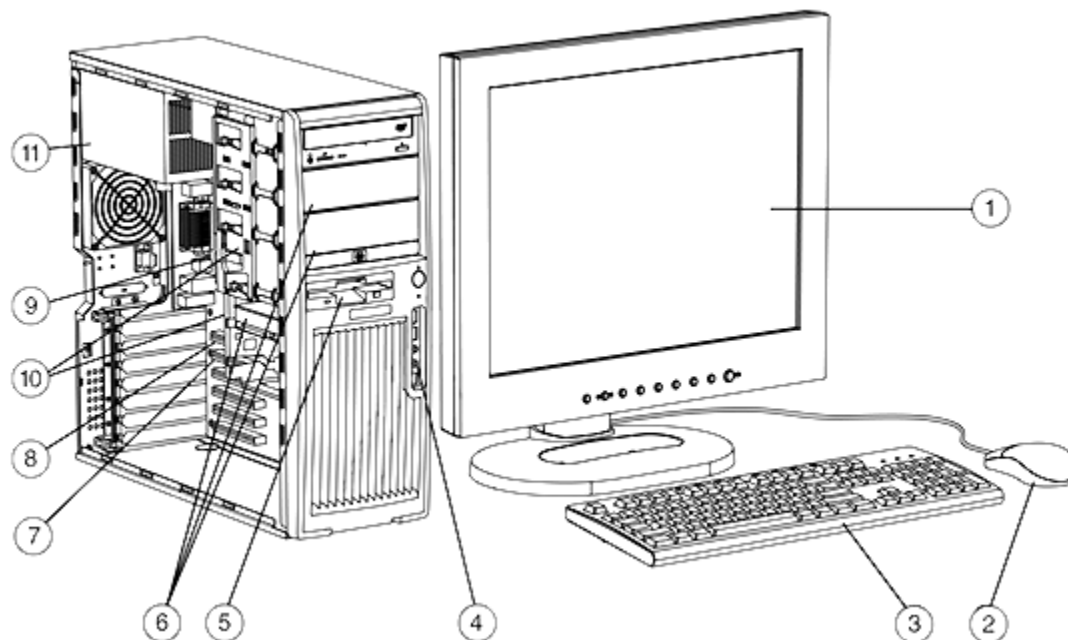


### Overview

**HP recommends Windows Vista® Business**



1. Monitor (sold separately)
2. 2-Button Scroll Mouse
3. 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. 2 USB 2.0 internal ports
8. 2 PCI slots, 1 PCI Express x4 slot, (with x1 functionality), 1 PCI Express x16 slot
9. AMD Opteron 1000-series processors
10. Rear IO: 6 USB 2.0, 1 standard serial port, 1 optional serial port, RJ-45, audio line in, audio line out, and microphone in DVI-D, VGA.
11. 300 watt (continuous) 80 PLUS efficient power supply

### At A Glance

- Choice of Operating Systems:
  - Genuine Windows Vista® Business 32-bit
  - Genuine Windows Vista® Business 64-bit
  - Genuine Windows Vista® 32-bit downgrade to Genuine Microsoft® Windows® XP Professional 32-bit
  - HP Linux Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux WS4 and WS5 - see: <http://www.hp.com/workstations/software/linux>) Red Flag Linux v5 (available in China only)
- For detailed OS/hardware support information for Linux, see: [http://www.hp.com/support/linux\\_hardware\\_matrix](http://www.hp.com/support/linux_hardware_matrix)
- Designed to meet the needs of customers, across all market segments, looking for a stable solution to cover mainstream business needs.
- Created using industry leading Design for Environment standards. Upgradeable, recyclable and energy efficient.
- AMD 690G Chipset
- AMD Opteron™ Processor 1000 series with HyperTransport™ technology
- Dual-Core processing
- AMD64 Technology
  - Direct Connect Architecture
  - 1 GHz AMD HyperTransport™ Bus
  - 128KB L1 cache per core ( 64KB instruction and 64KB data)
  - 2 MB L2 cache (1 MB per core)
  - MMX, SSE, SSE2, SSE3, 3DNOW Pro multimedia instructions
- Support for AMD Power Now™ technologies

### Overview

- Integrated professional graphics featuring 1 DVI-D + 1 VGA graphics ports
- Dual monitor support standard
- RAID 0/1 support
- Embedded TPM1.2 compliant security module (Vista Bit-Locker ready)
- Support for 3.0 Gb/s Serial ATA hard drives
- Value-added software available pre-installed:
  - HP OpenView and Altiris manageability software agents
  - Symantec Antivirus 10.0 with 60 day Live Update Subscription
  - HP Backup and Recovery Manager
- HP BIOS for security, manageability and software image stability
- Integrated HP Gigabit LAN by Broadcom
- Convertible and tool-less minitower chassis
- 2 PCI Express slots/2 PCI slots
- Dual channel Unbuffered DDR2 memory at 667 MHz
- Four channel SATA Controller with RAID\*\* (Factory integrated RAID is Microsoft Windows only)
- Realtek ALC262 integrated high definition audio with internal speaker
- Pre-loaded Manageability tools (Microsoft Windows only)
- 1-year parts, 1-year labor and 1-year on-site warranty services available on some SKUs (terms and conditions vary by country; certain restrictions and exclusions apply)
- 3-years parts, 3-years labor and 3-years on-site warranty services available on some SKUs (terms and conditions vary by country; certain restrictions and exclusions apply)
- HP Insight Diagnostics software

\* Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista -- like the new Windows Aero™ user interface -- require advanced or additional hardware. Check <http://www.windowsvista.com/getready> for details.

\*\* 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** – **Dual-Core AMD Opteron Processor 1000 series with 1 GHz HyperTransport™ Technology bus, 1 MB L2 cache per core**  
 One of the following

- AMD Opteron Processor Model 1212/ 2.00 GHz
- AMD Opteron Processor Model 1214/ 2.20 GHz
- AMD Opteron Processor Model 1216/ 2.40 GHz
- AMD Opteron Processor Model 1218/ 2.60 GHz
- AMD Opteron Processor Model 1220/ 2.80 GHz
- AMD Opteron Processor Model 1222/ 3.00 GHz

**NOTE:** Dual Core is a new technology designed to improve performance of multithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefit; check with software provider to determine suitability. Not all customers or software applications will necessarily benefit from use of this technology.

**Operating System** –  
 One of the following

- Genuine Windows Vista® Business 32-bit
- Genuine Windows Vista® Business 64-bit
- Genuine Windows Vista® 32-bit downgrade to Genuine Microsoft® Windows® XP Professional 32-bit
- Red Flag Linux v5 preload (China Only)
- HP Linux Installer Kit (see <http://www.hp.com/workstations/software/linux>): (expected availability CQ1 2008)

- Red Hat Enterprise Linux WS4 (Update 6 or later – 32- & 64-bit version)
- Red Hat Enterprise Linux 5 Desktop (Update 1 or later – 32 & 64 bit version)
- For detailed OS/hardware support information for Linux, see:  
[http://www.hp.com/support/linux\\_hardware\\_matrix](http://www.hp.com/support/linux_hardware_matrix)

**1-2 Hard Disk Drives** –  
 Up to 2 of the following  
 SATA drives

	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
<b>SATA Hard Drives</b>			
80 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
160 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
250 GB 7200 rpm SATA 3.0Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
500 GB 7200 rpm SATA 3.0Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop

<sup>i</sup> Support for all peripherals and parts on Microsoft Windows Vista Business 64 is subject to the expected availability of Microsoft Vista Business 64 in CQ1 2008

### Standard Features - Custom Components

Factory Integrated RAID	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
(on motherboard for SATA drives. All drives must be identical in type and capacity)	RAID 0 Configuration – Striped Array (SATA or SAS)	32-Bit, 64-Bit	32-Bit Not supported
	RAID 1 Configuration – Mirrored Array (SATA or SAS, 2 drive max.)	32-Bit, 64-Bit	32-Bit Not supported
<b>NOTE:</b> Requires identical hard drives (speeds, capacity, interface). (HW RAID functionality not supported by Linux)			

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Memory – One of the following	Windows Vista	Windows XP	Red Hat Linux
<b>PC2-5300E ECC Unbuffered RAM DIMMs</b>			
HP 1 GB (2 x 512 MB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
HP 2 GB (2 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
HP 3 GB (2 x 512 + 2 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
HP 4 GB (4 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>PC2-5300 Unbuffered RAM DIMMs</b>			
HP 512 MB (2 x 256 MB) PC2-5300E DDR2-667 ECC	32-Bit	32-Bit	WS 4 & 5 Desktop
HP 1 GB (2 x 512 MB) PC2-5300E DDR2-667 ECC (expected availability in CQ4 2007)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
HP 2 GB (4 x 512 MB) PC2-5300E DDR2-667 ECC (expected availability in CQ4 2007)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>NOTE:</b> Do not mix ECC and non-ECC memory. Only unbuffered DDR2 DIMMs are supported. All DIMMs must be either x8 or x16 width.			

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Removable Storage	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
<b>FDD Floppy drive</b>			
1.44 MB Diskette Drive (1 only)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>Optical drives</b>			
SATA 16X DVD-ROM*	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
SATA 16X DVD+/-RW, Supermulti with Lightscribe**	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>NOTE:</b> * Not supported as a 2nd drive option. ** LightScribe creates a grayscale image similar to black and white photography. LightScribe media required and sold separately. Double-layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.			

### Standard Features - Custom Components

Input Devices	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
<b>Keyboard</b> – One of the following USB Standard Keyboard	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>Mouse</b> – One of the following USB 2-Button Scroll Mouse (optical)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
USB 3-Button Mouse (optical)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop

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Audio	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
Integrated High Definition Realtek ALC262 audio with internal speaker	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
Sound Blaster X-Fi XtremeMusic Audio Card	32-Bit, 64-Bit	32-Bit	Not Supported

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NIC (Network Interface Controller)	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
Integrated PCIe Broadcom 5755 Netxtreme Gigabit Ethernet NIC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop

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PCI Express Graphics	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
<b>Integrated Graphics</b> Integrated ATI Radeon X1250 graphics	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>Professional 2D</b> NVIDIA Quadro NVS 290 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>Entry 3D</b> NVIDIA Quadro FX 370 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
NVIDIA Quadro FX 570 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
<b>Mid-range 3D</b> NVIDIA Quadro FX 1700 PCIe (512 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
ATI FireGL V5600 PCIe (512 MB)	32-Bit, 64-Bit	32-Bit	Not supported

### Standard Features - Custom Components

Miscellaneous	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux
Solenoid lock and hood sensor	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop
Configure minitower in desktop orientation	N/A	N/A	N/A
HP IEEE 1394a 3-Port PCI Card	32-Bit, 64-Bit	32-Bit	Not Supported

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Software	Windows Vista <sup>i</sup>	Windows XP	Red Hat Linux
<b>Standard</b>			
Alert Standard Format specification	32-Bit, 64-Bit	32-Bit	Not supported
HP Performance Tuning Framework	32-Bit, 64-Bit	32-Bit	Not supported
HP Client Manager Software v6.2 (optional download)	32-Bit, 64-Bit	32-Bit	Not supported
Intervideo WinDVD with DVD player	32-Bit, 64-Bit	32-Bit	
HP Backup and Recovery	32-Bit, 64-Bit	32-Bit	Not supported
PDF Complete	32-Bit, 64-Bit	32-Bit	Not supported
<b>Optional</b>			
Microsoft Office 2007 Small Business Edition	32-Bit	32-Bit	Not supported
Microsoft Office 2007 Trial Edition	32-Bit	32-Bit	Not supported
HP Client Manager Software v6.2 (optional download)	32-Bit, 64-Bit	32-Bit	Not supported
HP ProtectTools Security	32-Bit, 64-Bit	32-Bit	Not supported
Symantec AntiVirus 10	32-Bit, 64-Bit	32-Bit	Not supported

### Standard Features - Specs

<b>Form Factor</b>	Minitower	
<b>Color</b>	Carbonite/Alloy metallic	
<b>Convertibility</b>	Yes. 5.25" drives rotate for Minitower or Desktop orientation.	
<b>Expansion Slots</b> (see system board section for more details)	<ul style="list-style-type: none"> <li>• 2 PCI slots (full-height, full-length)</li> <li>• 1 PCI Express x4 slot (x1 functionality)</li> <li>• 1 PCI Express x16 slot for graphics</li> </ul>	
<b>Expansion Bays</b> (see storage section for more details)	<ul style="list-style-type: none"> <li>• 2 internal 3.5" bays</li> <li>• 1 external 3.5" bay, 3 external 5.25" bays*</li> </ul> <p><b>NOTE:</b> Third external 5.25" bay is not full depth in side orientation.</p>	
<b>Front I/O</b>	2 USB 2.0, 1 IEEE 1394 (requires optional PCI card to function), 1 headphone out, and 1 microphone.	
	<p><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.</p>	
<b>Internal I/O</b>	2 USB 2.0 headers, (requires optional HP Internal USB Port Kit and is compatible with Multimedia Card Reader Option), 1 Serial Port Header (requires optional AMO), 4 SATA Ports.	
<b>Rear I/O</b>	6 USB 2.0, 1 serial, 1 optional serial port, RJ-45 (NIC), 1 audio line in, 1 audio line out; audio ports can be retasked to function as line in, line out, microphone, or headphone.	
<b>Interfaces Supported</b>	1 SATA 3 Gb/s interface (4 internal SATA connectors)	
<b>Hard Drive Controller (PCI) Supported</b>	On-board only	
<b>On-board RAID Support</b>	Yes	
<b>Chassis Dimensions (W x D x H)</b>	17.7 x 6.6 x 17.9 inches; 45.0 x 16.8 x 45.6 cm 6.6 x 17.7 x 17.9 inches; 16.8 x 45.0 x 45.6 cm	
<b>Weight</b>	Exact weights depend upon configuration Minimum: 29.3 lbs (13.3 kg) Standard: 32.8 lbs (14.9 kg) Maximum: 38.2 lbs (17.3 kg)	
<b>Temperature</b>	Operating	40° to 95°F (5° to 35°C)
	Non-operating	-40° to 140°F (-40° to 60°C)
<b>Humidity</b>	Operating	8% to 85%
	Non-operating	8% to 90%
<b>Maximum Altitude</b> (non-pressurized)	Operating	10,000 feet; 3,000 m
	Non-operating	30,000 feet; 9,100 m
<b>Power Supply</b>	300 watts wide-ranging, active Power Factor Correction, 80 PLUS Efficient	

### Preconfigured Global SKUs

<b>xw4550T/PH2.4/D250 /U2.0/FX570z /p</b>	<b>OS</b>	Genuine Windows Vista® 32-bit downgrade to Genuine Microsoft® Windows® XP Professional 32-bit
<b>SKU: KK960AW#ABA</b>	<b>Base unit</b>	HP xw4550 Workstation base unit
	<b>Localization kit</b>	HP xw4550 Workstation localization kits
	<b>Processor 1</b>	AMD Opteron Processor Model 1216/ 2.40 GHz
	<b>Memory</b>	2 GB (2 x 1 GB) PC2-6400E DDR2-667 ECC
	<b>Hard Drive</b>	HP 250 GB 7200 rpm SATA 3.0Gb/s NCQ
	<b>Controller</b>	NA
	<b>Optical Drive</b>	SATA 16X DVD+/-RW, Supermulti with Lightscribe
	<b>Graphics</b>	NVIDIA Quadro FX 570 PCIe (256 MB)
	<b>Floppy disk drive</b>	NA
	<b>Keyboard</b>	HP USB standard keyboard
	<b>Mouse</b>	HP USB optical scroll mouse
	<b>Energy Star Compliance</b>	<b>HP Energy Star 4.0 Enabled Configuration</b>
	<b>Security</b>	HP ProtectTools Security Software
	<b>Warranty</b>	HP 3-3-3 Warranty

### Country Code Key

<b>US</b>	#ABA	<b>Russia</b>	#ACB
<b>French Canadian</b>	#ABC	<b>Spain</b>	#ABE
<b>Latin America</b>	#ABM	<b>Sweden</b>	
<b>Japan</b>	#ABJ	<b>Switzerland (Italian &amp; English)</b>	#ACN
<b>Japan (English)</b>	#ACF	<b>Switzerland (French &amp; German)</b>	#AR8
<b>Belgium</b>		<b>UK</b>	#ABU
<b>Czech Republic</b>	#AKB	<b>Korea</b>	#AB1
<b>Denmark</b>	#ACE	<b>PRC Chinese</b>	#AB2
<b>Europe A4</b>	#AK6	<b>Australia</b>	#ABG
<b>Europe-Int'l English</b>		<b>Taiwan</b>	#AB0
<b>France</b>	#ABF	<b>Thailand</b>	#AKL
<b>Germany</b>	#ABD	<b>Singapore Malaysia</b>	#AB4
<b>Italy</b>	#ABZ	<b>India English</b>	#ACJ
<b>Netherlands</b>	#ABH		

### After-Market Options

PCI-Express Graphics	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
<b>Professional 2D Multi Display Solutions</b>				
NVIDIA Quadro NVS 290 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GN502AA
<b>Entry 3D</b>				
NVIDIA Quadro FX 370 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GP528AA
NVIDIA Quadro FX 570 PCIe (256 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GR521AA
<b>Mid-range 3D</b>				
NVIDIA Quadro FX 1700 PCIe (512 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GP529AA
ATI FireGL V5600 PCIe (512 MB)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GT346AA

Hard Drives	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
<b>SATA Hard Drives</b>				
HP 80 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PY276AA
HP 160 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PV944A
HP 250 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	EA788AA
HP 500 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PV943A

Removable storage devices	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
1.44 MB Internal Floppy Drive	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	DY670A
HP 16-In-1 Media Card Reader with PCI Card	32-Bit, 64-Bit	32-Bit	Not supported	EM718AA

### After-Market Options

Input Devices	Windows Vista <sup>1</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
<b>Keyboards</b>				
HP USB Standard Keyboard	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	DT528A
HP USB Smart Card Keyboard (Carbonite/Silver)	32-Bit, 64-Bit	32-Bit	Not Supported	ED707AA
<b>Pointing Devices</b>				
HP USB 2-Button Scroll Mouse (optical)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	DC172B
HP USB 3-button mouse (optical)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	DY651A
HP USB SpacePilot USB 3D Input Device	32-Bit, 64-Bit	32-Bit	Not Supported	EF390AA
HP SpaceExplorer USB 3D Input Device	32-Bit, 64-Bit	32-Bit	Not Supported	RY429AAA
<hr/>				
Networking	Windows Vista <sup>1</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
<b>NICs</b>				
Broadcom NetXtreme Gigabit Ethernet PCIe Adapter	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	EA833AA
<hr/>				
Memory (Unbuffered DIMMs)	Windows Vista <sup>1</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
Configurations less than 1 GB are not supported on Microsoft Vista 64	<b>PC2-5300 DDR2-667 DIMMs (ECC Unbuffered)</b>			
512 MB (1 x 512 MB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PV940A
1 GB (1 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PV941A
<b>PC2-5300 DDR2-667 Memory (non-ECC Unbuffered)</b>				
256 MB (1 x 256 MB) PC2-5300 DDR2-667	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PX974AA
512 MB (1 x 512 MB) PC2-5300 DDR2-667 (availability CQ4 2007)	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	PX975AA
<hr/>				
Monitors	<b>TFTs</b>			Part Number
	HP LP3065 24-inch Flat Panel Monitor TFT			EZ320A4
	HP LP2465 24-inch Flat Panel Monitor TFT			EF224A4
	HP L2065 20.1-inch Flat Panel Monitor TFT			EF227A4
	HP L1965 19.1-inch Flat Panel Monitor TFT			RA373AA

### After-Market Options

Multimedia	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
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Adaptec Fireconnect 2100 Firewire (1394a) PCI Card (Windows only)	32-Bit, 64-Bit	32-Bit	Not supported	PA997A
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\* 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 ([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 1394a Card.

Audio	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
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SoundBlaster X-Fi XtremeGamer Audio Card (Windows only)	32-Bit, 64-Bit	32-Bit	Not supported	GE257AA
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Removable Storage	Windows Vista <sup>i</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
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#### FDD Floppy drive

1.44 MB Diskette Drive (1 only)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DY670A
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#### Optical drives

SATA 16X DVD-ROM*	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	EW268AA
SATA 16X DVD+/-RW, Supermulti with Lightscribe**	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	EW269AA

\* Cannot be 2nd drive.

\*\* LightScribe creates a grayscale image similar to black and white photography. LightScribe media required and sold separately. Double-layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. LightScribe software works with Microsoft Windows XP and Vista only.)

Security	Part Number
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HP Solenoid Hood Lock/Sensor Kit	DE618A
Kensington Security Cable & Lock	PC766A

Racking Options	Part Number
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HP xw4000 Depth Adjustable Fixed Rail Rack Kit	EK729AA
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### After-Market Options

#### Other Devices

	Part Number
Agere 2006 PCI hi-speed modem (32- and 64-Bit)	EK694AA
Modem RJ11 Adapter Kit	DC131C
2nd serial port adapter	PA716A
Front Card Guide and Fan Guide Kit	DY648A
HP Power Cord Kit	DM293A
HP Internal USB Port Kit	EM165AA

#### Software

	Windows Vista <sup>1</sup>	Windows XP	Red Hat Enterprise Linux	Part Number
HP RGS PC 3-year Software Assurance	TBD	TBD	TBD	GN039AA
HP RGS V5 PC Edition	TBD	TBD	TBD	GN038AA
HP RGS V5 Receiver Site License	TBD	TBD	TBD	GN034AA
HP RGS V5 Workstation Edition	TBD	TBD	TBD	GN035AA
HP RGS Workstation 3-year Software Assurance	TBD	TBD	NTBD	GN036AA

### Memory

#### PC2-5300E DDR2-667 ECC unbuffered DIMMs or PC2-5300 DDR2-667 non-ECC DIMMS

Only unbuffered DDR2 DIMMs (ECC unbuffered or non-ECC) are supported and must be x8 or x16 width. Memory upgrades are accomplished by adding DIMMs of the same or varied sizes.

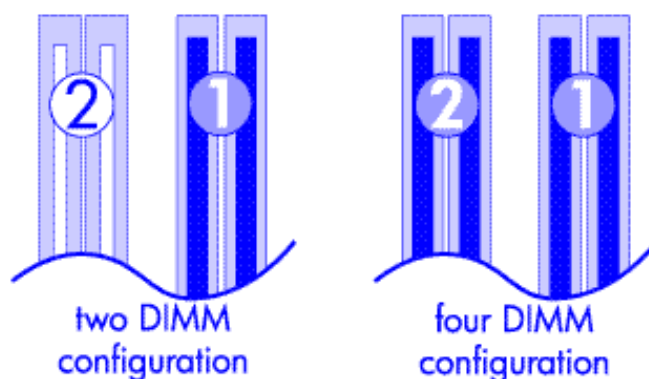
#### ECC/Chipkill parameters

Chipkill on the HP xw4550 functions within these parameters:

- The workstation enables Chipkill functionality on paired ECC memory DIMMs only. When a single ECC DIMM is loaded, standard single bit correct and two bit detect ECC is supported.
- Chipkill can detect and correct up to four bit errors if the four bits are in the same symbol. That is, multiple bit errors in bits 0–3 or 4–7 of a byte can be detected and corrected. Multi-bit error that overlap or span symbol boundaries (bits 2–5 or 3–6, for example) cannot be corrected. For DIMMs that are based on x4 parts, this means that a single DRAM chip can fail and the system will continue to operate. For x8 and x16 parts, a complete DRAM chip cannot fail, but symbol errors will be corrected as described. Memory Scrubbing – xw4550 supports Sequential plus Source Correction Scrubbing
  - **Sequential Scrubbing**  
In this mode, the scrubber sequentially proceeds through main memory, performing a read-write cycle or a read-modify-write cycle if a correctable error is found. The scrubber scrubs one cache line on each scrub interval that is programmable from 40 ns to 84 ms.
  - **Source Correction Scrubbing**  
In this mode, the scrubber is directed to scrub any cache line that is the source of any corrected error during normal accesses. During normal operation when source correction scrubbing is disabled, single-bit errors are corrected on the fly and the corrected data is passed without updating the source memory location. When source scrubbing is enabled the scrubber also corrects the source memory location.
  - **Sequential Plus Source Correction Scrubbing**  
When both sequential and source correction scrubbing are enabled, the scrubber sequentially proceeds through main memory. If a correctable error is detected during normal operation, the scrubber is redirected to the location of the error, and after it corrects that location in main memory it resumes sequential scrubbing at the previous location

#### Memory configuration suggestions

For best performance the total amount and type of memory loaded into Channel 1 and Channel 2 should be the same and should be loaded in pairs (two 512 MB DIMMs will have better performance than a single 1 GB DIMM). Match pairs by size and type. If these guidelines are not followed, your computer may not see all the RAM installed and may run the memory controller in a lower performance mode.



#### MAXIMUM MEMORY

Supports up to 4 GB DDR2-667 ECC Unbuffered or 2 GB DDR2-667 non-ECC SDRAM

#### POSSIBLE MEMORY CONFIGURATIONS



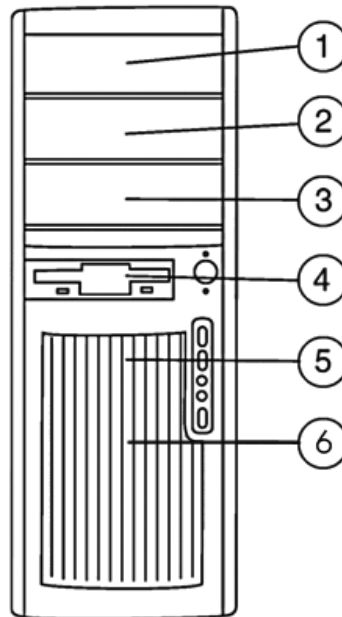
## Memory

Not all memory configurations possible are represented below.

DIMM Size	Slot 2		Slot 1	
	A	B	A	B
1 GB			512 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

## Storage Specifications

Tower configuration



### Convertible Minitower

	Quantity Supported	Position Supported	Controller
Optional Diskette Drive	1	4	Diskette
Optical Disk Drives	2	1, 2	SATA
Hard Disk Drives	2	5, 6	SATA
			User configurable SATA RAID 0, 1, standard

\* 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.

### Technical Specifications

<b>System Board</b>	
Processor Socket	Single AM2 socket
CPU Bus Speed Supported	1 GHz HyperTransport
Chipset	ATI RS690 (AMD690G) with the AMD SB600 south bridge
Super I/O Controller	SMSC SIO8
System Board Form Factor	ATX 9.6 x11.52 inches; 243.84 x 292.61 mm
Memory Expansion Slots	4 DIMMs DDR2-667 unbuffered ECC/non-ECC
Memory Type Supported	1.8V unbuffered DDR2-667with optional ECC  (See Memory section for additional details)
Memory Modes	Dual channel
PCI Express Connectors (v1.1)	1 PCIe x16 75W 1 PCIe x4 (x1 functionality)
PCI Connectors (5.0V)	2 full length 5v 33 MHz 32-Bit
Interfaces Supported	1 SATA 3.0 Gb/s interface (4 SATA connectors); 1 floppy disk interface
Hard Drive Controller (PCI) Supported	SATA 3.0 Gb/s AHCI Controller  <ul style="list-style-type: none"> <li>• Supports four SATA ports, complying with SATA 3.0 Gb/s specifications</li> <li>• Supports SATA 3.0 Gb/s 3.0GHz PHY, with backward compatibility with 1.5 GHz</li> </ul>
Integrated SATA RAID	<ul style="list-style-type: none"> <li>• Supports RAID striping (RAID 0) across all 4 ports (only 2 drive RAID 0)</li> <li>• Supports RAID mirroring (RAID 1) across all 4 ports (only 2 drive RAID 1)</li> <li>• Supports both AHCI mode and IDE mode</li> <li>• Supports advanced power management with AHCI mode</li> <li>• AHCI support for NCQ drives</li> <li>• 3.0 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 Graphics	ATI Radeon X1250 based graphics engine: <ul style="list-style-type: none"> <li>• UMA architecture (gfx frame buffer). Unified Memory Architecture - A region of system memory is reserved and dedicated to the graphics display.</li> <li>• DirectX 9.0 compliant</li> <li>• 2D/3D graphics core</li> <li>• 1 DVI-D + 1 VGA graphics ports integrated in motherboard</li> <li>• integrated graphics can do dual display across VGA &amp; DVI-D</li> </ul> <p>(See Technical Specifications – Graphics section for additional details)</p>
Network Controller	Integrated Broadcom 5755 Gigabit Ethernet LAN-on-Motherboard  (See Technical Specifications – Networking section for additional details)
IEEE 1394a Connectors	Not natively supported but can be added optional PCI 1394A controller card (HPPN 354614-006) to supply 3 standard 1394a ports (1 front panel and 2 rear chassis).
USB 2.0 Connectors	Front: 2 Rear: 6  Internal:2 (headers compatible with optional kit providing internal header to real USB connector and compatible with multimedia card reader cable)

### Technical Specifications

HD Integrated Audio	<p>Integrated high definition digital audio processing with Realtek 2 channel ALC262 codec (all ports are stereo). It features universal Audio Architecture:</p> <ul style="list-style-type: none"> <li>• 1 stereo DAC supports 16/20/24-bit PCM format with 44.1K/48K/96K/192kHz sample rate</li> <li>• 2 stereo ADCs support 16/20-bit PCM format with 44.1K/48K/96kHz sample rate</li> <li>• Rear panel line in and line out jacks – jacks are retaskable</li> <li>• Front panel microphone in and headphone out – fixed usage.</li> </ul> <p>(See Technical Specifications – Networking section for additional details)</p>
Flash ROM	Yes
Clear CMOS Button	Yes
CPU Fan Header	Yes
Chassis Fan Header	Yes
Front PCI Fan Header	Yes – optional
Front Control Panel/Speaker Header	Yes
CMOS Battery Holder - Lithium	Yes
Multibay Header	No
Integrated Trusted Platform Module	TPM 1.2
ASF 2.0 (Alert Standard Format)	Yes
Power Supply Headers	Yes
Power Switch, Power LED & Hard Drive LED Header	Yes
Clear Password Jumper	Yes
Serial ports	One integrated port, one external port via add on kit
Keyboard/Mouse	USB keyboard/mouse only (no PS2 support)
Parallel Port	No

### Cooling

Chassis Fan	92 mm x 92 mm x 25 mm 4-wire high frequency PWM
Processor Heatsink Fan	80 mm x 80 mm x 15 mm 4-wire high frequency PWM
(Optional) Front PCI Fan	92 mm x 92 mm x 25 mm 4-wire high frequency PWM
Power Supply Fan	80 mm x 80 mm x 25 mm variable speed

### Technical Specifications

<b>Power Supply</b>	300-watt 80 PLUS BTX power supply – Active PFC
Operating Voltage Range	90 – 264VAC
Rated Voltage Range	100 – 240VAC
Rated Line Frequency	50/60 Hz
Operating Line Frequency Range	47–63 Hz
Rated Input Current	5 A @ 100–120 VAC 2.5A @ 200–240 VAC
Heat Dissipation	Typical 431 btu/hr (108 kg-cal/hr)
	Maximum 1331 btu/hr (336 kg-cal/hr)
Power Supply Fan	80x25 mm variable speed
Energy Star 3.0 Compliant	Yes
Energy Star 4.0 Compliant	Yes
FEMP Standby Power Compliant (<2W in S5 – Power Off)	Yes
Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	<3W
Environmental and Mechanical Engineering Support Center (EMESC) – Intranet Web Site only	<a href="http://env-webserver.ccm.cpqcorp.net/EMESC/default.htm">http://env-webserver.ccm.cpqcorp.net/EMESC/default.htm</a>

<b>BIOS Features</b>	
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 and remotely powered on or off
WMI Support	WMI is Microsoft's implementation of Web-Based Enterprise Management (WBEM) for Windows. WMI is fully compliant with the Distributed Management Task Force (DMTF) Common Information Model (CIM) and WBEM specifications
BIOS Boot Spec 1.01+	Provides more control over how and from what devices the workstation will boot
Users can define a specific date and time for the system to power on	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
Serial, USB, Audio, Network, Enable/Disable Port Control	Enable or disables serial, parallel, USB, audio, and network ports

### Technical Specifications

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>
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 2.4, 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
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

## Technical Specifications

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 1.1
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

### System Software Updating

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

### Other deployment & management features

HP Client Management Solutions	Visit <a href="http://www.hp.com/go/easydeploy">http://www.hp.com/go/easydeploy</a>
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### Technical Specifications

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

<b>Other Features</b>	
ACPI-Ready Hardware	<p>Advanced Configuration and Power Management Interface (ACPI).</p> <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
Configuration Record SW	Yes
3.3V Aux Power LED on System PCA	Yes
CMOS Battery Holder for easy Replacement	Yes
NIC LEDs (integrated) (Green & Amber)	Used to determine NIC status
Dual Function Front Power Switch	Also acts as a reset switch when held for 4 seconds

### Technical Specifications

<b>Service and Support</b>	<p>On-site Warranty and Service (<a href="#">Note 1</a>): One and three-years, limited warranty and service offering delivers 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>) 8am - 5pm. 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</p> <p><a href="#">Note 1</a>: Terms and conditions may vary by country. Certain restrictions and exclusions apply.</p> <p><a href="#">Note 2</a>: 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.</p> <p><a href="#">Note 3</a>: 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.</p>
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<b>Eco-Label Certifications &amp; Declarations</b>	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> <li>● US ENERGY STAR 4.0 (Windows only, available on selected configurations)</li> <li>● US Federal Energy Management Program (FEMP)</li> <li>● China Energy Conservation Program</li> <li>● IT ECO declaration</li> <li>● Japan PC Green label*</li> </ul> <p><b>*NOTE:</b> This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'</p>
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### Energy Consumption and Noise Emissions

<b>Example Configuration #1</b>	Processor Info	1x AMD Opteron 3.0GHz 1222
	Memory Info	4x1GB DDR2-667MHz
	Graphics Info	FX1700
	Disks/Optical/Floppy	1x250GB SATA / 1 Optical / 1 Floppy

### Energy Consumption

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
<b>On-Idle (ENERGY STAR® Idle (S0))</b>	50.9W		52.7W		51.0W	
<b>ENERGY STAR® P<sub>TEC</sub> (Total Energy Consumption) Windows running Linpack and Viewperf (S0)</b>	181.3W		176.2W		179.6W	
Windows Busy Max (S0)	200.1W		192.0W		196.7W	
<b>ENERGY STAR® "Sleep" (S3)*</b>	2.93W	2.06W	6.58W	2.36W	2.80W	2.04W
<b>ENERGY STAR® "Standby" (Off) (S5)</b>	1.69W	0.94W	2.00W	1.23W	1.67W	0.92W

### Technical Specifications

#### Heat Dissipation\*\*

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
<b>On-Idle (ENERGY STAR® Idle (S0))</b>	173.6 btu/hr		179.7 btu/hr		174.0 btu/hr	
<b>ENERGY STAR® P<sub>TEC</sub> (Total Energy Consumption) Windows running Linpack and Viewperf (S0)</b>	618.6 btu/hr		601.2 btu/hr		612.8 btu/hr	
Windows Busy Max (S0)	682.9 btu/hr		655.3 btu/hr		671.3 btu/hr	
<b>ENERGY STAR® "Sleep" (S3)*</b>	10.0 btu/hr	7.03 btu/hr	12.2 btu/hr	8.05 btu/hr	9.56 btu/hr	6.96 btu/hr
<b>ENERGY STAR® "Standby" (Off) (S5)</b>	5.77 btu/hr	3.21 btu/hr	6.83 btu/hr	4.20 btu/hr	5.70 btu/hr	3.14 btu/hr

#### Example Configuration #2 (Energy Star 4.0 Compliant)

Processor Info	1x AMD Opteron 2.0GHz 1212
Memory Info	2x512MB DDR2-667MHz
Graphics Info	Integrated
Disks/Optical/Floppy	1x 80GB SATA / 1 Optical / 1 Floppy

#### Energy Consumption

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
<b>On-Idle (ENERGY STAR® Idle (S0))</b>	38.8W		36.9W		39.1W	
<b>ENERGY STAR® P<sub>TEC</sub> (Total Energy Consumption) Windows running Linpack and Viewperf (S0)</b>	96.6W		94.5W		99.5W	
Windows Busy Max (S0)	112.3W		108.1W		115.3W	
<b>ENERGY STAR® "Sleep" (S3)*</b>	2.64W	1.78W	2.84W	2.10W	2.61W	1.79W
<b>ENERGY STAR® "Standby" (Off) (S5)</b>	1.75W	0.98W	2.00W	1.25W	1.75W	0.95W

### Technical Specifications

#### Heat Dissipation\*\*

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
<b>On-Idle (ENERGY STAR® Idle (S0))</b>	132.4 btu/hr		125.9 btu/hr		133.5 btu/hr	
<b>ENERGY STAR® P<sub>TEC</sub> (Total Energy Consumption) Windows running Linpack and Viewperf (S0)</b>	329.6 btu/hr		322.6 btu/hr		339.7 btu/hr	
Windows Busy Max (S0)	383.3 btu/hr		369.0 btu/hr		393.5 btu/hr	
<b>ENERGY STAR® "Sleep" (S3)*</b>	9.01 btu/hr	6.08 btu/hr	9.69 btu/hr	7.17 btu/hr	8.91 btu/hr	6.11 btu/hr
<b>ENERGY STAR® "Standby" (Off) (S5)</b>	5.97 btu/hr	3.34 btu/hr	6.83 btu/hr	4.27 btu/hr	5.97 btu/hr	3.24 btu/hr

#### NOTES:

\* Energy Star low energy mode

\*\* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

#### Declared Noise Emissions

(in accordance with ISO 7779 and ISO 9296)

#### System Fan Off

Idle  
Fixed Disk (random writes)

#### Sound Power

(L<sub>Wad</sub>, bels)

TBD

TBD

#### Sound Pressure

(L<sub>Wad</sub>, decibels)

TBD

TBD

#### Longevity and Upgrading

This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 5 years after the end of production. Upgradeability features contained in the product include:

- Single AM2 socket
- 8 USB ports
- 2 PCI slots and 2 PCI Express slots
- 6 storage bays
- 4 memory slots

#### Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC


Batteries used in the product do not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

Battery size: CR2032 (coin cell)



### Technical Specifications

	Battery type: Lithium		
<b>Additional Information</b>	<ul style="list-style-type: none"> <li>This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.</li> <li>This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.</li> <li>This product contains 0% recycled materials (by wt.)</li> <li>This product is &gt;90% recycle-able when properly disposed of at end of life.</li> </ul>		
	<b>Packaging Materials</b>		
	External	Cardboard carton and insert	2.70 kg
	Internal	LDPE Foam	0.35 kg
<b>Material Usage</b>	<p>This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html">http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html</a>):</p> <ul style="list-style-type: none"> <li>Asbestos</li> <li>Certain Azo Colorants</li> <li>Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>Cadmium</li> <li>Chlorinated Hydrocarbons</li> <li>Chlorinated Paraffins</li> <li>Formaldehyde</li> <li>Halogenated Diphenyl Methanes</li> <li>Lead carbonates and sulfates</li> <li>Lead and Lead compounds</li> <li>Mercuric Oxide Batteries</li> <li>Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>Ozone Depleting Substances</li> <li>Polybrominated Biphenyls (PBBs)</li> <li>Polybrominated Diphenyl Ethers (PBDEs)</li> <li>Polybrominated Biphenyl Oxides (PBBOs)</li> <li>Polychlorinated Biphenyl (PCB)</li> <li>Polychlorinated Terphenyls (PCT)</li> <li>Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>Radioactive Substances</li> <li>Tributyl Tin; TBT), Triphenyl Tin; TPT), Tributyl Tin Oxide (TBTO)</li> </ul>		
<b>Packaging</b>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>Design packaging materials for ease of disassembly.</li> <li>Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>		
<b>End-of-Life Management and Recycling</b>	<p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/recycle">http://www.hp.com/recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p>		
<b>Hewlett-Packard Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:          [[link to new HP white paper now in progress]          Global Citizenship Report  <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p>		
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## Technical Specifications

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

## Technical Specifications - Audio

<b>Integrated Intel/RealtekType</b>	Integrated
<b>HD ALC262 Audio</b>	
<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>Meets Premium performance for Windows Logo Program 3.0</b>	Yes
<b>Audio Jacks</b>	Front panel microphone in and headphone out – fixed usage. Rear panel line in and line out jacks – jacks are retaskable One Line-In* (12-K ohm Input Impedance)* <b>NOTE: External Speakers need to be powered externally.</b>
<b>Sampling</b>	3 stereo ADCs support 16/20-bit PCM format with 44.1K/48K/96kHz sample rate 2 stereo DAC supports 16/20/24-bit PCM format with 44.1K/48K/96K/192kHz sample rate
<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 (PCI)</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>
	<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

### Technical Specifications - Audio

<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 x 5 x 0.9 inches; 18.415 x 12.7 x 2.286 cm
<b>Additional product features</b>	<p><b>Movies</b></p> <ul style="list-style-type: none"> <li>THX Certification</li> <li>Dolby Digital EX 6.1 Playback</li> <li>DTS-ES 6.1 Playback</li> </ul> <p><b>Music</b></p> <ul style="list-style-type: none"> <li>X-Fi 24-bit Crystalizer</li> <li>CMSS-3D</li> <li>SuperRip</li> </ul> <p><b>Audio Creation</b></p> <ul style="list-style-type: none"> <li>Pristine audio playback quality with a near transparent SRC engine</li> <li>Up to eight 24-bit hardware effects</li> <li>ASIO recording with latency as low as one millisecond</li> <li>24-bit SoundFont® sampling</li> <li>3D MIDI</li> </ul> <p><b>Gaming</b></p> <ul style="list-style-type: none"> <li>EAX ADVANCED HD 5.0</li> </ul> <p><b>Software Bundle</b></p> <ul style="list-style-type: none"> <li>Doom 3 Sound Blaster EAX patch</li> <li>Entertainment Mode</li> <li>Audio Creation Mode</li> <li>Game Mode</li> <li>Mode Switcher</li> <li>Audio Console</li> <li>Creative MediaSource</li> <li>Creative MediaSource DVD-Audio Player</li> <li>DTS Neo:6 Settings</li> <li>Karaoke Player</li> <li>Entertainment Center</li> <li>Smart Recorder</li> <li>SoundFont Bank Manager</li> <li>Speaker Connection Wizard</li> <li>THX Setup Console</li> <li>Vienna SoundFont Studio</li> <li>Volume Panel</li> <li>WaveStudio</li> <li>Console Launcher</li> </ul>

### Technical Specifications - Audio

<b>Minimum system requirements</b>	<b>System RAM</b>	Creative Media Toolbox
		Creative Diagnostics
	<b>Hard disk</b>	256MB
		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>Integrated PCI Express Broadcom BCM5755 NetXtreme Gigabit Ethernet Network Controller LoM</b>	<b>Connector</b> <b>Controller</b> <b>Memory</b> <b>Data rates supported</b> <b>Compliance</b> <b>Bus architecture</b> <b>Data path width</b> <b>Data path speed</b> <b>Data transfer mode</b> <b>Power requirement</b> <b>Boot ROM support</b> <b>Network transfer rate</b>	RJ-45 Broadcom 5755 PCI-E LAN Controller Integrated 48KB receive buffer and 8KB transmit buffer 10/100/1000 Mbps IEEE 802.3, 802.3AB and 802.3u compliant, 802.3x flow control PCIe 1.0a X1 2.5Gbit per sec per direction transfer rate Bus-master DMA 1.5 watts @ +3.3V AUX supply Yes 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 (full-duplex) 2000 Mbps
	<b>Operating system driver support</b>	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux WS 4 & 5 Desktop
	<b>Management capabilities</b>	WOL, PXE
	<b>Alerting</b>	ASF 2.0

<b>Broadcom BCM5751 NetXtreme Gigabit Ethernet Controller (PCIe) (Part# EA833AA)</b>	<b>Connector</b> <b>Controller</b> <b>Memory</b> <b>Data rates supported</b> <b>Compliance</b> <b>Bus architecture</b> <b>Data path width</b> <b>Data path speed</b> <b>Data transfer mode</b> <b>Hardware certifications</b> <b>Power requirement</b> <b>Boot ROM support</b> <b>Network transfer rate</b>	RJ-45 Broadcom 5751 PCI-E 1.0a LAN Controller Integrated 96Kb frame buffer memory 10/100/1000 Mbps IEEE 802.3, 802.3AB and 802.3u compliant, 802.3x flow control PCIe 1.0a X1 2.5Gbit per sec per direction transfer rate Bus-master DMA 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 3.1 watts @ +3.3V AUX supply Yes 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 inches; 11.2 x 5.5 x .2 cm

### Technical Specifications - Communications

<b>Operating system driver support</b>	Microsoft Windows Vista Business 32 and 64, Microsoft Windows 2000 and XP, Red Hat Enterprise Linux WS 4 & 5 Desktop
<b>Management capabilities</b>	WOL, PXE , Remote cable management
<b>Alerting</b>	ASF 2.0
<b>Kit contents</b>	Broadcom 5751, CD, Broadcom NetXtreme Gigabit Ethernet PCI NIC, drivers, quick install guide, product warranty statement

#### Agere Systems PCI International Softmodem

<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; PPML 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
<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 inches; 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

### Technical Specifications - Communications

<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: RJ11 modem adapter is not included.</b> 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:

## Technical Specifications - Hard Drives

<b>SATA 3.0Gb/s hard drives</b>	<b>80 GB</b> (7,200 rpm)	<b>Capacity</b>	80,026,361,856 bytes	
		<b>Height</b>	1 inches; 2.54 cm or less	
		<b>Width</b>	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
		<b>Interface</b>	Serial ATA (3.0 Gb/s) Native Command Queuing enabled	
		<b>Synchronous Transfer Rate (Maximum)</b>	Up to 300 MB/s	
		<b>Cache</b>	8 MB	
		<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 2 ms <b>Average</b> 11 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)	
		<b>160 GB</b> (7,200 rpm)	<b>Capacity</b>	160,041,885,696 bytes
			<b>Height</b>	1 inches; 2.54 cm or less
			<b>Width</b>	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm
		<b>Interface</b>	Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
		<b>Synchronous Transfer Rate (Maximum)</b>	Up to 300 MB/s	
		<b>Cache</b>	8 MB	
		<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 2 ms <b>Average</b> 11 ms <b>Full-Stroke</b> 21 ms	
		<b>Rotational Speed</b>	7,200 rpm	
		<b>Logical Blocks</b>	312,581,808	
		<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
	<b>250 GB</b> (7,200 rpm)	<b>Capacity</b>	250,059,350,016 bytes	
		<b>Height</b>	1 inches; 2.54 cm or less	
		<b>Width</b>	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
		<b>Interface</b>	Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
		<b>Synchronous Transfer Rate (Maximum)</b>	Up to 300 MB/s	
		<b>Cache</b>	16 MB	
		<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 2 ms <b>Average</b> 11 ms <b>Full-Stroke</b> 21 ms	

### Technical Specifications - Hard Drives

	<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>500 GB</b> (7,200 rpm)	<b>Capacity</b>	500,107,862,016 bytes
	<b>Height</b>	1 inches; 2.54 cm or less
	<b>Width</b>	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm
	<b>Interface</b>	Serial ATA (3.0 Gb/s), Native Command Queuing enabled
	<b>Synchronous Transfer Rate (Maximum)</b>	Up to 300 MB/s
	<b>Cache</b>	8 MB
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 2 ms <b>Average</b> 11 ms <b>Full-Stroke</b> 21 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)

### Technical Specifications - Peripherals

<b>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 inches ; 45.8 x 16.3 x 2.5 cm
	<b>Electrical</b>	<b>Weight</b>	2 lbs (0.9 kg) minimum
		<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>Mechanical</b>	<b>MicrosoftPC 99 – 2001</b>	Functionally compliant
		<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>Microsoft PC 99 – 2001</b>	Mechanically compliant
	<b>Environmental</b>	<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 WS 4 & 5 Desktop
	<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

### Technical Specifications - Peripherals

<b>USB Smart Card 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 inches ; 45.8 x 16.3 x 2.5 cm		
<b>Electrical</b>	<b>Electrical</b>	<b>Weight</b>	2 lbs (0.9 kg) minimum		
		<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>Mechanical</b>	<b>Mechanical</b>	<b>MicrosoftPC 99 – 2001</b>	Functionally compliant
				<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>Environmental</b>	<b>Environmental</b>	<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>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>Operating system support</b>	<b>Operating system support</b>	<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>Approvals</b>	<b>Approvals</b>	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition, Red Hat Enterprise Linux WS 4 & 5 Desktop			
<b>Ergonomic compliance</b>	<b>Ergonomic compliance</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC			
<b>Kit contents</b>	<b>Kit contents</b>	ANSI HFS 100, ISO 9241-4, and TUVGS			
		Keyboard, keyboard software media, installation guide, warranty card, safety and comfort			

<b>HP USB Smart Card Keyboard (ED707AA)</b>	<b>Physical characteristics</b>	<b>Keys</b>	104, 105, 106, 107, 109 layout (depending upon country)
		<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



### Technical Specifications - Peripherals

<b>Electrical</b>	<b>Operating voltage</b>	+ 5VDC $\pm$ 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>	Functionally compliant
	<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 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)

### Technical Specifications - Peripherals

	<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 XP Professional, Windows XP Professional x64 Edition, Microsoft Windows Vista Business 32 and 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 Payflex 8K Prismera US DoD CAC	
	<b>Cardlogix</b>	CLXSU004KK4 CLXSU008KK5	
	<b>Safenet, Inc.</b>	Model 300 Model 330	
	<b>De La Rue</b>	VisaCash	
	<b>Gemplus</b>	Gem Espresso GKK32K Gemclub Memo GemClub Micro GemXplore GemSafe	
	<b>Infineon</b>	SLE66C322P	
	<b>SafLink (Litronic)</b>	Forte	

### Technical Specifications - Peripherals

<b>Sharp</b>	Java Card
<b>Oberthur</b>	CosmopolIIC v4 CosmopolIIC v4.1 Cosmo ID-One GalatlIIC 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
<b>ISSI</b>	IS23SC4418 IS23SC4428
<b>ST</b>	14C02
<b>Telefonkarte</b>	SLE4406 SLE4436 SLE5536
<b>XICOR</b>	X24026

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<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 inches; 3.8 x 11.6 x 6.3 cm
	<b>Weight</b>	0.27 lb (0.12 kg)
	<b>Cable length</b>	72.8 inches; 185 cm
	<b>System requirements</b>	Microsoft Windows XP, Red Hat Enterprise Linux WS 4 & 5 Desktop

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### Technical Specifications - Peripherals

<b>HP Optical 3-Button Mouse (USB)</b>	<b>Dimensions/Weight</b>	<b>Height</b>	1.5 inches; 3.6 cm
		<b>Length</b>	4.5 inches; 11.56 cm
		<b>Width</b>	2.2 inches; 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>	6 feet; 1.8 m

<b>HP SpaceExplorer USB 3D Input Device</b>	<b>Physical Characteristics</b>	<b>Dimensions (L x W x H)</b>	7.6 x 5.4 x 2.3 in (194 x 139 x 58mm)
		<b>Weight</b>	1.36 lbs (0.62 kg)
	<b>Mechanical</b>	<b>Palmrest</b>	Sculpted
		<b>Buttons</b>	15 reprogrammable speed keys
		<b>Motion Controller</b>	Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw)
	<b>Operating System Supported</b>	<b>Device Sensitivity</b>	Adjustable to preference
			Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional or XP x64
	<b>Regulatory Approvals</b>		FCC, CE

<b>HP SpacePilot (USB – Windows XP Only)</b>	<b>Physical Characteristics</b>	<b>Dimensions (L x W x H)</b>	9.3 x 5.6 x 2.0 inches; 236 x 143 x 53 mm
		<b>Weight</b>	1.875 lb (0.85 kg)
		<b>Palmrest</b>	Sculpted
	<b>Mechanical</b>	<b>Buttons</b>	21+ programmable speed keys 15 reprogrammable
		<b>LCD Viewing Area (W x H)</b>	4.0 x 1.0 inches; 102.4 x 30.2mm
		<b>Active Area (W x H)</b>	3.7 x 1.0 inches; 93.4 x 26.2mm
		<b>Display Format</b>	240 x 64
		<b>Motion Controller</b>	Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw)
		<b>Device Sensitivity</b>	Adjustable to preference
	<b>System Requirements</b>		USB 1.1 or 2.0
	<b>Operating System Supported</b>		Microsoft Windows XP, not supported in Linux
	<b>Regulatory Approvals</b>		FCC, CE

### Technical Specifications - Optical Devices

<b>HP 16X Max SATA DVD-ROM Drive</b>	<b>Form Factor</b>	5.25-inch, half-height, tray-load		
	<b>Orientation</b>	Either horizontal or vertical		
	<b>Interface type</b>	SATA/ATAPI		
	<b>Disc capacity</b>	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)		
	<b>Dimensions (W x H x D)</b>	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
	<b>Weight (max)</b>	2.6 lb (1.2 kg)		
	<b>Read speeds</b>	<b>DVD+R/-R/+RW/ -RW/+R DL /-R DL</b>	Up to 8X	
		<b>DVD-ROM</b>	Up to 16X	
		<b>DVD-RAM</b>	Up to 4X	
		<b>CD-ROM, CD-R</b>	Up to 48X	
		<b>CD-RW</b>	Up to 32X	
	<b>Removable Storage - Media Compatibility - DVD-ROM</b>			
	<b>Media</b>	<b>Read</b>	<b>Write</b>	
<b>CD-ROM</b>	Yes	No		
<b>CD-R</b>	Yes	No		
<b>CD-RW</b>	Yes	No		
<b>DVD-ROM</b>	Yes	No		
<b>DVD-ROM DL</b>	Yes	No		
<b>DVD-RAM</b>	Yes	No		
<b>DVD+R</b>	Yes	No		
<b>DVD+R DL</b>	Yes	No		
<b>DVD+RW</b>	Yes	No		
<b>DVD-R</b>	Yes	No		
<b>DVD-RW</b>	Yes	No		
<b>DVD-R DL</b>	Yes	No		
<b>Access times</b> (typical reads, including setting)	<b>Random</b>	DVD: < 140 ms (typical), CD: < 125 ms (typical)		
	<b>Full Stroke</b>	DVD: < 250 ms (seek), CD: < 210 ms (seek)		
	<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 (44.4 MB/s -default)		
<b>Power</b>	<b>Source</b>	SATA 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>Environmental</b> (all conditions non-condensing)	<b>Temperature (operating)</b>	41° to 122° F (5° to 50° C)		
	<b>Relative Humidity (operating)</b>	10% to 90%		

### Technical Specifications - Optical Devices

	<b>Maximum Wet Bulb Temperature (operating)</b>	86° F (30° C)
<b>Operating Systems Supported</b>	Windows Vista Business 32 and 64*, Windows XP Professional or Red Hat Enterprise Linux WS 4 & 5 Desktop, No driver is required for this device. Native support is provided by the operating system.	
	<p>* Certain Windows Vista product features require advanced or additional hardware. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit <a href="http://www.windowsvista.com/upgradeadvisor">http://www.windowsvista.com/upgradeadvisor</a>. For Windows Vista system requirements, visit <a href="http://www.windowsvista.com/systemrequirements">http://www.windowsvista.com/systemrequirements</a>.</p>	
<b>Option kit contents</b>	HP 16X Max SATA DVD-ROM Drive, Intervideo WinDVD and installation guide.	

<b>HP 16X Max SATA DVD+/-RW LightScribe Drive</b>	<b>Form Factor</b>	5.25-inch, half-height, tray-load			
	<b>Orientation</b>	Either horizontal or vertical			
	<b>Interface type</b>	SATA/ATAPI			
	<b>Disc capacity</b>	8.5 GB DL or 4.7 GB standard			
	<b>Dimensions (W x H x D)</b>	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)			
	<b>Weight (max)</b>	2.6 lb (1.2 kg)			
	<b>Write speed</b>	<b>DVD+R</b>	Up to 16X		
		<b>DVD+RW</b>	Up to 8X		
		<b>DVD+R DL</b>	Up to 8X		
		<b>DVD-R DL</b>	Up to 4X		
		<b>DVD-R</b>	Up to 16X		
		<b>DVD-RW</b>	Up to 6X		
		<b>DVD-RAM</b>	Up to 12X		
		<b>CD-R</b>	Up to 48X		
		<b>CD-RW</b>	Up to 32X		
		<b>Read speeds</b>	<b>DVD-RAM</b>	Up to 12X	
			<b>DVD+RW, DVD-RW, DVD+R DL, DVD-R DL</b>	Up to 8X	
			<b>DVD-ROM, DVD+R, DVD-R</b>	Up to 16X	
			<b>CD-ROM, CD-R</b>	Up to 48X	
			<b>CD-RW</b>	Up to 32X	
	<b>Access times (typical reads, including setting)</b>	<b>Random</b>	DVD: < 130 ms (typical), CD: < 120 ms (typical)		
<b>Full Stroke</b>		DVD: < 240 ms (seek), CD: < 200 ms (seek)			
<b>Power</b>	<b>Source</b>	SATA 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			

### Technical Specifications - Optical Devices

	<b>Total Drive Power</b> (standby mode)	< 2.5 Watt
<b>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 90%
	<b>Maximum Wet Bulb Temperature</b> (operating)	86° F (30° C)
<b>Operating Systems Supported</b>	Windows Vista Business 64* (64-bit expected availability in July 2007), Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*, Red Hat Linux WS 4 & 5 Desktop (32/64-bit OS). No driver is required for this device. Native support is provided by the operating system.	
	<p>* Certain Windows Vista product features require advanced or additional hardware. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit <a href="http://www.windowsvista.com/upgradeadvisor">http://www.windowsvista.com/upgradeadvisor</a>. For Windows Vista system requirements, visit <a href="http://www.windowsvista.com/systemrequirements">http://www.windowsvista.com/systemrequirements</a>.</p>	
<b>Option kit contents</b>	HP 16X DVD+-RW SuperMulti LightScribe drive, LightScribe software, Roxio Easy Media Creator version 9, Intervideo WinDVD Software, installation guide, and DVD+R media. Software is Microsoft Windows only.	

## Technical Specifications - Graphics

<b>Integrated ATI Radeon 3D/2D Controller X1250 graphics</b>	Full Microsoft DirectX® 9 based with Shader 2.0 support, full precision floating point pixel pipeline, 2x, 4x, or 6x Anti-Aliasing, hidden surface removal using 16, 24, or 32-bit Z-Buffering. Support for Microsoft's DirectDraw, Double Buffering, Virtual Sprites, Transparent Blit, and Masked Blit.
<b>VGA/DVI Controller</b>	Integrated
<b>Bus Type</b>	PCI Express™ x16 for optional graphics upgrade.
<b>RAMDAC</b>	Integrated
<b>Memory</b>	HYPERMEMORY™ technology offers optional dedicated Local Frame Buffer configuration for a 32-bit or 64-bit interface. UMA mode operation uses from 32MB up to 256MB of main memory configurable as display memory
<b>Controller Clock Speed</b>	400 MHz
<b>Overlay Planes</b>	Back end overlay supporting Motion Adaptive De-Interlacing
<b>Maximum Color Depth</b>	32 bits/pixel
<b>Maximum Vertical Refresh Rate</b>	Supports resolutions up to 2048x1536 @ 32bpp.
<b>Multi-display Support</b>	Up to 2 displays can be supported via the motherboard's VGA and DVI-D connectors. Integrated graphics is disabled when discrete PCI-Express graphics is installed in the x16 slot
<b>Operating Systems</b>	Microsoft Windows XP Professional SP2 and Microsoft Windows Vista Business 32, Red Hat Enterprise Linux WS 4
<b>Graphics/Video API Support</b>	Microsoft DirectX 9, DirectXVA®, VMR7, VMR9, GDI/GDI+

<b>NVIDIA Quadro NVS 290, 256 MB Dual Head</b>	<b>Form Factor</b>	Low Profile
	<b>Bus Type</b>	PCIe x16
	<b>Memory</b>	256 MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	<b>Connector</b>	DMS-59, includes DMS-59 to Dual DVI-I cable. DMS-59 to Dual VGA cable available as an option.
	<b>Display resolution support</b>	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft® Windows®
	<b>RAMDAC</b>	Integrated dual 400MHz
	<b>Color planes</b>	32-bit color buffer
	<b>Overlay planes</b>	Hardware supported
	<b>nView Architecture</b>	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows®.
	<b>Multi-Monitor Support</b>	Dual monitor support
	<b>DVI Support</b>	DMS-59 (to dual DVI-SL)
	<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

### Technical Specifications - Graphics

	5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling
<b>Supported Graphics APIs</b>	OGL 2.1 & DX10 Support; Shader Model 4.0
<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), 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 370 PCI-Express graphics controller</b>	<b>Form Factor</b>	ATX
	<b>Bus Type</b>	PCI-Express x16
	<b>Memory</b>	256MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	<b>Connectors</b>	DVI-I (dual-link) and DVI-I (single-link)
	<b>Display resolution support</b>	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link) and 3840x2400 (dual-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft® Windows®
	<b>RAMDAC</b>	Integrated dual 400MHz
	<b>Architecture Features</b>	High Resolution Anti-Aliasing PureVideo 2 engine supports AES 128-bit decryption GPU Computing (HW/SW including CUDA SDK 3D Textures LightSpeed Memory Architecture II 128-bit color precision Hardware accelerated anti-aliased points and lines Hardware OpenGL overlay planes H/W accelerated pixel readback 3rd generation occlusion culling AA on scan-out
	<b>Power consumption</b>	<50 W
	<b>Shading Architecture</b>	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
	<b>Supported Graphics APIs</b>	OGL 2.1 & SM4.0 and DirectX10 Support
<b>Available graphics drivers</b>	Microsoft Windows Vista 32 and 64, 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> .	

### Technical Specifications - Graphics

<b>NVIDIA Quadro FX 570 PCI-Express graphics controller</b>	<b>Form Factor</b>	ATX
	<b>Bus Type</b>	PCI-Express x16
	<b>Memory</b>	256MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	<b>Connectors</b>	DVI-I (dual-link) and DVI-I (single-link)
	<b>Display resolution support</b>	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link) and 3840x2400 (dual-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft® Windows®
	<b>RAMDAC</b>	Integrated dual 400MHz
	<b>Architecture Features</b>	High Resolution Anti-Aliasing PureVideo 2 engine supports AES 128-bit decryption GPU Computing (HW/SW including CUDA SDK 3D Textures LightSpeed Memory Architecture II 128-bit color precision Hardware accelerated anti-aliased points and lines Hardware OpenGL overlay planes H/W accelerated pixel readback 3rd generation occlusion culling AA on scan-out
	<b>Power consumption</b>	<60 W
	<b>Shading Architecture</b>	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
	<b>Supported Graphics APIs</b>	OGL 2.1 & SM4.0 and DirectX10 Support
	<b>Available graphics drivers</b>	Microsoft Windows Vista 32 and 64, 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> .

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<b>NVIDIA Quadro FX 1700 PCI-Express graphics controller</b>	<b>Form Factor</b>	ATX
	<b>Bus Type</b>	PCI-Express x16
	<b>Memory</b>	512 MB 4000MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	<b>Connectors</b>	DVI-I (dual-link) and DVI-I (single-link)
	<b>Display resolution support</b>	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link) and 3840x2400 (dual-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft® Windows®
	<b>RAMDAC</b>	Integrated dual 400MHz
	<b>Architecture Features</b>	High Resolution Anti-Aliasing PureVideo 2 engine supports AES 128-bit decryption GPU Computing (HW/SW including CUDA SDK 3D Textures LightSpeed Memory Architecture II 128-bit color precision Hardware accelerated anti-aliased points and lines

### Technical Specifications - Graphics

	Hardware OpenGL overlay planes
	H/W accelerated pixel readback
	3rd generation occlusion culling
	AA on scan-out
<b>Power consumption</b>	<75 W
<b>Shading Architecture</b>	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
<b>Supported Graphics APIs</b>	OGL 2.1 & SM4.0 and DirectX10 Support
<b>Available graphics drivers</b>	Microsoft Windows Vista 32 and 64, 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 V5600 PCI-Express graphics controller</b>	<b>Form factor</b>	ATX
	<b>Graphics controller</b>	R520
	<b>Bus Type</b>	PCI-Express x16
	<b>Memory</b>	512 MB f unified frame buffer, Z-buffer and Texture storage and a 128-bit Ring-Bus memory controller
	<b>Connectors</b>	Two dual-link DVI connectors with analog/digital outputs
	<b>Maximum resolution</b>	Dual Link digital support for 3840 x 2400 @ 60Hz. Ideal for 30-inch widescreen displays.
	<b>RAMDAC</b>	Dual 10-bit per channel 400MHz
	<b>Ring Bus memory controller</b>	<ul style="list-style-type: none"> <li>• 512-bit internal ring bus for highly efficient memory reads</li> <li>• Programmable intelligent arbitration logic</li> </ul>
	<b>Display output</b>	<ul style="list-style-type: none"> <li>• Up to 16-bit per RGB color component High Dynamic Range output (HDR)</li> <li>• Programmable piecewise linear gamma correction, color correction, and color space conversion (10-bits per color)</li> </ul>
	<b>Shading architecture</b>	<ul style="list-style-type: none"> <li>• Supports Full Shader Model 4.0</li> <li>• 120 shader processing unit</li> </ul>
	<b>Supported graphics APIs</b>	DirectX 10 and OpenGL 2.1 advanced
	<b>Available graphics drivers</b>	Microsoft Windows XP Professional 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> . HP-tested Windows XP and Linux Microsoft Windows Vista 32 and 64, 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>Option kit contents</b>	PCA with ATX bracket, DVI to VGA converters, CD and manual.

### Technical Specifications - Monitors

#### HP L1965 Flat Panel Monitor Panel

<b>Type</b>	Active matrix, thin film transistor (TFT)
<b>Viewable Image Area</b>	19 inches; 48.25 cm maximum viewable (diagonal)
<b>Screen Opening (WxH)</b>	14.9 x 12.0 inches; 38.0 x 30.5 cm
<b>Viewing Angle (typical)</b>	178 degrees horizontal/178 degrees vertical (10:1 minimum contrast ratio)
<b>Brightness (typical)</b>	300 nits (cd/m <sup>2</sup> )
<b>Contrast Ratio (typical)</b>	1000:1 (typical)
<b>Response Rate (typical)</b>	6 ms (typical gray to gray)**
<b>Pixel Pitch</b>	0.294 mm
<b>Backlight Lamp Life (to half brightness)</b>	50K hours

\* **NOTE:** All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

\*\***NOTE:** 20 ms rise and fall

#### Video/Other Inputs

<b>Plug and Play</b>	Yes (supports VESA DDC2B and DDC/CI; PC2001 compliant)
<b>Self Powered USB 2.0 Hub</b>	One upstream, four downstream ports (cable included)
<b>Input Signal</b>	Two DVI-I connectors (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>	One DVI-D to DVI-D, and 1 DVI-I to VGA cables

#### Signal Interface/ Performance

<b>Video Cable Length</b>	71 in (1.8 m)
<b>Horizontal Frequency</b>	24 to 83 kHz
<b>Vertical Frequency</b>	48 to 76 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 analog
<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, Netherlands, 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
<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>Typical Power Consumption</b>	< 35 watts
	<b>Maximum</b>	< 55 watts
	<b>Power Saving</b>	< 2 watts
	<b>Off Mode</b>	0 watts (when master power switch is in the off position)
	<b>Power Cable Length</b>	74.8 in (1.9 m); non-captive
<b>Mechanical</b>	<b>Dimensions (H x W x D)</b>	<b>Unpacked with stand</b> 14.85 min to 18.79 max x 15.9 x 8.78 inches (37.72 min to 47.72 max x 40.39 x 22.29 cm)
		<b>Base Area (Footprint D x W)</b> 8.78 x 11.88 inches (22.29 x 30.18 cm)
		<b>Panel only (without stand) (H x W x D)</b> 12.96 x 15.9 x 2.4 inches (32.91 x 40.39 x 6.1 cm)
	<b>Weight</b>	<b>Unpacked with stand</b> 15.6 lbs (7.06 kg) <b>Unpacked without stand</b> 9.26 lbs (4.19 kg) <b>Packaged</b> 20.5 lbs (9.27 kg)
	<b>Bezel Width</b>	12.5 mm left and right, 12.75 mm top and bottom
	<b>Tilt Range</b>	-4 degrees to +30 degrees
	<b>Swivel Range</b>	± 45 degrees horizontal swivel
	<b>Height Adjustable</b>	Yes (4 in/100mm adjustment range)

### Technical Specifications - Monitors

<b>Environmental</b>	<b>Pivot Rotation</b>	Yes, 90 degrees
	<b>Base</b>	Ships attached and is removable
	<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 12,000 ft (0 to 3,658 m)
	<b>Altitude – Non-operating</b>	0 to 40,000 ft (0 to 12,192 m)
<b>Environmental Data</b>	<b>Eco-Label Certifications and Declarations</b>	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- CECP

<b>Energy Consumption</b> (in accordance with US Energy Star test method)	<b>AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz</b>	<b>AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz</b>	<b>AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz</b>
Normal Operation	35.7 watts	35.6 watts	35.1 watts
Sleep	1.08 watts	1.14watts	1.23 watts
Off	0.93 watts	0.94 watts	0.92 watts
<b>Heat Dissipation*</b>	<b>100 VAC, 50 Hz</b>	<b>115 VAC, 60 Hz</b>	<b>230 VAC, 50 Hz</b>
Normal Operation	121.7 BTU/hr	121.4 BTU/hr	119.7 BTU/hr
Sleep	3.68 BTU/hr	3.89 BTU/hr	4.19 BTU/hr
Off	3.17 BTU/hr	3.21 BTU/hr	3.14 BTU/hr

\*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

<b>Longevity and Upgrading</b>	Upgradeability features contained in the product include: One upstream and four downstream USB ports
<b>Ergonomics</b>	The monitor meets the ergonomic requirement of EN-ISO 13406-2 for flat panel displays.
<b>Additional Information</b>	This product is in compliance with the Restrictions of Hazardous Substances (RoHS) Directive, 2002/95/EC.  This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive, 2002/96/EC.  Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.  Display meets the requirement for low frequency electromagnetic fields per MPR-II, TCO, and prEN50279 A/B/C.  This product contains 100% recycled materials (by

wt.)

This product is 100% recyclable when properly disposed of at end of life.

#### Packaging Materials

- Corrugated - 0.955 kg
- Plastic (other) - 0.055 kg
- Polystyrene - 0.24 kg

#### Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at

[http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen\\_specifications.html](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

#### Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials

		<p>such as paper and corrugated materials.</p> <ul style="list-style-type: none"> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>
	<b>End-of-life Management and Recycling</b>	<p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/recycle">http://www.hp.com/recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p>
	<b>Hewlett-Packard Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:          Global Citizenship Report  <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a>          Eco-label certifications  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html">http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html</a>          ISO 14001 certificates:  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html">http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html</a></p>
<b>Options</b>	<b>HP Silver Flat Panel Speaker Bar</b>	<p>Powered directly by the monitor or PC, seamlessly attaches to the monitor's bezel to bring full multimedia support to select HP flat panel monitors. Features include dual speakers with full sound range and external jack for headphones. Sold separately, part number EE418AA. For more information, refer to the HP Flat Panel Speaker Bar QuickSpecs.</p>
<b>Other</b>	<b>Accessories Included</b>	<p>One DVI-D to DVI-D cable, one DVI-I to VGA cable, one USB cable, and CD-ROM with Pivot Pro software, HP Display Assistant software, and HP Display LiteSaver software.</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, Bahasa, B. Portuguese, French, LA Spanish, Korean, Simplified Chinese, Traditional Chinese, Japanese, Danish, Dutch, Finnish, German, Italian, Norwegian, Swedish, Greek, Polish, Russian, Slovenian, Turkish
	<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 LP1965 Flat Panel Monitor. 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.

#### HP Flat Panel Monitor Panel LP2065

	<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 inches; 41.1 x 30.9 cm
	<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/m2)
	<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

### Technical Specifications - Monitors

	<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 (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>Video Input</b>	<b>Anti-Static</b>	Yes
	<b>Default Color Temperature</b>	6500 K
	<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>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

### Technical Specifications - Monitors

	<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 inches; 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 inches; 34.5 x 44.3 x 8.7 cm
	<b>Packaged</b>	11.77 x 22.2 x 16.77 inches; 29.9 x 56.4 x 42.6 cm
	<b>Weight</b>	<b>Unpacked</b>
<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%
	<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

### Technical Specifications - Monitors

	<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 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 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 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.

### Technical Specifications - Monitors

HP Flat Panel Monitor Panel  
LP2465

	<b>Type</b>	24-inch Active Matrix TFT (thin film transistor)
	<b>Viewable Image Area</b> (diagonal)	24 inches; 60.96 cm
	<b>Screen Opening</b> (W x H)	20.47 x 12.83 inches; 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
	<i>*Response time 13 ms rise and fall, 6 ms gray to gray.</i>	
<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, 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
<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>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 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

### Technical Specifications - Monitors

<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 ± 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)	
	<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>Accessories Included</b>	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-D cable – connects the graphic card's DVI-D digital connector to the monitor's	
<b>Other</b>			



		input #2 (DVI-I digital) connector
	<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>
	<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>	<p>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.</p>
<b>Certification and Compliance</b>		<p>Australian ACA Approval, Canadian Requirements/CSA, CE Marking, China CCIB/CCEE Approval, CISPR Requirements, Eastern European Approvals, 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</p>

### Technical Specifications - Monitors

	(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.

#### HP LP3065 Flat Panel Monitor

<b>Panel</b>	<b>Type</b>	30.0-inch Wide Format Active Matrix TFT (thin film transistor)
	<b>Viewable Image Area (diagonal)</b>	29.77 in (75.623 cm)
	<b>Screen Opening (W x H)</b>	25.3 x 15.8 in (64.3 x 40.3 cm)
	<b>Viewing Angle (typical)*</b>	Up to 178° H/ 178° V (10:1 minimum contrast ratio)
	<b>Brightness (typical)*</b>	300 nits (cd/m <sup>2</sup> )
	<b>Contrast Ratio (typical)*</b>	1000:1
	<b>Response Rate (typical)*</b>	12 ms (8 ms average gray to gray)
	<b>Pixel Pitch</b>	0.250 mm
	<b>Backlight Lamp Life (to half brightness)</b>	40K hours
	<b>Color Gamut</b>	92% of NTSC
<b>On Screen Display (OSD) Controls</b>	<b>Buttons or Switches</b>	Input select, brightness up, brightness down, power
	<b>User Controls</b>	Brightness, input selection
<b>Signal Interface/ Performance</b>	<b>Horizontal Frequency</b>	100 KHz
	<b>Vertical Frequency</b>	60 Hz
	<b>Native Resolution</b>	2560 x 1600 @ 60 Hz (native aspect ratio of 16:10)
	<b>Pixel Clock Speed</b>	275 MHz
	<b>Anti-Glare</b>	Yes
	<b>Anti-Static</b>	Yes
	<b>Default Color Temperature</b>	6500 K

### Technical Specifications - Monitors

<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>	Three dual-link DVI-D inputs (Windows PC and graphics card that supports DVI ports with dual-link digital bandwidth and VESA DDC standard for plug-and-play setup requires a DVI-D dual-link graphic card that supports WQXGA (2560 x 1600) resolution.)	
	<b>Video Cable</b>	Two dual-link DVI cables	
<b>Power</b>	<b>Video Cable Length</b>	5.9 ft (1.8 m)	
	<b>Input Power</b>	Auto-Ranging, 100 to 240 VAC; internal power supply, 50 Hz/60 Hz	
	<b>Typical Power Consumption</b>	118 watts	
	<b>Maximum</b>	< 176 watts	
	<b>Power Saving</b>	< 2 watts	
<b>Mechanical</b>	<b>Power Cable Length</b>	5.9 ft (1.8 m)	
	<b>Dimensions (H x W x D)</b>	<b>Unpacked w/ stand</b>	19.3 to 23.2 x 27.2 x 9.5 in (49.0 to 59.0 x 69.2 x 24.0 cm)
		<b>Unpacked w/o stand</b>	17.9 x 27.2 x 3.3 in (45.5 x 69.2 x 8.4 cm)
		<b>Packaged</b>	22.4 x 31.1 x 14.9 in (56.8 x 79.0 x 37.8 cm)
	<b>Weight</b>	<b>Unpacked</b>	30.6 lbs (13.9 kg)
	<b>Tilt Range</b>	-5° to + 30° vertical	
	<b>Swivel Range</b>	-45° to + 45°	
	<b>Height Adjustable</b>	Yes, range 5.1 in (100 mm)	
	<b>Pivot Rotation</b>	No	
	<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	
	<b>Altitude – Non-operating</b>	+40,000 ft	
	<b>Environmental Data</b>	<b>Eco-Label Certifications and Declarations</b>	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Federal Energy Management Program (FEMP)
- IT Eco Declaration
- TCO 03
- 
- 



### Technical Specifications - Monitors

- Taiwan Green Mark
- CECP
- Korea Eco-label
- EPEAT - Silver

<b>Energy Consumption</b> (in accordance with US Energy Star test method)	AC Input	AC Input	AC Input Voltage
	Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
<b>Normal Operation</b>	102.8 watts	101.7 watts	100.4watts
<b>Sleep<sup>1</sup></b>	2 watts	2 watts	2 watts
<b>Off</b>	0.05 watts	0.06 watts	0.25 watts
<b>Heat Dissipation<sup>2</sup></b>	AC Input	AC Input	AC Input Voltage
	Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
<b>Normal Operation</b>	350.8 BTU/hr	347.0 BTU/hr	342.6 BTU/hr
<b>Sleep</b>	6.8 BTU/hr	6.8 BTU/hr	6.8 BTU/hr
<b>Off</b>	0.2 BTU/hr	0.2 BTU/hr	0.9 BTU/hr

#### NOTES

<sup>1</sup>This sleep status ignore the input sync signal check cycle when metering the model in sleep mode.

<sup>2</sup>Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

**Longevity and Upgrading** Upgradeability features contained in the product include:

One upstream and four downstream USB ports

**Ergonomics** The monitor meets the ergonomic requirement of EN-ISO 13406-2 for flat panel displays.

**Additional Information** This product is in compliance with the Restrictions of Hazardous Substances (RoHS) Directive, 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive, 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see [www.epeat.net](http://www.epeat.net).

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

Display meets the requirement for low frequency electromagnetic fields per MPR-II, TCO, and prEN50279 A/B/C.

This product contains 0% recycled materials (by wt.)

This product is 97.6% recyclable when properly disposed of at end of life.

#### Packaging Materials

- Corrugated Paper 2.19 kg
- PE-LD Bags 0.09 kg
- EPS Molded Foam 1.07 kg

#### RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. By July 1, 2006, RoHS substances will be virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

#### Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at

[http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen\\_specifications.html](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

#### Packaging

HP follows these guidelines to decrease the

environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

#### End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

#### Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:  
 Global Citizenship Report  
<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>  
 Eco-label certifications  
<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>  
 ISO 14001 certificates:  
<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

#### Other

#### Accessories Included

Two dual link DVI-D to DVI-D cables - connects the graphic card's DVI-D digital connector to the monitor's input (DVI-D digital) connectors; power cord

#### Software

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.

#### User Guide Languages

English, B. Portuguese, French, LA Spanish, Korean, S. Chinese, T. Chinese, Bahasa, Japanese, Danish, Finnish, German, Norwegian, Spanish, Swedish, Greek, Polish, Russian, Slovenian, Turkish

#### Warranty Languages

English, Canadian French, LA Spanish, Brazilian Portuguese, Danish, German, Castilian Spanish, French, Italian, Dutch, Norwegian, Finnish, Swedish, Bahasa Indonesian, Korean, T. Chinese, S. Chinese

#### Color

Carbonite



### Technical Specifications - Monitors

	<b>VESA External Mounting</b>	Yes (Standard 4 hole pattern, 100 mm)
	<b>Kensington Lock-Ready</b>	Yes
<b>Options</b>	<b>HP 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, 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), S. Korean MIC Approval, Taiwan BSMI Approval, TCO 99 (emissions, ergonomics, environment), TUV-Ergo, UL Listed, VCCI Approvals.	
<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.	

<sup>i</sup> Support for all peripherals and parts on Microsoft Windows Vista Business 64 is subject to the expected availability of Microsoft Vista Business 64 in Q1 2008

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Warranty - year(s) Protected by HP Services, including a 3 years parts, 3 years labor, and 3 years onsite service (3/3/3) standard warranty. Terms and conditions vary by country. Certain restrictions and exclusions apply.