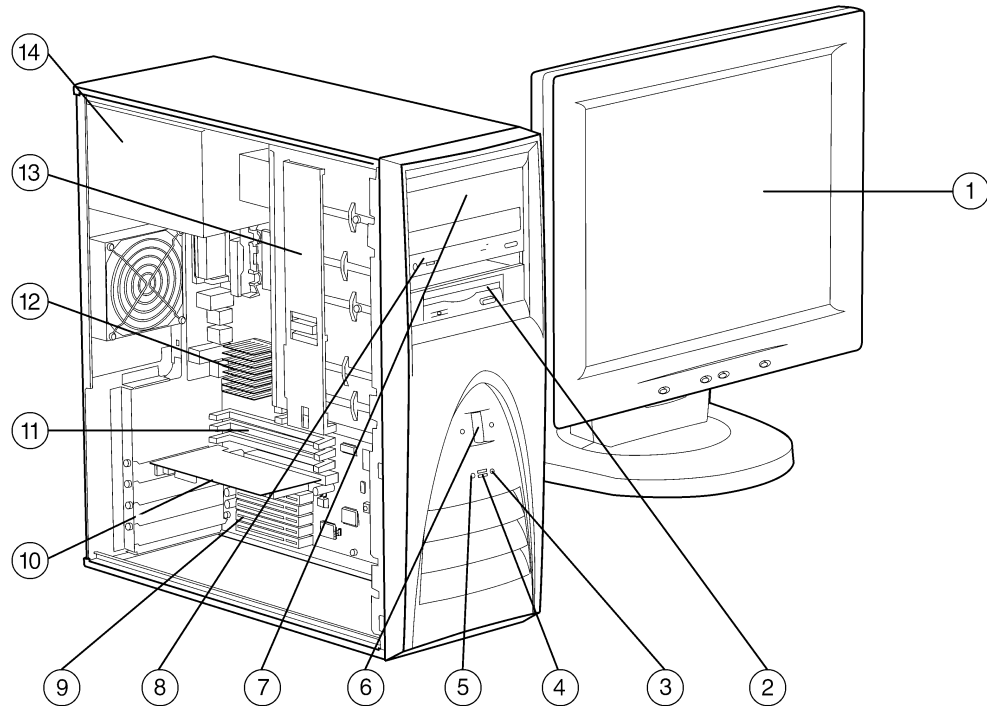


### Overview

#### At A Glance

- Convertible minitower form factor
- Supports single Pentium 4 processor at speeds of 1.5, 1.7, or 2.0 GHz. (400 MHz Front Side Bus)
- Intel 845 chipset with 400-MHz front side bus
- 256-KB L2 cache integrated on processor
- PC133 ECC SDRAM expandable to 1.5 GB
- High-performance, Ultra ATA 7200rpm, 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 216 GB of high-performance internal storage
- Choice of NVIDIA® Quadro2 EX, NVIDIA Quadro2 MXR, NVIDIA Quadro2 Pro, ATI® FireGL2, Matrox® Millennium G450, Matrox Millennium G550, or Matrox G200 Quad Multi-Monitor Series Graphics Controller
- 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 or CD-RW drive (depending on model)
- Two front USB ports and two front audio ports
- Integrated AC'97 audio with internal speaker
- Windows 2000 Professional or Windows NT Workstation 4.0 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. 1.44-MB Diskette Drive
3. Audio Port
4. USB Ports
5. Audio Port
6. On-Off Button
7. 5.25-in Drive Bay (available)

8. CD-ROM, DVD-ROM or CD-RW Drive
9. PCI Slots
10. AGP 4x Slot
11. Memory Sockets
12. Processor
13. Drivelock
14. 250-Watt Power Supply

## Standard Features - Pre-configured Models

<b>Models</b>	<b>Compaq Evo Workstation W4000</b> Available in multiple configurations. Not all configurations available in all countries. Check with your Authorized Compaq Reseller or Compaq.	
<b>Processor</b> <i>One of the following:</i>	Intel Pentium 4 processor 1.5 GHz Intel Pentium 4 processor 2.0 GHz	
<b>Cache Memory</b>	256-KB Level 2 cache	
<b>Upgradability</b>	Upgradeable memory, graphics, and hard drives	
<b>Memory</b> <i>One of the following:</i>	Standard	512 MB PC133 ECC SDRAM
	Standard	256 MB PC133 ECC SDRAM
	Maximum	1.5 GB (3 slots)
<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	18.2-GB Ultra160 SCSI (10,000 rpm)
	Removable Storage	40-GB Ultra ATA/100 (7200 rpm)
<b>Interfaces</b>	Parallel	1 (front)
	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)

## Standard Features - Pre-configured Models

<b>Graphics</b> <i>One of the following:</i>	Matrox Millennium G450 (AGP) Matrox Millennium G550 (AGP) Matrox G200 Quad Multi-monitor Series (PCI) NVIDIA Quadro2 EX (AGP) NVIDIA Quadro2 MXR (AGP) NVIDIA Quadro2 Pro (AGP) ATI FireGL2 (AGP)
<b>Audio</b>	Integrated AC'97 audio Internal Speaker
<b>Software</b>	Microsoft Windows 2000 Professional or NT Workstation 4.0 Microsoft Service Pack 2 for Windows 2000 Professional Microsoft Service Pack 6 for Windows NT 4.0 Compaq Restore CD Compaq Management Agents Compaq PC Diagnostics via the Web ROM-based Setup Diagnostics for Windows 2000 and Windows NT Microsoft Internet Explorer System Software Manager via the Web Altiris eXpress
<b>Intelligent Manageability</b>	Asset Control Alert on LAN (AoL) hardware ready Wake on LAN (WoL) Fault Management Lite Console 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
<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
<b>Power Supply</b>	250-Watt Power Supply (PFC)
<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.

## Standard Features - Pre-configured Models

<b>W4C/2.0/18S/512S/Xd</b> <i>470022-xxx and graphics option</i>	<b>Processor</b>	Intel Pentium 4 2.0-GHz	
	<b>Cache Memory</b>	256-KB integrated L2	
	<b>Memory</b>	512-MB ECC PC133 SDRAM	
	<b>Optical Drive</b>	16X/40X DVD-ROM Drive	
	<b>Hard Drive</b>	18.2-GB Ultra160 SCSI 10,000rpm	
	<b>Graphics</b>	Choice of graphics option: Matrox G200 Quad MMS with analog cables (159513-B21) Matrox G200 Quad MMS with DVI cables (179597-B21) NVIDIA Quadro2 EX (250066-B21) NVIDIA Quadro2 MXR (221412-B21) NVIDIA Quadro2 Pro (225339-B21) ATI FireGL2 (224087-B21) Matrox Millennium G450 (AGP) (202389-B21) Matrox Millennium G550 (AGP) DH AGP DVI/VGA (250227-B21)	
	<b>Audio</b>	Integrated AC97 audio with internal speaker	
	<b>OS</b>	Windows 2000 Professional/Windows NT Workstation 4.0 (dual install)	
	<b>W4C/1.5/40A/256S/Xc</b> <i>47002x-xxx and graphics option</i>	<b>Processor</b>	Intel Pentium 4 1.5-GHz
		<b>Cache Memory</b>	256-KB integrated L2
<b>Memory</b>		256-MB ECC PC133 SDRAM	
<b>Optical Drive</b>		48X Max CD-ROM Drive	
<b>Hard Drive</b>		40-GB Ultra ATA/100 7200 rpm	
<b>Graphics</b>		Choice of graphics option: Matrox G200 Quad MMS with analog cables (159513-B21) Matrox G200 Quad MMS with DVI cables (179597-B21) NVIDIA Quadro2 EX (250066-B21) NVIDIA Quadro2 MXR (221412-B21) NVIDIA Quadro2 Pro (225339-B21) ATI FireGL2 (224087-B21) Matrox Millennium G450 (AGP) (202389-B21) Matrox Millennium G550 (AGP) DH AGP DVI/VGA (250227-B21)	
<b>Audio</b>		Integrated AC97 audio with internal speaker	
<b>OS</b>		Windows 2000 Professional/Windows NT Workstation 4.0 (dual install)	

## Standard Features – Custom Configuration Models

<b>Processor</b>	Intel Pentium 4 processor 1.5 GHz Intel Pentium 4 processor 1.7 GHz Intel Pentium 4 processor 2.0 GHz	
<b>Cache Memory</b>	256-KB Level 2 cache standard	
<b>Upgradability</b>	Upgradeable memory, graphics, and hard drives	
<b>Memory</b>	Maximum	1.5 GB of PC133 ECC SDRAM (3 slots)
<b>Network Controller</b>	Integrated Intel PRO/100 VM Network Connection 3COM 3C920C-TX	
<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, 36.4-GB, 18.2-GB Ultra160 SCSI (10,000 rpm) 18.2-GB Ultra160 SCSI (15,000 rpm) 60-GB, 40-GB or 20-GB Ultra ATA/100 (7200 rpm)
	Removable Storage	16X/10X/4X CD-RW Drive 250-MB ATAPI ZIP
<b>Interfaces</b>	Parallel	1 (front)
	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)
<b>Graphics</b>	NVIDIA Quadro2 MXR (AGP) NVIDIA Quadro2 Pro (AGP) NVIDIA Quadro2 EX (AGP) ATI FireGL2 (AGP) Matrox Millennium G450 (AGP) Matrox Millennium G550 (AGP) Matrox G200 Quad Multi-monitor Series (PCI)	
	<i>One of the following:</i>	

### Options

<b>Memory (SDRAM)</b>	512-MB Memory Module (PC133 ECC SDRAM)	254873-B21
	256-MB Memory Module (PC133 ECC SDRAM)	254872-B21
	128-MB Memory Module (PC133 ECC SDRAM)	254871-B21
	512-MB Memory Module (PC133 non-ECC SDRAM)	259039-B21
	256-MB Memory Module (PC133 non-ECC SDRAM)	174225-B21
	128-MB Memory Module (PC133 non-ECC SDRAM)	174224-B21
	<b>Note:</b> Do not mix ECC and non-ECC memory.	
<b>Monitors</b>	TFT8030 Flat Panel Color (18-inch, Carbon/Silver)	234362-001
	TFT5030 Flat Panel Color (15-inch, Carbon/Silver)	228134-001
	TFT5015 Flat Panel Color (15-inch, Multimedia)	234046-001
	TFT5015 Flat Panel Color (15-inch, Carbon/Silver)	234044-001
	TFT5015 Flat Panel Color (15-inch, Opal)	234043-001
	P1210 CRT (22-inch, Carbon/Silver)	230538-001
	P1210 CRT (22-inch, Opal)	210290-001
	P910 CRT (19-inch, Opal)	210254-011
	P910 CRT (19-inch, Carbon/Silver)	230535-001
	S920 CRT (19-inch, Carbon/Silver)	240326-xxx
	S920 CRT (19-inch, Opal)	240325-xxx
	P710 CRT (17-inch, Opal)	210189-001
	V720 CRT (17-inch, Carbon/Silver)	232944-xxx
	V720 CRT (17-inch, Opal)	232943-xxx
	S720 CRT (17-inch, Carbon/Silver)	239287-xxx
	S720 CRT (17-inch, Opal)	239286-xxx
	S710 CRT (17-inch, Carbon)	154499-002
	V570 CRT (15-inch, Carbon/Silver)	228113-xxx
		<b>Note:</b> AssetControl monitor. AssetControl features are accessible with Compaq Workstations featuring Intelligent Manageability.
<b>Graphics</b>	Matrox G200 Quad Multi-monitor Series with cables for analog output (PCI)	159513-B21
	Matrox G200 Quad Multi-monitor Series with cables for DVI output (PCI)	179597-B21
	Matrox G200 Quad MMS DVI Upgrade Cable Kit (for option kit 159513-B21)	170840-B21
	Matrox Millennium G450 (AGP)	202389-B21
	Matrox Millennium G550 (AGP) DH AGP DVI/VGA	250227-B21
	NVIDIA Quadro2 EX (AGP) (low profile)	250066-B21
	NVIDIA Quadro2 MXR (AGP)	221412-B21
	NVIDIA Quadro2 Pro (AGP)	225339-B21
	ATI FireGL2 (AGP)	224087-B21
<b>Diskette Drives</b>	250-MB ATAPI ZIP (carbon)	294416-B22
	250-MB ATAPI ZIP Media 3-Pack	217896-B21
<b>Tape Drives</b>	TR5 10/20 GB	294293-B22
	TR5 10/20 GB Media 3-Pack	125782-B21
	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-B22
	VXA-1 Cleaning Cartridge	237110-B22

### Options

<b>Hard Drives</b>	<b><i>Ultra3 (Ultra160) SCSI Drives</i></b>	
	72-GB Ultra160 SCSI 10,000 rpm (1.0")	250023-B21
	36.4-GB Ultra160 SCSI 10,000 rpm	191189-B21
	18.2-GB Ultra160 SCSI 15,000 rpm	191188-B21
	18.2-GB Ultra160 SCSI 10,000 rpm	159764-B21
	<b><i>Ultra ATA Drives</i></b>	
	120-GB Ultra ATA 7200 rpm Quiet Seek and Quiet Idle	250021-B21
	80-GB Ultra ATA 7200 rpm Quiet Seek and Quiet Idle	250020-B21
	60-GB Ultra ATA 7200 rpm Quiet Seek and Quiet Idle	230253-B21
	40-GB Ultra ATA 7200 rpm Quiet Seek and Quiet Idle	201066-B21
	20-GB Ultra ATA 7200 rpm Quiet Seek and Quiet Idle	251974-B21
	<b>Storage Controllers</b>	Adaptec 29160N Ultra160 Single Channel SCSI Controller
Adaptec 2100S Ultra 160 (U3) Single Channel RAID Controller		192842-B21
<b>Biometrics</b>	USB Biometric ID Device	240238-B21
<b>Multimedia</b>	48X CD-ROM (carbon)	187217-B22
	16X/40X DVD-ROM (carbon)	237495-B22
	16X/10X/4X CD-RW Drive (carbon)	240598-B22
	8X Combo Drive CD-RW & DVD-ROM (carbon)	244885-B22
	4.7-GB DVD-RAM Drive (carbon)	294415-B22
	4.7-GB DVD RAM (Single Sided) Media Kit (3 pack)	211082-B21
	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 DVE Adobe kit	229966-B21
	4.7-GB DVD-RW drive (carbon)	246625-B22
	4.7-GB DVD-R Media (5 pack)	239405-001
	4.7-GB DVD-RW Media	249142-001
	<b>Communications</b>	Intel PRO/100+ Management Adapter w/ IPSecurity
Intel PRO/100+ Management Adapter w/ IPSecurity (20 pack)		212954-B21
Compaq NC7131 Gigabit Server Adapter PCI, 64/66 10/100/1000-T		158575-B21
Compaq WL215 Wireless USB		191810-B21
V90 56K PCI WIN Modem		225745-xx1
<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

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## Options

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<b>Other</b>	Compaq Scroll Mouse	170299-B22
	3 Button Mouse (carbon)	269192-B23
	External SCSI Adapter 68-/50-Pin	270187-B21
	Easy Access Keyboard (carbon)	202109-xx8
	Sliding Shelf Kit for Rack	332564-B21
	Spaceball 4000 3D Motion Controller (carbon)	112138-B22
	Compaq Basic Smart Card Keyboard (L2 Security) (carbon)	115506-xx8
	Solenoid Hood lock/sensor	252076-B21
<b>Support Software CD</b>	Annual Subscription	183426-xxx
	Single CD-ROM (current month)	272505-001

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## Memory

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### Compaq Evo Workstation W4000 (128 MB)

#### STANDARD MEMORY

128-MB of PC133 ECC SDRAM is standard.

#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1152 MB of PC133 ECC SDRAM is available with the installation of optional Memory Kits.

#### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Support for up to 1.5 GB of PC133 ECC SDRAM is available with the removal of the standard 128-MB PC133 ECC SDRAM module and the installation of optional Memory Kits.

#### Following are memory options available from Compaq:

- 512-MB Memory Kit (PC133 ECC SDRAM) 254873-B21
- 256-MB Memory Kit (PC133 ECC SDRAM) 254872-B21
- 128-MB Memory Kit (PC133 ECC SDRAM) 254871-B21

## Memory

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### Compaq Evo Workstation W4000 (256 MB)

#### STANDARD MEMORY

256-MB of PC133 ECC SDRAM is standard.

#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1280 MB of PC133 ECC SDRAM is available with the installation of optional Memory Kits

#### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Support for up to 1.5 GB of PC133 ECC SDRAM is available with the removal of the standard 256-MB PC133 ECC SDRAM module and the installation of optional Memory Kits.

#### Following are memory options available from Compaq:

- 512-MB Memory Kit (PC133 ECC SDRAM) 254873-B21
- 256-MB Memory Kit (PC133 ECC SDRAM) 254872-B21
- 128-MB Memory Kit (PC133 ECC SDRAM) 254871-B21

## Memory

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### Compaq Evo Workstation W4000 (512 MB)

#### STANDARD MEMORY

512 GB of PC133 ECC SDRAM is standard.

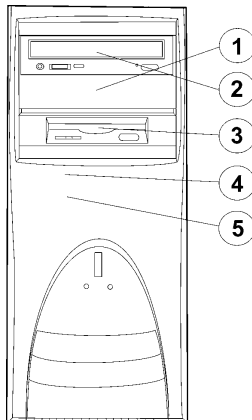
#### STANDARD MEMORY PLUS OPTIONAL MEMORY

Support for up to 1.5 GB of PC133 ECC SDRAM.

#### Following are memory options available from Compaq:

- 512-MB Memory Kit (PC133 ECC SDRAM) 254873-B21
- 256-MB Memory Kit (PC133 ECC SDRAM) 254872-B21
- 128-MB Memory Kit (PC133 ECC SDRAM) 254871-B21

## 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
250-MB ATAPI ZIP 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-RAM 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
TR5 10/20-GB tape drive	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, 3, 4, 5	Ultra160 SCSI Controller (PCI)
72-GB 10,000 rpm			
36.4-GB 10,000 rpm			
18.2-GB 15,000 rpm			
18.2-GB 10,000 rpm			
<i>Ultra ATA Drives</i>			
<b>1-inch</b>	Up to 3	1, 2, 3, 4, 5	Integrated EIDE
60-GB 7200 rpm			
40-GB 7200 rpm			
20-GB 7200 rpm			
<b>Maximum Storage Capacity</b>			
Internal	216 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 lbs/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 lbs/2.05 kg	
	<b>Temperature</b> (Values are subject to change)	Operating	50° to 95°F/10° to 35°C	
		Non-operating	4° to 140°F/-15° to 60°C	
	<b>Humidity (non-condensing)</b> (Values are subject to change)	Operating	20% to 80%	
		Non-operating	10% to 90%	
<b>Maximum Altitude</b> (nonpressurized)	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/465 x 160 x 36 mm		
	<b>Weight</b>	Approximately 2 lbs/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	
		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		
Non-operating Vibration	4 g peak acceleration			

## Technical Specifications

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

## Technical Specifications

Ultra160 SCSI Hard Drives	72 GB 250023-B21	<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 (typical reads, including settling)</b>	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				
	36.4 GB 191189-B21	<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 (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>	71,132,000		
<b>Operating Temperature</b>	50° to 95°F/10° to 35°C				
	18.2 GB 191188-B21	<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				

## Technical Specifications

Ultra160 SCSI Hard Drives <i>(continued)</i>	18.2 GB 159764-B21	Capacity	18,209 MB		
		Height	1 in/25.4 mm		
		Width	3.5 in/88.9 mm		
		Interface	Ultra160 SCSI		
		Synchronous Transfer Rate (Maximum)	160 MB/s		
		Seek Time (typical reads, including settling)	Single Track	0.6 ms	
			Average	4.7 ms	
			Full-Stroke	12 ms	
			Rotational Speed	10,000 rpm	
		Logical Blocks	35,566,000		
Operating Temperature	50° to 95°F/10° to 35°C				
Ultra ATA Hard Drives	60 GB 230253-B21	Capacity	60,000 MB		
		Height	1 in/25.4 mm		
		Width	3.5 in/88.9 mm		
		Interface	Ultra ATA/100		
		Synchronous Transfer Rate (Maximum)	100 MB/s		
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)	
			Average	8 ms (10.1 ms quiet seek)	
			Full-Stroke	18.0 ms (21.1 ms quiet seek)	
			Rotational Speed	7200 rpm	
		Logical Blocks	117,231,408		
Operating Temperature	41° to 131°F/5° to 55°C				
	40 GB 201066-B21	Capacity	40,000 MB		
		Height	1 in/25.4 mm		
		Width	3.5 in/88.9 mm		
		Interface	Ultra ATA/100		
		Synchronous Transfer Rate (Maximum)	100 MB/s		
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)	
			Average	8 ms (10.1 ms quiet seek)	
			Full-Stroke	18.0 ms (21.1 ms quiet seek)	
			Rotational Speed	7200 rpm	
		Logical Blocks	78,165,360		
Operating Temperature	41° to 131°F/5° to 55°C				
	20 GB 251974-B21	Capacity	20,000 MB		
		Height	1 in/25.4 mm		
		Width	3.5 in/88.9 mm		
		Interface	Ultra ATA/100		
		Synchronous Transfer Rate (Maximum)	100 MB/s		
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)	
			Average	8 ms (10.1 ms quiet seek)	
			Full-Stroke	18.0 ms (21.1 ms quiet seek)	
			Rotational Speed	7200 rpm	
		Logical Blocks	39,102,336		
Operating Temperature	41° to 131°F/5° to 55°C				

## Technical Specifications

16X/10X/40X CD-RW Drive	<b>Interface</b>	ATAPI IDE		
	<b>Media formats read</b>	Any industry standard compact disc media		
	<b>Media formats written</b>	CD-R and CD-RW		
	<b>Media capacity</b>	650 MB		
	<b>Write methods</b>	Disc-at-once, track-at-once, session-at-once, fixed packet, and variable packet		
	<b>Recording/playing time</b>	More than 74 minutes		
	<b>Data transfer rates</b>	Sustained	CD-R write—2,400 Kbps (16X) CD-RW write (1-4X media) —1,500 Kbps (4X) CD-RW write (4-10X media) —1,500 Kbps (10X)	
		Variable	CD-RW read—1,500 Kbps (10X) Digital audio extraction (minimum) —1,500 Kbps (10X) CD-ROM, CD-R read—1,500 to 6,000 Kbps (10X to 40X)	
	<b>Data transfer modes</b>	ATA PIO mode 4—16.7 Mbps		
		ATA multi-word DMA mode 2—16.7 Mbps		
		ATA UltraDMA mode 0—16.7 Mbps (mandatory and default setting)		
		ATA UltraDMA mode 1—24 Mbps (optional); mode 2—33 Mbps (optional)		
	<b>Media formats read</b>	CD-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>	Random	<120 ms typical	
		Full stroke	<200 ms typical	
	<b>Rotational speed</b>	17X—40X CAV	8,350 RPM, constant	
		16X CLV	3,424—7,952 RPM	
		10X CLV	2,140—4,970 RPM	
		8X CLV	1,712—3,976 RPM	
		4X CLV	856—1,988 RPM	
	<b>Start-up time</b>	Single	<7 seconds typical	
		Multi-session	<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>Thickness</b>	1.2 mm			
<b>Dimensions</b>	Fits in a standard 5.25-inch drive bay			
<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			
<b>Operating conditions</b>	Temperature	41° to 113° F (5° to 45° C) operating; -4° to 140° F		
	Humidity	10% to 80%		
<b>Mounting orientation</b>	Horizontal or vertical			
<b>Weight</b>	2.6 pounds (1.2 kg)			
<b>Approvals/ environmental</b>	UL 94 and 1950, CSA, CE, FDA, FCC			
<b>Operating systems supported</b>	Microsoft Windows 98, Microsoft Windows NT 4.0, Microsoft Windows 2000			
<b>Kit contents</b>	16X CD-RW media, CD-RW high speed media, Roxio™ EasyCD Creator version 4.05, Dantz Retrospect Express version 5.5 for CD-RW, IDE and audio cable			

## Technical Specifications

<b>48X CD-ROM Drive</b>	<b>Disk</b>	Applicable Disk	CD-ROM (Mode 1 and 2), CD-RW, CD-R Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CDI Ready, CD-XA Ready, CD TEXT, CD EXTRA	
		Capacity	540 MB (Mode 1, 12 cm) 650 MB (Mode 2, 12 cm)	
		Rotational Speed	8750 maximum	
		Diameter	4.7 in, 3.15 in/12 cm, 8 cm	
		Center Hole	0.6 in/15 mm diameter	
		Thickness	0.05 in/1.2 mm	
		Track Pitch	1.6 $\mu$ m	
		<b>Block Size</b>	Mode 1	2,048 bytes
			Mode 2	2,340, 2,336 bytes
			CD-DA	2,352 bytes
		CD-XA	2,328 bytes	
	<b>Interface</b>	IDE		
	<b>Access Times (typical)</b>	Random	< 100 ms	
		Full-Stroke	< 150 ms	
	<b>Audio Output Level</b>	Line-Out	0.7 VRMS	
	<b>Data Transfer Rate</b>	Sustained	150 KB/s (1X, using audio disc)	
		Variable	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	41° to 113°F/5° to 45°C	
		Humidity	10% to 80%	
	<b>Dimensions</b>	(HxWxD, maximum)	1.7 x 5.9 x 8.19 in/4.29 x 15 x 20.8 cm	
		Weight	2.65 lbs/1.2 kg	

## Technical Specifications

16X/40X DVD-ROM Drive with RAM read	Bus	Ultra DMA 33	
	Data Transfer Rate (1 KB = 1024 bytes)	Sustained	DVD = 8.1 MB/s to 21.6 MB/s CD-ROM = 2.55 KB/s to 6.00 KB/s
	Disk Rotation Technology		DVD: CAV - Constant Angular Velocity CD: CAV - Constant Angular Velocity
	Access Time (ms)	Random	DVD = <100 ms; CDROM = < 80 ms
		Full Stroke Seek	DVD = <240 ms; CDROM = <160 ms
	Cache Buffer Standard / Max	512 KB	
	ATAPI Interface	ATAPI	
	Disk Formats Read	DVD-ROM	Yes
		DVD-Video	Yes
		DVD-R	Yes
DVD-RW		Yes	
DVD-RAM		Yes	
Photo-CD/Multi-session		Yes	
CD-ROM		Yes	
CD TEXT		Yes	
Audio CD		Yes	
CD-I		Yes	
CD-RW		Yes	
CD-R		Yes	
CD-DA		Yes	
Video CD		Yes	
CD EXTRA		Yes	
CD-ROM XA	Yes		
MPEG	Yes		
MPC Level 2	Yes		
Disk Formats Written	None		
Disk	Capacity	CD = 650 MB	
		DVD: 4.7 GB, 8.5 GB, 9.4 GB	
	Block Size	Mode 0 2352 (bytes)	
		Mode 1 2352, 2340, 2336, 2048 (bytes)	
		Mode 2 2352, 2340, 2336, 2048 (bytes)	
Diameter	DVD – 2048 (bytes)		
Thickness	12 cm, 8 cm		
	1.2 mm (CD-ROM) 1.2 mm (DVD)		

## Technical Specifications

<b>16X/40 DVD-ROM Drive with RAM read</b> <i>(continued)</i>	<b>Audio Output Level</b>	Line Out	0.7± 0.1 Vrms
		Headphones	0.45 ± 0.2 Vrms
<b>Operating Conditions</b>		Temperature	41° to 113°F/5° to 45°C
		Humidity	5% to 85% relative humidity
<b>Dimensions (HxWxD)</b>		Inches	1.67 x 5.83 x 8.18
		Centimeters	4.23 x 14.8 x 20.75
<b>Weight</b>		Pounds	2.22
		Kilograms	1
<b>Agency Approvals / Environmentals</b>	UL, CSA, TUV, FDA, FCC, CE, EMI		
<b>OS Support</b>	Windows 98/98SE, Windows ME, Windows 2000, and Windows NT 4.0 (for data applications only)		
<b>MPEG Video playback compatibility</b>	Please refer to the platform for support		
<b>RPC2 (Regional Protection Yes Control)</b>			
<b>Minimum CPU Supported</b>	Pentium II 400 MHz or Celeron 466 MHz		
<b>Mounting Orientation</b>	Operates in horizontal or vertical position.		
<b>Kit Contents</b>	DVD-ROM Drive, MPEG playback software, ReadDVD™ software, IDE Cable, audio cable, installation instructions, and warranty card.		

## 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			

## Technical Specifications

<b>Integrated Intel PRO/100 VM Network Connection</b>	<b>Connectors</b>	RJ-45								
	<b>Expansion Bus Architecture</b>	PCI 2.2								
	<b>Network Transfer Rate</b>	<table border="0"> <tr> <td>10Base-T (Half-Duplex)</td> <td>10 Mb/s</td> </tr> <tr> <td>10Base-T (Full-Duplex)</td> <td>20 Mb/s</td> </tr> <tr> <td>100Base-TX (Half-Duplex)</td> <td>100 Mb/s</td> </tr> <tr> <td>100Base-TX (Full-Duplex)</td> <td>200 Mb/s</td> </tr> </table>	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
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>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>	Yes								
	<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								
Non-Operating	Temperature	40° to 158°F/°40 to 70°C								
	Humidity (non-condensing)									
	Altitude	5,000 ft/15,240 m								
	<b>OS Driver Support</b>	Microsoft Windows NT 3.51 and 4.0 Microsoft Windows 95, 98, and 2000 Novell Netware 3.11, 3.12, & 4.1x 5 Server Sun Solaris™ SCO UnixWare OpenDesktop OpenServer								

## Technical Specifications

3COM 3C920C-TX Network Connection	<b>Manufacturer</b>	3ComOL		
	<b>Connector</b>	RJ-45		
	<b>Expansion bus architecture</b>	PCI 2.2		
	<b>Configuration</b>	Network transfer rate	10BaseT (half-duplex) 10 Mbps 10BaseT (full-duplex) 20 Mbps 100BaseTX (half-duplex) 100 Mbps 100BaseTX (full-duplex) 200 Mbps	
		Data interface	PCI, 32-bit bus mastering	
		I/O address	Automatic I/O address	
		Interrupt level	Automatic IRQ setup	
		<b>Standards compliance</b>	IEEE 802.3 (10-Mbps Ethernet), IEEE 802.3u (100-Mbps Ethernet)	
	<b>OS driver support</b>	Microsoft Windows 95, Microsoft Windows 98, Microsoft Windows 2000, Microsoft Windows NT 3.5/x and 4.0,		
	<b>Remote wakeup</b>	Yes, WAKE signal		
	<b>Proactive alert technology</b>	No		
	<b>Environmental operating requirements</b>	Temperature	32° to 131° F (0° to 55° C)	
		Humidity (non-condensing)	10% to 90%	
	<b>Power management</b>	ACPI		
	<b>Network management</b>	DMI 2.0, WfM 2.x, PCI 2.2		
<b>Power</b>	+3.3 V, 340 mA			
<b>LED indicators</b>	100-Mbps link, 10-Mbps link, activity			
<b>Dimensions</b>	4.7 x 2.2 inches (12.0 x 5.6 cm)			
<b>Certifications</b>	CE Mark, FCC Class B, VCCI Class B, CISPR 22 Class B			

## Technical Specifications

<b>NVIDIA Quadro2 Pro Graphics Controller</b>	<b>3D/2D Controller</b>	Integrated Quadero2 Pro 2D/3D 128-bit graphics processor unit (GPU)		
	<b>VGA Controller</b>	Integrated into the Quadro2 Pro GPU		
	<b>Bus type</b>	AGP 4X		
	<b>RAMDAC</b>	350 MHz		
	<b>Memory type</b>	400 MHz 4Mx16DDR-5ns		
	<b>Memory amount</b>	64 MB		
	<b>Memory Speed</b>	400 MHz (DDR)		
	<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>	240 Hz		
	<b>Maximum pixel clock</b>	350 MHz		
	<b>Multi-display support</b>	No		
	<b>Operating systems</b>	Microsoft Windows 2000, Windows NT 4.0 available from Compaq		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	<b>Memory Dedicated to Texture Support</b>
	640 x 480	16.7 M	240 Hz	60.4 MB
800 x 600	16.7 M	240 Hz	58.4 MB	
1024 x 768	16.7 M	240 Hz	54.8 MB	
1152 x 864	16.7 M	200 Hz	52.3 MB	
1280 x 1024	16.7 M	150 Hz	48.6 MB	
1600 x 1000	64 K	120 Hz	54.6 MB	
1600 x 1000	16.7 M	120 Hz	45.3 MB	
1600 x 1200	64 K	100 Hz	52.8 MB	
1600 x 1200	16.7 M	100 Hz	41.5 MB	
1600 x 1280	64 K	100 Hz	52 MB	
1600 x 1280	16.7 M	100 Hz	40 MB	
1920 x 1080	64 K	85 Hz	51.9 MB	
1920 x 1080	16.7 M	85 Hz	39.7 MB	
1920 x 1200	64 K	85 Hz	50.5 MB	
1920 x 1200	16.7 M	85 Hz	37 MB	

## 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 2000, Microsoft Windows 98, Microsoft Windows NT 4.0
	<b>Two integrated RAMDACs</b>	Yes
<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>	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	
<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

<b>Matrox Millennium G550 AGP Graphics Controller</b> <i>(continued)</i>	<b>DualHead configurations</b>	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
	<b>DualHead 2-D display features</b>	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
	<b>DualHead display technology chip specifications</b>	Multiple independent displays with a single AGP card: analog flat panel (RGB monitor)/analog flat panel (RGB monitor); digital flat panel/digital flat panel

**Note:** 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)

<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	150 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>	AGP: 32 MB / PCI: 16 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>	AGP: 32 MB / PCI: 16 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 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
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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 Controllers

(continued)

#### Supported Modes

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

<b>Matrox G200 Quad Multi-Monitor Series (MMS) Graphics Controller</b>	<b>Dimensions (HxW)</b>	4.5x8 in/11.43x20.32 cm		
	<b>Refresh Rate (per display)</b>			
	<b>Aspect Ratio</b>	<b>Resolution</b>	<b>Vertical</b>	<b>Horizontal</b>
	4:3/5:4	640 x 480	60 to 200 Hz	31 to 102 kHz
		800 x 600	60 to 200 Hz	38 to 114 kHz
		1024 x 768	60 to 140 Hz	48 to 113 kHz
		1152 x 864	60 to 120 Hz	54 to 110 kHz
		1280 x 1024	60 to 100 Hz	64 to 107 kHz
		1600 x 1200	60 to 90 Hz	75 to 113 kHz
	16:9/16:10	1800 x 1440	60 to 70 Hz	89 to 104 kHz
856 x 480		60 to 200 Hz	30 to 108 kHz	
1280 x 720		60 to 100 Hz	44 to 76 kHz	
1600 x 1024		60 to 100 Hz	64 to 108 kHz	
1920 x 1080		60 to 80 Hz	70 to 94 kHz	
1920 x 1200		60 to 76 Hz	75 to 95 kHz	
With DVI digital flat panel displays, the maximum display resolution is 1280 x 1024. Maximum refresh rates may not be attainable at the highest display resolutions with 24 or 32-bit color palettes.				
<b>Interface</b>	PCI			
<b>Standard Memory</b>	32-MB SGRAM (8 MB per port)			
<b>DAC Speed</b>	250 MHz			
<b>Data Path</b>	128-bit Internal/64-bit External			
<b>Color Space Conversion</b>	Yes			
<b>Scaling</b>	Yes			
<b>Quick Draw Support</b>	Yes			
<b>DCI &amp; DirectX Video Playback</b>	Yes			
<b>Direct3D Support</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>	Two output ports, which require 2 adapter cables to connect analog or digital output displays			
	Analog Display Support	2 RGB cables support two DB-15 analog displays per cable		
	DVI (Digital Visual Interface) Display Support	DVI cable option kit provides two DVI cables for connecting two DVI compliant displays per cable		
	Display options supported	Four analog displays via two RGB cables Four DVI displays via two DVI cables Two analog displays via one RGB cable and two DVI displays via one DVI cable		
<b>Other</b>	PCI bus-mastering, texture mapping support, flat and Gouraud shading, Anisotropic Filter, perspective texture, specular highlighting, dithering, full scene anti-aliasing, Vertex fog			
<b>OS Support</b>	Windows 2000 and Windows NT 4.0			

## Technical Specifications

<b>NVIDIA Quadro2 MXR Graphics Controller</b>	<b>Dimensions (LxHxW)</b>	Approximately 6.5 x 3.8 x 0.6 in/16.51 x 9.65 x 1.52 cm		
	<b>Resolution</b>	<b>Maximum Colors Supported</b>	<b>Maximum Refresh Rate</b>	<b>Memory Dedicated to Texture Support</b>
	640 x 480	16.7 M	240 Hz	28.4 MB
	800 x 600	16.7 M	240 Hz	26.4 MB
	1024 x 768	16.7 M	200 Hz	22.8 MB
	1152 x 864	16.7 M	170 Hz	20.3 MB
	1280 x 1024	16.7 M	150 Hz	16.6 MB
	1600 x 1000	64 K	120 Hz	22.6 MB
	1600 x 1000	16.7 M	120 Hz	13.3 MB
	1600 x 1200	64 K	100 Hz	20.8 MB
	1600 x 1200	16.7 M	100 Hz	9.5 MB
	1600 x 1280	64 K	100 Hz	20 MB
	1600 x 1280	16.7 M	100 Hz	8 MB
	1920 x 1080	64 K	85 Hz	19.9 MB
	1920 x 1080	16.7 M	85 Hz	7.7 MB
	1920 x 1200	64 K	85 Hz	18.5 MB
	1920 x 1200	16.7 M	85 Hz	5 MB
<b>3D/2D Controller</b>	Integrated Quadro2 MXR 2D/3D 128-bit graphics processor unit (GPU)			
<b>VGA Controller</b>	Integrated into the Quadro2 MXR GPU			
<b>Bus Type</b>	AGP 2X, 4X Graphics Bus			
<b>RAMDAC</b>	350 MHz			
<b>Memory Type</b>	183 MHz SDR 2Mx32			
<b>Memory Amount</b>	32 MB			
<b>Memory Speed</b>	183 MHz			
<b>Controller Clock Speed</b>	200 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 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>	Yes			
<b>Operating Systems</b>	Microsoft® Windows® 2000, Windows NT 4.0 available from Compaq			

## Technical Specifications

NVIDIA Quadro2 EX Graphics Controller <i>(continued)</i>	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	10.5 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 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 GL2 Graphics Controller	Dimensions (HxW)	Approximately 6.5 x 3.8 x 0.6 in/16.51 x 9.65 x 1.52 cm		
	Resolution	Maximum Colors Supported	Maximum Refresh Rate	Memory Dedicated to Texture Support
	640 x 480	16.7 M	240 Hz	28.4 MB
	800 x 600	16.7 M	240 Hz	26.4 MB
	1024 x 768	16.7 M	200 Hz	22.8 MB
	1152 x 864	16.7 M	170 Hz	20.3 MB
	1280 x 1024	16.7 M	150 Hz	16.6 MB
	1600 x 1000	64 K	120 Hz	22.6 MB
	1600 x 1000	16.7 M	120 Hz	13.3 MB
	1600 x 1200	64 K	100 Hz	20.8 MB
	1600 x 1200	16.7 M	100 Hz	9.5 MB
	1600 x 1280	64 K	100 Hz	20 MB
	1600 x 1280	16.7 M	100 Hz	8 MB
	1920 x 1080	64 K	85 Hz	19.9 MB
	1920 x 1080	16.7 M	85 Hz	7.7 MB
	1920 x 1200	64 K	85 Hz	18.5 MB
	1920 x 1200	16.7 M	85 Hz	5 MB

## Technical Specifications

ATI Fire GL2 Graphics Controller (continued)	Form Factor	ATX
	3D/2D Controller	IBM RC1000 Rasterizer Chip
	VGA Controller	IBM RC1000 Rasterizer Chip
	Bus Type	AGP 2X/4X Version 2 compliant including side band signaling support
	RAMDAC	300 MHz IBM RC1000
	Memory Type	DDR SGRAM
	Memory Amount	64 MB DDR SGRAM unified frame buffer, Z-buffer and Texture storage
	Memory Speed	120 MHz
	Controller Clock Speed	120 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
	Mini-Din Stereo Interface support	StereoGraphics CrystalEyes shutter glasses
	Monitor	15-pin D-type analog
	Flat Panel Interface	DVI-D digital (supported resolutions up to 1280x1024 )
	Video Timings compliance	VESA DMT 1.0 and VESA GTF 1.0 specifications
	Total bits/pixel	117
	Maximum Vertical Refresh Rate	100 Hz / 120 Hz when Quad Buffer Stereo is enabled
	Maximum Pixel Clock	300 MHz
	Operating Systems	Microsoft® Windows® 2000 and Windows NT 4.0

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

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

. Compaq PCs use genuine Microsoft® Windows®

<http://www.microsoft.com/piracy/howtotell>

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