Texturing	Yes	Trilinear Filtering	Yes	DirectX Support	Yes	OpenGL Support
Single-cycle multi-texturing	Yes																										
Environment-Mapped Bump Mapping	Yes																										
Internal Rendering	32-bit																										
Source Textures	Up to 32-bit																										
Maximum Texture Size	2048 x 2048																										
Hardware non-power-of-2 textures	Yes																										
32-bit Color Output	Yes																										
32-bit Independent Z-buffer	Yes																										
Stencil Buffering	Yes																										
AGP Texturing	Yes																										
Trilinear Filtering	Yes																										
DirectX Support	Yes																										
OpenGL Support	Yes																										
<b>DualHead Display Features</b>	Multi-Display Mode, DVD Max Mode, DualHead Zoom Mode, DualHead Clone Mode, DualHead TV Output Mode, Single Chip Multi-Monitor Support																										

## Technical Specifications

### Matrox Millennium G450 Graphics Supported Modes

#### Controllers (continued)

This list assumes setup to be DualHead multi-display running Microsoft Windows 98. If using Windows NT 4.0 or Windows 2000 while in multi-display, primary CRT is limited to modes supported by 2<sup>nd</sup> CRT.

<i>Primary CRT Color Depths</i>	<i>Color Depths (bpp)</i>	<i>Refresh Rates</i>
640 x 480	8, 16, 24, 32	60 Hz, 72 Hz, 75 Hz, 85 Hz
800 x 600	8, 16, 24, 32	60 Hz, 72 Hz, 75 Hz, 85 Hz
1024 x 768	8, 16, 24, 32	60 Hz, 70 Hz, 75 Hz, 85 Hz
1152 x 864	8, 16, 24, 32	75 Hz
1280 x 960	8, 16, 24, 32	60 Hz, 75 Hz, 85 Hz
1280 x 1024	8, 16, 24, 32	60 Hz, 75 Hz, 85 Hz
1600 x 1200	8, 16, 24, 32	60 Hz, 65 Hz, 70 Hz, 75 Hz, 85 Hz (available in single monitor configuration only)
1800 x 1440	8, 16, 24	60 Hz, 72 Hz, 75 Hz, 85 Hz
1856 x 1392	8, 16, 24	60 Hz, 75 Hz, 85 Hz
1920 x 1440	8, 16, 24	60 Hz, 75 Hz, 85 Hz
2048 X 768	8, 16	60 Hz, 75 Hz

<i>Secondary CRT Color Depths</i>	<i>Color Depths (bpp)</i>	<i>Refresh Rates</i>
640 x 480	16, 32	60 Hz, 72 Hz, 75 Hz, 85 Hz
800 x 600	16, 32	60 Hz, 72 Hz, 75 Hz, 85 Hz
1024 x 768	16, 32	60 Hz, 70 Hz, 75 Hz, 85 Hz
1152 x 864	16, 32	75 Hz
1280 x 960	16, 32	60 Hz, 75 Hz, 85 Hz
1280 x 1024	16, 32	60 Hz, 75 Hz, 85 Hz
1600 x 1200	16, 32	60 Hz, 65 Hz, 70 Hz, 75 Hz, 85 Hz

## Technical Specifications

NVIDIA Quadro4 550 XGL Graphics Controller	<b>3D/2D Controller</b>	Integrated Quadro4 Pro 2D/3D 128-bit graphics processor unit (GPU)		
	<b>VGA Controller</b>	Integrated into the Quadro4 GPU		
	<b>Bus Type</b>	AGP4x		
	<b>RAMDAC</b>	350 MHz		
	<b>Speed &amp; Type</b>	200 MHz 4Mx 32 DDR SDRAM		
	<b>Memory Amount</b>	64 MB		
	<b>Controller Clock Speed</b>	270 MHz		
	<b>Color Planes</b>	32-bit color buffer		
	<b>Overlay Planes</b>	1 16-bit Video overlay plane, software emulation for OpenGL overlay planes		
	<b>Stencil Planes</b>	8-bit stencil buffer		
	<b>Alpha Planes</b>	8-bit alpha buffer		
	<b>Z-Buffer</b>	24-bit		
	<b>Total Bits/Pixel</b>	64		
	<b>Maximum Vertical Refresh Rate</b>	120 Hz		
	<b>Multi-Display Support</b>	Yes		
	<b>Operating Systems</b>	Microsoft Windows 2000, and Microsoft Windows XP		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	
	640 x 480	16.7 M	120 Hz	
	800 x 600	16.7 M	120 Hz	
	1024 x 768	16.7 M	120 Hz	
1152 x 864	16.7 M	120 Hz		
1280 x 1024	16.7 M	120 Hz		
1600 x 1200	64 K	100 Hz		
1600 x 1200	16.7 M	85 Hz		
1920 x 1080	64 K	100 Hz		
1920 x 1080	16.7 M	75 Hz		
1920 x 1200	64 K	85 Hz		
1920 x 1200	16.7 M	70 Hz		
1920 x 1440	64 K	75 Hz		
1920 x 1440	16.7 M	60 Hz		
2048 x 1536	64 K	60 Hz		

## Technical Specifications

<b>NVIDIA Quadro4 750 XGL Graphics Controller</b>	<b>3D/2D Controller</b>	Integrated Quadro4 2D/3D 128-bit graphics processor unit (GPU)		
	<b>VGA Controller</b>	Integrated into the Quadro4 GPU		
	<b>Bus Type</b>	AGP4x		
	<b>RAMDAC</b>	350 MHz		
	<b>Speed &amp; Type</b>	275 MHz 4Mx32DDR 5ns		
	<b>Memory Amount</b>	64 to 128 MB		
	<b>Controller Clock Speed</b>	275 MHz		
	<b>Color Planes</b>	32-bit color buffer		
	<b>Overlay Planes</b>	1 16-bit Video overlay plane, software emulation for OpenGL overlay planes		
	<b>Stencil Planes</b>	8-bit stencil buffer		
	<b>Alpha Planes</b>	8-bit alpha buffer		
	<b>Z-Buffer</b>	24-bit		
	<b>Total Bits/Pixel</b>	64		
	<b>Maximum Vertical Refresh Rate</b>	120 Hz		
	<b>Multi-Display Support</b>	Yes		
	<b>Operating Systems</b>	Microsoft Windows 2000 and Microsoft Windows XP		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	
	640 x 480	16.7 M	120 Hz	
	800 x 600	16.7 M	120 Hz	
	1024 x 768	16.7 M	120 Hz	
	1152 x 864	16.7 M	120 Hz	
1280 x 1024	16.7 M	120 Hz		
1600 x 1200	64 K	100 Hz		
1600 x 1200	16.7 M	85 Hz		
1920 x 1080	64 K	100 Hz		
1920 x 1080	16.7 M	75 Hz		
1920 x 1200	64 K	85 Hz		
1920 x 1200	16.7 M	70 Hz		
1920 x 1440	64 K	75 Hz		
1920 x 1440	16.7 M	60 Hz		
2048 x 1536	64 K	60 Hz		

## Technical Specifications

<b>NVIDIA Quadro4 900 XGL Graphics Controller</b>	<b>3D/2D Controller</b>	Integrated Quadro4 2D/3D 128-bit graphics processor unit (GPU)		
	<b>VGA Controller</b>	Integrated into the Quadro4 GPU		
	<b>Bus Type</b>	AGP4x		
	<b>RAMDAC</b>	350 MHz		
	<b>Speed &amp; Type</b>	325MHz 4Mx32DDR 5ns		
	<b>Memory Amount</b>	128 MB		
	<b>Controller Clock Speed</b>	300 MHz		
	<b>Color Planes</b>	32-bit color buffer		
	<b>Overlay Planes</b>	1 16-bit Video overlay plane, software emulation for OpenGL overlay planes		
	<b>Stencil Planes</b>	8-bit stencil buffer		
	<b>Alpha Planes</b>	8-bit alpha buffer		
	<b>Z-Buffer</b>	24-bit		
	<b>Total Bits/Pixel</b>	64		
	<b>Maximum Vertical Refresh Rate</b>	120 Hz		
	<b>Multi-Display Support</b>	Yes		
	<b>Operating Systems</b>	Microsoft Windows 2000, and Microsoft Windows XP		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	
	640 x 480	16.7 M	120 Hz	
	800 x 600	16.7 M	120 Hz	
	1024 x 768	16.7 M	120 Hz	
1152 x 864	16.7 M	120 Hz		
1280 x 1024	16.7 M	120 Hz		
1600 x 1200	64 K	100 Hz		
1600 x 1200	16.7 M	85 Hz		
1920 x 1080	64 K	100 Hz		
1920 x 1080	16.7 M	75 Hz		
1920 x 1200	64 K	85 Hz		
1920 x 1200	16.7 M	70 Hz		
1920 x 1440	64 K	75 Hz		
1920 x 1440	16.7 M	60 Hz		
2048 x 1536	64 K	60 Hz		

## Technical Specifications

<b>NVIDIA Quadro4 200 NVS Graphics Controller</b>	<b>3D/2D Controller</b>	Integrated Quadro4 2D/3D 128-bit graphics processor unit (GPU)		
	<b>VGA Controller</b>	Integrated into the Quadro4 GPU		
	<b>Bus type</b>	AGP4x		
	<b>RAMDAC</b>	Dual 350 MHz		
	<b>Memory speed and type</b>	166MHz 4Mx16 SDR 6ns		
	<b>Memory amount</b>	64 MB		
	<b>Texture memory</b>	Unified with frame buffer		
	<b>Form factor</b>	ATX and SFF		
	<b>Controller clock speed</b>	250 MHz		
	<b>Color planes</b>	32-bit color buffer		
	<b>Overlay planes</b>	1 16-bit Video overlay plane, software emulation for OpenGL overlay planes		
	<b>Stencil planes</b>	8-bit stencil buffer		
	<b>Alpha planes</b>	8-bit alpha buffer		
	<b>Z-buffer</b>	24-bit		
	<b>Total bits/pixel</b>	64		
	<b>Maximum vertical refresh rate</b>	120 MHz		
	<b>Maximum pixel clock</b>	350 MHz		
	<b>Dual screen support</b>	Yes, with nView		
	<b>Single DVI support</b>	Yes		
	<b>Dual DVI support</b>	Yes		
	<b>Operating systems</b>	Microsoft Windows XP and Windows 2000		
	<b>nView hardware architecture</b>	32-bit color 2048 x 1536 @ 60 Hz maximum resolution 2D rendering engine optimized for 32-, 24-, 16-, 15-, and 8-bpp modes		
	<b>High-definition video processor (HDVP)</b>	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware color-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	
	640 x 480	16.7 M	120 Hz	
800 x 600	16.7 M	120 Hz		
1024 x 768	16.7 M	120 Hz		
1152 x 864	16.7 M	120 Hz		
1280 x 1024	16.7 M	120 Hz		
1600 x 1200	64 K	100 Hz		
1600 x 1200	16.7 M	85 Hz		
1920 x 1080	64 K	100 Hz		
1920 x 1080	16.7 M	75 Hz		
1920 x 1200	64 K	85 Hz		
1920 x 1200	16.7 M	70 Hz		
1920 x 1440	64 K	75 Hz		
1920 x 1440	16.7M	60 Hz		
2048 x 1536	64 K	60 Hz		

## Technical Specifications

<b>NVIDIA Quadro4 400 NVS Graphics Controller</b>	<b>3D/2D Controller</b>	Integrated Quadro4 2D/3D 128-bit graphics processor unit (GPU)
	<b>VGA Controller</b>	Integrated into the Quadro4 GPU
	<b>Bus Type</b>	PCI
	<b>RAMDAC</b>	Dual 350 MHz
	<b>Memory Speed, Type, Capacity</b>	220 MHz, 4mx 32 DDR per GPU, 32 MB per GPU, 64 MB total
	<b>Texture Memory</b>	Unified with frame buffer
	<b>Form Factor</b>	ATX
	<b>Controller Clock Speed</b>	220 MHz
	<b>Color Planes</b>	32-bit color buffer
	<b>Overlay Planes</b>	1 16-bit Video overlay plane, software emulation for OpenGL overlay planes
	<b>Stencil Planes</b>	8-bit stencil buffer
	<b>Alpha Planes</b>	8-bit alpha buffer
	<b>Z-buffer</b>	24-bit
	<b>Total bits/pixel</b>	64
	<b>Maximum Vertical Refresh Rate</b>	120 MHz
	<b>Maximum Pixel Clock</b>	343 MHz based on resolutions shown below
	<b>Multi Screen VGA Support</b>	Yes, 1 to 4 displays with nView
	<b>Single DVI Support</b>	Yes
	<b>Multi screen DVI Support</b>	Yes, 1 to 4 displays
	<b>Operating Systems</b>	Microsoft Windows XP, Microsoft Windows 2000
	<b>nView Hardware Architecture</b>	32-bit color 2048 x 1536 @ 60 Hz maximum resolution 2D rendering engine optimized for 32-, 24-, 16-, 15-, and 8-bpp modes
	<b>High-definition Video Processor (HDVP)</b>	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware color-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling



## Technical Specifications

NVIDIA Quadro4 400 NVS (continued)	Resolution	Maximum Colors Supported	Maximum Refresh Rate
	640 x 480	16.7 M	120 Hz
	800 x 600	16.7 M	120 Hz
	1024 x 768	16.7 M	120 Hz
	1152 x 864	16.7 M	120 Hz
	1280 x 1024	16.7 M	120 Hz
	1600 x 1200	64 K	100 Hz
	1600 x 1200	16.7 M	85 Hz
	1920 x 1080	64 K	100 Hz
	1920 x 1080	16.7 M	75 Hz
	1920 x 1200	64 K	85 Hz
	1920 x 1200	16.7 M	70 Hz
	1920 x 1440	64 K	75Hz
	1920 x 1440	16.7M	60Hz
	2048 x 1536	64 K	60Hz

NVIDIA Quadro2 EX Graphics Controller	Resolution	Maximum Colors Supported	Maximum Refresh Rate	Memory Dedicated to Texture Support
	640 x 480	16.7 M	120 Hz	28.4 MB
	800 x 600	16.7 M	120 Hz	26.4 MB
	1024 x 768	16.7 M	120 Hz	22.8 MB
	1152 x 864	16.7 M	120 Hz	20.3 MB
	1280 x 1024	16.7 M	100 Hz	16.6 MB
	1600 x 1000	16.7 M	85 Hz	13.3 MB
	1600 x 1200	64 K	100 Hz	20.8 MB
	1600 x 1200	16.7 M	85 Hz	9.5 MB
	1920 x 1080	64 K	85 Hz	19.9 MB
	1920 x 1080	16.7 M	75 Hz	7.7 MB
	1920 x 1200	64 K	85 Hz	18.5 MB
	1920 x 1200	16.7 M	70 Hz	5 MB

<b>Dimensions (LxHxW)</b>	Approximately 6.5 x 2.5 x 0.6 in/16.5 x 6.4 x 1.5 cm
<b>3D/2D Controller</b>	Integrated Quadro2 EX 2D/3D 128-bit graphics processor unit (GPU)
<b>VGA Controller</b>	Integrated into the Quadro2 EX GPU
<b>Bus Type</b>	AGP 2X, 4X
<b>RAMDAC</b>	350 MHz
<b>Memory Type</b>	183 MHz SDR 2Mx32
<b>Memory Amount</b>	32 MB
<b>Memory Speed</b>	166 MHz
<b>Controller Clock Speed</b>	175 MHz
<b>Color Planes</b>	32-bit color buffer
<b>Overlay Planes</b>	One 16-bit Video overlay plane, software emulation for OpenGL overlay planes
<b>Stencil Planes</b>	8-bit stencil buffer
<b>Alpha Planes</b>	8-bit alpha buffer
<b>Z-buffer</b>	24-bit Z buffer
<b>Total bits/pixel</b>	64-bits
<b>Maximum Vertical Refresh Rate</b>	240 Hz
<b>Maximum Pixel Clock</b>	350 MHz
<b>Multi-display support</b>	No
<b>Operating Systems</b>	Microsoft Windows 2000, Windows XP Professional and Windows NT 4.0 available from Compaq

**Note:** All drivers and enhanced software can be found on the Compaq web site at:  
<http://www.compaq.com/support/files/workstations/us/index.html>.

### Technical Specifications

ATI Fire GL8800 Graphics Accelerator	Form Factor	ATX		
	Graphics Controller	RADEON™ 8800		
	Bus Type	AGP 4x		
	RAMDAC	400 MHz/30-bit		
	Memory Speed & Type	300MHz 4Mx32 DDR SGRAM 3.3ns		
	Memory Amount	128 MB		
	Controller Clock Speed	275 MHz		
	Color Planes	32 bit, True Color		
	Overlay Planes	8-bit		
	Stencil Planes	8-bit		
	Alpha Planes	8-bit		
	Z-Buffer	24-bit		
	Video Engine Support	YUV (4:2:2, 4:2:0) conversion, point and bilinear scaling		
	Monitor	15-pin D-type analog		
	Flat Panel Interface	DVI-I digital (supported resolutions up to 1600 x 1200)		
	Video Timings Compliance	VESA DMT 1.0 and VESA GTF 1.0 specifications		
	Maximum Vertical Refresh Rate	100 Hz/120 Hz when quad buffer stereo is enabled		
	Operating Systems	Microsoft Windows XP and Microsoft Windows 2000		
	Analog or digital monitor with 15-pin VGA connector - single monitor			
	<b>Resolution</b>	<b>Line Frequency (kHz)</b>	<b>Refresh Rate (Hz)</b>	<b>Color Depth (bits)</b>
640 x 480	31.5, 37.5, 43.3, 50.9	60, 75, 85, 100	16/32	
800 x 600	37.7, 46.9, 54.1, 63.9	60, 75, 85, 100	16/32	
1024 x 768	48.4, 60.0, 68.7, 80.8	60, 75, 85, 100	16/32	
1152 x 864	53.7, 67.5, 77.1, 91.5	60, 75, 85, 100	16/32	
1280 x 960	60.0, 75.1, 85.7, 101.7	60, 75, 85, 100	16/32	
1280 x 1024	64.0, 80.0, 91.1, 107.0	60, 75, 85, 100	16/32	
1600 x 1000	62.1, 78.3, 89.2, 105.9	60, 75, 85, 100	16/32	
1600 x 1024*	63.6, 80.2, 81.3, 91.4, 107.5	60, 75, 76, 85, 100	16/32	
1600 x 1200	75.0, 93.8, 106.3	60, 75, 85, 100	16/32	
1792 x 1344	83.6, 106.3, 119.9	60, 75, 85	16/32	
1920x1080**	67.1, 84.6, 96.4, 114.4	60, 75, 85, 100	16/32	
1920 x 1200*	74.5, 94.0, 95.0, 107.1, 127.1	60, 75, 76, 85, 100	16/32	
2048 x 1536	95.3, 120.2	60, 75	16/32	

\* = Wide Screen Aspect Ratio Mode (16:10).

\*\* = Wide Screen Aspect Ratio Mode (16:9).

**Note:** All drivers can be found on the Compaq Web site at:

<http://www.compaq.com/support/files/workstations/us/index.html>

**Note:** This web site is available in English only.

#### HP recommends Microsoft® Windows® XP Professional for Business

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