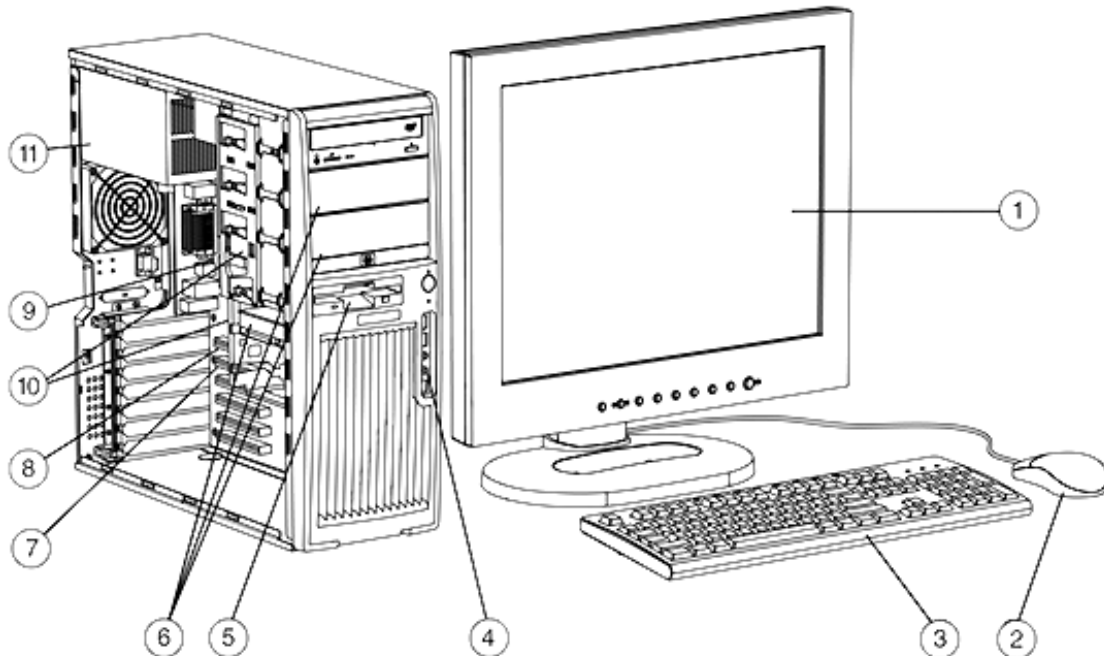


### Overview

**HP recommends Windows Vista™  
Business**



1. Monitor (sold separately)
2. 2-Button Scroll Mouse
3. 2004 Standard Keyboard
4. Front IO: 2 USB 2.0, IEEE-1394 (requires optional PCI card to enable), headphone and microphone
5. One 3.5" external bay for optional diskette drive or other 3.5" device
6. Three 5.25" external bays (3rd external is not full depth), and two 3.5" internal bays
7. 3 PCI slots, 1 PCI Express x1 slot, 1 PCI Express x8 slot (with x4 functionality)
8. 1 PCI Express x16 Graphics slot
9. Rear IO: 6 USB 2.0, 1 standard serial port, 1 optional serial port, 1 parallel port, PS/2 keyboard, PS/2 mouse, RJ-45, audio in, audio out, mic in
10. Intel® Pentium® 4 processor with Hyper-Threading Technology and EM64T capability
11. 460 watt (continuous) power supply

### Overview

#### At A Glance

- Choice of operating systems:  
Genuine Windows XP Professional (32-bit),  
Genuine Windows XP Professional x64 Edition,  
Red Hat Enterprise WS4  
HP Installer Kit for Linux (see <http://h20331.www2.hp.com/hpsub/cache/537200-0-0-225-121.html> for details)  
Tested on Microsoft Windows 2000 Professional SP4
- Intel Pentium 4 processor with Extended Memory 64 Technology (EM64T) and,
  - Hyper-Threading Technology
  - Virtualization Technology (672 processor only)
- Intel Pentium D processor with Extended Memory 64 Technology (EM64T)
- Intel 955X Express chipset
- Integrated HP Gbit LAN by Broadcom
- 800 MHz processor front side bus support
- Convertible and tool-less minitower chassis
- 3 PCI Express slots/3 PCI slots
- Dual channel DDR2 memory at 533 or 667 MHz
- Four channel SATA Controller with RAID\* 0, 1, 10, or 5
- Realtek integrated high definition audio with internal speaker
- Pre-loaded Manageability tools
- Protected by HP Services, including a 3-3-3 standard warranty. Terms and conditions vary by country. Certain restrictions and exclusions apply.

\* **NOTE:** Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf> for RAID capabilities with Linux.

### Standard Features - Custom Components

#### Processor and Speed – One of the following

**All processors feature Extended Memory 64 Technology. All Pentium 4 processors feature Hyper-Threading Technology**

Intel Pentium 4 processor 521 supporting Hyper-Threading Technology (2.80 GHz/1 MB, 800 FSB, Single Core)

Intel Pentium 4 processor 630 supporting Hyper-Threading Technology (3.00 GHz/2 MB, 800 FSB, Single Core)

Intel Pentium 4 processor 640 supporting Hyper-Threading Technology (3.20 GHz/2 MB, 800 FSB, Single Core)

Intel Pentium 4 processor 650 supporting Hyper-Threading Technology (3.40 GHz/2 MB, 800 FSB, Single Core)

Intel Pentium 4 processor 660 supporting Hyper-Threading Technology (3.60 GHz/2 MB, 800 FSB, Single Core)

Intel Pentium 4 processor 672 supporting Hyper-Threading Technology and Virtualization Technology (3.80 GHz/2 MB, 800 FSB, Single Core)

Intel Pentium D processor 940 (3.20 GHz/2 MB, 800 FSB, Dual Core)

Intel Pentium D processor 950 (3.40 GHz/2 MB, 800 FSB, Dual Core)

Intel Pentium D processor 960 (3.60 GHz/2 MB, 800 FSB, Dual Core)

**NOTE:** Hyper-Threading (HT) Technology requires a computer system with an Intel Pentium processor supporting HT Technology and an HT Technology enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. See <http://www.intel.com/info/hyperthreading/> for more information including details on which processors support HT Technology.

#### Operating System – One of the following

Genuine Windows XP Professional SP2 (32-bit)

Genuine Windows XP Professional x64 Edition (64-bit)

Red Hat Enterprise Linux Workstation 4 Update 3 (32 & 64-bit)

HP Installer CD for Red Hat Linux WS 3 and WS 4 Box Set (includes drivers for 32-bit and 64-bit)

See <http://h20331.www2.hp.com/hpsub/cache/537200-0-0-225-121.html>

Click on "Hardware support matrix" under "Related links" for details.

**NOTE:** Although HP Personal Workstations can be ordered with the HP Installer Kit for Linux and an IEEE 1394 card, HP cannot provide customer support for this configuration. Please refer to the Linux Hardware Support Matrix ([http://www.hp.com/support/linux\\_hardware\\_matrix](http://www.hp.com/support/linux_hardware_matrix)) for details, and to the Linux User Manual ([http://www.hp.com/support/linux\\_user\\_manual](http://www.hp.com/support/linux_user_manual)) for tips on user-enablement of the IEEE 1394 Card.

### Standard Features - Custom Components

#### 1st Hard Disk Drive –

One of the following

##### Serial ATA Drives

80 GB SATA 3.0-Gb/s 7200 rpm drive

160 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing

250 GB SATA 3.0-Gb/s 7200 rpm drive

500 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing

##### Serial ATA 1.5Gb/s Hard Drive

74 GB SATA 1.5-Gb/s 10K rpm drive

##### Ultra320 SCSI Drives

73 GB Ultra320 SCSI 10K rpm drive

146 GB Ultra320 SCSI 10K rpm drive

300 GB Ultra320 SCSI 10K rpm drive

36 GB Ultra320 SCSI 15K rpm drive

73 GB Ultra320 SCSI 15K rpm drive

#### Windows XP

#### Red Hat Linux

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

#### 2nd Hard Disk Drive –

One of the following

##### Serial ATA 3Gb/s Hard Drives

2nd Hard Drive, 80 GB SATA 3.0-Gb/s 7200 rpm drive

2nd Hard Drive, 160 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing

2nd Hard Drive, 250 GB SATA 3.0-Gb/s 7200 rpm drive

2nd Hard Drive, 500 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing

##### Serial ATA 1.5Gb/s Hard Drive

2nd Hard Drive, 74 GB SATA 1.5-Gb/s 10K rpm drive

##### Ultra320 SCSI Drives

2nd Hard Drive, 73 GB Ultra320 SCSI 10K rpm drive

2nd Hard Drive, 146 GB Ultra320 SCSI 10K rpm drive

2nd Hard Drive, 300 GB Ultra320 SCSI 10K rpm drive

2nd Hard Drive, 36 GB Ultra320 SCSI 15K rpm drive

2nd Hard Drive, 73 GB Ultra320 SCSI 15K rpm drive

#### Windows XP

#### Red Hat Linux

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

32-Bit, 64-Bit

WS3, WS4

### Standard Features - Custom Components

3rd Hard Disk Drive - One of the following	Serial ATA 3Gb/s Hard Drives	Windows XP	Red Hat Linux
	3rd Hard Drive, 80 GB SATA 3.0-Gb/s 7200 rpm drive	32-Bit	WS3, WS4
	3rd Hard Drive, 160 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing	32-Bit	WS3, WS4
	3rd Hard Drive, 250 GB SATA 3.0-Gb/s 7200 rpm drive	32-Bit	WS3, WS4
	3rd Hard Drive, 500 GB SATA 3.0-Gb/s 7200 rpm drive with Native Command Queuing	32-Bit	WS3, WS4
	Serial ATA 1.5Gb/s Hard Drive		
	3rd Hard Drive, 74 GB SATA 1.5-Gb/s 10K rpm drive	32-Bit	WS3, WS4
	Ultra320 SCSI Drives		
	3rd Hard Drive, 73 GB Ultra320 SCSI 10K rpm drive	32-Bit, 64-Bit	WS3, WS4
	3rd Hard Drive, 146 GB Ultra320 SCSI 10K rpm drive	32-Bit, 64-Bit	WS3, WS4
	3rd Hard Drive, 300 GB Ultra320 SCSI 10K rpm drive	32-Bit, 64-Bit	WS3, WS4
	3rd Hard Drive, 36 GB Ultra320 SCSI 15K rpm drive	32-Bit, 64-Bit	WS3, WS4
	3rd Hard Drive, 73 GB Ultra320 SCSI 15K rpm drive	32-Bit, 64-Bit	WS3, WS4

Drive controllers	Windows XP	Red Hat Linux
Integrated 4 channel Serial ATA 3Gb/s controller with NCQ and RAID* 0, 1, 10, 5 functionality	32-Bit	WS3, WS4
Optional U320 SCSI Controller - LSI 20320AR RAID 0,1 (required with SCSI HDDs)	32-Bit	WS3, WS4
<p>* <b>NOTE:</b> Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <a href="http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf">http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf</a> for RAID capabilities with Linux.</p>		

Factory Integrated RAID	Windows XP	Red Hat Linux
RAID 0 Configuration - Striped Array	32-Bit	
RAID 1 Configuration	32-Bit	
<p><b>NOTE:</b> Requires 2 identical hard drives (speeds, capacity, interface) SATA RAID 0, 1 and SCSI RAID 0, 1 available as options.</p>		

### Standard Features - Custom Components

#### Memory –

One of the following

#### ECC RAM

	Windows XP	Red Hat Linux
512 MB PC2-4300 (DDR2 533 MHz) ECC (2 x 256 MB)	32-Bit, 64-Bit	WS3, WS4
512 MB DDR2 PC2-5300 (667 MHz) ECC (2 x 256 MB)	32-Bit, 64-Bit	WS3, WS4
1 GB PC2-4300 (DDR2 533 MHz) ECC (2 x 512 MB)	32-Bit, 64-Bit	WS3, WS4
1 GB PC2-5300 (DDR2 667 MHz) ECC (2 x 512 MB)	32-Bit, 64-Bit	WS3, WS4
1.5 GB PC2-4300 (DDR2 533 MHz) ECC (2 x 256 MB + 2 x 512 MB)	32-Bit, 64-Bit	WS3, WS4
2 GB PC2-4300 (DDR2 533 MHz) ECC (4 x 512 MB)	32-Bit, 64-Bit	WS3, WS4
2 GB PC2-5300 (DDR2 667 MHz) ECC (2 x 1 GB)	32-Bit, 64-Bit	WS3, WS4
3 GB PC2-5300 (DDR2 667 MHz) ECC (2 x 512 + 2 x 1 GB)	32-Bit, 64-Bit	WS3, WS4
4 GB PC2-4300 (DDR2 533 MHz) ECC (2 x 2 GB)	32-Bit, 64-Bit	WS3, WS4
4 GB PC2-5300 (DDR2 667 MHz) ECC (4 x 1 GB)	32-Bit, 64-Bit	WS3, WS4
8 GB PC2-4300 (DDR2 533 MHz) ECC (4 x 2 GB)	32-Bit, 64-Bit	WS3, WS4

#### Non-ECC RAM

256 MB PC2-4300 (DDR2 533 MHz) non-ECC (1 x 256 MB)	32-Bit, 64-Bit	WS3, WS4
512 MB PC2-4300 (DDR2 533 MHz) non-ECC (2 x 256 MB)	32-Bit, 64-Bit	WS3, WS4
1 GB PC2-4300 (DDR2 533 MHz) non-ECC (4 x 256 MB)	32-Bit, 64-Bit	WS3, WS4
1 GB PC2-4300 (DDR2 533 MHz) non-ECC (2 x 512 MB)	32-Bit, 64-Bit	WS3, WS4

**NOTE:** Do not mix ECC and non-ECC memory. The system will not boot if ECC and non-ECC DIMMs are mixed. Only unbuffered DDR2 DIMMs are supported. All DIMMs must be either x8 or x16 width.

#### Removable Storage

	Windows XP	Red Hat Linux
1.44 MB Diskette Drive	32-Bit, 64-Bit	WS3, WS4
48X CD-ROM Drive	32-Bit, 64-Bit	WS3, WS4
48X CD-RW Drive	32-Bit, 64-Bit	WS3, WS4
16X DVD-ROM with +R Read	32-Bit, 64-Bit	WS3, WS4
48X Combo CD-RW/DVD-ROM Drive	32-Bit, 64-Bit	WS3, WS4
16X DVD+/-RW, Dual-Layer, LightScribe*	32-Bit, 64-Bit	WS3, WS4*

\*NOTE: LightScribe software works with Windows 32-Bit only.

#### 2nd Removable Storage

	Windows XP	Red Hat Linux
48X CD-RW Drive	32-Bit, 64-Bit	WS3, WS4
16X DVD-ROM with +R Read	32-Bit, 64-Bit	WS3, WS4
48X Combo CD-RW/DVD-ROM Drive	32-Bit, 64-Bit	WS3, WS4
16X DVD+/-RW, Dual-Layer, LightScribe*	32-Bit	WS3, WS4*

\*NOTE: LightScribe software works with Windows only.



### Standard Features - Custom Components

#### Keyboard\*\*

One of the following

PS/2 Standard Keyboard  
 USB Standard Keyboard

#### Windows XP

32-Bit, 64-Bit  
 32-Bit, 64-Bit

#### Red Hat Linux

WS3, WS4  
 WS3, WS4

**\*\*NOTE:** Not supported in configurations which include both USB mouse and Linux nor PS/2 mouse and Linux.

#### Mouse –

One of the following

PS/2 2-Button Scroll Mouse  
 USB 2-Button Optical Scroll Mouse  
 USB 3-Button Optical Mouse

#### Windows XP

32-Bit, 64-Bit  
 32-Bit, 64-Bit  
 32-Bit, 64-Bit

#### Red Hat Linux

WS3, WS4  
 WS3, WS4  
 WS3, WS4

#### Audio

Integrated High Definition audio with internal speaker  
 SoundBlaster X-Fi XtremeMusic Audio Card  
 HP Optical Drive Internal Audio Cable (Supported only when an optical drive is ordered. Not for use with X-Fi audio card)

#### Windows XP

32-Bit  
 32-Bit, 64-Bit

#### Red Hat Linux

WS3, WS4  
 WS3, WS4

#### NIC

Broadcom 5751 Netxtreme™ Gigabit PCIe NIC

#### Windows XP

32-Bit, 64-Bit

#### Red Hat Linux

WS3, WS4

#### Graphics

NVIDIA Quadro NVS 285 with TurboCache Technology PCI Express (128 MB with TC)\*  
 ATI FireGL V3100 PCI Express (128 MB)  
 NVIDIA Quadro FX 540 PCI Express (128 MB)  
 NVIDIA Quadro FX 1400 PCI Express (128 MB)  
 ATI FireGL V5100 PCI Express (128 MB)  
 NVIDIA Quadro NVS 440 PCI Express (256 MB)  
 NVIDIA Quadro FX3450 PCI Express (256 MB)  
 NVIDIA Quadro FX4500 PCI Express (512 MB)

#### Windows XP

32-Bit, 64-Bit  
 32-Bit  
 32-Bit, 64-Bit  
 32-Bit  
 32-Bit, 64-Bit  
 32-Bit, 64-Bit  
 32-Bit, 64-Bit  
 32-Bit, 64-Bit

#### Red Hat Linux

WS3, WS4  
 WS3, WS4  
 WS3, WS4  
 WS3, WS4  
 WS3, WS4  
 WS3, WS4  
 WS3, WS4

**NOTE:**

\* Two NVIDIA Quadro NVS 285 with TurboCache Technology PCI Express cards may be used together.

### Standard Features - Custom Components

#### Miscellaneous

	Windows XP	Red Hat Linux
Solenoid lock and hood sensor	32-Bit, 64-Bit	WS3, WS4
HP FireWire IEEE 1394a 3-Port PCI Card	32-Bit	
Configure minitower in desktop orientation	32-Bit, 64-Bit	WS3, WS4
Energy Star Settings	32-Bit, 64-Bit	
HP Workstations Mouse Pad	N/A	N/A

#### Software

	Windows XP	Red Hat Linux
Microsoft Windows XP Professional*	32-Bit	
OR Microsoft Windows XP Professional x64 Edition*	64-Bit	
Red Hat Enterprise Linux WS 3, 64-bit OS		WS3, WS4
HP Red Hat Linux Installer Kit (includes drivers for both 32-bit & 64-bit OS versions on xw8200, xw6200, xw4200, xw4300)		WS3, WS4
Alert Standard Format specification*	32-Bit, 64-Bit	
HP ProtectTools Software	32-Bit	
Symantec Norton AntiVirus 2005 (optional preinstall, Microsoft Windows XP Professional only)*	32-Bit	
Computer Associates® eTrust™ 64-bit AntiVirus (optional preinstall, Microsoft Windows XP Professional x64 Edition only)*	64-Bit	
HP Performance Tuning Framework*	32-Bit, 64-Bit	
Computer Associates eTrust 64-bit Anti-Virus Software	64-Bit	
Altiris Recovery* (optional download)	32-Bit, 64-Bit	
HP ProtectTools Security Manager* (optional download)	32-Bit, 64-Bit	
HP Client Manager Software v6.0* (optional download)	32-Bit, 64-Bit	
Microsoft Office 2003 Small Business Edition (optional preinstall - Microsoft Windows XP Professional only)	32-Bit	
Microsoft Office 2003 Basic (optional preinstall - Microsoft Windows XP Professional only)	32-Bit	
Microsoft Office 2003 Professional	32-Bit, 64-Bit	
CD/DVD software dependent on optical drive choices	32-Bit	

\* **NOTE:** Not available with Linux Operating System.



### Standard Features - Specs

Operating System (choice)	Genuine Windows XP Professional (32-bit) Genuine Windows XP Professional x64 Edition Red Hat Enterprise Linux Workstation 4 Update 3. HP Installer Kit for Linux 1 (includes drivers for both 32-bit & 64-bit OS versions) (Tested and supported on Microsoft Windows 2000 Professional SP4. See HP White Paper at: <a href="http://www.hp.com/workstations/white_papers/docs/xw4300_win2k_whitepaper_sept2005.pdf">http://www.hp.com/workstations/white_papers/docs/xw4300_win2k_whitepaper_sept2005.pdf</a> )
Form factor	Minitower
Color	Carbonite/Alloy metallic
Convertibility	Yes. 5.25" drives rotate for Minitower or Desktop orientation.
System Board Form Factor	ATX (9.6 x 12 in)
Processor	Single Intel Pentium 4 processors with Hyper-Threading Technology or Pentium D processors
CPU Bus Speed Supported	1066 and 800 MHz FSB
Standard L2 Cache	1 or 2 MB L2 cache, depending on specific processor
Chipset	Intel 955X North bridge/ICH7R South bridge
Memory Expansion Slots	4 DIMMs
Memory Type Supported	DDR2 (ECC and non-ECC)
Memory Speed Supported	DDR2 SDRAM PC2-4300 (533 MHz) ECC DDR2 SDRAM PC2-5300 (667 MHz) ECC DDR2 SDRAM PC2-4300 (533 MHz) non-ECC
Maximum Memory	8 GB (4 DIMM slots)
Network controller	Integrated Broadcom 5752 10/100/1000 for HP (PCI Express interface)
Audio	Integrated High Definition digital audio with stereo microphone
PCI slots	3 PCI slots (full-height, full-length) 1 PCI Express x8 slot (x4 functionality) 1 PCI Express x1 slot 1 PCI Express x16 graphics slot
AGP slot	None
Bays	Total Bays = 6
Internal Bays	<ul style="list-style-type: none"> <li>Two 3.5 inch SATA Hard Drive</li> </ul>
External Bays	<ul style="list-style-type: none"> <li>Three 5.25 inch bays</li> <li>One 3.5 inch bay for optional floppy drive</li> </ul>
Parallel Port	1
Serial Port	1 standard, 2nd is optional
Front I/O	2 USB 2.0, IEEE-1394 (requires optional PCI card to function), headphone and microphone. <b>NOTE:</b> Although HP Personal Workstations can be ordered with the HP Installer Kit for Linux and an IEEE 1394 card, HP cannot provide customer support for this configuration. Please refer to the Linux Hardware Support Matrix ( <a href="http://www.hp.com/support/linux_hardware_matrix">http://www.hp.com/support/linux_hardware_matrix</a> ) for details, and to the Linux User Manual ( <a href="http://www.hp.com/support/linux_user_manual">http://www.hp.com/support/linux_user_manual</a> ) for tips on user-enablement of the IEEE 1394 Card.
Rear I/O	6 USB 2.0, 1 standard serial port, 1 optional serial port, parallel port, PS/2 keyboard, PS/2 mouse, RJ-45, audio in, audio out, mic in (audio/mic ports can be made function autosensing and interchangeably retaskable by downloading a driver)
USB Keyboard	Optional
USB Mouse	Optional
PS/2 Keyboard	1
PS/2 Mouse	1

### Standard Features - Specs

Chassis Dimensions (H x W x D)	17.7 x 6.6 x 17.9 in (45.0 x 16.8 x 45.6 cm)	
	6.6 x 17.7 x 17.9 in (16.8 x 45.0 x 45.6 cm)	
Weight	Typical configuration – 35 lb (15.88 kg)	
Shipping weight	Typical configuration – 44 lb (19.96 kg)	
Temperature	Operating	40° to 95°F (5° to 35°C)
	Non-operating	-40° to 140°F (-40° to 60°C)
Humidity	Operating	8% to 85%
	Non-operating	8% to 90%
Maximum Altitude (nonpressurized)	Operating	10,000 ft (3,000 m)
	Non-operating	30,000 ft (9,100 m)
Power Supply	460 watts (continuous) Auto-ranging	
Interfaces Supported	1 SATA 3 Gb/s interface (4 Serial-ATA connectors), 1 EIDE interface for optical drives	
Hard Drive Controller (PCI) Supported	Optional Ultra320 or Ultra320 RAID (Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <a href="http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf">http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf</a> for RAID capabilities with Linux.)	
On-board RAID supported?	Yes	

### Standard Features - Preconfigures Global Models

<b>xw4300X / PJ3.80 / C74 / J1.0 / Processor</b>	Intel Pentium 4 processor 670 supporting Hyper-Threading Technology (3.80 GHz/2 MB, 800 FSB, Single Core)
<b>Xv / p</b>	Genuine Windows XP Professional
EM478AW#ABA	<b>OS</b>
	<b>Cache Memory</b> 2 MB L2
	<b>Memory</b> 1 GB (2x512) DDR2-533 ECC Registered
	<b>Optical Drive</b> 48X DVD-ROM/CD-RW Combo Drive
	<b>Hard Drive</b> 74-GB SATA 1.5-GB/S 10k rpm (1st)
	<b>Graphics</b> None
	<b>Mouse</b> Optical Scroll mouse (USB)
	<b>Other</b> Includes Standard PS/2 Keyboard

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<b>xw4300X / PY3.80 / C74 / J1.0 / Processor</b>	Intel Pentium 4 processor 672 supporting Hyper-Threading Technology and Virtualization Technology (3.80 GHz/2 MB, 800 FSB, Single Core)
<b>Xv / p</b>	Genuine Windows XP Professional
EP810AW #ABA	<b>OS</b>
	<b>Cache Memory</b> 2 MB L2
	<b>Memory</b> 1 GB (2x512) DDR2-533 ECC Registered
	<b>Optical Drive</b> 48X DVD-ROM/CD-RW Combo Drive
	<b>Hard Drive</b> 74-GB SATA 1.5-GB/S 10k rpm (1st)
	<b>Graphics</b> None
	<b>Mouse</b> Optical Scroll mouse (USB)
	<b>Other</b> Includes Standard PS/2 Keyboard

### Standard Features - Preconfigured Regional Models

**xw4300X/PJ3.00/F160/  
J1.0/FGV3v/p**

<b>Processor</b>	Intel Pentium 4 processor 630 supporting Hyper-Threading Technology (3.00 GHz/2 MB, 800 FSB, Single Core)
<b>OS</b>	Genuine Windows XP Professional (32-bit)
<b>Cache Memory</b>	2 MB
<b>Memory</b>	1 GB (2x512) DDR2-533 ECC RAM
<b>Optical Drive</b>	HP 48X DVD-ROM/CDRW (1st) Combo Drive
<b>Hard Drive</b>	HP 160GB SATA/300 7200rpm with Native Command Queuing (1st)
<b>Graphics</b>	ATI FireGL V3100 128MB PCIe Graphics
<b>Mouse</b>	HP USB Optical Scroll Mouse
<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### **xw4300X/PJ3.00/F160/J1.0/FGV3v/p Country Code Key**

<b>N. America</b>	PZ002UA#ABA
<b>Fr. Canadian</b>	PZ002UA#ABC
<b>L. America</b>	PZ002UA#ABM

**xw4300X/PJ3.00/F160/  
K512/Xv/p**

<b>Processor</b>	Intel Pentium 4 processor 630 supporting Hyper-Threading Technology (3.00 GHz/2 MB, 800 FSB, Single Core)
<b>OS</b>	Genuine Windows XP Professional (32-bit)
<b>Cache Memory</b>	2 MB
<b>Memory</b>	512 MB (2x256) DDR2-667 ECC RAM
<b>Optical Drive</b>	HP 48X DVD-ROM/CDRW (1st) Combo Drive
<b>Hard Drive</b>	HP 160GB SATA/300 7200rpm with Native Command Queuing (1st)
<b>Graphics</b>	Not included in base configuration – Please Choose a graphics card option below: NVIDIA Quadro NVS 280 PCI (64 MB, VGA & DVI) NVIDIA Quadro NVS 280 PCI Express (64 MB, VGA & DVI) NVIDIA Quadro NVS 285 PCI Express (128 MB, VGA & DVI) NVIDIA Quadro NVS 400 PCI (64 MB, VGA & DVI) ATI FireGL V3100 PCI Express (128 MB) NVIDIA Quadro FX 540 PCI Express (128 MB) NVIDIA Quadro FX 1400 PCI Express (128 MB) ATI FireGL V5100 PCI Express (128 MB) NVIDIA Quadro FX 3450 PCI Express (256 MB) NVIDIA Quadro FX 4500 PCI Express (512 MB) <b>NOTE:</b> Please see <a href="#">Part Numbers in After market options/Standalone accessories section.</a>
<b>Mouse</b>	HP USB Optical Scroll Mouse
<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

### Standard Features - Preconfigured Regional Models

#### xw4300X/PJ3.00/F160/K512/Xv/p Country Code Key

<b>N. America</b>	PZ008UA#ABA
<b>Fr. Canadian</b>	PZ008UA#ABC
<b>L. America</b>	PZ008UA#ABM

#### xw4300X/PV3.20/C74/J1/Xd/p

<b>Processor</b>	Intel Pentium D processor 840 (3.20 GHz/1 MB, 800 FSB, Dual Core)
<b>OS</b>	Genuine Windows XP Professional (32-bit)
<b>Cache Memory</b>	2 MB (Dual Core)
<b>Memory</b>	1 GB (2x512) DDR2-533 ECC RAM
<b>Optical Drive</b>	HP 16X DVD-ROM (1st) Drive
<b>Hard Drive</b>	74-GB SATA 1.5-GB/S 10k rpm (1st)
<b>Graphics</b>	Not included in base configuration – Please Choose a graphics card option below: NVIDIA Quadro NVS 280 PCI (64 MB, VGA & DVI) NVIDIA Quadro NVS 280 PCI Express (64 MB, VGA & DVI) NVIDIA Quadro NVS 285 PCI Express (128 MB, VGA & DVI) NVIDIA Quadro NVS 400 PCI (64 MB, VGA & DVI) ATI FireGL V3100 PCI Express (128 MB) NVIDIA Quadro FX 540 PCI Express (128 MB) NVIDIA Quadro FX 1400 PCI Express (128 MB) ATI FireGL V5100 PCI Express (128 MB) NVIDIA Quadro FX 3450 PCI Express (256 MB) NVIDIA Quadro FX 4500 PCI Express (512 MB) <b>NOTE:</b> Please see <a href="#">Part Numbers in After market options/Standalone accessories section.</a>
<b>Mouse</b>	HP USB Optical Scroll Mouse
<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### xw4300X/PV3.20/C74/J1/Xd/p Country Code Key

<b>N. America</b>	PY957UA#ABA
<b>Fr. Canadian</b>	PY957UA#ABC
<b>L. America</b>	PY957UA#ABM

### Standard Features - Preconfigured Regional Models

#### xw4300X/PJ3.20/F160/ J512/FX54/v/p

<b>Processor</b>	Intel Pentium 4 processor 640 supporting Hyper-Threading Technology (3.20 GHz/2 MB, 800 FSB, Single Core)
<b>OS</b>	Genuine Windows XP Professional (32-bit)
<b>Cache Memory</b>	2 MB
<b>Memory</b>	512 MB (2x256) DDR2-533 ECC RAM
<b>Optical Drive</b>	HP 48X DVD-ROM/CDRW (1st) Combo Drive
<b>Hard Drive</b>	HP 160GB SATA/300 7200rpm with Native Command Queuing (1st)
<b>Graphics</b>	NVIDIA Quadro FX540 128MB PCIe Graphics
<b>Mouse</b>	HP USB Optical Scroll Mouse
<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### xw4300X/PJ3.20/F160/J512/FX54/v/p Country Code Key

<b>N. America</b>	PY999UA#ABA
<b>Fr. Canadian</b>	PY999UA#ABC
<b>L. America</b>	PY999UA#ABM

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#### xw4300X/PJ3.40/F160/ J1/FX14/v/p

<b>Processor</b>	Intel Pentium 4 processor 650 supporting Hyper-Threading Technology (3.40 GHz/2 MB, 800 FSB, Single Core)
<b>OS</b>	Genuine Windows XP Professional (32-bit)
<b>Cache Memory</b>	2 MB
<b>Memory</b>	1 GB (2x512) DDR2-533 ECC RAM
<b>Optical Drive</b>	HP 48X DVD-ROM/CDRW (1st) Combo Drive
<b>Hard Drive</b>	HP 160GB SATA/300 7200 rpm with Native Command Queuing (1st)
<b>Graphics</b>	NVIDIA Quadro FX1400 128MB PCIe Graphics
<b>Mouse</b>	HP USB Optical Scroll Mouse
<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### xw4300X/PJ3.40/F160/J1/FX14/v/p Country Code Key

<b>N. America</b>	PZ001UA#ABA
<b>Fr. Canadian</b>	PZ001UA#ABC
<b>L. America</b>	PZ001UA#ABM

### Standard Features - Preconfigured Regional Models

<b>xw4300X/PJ3.60/F160/ J1.0/Xd/p</b>	<b>Processor</b>	Intel Pentium 4 processor 660 supporting Hyper-Threading Technology (3.60 GHz/2 MB, 800 FSB, Single Core)
	<b>OS</b>	Genuine Windows XP Professional (32-bit)
	<b>Cache Memory</b>	2 MB
	<b>Memory</b>	1 GB (2x512) DDR2-533 ECC RAM
	<b>Optical Drive</b>	HP 16X DVD-ROM (1st) Drive
	<b>Hard Drive</b>	HP 160GB SATA/300 7200rpm (1st)
	<b>Graphics</b>	Not included in base configuration – Please Choose a graphics card option below: NVIDIA Quadro NVS 280 PCI (64 MB, VGA & DVI) NVIDIA Quadro NVS 280 PCI Express (64 MB, VGA & DVI) NVIDIA Quadro NVS 285 PCI Express (128 MB, VGA & DVI) NVIDIA Quadro NVS 400 PCI (64 MB, VGA & DVI) ATI FireGL V3100 PCI Express (128 MB) NVIDIA Quadro FX 540 PCI Express (128 MB) NVIDIA Quadro FX 1400 PCI Express (128 MB) ATI FireGL V5100 PCI Express (128 MB) NVIDIA Quadro FX 3450 PCI Express (256 MB) NVIDIA Quadro FX 4500 PCI Express (512 MB) <b>NOTE:</b> Please see <a href="#">Part Numbers in After market options/Standalone accessories section.</a>
	<b>Mouse</b>	HP USB Optical Scroll Mouse
	<b>Other</b>	Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### **xw4300X/PJ3.60/F160/J1.0/Xd/p Country Code Key**

<b>N. America</b>	PZ003UA#ABA
<b>Fr. Canadian</b>	PZ003UA#ABC
<b>L. America</b>	PZ003UA#ABM

<b>xw4300/X/PJ3.80/S73/ J1/Xv/p</b>	<b>Processor</b>	Intel Pentium 4 processor 670 supporting Hyper-Threading Technology (3.80 GHz/2 MB, 800 FSB, Single Core)
	<b>OS</b>	Genuine Windows XP Professional (32-bit)
	<b>Cache Memory</b>	2 MB
	<b>Memory</b>	1 GB (2x512) DDR2-533 ECC RAM
	<b>Optical Drive</b>	HP 48X DVD-ROM/CDRW (1st) Combo Drive
	<b>Hard Drive</b>	HP 73GB U320 SCSI 10,000rpm (1st)
	<b>Graphics</b>	Not included in base configuration – Please Choose a graphics card option below: NVIDIA Quadro NVS 280 PCI (64 MB, VGA & DVI) NVIDIA Quadro NVS 280 PCI Express (64 MB, VGA & DVI) NVIDIA Quadro NVS 285 PCI Express (128 MB, VGA & DVI) NVIDIA Quadro NVS 400 PCI (64 MB, VGA & DVI) ATI FireGL V3100 PCI Express (128 MB) NVIDIA Quadro FX 540 PCI Express (128 MB)

### Standard Features - Preconfigured Regional Models

NVIDIA Quadro FX 1400 PCI Express (128 MB)

ATI FireGL V5100 PCI Express (128 MB)

NVIDIA Quadro FX 3450 PCI Express (256 MB)

NVIDIA Quadro FX 4500 PCI Express (512 MB)

**NOTE:** Please see [Part Numbers in After market options/Standalone accessories section.](#)

**Mouse**

HP USB Optical Scroll Mouse

**Other**

Includes HP PS/2 Standard Keyboard (no floppy disk option)

#### xw4300/X/PJ3.80/S73/J1/Xv/p Country Code Key

**N. America** PY959UA#ABA

**Fr. Canadian** PY959UA#ABC

**L. America** PY959UA#ABM



### After-Market Options

Graphics	Windows XP	Red Hat Linux	Part Number
<b>Multi display solutions</b>			
NVIDIA Quadro NVS 280 PCI Graphics Card (64 MB, VGA & DVI)	32-Bit, 64-Bit	WS3, WS4	AA932A
NVIDIA Quadro NVS 285 with TurboCache Technology PCI Express Graphics Card (128 MB, TC)	32-Bit, 64-Bit	WS3, WS4	EE061AA
NVIDIA DVI Dual-head Connector Cable for NVS cards	32-Bit, 64-Bit	WS3, WS4	DL139A
ATI FireGL V3100 (128 MB) - PCIe	32-Bit		PE949A
NVIDIA Quadro FX 540 (128 MB)	32-Bit, 64-Bit	WS3, WS4	PH791A
NVIDIA Quadro FX 1400 (128 MB)) - PCIe	32-Bit		PM979A
ATI FireGL V5100 (128 MB) - PCIe	32-Bit		PB330A
NVIDIA Quadro NVS 440 PCI Express Graphics Card (256 MB)	32-Bit, 64-Bit		PT453A
NVIDIA Quadro FX 3450 (256 MB) - PCIe	32-Bit, 64-Bit	WS3, WS4	PY640AA
NVIDIA Quadro FX 4500 (512 MB) - PCIe	32-Bit, 64-Bit	WS3, WS4	EA762AA
NVIDIA Quadro G-Sync	32-Bit, 64-Bit	WS3, WS4	ED087AA

Hard Drives	Windows XP	Red Hat Linux	Part Number
<b>SATA Hard Drives</b>			
HP 74 GB SATA 1.5-Gb/s 10K rpm HDD	32-Bit, 64-Bit	WS3, WS4	DX760A
HP 80 GB SATA 3Gb/s 7200 rpm HDD	32-Bit, 64-Bit	WS3, WS4	PY276AA
HP 160 GB SATA 3Gb/s NCQ 7200 rpm HDD	32-Bit, 64-Bit	WS3, WS4	PV944A
HP 250 GB SATA NCQ 7200 rpm HDD	32-Bit, 64-Bit	WS3, WS4	EA788AA
HP 500 GB SATA 3Gb/s NCQ 7200 rpm HDD	32-Bit, 64-Bit	WS3, WS4	PV943A
<b>SCSI Hard Drives</b>			
HP 36 GB U320 SCSI 15K rpm HDD	32-Bit, 64-Bit	WS3, WS4	AA616A
HP 73 GB U320 SCSI 10K rpm	32-Bit, 64-Bit	WS3, WS4	AA613A
HP 73 GB U320 SCSI 15K rpm	32-Bit, 64-Bit	WS3, WS4	AA617A
HP 146 GB U320 SCSI 10K rpm	32-Bit, 64-Bit	WS3, WS4	AA614A
HP 300 GB U320 SCSI 10K rpm	32-Bit, 64-Bit	WS3, WS4	DY672A
<b>Hard Drive Accessories</b>			
Bracket HDD 3.5" to 5.25"	32-Bit, 64-Bit	WS3, WS4	DY659A
Cable, 3 port SCSI xw4200/6200	32-Bit, 64-Bit	WS3, WS4	DY661A
<b>Removable Drive Enclosures</b>			
StorCase DX115 SATA Removable Enclosure			EA332AA
StorCase DX115 SATA/SAS Carrier Tray			RA697AA

### After-Market Options

Controllers		Windows XP	Red Hat Linux	Part Number
<b>SCSI Controllers</b>				
	U320 SCSI Controller - LSI 20320AR RAID 0,1	32-Bit		DZ554A
<hr/>				
Removable storage devices		Windows XP	Red Hat Linux	Part Number
	512 MB USB 2.0 Drive Key II	32-Bit, 64-Bit	WS3, WS4	ED516AA
	1 GB USB 2.0 Drive Key II	32-Bit, 64-Bit	WS3, WS4	AG382AA
	1.44 MB Internal Floppy Drive	32-Bit, 64-Bit	WS3, WS4	DY670A
	HP StorageWorks DAT 24 USB external tape drive	32-Bit, 64-Bit	WS3, WS4	DW070A
	HP StorageWorks DAT 24 USB internal tape drive	32-Bit, 64-Bit	WS3, WS4	DW069A
	HP StorageWorks DAT 40 USB external tape drive	32-Bit, 64-Bit	WS3, WS4	DW023A
	HP StorageWorks DAT 40 USB internal tape drive	32-Bit, 64-Bit	WS3, WS4	DW022A
	HP StorageWorks DAT 72 USB external tape drive	32-Bit, 64-Bit	WS3, WS4	DW027A
	HP StorageWorks DAT 72 USB internal tape drive	32-Bit, 64-Bit	WS3, WS4	DW026A
	HP StorageWorks DAT 72 SCSI external tape drive	32-Bit, 64-Bit	WS3, WS4, 7.2, 7.3	Q1523B
	HP StorageWorks DAT 72 SCSI internal tape drive	32-Bit, 64-Bit	WS3, WS4, 7.2, 7.3	Q1522B
<hr/>				
Input/Output Devices		Windows XP	Red Hat Linux	Part Number
<b>Keyboards</b>				
	HP PS/2 Standard Keyboard	32-Bit, 64-Bit	WS3, WS4	DT527A
	HP USB Standard Keyboard	32-Bit, 64-Bit	WS3, WS4	DT528A
	HP USB Smart Card Keyboard (Carbonite/Silver)	32-Bit, 64-Bit	WS3, WS4	ED707AA
<b>Pointing Devices</b>				
	HP PS/2 2-Button Scroll Mouse	32-Bit, 64-Bit	WS3, WS4	DD440B
	HP USB 2-Button Optical Scroll Mouse	32-Bit, 64-Bit	WS3, WS4	DC172B
	HP USB Optical 3-button mouse	32-Bit, 64-Bit	WS3, WS4	DY651A
	HP USB Optical 3-button 2.9M OEM Mouse	32-Bit, 64-Bit	WS3, WS4	ET424AA
	HP USB Spaceball 5000	32-Bit, 64-Bit	Not Supported	DV675A
	HP USB SpaceMouse	32-Bit, 64-Bit	Not Supported	DZ203A
	HP SpacePilot 3D USB Intelligent Controller	32-Bit, 64-Bit	Not Supported	EF390AA
<hr/>				
Networking		Windows XP	Red Hat Linux	Part Number
<b>NICs</b>				
	Intel Pro/1000 GT Gigabit PCI NIC	32-Bit	WS3, WS4	AG393AA
	Broadcom 5751 Netxtreme Gigabit PCIe NIC	32-Bit, 64-Bit	WS3, WS4	EA833AA

### After-Market Options

Memory (DIMMs)	Windows XP	Red Hat Linux	Part Number
<b>DDR2-533 Memory DIMMs(ECC Unbuffered)</b>			
HP 256-MB (1x256 MB) PC2-4200 DDR2-533 non-ECC RAM	32-Bit, 64-Bit	WS3, WS4	PV558AA
HP 256-MB (1x256 MB) PC2-4300 DDR2-533 ECC Unbuffered RAM	32-Bit, 64-Bit	WS3, WS4	PY575AA
HP 512-MB (1x512MB) PC2-4200 DDR2-533 non-ECC	32-Bit, 64-Bit	WS3, WS4	PV560AA
HP 512-MB (1x512MB) PC2-4300 DDR2-533 ECC Unbuffered RAM	32-Bit, 64-Bit	WS3, WS4	PY576AA
HP 2GB (1x2GB) PC2-4200 DDR2-533 ECC RAM	32-Bit, 64-Bit	WS3, WS4	EE599AA
<b>PC2-5300 (DDR2-667) Memory DIMMs (ECC Unbuffered)</b>			
HP 256-MB (1x256 MB) DDR2-667 ECC RAM	32-Bit, 64-Bit	WS3, WS4	PV939A
HP 512-MB (1x512 MB) DDR2-667 ECC RAM	32-Bit, 64-Bit	WS3, WS4	PV940A
HP 1-GB (1x1 GB) DDR2-667 ECC RAM	32-Bit, 64-Bit	WS3, WS4	PV941A

Monitors	TFTs	Part Number
	HP TFT LP2465 (24-inch)	EF224A5#
	HP TFT L2335 (23-inch)	P9615W#
	HP TFT LP2065 (20.1-inch) TCO03 Two Tone (Carbonate/Silver)	EF227A5#
	HP TFT L2035 (20.1-inch)	P9614W#
	HP TFT L1955 (19.1-inch)	PH466A4#ABA

Multimedia	Windows XP	Red Hat Linux	Part Number
Adaptec Fireconnect 2100 Firewire (1394a) PCI Card (Windows only)	32-Bit, 64-Bit		PA997A
<b>NOTE:</b> Although HP Personal Workstations can be ordered with the HP Installer Kit for Linux and an IEEE 1394A card, HP cannot provide customer support for this configuration. Please refer to the Linux Hardware Support Matrix ( <a href="http://www.hp.com/support/linux_hardware_matrix">http://www.hp.com/support/linux_hardware_matrix</a> ) for details, and to the Linux User Manual ( <a href="http://www.hp.com/support/linux_user_manual">http://www.hp.com/support/linux_user_manual</a> ) for tips on user-enablement of the IEEE 1394A Card.			

Audio	Part Number
SoundBlaster X-Fi XtremeMusic Audio Card (Windows only)	EA326AA
HP Satellite Speakers	ZD929AA

### After-Market Options

Optical Drives	Windows XP	Red Hat Linux	Part Number
<b>DVD-ROM Drive</b> 16X DVD-ROM w/ +R read	32-Bit, 64-Bit	WS4	AA620B
<b>CD-ROM Drive</b> 48X Max CD-ROM Drive	32-Bit, 64-Bit	WS3, WS4	DC143B
<b>CD-RW Drive</b> 48X CD-RW Drive (Roxio software)	32-Bit, 64-Bit	WS3, WS4	DE205B
<b>Combo Drive</b> 48X Combo DVD-ROM/CD-RW Drive (Roxio & WinDVD on Microsoft Windows)	32-Bit, 64-Bit	WS3, WS4	DE206B
<b>DVD+/-RW Drive</b> HP 16X DVD+/-RW, DL, LightScribe Drive <i>*(LightScribe software works with Windows 32-Bit only.)</i>	32-Bit, 64-Bit*	WS3, WS4*	DZ555B
<hr/>			
<b>Security</b>			<b>Part Number</b>
Chassis clamp lock, universal, no cable			DE817A
Chassis clamp lock, universal, with cable			DE818A
<hr/>			
<b>Brackets/Stand</b>			<b>Part Number</b>
Depth Adjustable Rails (stationary)			332558-B21
Sliding Shelf kit			234672-B21
Fixed shelf kit			253449-B21
<hr/>			
<b>Other Devices</b>			<b>Part Number</b>
Agere 2006 PCI High-Speed International SoftModem (32-Bit, 64-Bit)			EK694AA
Agere Systems PCI International Softmodem (32-Bit)			DC132D
Modem RJ11 Adapter Kit			DC131C
2nd serial port adapter			PA716A
Front Card Guide and Fan Kit			DY648A
HP xw4 Depth Adjustable Fixed Rail Rack Kit			EK729AA
<hr/>			
<b>Operating Systems</b>			<b>Part Number</b>
Red Hat Linux WS 3, Update 7, 32-bit OS			RA354AA
Red Hat Linux WS 3, Update 7, 64-bit OS			RA355AA
Red Hat Linux WS 4, Update 3, 32/64-bit OS			RA356AA

### After-Market Options

Software	Windows XP	Red Hat Linux	Part Number
HP Remote Graphics SW V3 for HP Systems LTU	32-Bit	WS3, WS4	PY682AA
HP Remote Graphics SW V3 Receiver LTU	32-Bit	WS3, WS4	PY684AA
HP Remote Graphics SW V3 CD-ROM Media	32-Bit	WS3, WS4	PY685AA
HP Remote SW for HP 1yr Update Subscription	32-Bit	WS3, WS4	PN680A
HP Remote SW Receiver 1yr Update Subscription	32-Bit	WS3, WS4	PN682A
<b>HP Care Pack Services</b>			
Next Business Day Onsite, HW Support, CPU Only- 4 yrs			U7942E
Next Business Day Onsite, HW Support, CPU Only - 5 yrs			U7944E
Next Day Onsite Response- 4 yrs			U7941E
Next Day Onsite Response - 5 yrs			U7943E
4-Hour, 9x5 Onsite, HW Support, CPU only - 3 yrs			U4873E
4-Hour, 9x5 Onsite, HW Support, CPU only, 4 yrs			U7946E
4-Hour, 9x5 Onsite, HW Support, CPU only, 5 yrs			U7948E
Basic 8-5, 4-Hour Onsite Response - 3 yrs			U4874E
Basic 8-5, 4-Hour Onsite Response - 4 yrs			U7945E
Basic 8-5, 4-Hour Onsite Response - 5 yrs			U7947E
4-Hour Onsite Response, 24x7, CPU Only - 4 yrs			U7950E
4-Hour Onsite Response, 24x7, CPU Only - 5 yrs			U7952E
4-Hour Onsite Response, 24x7 - 4 yrs			U7949E
4-Hour Onsite Response, 24x7 - 5 yrs			U7951E
Software Technical Support, Unlimited, 9x5 - 1 yr			U4381E
4-Hour Onsite, Extended Hours Response, CPU Only - 5 yrs			U7940E
Software Technical Support, Unlimited, 24x7 - 1 yr			U4382E
4-Hour Onsite, Extended Hours Response - 5 yrs			U7939E
Software Technical Support, 10 incidents, 9x5 - 1yr			UA382E
Software Technical Support, 10 incidents, 24x7- 1yr			UA383E
Software Technical Support, 25 incidents, 9x5- 1yr			UA396E
Software Technical Support, 25 incidents, 24x7			UA385E
Software Technical Support, 50 incidents, 9x5- 1yr			UA398E
Software Technical Support, 50 incidents, 24x7- 1yr			UA387E
Post Warranty Service, Next Day Onsite, CPU Only			U4867PE
Post Warranty Service, 4-Hour, 9x5 Onsite, HW Support, CPU only			U4877PE
Post Warranty Service, Next Day Onsite			U4868PE
Post Warranty Service, 4-Hour, 9x5 Onsite, HW Support			U4878PE
Installation for 2+ IA 32 Workstation; Basic - 1yr			U4879E
Installation for 1 IA 32 Workstation; Basic - 1yr			U4876E

### Memory

#### Intel 955X Express chipset

#### DDR2 SDRAM ECC MEMORY

Only unbuffered DDR2 DIMMs are supported and must be either x8 or x16 width. Memory upgrades are accomplished by adding DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The Intel 955X chipset supports ECC 667 MHz (PC2-5300) DDR2 memory or non-ECC and ECC 533 MHz (PC2-4300) DDR2 memory.

For best performance the total amount and type of memory loaded into Channel A and Channel B should be the same. If it is not, your computer will see all the RAM installed but will run the memory controller at a lower performance mode. Although not required, for best performance add the memory in pairs rather than as a single DIMM (two 512 MB DIMMs will have better performance than a single 1 GB DIMM). Also, add the memory into both channels (e.g. one in socket 1 and one in socket 3) to take advantage of dual channel performance. If you have unused slots within a channel, make them socket 2 and socket 4. This provides the best margin for the memory bus.

#### CAUTION:

Mixing speeds will mean that the memory runs at the speed of the slowest DIMM.

Do not mix ECC and non-ECC memory. The system will not boot if ECC and non-ECC DIMMs are mixed.

Do not mix single-sided and double-sided DIMMs. Both sides of a double-sided DIMM must have the same memory size. Each rank (side) of the DIMM must be the same size.

#### MAXIMUM MEMORY

Supports up to 8 GB of ECC DDR2 533 MHz or 4 GB of DDR2 667 MHz SDRAM

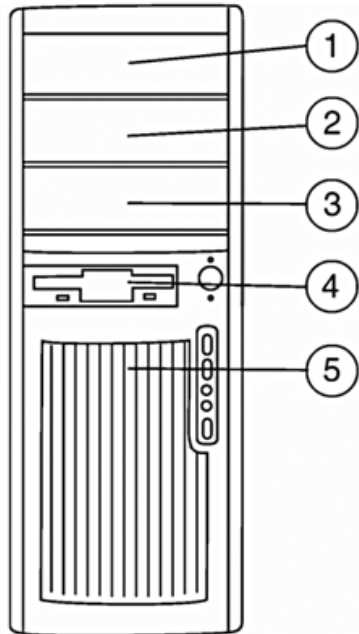
#### POSSIBLE MEMORY CONFIGURATIONS

*Not all memory configurations possible are represented below.*

DIMM Size	Slot			
	1	2	3	4
256 MB (single channel performance configuration)	256 MB			
512 MB	256 MB		256 MB	
1 GB	512 MB		512 MB	
1.5 GB	256 MB	512 MB	256 MB	512 MB
2 GB	1 GB		1 GB	
2 GB	512 MB	512 MB	512 MB	512 MB
4 GB	1 GB	1GB	1 GB	1GB
4 GB	2 GB		2 GB	
6 GB	1 GB	2 GB	1 GB	2 GB
8 GB	2 GB	2 GB	2 GB	2 GB

### Storage

Tower configuration



	Quantity Supported	Position Supported	Controller
<b>Convertible Minitower</b>			
Optional Diskette Drive	1	4	Diskette
Optical Disk Drives	2	1, 2	IDE
Hard Disk Drives	2 standard (4 SATA w/AM0) (3 SCSI w/AM0)	5, 6 (and 2 or 3, for 3rd or 4th drives using optical bays, adapter kit(s) required)	SATA (and/or optional SCSI) Factory Integrated RAID* 0, 1 User configurable SATA RAID 0, 1 5, 10 standard

\* **NOTE:** Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf> for RAID capabilities with Linux.

### Additional Technical Specifications

<b>System Board</b>	
Architecture	Intel Pentium 4 EM64T/PCI-E
Chipset	Intel 955X Express North Bridge/ICH7R South Bridge
Super I/O Controller	SMSC SCH5307
System Board Form Factor	ATX
Processor Socket	LGA775
DIMM Connectors (DDR2, 1.8V)	4 ECC support
AGP Connector (1.5V)	None
Integrated Graphics	None
PCI Connectors (5.0V)	3 full length 33 MHz 32-bit
PCI Express Connectors (v1.0a)	1 x16 1 x8* (x4 bandwidth) 1 x1
Flash ROM	Yes
AC97 integrated audio	Yes
CD ROM IN (Audio)	No
AUX IN (Audio)	Yes
Internal speaker	Yes
Clear CMOS Button	Yes
CPU Fan Header	Yes
Chassis Fan Header	Yes
Chassis Speaker Header	Yes
CMOS Battery Holder – Lithium	Yes
Hood Lock Header	Yes
Hood Sensor Header	Yes
Multibay Header	No
Integrated SATA RAID	<ul style="list-style-type: none"> <li>• Multiple Volume support to enable RAID 0, RAID 1, RAID 5, or RAID 10 on a single array</li> <li>• Support for 1 or 2 RAID arrays on 4 ports for RAID 0 or RAID 1</li> <li>• RAID 1 spare and auto-rebuild</li> <li>• Matrix RAID* support</li> <li>• AHCI support for NCQ drives</li> <li>• 3 Gb/s drive support</li> </ul> <p><b>* NOTE:</b> Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <a href="http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf">http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf</a> for RAID capabilities with Linux.</p>
Integrated Broadcom NetXtreme Gigabit ethernet for HP	Yes
Wake-On-Lan®	Yes



### Additional Technical Specifications

ASF 1.0 and 2.0 (Alert Standard Format)	Yes
Power Supply Header	Yes
Power Switch, Power LED & Hard Drive LED Header	Yes
Password Clear Header	Yes
Riser Connector	None
HDD activity LED Header	Yes
PCI extender that connects to System Board	None

### Technical Specifications

<b>Cooling</b>	
Chassis Fan	92 mm
Processor Heatsink Fan	70 or 80 mm
Power Supply Fan	92 mm

<b>Power Supply</b>			
Full Ranging Input (Line Select Switch)	Yes		
Active Power Factor Correction (APFC) (Input Current is nearly 1/2 a non-APFC PS)	Yes		
Passive Power Factor Correction (PFC)	No		
Operating Voltage Range	90 – 264 VAC/118 VAC		
Rated Voltage Range	100 – 240 VAC		
Rated Line Frequency	50-60 Hz/400Hz		
Operating Line Frequency Range	47 – 66 Hz/393 – 407Hz		
Rated Input Current	7.4A/7.4A		
Maximum Rated Power	460 Watt Continuous		
Heat Dissipation	Typical 733.8 btu/hr Maximum 2415.4 btu/hr		
Power Supply Fan	92mm variable speed		
PS Size	3.84 x 5.91 x 6.05 in (97.6 x 150 x 153.71 mm)		
Energy Star Compliant	Yes		
FEMP Standby Power Compliant (<2W in S5 - Power Off)	Yes if Wake-on-LAN disabled. System board may draw more power if Wake-on-LAN enabled.		
Power Consumption in ES Mode - Suspend to RAM (S3) (Instantly Available PC)	~2W (will depend on configuration)		
Surge Tolerant Full Ranging Power Supply	Withstands power surges up to 2000V		
Typical configuration power consumption	One processor (1 x 3.60 GHz 2 MB L2 Cache, Pentium 4 Processor with HT Technology) One GB memory (2 x 512 MB) Two hard drives (2 x SATA 40 GB) CD-ROM drive PCI Express Graphics Card (NVIDIA FX 1400) One diskette Monitor		
	<b>Input Power consumption</b>	<b>@ 120Vac/60Hz</b>	
	Typical operating mode (system busy)	215 W	= 733.8 btu/hr
	Windows XP Idle	107 W	= 365.2 btu/hr
	Standby mode (S3)	2 W	= 6.83 btu/hr

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	Hibernate mode (S4)	~1 W	= 3.41 btu/hr *
	Power Off (S5)	~2 W	= 6.83 btu/hr *
		~1 W	= 3.41 btu/hr *
* when Wake-on-LAN disabled			

ROM Features	Description
PCI 3.0 Support	Full BIOS support for PCI Express through industry standard interfaces.
ASF 2.0 Compliant	Allows workstation status to be monitored on a remote console.
BIOS Boot Spec 1.01+	Provides more control over how and from what devices the workstation will boot.
BIOS Power on	Users can define a specific date and time for the system to power on.
Instantly Available PC (Suspend to RAM - ACPI sleep state S3)	Allows for very low power consumption with quick resume time
ROM Based Computer Setup Utility (F10)	Review and customize system configuration settings controlled by the BIOS.
Remote System Installation via F12 (PXE) (Remote Boot from Server)	Allows a new or existing system to boot over the network and download software, including the operating system
System/Emergency ROM Flash Recovery with Video	Recovers corrupted system BIOS
CMOS Archive and CMOS Restore	Holding down the power button restores the last known good BIOS settings.
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Enable or disables serial, parallel, USB, audio, and network ports
Removable Media Write Control/ Boot Control	User can prevent the workstation from writing to or booting from removable media
Power-On Password	Prevents an unauthorized person from booting up the computer
Setup Password	Prevents an unauthorized person from changing the system configuration
Replicated Setup	Saves BIOS settings to diskette or USB flash device in human readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering Computer Setup Utility (F10)
Memory Change Alert (Requires HP Client Manager Software)	Alerts management console if memory is removed or changed
Thermal Alert (Requires HP Client Manager Software)	Monitors the temperature state within the chassis. Three modes: <ul style="list-style-type: none"> <li>● NORMAL - normal temperature ranges</li> <li>● ALERTED - excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown</li> <li>● SHUTDOWN - excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs</li> </ul>
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console
Remote Wakeup	<ul style="list-style-type: none"> <li>● System administrators can power on, restart, and power off a client computer from a remote location.</li> </ul>

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ACPI (Advanced Configuration and Power Management Interface)	<ul style="list-style-type: none"> <li>Allows the system to enter and resume from low power modes (sleep states)</li> <li>Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system</li> <li>Supports ACPI 2.0 for full compatibility with 64-bit operating systems</li> </ul>
SMBIOS	System Management BIOS 2.3.5, previously known as DMI BIOS, for system management information
ROM revision levels	Identifies system ROM revision levels and reports in Computer Setup Utility (F10). Version is stored in an industry standard memory location (SMBIOS) so that management SW applications can use and report this information
System board revision level	<ul style="list-style-type: none"> <li>Allows management SW to read revision level of the system board</li> <li>Revision level is digitally encoded into the HW and cannot be modified</li> </ul>
Ownership Tag	A user-defined string stored in non-volatile memory that is displayed in the BIOS splash screen

Industry Standard	Revision Supported by the BIOS
ACPI	Advanced Configuration and Power Management Interface, Version 2.0
ASF	Alert Standard Format Specification, Version 2.0
ATA (IDE)	ATA Attachment 6 with Packet Interface (ATA/ATAPI-6), Revision 3b
ATAPI	ATAPI Removable Media Device BIOS Specification Version 1.0
BBS	BIOS Boot Specification v1.01
BIOS 32-bit Services	Standard BIOS 32-bit Service Directory Proposal
CD Boot	"El Torrito" Bootable CD-ROM Format Specification Version 1.0
EDD	<ul style="list-style-type: none"> <li>Enhanced Disk Drive Specification Version 1.1</li> <li>BIOS Enhanced Disk Drive Specification Version 3.0</li> </ul>
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision 1.0
PCI	<ul style="list-style-type: none"> <li>PCI Local Bus Specification, Revision 2.3</li> <li>PCI Power Management Specification, Revision 1.1</li> <li>PCI Firmware Specification, Revision 3.0, Draft .7</li> </ul>
PCI Express	PCI Express Base Specification, Revision 1.0a
PMM	POST Memory Manager Specification, Version 1.01
SATA	<ul style="list-style-type: none"> <li>Serial ATA Specification, Revision 1.0a</li> <li>Serial ATA 3 Gb/s: Extensions to Serial ATA 1.5 Gb/s, Revision 1.0</li> </ul>
SMBIOS	System Management BIOS Reference Specification, Version 2.4
SPD	PC SDRAM Serial Presence Detect (SPD) Specification, Revision 1.2B
TPM	Trusted Computing Group TPM Specification Version 1.2
UHCI	Universal Host Controller Interface Design Guide, Revision 1.1
USB 1.1	Universal Serial Bus Revision 1.1 Specification
USB 2.0	Universal Serial Bus Revision 2.0 Specification

<b>Other deployment &amp; management features</b>	
HP Client Management Solutions	<p>HP Client Management Solutions help simplify management of Workstations and significantly reduce total ownership costs. These solutions share a common design and are highly integrated due to the extensive work between HP and its partner Altiris.</p> <p>HP Client Manager Software is included free with all HP business PCs and Workstations. It enables central tracking, monitoring, and management of the hardware aspects of HP client systems:</p> <ul style="list-style-type: none"> <li>Get valuable hardware information such as CPU, memory, video, and security settings</li> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <li>● Monitor system health to fix problems before they occur</li> <li>● Install drivers and BIOS updates without visiting each PC</li> <li>● Remotely configure BIOS and security settings</li> <li>● Automate processes to quickly resolve hardware problems</li> </ul> <p>Additional Altiris solutions (fee-based) are available to address Workstation management challenges through the entire IT lifecycle including:</p> <ul style="list-style-type: none"> <li>● Inventory assessment</li> <li>● Software license compliance</li> <li>● Personality migration</li> <li>● Software image deployment</li> <li>● Software distribution</li> <li>● Asset management</li> <li>● Client backup and recovery</li> <li>● Problem resolution</li> </ul> <p>Visit <a href="http://www.hp.com/go/easydeploy">http://www.hp.com/go/easydeploy</a> for more information, to download HP Client Manager Software, and to evaluate the Altiris solutions.</p>
System Software Manager (free)	A free utility that detects and updates BIOS, device drivers, and management agent versions on your networked PCs and workstations
Replicated Setup	Saves BIOS settings to diskette or USB disk-on-key in human readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering ROM-based F10 setup
Software Restore CD	Restores computer to its original factory shipping image
Asset Tag	<ul style="list-style-type: none"> <li>● Repository for storing company-specific property asset numbers for easy tracking</li> <li>● Initially set equal to the system serial number</li> <li>● Stored in a protected section of non-volatile memory that can be accessed and modified with the F10 Setup program</li> </ul>
DIMM Serial Presence Detect	Detects whether or not memory DIMMs are present and their type
Hard drive serial number, model, and manufacturer	Hard drive manufacturer, model, and serial number is stored in the hard drive firmware and reported in ROM-based F10 setup
System serial number, model, & manufacturer	System serial number, model, & manufacturer stored in a non-volatile memory and can be retrieved with management SW or viewed in ROM-based F10 setup
ROM revision levels	Identifies system ROM revision levels and reports in ROM-based F10 setup Version is stored in an industry standard memory location (SMBIOS) so that management SW applications can use and report this information
System board revision level	<ul style="list-style-type: none"> <li>● Allows management SW to read revision level of the system board</li> <li>● Revision level is digitally encoded into the HW and cannot be modified</li> </ul>
Memory Change Alert (Requires HP Client Manager Software)	Alerts management console if memory is removed or changed
Ownership Tag	A user-defined string stored in non-volatile memory that is displayed in the BIOS splash screen
Ultra ATA Integrity Monitoring (CRC Checking)	A feature of SATA and SCSI, Cyclic Redundancy Checking provides data transfer verification and proactive notification of hard drive data transmission problems with recommendations for enhancing system performance. It detects all the following errors' types: <ul style="list-style-type: none"> <li>● single-bit errors</li> <li>● double-bit errors</li> <li>● an odd number of errors</li> <li>● error bursts up to 32-bits long</li> </ul>

### Technical Specifications

<p>Drive Self Tests (DPS)</p>	<ul style="list-style-type: none"> <li>• Drive Protection System (Adaptec and LSI SCSI controllers do not offer DPS)</li> <li>• A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user.</li> <li>• Running independently of the operating system, it can be accessed through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced.</li> </ul> <p>The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures DPS Access through F10 Setup during Boot (F10 diagnostic access not available with SCSI drives)</p>
<p>SMART Technology (Self-Monitoring, Analysis and Reporting Technology)</p>	<p>Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count.</p> <p>By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure.</p> <p>SMART I – Drive Failure Prediction SMART II – Off-Line Data Collection SMART III – Off-Line Read Scanning with Defect Reallocation</p>

<b>Security Features</b>	
<p>Padlock support</p>	<p>Padlock loop in rear of chassis. Locks side cover and secures chassis from theft. (0.22" diameter)</p>
<p>Cable Lock Support</p>	<p>Kensington lock slot in rear of chassis. Locks side cover and secures chassis from theft. (3mm x 7mm opening)</p>
<p>Universal chassis clamp lock support</p>	<p>Threaded feature in rear of chassis. Locks side cover and locks cables to chassis. Secures chassis from theft and allows multiple units to be chained together when used with optional cable.</p>
<p>Solenoid lock and hood sensor</p>	<p>Yes</p>
<p>Serial, Parallel, USB Enable/Disable</p>	<p>Enable or disable serial, parallel or USB ports and hide them from the operating system</p>
<p>Removable Media Write/Boot Control</p>	<p>Prevents the computer from being booted from removable media on supported devices (and can disable writes to media)</p>
<p>Power-On Password</p>	<p>Prevents an unauthorized person from booting up the computer</p>
<p>Setup Password</p>	<p>Prevents an unauthorized person from changing the system configuration</p>

### Technical Specifications

<b>System Software Updating</b>	
Product Change Notification	<ul style="list-style-type: none"> <li>• Program to proactively communicate Product Change Notifications (PCNs) and Customer Advisories by email to customers, based on a user-defined profile.</li> <li>• PCNs provide advance notification of hardware and software changes to be implemented in the factory providing time to plan for transition.</li> <li>• Customer Advisories provide concise, effective problem resolution, greatly reducing the need to call technical support.</li> </ul>
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console
Remote Wakeup/Remote Shutdown	<ul style="list-style-type: none"> <li>• System administrators can power on, restart, and power off a client computer from a remote location.</li> <li>• Enables cost-effective power consumption when the administrator needs to distribute software, perform security management, or update the ROM.</li> </ul>
ROM Based Setup (F10) and Start-up Diagnostics	Yes
Support Software CD & WWW	Yes

<b>Other Features</b>	
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). <ul style="list-style-type: none"> <li>• Allows the system to wake from a low power mode.</li> <li>• Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system</li> </ul>

<b>Serviceability Features of System</b>	
Access panel	Tool-less
Optical drives	Tool-less
Floppy drive	Tool-less
Hard drives	Tool-less
Expansion cards	Tool-less
Green user touch points	Yes, on tool-free internal chassis mechanisms
Color-coordinated cables and connectors	Yes
Memory	Tool-less, can be upgraded without removing any internal components
System board	Tool-less removal
Dual Color Power and HD LED on Front of Computer (Indicates Normal Operations and Fault Conditions)	green – normal red – fault
System/Emergency ROM Flash Recovery with Video	Recovers corrupted system BIOS.
Configuration Record SW	Yes
Over-Temp Warning on Screen (Requires IM Agents)	Yes

### Technical Specifications

Restore CD set	Restores the computer to its original factory shipping image
Flash ROM	Yes
3.3V Aux Power LED on System PCA	Yes
Dual Function 5V Aux Power LED (ON)/PS_ON LED (OFF) on System PCA	Yes
Diagnostic Power Switch LED on board	Yes
Clear Password Jumper	Yes
Clear CMOS Button	Yes
CMOS Battery Holder for easy Replacement	Yes
Processor ZIF Socket for easy Upgrade	Yes
DIMM Connectors for easy Upgrade	Yes
NIC LEDs (integrated) (Green & Amber)	Used to determine NIC status
ASF 1.0 support (Alert Standard Format)	Industry-standard specification for network alerting in operating system-absent environments
Dual function front power switch	Also acts as a reset switch when held for 4 seconds

<b>Service and Support</b>	On-site Warranty and Service ( <a href="#">Note 1</a> ): This three-year, limited warranty and service offering delivers three years of on-site, next business-day ( <a href="#">Note 2</a> ) service for parts and labor and includes free telephone support ( <a href="#">Note 3</a> ) 24 x 7. Global coverage ( <a href="#">Note 2</a> ) ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering.
	<b>NOTE 1:</b> Terms and conditions may vary by country. Certain restrictions and exclusions apply.
	<b>NOTE 2:</b> On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.
	<b>NOTE 3:</b> Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.



### Technical Specifications - Audio

<b>High Definition Integrated Realtek ALC260 Audio</b>	<b>Type</b>	Integrated
	<b>High Definition Codec</b>	Yes
	<b>FM Synthesis Support</b>	Yes
	<b>OPL3 FM Synthesis Support</b>	Yes
	<b>Sound Blaster Compatibility</b>	Yes
	<b>SPDIF 6-channel pass-through</b>	No
	<b>Audio Jacks</b>	One Front fixed stereo analog Microphone-In (20-K ohm Input Impedance); One Front fixed stereo Headphone-Out (expects at least a 32ohm load) One Line-In* (12-K ohm Input Impedance)* One Line-Out * (less than 800 ohms Output Impedance, expects at least a 10-K ohm load) One Stereo analog Microphone-In* (20-K ohm Input Impedance)
		<b>NOTE:</b> *Rear audio port are re-taskable as Line-In, Line-Out, Microphone-In, or Headphone-Out with Optional driver, available only through download from HP support website and not supported by default. External Speakers need to be powered externally.
	<b>Sampling</b>	44.1 kHz/48 kHz/96 kHz/192 kHz (output only)
	<b>Wavetable Syntheses (software)</b>	Yes – GM and FM Midi Support, Direct Music and Down Loadable Soundset (4 Meg DLS Level 1 and 2 Support)
	<b>3D Positional Sound</b>	No
	<b>Digital Audio</b>	Yes
	<b>Analog Audio</b>	Yes
	<b>DVD Audio</b>	Yes
	<b>Number of Channels on Line-Out (mono/stereo)</b>	Stereo (Left & Right channels)
<b>Internal Audio Speaker Power Rating</b>	1.5 W	
<b>Internal Speaker</b>	Yes	
<b>Hardware Equalizer for Internal Speaker</b>	No	
<b>External Speaker Jack (Line-Out)</b>	Yes	
<b>Sound Blaster X-Fi XtremeMusic Audio Card</b>	<b>Audio Quality</b>	Total Harmonic Distortion + Noise at 1kHz (20kHz Low-pass filter) = 0.004%
	<b>Signal to Noise Ratio (SNR)</b>	Signal-to-Noise Ratio (20kHz Low-pass filter, A-Weighted) <ul style="list-style-type: none"> <li>● Stereo Output: 109dB</li> <li>● Front and Rear Channels: 109dB</li> <li>● Center, Subwoofer and Side Channels: 109dB</li> </ul>

### Technical Specifications - Audio

<b>Sound Conversion</b>	24-bit Analog-to-Digital conversion of analog inputs at 96kHz sample rate 24-bit Digital-to-Analog conversion of digital sources at 96kHz to analog 7.1 speaker output 24-bit Digital-to-Analog conversion of stereo digital sources at 192kHz to stereo output	
<b>Recording/Sampling Rate</b>	44.1, 48 and 96kHz	
<b>ASIO 2.0 support</b>	16-bit/44.1kHz, 16-bit/48kHz, 24-bit/44.1kHz 24-bit/48kHz and 24-bit/96kHz with direct monitoring	
<b>Enhanced SoundFont support</b>	up to 24-bit resolution 24-bit/96kHz	
<b>DACs</b>	24-bit/192kHz	
<b>Voice Support</b>	128 voices	
<b>Max. Channels in 3D Positional Audio</b>	7.1	
<b>EAX® ADVANCED HD™ 5.0 support</b>	Yes including EAX® MacroFX™, EAX® PurePath™ and Environment FlexiFX™	
<b>Connectors</b>	FlexiJack (Performing a 3-in-1 function, Digital In / Line In / Microphone) via 3.50 mm minijack Line level out (Front / Rear / Center / Subwoofer / Rear Center) via 3.50 mm minijacks AUX_IN line-level analog input via 4-pin Molex connector on card One AD_Link (26 pin) connector for linking to the X-Fi I/O Console (upgrade option)	
<b>Dimensions</b>	7.25" x5" x .9" ( x x )	
<b>Additional product features</b>	<b>Movies</b>	THX Certification Dolby Digital EX 6.1 Playback DTS-ES 6.1 Playback
	<b>Music</b>	X-Fi 24-bit Crystalizer CMSS-3D SuperRip
	<b>Audio Creation</b>	Pristine audio playback quality with a near transparent SRC engine Up to eight 24 bit hardware effects ASIO recording with latency as low as one millisecond 24-bit SoundFont® sampling 3D MIDI
	<b>Gaming</b>	EAX ADVANCED HD 5.0
	<b>Software Bundle</b>	Doom 3 Sound Blaster EAX patch Entertainment Mode Audio Creation Mode Game Mode Mode Switcher Audio Console Creative MediaSource

### Technical Specifications - Audio

			Creative MediaSource DVD-Audio Player
			DTS Neo:6 Settings
			Karaoke Player
			Entertainment Center
			Smart Recorder
			SoundFont Bank Manager
			Speaker Connection Wizard
			THX Setup Console
			Vienna SoundFont Studio
			Volume Panel
			WaveStudio
			Console Launcher
			Creative Media Toolbox
			Creative Diagnostics
<b>Minimum system requirements</b>	<b>System RAM</b>		256MB
	<b>Hard disk</b>		600MB free space
			Available PCI 2.1 slot for the audio card
			CD-ROM/CD-RW or CD/DVD-ROM required for software installation
	<b>Operating System</b>		Microsoft® Windows® XP Service Pack 2 (SP2)

### Technical Specifications - Communications

<b>Broadcom BCM5752 NetXtreme Gigabit Ethernet LOM (PCIe)</b>	<b>Connector</b>	RJ-45
	<b>Controller</b>	Broadcom 5752 PCI-E LAN Controller
	<b>Memory</b>	Integrated 64KB receive buffer and 8KB transmit buffer
	<b>Data rates supported</b>	10/100/1000 Mbps
	<b>Compliance</b>	IEEE 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	<b>Bus architecture</b>	PCIe 1.0a
	<b>Data path width</b>	X1
	<b>Data path speed</b>	2.5Gbit per sec per direction transfer rate
	<b>Data transfer mode</b>	Bus-master DMA
	<b>Hardware certifications</b>	
	<b>Power requirement</b>	1.5 watts @ +3.3V AUX supply
	<b>Boot ROM support</b>	Yes
	<b>Network transfer rate</b>	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T, 1000 Mbps
	<b>Operating system driver support</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux 3
	<b>Management capabilities</b>	WOL, PXE
	<b>Alerting</b>	ASF 2.0

<b>Broadcom BCM5751 NetXtreme Gigabit Ethernet Controller (PCIe)</b>	<b>Connector</b>	RJ-45
	<b>Controller</b>	Broadcom 5751 PCI-E 1.0a LAN Controller
	<b>Memory</b>	Integrated 96Kb frame buffer memory
	<b>Data rates supported</b>	10/100/1000 Mbps
	<b>Compliance</b>	IEEE 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	<b>Bus architecture</b>	PCI-E 1.0a
	<b>Data path width</b>	X1
	<b>Data path speed</b>	2.5Gbit per sec per direction transfer rate
	<b>Data transfer mode</b>	Bus-master DMA
	<b>Hardware certifications</b>	FCC class B, NRTL Mark Canada and United States, C-Tick for Australia, BSMI for Taiwan, VCCI for Japan, MIC for Korea, GOST for Russia
	<b>Power requirement</b>	3.1 watts @ +3.3V AUX supply
	<b>Boot ROM support</b>	Yes

### Technical Specifications - Communications

<b>Network transfer rate</b>	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T, 1000 Mbps
<b>Environmental</b>	<b>Operating temperature</b> 32° to 131° F (0° to 55° C) <b>Operating humidity</b> 85% at 131° F (55° C)
<b>Dimensions</b>	4.4 x 2.2 x 0.08 in (11.2 x 5.5 x 0.2 cm)
<b>Operating system driver support</b>	Microsoft Windows 2000 and XP, Red Hat Linux 7.2, 7.3 and Red Hat Enterprise Linux 3
<b>Management capabilities</b>	WOL, PXE , Remote cable management
<b>Alerting</b>	ASF 2.0
<b>Kit contents</b>	Broadcom 5751, CD, Broadcom 5751 Netxtreme Gigabit PCIe NIC, drivers, quick install guide, product warranty statement

<b>Agere Systems PCI International Softmodem</b>	<b>Data Transmission</b>	Technology speeds: 56,000 Kbps maximum downstream data, controllerless <b>NOTE:</b> 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	<b>Data Speeds</b>	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/ 9,600/7,200/4,800/2,400/1,200/300
	<b>Data Standards</b>	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	<b>Fax Speeds</b>	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
	<b>Fax Mode Capabilities</b>	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	<b>Error Correction and Data Compression</b>	V.44, 42bis, V.42 and MNP2-5
	<b>Power Management</b>	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
	<b>Upgradeability</b>	Driver upgradeable for future enhancements
	<b>Video</b>	ITU-T V.80 video ready interface
	<b>Other</b>	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	<b>Operating Temperature</b>	32° to 158° F (0° to 70° C)
	<b>Operating Humidity</b>	20% to 90%, non-condensing
	<b>Operating System Support</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition
	<b>OS Driver Support</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition

### Technical Specifications - Communications

<b>Power</b>	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
<b>Chipset</b>	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
<b>Dimensions (L X H)</b>	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
<b>Connection</b>	Single RJ-11 connector
<b>Other Features</b>	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
<b>Safety</b>	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
<b>EMC</b>	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
<b>Telecom</b>	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
<b>Health</b>	Bare PCB material compliant to 94V-0 or better (marked as such)
<b>Other</b>	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant
<b>Kit Contents</b>	DC132D : Agere Systems PCI International Softmodem with full-height bracket attached, additional low-profile bracket, RJ11 modem cable, driver and documentation CD. <b>NOTE:</b> RJ11 modem adapter is not included. DC131C #xxx: RJ11 modem adapter kit for use with DC132D #ACP: Austria, #ABW: Belgium (Dutch/Flemish), #AKN: Bosnia, Herzegovna, Croatia, Slovenia, Yugoslavia (Slovenian), #AKB: Czech Republic (Czech) & Slovakia, #ABF: France, #ABD: Germany, #AB7: Greece, #AKC: Hungary, #ABT: Israel, #ABZ: Italy, #ABH: Netherlands, #UUW: Nordic Region, #ACB: Russia, #ACQ: South Africa, #ACD: Switzerland, #AB8: Turkey, #ABU: UK, #ABG: Australia, New Zealand, #ACJ: India.

### Technical Specifications - Controllers

<b>U320 SCSI Controller - LSI 20320AR RAID 0,1 including external connector</b> (required with SCSI HDDs)	<b>Bus architecture</b>	PCI-X (backward compatible with PCI)
	<b>Number of supported devices</b>	Up to 15 SCSI devices
	<b>Interface protocol</b>	64 bit, 133MHz PCI-X
	<b>Host bus transfer rate</b>	Up to 1MB/s
	<b>SCSI data transfer rate</b>	Up to 320 MB/s per channel
	<b>SCSI Bus</b>	Wide Ultra320, Low Voltage Differential, and Ultra Wide Single-Ended
	<b>Internal connector</b>	68-pin HD
	<b>External connector</b>	68 pin
	<b>Total connectors</b>	2
	<b>Plug and Play Support</b>	No
	<b>Dimensions (H x L)</b>	6.6 x 2.5 in (16.9 x 6.4 cm)
	<b>Approvals</b>	CE, VCCI, Canada, C-Tick, FCC class B, UL 94V0
	<b>Operating system support</b>	Microsoft Windows XP Professional Windows XP Professional x64 Edition
	<b>Kit contents</b>	Controller card, driver CD, LED cables, user documentation and warranty card.

<b>U320 SCSI Controller - LSI 20320AR RAID 0,1 single-channel host adapter</b>	<b>Bus architecture</b>	PCI-X (backward compatible with PCI)
	<b>RAID level supported</b>	single RAID volume RAID 0, 1, or 1E
	<b>Number of supported devices</b>	Up to 15 SCSI devices
	<b>Interface protocol</b>	64 bit, 133MHz PCI-X
	<b>Host bus transfer rate</b>	Up to 1 MB/s
	<b>SCSI data transfer rate</b>	Up to 320 MB/s per channel
	<b>SCSI Bus</b>	Wide Ultra320, Low Voltage Differential, and Ultra Wide Single-Ended
	<b>Internal connector</b>	68-pin HD
	<b>External connector</b>	68-pin VHDCI
	<b>Total connectors</b>	2
	<b>Plug and Play Support</b>	No
	<b>Dimensions (H x L)</b>	6.6 x 2.5 in (16.9 x 6.4 cm)
	<b>Approvals</b>	CE, VCCI, Canada, C-Tick, FCC class B, UL 94V0
	<b>Operating system support</b>	Microsoft Windows XP Professional, Red Hat Enterprise Linux Workstation 3
<b>Kit contents</b>	Controller card, driver CD, LED cables, user documentation and warranty card.	

### Technical Specifications - Hard Drives

**Serial ATA 1.5-Gb/s Hard Drives (7200 rpm) 250 GB**

<b>Capacity</b>	250,059,350,016 bytes	
<b>Height</b>	1 in (2.6 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA	
<b>Synchronous Transfer Rate (Maximum)</b>	150 MB/s	
<b>Buffer</b>	8 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.8 ms
	<b>Average</b>	<9.0 ms
	<b>Full-Stroke</b>	≤17 ms
<b>Rotational Speed</b>	7,200 rpm	
<b>Logical Blocks</b>	488,397,168	
<b>Operating Temperature</b>	41° to 131°F (5° to 55°C)	

**400 GB**

<b>Capacity</b>	400,088,457,216 bytes	
<b>Height</b>	1 in (2.6 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA	
<b>Synchronous Transfer Rate (Maximum)</b>	150 MB/s	
<b>Buffer</b>	8 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.8 ms
	<b>Average</b>	<11.0 ms
	<b>Full-Stroke</b>	≤15 ms
<b>Rotational Speed</b>	7,200 rpm	
<b>Logical Blocks</b>	781,422,768	
<b>Operating Temperature</b>	41° to 131°F (5° to 55°C)	



### Technical Specifications - Hard Drives

#### Serial ATA 1.5-Gb/s Hard Drives (10,000 rpm) 74 GB

<b>Capacity</b>	74,355,769,344 bytes	
<b>Height</b>	1.0 in (2.54 mm)	
<b>Width</b>	Media diameter: 3.3 in (84mm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA	
<b>Synchronous Transfer Rate (Maximum)</b>	150 MB/s	
<b>Buffer</b>	8 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 ms
	<b>Average</b>	4.5 ms
	<b>Full-Stroke</b>	10.2 ms
<b>Rotational Speed</b>	10,000 rpm	
<b>Logical Blocks</b>	145,226,112	
<b>Operating Temperature</b>	41° to 140° F (5 to 60° C)	

#### Serial ATA 3.0-Gb/s Hard Drives 500 GB

<b>Capacity</b>	500,107,862,016 bytes	
<b>Height</b>	1.0 in (2.54 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 3 Gb/s	
<b>Buffer</b>	16 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	1.3 ms
	<b>Average</b>	20.0 ms
	<b>Full-Stroke</b>	30 ms
<b>Rotational Speed</b>	7,200 rpm	
<b>Logical Blocks</b>	976,773,168	
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	

#### 250 GB

<b>Capacity</b>	250,059,350,016 bytes	
<b>Height</b>	1 in (2.54 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA (3.0 Gb/s)	
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 3 Gb/s	
<b>Buffer</b>	8 Mbytes	

### Technical Specifications - Hard Drives

	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	1.0 ms
		<b>Average</b>	8.5 ms
		<b>Full-Stroke</b>	18 ms
	<b>Rotational Speed</b>		7,200 rpm
	<b>Logical Blocks</b>		488,397,168
	<b>Operating Temperature</b>		41° to 131° F (5° to 55° C)
<b>160 GB</b>	<b>Capacity</b>		163,928,604,672 bytes
	<b>Height</b>		1.0 in (2.54 cm)
	<b>Width</b>		Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)
	<b>Interface</b>		Serial ATA (3.0 Gb/s)
	<b>Synchronous Transfer Rate</b> (Maximum)		Up to 3 Gb/s
	<b>Buffer</b>		8 Mbytes
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.9 ms
		<b>Average</b>	9.3 ms
		<b>Full-Stroke</b>	18 ms
	<b>Rotational Speed</b>		7,200 rpm
	<b>Logical Blocks</b>		320,173,056
	<b>Operating Temperature</b>		41° to 131° F (5° to 55° C)
<b>80 GB</b>	<b>Capacity</b>		80,026,361,856 bytes
	<b>Height</b>		1.0 in (2.54 cm)
	<b>Width</b>		Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)
	<b>Interface</b>		Serial ATA (3.0 Gb/s)
	<b>Synchronous Transfer Rate</b> (Maximum)		Up to 3 Gb/s
	<b>Buffer</b>		8 MB
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	2 ms
		<b>Average</b>	9.3 ms
		<b>Full-Stroke</b>	21 ms
	<b>Rotational Speed</b>		7,200 rpm
	<b>Logical Blocks</b>		156,301,488
	<b>Operating Temperature</b>		41° to 131° F (5° to 55° C)

### Technical Specifications - Hard Drives

#### Ultra320 SCSI Hard Drives 73 GB (10,000 rpm)

<b>Capacity</b>	73,407,865,856 bytes	
<b>Height</b>	1.0 in (2.54 cm)	
<b>Width</b>	3.5 in (8.9 cm)	
<b>Interface</b>	68 pin LVD SCSI	
<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s	
<b>Buffer</b>	8 Mbytes	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec
	<b>Average</b>	<4.5 msec
	<b>Full-Stroke</b>	<11.0 msec
<b>Rotational Speed</b>	10,000 rpm	
<b>Logical Blocks</b>	143,374,738	
<b>Operating Temperature</b>	40° to 130° F (5° to 55° C)	

#### 146 GB

<b>Capacity</b>	146,815,737,856 bytes	
<b>Height</b>	1.0 in (2.54 cm)	
<b>Width</b>	3.5 in (8.9 cm)	
<b>Interface</b>	68 pin LVD SCSI	
<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s	
<b>Buffer</b>	8 Mbytes	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec
	<b>Average</b>	<4.5 msec
	<b>Full-Stroke</b>	<11.0 msec
<b>Rotational Speed</b>	10,000 rpm	
<b>Logical Blocks</b>	286,749,488	
<b>Operating Temperature</b>	40° to 130° F (5° to 55° C)	

### Technical Specifications - Hard Drives

<b>300 GB</b>	<b>Capacity</b>	300,000,000,000 bytes		
	<b>Height</b>	1.0 in (2.54 cm)		
	<b>Width</b>	3.5 in (8.9 cm)		
	<b>Interface</b>	68 pin LVD SCSI		
	<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s		
	<b>Buffer</b>	8 Mbytes		
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec	
		<b>Average</b>	<4.5 msec	
		<b>Full-Stroke</b>	<11.0 msec	
	<b>Rotational Speed</b>	10,000 rpm		
	<b>Logical Blocks</b>	585,937,500		
	<b>Operating Temperature</b>	40° to 130° F (5° to 55° C)		

<b>Ultra320 SCSI Hard Drives 36 GB</b> (15,000 rpm)	<b>Capacity</b>	36,420,075,520 bytes		
	<b>Height</b>	1.0 in (2.54 cm)		
	<b>Width</b>	3.5 in (8.9 cm)		
	<b>Interface</b>	68 pin LVD SCSI		
	<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s		
	<b>Buffer</b>	8 Mbytes		
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec	
		<b>Average</b>	<4.5 msec	
		<b>Full-Stroke</b>	<11.0 msec	
	<b>Rotational Speed</b>	15,000 rpm		
	<b>Logical Blocks</b>	71,132,960		
	<b>Operating Temperature</b>	40° to 130°F (5° to 55°C)		

<b>73 GB</b>	<b>Capacity</b>	73,407,865,856 bytes		
	<b>Height</b>	1.0 in (2.54 cm)		
	<b>Width</b>	3.5 in (8.9 cm)		
	<b>Interface</b>	68 pin LVD SCSI		
	<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s		
	<b>Buffer</b>	8 Mbytes		
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec	
		<b>Average</b>	<4.5 msec	
		<b>Full-Stroke</b>	<11.0 msec	



### Technical Specifications - Hard Drives

	<b>Rotational Speed</b>	15,000 rpm	
	<b>Logical Blocks</b>	143,374,738	
	<b>Operating Temperature</b>	40° to 130°F (5° to 55° C)	
<b>146 GB</b>	<b>Capacity</b>	146,815,737,856 bytes	
	<b>Height</b>	1.0 in (2.5 cm)	
	<b>Width</b>	3.5 in (8.9 cm)	
	<b>Interface</b>	68 pin LVD SCSI	
	<b>Synchronous Transfer Rate (Maximum)</b>	320 MB/s	
	<b>Buffer</b>	8 Mbytes	
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.3 msec
		<b>Average</b>	<4.5 msec
		<b>Full-Stroke</b>	<11.0 msec
	<b>Rotational Speed</b>	15,000 rpm	
	<b>Logical Blocks</b>	143,374,738	
	<b>Operating Temperature</b>	40° to 130°F (5° to 55° C)	

### Technical Specifications - Removable Storage

<b>USB Disk on Key</b>	<b>Dimensions (HxWxD)</b>	0.9 x 0.7 x 3.9 in (2.3 x 1.8 x 9.8 cm)
	<b>Weight</b>	0.05 lb (0.02 kg)
	<b>USB Specification</b>	2.0
	<b>Transfer Rate</b>	Read-1023 KB/Sec; Write-850 KB/Sec
	<b>Storage Media</b>	Solid state flash memory, no moving parts
	<b>Power Supply</b>	USB Bus-powered, no external power required
	<b>Capacity</b>	256 MB

### Technical Specifications - Input/Output Devices

<b>PS/2 OR USB Standard Keyboard</b>	<b>Physical characteristics</b>	<b>Keys</b>	104, 105, 106, 107, 109 layout (depending upon country)
		<b>Dimensions (L x W x H)</b>	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		<b>Weight</b>	2 lb (0.9 kg) minimum
	<b>Electrical</b>	<b>Operating voltage</b>	+ 5VDC ± 5%
		<b>Power consumption</b>	50-mA maximum (with three LEDs ON)
		<b>ESD</b>	CE level 4, 15-kV air discharge
		<b>EMI - RFI</b>	Conforms to FCC rules for a Class B computing device
		<b>Microsoft PC 99 - 2001</b>	Functionally compliant
	<b>Mechanical</b>	<b>Languages</b>	38 available
		<b>Keycaps</b>	Low-profile design
		<b>Switch actuation</b>	55-g nominal peak force with tactile feedback
		<b>Switch life</b>	20 million keystrokes (using Hasco modified tester)
		<b>Switch type</b>	Contamination-resistant switch membrane
		<b>Key-leveling mechanisms</b>	For all double-wide and greater-length keys
		<b>Cable length</b>	6 ft (1.8 m)
	<b>Environmental</b>	<b>Microsoft PC 99 - 2001</b>	Mechanically compliant
		<b>Acoustics</b>	43-dBA maximum sound pressure level
		<b>Operating temperature</b>	50° to 122° F (10° to 50° C)
		<b>Non-operating temperature</b>	-22° to 140° F (-30° to 60° C)
		<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
		<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
		<b>Operating shock</b>	40 g, six surfaces
		<b>Non-operating shock</b>	80 g, six surfaces
<b>Operating vibration</b>		2-g peak acceleration	
<b>Non-operating vibration</b>		4-g peak acceleration	
<b>Drop (out of box)</b>		26 in (66 cm) on carpet, six-drop sequence	
<b>Drop (in box)</b>		42 in (107 cm) on concrete, 16-drop sequence	
<b>Operating system support</b>		Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux Workstation 3 and 4	
<b>Approvals</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC		
<b>Ergonomic compliance</b>	ANSI HFS 100, ISO 9241-4, and TUVGS		
<b>Kit contents</b>	Keyboard, keyboard software media, installation guide, warranty card, safety and comfort		

<b>HP USB Smart Card Keyboard</b>	<b>Physical characteristics</b>	<b>Keys</b>	104, 105, 106, 107, 109 layout (depending upon country)
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### Technical Specifications - Input/Output Devices

(ED707AA)

<b>Electrical</b>	<b>Form factor</b>	USB basic Smart Card keyboard
	<b>Colors</b>	Carbonite/Silver
	<b>Dimensions (L x W x H)</b>	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)
	<b>Weight</b>	2 lb (0.9 kg) minimum
	<b>Operating voltage</b>	+ 5VDC ± 5%
	<b>Power consumption</b>	100-mA maximum (with four LEDs ON)
	<b>System interface</b>	USB Type A plug connector
	<b>ESD</b>	CE level 4, 15-kV air discharge
	<b>EMI - RFI</b>	Conforms to FCC rules for a Class B computing device
	<b>Mechanical</b>	<b>Microsoft PC 99 - 2001</b>
<b>Languages</b>		30+ available
<b>Keycaps</b>		Low-profile design
<b>Switch actuation</b>		55-g nominal peak force with tactile feedback
<b>Switch life</b>		20 million keystrokes (using Hasco modified tester)
<b>Switch type</b>		Contamination-resistant switch membrane
<b>Key-leveling mechanisms</b>		For all double-wide and greater-length keys
<b>Cable length</b>		6 ft (1.8 m)
<b>Microsoft PC 99 - 2001</b>		Mechanically compliant
<b>Acoustics</b>		43-dBA maximum sound pressure level
<b>Environmental</b>	<b>Operating temperature</b>	50° to 122° F (10° to 50° C)
	<b>Non-operating temperature</b>	-22° to 140° F (-30° to 60° C)
	<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
	<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
	<b>Operating shock</b>	40 g, six surfaces
	<b>Non-operating shock</b>	80 g, six surfaces
	<b>Operating vibration</b>	2-g peak acceleration
	<b>Non-operating vibration</b>	4-g peak acceleration
	<b>Drop (out of box)</b>	26 in (66 cm) on carpet, six-drop sequence
	<b>Drop (in box)</b>	42 in (107 cm) on concrete, 16-drop sequence
<b>SMARTCARD function</b>	<b>Support</b>	All ISO 7816 smart cards
	<b>Interface</b>	Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1)
	<b>Chipset</b>	SCM STCII
	<b>Standard APIs supported</b>	PC/SC, EMV2000, SET
	<b>Power</b>	USB Port



### Technical Specifications - Input/Output Devices

		Short circuit detection (protects smart card and reader)
		Power supply compliant with ISO7816 and EMV (5V, 60 mA)
		Supports 3-V and 5-V cards
<b>Power consumption</b>		250-mA maximum draw (50 mA for the keyboard with three LEDs ON and 200-mA maximum startup current using a high-current, 60-mA smart card)
<b>Communication</b>	<b>From card</b>	Programmable from 9,600 baud to 115,200 baud
	<b>From computer</b>	Up to 38,400 baud
<b>Landing mechanism</b>	<b>Contact device</b>	Friction contact
	<b>Card insertions rating</b>	Up to 100,000 insertion cycles
<b>Interface modes</b>		USB communications through USB port SCM protocol Automatic card insertion/removal detection
<b>Reader performance interface</b>		USB connection
<b>Electro-magnetic standards</b>	<b>Europe</b>	89/336/CEE guideline
	<b>USA</b>	USAFCC part 15
<b>Operating system support</b>	Microsoft® Windows® 2000, Windows XP Home, Windows XP Professional, xpe, ce.net, Linux, XP-64	
<b>Approvals</b>	CE-Mark, UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, JITC, EMV2000, USB-IF	
<b>Ergonomic compliance</b>	ANSI HFS 100, ISO 9241-4, TUVGS	
<b>Kit contents</b>	Keyboard, I/O Security and Documentation CD, , warranty card	
<b>Smart card compatibility</b>	<b>HP</b>	HP ProtectTools Smart Card
	<b>American Express</b>	Amex Blue
	<b>Axalto (Schlumberger)</b>	Cryptoflex 8K Cryptoflex 16K Cryptoflex 32K Cryptoflex 32K e-gate Cyberflex Access 64K Cyberflex Access 32K Cyberflex 32K e-gate Cyberflex 64K Cyberflex Palmera Payflex-S Payflex 1K Payflex 2K Payflex 4K

### Technical Specifications - Input/Output Devices

	Payflex 8K
	Prismera
	US DoD CAC
<b>Cardlogix</b>	CLXSU004KK4 CLXSU008KK5
<b>Datakey</b>	Model 300 Model 330
<b>De La Rue</b>	VisaCash
<b>Gemplus</b>	Gem Expresso GKK32K Gemclub Memo GemClub Micro GemXplore GemSafe
<b>Infineon</b>	SLE66C322P
<b>SafLink (Litronic)</b>	Forte
<b>Sharp</b>	Java Card
<b>Oberthur</b>	CosmopolIIC v4 CosmopolIIC v4.1 Cosmo ID-One GalatIIC v2.1 US DoD CAC
<b>Memory Cards</b>	
<b>Atmel</b>	AT24C01ASC AT24C02SC AT24C04SC AT24C08SC AT24C16SC AT24C32SC AT24C64SC AT24C128SC AT24C256SC AT24C512SC AT88SC153 AT88SC1608
<b>Axalto (Schlumberger)</b>	PrimeFlex Store 8K PrimeFlex Store 2K
<b>nfineon</b>	SLE4406 SLE4406E SLE4406E SE SLE4418 SLE4428 SLE4432 SLE4436E SLE4442 SLE5536

### Technical Specifications - Input/Output Devices

<b>ISSI</b>	IS23SC4418 IS23SC4428
<b>ST</b>	14C02
<b>Telefonkarte</b>	SLE4406 SLE4436 SLE5536
<b>XICOR</b>	X24026

<b>HP PS/2 Scroll Mouse</b>	<b>Dimensions</b>	3.8 x 6.3 x 11.6 cm (1.5 x 2.5 x 4.6 in)	
	<b>Weight</b>	4.44 oz (126 g)	
	<b>Environmental</b>	<b>Operating temperature</b>	50° to 122° F (10° to 50° C)
		<b>Non-operating temperature</b>	-22° to 140° F (-30° to 60° C)
		<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
		<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
		<b>Operating shock</b>	40 g, 6 surfaces
		<b>Non-operating shock</b>	80 g, 6 surfaces
		<b>Operating vibration</b>	2 g peak acceleration
		<b>Non-operating vibration</b>	4 g peak acceleration
		<b>Drop (out-of-box)</b>	26 in (66 cm) on carpet, 6-drop sequence
		<b>Drop (out-of-box)</b>	1 m on asphalt tile over concrete, 6-drop sequence
	<b>Electrical</b>	<b>Operating voltage</b>	5 VDC ± 10%
		<b>Power consumption</b>	15 mA
		<b>System consumption</b>	PS/2 mini-din connector
		<b>ESD</b>	CE level 4, 15 kV air discharge
		<b>EMI-RFI</b>	Conforms to FCC rules for a Class B computing device
	<b>Mechanical</b>	<b>Microsoft PC99 - 2001</b>	Functionally compliant
		<b>Resolution</b>	400 ± 20% DPI
		<b>Tracking speed</b>	10 in/s maximum
<b>Acceleration</b>		100 in/s	
<b>Switch actuation</b>		65 g nominal peak force	
<b>Switch life</b>		1,000,000 operations (using Hasco modified tester)	
<b>Switch type</b>		Low force micro-switches	
<b>Tracking mechanism life</b>		155 mi (250 km) at average speed of 10 in/s	
<b>Cable length</b>		6 ft (1.8 m)	
<b>Microsoft PC99 - 2001</b>		Mechanically compliant	
<b>Scroll wheel</b>	<b>Width</b>	8 mm	

### Technical Specifications - Input/Output Devices

	<b>Diameter</b>	0.99 in (25.2 mm)
	<b>Maximum rotation speed</b>	30 mm/s
	<b>Switch type</b>	Light force micro-switch
	<b>Switch life</b>	1 million operations
	<b>Mechanical life</b>	Minimum 200,000 revolutions
<b>Regulatory approvals</b>	<b>Compliant</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
<b>Compatibility</b>	<b>Operating system support</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux Workstation 3 and 4

<b>HP 2-button Optical Scroll Mouse (USB)</b>	<b>Dimensions (H x L x W)</b>	1.5 x 4.5 x 2.5 in (3.8 x 11.6 x 6.3 cm)
	<b>Weight</b>	0.27 lb (0.12 kg)
	<b>Cable length</b>	72.8 in (185 cm)
	<b>System requirements</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux Workstation 3 and 4

<b>HP Optical 3-Button Mouse (USB)</b>	<b>Dimensions/Weight</b>	<b>Height</b>	1.5 in (3.76 cm)
		<b>Length</b>	4.5 in (11.56 cm)
		<b>Width</b>	2.4 in (6.19 cm)
		<b>Weight</b>	3.80 oz (108 g)
	<b>Environmental</b>	<b>Operating temperature</b>	32° to 104° F (0° 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>Tracking speed</b>	6 in/s Maximum
		<b>Switch life</b>	3,000,000 operations
		<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>	9.5 ft (2.9 m)

### Technical Specifications - Input/Output Devices

<b>Spaceball 5000 USB</b> (Windows XP only)	<b>Physical characteristics</b>	<b>Dimensions (H x W x D)</b>	3.0 x 6.0 x 8.4 in (7.6 x 15.2 x 21.3 cm)
		<b>Ball Diameter</b>	2.2 in (5.6 cm)
		<b>Weight</b>	2.1 lb (9.94 kg)
		<b>Features</b>	Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw) Certified for leading CAD and DCC applications
	<b>Environmental</b>	<b>Operating temperature</b>	50° to 104° F (10° to 40° C)
		<b>Non-operating temperature</b>	43° to 140° F (6° to 60° C)
		<b>Operating humidity</b>	8% to 80% (non-condensing at ambient)
		<b>Non-operating humidity</b>	5% to 80% (non-condensing at ambient)
	<b>Mechanical</b>	<b>Buttons</b>	12 programmable (unshifted)
		<b>Ball Force Range</b>	0.5 - 8.2N/1.8 - 29.5 oz
		<b>Ball Torque Range</b>	0.085 – 0.33 oz-in. (6.91 Nmm)
		<b>Resolution</b>	10 bits
	<b>Serial Specifications</b>	<b>Connector</b>	USB 1.1 or greater
		<b>Cable Length</b>	12.8 ft. (3.9 m)
		<b>Data Rate</b>	USB model – 16 msec
		<b>Flow Control</b>	Xon/Xoff (on PS/2 model only)
	<b>Software Drivers Available</b>	<b>USB model</b>	Microsoft Windows XP Professional
	<b>System Requirements</b>	<b>Disk Space</b>	10 MB free disk space
	<b>Regulatory Approvals</b>	UL, cUL, EN 950, EN 60950, CSA, FCC, CE Mark, TUV, CISPR 22, EN 50082, IEC 1000 4-2, IEC 1000-4-3, AS/NZS, VCCI, BSMI, C-Tick	

<b>HP SpaceMouse Plus USB</b> (Windows XP only)	<b>Physical characteristics</b>	<b>Dimensions (H x W x D)</b>	7.4 x 4.72 x 1.73 in (18.8 x 12.0 x 4.4 cm)
		<b>Cap Diameter</b>	2 x 6.5 x 6.6 mm
		<b>Weight</b>	1.5 lb (0.68 kg)
		<b>Features</b>	Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw) Certified for leading CAD and DCC applications
	<b>Environmental</b>	<b>Operating temperature</b>	41° to 140° F (5° to 60° C)
		<b>Non-operating temperature</b>	-13° to 158° F (-25° to 70° C)
		<b>Operating humidity</b>	10 to 98 % RH (non-condensing)
		<b>Non-operating humidity</b>	10 to 98 % RH (non-condensing)
	<b>Mechanical</b>	<b>Buttons</b>	11 programmable (unshifted)
		<b>Cap Force Range</b>	0.2 N – 4.5 N
		<b>Cap Torque Range</b>	4 Nmm to 100 Nmm
		<b>Resolution</b>	8 bit

### Technical Specifications - Input/Output Devices

<b>USB Specifications</b>	<b>Connector</b>	USB 1.1 or greater
	<b>Cable Length</b>	6.56 ft (2 m)
	<b>Data Rate</b>	16 msec
<b>Software Drivers Available</b>	Microsoft Windows XP Professional	
<b>System Requirements</b>	<b>Disk Space</b>	10 MB free disk space
<b>Regulatory Approvals</b>	UL, cUL, EN 950, EN 60950, CSA, FCC, CE Mark, TUV, CISPR 22, EN 50082, IEC 1000 4-2, IEC 1000-4-3, AS/NZS, VCCI, BSMI, C-Tick	

#### 1394a FireWire PCI card

<b>Device Interface Protocol</b>	IEEE-1394a	
<b>Data Rate</b>	400 Mbps	
<b>Devices Supported</b>	IEEE-1394 compliant devices	
<b>Bus Interface</b>	PCI	
<b>Physical</b>	Low profile PCI card with a full height bracket	
<b>Environmental</b>	<b>Operating temperature</b>	41° to 95° F (5° to 35° C)
	<b>Non-operating temperature</b>	158° F (70° C) and above
	<b>Relative humidity</b>	10% to 90%
	<b>Ports</b>	2 rear and 2 front (depends on model of PC)
<b>Minimum System Requirements</b>	Windows XP Professional, Windows XP Professional x64 Edition, Linux support with the HP Installer Kit for Linux Pentium II 266 or faster 32-MB RAM 1-GB Hard Drive CD-ROM drive Built in sound system	

### Technical Specifications - Input/Output Devices

**HP SpacePilot 3D USB  
Intelligent Controller**  
(model EF390AA)

**Physical Characteristics**

**Dimensions** (L x W x H)

9.3 x 5.6 x 2.0 in (236 x 143 x 53 mm)

**Weight**

1.875 lb (0.85 kg)

**Palmrest**

Sculpted

**Mechanical**

**Buttons**

21+ programmable speed keys

15 reprogrammable

**LCD Viewing Area**

(W x H) 4.1 x 1.2 in (102 x 30 mm)

**Active Area**

(W x H) 3.9 x 1.0 in (98 x 26 mm)

**Display Format**

240 x 64

**Motion Controller**

Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw)

**Device Sensitivity**

Adjustable to preference

**System Requirements**

Intel Pentium 4 or AMD Athlon processor based system

20 megabytes free disk space for driver and plug-in installation (CD-ROM device required)

USB 1.1 or 2.0

**Operating System  
Supported**

Microsoft Windows 2000 and XP

**Regulatory Approvals**

FCC, CE

### Technical Specifications - Optical Devices

<b>48X CD-ROM Drive</b>	<b>Form Factor</b>	5.25-in, half-height, tray load		
	<b>Mounting Orientation</b>	Horizontal or vertical		
	<b>Interface</b>	ATAPI/EIDE		
	<b>Dimensions (HxWxD)</b>	1.63 x 5.83 x 7.27 in (4.13 x 14.6 x 18.5 cm)		
	<b>Weight</b>	1.76 lb (0.8 kg)		
	<b>Data Transfer Rates - Read</b>	Digital audio extraction (minimum) – 1,200 KB/s (8X) CD read – up to 7,200 KB/s (48X)		
	<b>Media and Formats - Read</b>	<b>CD Media</b>	stamped, CD-R, CD-RW (LS, HS, US)	
		<b>CD Capacities</b>	180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute)	
		<b>CD Formats</b>	CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD	
		<b>Access Times</b> (typical reads, including settling)	<b>CD-ROM Mode 1</b>	< 125 ms
			<b>Full Stroke CD</b>	< 210 ms
			<b>Start-up Time</b> (typical)	< 7 s (single session), < 30 s (multi-session)
			<b>Stop Time</b> (typical)	< 4 s
			<b>Write Buffer Size</b>	128 KB (minimum)
		<b>Power</b>	<b>Data Transfer Modes</b>	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 0 (16.7 MB/s); UltraDMA Mode 2 (33.3 MB/s)
			<b>Source</b>	Four-pin, DC power receptacle
	<b>DC Power Requirement</b>		5 VDC ± 5% - 100 mV ripple p-p	
			12 VDC ± 5% - 200 mV ripple p-p	
	<b>DC Current</b>		5 VDC - <1000 mA typical, < 1600 mA maximum	
			12 VDC - < 600 mA typical, <1400 mA maximum	
<b>Total Drive Power</b> (standby mode)	< 2.5 Watt			
<b>Audio Output</b>	<b>Line-Out</b>	0.7 VRMS		
	<b>Signal-to-Noise Ratio</b>	74 dB		
	<b>Channel Separation</b>	65 dB		
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes			
<b>Operating Conditions</b> (all conditions non-condensing)	<b>Temperature</b>	41° to 122° F (5° to 50° C)		
	<b>Humidity</b>	10% to 80%		



### Technical Specifications - Optical Devices

<b>Certifications, Approvals</b>	MMC-3 support, multi-read compliant, Microsoft WHQL certification, ACA AS/NZS 3548 class B, BSMI CNS 13438, CE Mark, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, EMKO EN60950, EN 60825-1, UL 60950, CSA C22.2 60950-2000, CFR 21 part 1040 class 1, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, ANSI C63.4-1992 (FCC Class B)
<b>Operating Systems Supported</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux Workstation 3
<b>Supplied Software</b>	None

#### 16X/48X DVD-ROM Drive with +R Read Support

<b>Height</b>	5.25-in, half-height, tray load	
<b>Interface Type</b>	ATAPI/EIDE	
<b>Dimensions (W x H x D)</b>	5.88 x 1.71 x 7.87 [max] in (149.5 x 43.25 x 200.0 [max] mm) (external, excluding bezel)	
<b>Disc Formats</b>	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R ; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW	
<b>Disc Capacity</b>	<b>DVD-ROM</b>	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R)
	<b>CD-ROM</b>	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
<b>Access Times</b> (typical reads, including settling)	<b>DVD-ROM Single Layer</b>	120 ms
	<b>CD-ROM Mode 1</b>	90 ms
	<b>Full Stroke DVD</b>	240 ms (seek)
	<b>Full Stroke CD</b>	160 ms (seek)
	<b>Startup Time</b>	< 10 seconds (typical)
	<b>Stop Time</b>	< 4 seconds
	<b>Data Transfer Modes</b>	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)
<b>Maximum Data Transfer Rates</b>	<b>CD-ROM Read</b>	6000 KB/s (40X) Max
	<b>DVD-ROM Read</b>	21,600 KB/s (16X) Max
	<b>Digital Audio Extraction</b>	6000 KB/s (40X) Max
<b>Power</b>	<b>Source</b>	Four-pin, DC power receptacle
	<b>DC Power Requirement</b>	5 VDC ± 5% – 100 mV ripple p-p 12 VDC ± 5% – 200 mV ripple p-p
	<b>DC Current</b>	5 VDC – <800 mA typical, < 1000 mA maximum 12 VDC – < 870 mA typical, <1800 mA maximum

### Technical Specifications - Optical Devices

<b>Audio Output</b>	<b>Line-Out</b>	0.7 VRMS
	<b>Signal-to-Noise Ratio</b>	85 dB
	<b>Channel Separation</b>	65 dB
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes	
<b>Data Interface Connector</b>	40-pin, shrouded and keyed, flat ribbon	
<b>Operating Environmental</b> (all conditions non-condensing)	<b>Temperature</b> (operating)	41° to 122° F (5° to 50° C)
	<b>Relative Humidity</b> (operating)	10% to 85%
	<b>Maximum Wet Bulb Temperature</b> (operating)	86° F (30° C)
<b>Certifications, Approvals</b>	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, EMKO EN60950, EN 60825-1, UL 60950, CSA C22.2 60950-2000, CFR 21 part 1040 class 1, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, ANSI C63.4-1992	
<b>Operating Systems Supported</b>	Windows 2000, XP Professional, and XP Professional x64 Edition Red Hat Linux 7.2, 7.3 WS3 and WS4 Versions	
<b>Kit Contents</b>	16X/40X DVD-ROM Drive, InterVideo WinDVD MPEG Movie Playback software, audio cable, and installation guide.	

#### HP 48X CD-RW

<b>Form Factor</b>	5.25-inch, half-height, tray-load	
<b>Mounting Orientation</b>	Horizontal or vertical	
<b>Interface</b>	ATAPI/EIDE	
<b>Dimensions (HxWxD)</b>	1.63 x 5.75 x 7.27 [max] in (4.13 x 14.6 x 18.5 [max] cm) (external, excluding bezel)	
<b>Weight (max)</b>	2.0 lb (0.9 kg)	
<b>Read Only Disc Parameters</b>	<b>Data Transfer Rates - Read</b>	<b>Digital audio extraction</b> (minimum) - 1,800 KB/s (12X) <b>CD read</b> - up to 7,200 KB/s (48X)
	<b>Media and Formats - Read</b>	<b>CD Media:</b> stamped; CD-R; CD-RW (LS, HS, US) <b>CD Capacities:</b> 180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute) <b>CD Formats:</b> CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD
	<b>Data Transfer Rates - Write</b>	<b>CD-R write</b> - 2100 KB/s (14X) to 7200 KB/s (48X) <b>CD-RW write</b> - 600 KB/s (4X) <b>CD-RW write (high speed)</b> - 1500 KB/s (10X) to 1800 KB/s (12X)
<b>Writeable Disc Parameters</b>		

### Technical Specifications - Optical Devices

		<b>CD-RW write (ultra high speed)</b> - 2400 KB/s (16X) to 4800 KB/s (32X)
	<b>Media and Formats - Write</b>	<b>CD Media:</b> CD-R; CD-RW (LS, HS, US) <b>CD Capacities:</b> 180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute) <b>CD Formats:</b> CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD
	<b>Write Methods</b>	Disc-at-once, session-at-once, track-at-once, incremental fixed and variable packet, multi-session
<b>Access Times</b> (typical reads, including settling)	<b>CD-ROM Mode 1</b>	< 125 ms
	<b>Full Stroke CD</b>	< 210 ms
	<b>Start-up Time</b> (typical)	< 7 s (single session), < 30 s (multi-session)
	<b>Stop Time</b> (typical)	< 4 s
	<b>Write Buffer Size</b>	2 MB
	<b>Data Transfer Modes</b>	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 2 (33.3 MB/s)
<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, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)
	<b>Total Drive Power</b> (standby mode)	< 2.5 Watt
<b>Audio Output</b>	<b>Line-Out</b>	0.7 VRMS
	<b>Signal-to-Noise Ratio</b>	74 dB
	<b>Channel Separation</b>	65 dB
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes	
<b>Operating Conditions</b>	<b>Temperature</b>	41° to 122° F (5° to 50° C)
	<b>Humidity</b>	10% to 90%10% to 90%
<b>Certifications, Approvals</b>	MMC-3 support, multi-read compliant, Microsoft WHQL certification, ACA AS/NZS 3548 class B, BSMI CNS 13438, CE Mark, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, EMKO EN60950, EN 60825-1, UL 60950, CSA C22.2 60950-2000, CFR 21 part 1040 class 1, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, ANSI C63.4-1992 (FCC Class B)	
<b>Operating Systems Supported</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux Workstation 3	

### Technical Specifications - Optical Devices

**Supplied Software** (for Windows XP) Roxio Digital Media Plus: Create or copy CDs and DVDs, including music and data CDs, and data DVDs

<b>HP 48X CD-RW/DVD-ROM Combo Drive</b>	<b>Form Factor</b>	5.25-inch, half-height, tray-load	
	<b>Mounting Orientation</b>	Horizontal or vertical	
	<b>Interface</b>	ATAPI/EIDE	
	<b>Dimensions (HxWxD)</b>	5.77 x 1.71 x 7.87 [max] in (14.66 x 4.34 x 20.0 [max] cm) (external, excluding bezel)	
	<b>Weight (max)</b>	2.6 lb (1.2 kg)	
	<b>Read Only Disc Parameters</b>	<b>Data Transfer Rates - Read</b>	<b>CD read</b> - 7200 KB/s (48X) Max
			Digital audio extraction (minimum) - 1,800 KB/s (12X)
		<b>DVD ROM read</b> - 21,632 KB/s (16X) Max	
		<b>Media and Formats - Read</b>	<b>CD Media:</b> stamped; CD-R; CD-RW (LS, HS, US) <b>CD Capacities:</b> 180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute) <b>CD Formats:</b> CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD <b>DVD Media:</b> stamped (single and double layer); DVD+R; DVD+RW; DVD+R DL; DVD-R; DVD-RW <b>DVD Capacities:</b> 4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R) <b>DVD Formats:</b> DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border ; DVD+R version 1.2 (including multi-session); DVD+R DL version 1.0; DVD+RW version 1.2
	<b>Writeable Disc Parameters</b>	<b>Data Transfer Rates - Write</b>	<b>CD-R write</b> - 2100 KB/s (14X) to 7200 KB/s (48X)
<b>CD-RW write</b> - 600 KB/s (4X)			
<b>CD-RW write</b> (high speed) - 1500 KB/s (10X) to 1800 KB/s (12X) <b>CD-RW write</b> (ultra high speed) - 2400 KB/s (16X) to 4800 KB/s (32X)			
<b>Media and Formats - Write</b>	<b>CD Media:</b> CD-R; CD-RW (LS, HS, US) <b>CD Capacities:</b> 180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute)		

### Technical Specifications - Optical Devices

		<b>CD Formats:</b> CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD
	<b>Write Methods</b>	Disc-at-once, session-at-once, track-at-once, incremental fixed and variable packet, multi-session
<b>Access Times</b> (typical reads, including settling)	<b>Random DVD</b>	< 140 ms
	<b>Random CD</b>	< 125 ms, (typical)
	<b>Full Stroke DVD</b>	< 250 ms
	<b>Full Stroke CD</b>	< 210 ms
	<b>Startup Time (single)</b>	< 7 seconds (typical)
	<b>Startup Time (multi-session)</b>	< 30 seconds (typical)
	<b>Stop Time (typical)</b>	< 4 s
	<b>Cache Buffer</b>	2 MB (minimum)
	<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 3 (44 Mbytes/s)
	<b>Power</b>	<b>Source</b>
<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, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)
<b>Total Drive Power (standby mode)</b>		< 2.5 Watt
<b>Audio Output</b>		<b>Line-Out</b> 0.7 VRMS <b>Signal-to-Noise Ratio</b> 74 dB <b>Channel Separation</b> 65 dB
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes	
<b>Data Interface Connector</b>	40-pin, shrouded and keyed, flat ribbon	
<b>Operating Conditions</b> (all conditions non-condensing)	<b>Temperature</b>	41° to 122° F (5° to 50° C)
	<b>Relative humidity</b>	10% to 90%
	<b>Maximum wet bulb temperature</b>	86° F (30° C)
<b>Certifications, Approvals</b>	MMC-3 support, multi-read compliant, Microsoft WHQL certification, ACA AS/NZS 3548 class B, BSMI CNS 13438, CE Mark, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, EMKO EN60950, EN 60825-1, UL 60950, CSA C22.2 60950-2000, CFR 21 part 1040 class 1, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, ANSI C63.4-1992 (FCC Class B)	

### Technical Specifications - Optical Devices

<b>Operating Systems Supported</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat WS3 and WS4 Versions
<b>Supplied Software</b> (for Windows XP)	Roxio Cineplayer Movie Playback Roxio Digital Media Plus: Create or copy CDs and DVDs, including music and data CDs, and data DVDs

#### 16X DVD+/-RW, Dual-Layer, with LightScribe Direct Disc Labeling

<b>Form Factor</b>	5.25-inch, half-height, tray-load
<b>Orientation</b>	Horizontal or vertical
<b>Interface</b>	ATAPI/EIDE
<b>Dimensions</b> (HxWxD)	5.9 x 1.7 x 7.9 in (15.0 x 4.4 x 20.0 cm)
<b>Weight</b> (maximum)	2.6 lb (1.2 kg)
<b>Read Only Disc Parameters</b>	<p><b>Data Transfer Rates - Read</b></p> <p><b>DVD-ROM, DVD-video read</b> - 5-16X (6750 - 21,600 KB/s CAV)</p> <p><b>DVD-video playback, DVD+R, DVD+RW, DVD-R, DVD-RW</b> - 4-8X (5400 - 10,800 KB/s CAV)</p> <p><b>CD-audio playback</b> - 8x (1200 KB/s CLV)</p> <p><b>Digital audio extraction</b> (minimum) - 12X (1,800 KB/s CAV)</p> <p><b>CD-ROM, CD-R, CD-RW, CD-Audio read</b> - 16-40X (2400 to 6000 KB/s CAV)</p> <p><b>Media and Formats - Read</b></p> <p><b>CD Media:</b> stamped; CD-R; CD-RW (supports AM2) (LS, HS, US)</p> <p><b>CD Capacities:</b> 180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute)</p> <p><b>CD Formats:</b> CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD, UDF (1.02 and 1.50)</p> <p><b>DVD Media:</b> stamped (single and double layer); DVD+R; DVD+RW; DVD+R DL; DVD-R; DVD-RW</p> <p><b>DVD Capacities:</b> 4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 14.1 GB (DVD-14), 17.0 GB (DVD-18), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R), 1.46 GB (DVD+R, 8cm), 1.46 GB (DVD+RW, 8cm)</p> <p><b>DVD Formats:</b> DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0 (including multi-border); DVD-RW version 1.0 and 1.1; DVD+R version 1.3 (including multi-session); DVD+R DL version 1.0; DVD+RW version 1.2</p>

### Technical Specifications - Optical Devices

#### Writeable Disc Parameters

#### Data Transfer Rates - Write

**CD-R write** - 16-40X (2400-6000 KB/s CAV)  
**CD-RW write** - 4X (600 KB/s CLV)  
**CD-RW write** (high speed) - 10X (1500 KB/s CLV)  
**CD-RW write** (ultra high speed) - 16-24X (2400-3600 KB/s ZCLV)  
**DVD+R** - 6-16X (8100-21,600 KB/s CAV), 8x (10,800 KB/s ZCLV), 2.4-4x (3250-5400 KB/s CLV)  
**DVD+R DL** - 2.4 (3250 KB/s CLV)  
**DVD+RW** - 2.4-4X (3250-5400 KB/s CLV)  
**DVD-R** - 2-4X (2700-5400 KB/s CLV), 8X (10,800 KB/s ZCLV)  
**DVD-RW** - 2-4X (2700-5400 KB/s CLV)

#### Media and Formats - Write

**CD Media:** CD-R (OBII Vol2.0 Rev 1.2), CD-RW (LS, HS, US)  
**CD Capacities:** 180 MB (mode 1, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm, 80-minute)  
**CD Formats:** CD-DA, CD-ROM (Mode 1 and 2), CD-XA (Mode 2, Form 1 and 2), Photo CD (Single and Multi-session), Mixed Mode (Audio and Data combined), CD-I (Mode 2, Form 1 and 2, and CD-I Ready), CD-Extra, CD-Bridge, Video CD, UDF (1.02 and 1.50)  
**DVD Media:** DVD+R, DVD+R DL, DVD+RW, DVD-R, DVD-RW  
**DVD Capacities:** 4.7 GB (DVD-5), 8.54 GB (DVD-9), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.1), 4.7 GB (DVD+RW version 1.3), 4.7 GB (DVD+R version 1.2), 1.46 GB (DVD+R, 8cm), 1.46 GB (DVD+RW, 8cm)  
**DVD Formats:** DVD-R version 1.0 and 2.0 (including multi-border); DVD-RW version 1.0 and 1.1; DVD+R version 1.3 (including multi-session); DVD+R DL version 1.0; DVD+RW version 1.2

#### Write Methods

Disc-at-once, session-at-once, track-at-once, incremental fixed and variable packet, multi-session

#### LightScribe Direct Disc Labeling Parameters

#### Media Supported

**CD-R:** LightScribe Version 1.0  
**DVD+R:** LightScribe Version 1.0

#### Resolution

**Dots per inch:** 600  
**Tracks per inch:** 500-1600 (mode dependent)

#### Labeling Times

**Draft quality:** < 20 min  
**Normal quality:** < 28 min  
**Best quality:** < 36 min

### Technical Specifications - Optical Devices

<b>Access Times</b> (typical reads, including settling)	<b>Random DVD</b>	< 130 ms (typical)	
	<b>Random CD</b>	< 120 ms (typical)	
	<b>Full Stroke DVD</b>	< 240 ms	
	<b>Full Stroke CD</b>	< 200 ms	
	<b>Startup Time (single)</b>	< 7 seconds (typical)	
	<b>Startup Time (multi-session)</b>	< 30 seconds (typical)	
	<b>Stop Time (typical)</b>	< 4 s	
	<b>Cache Buffer</b>	2 MB	
	<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 3 (44.4 MB/s) (default on most HP xw series workstations)	
	<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, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)	
<b>Total Drive Power (standby mode)</b>		< 2.5 Watt	
<b>Audio Output</b>		<b>Line-Out</b>	0.7 VRMS
	<b>Signal-to-Noise Ratio</b>	74 dB	
	<b>Channel Separation</b>	65 dB	
<b>Operating Conditions</b> (all conditions non-condensing)	<b>Temperature</b>	41° to 122° F (5° to 50° C)	
	<b>Relative humidity</b>	10% to 90%	
	<b>Maximum wet bulb temperature</b>	86° F (30° C)	
<b>Certifications, Approvals</b>	MMC-4 compliant, multi-read compliant, Microsoft WHQL certification, ACA AS/NZS 3548 class B, BSMI CNS 13438, CE Mark, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, EMKO EN60950, EN 60825-1, UL 60950, CSA C22.2 60950-2000, CFR 21 part 1040 class 1, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, ANSI C63.4-1992 (FCC Class B), relevant parts of IEC 61000-4.		
<b>Operating Systems Supported</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition Red Hat Linux 7.3 WS3 and WS4 Versions (LightScribe labeling functionality not supported on Linux)		
<b>Supplied Software (for Windows XP)</b>	Roxio Cineplayer Movie Playback Roxio Digital Media Plus: Create or copy CDs and DVDs, including music and data CDs, and data DVDs Roxio MyDVD for DVD authoring <b>NOTE:</b> LightScribe Direct Disc Labeling is supported only on 32-bit Windows XP in the launch timeframe for the xw4300. Support for Windows XP Professional x64 Edition is anticipated to be available some time after the launch, and will require software updates. There is no support for LightScribe		



### Technical Specifications - Optical Devices

labeling under Linux. The drive will operate as a DVD writer under these other operating systems, but will not be available in software applications as a LightScribe "printer".

**NOTE:** This DVD writer kit does not include any software for burning DVDs on Linux. DVD burning is supported with the 'growisofs' command. CD burning is supported with the 'cdrecord' command. Red Hat Enterprise Linux WS 3 distribution includes both 'cdrecord' and 'growisofs'. Red Hat Linux 8, 9.0 distributions only include 'cdrecord'. Therefore DVD burning is only supported on WS 3.

### Technical Specifications - Graphics

<b>NVIDIA Quadro NVS 285 with TurboCache Technology PCIe Graphics</b>	<b>Form Factor</b>	NVIDIA Quadro NVS 285 with TurboCache Technology 128MB PCIe Dual Head Low profile, both ATX and low profile brackets included
	<b>Graphics Controller</b>	Integrated Quadro 285 2D graphics processor unit (GPU)
	<b>Bus Type</b>	PCI-Express
	<b>Memory</b>	128 MB DDR (64 MB local frame buffer plus 64 MB of shared system memory via TurboCache technology) <b>NOTE:</b> The graphics card uses part of the total system memory (RAM) for graphics performance. System memory dedicated to graphics performance is not available for other use by other programs.
	<b>Connectors</b>	DMS-59 to dual-DVI Y-cable or dual-VGA Y-cable
	<b>Dimensions</b>	Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
	<b>Overlay planes</b>	One 16-bit Video overlay plane
	<b>Multi-monitor support</b>	Dual analog or digital monitors
	<b>Maximum pixel clock</b>	350 MHz
	<b>RAMDAC</b>	Dual 350 MHz (integrated)
	<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>Available graphics drivers</b>	Microsoft Windows 2000 and Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode) HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://www.hp.com/country/us/en/support.html?pageDisplay=drivers">http://www.hp.com/country/us/en/support.html?pageDisplay=drivers</a>

<b>NVIDIA Quadro FX 540 PCI-Express Graphics Card</b>	<b>Form Factor</b>	ATX, 4.376" x 7.0" Single slot
	<b>Graphics Controller</b>	NVIDIA NV43GL
	<b>Bus Type</b>	PCI-Express x16, <75W power consumption
	<b>RAMDAC</b>	Dual 400 MHz integrated
	<b>Memory</b>	128 MB 275 MHz DDR SDRAM unified frame buffer, Z-buffer and Texture storage 8.8 GB/sec graphics memory bandwidth
	<b>Connectors</b>	DVI-I + VGA + 10-pin HDTV Out (HD cable purchased separately)
	<b>Multi-monitor support</b>	Integrated analog display controller supporting a single analog display at 2048x1536 @ 75Hz, one digital display at 1600x1200 @ 60Hz.
	<b>Additional product features</b>	128 KB BIOS 3.3V Flash ROM reprogrammable by SW Hardware accelerated Overlay Planes Hardware accelerated two-sided lighting Hardware accelerated antialiased points and lines 3D Volumetric Texture support

### Technical Specifications - Graphics

	<p>Hardware accelerated Occlusion Culling</p> <p>Compliant with Microsoft/Intel PC2001 Workstation requirements</p> <p>Video Timings compliant with VESA DMT 1.0 and VESA GTF 1.0 specifications</p> <p>DDC2B+ Monitor support on all OS platforms</p> <p>ACPI Version 1.0b Power Management support (all modes)</p>
<b>Shading architecture</b>	<p>Fully programmable GPU (OpenGL 1.5/DirectX 9.0c class)</p> <p>Long fragment programs (up to 65,536 instructions)</p> <p>Long vertex programs (up to 65,536 instructions)</p> <p>Looping and subroutines (up to 256 loops per vertex program)</p> <p>Dynamic flow control</p> <p>Conditional execution</p> <p>Optimized compilers for Cg, OpenGL shading language, and Microsoft HLSL</p>
<b>Supported graphics APIs</b>	<p>OpenGL 1.5 ICD with immediate mode support for all OGL primitive types</p> <p>DirectX 9.0c</p>
<b>Available graphics drivers</b>	<p>HP-tested: Microsoft Windows XP, Windows 2000, and Linux</p> <p>HP qualified drivers may be preloaded or available from the HP support Web site:</p> <p><a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a>.</p>
<b>Maximum Resolution</b>	<p>DVI-I output - drives digital display at resolutions up to 1600x1200 @ 60Hz</p> <p>Internal 400MHz RAMDACs – drives dual analog display up to 2048x1536 @ 75Hz each</p>

#### NVIDIA Quadro FX 1400 PCI-Express Graphics Controller

<b>Form Factor</b>	<p>ATX, 4.376" x 8.5"</p> <p>Single slot</p>
<b>Graphics Controller</b>	NVIDIA NV41GL
<b>Bus Type</b>	PCI-Express x16, <75W power consumption
<b>RAMDAC</b>	Dual 400 MHz integrated
<b>Memory</b>	<p>128 MB 300 MHz DDR SDRAM unified frame buffer, Z-buffer and Texture storage</p> <p>19.2 GB/s graphics memory bandwidth</p>
<b>Connectors</b>	2 DVI-I analog/digital monitor outputs, 1 3-pin Mini DIN stereo output
<b>Multi-monitor support</b>	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays.
<b>Additional product features</b>	<p>128 KB BIOS 3.3V Flash ROM reprogrammable by SW</p> <p>Hardware accelerated Overlay Planes</p> <p>Hardware accelerated two-sided lighting</p> <p>Hardware accelerated antialiased points and lines</p> <p>Quad-buffered Stereo</p> <p>3D Volumetric Texture support</p> <p>Hardware accelerated Occlusion Culling</p> <p>Scalable Link Interface (SLI) technology</p> <p>Compliant with Microsoft/Intel PC2001 Workstation requirements</p> <p>Video Timings compliant with VESA DMT 1.0 and VESA GTF 1.0 specifications</p> <p>DDC2B+ Monitor support on all OS platforms</p> <p>ACPI Version 1.0b Power Management support (all modes)</p>
<b>Shading architecture</b>	<p>Fully programmable GPU (OpenGL 1.5/DirectX 9.0c class)</p> <p>Long fragment programs (up to 65,536 instructions)</p>

### Technical Specifications - Graphics

	<p>Long vertex programs (up to 65,536 instructions)</p> <p>Looping and subroutines (up to 256 loops per vertex program)</p> <p>Dynamic flow control</p> <p>Conditional execution</p> <p>Optimized compilers for Cg, OpenGL shading language, and Microsoft HLSL</p>
<b>Supported graphics APIs</b>	OpenGL 1.5 ICD with immediate mode support for all OGL primitive types DirectX 9.0c
<b>Available graphics drivers</b>	HP-tested: Microsoft Windows XP, Windows 2000 and Linux HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a> .
<b>Maximum Resolution</b>	Dual DVI-I output – drives dual digital displays at resolutions up to 1900x1200 @ 60Hz Internal 400MHz RAMDACs – drives dual analog displays up to 2048x1536 @ 85Hz each

<b>NVIDIA Quadro NVS 440 256 MB Graphics Controller</b>	<b>Form Factor</b>	ATX
	<b>Graphics Controller</b>	2 nv43 2D graphics processor units (GPUs)
	<b>VGA controller</b>	Integrated into the Quadro GPU
	<b>Bus Type</b>	PCI-E x16
	<b>RAMDAC</b>	Dual 350 MHz
	<b>Memory</b>	256 MB DDR frame buffer and Texture storage (128MB per GPU)
	<b>Connector</b>	Two DMS-59
	<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
	<b>Maximum pixel clock</b>	350 MHz
	<b>Multi-Monitor Support</b>	Up to 4 analog or digital monitors
	<b>Single DVI Support</b>	Yes
	<b>Dual DVI Support</b>	Yes
<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>Available graphics drivers</b>	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode ) HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a> .	

### Technical Specifications - Graphics

<b>NVIDIA Quadro FX 3450 Graphics Controller</b>	<b>Form Factor</b>	ATX
	<b>Graphics Controller</b>	NVIDIA Quadro FX 3450 Workstation GPU
	<b>Bus Type</b>	PCI-Express x16
	<b>Memory</b>	256 MB 450 MHz GDDR3 SDRAM unified graphics memory
	<b>Connectors</b>	2 DVI-I (one dual-link/one single-link) analog/digital monitor outputs, 1 3-pin Mini DIN stereo output, DVI-I to VGA adapters included
	<b>Multi-Monitor Support</b>	Dual integrated display controllers supporting up to two analog displays at 2048 x 1536 @ 75 Hz on both displays or dual digital displays at 1920 x 1200 (single-link) and 3840 x 2400 (dual-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft Windows
	<b>Architecture Features</b>	256-bit memory interface 128-bit IEEE floating-point color precision 12-bit sub-pixel precision 65,536 fragment instruction 65,536 vertex instruction 3D volumetric textures Single-system powerwall 12 pixels per clock rendering engine Hardware accelerated antialiased points and lines Hardware OpenGL overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes 3rd generation occlusion culling 16 textures per pixel in fragment programs Window ID clipping functionality Hardware accelerated line stippling OpenGL Quad-buffered stereo
	<b>Shading Architecture</b>	Fully programmable GPU (OpenGL 2.0/DirectX 9.0c class) Long fragment programs (up to 65,536 instructions) Long vertex programs (up to 65,536 instructions) Looping and subroutines (up to 256 loops per vertex program) Dynamic flow control Conditional execution
	<b>High Level Shader Languages</b>	Optimized compiler for Cg and Microsoft® HLSL OpenGL 2.0 and DirectX 9.0c support Open source compiler
	<b>High-Resolution Antialiasing</b>	12-bit subpixel sampling precision enhances AA quality Rotated-grid full-scene antialiasing (RG FSAA) 8x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolution up to 1920x1200
	<b>Display Resolution Support</b>	Dual Link DVI- I output-drives digital displays at resolutions up to 3840 x 2400 @ 24 Hz Single Link DVI-I output drives digital displays at resolutions up to 1920 x 1200 @ 75 Hz Internal 400 MHz DACs - Two analog displays up to 2048 x 1536 @ 75 Hz each

### Technical Specifications - Graphics

<b>nView Architecture</b>	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows.
<b>Supported Graphics APIs</b>	OpenGL 2.0 ICD with immediate mode support for all OGL primitive types DirectX 9.0c
<b>Available Graphics Drivers</b>	Microsoft Windows XP, Linux - Full Open GL implementation, complete with NVIDIA and ARB extensions. HP qualified drivers may be preloaded or available from the HP support web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a> .

<b>NVIDIA Quadro FX 4500 Graphics Controller</b>	<b>Graphics Controller</b>	NVIDIA Quadro FX 4500 Workstation GPU
	<b>Bus Type</b>	PCI Express x16
	<b>RAMDAC</b>	Dual 400 MHz integrated
	<b>Memory</b>	512 MB GDDR3 SDRAM unified graphics memory
	<b>Form Factor</b>	ATX
	<b>Connectors</b>	2 DVI-I analog/digital monitor outputs, 1 3-pin Mini DIN stereo output, DVI-I to VGA adapters included
	<b>Multi-Monitor Support</b>	Dual integrated display controllers supporting up to 2048 x 1536 @ 75 Hz (analog) or 3840 x 2400 @ 41 Hz (digital) on both displays
	<b>NVIDIA Quadro FX 4500 Architecture</b>	256-bit memory interface 35.2GB/sec. memory bandwidth Full 128-bit floating point color precision 12-bit subpixel precision 65,536 fragment instruction 65,536 vertex instruction 3D volumetric textures Single-system powerwall 12 pixels per clock rendering engine Hardware accelerated antialiased points & lines Hardware OpenGL® overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes Hardware two-sided lighting 3rd-generation occlusion culling OpenGL quad-buffered stereo Hardware-Accelerated Pixel Read-Back
	<b>Shading Architecture</b>	16 textures per pixel in fragment programs Window ID clipping functionality Hardware accelerated line stippling Fully programmable GPU (OpenGL2.0/DirectX 9.0c class) Long fragment programs (up to 65,536 instructions) Long vertex programs (up to 65,536 instructions) Looping and subroutines (up to 256 loops per vertex program) Dynamic flow control Conditional execution

### Technical Specifications - Graphics

<b>High Level Shader Languages</b>	Optimized compiler for Cg and Microsoft HLSL OpenGL 2.0 and DirectX 9.0c support Open source compiler
<b>High-Resolution Antialiasing</b>	12-bit subpixel sampling precision enhances AA quality Rotated-grid full-scene antialiasing (RG FSAA) 16x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolution up to 1920 x 1200
<b>Display Resolution Support</b>	Dual Dual Link DVI- I output-drives digital displays at resolutions up to 3840 x 2400 @ 41 Hz Internal 400 MHz DACs - Two analog displays up to 2048 x 1536 @ 75 Hz each
<b>nView Architecture</b>	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows.
<b>Supported Graphics APIs</b>	OpenGL 2.0 ICD with immediate mode support for all OGL primitive types DirectX 9.0c
<b>Available Graphics drivers</b>	Microsoft Windows XP, Linux - Full Open GL implementation, complete with NVIDIA and ARB extensions. HP qualified drivers may be preloaded or available from the HP support web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a>
<b>ATI FireGL V3100 Graphics Card (PCI Express)</b>	
<b>Form factor</b>	ATX
<b>Graphics controller</b>	RV370
<b>Bus type</b>	PCI-Express x16
<b>Memory</b>	128 MB 200MHz DDR unified frame buffer, Z-buffer and Texture storage
<b>Connectors</b>	1 DVI-I analog/digital and 1 VGA analog monitor output
<b>Multi-monitor support</b>	Dual integrated display controllers supporting up to 2048x1536 @ 85Hz on both displays
<b>RAMDAC</b>	Dual 400 MHz integrated
<b>Architecture features</b>	128-bit memory interface 128-bit IEEE floating-point precision 24-bits per RGBA color precision 4-bit sub-pixel precision 2 parallel geometry engines 4 parallel pixel pipelines 2x/4x/6x FSAA Hardware accelerated antialiased points and lines Hardware OpenGL overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes Hardware accelerated occlusion culling Hardware accelerated clip planes
<b>Shading architecture</b>	Smartshader™ technology Programmable pixel and vertex shaders 16 textures per pass Pixel shaders up to 160 instructions with 32-bit floating point precision for each RGBA component Multiple render target support Shadow volume rendering acceleration

### Technical Specifications - Graphics

	High precision 10-bit per channel frame buffer support
<b>Supported graphics APIs</b>	OpenGL 1.5 DirectX 9.0
<b>Available graphics drivers</b>	Windows XP Professional, Windows XP Professional x64 Edition, Linux Xfree86HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a> .
<b>Maximum resolution</b>	DVI-I output – drives digital display at resolutions up to 1600x1200 Internal 400MHz RAMDACs – drives dual analog displays up to 2048x1536 @ 85Hz each

#### ATI FireGL V5100 PCI-Express Graphics Controller

<b>Form Factor</b>	ATX
<b>Graphics Controller</b>	RV423
<b>Bus Type</b>	PCI-Express x16
<b>Memory</b>	128 MB 350MHz DDR unified frame buffer, Z-buffer and Texture storage
<b>Connectors</b>	2 DVI-I analog/digital monitor outputs, 1 3-pin Mini DIN stereo output
<b>Multi-monitor support</b>	Dual integrated display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays.
<b>RAMDAC</b>	Dual 400 MHz integrated
<b>Architecture features</b>	256-bit memory interface 128-bit IEEE floating-point precision 24-bits per RGBA color precision 8-bit sub-pixel precision 6 parallel geometry engines 12 parallel pixel pipelines 2x/4x/6x FSAA Hardware accelerated antialiased points and lines Hardware OpenGL overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes Hardware accelerated occlusion culling Hardware accelerated clip planes Quad-buffered stereo
<b>Shading architecture</b>	Smartshader™ technology Programmable pixel and vertex shaders 16 textures per pass Pixel shaders up to 160 instructions with 32-bit floating point precision for each RGBA component Multiple render target support Shadow volume rendering acceleration High precision 10-bit per channel frame buffer support
<b>Supported graphics APIs</b>	OpenGL 1.5 DirectX 9.0
<b>Available graphics drivers</b>	HP-tested: Microsoft Windows XP, Windows 2000, and Linux HP qualified drivers may be preloaded or available from the HP support Web site: <a href="http://welcome.hp.com/country/us/eng/software_drivers.html">http://welcome.hp.com/country/us/eng/software_drivers.html</a> .



### Technical Specifications - Graphics

**Maximum Resolution**

DVI-I output – drives digital displays at resolutions up to 1600x1200

Internal 400MHz RAMDAC – drives dual analog displays up to 2048x1536 @ 85Hz each

### Technical Specifications - Monitors

<b>HP L1755 Flat Panel Monitor</b>	<b>Panel</b>	<b>Type</b>	Active matrix, thin film transistor (TFT)
		<b>Viewable Image Area (diagonal)</b>	17 in (43.2 cm) maximum viewable
		<b>Screen Opening (WxH)</b>	13.4 x 10.7 in (33.9 x 27.2 cm)
		<b>Viewing Angle (typical)</b>	176 degrees horizontal/176 degrees vertical (10:1 minimum contrast ratio)
		<b>Brightness (typical)</b>	Up to 250 nits (cd/m <sup>2</sup> )
		<b>Contrast Ratio (typical)</b>	Up to 1000:1 (typical)
		<b>Response Rate (typical)</b>	25 ms (typical rise + fall)
		<b>Pixel Pitch</b>	0.264 mm
	<b>Video/Other Inputs</b>	<b>Plug and Play</b>	Yes (supports VESA DDC2B; PC2001 compliant)
		<b>Self Powered USB 2.0 Hub</b>	One upstream, four downstream ports (cable included)
		<b>Input Signal</b>	Two connectors: one 15-pin mini D-sub analog VGA; and one DVI-I (VGA analog or digital)
		<b>Input Impedance</b>	75 ohms ± 2%
		<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green (activated through on-screen display)
		<b>Video Cable</b>	VGA to VGA, DVI-D to DVI-D, and DVI-I to VGA
		<b>Video Cable Length</b>	78 in (2.0 m)
	<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b>	30 to 82 kHz
		<b>Vertical Frequency</b>	56 to 75 Hz
		<b>Native Resolution</b>	1280 x 1024 @ 60 Hz analog 1280 x 1024 @ 60 Hz digital
		<b>Maximum Resolution (Analog)</b>	1280 x 1024 @ 75 Hz analog
		<b>Maximum Resolution (Digital)</b>	1280 x 1024 @ 75 Hz digital
		<b>Preset VESA Graphic Modes (non-interlaced)</b>	640 x 480 @ 60 Hz, 72 Hz, 75 Hz 720 x 400 @ 70 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz 1280 x 1024 @ 60 Hz, 75 Hz
		<b>Preset MAC Mode</b>	832 x 624 @ 75 Hz 1152 x 870 @ 75 Hz
		<b>Preset VGA Mode</b>	640 x 480 @ 60 Hz, 72 Hz
		<b>Preset SUN Mode</b>	1152 x 900 @ 76 Hz
		<b>Fail Safe Mode</b>	Yes (limits out of range signal messages)
		<b>Maximum Pixel Clock Speed</b>	140 MHz

### Technical Specifications - Monitors

	<b>User Programmable Modes</b>	Yes, 15
	<b>Anti-Glare</b>	Yes
	<b>Anti-Static</b>	Yes
	<b>AssetControl</b>	Yes (accessible on HP Compaq Business Desktops featuring Intelligent Manageability)
	<b>Default Color Temperature</b>	Yes (6500k, 9300k, SRGB, Custom User)
<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b>	Power on/off; 3-button OSD; second level OSD buttons include dual-input switch, dedicated auto adjust switch
	<b>Languages</b>	English, Spanish, French, German, Italian, Japanese, Simplified Chinese
	<b>User Controls</b>	Size and positioning, contrast, brightness, clock, clock phase, selectable color temperature, serial number, mode displayed, sleep timer, input selection, factory reset, individual color contrast, full-screen resolution
<b>Power</b>	<b>Power Supply</b>	Auto-ranging, 90 to 265 VAC; internal power supply
	<b>Input Power</b>	100 ~ 240 VAC
	<b>Nominal Current</b>	1.5 A maximum
	<b>Frequency</b>	50 ~ 60 Hz
	<b>Average</b>	33 watts when displaying standard office software
	<b>Typical Power Consumption</b>	< 40 watts
	<b>Maximum</b>	< 60 watts
	<b>Power Saving Off Mode</b>	< 2 W 0 watts (when master power switch is in the off position)
	<b>Power Cable Length</b>	70 in (1.8 m); non-captive
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked with stand</b> 16.1 (minimum) to 21.2 (maximum) x 14.4 x 8.3 in (40.9 (minimum) to 42.2 (maximum) x 36.5 x 21.1 cm)
		<b>Base Area (Footprint D x W)</b> 8.3 x 12.2 in (21.1 x 30.9 cm)
		<b>Panel only (without stand) (H x W x D)</b> 11.8 x 14.4 x 2.9 in (30.1 x 40.9 x 7.3 cm)

### Technical Specifications - Monitors

	<b>Weight</b>	<b>Unpacked with stand</b>	14.7 lb (6.7 kg)
		<b>Unpacked without stand</b>	8.1 lb (3.7 kg)
		<b>Packaged</b>	20.2 lb (9.2 kg)
	<b>Bezel Width</b>	13 mm left and right, 14 mm top, and 15 mm bottom	
	<b>Tilt Range</b>	-5° to +35°	
	<b>Swivel Range</b>	± 50° horizontal swivel	
	<b>Height Adjustable</b>	Yes (5.1 in/13 cm adjustment range)	
	<b>Pivot Rotation</b>	Yes, 90°	
	<b>Base</b>	Ships detached and is removable after installation	
<b>Environmental</b>	<b>Temperature – Operating</b>	41° to 95° F (5° to 35° C)	
	<b>Temperature – Non-operating</b>	-4° to 140° F (-20° to 60° C)	
	<b>Humidity – Operating</b>	20% to 80%	
	<b>Humidity – Non-operating</b>	5% to 95%	
	<b>Altitude – Operating</b>	0 to 13,000 ft (0 to 4,000 m)	
	<b>Altitude – Non-operating</b>	0 to 40,000 ft (0 to 12,192 m)	
<b>Options</b>	<b>HP Desktop Access Center – Part number: DK985A</b>	Features integrated microphone/headset jacks, dual function headset for phone/PC support, a MultiBay slot for adding an optical drive (sold separately), and four USB ports for easy integration of third-party digital solutions. Sold separately. For more information, refer to the HP Desktop Access Center QuickSpec document.	
	<b>HP Flat Panel Speaker Bar – Part number: PF804AA</b>	Powered directly by the monitor, seamlessly attaches to the monitor's bezel to bring full multimedia support to select HP flat panel monitors. Features dual speakers with full sound range and external jack for headphones. Sold separately. For more information, refer to the HP Flat Panel Speaker Bar QuickSpec document.	
	<b>HP Compaq 7000 Series Ultra-slim Desktop Integrated Work Center Stand – Part number: DL641B</b>	Allows mounting of a 15-, 17- or 19-inch HP flat panel monitor and an HP Compaq dc7100 Ultra-slim Desktop PC on a single stand for the convenience of an "all-in-one" form factor. Sold separately. For more information, refer to this product's QuickSpec document	
<b>Other</b>	<b>Accessories Included</b>	VGA to VGA cable, DVI-D to DVI-D cable, DVI-I to VGA cable, USB cable, user CD-ROM with Pivot Pro software	
	<b>Software</b>	Pivot Pro software from Portrait Displays, Inc. interacts with your PC's native graphics driver to enable seamless portrait screen redraws with a simple mouse-click or keyboard command. Pivot	

### Technical Specifications - Monitors

	Pro supports 90-degree portrait and landscape views. Language support is available in English, Japanese, French, German, Spanish, Italian, and Traditional and Simplified Chinese.
<b>Software</b>	HP Display LiteSaver feature lets you schedule Sleep mode at preset times to help protect the display against image retention, drastically lower power consumption and energy costs, and extend the lifespan of the monitor.
<b>User Guide Languages</b>	English, Latin America Spanish, Brazilian Portuguese, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Swedish, Greek, Polish, Russian, Slovenian, Turkish, Simplified Chinese, Traditional Chinese, Korean, and Japanese
<b>Warranty Languages</b>	English, Canadian French, Latin America Spanish, Brazilian Portuguese, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Spanish, Swedish, Bahasa Indonesian, Simplified Chinese, Traditional Chinese, and Korean
<b>Color</b>	Carbonite, two-tone carbonite and silver (EMEA only)
<b>VESA Mounting</b>	Yes (swing arm/wall mount not included); base must be removed for mounting options)
<b>VESA External Mounting</b>	Yes (standard 4 hole pattern, 100 mm)
<b>Kensington Lock-ready</b>	Yes
<b>Certification and Compliance</b>	Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCC Approval, CISPR Requirements, Eastern European Approvals, Energy Star Compliant, FCC Approval, German Ergonomic (TUV and GS Mark), ISO 13406-2 Compliant (Pixel Defect Guidelines), Mexican NOM Approval, MPR-II Compliant, PC2001 Compliant, PC99 Certified, S. Korean MIC Approval, Taiwan BSMI Approval, TCO 99 or 03 depending on region (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Microsoft Windows Certification
<b>Compatibility</b>	VESA Video Signal Standard (VSIS) Compliant video cards have been tested and proven compatible for use with the HP L1755 Flat Panel Monitor. Recommended for use with HP products.
<b>Service and Warranty</b>	Limited three-year parts and repair labor, service provider labor, and on-site service. Next business day advanced exchange direct replacement service available during warranty period. Certain restrictions and exclusions apply. For details, contact HP Customer Support.

#### HP L1955 Flat Panel Monitor

#### Panel

#### Type

Active matrix, thin film transistor (TFT)

#### Viewable Image Area (diagonal)

19 in (48.25 cm) maximum viewable

#### Screen Opening (WxH)

14.9 x 12.0 in (38.0 x 30.5 cm)



### Technical Specifications - Monitors

	<b>Viewing Angle</b> (typical)	176 degrees horizontal/176 degrees vertical (10:1 minimum contrast ratio)
	<b>Brightness</b> (typical)	Up to 250 nits (cd/m <sup>2</sup> )
	<b>Contrast Ratio</b> (typical)	Up to 1000:1 (typical)
	<b>Response Rate</b> (typical)	<16 ms (typical rise + fall)
	<b>Pixel Pitch</b>	0.294 mm
<b>Video/Other Inputs</b>	<b>Plug and Play</b>	Yes (supports VESA DDC2B; PC2001 compliant)
	<b>Self Powered USB 2.0 Hub</b>	One upstream, four downstream ports (cable included)
	<b>Input Signal</b>	Two connectors: one 15-pin mini D-sub analog VGA; and one DVI-I (VGA analog or digital)
	<b>Input Impedance</b>	75 ohms ± 2%
	<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green (activated through on-screen display)
	<b>Video Cable</b>	VGA to VGA, DVI-D to DVI-D, and DVI-I to VGA
	<b>Video Cable Length</b>	78 in (2.0 m)
<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b>	30 to 82 kHz
	<b>Vertical Frequency</b>	56 to 75 Hz
	<b>Native Resolution</b>	1280 x 1024 @ 75 Hz analog 1280 x 1024 @ 60 Hz digital
	<b>Maximum Resolution (Analog)</b>	1280 x 1024 @ 75 Hz analog
	<b>Maximum Resolution (Digital)</b>	1280 x 1024 @ 75 Hz digital
	<b>Preset VESA Graphic Modes (non-interlaced)</b>	640 x 480 @ 60 Hz, 72 Hz, 75 Hz 720 x 400 @ 70 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz 1280 x 1024 @ 60 Hz, 75 Hz
	<b>Preset MAC Mode</b>	832 x 624 @ 75 Hz 1152 x 870 @ 75 Hz
	<b>Preset VGA Mode</b>	640 x 480 @ 60 Hz, 72 Hz
	<b>Preset SUN Mode</b>	1152 x 900 @ 76 Hz
	<b>Fail Safe Mode</b>	Yes (limits out of range signal messages)
	<b>Maximum Pixel Clock Speed</b>	140 MHz
	<b>User Programmable Modes</b>	Yes, 15
	<b>Anti-Glare</b>	Yes
	<b>Anti-Static</b>	Yes

### Technical Specifications - Monitors

	<b>AssetControl</b>	Yes (accessible on HP Compaq Business Desktops featuring Intelligent Manageability)
	<b>Default Color Temperature</b>	Yes (6500k, 9300k, SRGB, Custom User)
<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b>	Power on/off; 3-button OSD; second level OSD buttons include dual-input switch, dedicated auto adjust switch
	<b>Languages</b>	English, Spanish, French, German, Italian, Japanese, Simplified Chinese
	<b>User Controls</b>	Size and Positioning Contrast Brightness Clock, Clock Phase Selectable Color Temperature Serial Number Mode Displayed Sleep Timer Input Selection Factory Reset Individual Color Contrast Full-screen Resolution
<b>Power</b>	<b>Power Supply</b>	Auto-ranging, 90 to 265 VAC; internal power supply
	<b>Input Power</b>	100 ~ 240 VAC
	<b>Nominal Current</b>	1.5 A maximum
	<b>Frequency</b>	50 ~ 60 Hz
	<b>Average</b>	33 watts when displaying standard office software
	<b>Typical Power Consumption</b>	< 40 watts
	<b>Maximum</b>	< 60 watts
	<b>Power Saving Off Mode</b>	< 2 watts 0 watts (when master power switch is in the off position)
	<b>Power Cable Length</b>	70 in (1.8 m); non-captive
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked with stand</b> 16.8 (minimum) to 22.3 (maximum) x 15.9 x 8.3 in (42.7 (minimum) to 56.6 (maximum) x 40.4 x 21.1 cm)
		<b>Base Area (Footprint D x W)</b> 8.3 x 12.2 in (21.1 x 30.9 cm)

### Technical Specifications - Monitors

	<b>Panel only</b> (without stand) (H x W x D)	13.2 x 15.9 x 3.1 in (33.5 x 40.4 x 7.9 cm)
<b>Weight</b>	<b>Unpacked with stand</b>	16.5 lb (7.5 kg)
	<b>Unpacked without stand</b>	10.5 lb (4.75 kg)
	<b>Packaged</b>	23.5 lb (10.7 kg)
<b>Bezel Width</b>	13 mm left and right, 14 mm top, and 15 mm bottom	
<b>Tilt Range</b>	-5° to +35°	
<b>Swivel Range</b>	± 50° horizontal swivel	
<b>Height Adjustable</b>	Yes (5.1 in/13 cm adjustment range)	
<b>Pivot Rotation</b>	Yes, 90°	
<b>Base</b>	Ships detached and is removable after installation	
<b>Environmental</b>	<b>Temperature – Operating</b>	41° to 95° F (5° to 35° C)
	<b>Temperature – Non-operating</b>	-4° to 140° F (-20° to 60° C)
	<b>Humidity – Operating</b>	20% to 80%
	<b>Humidity – Non-operating</b>	5% to 95%
	<b>Altitude – Operating</b>	0 to 13,000 ft (0 to 4,000 m)
	<b>Altitude – Non-operating</b>	0 to 40,000 ft (0 to 12,192 m)
<b>Options</b>	<b>Desktop Access Center</b>	Features integrated microphone/headset jacks, dual function headset for phone/PC support, a MultiBay slot for adding an optical drive (sold separately), and four USB ports for easy integration of third-party digital solutions. Sold separately; part number DK985A. For more information, refer to the HP Desktop Access Center QuickSpecs.
	<b>HP Flat Panel Speaker Bar</b>	Powered directly by the monitor, seamlessly attaches to the monitor's bezel to bring full multimedia support to select HP flat panel monitors. Features dual speakers with full sound range and external jack for headphones. Sold separately, part number PF804AA. For more information, refer to the HP Flat Panel Speaker Bar QuickSpecs.
<b>Other</b>	<b>Accessories Included</b>	VGA to VGA cable, DVI-D to DVI-D cable, DVI-I to VGA cable, USB cable, user CD-ROM with Pivot Pro software
	<b>Software</b>	Pivot Pro software from Portrait Displays, Inc. interacts with your PC's native graphics driver to enable seamless portrait screen redraws with a simple mouse-click or keyboard command. Pivot Pro supports 90-degree portrait and landscape views. Language support is available in English,



### Technical Specifications - Monitors

		Japanese, French, German, Spanish, Italian, and Traditional and Simplified Chinese.
	<b>Software</b>	HP Display LiteSaver feature lets you schedule Sleep mode at preset times to help protect the display against image retention, drastically lower power consumption and energy costs, and extend the lifespan of the monitor.
	<b>User Guide Languages</b>	English
	<b>Warranty Languages</b>	English
	<b>Color</b>	Carbonite, two-tone carbonite and silver (EMEA only)
	<b>VESA Mounting</b>	Yes (swing arm/wall mount not included); base must be removed for mounting options)
	<b>VESA External Mounting</b>	Yes (standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-ready</b>	Yes
<b>Certification and Compliance</b>		Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCIB/CCEE Approval, CISPR Requirements, Eastern European Approvals, Energy Star Compliant, FCC Approval, German Ergonomic (TUV and GS Mark), ISO 13406-2 Compliant (Pixel Defect Guidelines), Mexican NOM Approval, MPR-II Compliant, PC2001 Compliant, PC99 Certified, S. Korean MIC Approval, Taiwan BSMI Approval, TCO 99 or 03 depending on region (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Microsoft® Windows® Certification
<b>Compatibility</b>		VESA Video Signal Standard (VSIS) Compliant video cards have been tested and proven compatible for use with the HP L1955 Flat Panel Monitor. Recommended for use with HP products.
<b>Service and Warranty</b>		Limited three-year parts and repair labor, service provider labor, and on-site service. Next Business Day advanced exchange direct replacement service available during warranty period. Certain restrictions and exclusions apply. For details, contact HP Customer Support.

<b>HP Flat Panel Monitor L2035</b>	<b>Panel</b>	<b>Type</b>	20-inch Active Matrix TFT (thin film transistor)
		<b>Viewable Image Area</b> (diagonal)	20.1 in (51 cm)
		<b>Screen Opening</b> (W x H)	16.2 x 12.17 in (41.1 x 30.9 cm)
		<b>Viewing Angle</b> (typical)*	Up to 170° H/170° V (10:1 minimum contrast ratio)
		<b>Brightness</b> (typical)*	Up to 250 nits (cd/m <sup>2</sup> )
		<b>Contrast Ratio</b> (typical)*	Up to 400:1
		<b>Response Rate</b> (typical)*	16 ms (typical, rise + fall)
		<b>Pixel Pitch</b>	0.255 mm

### Technical Specifications - Monitors

\*All specifications are provided by the component manufacturers. Performance specifications represent the highest specification of all HP's component manufacturers' typical level specifications for performance. Actual performance may vary either higher or lower.

<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b> PIP (Picture in Picture), Input select, auto adjust, OSD up, OSD down, OSD menu select, power <b>Languages</b> English, French, German, Spanish, Italian <b>User Controls</b> Brightness, contrast, positioning, color temperature, individual color control, serial number display, full screen resolutions, clock, clock phase, video picture-in-picture (size and position), input selection (includes separate direct access key for dedicated swap between inputs 1 and 2), factory reset
<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b> 30 to 94 kHz (VGA input); 30 to 92 KHz (DVI input) (for modes with pixel clock less than 157 MHz) <b>Vertical Frequency</b> 48 to 85 Hz (VGA input); 30 to 92 KHz (DVI input) (for modes with pixel clock less than 157 MHz) <b>Graphics Controller</b> Pixelworks PW171 <b>Native Resolution</b> 1600 x 1200 @ 60 Hz (recommended) <b>Preset VESA Graphic Modes (non-interlaced)</b> 1600 x 1200 @ 60 Hz, 75 Hz (VGA input) 1280 x 1024 @ 60 Hz, 75 Hz, 85 Hz 1280 x 960 @ 60 Hz 1152 x 900 @ 66 Hz 1024 x 768 @ 60 Hz, 75 Hz, 85 Hz 800 x 600 @ 60 Hz, 85 Hz 640 x 480 @ 60 Hz, 75 Hz, 85 Hz <b>Text Mode</b> 720 x 400 @ 70 Hz <b>Mac Mode</b> 1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz <b>Sun Mode</b> 1152 x 900 @ 66 Hz <b>Maximum Pixel Clock Speed</b> 202 MHz (VGA input); 162 MHz (DVI input) <b>User Programmable Modes</b> Yes, 10 <b>Anti-Glare</b> Yes <b>Anti-Static</b> Yes <b>Default Color Temperature</b> 6500 K
<b>Video Input</b>	<b>Plug and Play</b> Yes <b>Input Signal</b> Four connectors, including one 15-pin mini D-sub VGA, one DVI-I (VGA analog and digital input), one composite video, and one s-video <b>Input Impedance</b> 75 ohms ± 10%

### Technical Specifications - Monitors

	<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green	
	<b>Video Cable</b>	VGA to VGA; VGA to DVI-I; DVI-D to DVI-I	
	<b>Video Cable Length</b>	5.9 ft (1.8 m)	
<b>Power</b>	<b>Input Power</b>	Auto-Ranging, 90 to 132 VAC and 195 to 265 VAC; internal power supply, 50 Hz/60 Hz	
	<b>Frequency</b>	47.5 to 63 Hz	
	<b>Maximum</b>	< 75 W	
	<b>Power Saving</b>	< 5 W	
	<b>Power Cable Length</b>	5.9 ft (1.8 m)	
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked with stand</b>	17.36 to 20.9 x 17.8 x 8.27 in (44.1 to 53.1 x 45.2 x 21.0 cm)
		<b>Unpacked without stand (head only)</b>	14.29 x 17.8 x 3.19 in (36.3 x 45.2 x 8.1 cm)
		<b>Packaged</b>	11.5 x 21.9 x 23.9 in (29.2 x 55.6 x 60.6 cm)
	<b>Weight</b>	<b>Unpacked</b>	With stand: 20.28 lb (9.2 kg); Without stand: 12.35 lb (5.6 kg)
		<b>Packaged</b>	26.9 lb (12.2 kg)
	<b>Tilt Range</b>	-5° to + 25° vertical	
	<b>Swivel Range</b>	-35° to + 35°	
	<b>Height Adjustable</b>	Yes, range 3.54 in (9.0 cm)	
	<b>Pivot Rotation</b>	Yes	
	<b>Base</b>	Attached	
<b>Environmental</b>	<b>Temperature – Operating</b>	46° to 95° F (10° to 35° C)	
	<b>Temperature – Non-operating</b>	6° to 140° F (-10° to 60° C)	
	<b>Humidity – Operating</b>	20% to 80% non-condensing	
	<b>Humidity – Non-operating</b>	5% to 85%	
	<b>Altitude – Operating</b>	+12,000 ft (+3,657.6 m)	
	<b>Altitude – Non-operating</b>	+40,000 ft (+12,192 m)	
<b>Options</b>	<b>HP Desktop Access Center</b>	Sold separately, the HP Desktop Access Center features integrated microphone/headset jacks, dual function headset for phone/PC support, a MultiBay slot for adding an optical drive (sold separately), and four USB ports for easy integration of third-party digital solutions; part number DK985A. For more information, refer to the HP Desktop Access Center QuickSpecs.	

### Technical Specifications - Monitors

<b>Other</b>	<b>Accessories Included</b>	VGA to VGA cable – connects the graphic card's VGA analog connector to the monitor's input #1 (VGA analog) connector VGA to DVI-I cable – connects the graphic card's VGA connector to the monitor's input #2 (DVI-I analog) connector DVI-D to DVI-I cable – connects the graphic card's DVI-D digital connector to the monitor's input #2 (DVI-I digital) connector
	<b>User Guide Languages</b>	English, B. Portuguese, French, LA Spanish, Korean, S. Chinese, T. Chinese, Bahasa, Japanese, Danish, Finnish, German, Norwegian, Spanish, Swedish, Greek, Polish, Russian, Slovenian, Turkish
	<b>Warranty Languages</b>	English, Canadian French, LA Spanish, Brazilian Portuguese, Danish, German, Castilian Spanish, French, Italian, Dutch, Norwegian, Finnish, Swedish, Bahasa Indonesian, Korean, T. Chinese, S. Chinese
	<b>Color</b>	Carbonite/Silver
	<b>VESA External Mounting</b>	Yes (Standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-Ready</b>	Yes
<b>Certification and Compliance</b>		Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCIB/CCEE Approval, CISPR Requirements, Eastern European Approvals, *Energy Star Compliant, FCC Approval, German Ergonomic (TUV and GS Mark), ISO 9241-3,7,8 VDT Guidelines, ISO 13406-2 Pixel Defect Guidelines, Mexican NOM Approval, MIC Requirements (New Zealand), MPR-II Compliant, Nordic Approvals (Nemko, Fimko, Demko, Semko), PC2001 Compliant, PC99 Certified, S. Korean MIC Approval, Taiwan BSMI Approval, TCO 03 (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Windows Certification (Microsoft® Windows® 98, Microsoft Windows 2000, and Microsoft Windows XP) <a href="#">* Energy Star Compliant available summer 2004.</a>
<b>Compatibility</b>		Compatible with platforms using the VESA standard video modes and HP Compaq Business Desktops d500, d300, and d200 Series, Compaq Evo Desktops, and HP Workstations
<b>Service and Warranty</b>		Limited three years parts, labor, and on-site service, including backlight. Availability varies by region. Certain restrictions and exclusions apply. Consult HP Customer Service for details.

<b>HP Flat Panel Monitor LP2065</b>	<b>Panel</b>	<b>Type</b>	20-inch Active Matrix TFT (thin film transistor)
		<b>Viewable Image Area</b> (diagonal)	20.1 in (51 cm)
		<b>Screen Opening</b> (W x H)	16.2 x 12.17 in (41.1 x 30.9 cm)

### Technical Specifications - Monitors

	<b>Viewing Angle</b> (typical)*	Up to 178° horizontal/178° vertical (10:1 minimum contrast ratio)
	<b>Brightness</b> (typical*	Up to 300 nits (cd/m <sup>2</sup> )
	<b>Contrast Ratio</b> (typical)*	Up to 800:1
	<b>Response Rate</b> (typical)*	8 ms (gray to gray), 16 ms (rise + fall)
	<b>Pixel Pitch</b>	0.255 mm
	<b>Backlight Lamp Life</b> (to half brightness)	45K hours
<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b>	Input select, auto adjust/OSD up, OSD down, OSD menu select, power
	<b>Languages</b>	English, French, German, Spanish, Italian, Dutch, and Japanese
	<b>User Controls</b>	Brightness, contrast, positioning, color temperature, individual color control, serial number display, full screen resolutions, clock, clock phase, input selection, image control (including scaling), and factory reset
	<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b> 30 to 94 kHz (VGA input); 30 to 92 KHz (DVI input for modes with pixel clock less than 157 MHz)
	<b>Vertical Frequency</b>	48 to 85 Hz (VGA input); 30 to 92 KHz (DVI input for modes with pixel clock less than 157 MHz)
	<b>Native Resolution</b>	1600 x 1200 @ 60 Hz (recommended)
	<b>Preset VESA Graphic Modes</b> (non-interlaced)	1600 x 1200 @ 60 Hz, 75 Hz (VGA input) 1280 x 1024 @ 60 Hz, 75 Hz, 85 Hz 1280 x 960 @ 60 Hz 1152 x 900 @ 66 Hz 1024 x 768 @ 60 Hz, 75 Hz, 85 Hz 800 x 600 @ 60 Hz, 85 Hz 640 x 480 @ 60 Hz, 75 Hz, 85 Hz
	<b>Text Mode</b>	720 x 400 @ 70 Hz
	<b>Mac Mode</b>	1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz
	<b>Sun Mode</b>	1152 x 900 @ 66 Hz
	<b>Maximum Pixel Clock Speed</b>	202 MHz (VGA input); 162 MHz (DVI input)
	<b>User Programmable Modes</b>	Yes, 10
	<b>Anti-Glare</b>	Yes
	<b>Anti-Static</b>	Yes
	<b>Default Color Temperature</b>	6500 K
<b>Video Input</b>	<b>Plug and Play</b>	Yes

### Technical Specifications - Monitors

	<b>Input Signal</b>	Four connectors, including one 15-pin mini D-sub VGA, one DVI-I (VGA analog and digital input), one composite video, and one s-video	
	<b>Self Powered USB 2.0 Hub</b>	One upstream, four downstream ports (cable included)	
	<b>Input Signal</b>	Two DVI-I connectors (dual VGA analog or dual digital input possible)	
	<b>Input Impedance</b>	75 ohms $\pm$ 10%	
	<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green	
	<b>Video Cable</b>	Two VGA to DVI-I; two DVI-D to DVI-I	
	<b>Video Cable Length</b>	5.9 ft (1.8 m)	
<b>Power</b>	<b>Input Power</b>	Auto-Ranging, 90 to 132 VAC and 195 to 265 VAC; internal power supply, 50 Hz/60 Hz	
	<b>Frequency</b>	47.5 to 63 Hz	
	<b>Typical Power Consumption</b>	55 watts (without USB ports); 70 watts (USB ports fully loaded)	
	<b>Maximum</b>	< 75 W	
	<b>Power Saving</b>	< 2 watts	
	<b>Power Cable Length</b>	5.9 ft (1.8 m)	
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked with stand</b>	16.7 to 21.8 x 17.4 x 8.67 in (42.5 to 55.5 x 44.3 x 22.0 cm)
		<b>Unpacked w/o stand (head only)</b>	13.58 x 17.4 x 3.42 in (34.5 x 44.3 x 8.7 cm)
		<b>Packaged</b>	11.77 x 22.2 x 16.77 in (29.9 x 56.4 x 42.6 cm)
	<b>Weight</b>	<b>Unpacked</b>	With stand: 20.28 lb (9.2 kg); Without stand: 12.35 lb (5.6 kg)
		<b>Packaged</b>	26.3 lb (11.95 kg)
	<b>Tilt Range</b>	-5° to + 25° vertical tilt	
	<b>Swivel Range</b>	-45° to + 45°	
	<b>Height Adjustable</b>	Yes, range 5.1 in (13.0 cm)	
	<b>Pivot Rotation</b>	Yes	
	<b>Base</b>	Detachable, ships attached	
<b>Environmental</b>	<b>Temperature – Operating</b>	46° to 95° F (10° to 35° C)	
	<b>Temperature – Non-operating</b>	6° to 140° F (-10° to 60° C)	
	<b>Humidity – Operating</b>	20% to 80% non-condensing	
	<b>Humidity – Non-operating</b>	5% to 85%	

### Technical Specifications - Monitors

	<b>Altitude – Operating</b>	+12,000 ft (+3,657.6 m)
	<b>Altitude – Non-operating</b>	+40,000 ft (+12,192 m)
<b>Options</b>	<b>HP Silver Flat Panel Speaker Bar - Part number: EE418AA</b>	Powered directly by the monitor or the PC, the Speaker Bar seamlessly attaches to the monitor's lower bezel to bring full audio support to select HP flat panel monitors. Features include dual speakers with full sound range and external jack for headphones. Sold separately. For more information, refer to the HP Silver Flat Panel Speaker Bar QuickSpec.
<b>Other</b>	<b>Accessories Included</b>	VGA to DVI-I cable – connects the graphic card's VGA connector to the monitor's input #1 or 2 (DVI-I analog) connector.  DVI-D to DVI-I cable – connects the graphic card's DVI-D digital connector to the monitor's input #1 or #2 (DVI-I digital) connector.
	<b>User Guide Languages</b>	English, B. Portuguese, French, LA Spanish, Korean, S. Chinese, T. Chinese, Bahasa, Japanese, Danish, Finnish, German, Norwegian, Spanish, Swedish, Greek, Polish, Russian, Slovenian, Turkish
	<b>Software</b>	HP Display Assistant Utility makes it possible to adjust displays settings through the PC using two-way communication via DDCI.  HP Display Lite Saver allows ability to power up and down display at predetermined hours of the day to save power and backlight life.  Pivot Pro software from Portrait Displays, Inc. interacts with your PC's native graphics driver to enable seamless portrait screen redraws with a simple mouse-click or keyboard command. Pivot Pro supports 90-degree portrait and landscape views. Language support is available in English, Japanese, French, German, Spanish, Italian, and Traditional and Simplified Chinese.
	<b>User Guide Languages</b>	English
	<b>Warranty Languages</b>	English
	<b>Color</b>	Carbonite/Silver
	<b>VESA External Mounting</b>	Yes (Standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-Ready</b>	Yes
<b>Certification and Compliance</b>		Canadian Requirements/CSA, CE Marking, CISPR Requirements, , Energy Star Compliant, FCC Approval, ISO 13406-2 Pixel Defect Guidelines, Mexican NOM Approval,, MPR-II Compliant, PC2001 Compliant, PC99 Certified, TCO 03 (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Microsoft Windows Certification (Microsoft Windows 98, Microsoft Windows 2000, and Microsoft Windows XP)

### Technical Specifications - Monitors

<b>Compatibility</b>	Compatible with platforms using the VESA standard video modes. Recommended for use with HP products.
<b>Service and Warranty</b>	Three years parts, labor, and on-site service. 24-hour 365-day 1-800 technical support. Replacement options include 2nd business day on-site service or next business day direct replacement. With direct replacement, HP will ship a replacement display product directly to you. Using the shipping labels provided, return your failed display to HP. Certain restrictions and exclusions apply. For details, contact HP Customer Support.

<b>HP Flat Panel Monitor L2335</b>	<b>Panel</b>	<b>Type</b>	23-inch Active Matrix TFT (thin film transistor)
		<b>Viewable Image Area</b> (diagonal)	23 in (58.4 cm)
		<b>Screen Opening</b> (W x H)	19.53 x 12.24 in (49.6 x 31.1 cm)
		<b>Viewing Angle</b> (typical)*	Up to 170° H/170° V (10:1 minimum contrast ratio)
		<b>Brightness</b> (typical)*	Up to 250 nits (cd/m <sup>2</sup> )
		<b>Contrast Ratio</b> (typical)*	Up to 500:1
		<b>Response Rate</b> (typical)*	16 ms (typical, rise + fall)
		<b>Pixel Pitch</b>	0.258 mm
		* All specifications are provided by the component manufacturers. Performance specifications represent the highest specification of all HP's component manufacturers' typical level specifications for performance. Actual performance may vary either higher or lower.	
		<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b>
		<b>Languages</b>	English, French, German, Spanish, Italian
		<b>User Controls</b>	Brightness, contrast, positioning, color temperature, individual color control, serial number display, full screen resolutions, clock, clock phase, video picture-in-picture (size and position), input selection (includes separate direct access key for dedicated swap between inputs 1 and 2), factory reset
	<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b>	30 to 94 kHz (VGA input); 30 to 92 KHz (DVI input) (for modes with pixel clock less than 157 MHz)
		<b>Vertical Frequency</b>	48 to 85 Hz (VGA and DVI input)
		<b>Graphics Controller</b>	Pixelworks PW172
		<b>Native Resolution</b>	1920 x 1200 @ 60 Hz (recommended)
		<b>Preset VESA Graphic Modes</b> (non-interlaced)	1920 x 1200 @ 60Hz 1600 x 1200 @ 60 Hz, 75 Hz 1280 x 1024 @ 60 Hz, 75Hz, 85 Hz 1280 x 960 @ 60 Hz 1152 x 900 @ 66 Hz



### Technical Specifications - Monitors

		1024 x 768 @ 60 Hz, 75 Hz, 85 Hz						
		800 x 600 @ 60 Hz, 75Hz						
		640 x 480 @ 60 Hz, 75 Hz						
	<b>Text Mode</b>	720 x 400 @ 70 Hz						
	<b>Mac Mode</b>	1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz						
	<b>Sun Mode</b>	1152 x 900 @ 66 Hz						
	<b>Maximum Pixel Clock Speed</b>	202 MHz (VGA input); 162 MHz (DVI input)						
	<b>User Programmable Modes</b>	Yes, 10						
	<b>Anti-Glare</b>	Yes						
	<b>Anti-Static</b>	Yes						
	<b>Default Color Temperature</b>	6500 K						
<b>Video Input</b>	<b>Plug and Play Input Signal</b>	Yes						
		Five connectors, including one 15-pin mini D-sub VGA, one DVI-I (VGA analog and digital input), one composite video, one s-video, component video						
	<b>Input Impedance</b>	75 ohms ± 10%						
	<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green						
	<b>Video Cable</b>	VGA to VGA; VGA to DVI-I; DVI-D to DVI-I						
	<b>Video Cable Length</b>	5.9 ft (1.8 m)						
<b>Power</b>	<b>Input Power</b>	Auto-Ranging, 90 to 132 VAC and 195 to 265 VAC; internal power supply, 50 Hz/60 Hz						
	<b>Frequency</b>	47.5 to 63 Hz						
	<b>Maximum</b>	< 100 W						
	<b>Power Saving</b>	< 5 W						
	<b>Power Cable Length</b>	5.9 ft (1.8 m)						
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<table border="0"> <tbody> <tr> <td><b>Unpacked</b></td> <td>17.36 (min) to 20.9 (max) x 21.46 x 8.27 in (44.1 (min) to 53.1 (max) x 54.5 x 21.0 cm)</td> </tr> <tr> <td><b>Unpacked without stand (head only)</b></td> <td>14.57 x 21.46 x 3.35 in (37.0 x 54.5 x 8.5 cm)</td> </tr> <tr> <td><b>Packaged</b></td> <td>11.5 x 25.75 x 23.86 in (29.2 x 65.4 x 60.6 cm)</td> </tr> </tbody> </table>	<b>Unpacked</b>	17.36 (min) to 20.9 (max) x 21.46 x 8.27 in (44.1 (min) to 53.1 (max) x 54.5 x 21.0 cm)	<b>Unpacked without stand (head only)</b>	14.57 x 21.46 x 3.35 in (37.0 x 54.5 x 8.5 cm)	<b>Packaged</b>	11.5 x 25.75 x 23.86 in (29.2 x 65.4 x 60.6 cm)
<b>Unpacked</b>	17.36 (min) to 20.9 (max) x 21.46 x 8.27 in (44.1 (min) to 53.1 (max) x 54.5 x 21.0 cm)							
<b>Unpacked without stand (head only)</b>	14.57 x 21.46 x 3.35 in (37.0 x 54.5 x 8.5 cm)							
<b>Packaged</b>	11.5 x 25.75 x 23.86 in (29.2 x 65.4 x 60.6 cm)							
	<b>Weight</b>	<table border="0"> <tbody> <tr> <td><b>Unpacked</b></td> <td>22.27 lb (10.1 kg)</td> </tr> <tr> <td><b>Packaged</b></td> <td>30.87 lb (14.0 kg)</td> </tr> </tbody> </table>	<b>Unpacked</b>	22.27 lb (10.1 kg)	<b>Packaged</b>	30.87 lb (14.0 kg)		
<b>Unpacked</b>	22.27 lb (10.1 kg)							
<b>Packaged</b>	30.87 lb (14.0 kg)							
	<b>Tilt Range</b>	-5° to + 25° vertical						
	<b>Swivel Range</b>	-35° to + 35°						
	<b>Height Adjustable</b>	Yes, range 3.54 in (9.0 cm)						

### Technical Specifications - Monitors

	<b>Pivot Rotation</b>	Yes
	<b>Base</b>	Attached
<b>Environmental</b>	<b>Temperature – Operating</b>	46° to 95° F (10° to 35° C)
	<b>Temperature – Non-operating</b>	6° to 140° F (-10° to 60° C)
	<b>Humidity – Operating</b>	20% to 80% non-condensing
	<b>Humidity – Non-operating</b>	5% to 85%
	<b>Altitude – Operating</b>	+12,000 ft (+3,657.6 m)
	<b>Altitude – Non-operating</b>	+40,000 ft (+12,192 m)
<b>Options</b>	<b>HP Desktop Access Center</b>	Sold separately, the HP Desktop Access Center Features integrated microphone/headset jacks, dual function headset for phone/PC support, a MultiBay slot for adding an optical drive (sold separately), and four USB ports for easy integration of third-party digital solutions; part number DK985A. For more information, refer to the HP Desktop Access Center QuickSpecs.
<b>Other</b>	<b>Accessories Included</b>	VGA to VGA cable – connects the graphic card's VGA analog connector to the monitor's input #1 (VGA analog) connector VGA to DVI-I cable – connects the graphic card's VGA connector to the monitor's input #2 (DVI-I analog) connector DVI-D to DVI-I cable – connects the graphic card's DVI-D digital connector to the monitor's input #2 (DVI-I digital) connector
	<b>User Guide Languages</b>	English, B. Portuguese, French, LA Spanish, Korean, S. Chinese, T. Chinese, Bahasa, Japanese, Danish, Finnish, German, Norwegian, Spanish, Swedish, Greek, Polish, Russian, Slovenian, Turkish
	<b>Warranty Languages</b>	English, Canadian French, LA Spanish, Brazilian Portuguese, Danish, German, Castilian Spanish, French, Italian, Dutch, Norwegian, Finnish, Swedish, Bahasa Indonesian, Korean, T. Chinese, S. Chinese
	<b>Color</b>	Carbonite/silver
	<b>VESA External Mounting</b>	Yes (Standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-Ready</b>	Yes
<b>Certification and Compliance</b>		Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCIB/CCEE Approval, CISPR Requirements, Eastern European Approvals, *Energy Star Compliant, FCC Approval, German Ergonomic (TUV and GS Mark), ISO 9241-3,7,8 VDT Guidelines, ISO 13406-2 Pixel Defect Guidelines, Mexican

### Technical Specifications - Monitors

NOM Approval, MIC Requirements (New Zealand), MPR-II Compliant, Nordic Approvals (Nemko, Fimko, Demko, Semko), PC2001 Compliant, PC99 Certified, S. Korean MIC Approval, Taiwan BSMI Approval, TCO 03 (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Windows Certification (Microsoft® Windows® 98, Microsoft Windows 2000, and Microsoft Windows XP).

\* [Energy Star Compliant available summer 2004.](#)

#### Compatibility

Compatible with platforms using the VESA standard video modes and HP Compaq Business Desktops d500, d300, and d200 Series, Compaq Evo Desktops, and HP Business Desktops d300 series.

#### Service and Warranty

Limited three years parts, labor, and on-site service, including backlight. Availability varies by region. Certain restrictions and exclusions apply. Consult HP Customer Service for details.

#### HP Flat Panel Monitor LP2465

#### Panel

<b>Type</b>	24-inch Active Matrix TFT (thin film transistor)
<b>Viewable Image Area</b> (diagonal)	24 in (60.96 cm)
<b>Screen Opening</b> (W x H)	20.47 x 12.83 in (52.0 x 32.6 cm)
<b>Viewing Angle</b> (typical)*	178° H/ 178° V (10:1 minimum contrast ratio)
<b>Brightness</b> (typical)*	500 nits (cd/m <sup>2</sup> )
<b>Contrast Ratio</b> (typical)*	1000:1
<b>Response Rate</b> (typical)*	8 ms (typical gray to gray)
<b>Pixel Pitch</b>	0.270 mm
<b>Backlight Lamp Life</b> (to half brightness)	50K hours

\*Response time 13 ms rise and fall, 6 ms gray to gray.

#### On Screen Display (OSD) Controls

<b>Buttons or Switches</b>	Input Select, Auto Adjust, OSD Up, OSD Down, OSD Menu Select, Power
<b>Languages</b>	English, French, German, Spanish, Italian, Japanese, Dutch
<b>User Controls</b>	Brightness, contrast, positioning, color temperature, individual color control, serial number display, full screen resolutions, clock, clock phase, input selection (includes separate direct access key for dedicated swap between inputs 1 and 2), factory reset

#### Signal Interface/ Performance

<b>Horizontal Frequency</b>	30 to 94 kHz (VGA input); 30 to 92 KHz (DVI input) (for modes with pixel clock less than 157 MHz)
<b>Vertical Frequency</b>	48 to 85 Hz (VGA and DVI input)
<b>Native Resolution</b>	1920 x 1200 @ 60 Hz (recommended) (native aspect ratio of 16:10)
<b>Preset VESA Graphic Modes</b> (non-interlaced)	1920 x 1200 @ 60 Hz 1600 x 1200 @ 60 Hz, 75 Hz 1280 x 1024 @ 60 Hz, 75 Hz, 85 Hz

### Technical Specifications - Monitors

		1280 x 960 @ 60 Hz
		1152 x 900 @ 66 Hz
		1024 x 768 @ 60 Hz, 75 Hz, 85 Hz
		800 x 600 @ 60 Hz, 75 Hz
		640 x 480 @ 60 Hz, 75 Hz
	<b>Text Mode</b>	720 x 400 @ 70 Hz
	<b>Mac Mode</b>	1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz
	<b>Sun Mode</b>	1152 x 900 @ 66 Hz
	<b>Maximum Pixel Clock Speed</b>	202 MHz (VGA input); 162 MHz (DVI input)
	<b>User Programmable Modes</b>	Yes, 20
	<b>Anti-Glare</b>	Yes
	<b>Anti-Static</b>	Yes
	<b>Default Color Temperature</b>	6500 K
<b>Video/Other Inputs</b>	<b>Plug and Play</b>	Yes
	<b>Self Powered USB 2.0 Hub</b>	One upstream, four downstream ports (located on side of monitor, cable included)
	<b>Input Signal</b>	Two DVI-I (VGA analog and digital) inputs
	<b>Input Impedance</b>	75 ohms $\pm$ 10%
	<b>Sync Input</b>	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green
	<b>Video Cable</b>	VGA to DVI-I; DVI-D to DVI-D
	<b>Video Cable Length</b>	5.9 ft (1.8 m)
<b>Power</b>	<b>Input Power</b>	Auto-Ranging, 90 to 132 VAC and 195 to 265 VAC; internal power supply, 50 Hz/60 Hz
	<b>Frequency</b>	47.5 to 63 Hz
	<b>Typical Power Consumption</b>	75 watts
	<b>Maximum</b>	< 110 watts
	<b>Power Saving</b>	< 2 watts
	<b>Power Cable Length</b>	6.2 ft (1.9 m)
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked w/ stand</b> 14.6 (min) to 19.7 (max) x 22 x 9.1 in (37.1 (min) to 50.1 (max) x 55.4 x 23.2 cm)
		<b>Unpacked w/o stand (head only)</b> 14.4 x 22 x 3.7 in (36.6 x 55.84 x 9.2 cm)
		<b>Packaged</b> 11.7 x 22.1 x 25.6 in (29.8 x 56.0 x 65.1 cm)

### Technical Specifications - Monitors

	<b>Weight</b>	<b>Unpacked</b>	23.6 lbs (10.7 kg)	
		<b>Packaged</b>	23.6 lbs (10.7 kg)	
	<b>Tilt Range</b>	-5° to + 25° vertical		
	<b>Swivel Range</b>	-45° to + 45°		
	<b>Height Adjustable</b>	Yes, range 5.1 in (130 mm)		
	<b>Pivot Rotation</b>	Yes		
	<b>Base</b>	Detachable, ships detached		
<b>Environmental</b>	<b>Temperature – Operating</b>	46° to 95° F (10° to 35° C)		
	<b>Temperature – Non-operating</b>	6° to 140° F (-10° to 60° C)		
	<b>Humidity – Operating</b>	20% to 80% non-condensing		
	<b>Humidity – Non-operating</b>	5% to 85%		
	<b>Altitude – Operating</b>	+12,000 ft (+3,657.6 m)		
	<b>Altitude – Non-operating</b>	+40,000 ft (+12,192 m)		
	<b>Other</b>	<b>Accessories Included</b>	<p>VGA to DVI-I cable – connects the graphic card's VGA connector to the monitor's input #2 (DVI-I analog) connector</p> <p>DVI-D to DVI-D cable – connects the graphic card's DVI-D digital connector to the monitor's input #2 (DVI-I digital) connector</p>	
		<b>Software</b>	<p>Pivot Pro software from Portrait Displays, Inc. interacts with your PC's native graphics driver to enable seamless portrait screen redraws with a simple mouse-click or keyboard command. Pivot Pro supports 90-degree portrait and landscape views. Language support is available in English, Japanese, French, German, Spanish, Italian, and Traditional and Simplified Chinese.</p> <p>HP Display Assistant is a software utility that allows monitor adjustment, color calibration, and security/asset management using the Display Data Channel Command Interface (DDC/CI) protocol of the connected desktop PC.</p> <p>HP Display LiteSaver feature allows you to schedule Sleep mode at preset times to help protect the monitor against image retention, drastically lower power consumption and energy costs, and extend the lifespan of the monitor.</p>	

### Technical Specifications - Monitors

	<b>User Guide Languages</b>	English, B. Portuguese, French, LA Spanish, Korean, S. Chinese, T. Chinese, Bahasa, Japanese, Danish, Finnish, German, Norwegian, Spanish, Swedish, Greek, Polish, Russian, Slovenian, Turkish
	<b>Warranty Languages</b>	English, Canadian French, LA Spanish, Brazilian Portuguese, Danish, German, Castilian Spanish, French, Italian, Dutch, Norwegian, Finnish, Swedish, Bahasa Indonesian, Korean, T. Chinese, S. Chinese
	<b>Color</b>	Carbonite/silver
	<b>VESA External Mounting</b>	Yes (Standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-Ready</b>	Yes
<b>Options</b>	<b>HP Silver Flat Panel Speaker Bar - Part number: EE418AA</b>	Powered directly by the monitor or PC, the Speaker Bar seamlessly attaches to the monitor's lower bezel to bring full audio support to select HP flat panel monitors. Features include dual speakers with full sound range and an external jack for headphones. Sold separately. For more information, refer to the HP Flat Panel Speaker Bar QuickSpec.
<b>Certification and Compliance</b>		Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCIB/CCEE Approval, CISPR Requirements, Eastern European Approvals, Energy Star Compliant, FCC Approval, German Ergonomic (TUV and GS Mark), ISO 9241-3,7,8 VDT Guidelines, ISO 13406-2 Pixel Defect Guidelines, Mexican NOM Approval, MIC Requirements (New Zealand), MPR-II Compliant, Nordic Approvals (Nemko, Fimko, Demko, Semko), PC2001 Compliant, PC99 Certified, S. Korean MIC Approval, Taiwan BSMI Approval, TCO 03 (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals, Microsoft Windows Certification (Microsoft Windows 98, Microsoft Windows 2000, and Microsoft Windows XP)
<b>Compatibility</b>		Compatible with platforms using the VESA standard video modes. Recommended for use with HP products.
<b>Service and Warranty</b>		Three years parts, labor, and on-site service. 24-hour, 90-day, toll-free technical support. Replacement options may include second business day on-site service, or next business day direct replacement, at HP's sole discretion. With direct replacement, HP will ship a replacement display product directly to you. Using the prepaid shipping labels provided, return your failed display to HP in the same packaging as the replacement. Certain restrictions and exclusions apply. For details see your product warranty or contact HP Customer Support.

### Technical Specifications - Monitors

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