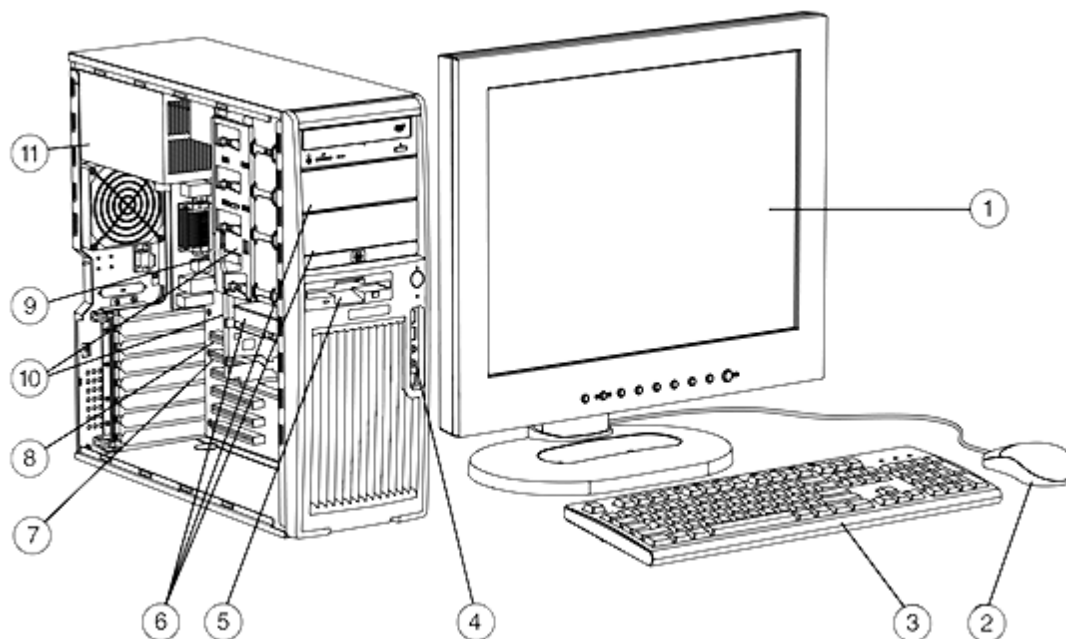


Overview

HP recommends Windows Vista®
Business



1. Monitor (sold separately)
2. Mouse
3. Keyboard
4. Front IO: 2 USB 2.0, IEEE-1394 (requires optional PCI card to enable), headphone and microphone
5. One 3.5" external bay for optional diskette drive or other 3.5" device
6. Three 5.25" external bays (3rd external is not full depth), and two 3.5" internal bays
7. 3 PCI slots, 1 PCI Express x1 slot, 1 PCI Express x8 slot (with x4 functionality), 2 PCI Express x16 slots (one exclusive for graphics)
8. Rear IO: 7 USB 2.0, 1 standard serial port, 1 optional serial port, 1 parallel port, PS/2 keyboard, PS/2 mouse, RJ-45, External SATA, audio line in, audio line out, and microphone in.
9. 3 USB 2.0 internal port (1 type A receptacle, 2 headers)
10. R475 watt (continuous) 80 PLUS efficient power supply.
11. Intel® Core™ 2 Duo, Core 2 Quad, Core 2 Extreme processor or Intel Pentium® Dual Core processor; all processors are EM64T capable

Overview

At A Glance

- Choice of Operating Systems:
 - Microsoft Vista™ Business 32 or 64
 - Microsoft Windows Vista™ Business 32-bit downgrade to Microsoft Windows XP Professional (expected available until August 2008)
 - Microsoft Windows Vista™ Business 64-bit downgrade to Microsoft Windows XP Professional x64 (expected available until August 2008)
 - Microsoft Windows® XP Professional SP2 32-Bit (expected available until January 2008)
 - Preloaded: Red Hat Enterprise Linux® WS 4 (64-bit version)
 - HP Linux Installer Kit (see <http://www.hp.com/workstations/software/linux>)
 - Red Flag Linux v5 *For detailed OS/hardware support information for Linux, see:
http://www.hp.com/support/linux_hardware_matrix
- Intel Core™ 2 Extreme processor with Intel® 64 Architecture
 - Quad-Core
 - 1333 MHz Front Side Bus
 - 8 MB L2 cache (2x4 MB shared)
 - Virtualization Technology
- Intel Core™ 2 Quad-Core processor with Intel® 64 Architecture
 - Quad-Core
 - 1066 MHz Front Side Bus
 - 8 MB L2 cache (2x4 MB shared)
 - Virtualization Technology available with most processor options.
- Intel Core™ 2 Duo processor with Intel® 64 Architecture
 - Dual-Core
 - 800 or 1333 MHz Front Side Bus
 - 2 or 4 MB shared L2 cache
 - Virtualization Technology
- Intel® Pentium® Dual-Core Processor with Intel® 64 Architecture
 - Dual-core
 - 800 MHz Front Side Bus
 - 1 MB dedicated L2 cache
- Intel X38 Express chipset
- Integrated HP Gbit LAN by Broadcom
- 1333, 1066 or 800 MHz processor front side bus support
- Convertible and tool-less minitower chassis
- 4 PCI Express /3 PCI slots
- Dual channel ECC DDR2 memory at 667 or 800 MHz
- Six channel SATA Controller with RAID** (Factory integrated RAID is Microsoft Windows only)
- Realtek integrated high definition audio with internal speaker
- Pre-loaded Manageability tools (Microsoft Windows only)
- ENERGY STAR 4.0 Compliance with energy-saving features available on selected configurations (Not supported by Linux)
- 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.

* Red Flag Linux available in China only

** 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 - Specs

Processor and Speed – One of the following

All processors feature Intel® 64 Architecture

Intel Core 2 Extreme QX6850 processor / 3.0 GHz, 4 MB x 2, 1333 FSB, Quad-Core
Intel Core 2 Quad Q6700 processor / 2.66 GHz, 4 MB x 2, 1066 FSB, Quad-Core
Intel Core 2 Quad Extreme Q6600 processor / 2.40 GHz, 4 MB x 2, 1066 FSB, Quad-Core
Intel Core 2 Duo E6850 Processor/ 3.00 GHz, 4 MB L2 (shared), 1333 MHz FSB, Dual-Core
Intel Core 2 Duo E6750 Processor/ 2.66 GHz, 4 MB L2 (shared), 1333 MHz FSB, Dual-Core
Intel Core 2 Duo E6550 Processor/ 2.33 GHz, 4 MB L2 (shared), 1333 MHz FSB, Dual-Core
Intel Core 2 Duo E4500 Processor/ 2.20 GHz, 2 MB L2 (shared), 800 MHz FSB, Dual-Core
Intel Pentium Dual-Core Processor E2180/ 2.00 GHz, 1 MB L2 (shared), 800 MHz FSB, Dual-Core

All processors except the Intel Core 2 Duo E4500 support Intel Virtualization Technology. Intel Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and applications enabled for virtualization technology. Functionality, performance or other virtualization technology benefits will vary depending on hardware and software configurations.

Intel processor numbers are not a measurement of higher performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number/ for details. Intel® 64 Architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 Architecture. Processor will not operate (including 32-bit operation) without an Intel® 64 Architecture-enabled BIOS.

Performance will vary depending on your hardware and software configurations. See <http://www.intel.com/technology/64bitextensions> for more information including details on which processors support Intel® 64 Architecture or consult with your system vendor for more information.

Operating System – One of the following

Microsoft Vista™ Business 32 or 64

Microsoft Windows Vista 32-bit downgrade to Microsoft Windows XP Professional (expected available until August 2008)

Microsoft Windows Vista 64-bit downgrade to Microsoft Windows XP Professional x64 Edition (expected available until August 2008)

Microsoft Windows® XP Professional SP2 32-Bit (expected available until January 2008y)

Preloaded:

Red Hat Enterprise Linux WS 4 (64-bit version)

Or

Red Flag v5 (PRC only)

HP Linux Installer Kit (see <http://www.hp.com/workstations/software/linux>)

Red Hat Enterprise Linux WS 4 & 5 Desktop (4.5/5.0 or later - 32- or 64-bit version)

For detailed OS/hardware support information for Linux, see:

http://www.hp.com/support/linux_hardware_matrix

Standard Features - Specs

1-3 Hard Disk Drives –

Up to 3 of the following SATA drives, or 3 of the following SAS drives

	Windows Vista ¹	Windows XP	Red Hat Linux
SATA Hard Drives			
80 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
160 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
250 GB 7200 rpm SATA 3.0Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
500 GB 7200 rpm SATA 3.0Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
1 TB 7200 rpm SATA 3.0 Gb/s NCQ (expected availability Q4 2007)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
80 GB 10K rpm SATA NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
160 GB 10K rpm SATA NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
Serial Attached SCSI (SAS) Hard Drives (SAS controller required)			
73 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
146 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
300 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop

4th Hard Disk Drive –

One of the following (not supported with 2nd optical drive)

	Windows Vista ¹	Windows XP	Red Hat Linux
SATA 3.0 Gb/s Hard Drives			
160 GB 7200 rpm SATA 3.0 Gb/s NCQ drive	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
1 TB 7200 rpm SATA 3.0 Gb/s NCQ (expected availability Q4 2007)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
Serial Attached SCSI (SAS) Drives (SAS controller required)			
300 GB 15K rpm SAS 3.0 Gb/s drive	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
146 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
300 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop

Standard Features - Specs

Factory Integrated RAID (on motherboard for SATA drives)		Windows Vista ¹	Windows XP	Red Hat Linux
	RAID 0 Configuration - Striped Array (SATA or SAS)	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported
All drives must be identical in type and capacity	RAID 0 Data Configuration -	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported
	RAID 1 Configuration - Mirrored Array (SATA or SAS, 2 drive max.)	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported
All RAID arrays must be less than 2 TB	RAID 5 Configuration - Parity Array (available CQ1 2008): If SAS, 8 port controller required.	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported
	RAID 10 Configuration - Striped/Mirrored Array (available CQ1 2008): 4 HD drives required	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported

NOTE: Requires identical hard drives (speeds, capacity, interface). (HW RAID functionality not supported by Linux)

Drive controllers		Windows Vista ¹	Windows XP	Red Hat Linux
	Integrated 6-channel SATA 3.0 Gb/s controller with RAID* 0, 1, 5, 10 and NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	Optional 4-port SAS LSI 3041E 3.0 Gb/s RAID* Card**	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop

NOTE:

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

** Not supported when HD drive 1 is SATA

Memory – One of the following		Windows Vista	Windows XP	Red Hat Linux
	DDR2-266 ECC Unbuffered RAM DIMMs			
	HP 512 MB (1 x 512 MB) PC2-5300E DDR2-667 ECC	32-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 1 GB (2 x 512 MB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 2 GB (2 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	DDR2-800 ECC Unbuffered RAM DIMMs			
	HP 512 MB (1 x 512 MB) PC2-6400E DDR2-800 ECC	32-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 1 GB (2 x 512 MB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 2 GB (2 x 1 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 3 GB (2 x 512 + 2 x 1 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 4 GB (2 x 2 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
	HP 4 GB (4 x 1 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop

Standard Features - Specs

HP 8 GB (4 x 2 GB) PC2-6400E DDR2-800 ECC 32-Bit, 64-Bit 32-Bit, 64-Bit WS 4 & 5 Desktop

NOTE: Only unbuffered DDR2 DIMMs are supported. All DIMMs must be either x8 or x16 width.

Removable Storage

0 or 1 floppy drive
Up to 2 optical drives

	Windows Vista ⁱ	Windows XP	Red Hat Linux
FDD Floppy drive 1.44 MB Diskette Drive (1 only)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
Optical drives			
SATA 16X DVD-ROM*	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
SATA 48X CD-RW/DVD-ROM Combo Drive	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
SATA 16X DVD+/-RW, Supermulti with Lightscribe**	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop

* 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.

Input Devices

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

Audio

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

Standard Features - Specs

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

PCI Express Graphics	Windows Vista ⁱ	Windows XP	Red Hat Linux
Professional 2D			
NVIDIA Quadro NVS 290 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must be NVS 290 or NVS 440	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
NVIDIA Quadro NVS 440 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must be NVS 290 or NVS 440	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
Entry 3D			
NVIDIA Quadro FX 370 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
NVIDIA Quadro FX 570 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
Mid-range 3D			
NVIDIA Quadro FX 1700 PCIe (512 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
ATI FireGL V5600 PCIe (512 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported
High-end 3D			
NVIDIA Quadro FX 3500 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
NVIDIA Quadro FX 4600 PCIe (768 MB)** - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop
** This card consumes 2 PCIe slots, reducing the maximum number of PCI cards in a system			

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

Standard Features - Specs

Software	Windows Vista ¹	Windows XP	Red Hat Linux
OS options			
Microsoft Windows Vista™ Business 64	64-Bit	N/A	N/A
OR Microsoft Windows Vista™ Business 32	32-Bit	N/A	N/A
OR Microsoft Windows Vista™ Business 64 downgrade to Microsoft Windows XP Professional x64 Edition	64-Bit	64-Bit	N/A
OR Microsoft Windows Vista™ Business 32 downgrade to Microsoft Windows XP Professional SP2	32-Bit	32-Bit	N/A
OR Microsoft Windows XP Professional x64 Edition	N/A	64-Bit	N/A
OR Microsoft Windows XP Professional SP2	N/A	32-Bit	
OR Red Hat Enterprise Linux WS 4 & 5 Desktop (32 & 64-bit)	N/A	N/A	WS 4 & 5 Desktop
OR Red Flag Linux v5 (China Only)	N/A	N/A	N/A
OR HP Red Hat Linux Installer Kit (includes drivers for both 32-bit & 64-bit)	N/A	N/A	WS 4 & 5 Desktop
Standard			
Alert Standard Format specification	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
HP Performance Tuning Framework	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
Roxio Easy Media Creator (CD or DVD burner)	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
Intervideo WinDVD with DVD player	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
HP Backup and Recovery	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
PDF Complete	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
Optional			
Microsoft Office 2007 Small Business Edition	32-Bit	32-Bit, 64-Bit	N/A
Microsoft Office 2007 Trial Edition	32-Bit	32-Bit, 64-Bit	N/A
HP Client Manager Software v6.2 (optional download)	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
HP ProtectTools Security	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A
Symantec AntiVirus 10	32-Bit, 64-Bit	32-Bit, 64-Bit	N/A

Standard Features - Specs

Form Factor	Minitower	
Color	Carbonite/Alloy metallic	
Convertibility	Yes. 5.25" drives rotate for Minitower or Desktop orientation.	
Expansion Slots (see system board section for more details)	<ul style="list-style-type: none"> • 3 PCI slots (full-height, full-length) • 1 PCI Express x8 slot (x4 functionality) • 1 PCI Express x1 slot (half length) • 2 PCI Express x16 Gen2 slots (one dedicated for graphics) 	
Expansion Bays (see storage section for more details)	<ul style="list-style-type: none"> • 2 internal 3.5" bays • 1 external 3.5" bay, 3 external 5.25" bays* <p>NOTE: Third external 5.25" bay is not full depth in side orientation.</p>	
Front I/O	2 USB 2.0, 1 IEEE 1394 (requires optional PCI card to function), 1 audio out, and 1 microphone. <p>NOTE: Although HP Personal Workstations can be ordered with the HP Installer Kit for Linux and an IEEE 1394 card, HP cannot provide customer support for this configuration. Please refer to the Linux Hardware Support Matrix (http://www.hp.com/support/linux_hardware_matrix) for details, and to the Linux User Manual (http://www.hp.com/support/linux_user_manual) for tips on user-enablement of the IEEE 1394 Card.</p>	
Internal I/O	1 USB 2.0 Type A Receptacle, 2 USB 2.0 headers	
Rear I/O	7 USB 2.0, 1 serial, 1 optional serial port, parallel port, 2 PS/2, RJ-45 (NIC), 1 External SATA, 1 audio line in, 1 audio line out, 1 microphone in; audio ports can be retasked to function as line in, line out, microphone, or headphone.	
Interfaces Supported	1 SATA 3 Gb/s interface (5 internal, 1 external SATA connectors)	
On-board RAID Support	SATA only	
Chassis Dimensions (H x W x D)	Standard minitower orientation: 17.7 x 6.6 x 17.9 inches; 45.0 x 16.8 x 45.6 cm Converted desktop orientation: 6.6 x 17.7 x 17.9 inches; 16.8 x 45.0 x 45.6 cm	
Weight	Exact weights depend upon configuration Minimum: 29.9 lbs (13.6 kg) Standard: 33.3 lbs (15.1 kg) Maximum: 43.3 lbs (19.6 kg)	
Temperature	Operating	40° to 95°F (5° to 35°C)
	Non-operating	-40° to 140°F (-40° to 60°C)
Humidity	Operating	8% to 85%
	Non-operating	8% to 90%
Maximum Altitude (non-pressurized)	Operating	10,000 feet; 3,000 m
	Non-operating	30,000 feet; 9,100 m
Power Supply	475 watts wide-ranging, active Power Factor Correction, 80 PLUS Efficient	

After-Market Options

PCI-Express Graphics	Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
Professional 2D Multi Display Solutions				
NVIDIA Quadro NVS 290 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card may be NVS 290 or NVS 440	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	GN502AA
NVIDIA Quadro NVS 440 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card may be NVS 290 or NVS 440	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	PT453A
HP 'DMS-59 to Dual VGA' Cable Kit	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GS567AA
Entry 3D				
NVIDIA Quadro FX 370 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GP528AA
NVIDIA Quadro FX 570 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GR521AA
Mid-range 3D				
NVIDIA Quadro FX 1700 PCIe (512 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit	WS 4 & 5 Desktop	GP529AA
ATI FireGL V5600 PCIe (512 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported	GT346AA
High-end 3D				
NVIDIA Quadro FX 3500 PCIe (256 MB) - 1 or 2 of these cards are supported - 2nd card must match first	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	ES357AA
NVIDIA Quadro FX 4600 PCIe (768 MB)** - 1 or 2 of these cards are supported - 2nd card must match first	Not supported	32-Bit, 64-Bit	WS 4 & 5 Desktop	RV706AA

** This card consumes 2 PCIe slots, reducing the maximum number of PCI cards in a system

After-Market Options

Hard Drives	Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
SATA Hard Drives				
HP 80 GB 10K rpm SATA	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EM172AA
HP 160 GB 10K rpm SATA	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EW222AA
HP 160 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	PV944A
HP 250 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EA788AA
HP 500 GB 7200 rpm SATA 3.0 Gb/s NCQ	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	PV943A
HP 1 TB 7200 rpm SATA 3.0 Gb/s NCQ (expected availability in Q4 2007)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	GE262AA
SAS Hard Drives				
73 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EA329AA
146 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EA330AA
300 GB 15K rpm SAS 3.0 Gb/s	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EM174AA

Controllers	Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
SCSI Controllers				
LSI 3041E 4-Port SAS 3 Gb/s controller, supports RAID 0, 1 1E and 10E	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EH417AA

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

After-Market Options

Input Devices		Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
	Keyboards				
	HP PS/2 Standard Keyboard	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DT527A
	HP USB Standard Keyboard	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DT528A
	HP USB Smart Card Keyboard (Carbonite/Silver)	32-Bit, 64-Bit	32-Bit, 64-Bit	Not Supported	ED707AA
	Pointing Devices				
	HP PS/2 2-Button Scroll Mouse (optical)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DD440B
	HP USB 2-Button Scroll Mouse (optical)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DC172B
	HP USB 3-button mouse (optical)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DY651A
	HP USB SpacePilot USB 3D Input Device	TBD	32-Bit, 64-Bit	Not Supported	EF390AA
	HP SpaceExplorer USB 3D Input Device	TBD	32-Bit, 64-Bit	Not Supported	RY429AAA

Networking		Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
	NICs				
	Intel Pro 1000 PT Gigabit PCI Express Network Interface Card (NIC)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EH352AA
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EA833AA

Memory (Unbuffered DIMMs)		Windows Vista ¹	Windows XP	Red Hat Linux	Part Number
	PC2-5300 DDR2-667 DIMMs (ECC Unbuffered)				
Configurations less than 1 GB are not supported on Microsoft Vista 64 or Vista64 downgrade to XP64	512 MB (1 x 512 MB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	PV940A
	512 MB (1 x 512 MB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	GH738AA
	1 GB (1 x 1 GB) PC2-5300E DDR2-667 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	PV941A
	1 GB (1 x 1 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	GH739AA
	2 GB (1 x 2 GB) PC2-6400E DDR2-800 ECC	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	GH740AA

After-Market Options

Monitors	TFTs	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

Multimedia		Windows Vista ⁱ	Windows XP	Red Hat Linux	Part Number
	Adaptec Fireconnect 2100 Firewire (1394a) PCI Card (Windows only)	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported	PA997A
	HP FireWire 800 IEEE 1394b PCI Card	Not supported	32-Bit, 64-Bit	Not supported*	EA327AA

* 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) for details, and to the Linux User Manual (http://www.hp.com/support/linux_user_manual) for tips on user-enablement of the IEEE 1394a Card.

Audio		Windows Vista ⁱ	Windows XP	Red Hat Linux	Part Number
	SoundBlaster X-Fi XtremeGamer Audio Card (Windows only)	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported	GE257AA
	HP USB Powered Speakers	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	RD628AA

Removable Storage Devices		Windows Vista ⁱ	Windows XP	Red Hat Linux	Part Number
	FDD Floppy drive				
	1.44 MB Diskette Drive (1 only)	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	DY670A
	Optical drives				
	SATA 16X DVD-ROM*	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EW268AA
	SATA 48X CD-RW/DVD-ROM Combo Drive	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop	EW267AA
	SATA 16X DVD+/-RW, Supermulti with Lightscribe**	32-Bit, 64-Bit	32-Bit, 64-Bit	WS 4 & 5 Desktop**	EW269AA
	Other storage options				
	HP 16-In-1 Media Card Reader with PCI Card	32-Bit, 64-Bit	32-Bit, 64-Bit	Not supported	EM718AA

* 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.)

After-Market Options

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

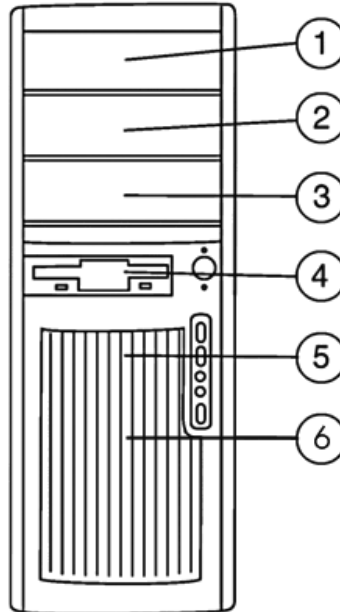
Racking Options		Part Number
	HP xw4000 Depth Adjustable Fixed Rail Rack Kit	EK729AA

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 Optical Bay HDD Mounting Bracket	DY659A
	HP Power Cord Kit	DM293A
	HP Internal USB Port Kit	EM165AA

Software	Windows Vista ¹	Windows XP	Red Hat 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	TBD	GN036AA

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 standard (2 additional in Optical Bays via adapter) (4 SATA, 4 SAS)	5, 6 (and 2 or 3, for 3rd or 4th drives using optical bays, adapter kit(s) required)	SATA (and/or optional SAS) Factory Integrated RAID* 0, 1, 5, 10 (Levels 5, 10 available in CQ1 2008) User configurable SATA RAID 0, 1, 5, 10 standard

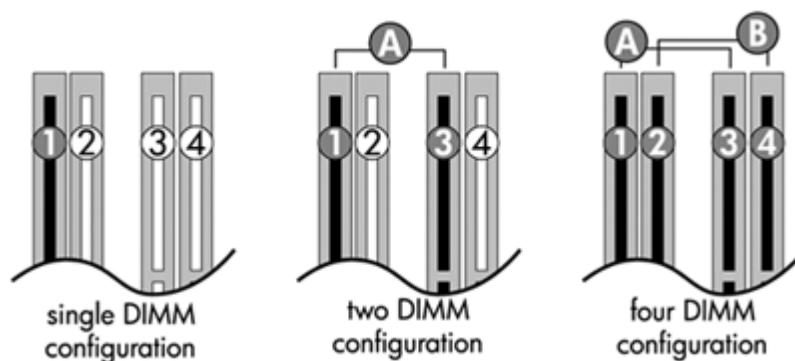
* **NOTE:** Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent, functionality and performance. It is a good alternative to hardware-based RAID. Please visit <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf>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

Memory

PC2-5300E DDR2-667 ECC Unbuffered or PC2-6400E DDR2-800 ECC Unbuffered RAM DIMMs

Only Error Checking and Correcting unbuffered DDR2 DIMMs are supported and must be either x8 or x16 width. Memory upgrades are accomplished by adding DIMMs of the same or varied sizes. The Intel chipset supports both PC2-5300 DDR2-667 and the PC2-6400E DDR2-800 ECC unbuffered memory. It is suggested to not mix ECC and non-ECC memory.

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



MAXIMUM MEMORY

Supports up to 8 GB DDR2-667 or DDR2-800 ECC unbuffered memory

POSSIBLE MEMORY CONFIGURATIONS

Not all memory configurations possible are represented below.

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

Technical Specifications

System Board	
Processor Socket	Single LGA775
CPU Bus Speed Supported	800, 1066 and 1333 MHz FSB
Chipset	Intel X38 Express North Bridge/ICH9R South Bridge
Super I/O Controller	SMSC SCH5327
System Board Form Factor	ATX 9.6 x 12 inches (243.84 x 304.8 mm)
Memory Expansion Slots	4 DDR2 memory slots
Memory Type Supported	1.8V DDR2 (ECC memory modules)
Memory Speed Supported	DDR2 SDRAM PC2-5300E (667 MHz) unbuffered ECC or DDR2 SDRAM PC2-6400E (800 MHz) unbuffered ECC
Maximum Memory	8 GB (4 DIMM slots) NOTE: * Maximum memory capacities assume 64-bit operating systems, such as genuine Windows® Vista Business 64, XP Professional x64 Edition, Red Hat Linux 64-bit. Genuine Windows Vista Business 32 and XP Professional (32-bit) support up to 4 GB. 32-bit Linux supports up to 8 GB.
Memory Protection	ECC available on data, parity on address and command
Memory Modes	Dual channel
PCI Express Connectors (Gen2 Rev 0.7 connectors)	2 PCI Express x16 Gen2 Rev 0.7 (75W+75W) 1 PCI Express x8 ¹ (x4 electrical) 1 PCI Express x1
PCI Connectors (5.0V)	2 full length, 1 half-length 33 MHz 32-Bit
Serial Attached SCSI (SAS) Supported	(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.)
SATA Interface Supported	1 SATA 3.0 Gb/s interface (5 SATA connectors); gen2
Integrated SATA RAID	<ul style="list-style-type: none"> RAID 0, 1, 5*, or 10* on a single array, up to 4 hard drives depending on the RAID level supported (RAID 5 and 10 won't be available as a factory-configurable option until Q1 2008) Support for 1 or 2 RAID arrays on 4-ports for RAID 0 or 1 RAID 1 spare and auto-rebuild Matrix RAID support AHCI support for NCQ drives 3.0 Gb/s drive support <p>NOTE: Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent functionality and performance. It is a good alternative to hardware-based RAID. Please visit http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf for RAID capabilities with Linux.</p>
External SATA (eSATA)	1 dedicated rear eSATA, 1.5 Gbps
Network Controller	Integrated Broadcom 5755 Gigabit Ethernet LOM
USB 2.0 Connectors	Front: 2 Rear: 7 Internal: 3 (one Female Type A and one dual channel 2x5 pin header)
IDE connector	No
Floppy connector	Yes
LAN (RJ45)	Yes

Technical Specifications

Serial	Yes
2nd Serial	Yes (requires optional 2nd Serial Port Adapter)
Parallel	Yes
Audio	Integrated high definition digital audio with Line in, Line Out, Microphone, Headphone
CD-ROM input/Audio)	No
AUX INPUT; Audio)	Yes
Flash ROM	Yes
Clear CMOS Button	Yes
CPU Fan Header	Yes
Chassis Fan Header	Yes
Front PCI Fan Header	Yes
Front Control Panel/Speaker Header	Yes
CMOS Battery Holder - Lithium	Yes
Hood Lock Header	Yes
Hood Sensor Header	Yes
Integrated Trusted Platform Module	TPM 1.2 integrated in Broadcom LOM
ASF 2.0 (Alert Standard Format)	Yes
Power Supply Headers	Yes
Power Switch, Power LED & Hard Drive LED Header	Yes
Password Clear Header	Yes

Power Supply	475 watt custom power supply - (Wide Ranging, Active PFC)	
Operating Voltage Range	90 - 269 VAC	
Rated Voltage Range	100 - 240 VAC	118 VAC
Rated Line Frequency	50/60 Hz	400Hz
Operating Line Frequency Range	47 - 66 Hz	393-407 Hz
Rated Input Current	10 A @ 100-127 VAC 6A @ 200-240 VAC	10 A @ 118 VAC
Heat Dissipation	Typical 1419 btu/hr (358 kg-cal/hr) Maximum 2027 btu/hr (511 kg-cal/hr)	
Power Supply Fan	92x25 mm variable speed	
Energy Star 4.0 Compliant	Yes	
80 PLUS® Compliant	Yes	
Blue Angel Compliant (<5w in S5 - Power Off)	N/A	
FEMP Standby Power Compliant @115V (<2W in S5 - Power Off)	Yes	

Technical Specifications

Power Consumption in ES Mode - Suspend to RAM (S3) (Instantly Available PC)	<5W
---	-----

Cooling	
Chassis Fan	92 mm x 92mm x 25 mm 4-wire high frequency PWM
Power Supply Fan	92 mm x 92 mm x 25 mm 3-wire fan (non-serviceable)
Processor Heatsink Fan	80 mm x 80 mm x 15 mm 4-wire high frequency PWM
Optional Front Chassis Fan (AMO only)	92 mm x 92 mm x 25 mm 4-wire high frequency PWM

BIOS Features	
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.
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.
BIOS Power on	Users can define a specific date and time for the system to power on.
Instantly Available PC (Suspend to RAM - ACPI sleep state S3)	Allows for very low power consumption with quick resume time
ROM Based Computer Setup Utility (F10)	Review and customize system configuration settings controlled by the BIOS.
Remote System Installation via F12 (PXE) (Remote Boot from Server)	Allows a new or existing system to boot over the network and download software, including the operating system
System/Emergency ROM Flash Recovery with Video	Recovers corrupted system BIOS
Serial, USB, Audio, Network, Enable/Disable Port Control	Enable or disables serial, USB, audio, and network ports
Removable Media Write Control/ Boot Control	User can prevent the workstation from writing to or booting from removable media
Power-On Password	Prevents an unauthorized person from booting up the computer
Setup Password	Prevents an unauthorized person from changing the system configuration
Replicated Setup	Saves BIOS settings to diskette or USB flash device in human readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering Computer Setup Utility (F10)
Memory Change Alert (Requires HP Client Manager Software)	Alerts management console if memory is removed or changed

Technical Specifications

Thermal Alert (Requires HP Client Manager Software)	Monitors the temperature state within the chassis. Three modes: <ul style="list-style-type: none"> • NORMAL - normal temperature ranges • ALERTED - excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown • SHUTDOWN - excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console
Remote Wakeup	<ul style="list-style-type: none"> • System administrators can power on, restart, and power off a client computer from a remote location.
ACPI (Advanced Configuration and Power Management Interface)	<ul style="list-style-type: none"> • Allows the system to enter and resume from low power modes (sleep states) • 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 • Supports ACPI 2.0 for full compatibility with 64-bit operating systems
SMBIOS	System Management BIOS 2.5, previously known as DMI BIOS, for system management information
ROM revision levels	Identifies system ROM revision levels and reports in Computer Setup Utility (F10). Version is stored in an industry standard memory location (SMBIOS) so that management SW applications can use and report this information
System board revision level	<ul style="list-style-type: none"> • Allows management SW to read revision level of the system board • Revision level is digitally encoded into the HW and cannot be modified
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"> • System administrators can power on, restart, and power off a client computer from a remote location. • Enables cost-effective power consumption when the administrator needs to distribute software, perform security management, or update the ROM.
ROM Based Setup (F10) and Start-up Diagnostics	Yes

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
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"> • Enhanced Disk Drive Specification Version 1.1 • BIOS Enhanced Disk Drive Specification Version 3.0
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision 1.0
PCI	<ul style="list-style-type: none"> • PCI Local Bus Specification, Revision 2.3 • PCI Power Management Specification, Revision 1.1 • PCI Firmware Specification, Revision 3.0, Draft .7
PCI Express	PCI Express Base Specification, Revision 1.1 PCI Express Base Specification, Revision 2.0
PMM	POST Memory Manager Specification, Version 1.01
SATA	<ul style="list-style-type: none"> • Serial ATA Specification, Revision 1.0a • Serial ATA 3 Gb/s: Extensions to Serial ATA 1.5 Gb/s, Revision 1.0
SMBIOS	System Management BIOS Reference Specification, Version 2.5
SPD	PC SDRAM Serial Presence Detect (SPD) Specification, Revision 1.2B

Technical Specifications

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

Serviceability Features of System	
Access Panel	Tool-less
Optical Drives	Tool-less
Floppy Drive	Tool-less
Hard Drives	Tool-less
Expansion Cards	Tool-less
Green user touch points	Yes, on tool-free internal chassis mechanisms
Color-coordinated cables and connectors	Yes
Memory	Tool-less, can be upgraded without removing any internal components
System Board	Tool-less removal
Dual Color Power and HD LED on Front of Computer (Indicates Normal Operations and Fault Conditions)	green – normal red – fault
System/Emergency ROM Flash Recovery with Video	Recovers corrupted system BIOS.
Configuration Record SW	Yes
Over-Temp Warning on Screen (Requires IM Agents)	Yes
Restore CD set	Restores the computer to its original factory shipping image
Processor ZIF Socket for easy Upgrade	Requires T-15 Torx or flat blade screwdriver to remove heatsink
ASF 2.0 support (Alert Standard Format)	Industry-standard specification for network alerting in operating system-absent environments
Dual Function Front Power Switch	Also acts as a reset switch when held for 4 seconds

Technical Specifications

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

Other deployment & management features

HP Client Management Solutions	Visit http://www.hp.com/go/easydeploy
--------------------------------	---

Security Features

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, Parallel, USB Enable/Disable	Enable or disable serial, parallel 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

Other Features

ACPI-Ready Hardware	<p>Advanced Configuration and Power Management Interface (ACPI).</p> <ul style="list-style-type: none"> • Allows the system to wake from a low power mode. • 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
---------------------	---

Technical Specifications

<p>Insight Diagnostics</p>	<p>HP Insight Diagnostics Offline Edition The diagnostics utility enables you to perform testing and to view critical computer hardware and software configuration information from various sources. This utility enables you to:</p> <ul style="list-style-type: none"> • Run diagnostics • View the hardware configuration of the system <p>Key features and benefits HP Insight Diagnostics simplifies the process of effectively identifying, diagnosing, and isolating the hardware issues. In addition to robust management tools, service tools can be invaluable in quickly resolving system problems. To streamline the service process and resolve problems quickly, it is necessary to have the right information available at the time that a service call is placed. The primary information requirement, which is also the one that provides the greatest insight into potential system issues, is the configuration of the system. Insight Diagnostics helps provide higher system availability. Typical uses of the Insight Diagnostics are:</p> <ul style="list-style-type: none"> • Testing and diagnosing apparent hardware failures • Documenting system configurations for upgrade planning, standardization, inventory tracking, disaster recovery, and maintenance • Sending configuration information to another location for more in-depth analysis
----------------------------	---

<p>Service and Support</p>	<p>On-site Warranty and Service (Note 1): One and three-years, limited warranty and service offering delivers on-site, next business-day (Note 2) service for parts and labor and includes free telephone support (Note 3) 8am - 5pm. Global coverage (Note 2) 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>Note 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.</p> <p>Note 2: 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>Note 3: 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>
----------------------------	--

<p>Eco-Label Certifications & Declarations</p>	<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"> • US Energy Star (energy-saving features available on selected configurations -Windows only) • US Federal Energy Management Program (FEMP) • China Energy Conservation Program • IT ECO declaration • Japan PC Green label* <p>*NOTE: This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'</p>
--	---

<p>Energy Consumption and Noise Emissions</p>	
<p>- THE FOLLOWING FIGURES ARE ESTIMATES AND WILL BE SUBJECT TO CHANGE</p>	
<p>System Configuration</p>	

Technical Specifications

Example Configuration #1	Processor Info	1x Pentium Dual Core E4500 (2.20GHz)
	Memory Info	2x512MB 667MHz
	Graphics Info	NVS290
	Disks/Optical/Floppy	1x160GB 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
Windows Idle (S0)	67.4W		66.4W		65.5W	
Windows Busy Typ(S0)	89.7W		88.4W		88.2W	
Windows Busy Max (S0)	114.1W		109.6W		110.0W	
Sleep (S3)	3.61W	2.82W	3.89W	3.12W	3.61W	2.82W
Off (S5)	1.51W	1.30W	1.81W	1.60W	1.50W	1.28W

Heat Dissipation**

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows Idle (S0)	230.1 btu/hr		226.6 btu/hr		223.6 btu/hr	
Windows Busy Typ(S0)	306.3 btu/hr		301.6 btu/hr		300.9 btu/hr	
Windows Busy Max (S0)	389.4 btu/hr		374.1 btu/hr		375.4 btu/hr	
Sleep (S3)	12.3 btu/hr	9.62 btu/hr	13.3 btu/hr	10.6 btu/hr	12.3 btu/hr	9.62 btu/hr
Off (S5)	5.15 btu/hr	4.44 btu/hr	6.18 btu/hr	5.46 btu/hr	5.12 btu/hr	4.37 btu/hr

Example Configuration #2
(Energy Star 4.0 Compliant)

Processor Info	1xCore 2 Extreme QX6850 (2.93GHz)
Memory Info	2x1GB 800MHz
Graphics Info	FX1700
Disks/Optical/Floppy	2x73GB SAS / 2 Optical / 1 Floppy

Energy Consumption

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows Idle (S0)	113W		108W		113W	
Windows Busy Typ(S0)	138W		133W		138W	
Windows Busy Max (S0)	186W		178W		183W	
Sleep (S3)	3.70W	2.90W	3.95W	3.20W	3.70W	2.90W
Off (S5)	1.52W	1.30W	1.81W	1.58W	1.50W	1.28W

Technical Specifications

Heat Dissipation**

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows Idle (S0)	386 btu/hr		369 btu/hr		386 btu/hr	
Windows Busy Typ(S0)	471 btu/hr		454 btu/hr		471 btu/hr	
Windows Busy Max (S0)	635 btu/hr		608 btu/hr		625 btu/hr	
Sleep (S3)	12.6 btu/hr	9.89 btu/hr	13.5 btu/hr	10.9 btu/hr	12.6 btu/hr	9.89 btu/hr
Off (S5)	5.19 btu/hr	4.44 btu/hr	6.18 btu/hr	5.39 btu/hr	5.12 btu/hr	4.37 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.](#)

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:

- Intel LGA775 processor socket
- 12 USB ports
 - 7 rear
 - 3 internal - 1 Type A
 - 2 front
- 3 PCI slots
- 4 PCI Express slots
 - 1 PCI Express ×1 slot
 - 2 Gen2 PCI Express ×16 slots
 - 1 PCI Express ×8 (×4) slot
- 5 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 the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

Battery size: CR2032 (coin cell)

Battery type: Lithium

Technical Specifications

Additional Information	<ul style="list-style-type: none"> • 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. • This product contains 0% recycled materials (by wt.) • This product is >90% recycle-able when properly disposed of at end of life. 									
	<table border="1"> <tr> <td data-bbox="351 466 664 498">Packaging Materials</td> <td data-bbox="664 466 1056 498"></td> <td data-bbox="1056 466 1489 498"></td> </tr> <tr> <td data-bbox="351 498 664 531">External</td> <td data-bbox="664 498 1056 531">Cardboard carton and insert</td> <td data-bbox="1056 498 1489 531">2.70 kg</td> </tr> <tr> <td data-bbox="351 531 664 574">Internal</td> <td data-bbox="664 531 1056 574">LDPE Foam</td> <td data-bbox="1056 531 1489 574">0.35 kg</td> </tr> </table>	Packaging Materials			External	Cardboard carton and insert	2.70 kg	Internal	LDPE Foam	0.35 kg
Packaging Materials										
External	Cardboard carton and insert	2.70 kg								
Internal	LDPE Foam	0.35 kg								
Material Usage	<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 http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):</p> <ul style="list-style-type: none"> • 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 Diphenyl Ethers (PBDEs) • 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	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>									

Technical Specifications

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

[link to new HP white paper now in progress]

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>

Technical Specifications - Audio

High Definition Integrated Type	Integrated
Realtek ALC262 Audio	
High Definition Codec	Yes
SPDIF	No
External audio jacks	One front stereo analog microphone-in One front stereo headphone-out One rear line-in One rear line-out One rear stereo analog microphone-in
Internal audio connectors	AUX-IN line-level analog input
Retasking	NOTE: *Rear audio port are re-taskable as Line-In, Line-Out, Microphone-In, or Headphone-Out with Optional driver, available only through download from HP support website and not supported by default. External Speakers need to be powered externally.
Sampling	44.1kHz/48 kHz/96kHz/192kHz (output only)
Wavetable Syntheses (software)	Yes - Uses OS soft wavetable
Internal audio speaker power rating	1.5 W
Internal Speaker	Yes
Microphone features	Stereo Microphone supporting: Acoustic echo cancellation Noise suppression Beam forming

Sound Blaster X-Fi XtremeMusic (PCI)	
Audio Quality	Total Harmonic Distortion + Noise at 1kHz (20kHz Low-pass filter) = 0.004%
Signal to Noise Ratio (SNR)	Signal-to-Noise Ratio (20kHz Low-pass filter, A-Weighted) <ul style="list-style-type: none"> • Stereo Output: 109dB • Front and Rear Channels: 109dB • Center, Subwoofer and Side Channels: 109dB
Sound Conversion	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
Recording/Sampling Rate	44.1, 48 and 96kHz
ASIO 2.0 support	16-bit/44.1kHz, 16-bit/48kHz, 24-bit/44.1kHz 24-bit/48kHz and 24-bit/96kHz with direct monitoring
Enhanced SoundFont support	up to 24-bit resolution 24-bit/96kHz
DACs	24-bit/192kHz
Voice Support	128 voices
Max. Channels in 3D Positional Audio	7.1

Technical Specifications - Audio

EAX® ADVANCED HD™ 5.0 support	Yes including EAX® MacroFX™, EAX® PurePath™ and Environment FlexiFX™	
Connectors	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)	
Dimensions	7.25" x5" x .9"	
Additional product features	Movies	THX Certification Dolby Digital EX 6.1 Playback DTS-ES 6.1 Playback
	Music	X-Fi 24-bit Crystalizer CMSS-3D SuperRip
	Audio Creation	Pristine audio playback quality with a near transparent SRC engine Up to eight 24 bit hardware effects ASIO recording with latency as low as one millisecond 24-bit SoundFont® sampling 3D MIDI
	Gaming	EAX ADVANCED HD 5.0
	Software Bundle	Doom 3 Sound Blaster EAX patch Entertainment Mode Audio Creation Mode Game Mode Mode Switcher Audio Console Creative MediaSource Creative MediaSource DVD-Audio Player DTS Neo:6 Settings Karaoke Player Entertainment Center Smart Recorder SoundFont Bank Manager Speaker Connection Wizard THX Setup Console Vienna SoundFont Studio Volume Panel WaveStudio Console Launcher Creative Media Toolbox Creative Diagnostics
Minimum system requirements	System RAM	256MB
	Hard disk	600MB free space Available PCI 2.1 slot for the audio card CD-ROM/CD-RW or CD/DVD-ROM required for software installation
	Operating System	Microsoft Windows XP Service Pack 2 (SP2)

Technical Specifications - Audio

Integrated PCI Express Broadcom BCM5755 NetXtreme Gigabit Ethernet Network Controller LoM	Connector Controller Memory Data rates supported Compliance Bus architecture Data path width Data path speed Data transfer mode Hardware certifications Power requirement Boot ROM support Network transfer rate Operating system driver support Management capabilities Alerting	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 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 WOL, PXE ASF 2.0
Intel Pro 1000 PT PCI Express Gigabit NIC (Part# EH352AA)	Connector Controller Memory Data rates supported Compliance Bus architecture Data path width Data transfer mode Hardware certifications Power requirement Boot ROM support Network transfer rate Environmental	RJ-45 Intel 82572EI Gigabit Ethernet Controller Integrated Dual 48K configurable transmit receive FIFO Buffers 10/100/1000 Mbps IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control PCIe 1.0a X1, 250MB/s, Bi-directional interface Bus-master DMA FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T 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 Operating temperature 32° to 131° F (0° to 55° C) Operating humidity 85% at 131° F (55° C)

Technical Specifications - Communications

Dimensions	6.4 x 2.6 x 0.8 inches; 16.3 x 6.6 x 1.9 cm)
Operating system driver support	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional, Red Hat Enterprise Linux WS 4 and 5 Desktop
Management capabilities	ASF, WOL , PXE, DMI, WFM 2.0.
Kit contents	Intel Pro 1000 PT PCI Express Gigabit NIC, CD containing Intel PROset II NIC drivers, quick install guide, product warranty statement

Broadcom BCM5751 NetXtreme Gigabit Ethernet Controller (PCIe) (Part# EA833AA)	Connector	RJ-45	
	Controller	Broadcom 5751 PCI-E 1.0a LAN Controller	
	Memory	Integrated 96Kb frame buffer memory	
	Data rates supported	10/100/1000 Mbps	
	Compliance	IEEE 802.3, 802.3AB and 802.3u compliant, 802.3x flow control	
	Bus architecture	PCIe 1.0a	
	Data path width	X1	
	Data path speed	2.5Gbit per sec per direction transfer rate	
	Data transfer mode	Bus-master DMA	
	Hardware certifications	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	
	Power requirement	3.1 watts @ +3.3V AUX supply	
	Boot ROM support	Yes	
	Network transfer rate	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	
Environmental	Operating temperature	32° to 131° F (0° to 55° C)	
	Operating humidity	85% at 131° F (55° C)	
Dimensions	4.4 x 2.2 x 0.08 inches; 11.2 x 5.5 x .2 cm		
Operating system driver support	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP, Red Hat Enterprise Linux 4 and 5 Desktop		
Management capabilities	WOL, PXE , Remote cable management		
Alerting	ASF 2.0		
Kit contents	Broadcom 5751, CD, Broadcom NetXtreme Gigabit Ethernet PCI NIC, drivers, quick install guide, product warranty statement		

Agere Systems PCI International Softmodem	Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless NOTE: 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.
	Data Speeds	(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
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103

Technical Specifications - Communications

Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
Power Management	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
Upgradeability	Driver upgradeable for future enhancements
Video	ITU-T V.80 video ready interface
Other	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
Operating Temperature	32° to 158° F (0° to 70° C)
Operating Humidity	20% to 90%, non-condensing
Operating System Support	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition
OS Driver Support	Microsoft Windows XP Professional, Microsoft Windows XP Professional x64 Edition
Power	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
Chipset	Agere Systems SV92PL - Integrated PCI interface with 5-V tolerant buffers and CardBus support
Dimensions (L X H)	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
Connection	Single RJ-11 connector
Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
Safety	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
EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
Health	Bare PCB material compliant to 94V-0 or better (marked as such)
Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant
Kit Contents	DC132D : Agere Systems PCI International Softmodem with full-height bracket attached, additional low-profile bracket, RJ11 modem cable, driver and documentation CD.
	NOTE: RJ11 modem adapter is not included.
	DC131C #xxx: RJ11 modem adapter kit for use with DC132D
	#ACP: Austria, #ABW: Belgium (Dutch/Flemish), #AKN: Bosnia, Herzegovna, Croatia, Slovenia, Yugoslavia (Slovenian), #AKB: Czech Republic (Czech) & Slovakia, #ABF: France, #ABD: Germany, #AB7:

Technical Specifications - Controllers

LSI SAS3041E Serial Attach SCSI (SAS) Host Bus Adapter (HBA) (Part# EH417AA)	PCI Bus	PCI-Express x4 lanes	
	PCI Modes	Bus Master DMA	
	PCI data burst transfer rate	1.0 GBps (half duplex) 2.0 GBps (full duplex)	
	SAS Bandwidths	Half Duplex	Full Duplex
		Single lane – 300 MBps	Single SAS Lane – 600 MBps
		Wide Port (2 lanes) – 600 MBps	Wide Port (2 lanes) – 1200 MBps
		Wide Port (4 lanes) – 1200 MBps	Wide Port (4 lanes) – 2400 MBps
	PCI Card Type	3.3 volt add-in card	
	PCI Voltage	12 V ± 10%	
	PCI Form Factor	6.6" x 2.731" (Low-profile)	
	PCI Power	7.5 Watts	
	Bracket	Full height and Low-profile	
	Certification Level	PCI-Express 1.0a	
	IO Bus	Four 3Gbps SAS/SATA ports	
	SAS Processor	LSISAS1064E	
	Internal Connectors	Four- SATA x1 connectors	
	External Connectors	None	
	Max. Number of SCSI Devices	128	
	LED Indicators	On-board activity and fault LEDs	
	Integrated Mirroring	Integrated Mirroring option available	
	Environments	Operating	Storage
	Temperature	32° to 140° F (0° to 60° C)	-49° to 221° F (-45° to +105° C)
	Relative Humidity	5% to 90% non-condensing	5% to 90% non-condensing
	MTBF	>200,000 hours	
	Compliances	EMC: Class B-US (CFR 47, P15B); Canada (ICES-003); Japan (V-3/02.04); Europe (EN55022/EN55024); Australia/New Zealand (AS/NZS 3548); Safety: EN60950	
	Operating system support	Microsoft Vista Business 32 and 64, Microsoft Windows XP Professional, Microsoft Windows XP Professional x64, Red Hat Enterprise Linux WS 4 and 5 Desktop	
	Kit contents	Controller card, driver CD, LED cables, user documentation and warranty card.	

Technical Specifications - Hard Drives

SATA hard drives	160 GB (10k rpm)	Capacity	160,041,885,696 bytes			
		Height	1 inches; 2.54 cm or less			
		Width	Media diameter: 3.0 inches; 7.62 cm Physical size: 4 inches; 10.2 cm			
		Interface	Serial ATA (1.5 Gb/s), Native Command Queuing enabled			
		Synchronous Transfer Rate (Maximum)	Up to 150 MB/s			
		Cache	16 Mbytes			
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.3 ms		
			Average	4.6 ms		
			Full-Stroke	10.2 ms		
		Rotational Speed	10,000 rpm			
		Logical Blocks	312,581,808			
		Operating Temperature	41° to 131° F (5° to 55° C)			
			80 GB (10k rpm)	Capacity	80,026,361,856 bytes	
				Height	1 inches; 2.54 cm or less	
Width	Media diameter: 3.0 inches; 7.62 cm Physical size: 4 inches; 10.2 cm					
Interface	Serial ATA (1.5 Gb/s), Native Command Queuing enabled					
Synchronous Transfer Rate (Maximum)	Up to 150 MB/s					
Cache	16 Mbytes					
Seek Time (typical reads, includes controller overhead, including settling)	Single Track			0.3 ms		
	Average			4.6 ms		
	Full-Stroke			10.2 ms		
Rotational Speed	10,000 rpm					
Logical Blocks	156,301,488					
Operating Temperature	41° to 131° F (5° to 55° C)					

Technical Specifications - Hard Drives

80 GB (7,200 rpm)	Capacity	80,026,361,856 bytes	
	Height	1 inches; 2.54 cm or less	
	Width	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
	Interface	Serial ATA (3.0 Gb/s) Native Command Queuing available only in Configure-To-Order drive, not when ordered as an After Market Option).	
	Synchronous Transfer Rate (Maximum)	Up to 300 MB/s	
	Cache	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.9 ms
		Average	9.3 ms
		Full-Stroke	118 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	160 GB (7,200 rpm)	Capacity	160,041,885,696 bytes
Height		1 inches; 2.54 cm or less	
Width		Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
Interface		Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
Synchronous Transfer Rate (Maximum)		Up to 300 MB/s	
Cache		8 MB	
Seek Time (typical reads, includes controller overhead, including settling)		Single Track	0.9 ms
		Average	9.3 ms
		Full-Stroke	118 ms
Rotational Speed		7,200 rpm	
Logical Blocks		312,581,808	
Operating Temperature		41° to 131° F (5° to 55° C)	

Technical Specifications - Hard Drives

250 GB (7,200 rpm)	Capacity	250,059,350,016 bytes	
	Height	1 inches; 2.54 cm or less	
	Width	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
	Interface	Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
	Synchronous Transfer Rate (Maximum)	Up to 300 MB/s	
	Cache	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
		Average	11.0 ms
		Full-Stroke	18 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	500 GB (7,200 rpm)	Capacity	500,107,862,016 bytes
Height		1 inches; 2.54 cm or less	
Width		Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm	
Interface		Serial ATA (3.0 Gb/s), Native Command Queuing enabled	
Synchronous Transfer Rate (Maximum)		Up to 300 MB/s	
Cache		8 MB	
Seek Time (typical reads, includes controller overhead, including settling)		Single Track	1.3 ms
		Average	20.0 ms
		Full-Stroke	30 ms
Rotational Speed		7,200 rpm	
Logical Blocks		976,773,168	
Operating Temperature		41° to 131° F (5° to 55° C)	

Technical Specifications - Hard Drives

Serial ATA Hard Drives	1 TB (7,200 rpm)	Capacity	1,000,204,886,016 bytes		
		Height	1 inches; 2.54 cm or less		
		Width	Media diameter: 3.5 inches; 8.89 cm Physical size: 4 inches; 10.2 cm		
		Interface	Serial ATA (1.5 Gb/s), Native Command Queuing enabled		
		Synchronous Transfer Rate (Maximum)	Up to 3.0 Gb/s		
		Cache	16 Mbytes		
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms	
			Average	14.5 ms	
			Full-Stroke	33 ms	
		Rotational Speed	7,200 rpm		
		Logical Blocks	1,953,525,168		
		Operating Temperature	41° to 131° F (5° to 55° C)		

Serial Attached SCSI (SAS) Hard Drives	300 GB (15k rpm)	Capacity	300,000,000,000 bytes		
		Height	1.0 in (25.4mm)		
		Width	4.0 in (101.6mm)		
		Interface	SAS		
		Synchronous Transfer Rate (Maximum)	3.0 Gb/s		
		Cache	16 MB		
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.2 ms	
			Average	3.5 ms	
			Full-Stroke	7.0 ms	
		Rotational Speed	15,000 rpm		
		Logical Blocks	585,937,500 - 512 byte blocks		
		Operating Temperature	50° to 95° F (10° to 35° C)		

	73 GB (15k rpm)	Capacity	73,407,865,856 bytes		
		Height	1.0 in (25.4mm)		
		Width	4.0 in (101.6mm)		
		Interface	SAS		
		Synchronous Transfer Rate (Maximum)	3.0 Gb/s		
		Cache	16 MB		
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.2 ms	
			Average	3.5 ms	
			Full-Stroke	7.4 ms	
		Rotational Speed	15,000 rpm		
		Logical Blocks	143,374,738 - 512 byte blocks		
		Operating Temperature	50° to 95° F (10° to 35° C)		

Technical Specifications - Hard Drives

146 GB (15k rpm)	Capacity	146,815,737,856 bytes	
	Height	1.0 in (25.4mm)	
	Width	4.0 in (101.6mm)	
	Interface	SAS	
	Synchronous Transfer Rate (Maximum)	3.0 Gb/s	
	Cache	16 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.2 ms
		Average	3.5 ms
		Full-Stroke	7.4 ms
	Rotational Speed	15,000 rpm	
	Logical Blocks	286,749,488 - 512 byte blocks	
	Operating Temperature	50° to 95° F (10° to 35° C)	

Technical Specifications - Peripherals

HP IEEE 1394a FireWire 4-Port PCI Card (Part# PA997A)	Device Interface Protocol	IEEE-1394a	
	Data Rate	400 Mbps	
	Devices Supported	IEEE-1394 compliant devices	
	Bus Interface	PCI	
	Physical	PCI card with brackets for low profile and full height PCI slots.	
	Environmental	Operating temperature	50° to 131° F (10° to 55° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Relative humidity	20% to 80%
	Ports	Two IEEE1394 6-Pin Connector (Rear)	
	Connectors	One 10-Pinches; 9 Contacts) Custom Connector (Internal)	
	Minimum System Requirements	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional, Windows XP Home, not supported on Linux	
		Pentium II 266 or above	
		128-MB RAM	
1-GB Hard Drive			
CD-ROM drive			
Built-in sound system			
Available PCI slot			
Regulatory Agency Approval	FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC		

HP IEEE 1394b FireWire 800 3-Port PCI Card (Windows XP Only) (Part# EA327AA)	Device Interface Protocol	IEEE-1394	
	Data Rate	800 Mbps	
	Devices Supported	IEEE-1394 compliant devices	
	Bus Interface	PCI	
	Physical	PCI card with brackets for low profile and full height PCI slots.	
	Environmental	Operating temperature	50° to 131° F (10° to 55° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Relative humidity	20% to 80%
	Ports	Two IEEE-1394b bilingual 9-Pin Connector (Rear)	
	Connectors	One 10-Pin header Custom Connector (Internal)	
	Minimum System Requirements	Microsoft Windows XP Professional, Windows XP Home, not supported on Linux	
		Pentium III	
		128-MB RAM	
1-GB Hard Drive			
CD-ROM drive			
Built-in sound system			
Available PCI slot			
Regulatory Agency Approval	FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC		

Technical Specifications - Peripherals

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

Technical Specifications - Peripherals

HP 2-button Optical Scroll Mouse (USB)	Dimensions (H x L x W)	1.5 x 4.5 x 2.5 inches; 3.8 x 11.6 x 6.3 cm		
	Weight	0.27 lb (0.12 kg)		
	Cable length	72.8 inches; 185 cm		
	System requirements	Microsoft Windows XP, Red Hat Enterprise Linux WS 4 & 5 Desktop		
HP Optical 3-Button Mouse (USB)	Dimensions/Weight	Height	1.5 inches; 3.6 cm	
		Length	4.5 inches; 11.56 cm	
		Width	2.2 inches; 6.19 cm	
		Weight	3.80 oz (108 g)	
	Environmental	Operating temperature	32° to 104° F (0° to 40° C)	
		Non-operating temperature	-4° to 140° F (-20° to 60° C)	
		Operating humidity	10% to 90% (non condensing at ambient)	
	Mechanical	Tracking speed	6 in/s Maximum	
		Switch life	3,000,000 operations	
		Switch type	Micro-switches	
		Tracking mechanism life	155 miles (250 km) at average speed of 10 in/s	
		Cable length	6 feet; 1.8 m	
		HP SpaceExplorer USB 3D Physical Characteristics Input Device	Dimensions (L x W x H)	7.6 x 5.4 x 2.3 in (194 x 139 x 58mm)
Weight				1.36 lbs (0.62 kg)
Palmrest				Sculpted
Mechanical	Buttons			15 reprogrammable speed keys
	Motion Controller		Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw)	
Operating System Supported	Device Sensitivity		Adjustable to preference	
	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional or XP x64, not supported in Linux			
	Regulatory Approvals			FCC, CE

Technical Specifications - Peripherals

HP SpacePilot (USB – Windows XP Only)	Physical Characteristics	Dimensions (L x W x H)	9.3 x 5.6 x 2.0 inches; 236 x 143 x 53 mm
		Weight	1.875 lb (0.85 kg)
	Mechanical	Palmrest	Sculpted
		Buttons	21+ programmable speed keys 15 reprogrammable
		LCD Viewing Area (W x H)	4.0 x 1.0 inches; 102.4 x 30.2mm
		Active Area (W x H)	3.7 x 1.0 inches; 93.4 x 26.2mm
		Display Format	240 x 64
		Motion Controller	Six degrees of freedom motion control through the X, Y, Z axis (pitch, roll, yaw)
		Device Sensitivity	Adjustable to preference
	System Requirements	USB 1.1 or 2.0	
	Operating System Supported	Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP, not supported in Linux	
	Regulatory Approvals	FCC, CE	

Technical Specifications - Optical Devices

HP 16X Max SATA DVD-ROM Drive	Form Factor	5.25-inch, half-height, tray-load		
	Orientation	Either horizontal or vertical		
	Interface type	SATA/ATAPI		
	Disc capacity	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)		
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
	Weight (max)	2.6 lb (1.2 kg)		
	Read speeds	DVD+R/-R/+RW/-RW/+R DL /-R DL	Up to 8X	
		DVD-ROM	Up to 16X	
		DVD-RAM	Up to 4X	
		CD-ROM, CD-R	Up to 48X	
		CD-RW	Up to 32X	
	Removable Storage - Media Compatibility - DVD-ROM			
	Media	Read	Write	
	CD-ROM	Yes	No	
	CD-R	Yes	No	
CD-RW	Yes	No		
DVD-ROM	Yes	No		
DVD-ROM DL	Yes	No		
DVD-RAM	Yes	No		
DVD+R	Yes	No		
DVD+R DL	Yes	No		
DVD+RW	Yes	No		
DVD-R	Yes	No		
DVD-RW	Yes	No		
DVD-R DL	Yes	No		
Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)		
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)		
	Cache Buffer	2 MB (minimum)		
	Data Transfer Modes	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)		
Power	Source	SATA DC power receptacle		
	DC Power Requirement	5 VDC \pm 5%-100 mV ripple p-p 12 VDC \pm 5%-200 mV ripple p-p		
	DC Current	5 VDC - < 1000 mA typical, < 1600 mA maximum 12 VDC - < 600 mA typical, < 1400 mA maximum		

Technical Specifications - Optical Devices

Environmental (all conditions non-condensing)	Temperature (operating) 41° to 122° F (5° to 50° C) Relative Humidity (operating) 10% to 90% Maximum Wet Bulb Temperature (operating) 86° F (30° C)
Operating Systems Supported	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.
	*NOTE: 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 http://www.windowsvista.com/upgradeadvisor . For Windows Vista system requirements, visit http://www.windowsvista.com/systemrequirements .
Option kit contents	HP 16X Max SATA DVD-ROM Drive, Intervideo WinDVD and installation guide.

HP 48X SATA CD-RW/DVD-ROM Combo Drive	Form Factor	5.25-inch, half-height, tray-load
	Orientation	Either horizontal or vertical
	Interface type	SATA/ATAPI
	Disc capacity	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)
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)
	Weight (max)	2.6 lb (1.2 kg)
	Write speed	CD-R Up to 48X CD-RW Up to 32X
	Read speeds	DVD+R/-R/+RW/-RW/+R DL /-R DL Up to 8X DVD-ROM Up to 16X CD-ROM, CD-R Up to 48X CD-RW Up to 32X
	Buffer Size	1.5MB (Min)
	Access times (typical reads, including setting)	Random DVD: < 140 ms (typical), CD: < 125 ms (typical) Full Stroke DVD: < 250 ms (seek), CD: < 210 ms (seek)
	Power	Source SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p DC Current 5 VDC - < 1000 mA typical, < 1600 mA maximum 12 VDC - < 600 mA typical, < 1400 mA maximum Total Drive Power (standby mode) < 2.5 Watt

Technical Specifications - Optical Devices

Environmental (all conditions non-condensing)	Temperature (operating) 41° to 122° F (5° to 50° C) Relative Humidity (operating) 10% to 90% Maximum Wet Bulb Temperature (operating) 86° F (30° C)
Operating Systems Supported	Windows Vista Business 64*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*, Red Hat Linux WS 4, 32/64-bit OS. No driver is required for this device. Native support is provided by the operating system.
Option kit contents	HP 48X Max SATA CD-RW/DVD-ROM Combo Drive, Roxio Easy Media Creator version 9, Intervideo WinDVD, CD-R media, high-speed CD-RW media, and installation guide.

* 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 <http://www.windowsvista.com/upgradeadvisor>. For Windows Vista system requirements, visit <http://www.windowsvista.com/systemrequirements>.

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

Technical Specifications - Optical Devices

Power	Source	SATA DC power receptacle
	DC Power Requirement	5 VDC \pm 5%-100 mV ripple p-p 12 VDC \pm 5%-200 mV ripple p-p
	DC Current	5 VDC - < 1000 mA typical, < 1600 mA maximum 12 VDC - < 600 mA typical, < 1400 mA maximum
	Total Drive Power (standby mode)	< 2.5 Watt
	Environmental (all conditions non-condensing)	Temperature (operating) 41° to 122° F (5° to 50° C) Relative Humidity (operating) 10% to 90% Maximum Wet Bulb Temperature (operating) 86° F (30° C)
Operating Systems Supported	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. <i>* 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 http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit http://www.windowsvista.com/systemrequirements.</i>	
Option kit contents	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

NVIDIA Quadro NVS 440, 256 MB Quad Head (Part# PT453AA)	Form Factor	ATX
	Graphics Controller	2 nv43 2D graphics processor units (GPUs)
	VGA controller	Integrated into the Quadro GPU
	Bus Type	PCI-E x16
	RAMDAC	Dual 350 MHz
	Memory	256 MB DDR frame buffer and Texture storage (128MB per GPU)
	Connector	Two DMS-59
	Controller clock speed	250 MHz
	Color planes	32-bit color buffer
	Overlay planes	1 16-bit Video overlay plane
	Maximum pixel clock	350 MHz
	Multi-Monitor Support	Up to 4 analog or digital monitors
	Single DVI Support	Yes
	Dual DVI Support	Yes
	High-definition Video Processor (HDVP)	32-Bit color 2048 x 1536 @ 60 Hz maximum resolution 2D rendering engine optimized for 32-, 24-, 16-, 15-, and 8-bpp modes
	High-definition Video Processor (HDVP)	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware color-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling
	Available graphics drivers	Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode) HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/eng/software_drivers.html .

***NOTE:** Graphics card uses "reduced blanking" timing and may not work with all panels at this resolution.

Technical Specifications - Graphics

NVIDIA Quadro NVS 290, 256 MB Dual Head	Form Factor	Low Profile
	Bus Type	PCIe x16
	Memory	256 MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connector	DMS-59, includes DMS-59 to Dual DVI-I cable. DMS-59 to Dual VGA cable available as an option.
	Display resolution support	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®
	RAMDAC	Integrated dual 400MHz
	Color planes	32-bit color buffer
	Overlay planes	Hardware supported
	nView Architecture	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows®.
	Multi-Monitor Support	Dual monitor support
	DVI Support	DMS-59 (to dual DVI-SL)
	High-definition Video Processor (HDVP)	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware color-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling
	Supported Graphics APIs	OpenGL 2.1 & DX10 Support; Shader Model 4.0
	Available graphics drivers	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: http://welcome.hp.com/country/us/eng/software_drivers.html .

Technical Specifications - Graphics

NVIDIA Quadro FX 370	Form Factor	ATX
PCI-Express graphics controller	Bus Type	PCI-Express x16
	Memory	256MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connectors	DVI-I (dual-link) and DVI-I (single-link)
	Display resolution support	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®
	RAMDAC	Integrated dual 400MHz
	Architecture Features	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
	Power consumption	<50 W
	Shading Architecture	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
	Supported Graphics APIs	OGL 2.1 & SM4.0 and DirectX10 Support
	Available graphics drivers	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: http://welcome.hp.com/country/us/eng/software_drivers.html .

Technical Specifications - Graphics

NVIDIA Quadro FX 570	Form Factor	ATX
PCI-Express graphics controller	Bus Type	PCI-Express x16
	Memory	256MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connectors	DVI-I (dual-link) and DVI-I (single-link)
	Display resolution support	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®
	RAMDAC	Integrated dual 400MHz
	Architecture Features	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
	Power consumption	<60 W
	Shading Architecture	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
	Supported Graphics APIs	OGL 2.1 & SM4.0 and DirectX10 Support
	Available graphics drivers	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: http://welcome.hp.com/country/us/eng/software_drivers.html .

Technical Specifications - Graphics

NVIDIA Quadro FX 1700	Form Factor	ATX
PCI-Express graphics controller	Bus Type	PCI-Express x16
	Memory	512 MB 4000MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connectors	DVI-I (dual-link) and DVI-I (single-link)
	Display resolution support	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®
	RAMDAC	Integrated dual 400MHz
	Architecture Features	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
	Power consumption	<75 W
	Shading Architecture	Fully programmable GPU (OpenGL 2.1/DirectX 10 class) Vertex/Pixel Shader 4.0 Shading Support (HLSL, GLSL, CgFX)
	Supported Graphics APIs	OpenGL 2.1 & SM4.0 and DirectX10 Support
	Available graphics drivers	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: http://welcome.hp.com/country/us/eng/software_drivers.html .

Technical Specifications - Graphics

NVIDIA Quadro FX 3500, Form Factor	ATX
256 MB	Bus Type PCI-Express x16
(Part# ES357AA)	Memory 256 MB 700 MHz GDDR3 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connectors 2 dual-link DVI-I + 3-pin Mini DIN stereo output
	Display resolution support 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
	RAMDAC Dual 400 MHz integrated
	Architecture Features 256-bit memory interface 128-bit IEEE floating-point precision graphics pipeline 128-bit color precision 12-bit sub-pixel precision 8x FSAA at 1920x1200, 4x at 2048x1536, rotated grid FSAA sampling algorithm Hardware accelerated antialiased points and lines Hardware OpenGL overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes 3rd generation occlusion culling 3D volumetric texture support Quad-buffered stereo Dual Link DVI enabling driving digital displays up to 3840x2400 (24Hz) SLI Link
	Shading Architecture Fully programmable GPU Long fragment programs (up to 65,536 instructions) Long vertex programs (up to 65,536 instructions) Looping and subroutines (up to 256 loops per vertex program) Dynamic flow control Conditional execution
	Supported Graphics APIs OpenGL 2.0 DirectX 9.0
	Available Graphics Drivers Microsoft Windows Vista Business 32 and 64, Microsoft Windows XP Professional; Linux - Full Open GL implementation, complete with NVIDIA and ARB extensions. Qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/eng/software_drivers.html .
	Maximum Resolution Dual DVI-I output – drives dual digital displays at resolutions up to 1920x1200 @ 60Hz (single-link) and 3840x2400 @ 24Hz (dual-link). Internal 400MHz RAMDACs – drives dual analog displays up to 2048x1536 @ 75Hz each

NVIDIA Quadro FX 4600 (768 MB)	Graphics controller	NVIDIA Quadro FX 4600 Workstation GPU
	Bus Type	PCI Express x16
	RAMDAC	Dual 400 MHz integrated
	Memory	768 MB GDDR3 SDRAM unified graphics memory

Technical Specifications - Graphics

Connectors	2 Dual-Link DVI-I analog/digital monitor outputs, 1 3-pin Mini DIN stereo output, DVI-I to VGA adapters included
Multi-monitor Support	Dual integrated display controllers supporting up to 2048x1536 @ 75Hz (analog) or 3840x2400 @ 41Hz (digital) on both displays
NVIDIA Quadro FX 4600 Architecture	384-bit memory interface 67.2 GB/sec. memory bandwidth Full 128-bit floating point color precision 12-bit subpixel precision 65,536 fragment instruction 65,536 vertex instruction 3D volumetric textures Single-system powerwall Hardware accelerated antialiased points & lines Hardware OpenGL® overlay planes Hardware accelerated two-sided lighting Hardware accelerated clipping planes Hardware two-sided lighting 3rd-generation occlusion culling OpenGL quad-buffered stereo Hardware-Accelerated Pixel Read-Back
Shading Architecture	16 textures per pixel in fragment programs Window ID clipping functionality Hardware accelerated line stippling Fully programmable GPU (OpenGL2.0/DirectX 9.0c class) Long fragment programs (up to 65,536 instructions) Long vertex programs (up to 65,536 instructions) Looping and subroutines (up to 256 loops per vertex program) Dynamic flow control Conditional execution
High-level Shader Languages	Optimized compiler for Cg and Microsoft® HLSL OpenGL 2.0 and DirectX 9.0c support Open source compiler
High-resolution Antialiasing	12-bit subpixel sampling precision enhances AA quality Rotated-grid full-scene antialiasing (RG FSAA) 16x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolution up to 1920x1200
Display Resolution Support	Dual Dual Link DVI-I output-drives digital displays at resolutions up to 3840 x 2400 @ 41Hz Internal 400 MHz DACs - Two analog displays up to 2048x1536 @ 75 Hz each
nView Architecture	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows®.
Supported Graphics APIs	OpenGL 2.0 ICD with immediate mode support for all OGL primitive types, DirectX 10 compatible
Available Graphics drivers	Microsoft Windows XP Professional, 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: http://welcome.hp.com/country/us/eng/software_drivers.html

Technical Specifications - Monitors

HP L1965 Flat Panel Monitor	Panel	Type	Active matrix, thin film transistor (TFT)	
			Viewable Image Area (diagonal)	19 inches; 48.25 cm maximum viewable
			Screen Opening (WxH)	14.9 x 12.0 inches; 38.0 x 30.5 cm
			Viewing Angle (typical)	178 degrees horizontal/178 degrees vertical (10:1 minimum contrast ratio)
			Brightness (typical)	300 nits (cd/m ²)
			Contrast Ratio (typical)	1000:1 (typical)
			Response Rate (typical)	6 ms (typical gray to gray)**
			Pixel Pitch	0.294 mm
			Backlight Lamp Life (to half brightness)	50K hours
			<p>* 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</p>	
Video/Other Inputs		Plug and Play	Yes (supports VESA DDC2B and DDC/CI; PC2001 compliant)	
		Self Powered USB 2.0 Hub	One upstream, four downstream ports (cable included)	
		Input Signal	Two DVI-I connectors (VGA analog or digital)	
		Input Impedance	75 ohms ± 2%	
		Sync Input	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green (activated through on-screen display)	
		Video Cable	One DVI-D to DVI-D, and 1 DVI-I to VGA cables	
		Video Cable Length	71 in (1.8 m)	
Signal Interface/ Performance		Horizontal Frequency	24 to 83 kHz	
		Vertical Frequency	48 to 76 Hz	
		Native Resolution	1280 x 1024 @ 75 Hz analog 1280 x 1024 @ 60 Hz digital	
		Maximum Resolution (Analog)	1280 x 1024 @ 75 Hz analog	
		Maximum Resolution (Digital)	1280 x 1024 @ 75 Hz analog	
		Preset VESA Graphic Modes (non-interlaced)	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		
		Preset MAC Mode	832 x 624 @ 75 Hz 1152 x 870 @ 75 Hz	
		Preset VGA Mode	640 x 480 @ 60 Hz, 72 Hz	
		Preset SUN Mode	1152 x 900 @ 76 Hz	
		Fail Safe Mode	Yes (limits out of range signal messages)	

Technical Specifications - Monitors

	Maximum Pixel Clock Speed	140 MHz
	User Programmable Modes	Yes, 15
	Anti-Glare	Yes
	Anti-Static	Yes
	AssetControl	Yes (accessible on HP Compaq Business Desktops featuring Intelligent Manageability)
	Default Color Temperature	Yes (6500k, 9300k, SRGB, Custom User)
On Screen Display (OSD) Controls	Buttons or Switches	Power on/off; 3-button OSD; second level OSD buttons include dual-input switch, dedicated auto adjust switch
	Languages	English, Spanish, French, German, Netherlands, Italian, Japanese, Simplified Chinese
	User Controls	Size and Positioning Contrast Brightness Clock, Clock Phase Selectable Color Temperature Serial Number Mode Displayed Sleep Timer Input Selection Factory Reset
Power	Power Supply	Auto-ranging, 90 to 265 VAC; internal power supply
	Input Power	100 ~ 240 VAC
	Nominal Current	1.5 A maximum
	Frequency	50 ~ 60 Hz
	Typical Power Consumption	< 35 watts
	Maximum	< 55 watts
	Power Saving	< 2 watts
	Off Mode	0 watts (when master power switch is in the off position)
	Power Cable Length	74.8 in (1.9 m); non-captive

Technical Specifications - Monitors

Mechanical	Dimensions (H x W x D)	Unpacked with stand	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)
		Base Area (Footprint D x W)	8.78 x 11.88 inches (22.29 x 30.18 cm)
		Panel only (without stand) (H x W x D)	12.96 x 15.9 x 2.4 inches (32.91 x 40.39 x 6.1 cm)
	Weight	Unpacked with stand	15.6 lbs (7.06 kg)
		Unpacked without stand	9.26 lbs (4.19 kg)
		Packaged	20.5 lbs (9.27 kg)
	Bezel Width	12.5 mm left and right, 12.75 mm top and bottom	
	Tilt Range	-4 degrees to +30 degrees	
	Swivel Range	± 45 degrees horizontal swivel	
	Height Adjustable	Yes (4 in/100mm adjustment range)	
	Pivot Rotation	Yes, 90 degrees	
	Base	Ships attached and is removable	
	Environmental	Temperature – Operating	41° to 95° F (5° to 35° C)
Temperature – Non- operating		-4° to 140° F (-20° to 60° C)	
Humidity – Operating		20% to 80%	
Humidity – Non- operating		5% to 95%	
Altitude – Operating		0 to 12,000 ft (0 to 3,658 m)	
Altitude – Non- operating		0 to 40,000 ft (0 to 12,192 m)	
Environmental Data	Eco-Label Certifications and Declarations	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:	
		<ul style="list-style-type: none"> • US Energy Star • CECP 	

Energy Consumption (in accordance with US Energy Star test method)	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
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
Heat Dissipation*	100 VAC, 50 Hz	115 VAC, 60 Hz	230 VAC, 50 Hz
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.

Technical Specifications - Monitors

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	<p>This product is in compliance with the Restrictions of Hazardous Substances (RoHS) Directive, 2002/95/EC.</p> <p>This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive, 2002/96/EC.</p> <p>Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.</p> <p>Display meets the requirement for low frequency electromagnetic fields per MPR-II, TCO, and prEN50279 A/B/C.</p> <p>This product contains 100% recycled materials (by wt.)</p> <p>This product is 100% recyclable when properly disposed of at end of life.</p> <p>Packaging Materials</p> <ul style="list-style-type: none">• Corrugated - 0.955 kg• Plastic (other) - 0.055 kg• Polystyrene - 0.24 kg
Material Usage	<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 http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):</p> <ul style="list-style-type: none">• 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)

		<ul style="list-style-type: none">• 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	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none">• 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	<p>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.</p>
	Hewlett-Packard Corporate Environmental Information	<p>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</p>
Options	HP Silver Flat Panel Speaker Bar	<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>

Technical Specifications - Monitors

Other	Accessories Included	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.
	Software	<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>
	User Guide Languages	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
	Warranty Languages	English
	Color	Carbonite, two-tone carbonite and silver (EMEA only)
	VESA Mounting	Yes (swing arm/wall mount not included); base must be removed for mounting options)
	VESA External Mounting	Yes (standard 4 hole pattern, 100 mm)
	Kensington Lock-ready	Yes
Certification and Compliance		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
Compatibility		VESA Video Signal Standard (VSI) Compliant video cards have been tested and proven compatible for use with the HP LP1965 Flat Panel Monitor. Recommended for use with HP products.
Service and Warranty		Three years parts, labor, and on-site service. 24-hour, 90-day, toll-free technical support. Replacement options may include second business day on-site service, or next business day direct replacement, at HP's sole discretion. With direct replacement, HP will ship a replacement display product directly to you. Using the prepaid shipping labels provided, return your failed display to HP in the same packaging as the replacement. Certain restrictions and exclusions apply. For details see your product warranty or contact HP Customer Support.

Technical Specifications - Monitors

HP Flat Panel Monitor LP2065	Panel	Type	20-inch Active Matrix TFT (thin film transistor)
		Viewable Image Area (diagonal)	20.1 in (51 cm)
		Screen Opening (W x H)	16.2 x 12.17 inches; 41.1 x 30.9 cm
		Viewing Angle (typical)*	Up to 178° horizontal/178° vertical (10:1 minimum contrast ratio)
		Brightness (typical)*	Up to 300 nits (cd/m ²)
		Contrast Ratio (typical)*	Up to 800:1
		Response Rate (typical)*	8 ms (gray to gray), 16 ms (rise + fall)
		Pixel Pitch	0.255 mm
		Backlight Lamp Life (to half brightness)	45K hours
		On Screen Display (OSD) Controls	Buttons or Switches
Languages			
User Controls			
Signal Interface/ Performance	Horizontal Frequency		
	Vertical Frequency		
	Native Resolution		
	Preset VESA Graphic Modes (non-interlaced)	1600 x 1200 @ 60 Hz (recommended)	
		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	
	Text Mode	720 x 400 @ 70 Hz	
	Mac Mode	1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz	
	Sun Mode	1152 x 900 @ 66 Hz	
Maximum Pixel Clock Speed	202 MHz (VGA input); 162 MHz (DVI input)		
User Programmable Modes	Yes, 10		
Anti-Glare	Yes		
Anti-Static	Yes		
Default Color Temperature	6500 K		

Technical Specifications - Monitors

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

Technical Specifications - Monitors

Environmental	Temperature – Operating	46° to 95° F (10° to 35° C)
	Temperature – Non-operating	6° to 140° F (-10° to 60° C)
	Humidity – Operating	20% to 80% non-condensing
	Humidity – Non-operating	5% to 85%
	Altitude – Operating	+12,000 ft (+3,657.6 m)
	Altitude – Non-operating	+40,000 ft (+12,192 m)
Options	HP Silver Flat Panel Speaker Bar - Part number: EE418AA	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.
Other	Accessories Included	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.
	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
	Software	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.
	User Guide Languages	English
	Warranty Languages	English
	Color	Carbonite/Silver
VESA External Mounting	Yes (Standard 4 hole pattern, 100 mm)	
Kensington Lock-Ready	Yes	

Technical Specifications - Monitors

Certification and Compliance	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)
Compatibility	Compatible with platforms using the VESA standard video modes. Recommended for use with HP products.
Service and Warranty	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.

HP Flat Panel Monitor LP2465	Panel	Type	24-inch Active Matrix TFT (thin film transistor)
		Viewable Image Area (diagonal)	24 inches; 60.96 cm
		Screen Opening (W x H)	20.47 x 12.83 inches; 52.0 x 32.6 cm
		Viewing Angle (typical)*	178° H/ 178° V (10:1 minimum contrast ratio)
		Brightness (typical)*	500 nits (cd/m ²)
		Contrast Ratio (typical)*	1000:1
		Response Rate (typical)*	8 ms (typical gray to gray)
		Pixel Pitch	0.270 mm
		Backlight Lamp Life (to half brightness)	50K hours
On Screen Display (OSD) Controls	Buttons or Switches	Input Select, Auto Adjust, OSD Up, OSD Down, OSD Menu Select, Power	
	Languages	English, French, German, Spanish, Italian, Japanese, Dutch	
	User Controls	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	

Technical Specifications - Monitors

Signal Interface/ Performance	Horizontal Frequency	30 to 94 kHz (VGA input); 30 to 92 KHz (DVI input) (for modes with pixel clock less than 157 MHz)	
	Vertical Frequency	48 to 85 Hz (VGA and DVI input)	
	Native Resolution	1920 x 1200 @ 60 Hz (recommended) (native aspect ratio of 16:10)	
	Preset VESA Graphic Modes (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	
	Text Mode	720 x 400 @ 70 Hz	
	Mac Mode	1152 x 870 @ 75 Hz and 832 x 624 @ 75 Hz	
	Sun Mode	1152 x 900 @ 66 Hz	
	Maximum Pixel Clock Speed	202 MHz (VGA input); 162 MHz (DVI input)	
	User Programmable Modes	Yes, 20	
	Anti-Glare	Yes	
	Anti-Static	Yes	
	Default Color Temperature	6500 K	
	Video/Other Inputs	Plug and Play	Yes
		Self Powered USB 2.0 Hub	One upstream, four downstream ports (located on side of monitor, cable included)
		Input Signal	Two DVI-I (VGA analog and digital) inputs
		Input Impedance	75 ohms \pm 10%
		Sync Input	Separate sync (HSYNC/VSYNC); composite sync, Sync on Green
Video Cable		VGA to DVI-I; DVI-D to DVI-D	
Power	Video Cable Length	5.9 ft (1.8 m)	
	Input Power	Auto-Ranging, 90 to 132 VAC and 195 to 265 VAC; internal power supply, 50 Hz/60 Hz	
	Frequency	47.5 to 63 Hz	
	Typical Power Consumption	75 watts	
	Maximum	< 110 watts	
	Power Saving	< 2 watts	
	Power Cable Length	6.2 ft (1.9 m)	

Technical Specifications - Monitors

Mechanical	Dimensions (H x W x D)	Unpacked w/ stand	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)
		Unpacked w/o stand (head only)	14.4 x 22 x 3.7 in (36.6 x 55.84 x 9.2 cm)
		Packaged	11.7 x 22.1 x 25.6 in (29.8 x 56.0 x 65.1 cm)
	Weight	Unpacked	23.6 lbs (10.7 kg)
		Packaged	23.6 lbs (10.7 kg)
	Tilt Range		-5° to + 25° vertical
	Swivel Range		-45° to + 45°
	Height Adjustable		Yes, range 5.1 in (130 mm)
	Pivot Rotation		Yes
	Base		Detachable, ships detached
Environmental	Temperature – Operating		46° to 95° F (10° to 35° C)
	Temperature – Non-operating		6° to 140° F (-10° to 60° C)
	Humidity – Operating		20% to 80% non-condensing
	Humidity – Non-operating		5% to 85%
	Altitude – Operating		+ 12,000 ft (+3,657.6 m)
	Altitude – Non-operating		+40,000 ft (+12,192 m)
	Other	Accessories Included	<p>VGA to DVI-I cable – connects the graphic card's VGA connector to the monitor's input #2 (DVI-I analog) connector</p> <p>DVI-D to DVI-D cable – connects the graphic card's DVI-D digital connector to the monitor's input #2 (DVI-I digital) connector</p>
Software		<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

	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/silver
	VESA External Mounting	Yes (Standard 4 hole pattern, 100 mm)
	Kensington Lock-Ready	Yes
Options	HP Silver Flat Panel Speaker Bar - Part number: EE418AA	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.
Certification and Compliance		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 (Microsoft Windows 98, Microsoft Windows 2000, and Microsoft Windows XP)
Compatibility		Compatible with platforms using the VESA standard video modes. Recommended for use with HP products.
Service and Warranty		Three years parts, labor, and on-site service. 24-hour, 90-day, toll-free technical support. Replacement options may include second business day on-site service, or next business day direct replacement, at HP's sole discretion. With direct replacement, HP will ship a replacement display product directly to you. Using the prepaid shipping labels provided, return your failed display to HP in the same packaging as the replacement. Certain restrictions and exclusions apply. For details see your product warranty or contact HP Customer Support.

Technical Specifications - Monitors

HP LP3065 Flat Panel Monitor	Panel	Type	30.0-inch Wide Format Active Matrix TFT (thin film transistor)
		Viewable Image Area (diagonal)	29.77 in (75.623 cm)
		Screen Opening (W x H)	25.3 x 15.8 in (64.3 x 40.3 cm)
		Viewing Angle (typical)*	Up to 178° H/ 178° V (10:1 minimum contrast ratio)
		Brightness (typical)*	300 nits (cd/m ²)
		Contrast Ratio (typical)*	1000:1
		Response Rate (typical)*	12 ms (8 ms average gray to gray)
		Pixel Pitch	0.250 mm
		Backlight Lamp Life (to half brightness)	40K hours
		Color Gamut	92% of NTSC
	On Screen Display (OSD) Controls	Buttons or Switches	Input select, brightness up, brightness down, power
		User Controls	Brightness, input selection
	Signal Interface/ Performance	Horizontal Frequency	100 KHz
		Vertical Frequency	60 Hz
		Native Resolution	2560 x 1600 @ 60 Hz (native aspect ratio of 16:10)
		Pixel Clock Speed	275 MHz
		Anti-Glare	Yes
	Anti-Static	Yes	
	Default Color Temperature	6500 K	
Video/Other Inputs	Plug and Play	Yes	
	Self Powered USB 2.0 Hub	One upstream, four downstream ports (located on side of monitor, cable included)	
	Input Signal	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.)	
	Video Cable	Two dual-link DVI cables	
	Video Cable Length	5.9 ft (1.8 m)	

Technical Specifications - Monitors

Power	Input Power	Auto-Ranging, 100 to 240 VAC; internal power supply, 50 Hz/60 Hz		
	Typical Power Consumption	118 watts		
	Maximum	< 176 watts		
	Power Saving	< 2 watts		
	Power Cable Length	5.9 ft (1.8 m)		
Mechanical	Dimensions (H x W x D)	Unpacked w/ stand	19.3 to 23.2 x 27.2 x 9.5in (49.0 to 59.0 x 69.2 x 24.0 cm)	
		Unpacked w/o stand (head only)	17.9 x 27.2 x 3.3 in (45.5 x 69.2 x 8.4 cm)	
		Packaged	22.4 x 31.1 x 14.9 in (56.8 x 79.0 x 37.8 cm)	
		Unpacked	30.6 lbs (13.9 kg)	
Environmental	Weight	Unpacked 30.6 lbs (13.9 kg)		
	Tilt Range	-5° to + 30° vertical		
	Swivel Range	-45° to + 45°		
	Height Adjustable	Yes, range 5.1 in (100 mm)		
	Pivot Rotation	No		
	Base	Detachable, ships detached		
	Temperature – Operating	46° to 95° F (10° to 35° C)		
	Temperature – Non-operating	6° to 140° F (-10° to 60° C)		
	Humidity – Operating	20% to 80% non-condensing		
	Humidity – Non-operating	5% to 85%		
	Altitude – Operating	+12,000 ft		
	Altitude – Non-operating	+40,000 ft		
Environmental Data	Eco-Label Certifications and Declarations	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:		
		<ul style="list-style-type: none"> • US Federal Energy Management Program (FEMP) • IT Eco Declaration • TCO 03 • Taiwan Green Mark • CECP • Korea Eco-label • EPEAT - Silver 		
	Energy Consumption (in accordance with US Energy Star test method)	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
	Normal Operation	102.8 watts	101.7 watts	100.4watts

Technical Specifications - Monitors

Sleep ¹	2 watts	2 watts	2 watts
Off	0.05 watts	0.06 watts	0.25 watts
Heat Dissipation ²	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation	350.8 BTU/hr	347.0 BTU/hr	342.6 BTU/hr
Sleep	6.8 BTU/hr	6.8 BTU/hr	6.8 BTU/hr
Off	0.2 BTU/hr	0.2 BTU/hr	0.9 BTU/hr

NOTES

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

²Heat 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.

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% recycleable 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):

- 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>

Technical Specifications - Monitors

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
	VESA External Mounting	Yes (Standard 4 hole pattern, 100 mm)
	Kensington Lock-Ready	Yes
Options	HP Flat Panel Speaker Bar - Part number: EE418AA	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.
Certification and Compliance	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.	
Compatibility	Compatible with platforms using the VESA standard video modes. Recommended for use with HP products.	
Service and Warranty	Three years parts, labor, and on-site service. 24-hour, 90-day, toll-free technical support. Replacement options may include second business day on-site service, or next business day direct replacement, at HP's sole discretion. With direct replacement, HP will ship a replacement display product directly to you. Using the prepaid shipping labels provided, return your failed display to HP in the same packaging as the replacement. Certain restrictions and exclusions apply. For details see your product warranty or contact HP Customer Support.	

Technical Specifications - Monitors

ⁱ 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

© Copyright 2007 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice.

All rights reserved. Microsoft, Windows, Windows Vista, and Windows XP are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel, the Intel logo, Pentium, and Pentium Inside are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Linux is a registered trademark of Linus Torvalds in the United States and other countries.

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.