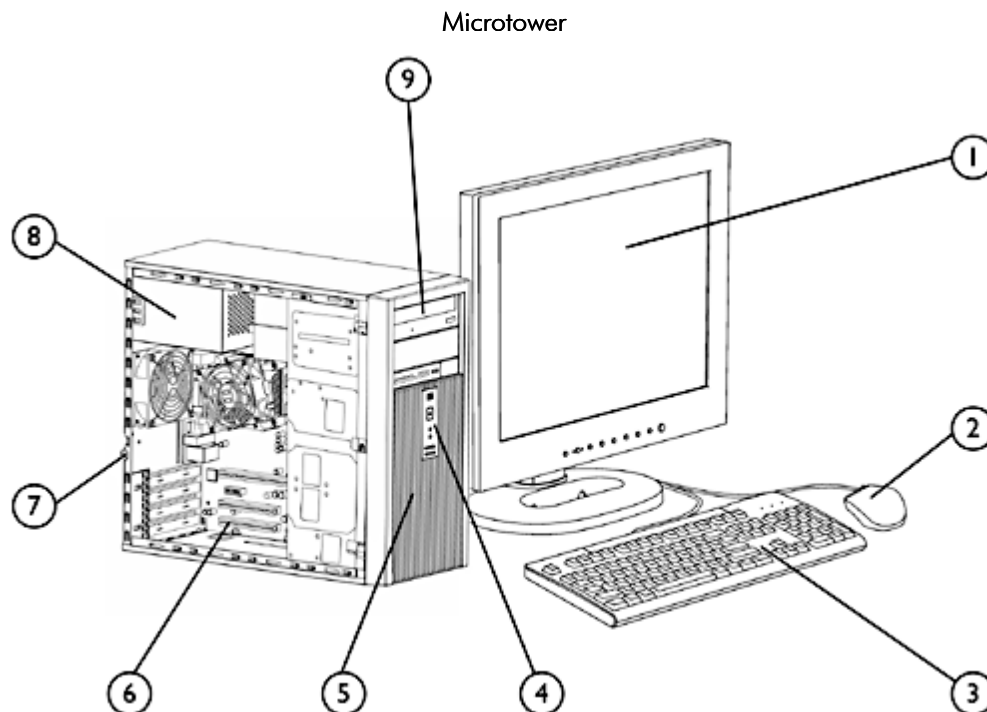


Overview



Microtower

1. Monitor (sold separately)
2. PS/2 Scroll Mouse
3. HP Standard Keyboard
4. (2) USB 2.0 ports, audio ports
5. (2) internal 3.5" drive bays
6. (2) full-height PCI 2.3 slots, (1) PCI-E x1 slot, (1) PCI-E x16 slot
7. (4) USB 2.0 ports, (1) serial port, (1) parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) audio in – (1) audio out – (1) MIC
8. 250-watt max power supply
9. (2) external 5.25" drive bays for optional optical drives; (1) external 3.5" drive bay for optional media reader or diskette drive

At A Glance

- Intel® Pentium 4 processors, Intel Celeron D processors
- Choice of operating systems:
 - Genuine Windows XP Home
 - Genuine Windows XP Professional
 - FreeDOS
- ATI Radeon Xpress 200 chipset
- Built-in ATI graphics processor derived from the Radeon X300
- PCI Express I/O bus
- Integrated SATA 1.5-Gb/s controller
- Integrated Ultra ATA/100 controller
- Integrated Fast Ethernet 10/100 Network Connection
- Choice of hard drives and optical drives
- DDR2 SDRAM system memory
- Protected by HP Services, including a 1-1-1 standard warranty. Certain restrictions & exclusions apply.

Standard Features - Select Models

Standard Models

EN283UT#ABA	Promo dx2200M/C346/80hnc/256L/3uf US HP dx2200 Microtower, Genuine Windows XP Home SP2, ATI Radeon Xpress 200 chipset, Intel Celeron D 346 3.06-GHz, 256-KB L2 cache, 533-MHz FSB, 256-MB PC2-5300 (DDR-667) DIMM Single-Channel (1x256), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 48X CD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
EN284UT#ABA	Promo dx2200M/C346/80hnc/256L/4uf US HP dx2200 Microtower, Genuine Windows XP Professional SP2, ATI Radeon Xpress 200 chipset, Intel Celeron D 346 3.06-GHz, 256-KB L2 cache, 533-MHz FSB, 256MB PC2-5300 (DDR-667) DIMM Single-Channel (1x256), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 48X CD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
EN285UT#ABA	Promo dx2200M/C346/80hnc/512L/4uf US HP dx2200 Microtower, Genuine Windows XP Professional SP2, ATI Radeon Xpress 200 chipset, Intel Celeron D 346 3.06-GHz, 256-KB L2 cache, 533-MHz FSB, 512-MB PC2-5300 (DDR-667) DIMM Single-Channel (1x512), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 48X CD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite war
EN286UT#ABA	Promo dx2200M/P4-524/80hnd/512L/4f US HP dx2200 Microtower, Genuine Windows XP Professional SP2, ATI Radeon Xpress 200 chipset, Intel Pentium 4 524 3.06GHz HT, 1-MB L2 cache, 533-MHz FSB, 512-MB PC2-5300 (DDR-667) DIMM Single-Channel (1x512), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 16X/48X DVD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
EN287UT#ABA	Promo dx2200M/P-524/80hnw/512L/4uf US HP dx2200 Microtower, ATI Radeon Xpress 200 chipset, Intel Pentium 4 524 3.06-GHz HT, 1-MB L2 cache, 533-MHz FSB, 512-MB PC2-5300 (DDR-667) DIMM Single-Channel (1x512), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 48X/32X/48X/16X Combo Drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
EN288UT#ABA	Promo dx2200M/P4-524/80hnw/1GBL/4uf US HP dx2200 Microtower, ATI Radeon Xpress 200 chipset, Intel Pentium 4 524 3.06-GHz HT, 1-MB L2 cache, 533-MHz FSB, 1.0-GB PC2-5300 (DDR-667) DIMM Single-Channel (1x1.0GB), Integrated Graphics, 80-GB SATA Hard Drive (7200 rpm) 3.0 GBps, 48X/32X/48X/16X Combo Drive, No Floppy Drive, Integrated audio with internal speaker, Realtek 8100c 10/100 LAN controller, Norton Antivirus 2005, Standard PS/2 Keyboard, HP USB 2-button Optical Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
EN289UT#ABA	Promo dx2200M/PD-805/80hnw/512GBL/4uf US HP Promo dx2200 Microtower, Genuine Windows XP Professional SP2, Pentium D Dual Core 805, 80GB hard drive 7200 SATA, no floppy, DVD/CDRW cmb, 512MB memory, PC5300 DDR2 single
EN282UT#ABA	Promo dx2200M/PD-805/160hna/1GBL/4uf US HP Promo dx2200 Microtower, Genuine Windows XP Professional SP2, Pentium D Dual Core 805, 160GB hard drive 7200 SATA, no floppy, DVD+RW, 1GB memory, PC5300 DDR2 single

Available Technology and Features

Processor and Speed

One of the following

Intel Celeron D Processors:

Intel Celeron D 326 Processor (2.53-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 331 Processor (2.66-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 336 Processor (2.80-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 346 Processor (3.06-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 355 Processor (3.33-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Pentium 4 Processors:

Intel Pentium 4 516 Processor (2.93-GHz, 1-MB L2 cache, 533-MHz FSB)

Intel Pentium 4 519K Processor (3.06-GHz, 1-MB L2 cache, 533-MHz FSB)

Intel Pentium 4 Processors with Hyper-Threading Technology:

Intel Pentium 4 521 Processor (2.80-GHz, 1-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 524 Processor (3.06-GHz, 1-MB L2 cache, 533-MHz FSB)

Intel Pentium 4 630 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 640 Processor (3.2-GHz, 2-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 541 Processor (3.2-GHz, 1-MB L2 cache, 800-MHz FSB)

Intel Pentium D Dual Core Processors:

Intel Pentium D 805 Dual Core Processor (2.66-GHz, 2x1MB L2 cache, 533-MHz FSB)

Intel Pentium D 820 Dual Core Processor (2.8-GHz, 2x1MB L2 cache, 800-MHz FSB)

Intel Pentium D 915 Dual Core Processor (2.8-GHz, 2x2MB L2 cache, 800-MHz FSB)

Intel Pentium D 925 Dual Core Processor (3.0-GHz, 2x2MB L2 cache, 800-MHz FSB)

***NOTE:** Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

Operating Systems and Application Software

Genuine Microsoft Windows XP Home SP2

Genuine Microsoft Windows XP Professional SP2

Free DOS

Microsoft Office 2003 Basic

Microsoft Office 2003 Small Business

Microsoft Office 2003 Professional

Microsoft Works 8.5

Roxio DigitalMedia Plus (by SONIC)*

Roxio CinePlayer*

Dantz Retrospect Express 7*

Norton Antivirus 2005 with 60 day Live Update Subscription (availability varies by region)

Sun Java Runtime Environment

Google Toolbar

* Supporting software available with certain optical drive configurations

Available Technology and Features

Hard Drives	40-GB Serial ATA 1.5-Gb/s Hard Drive (7200 rpm)
	80-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
	160-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
	250-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
	NOTE: The HP Compaq dx2200 Microtower Serial ATA interface supports data transfer rates up to 1.5 Gb/s.

System Memory	256-MB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 256-MB)
	512-MB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 512-MB)
	1-GB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 1-GB)
	NOTE: The HP Compaq dx2200 Microtower memory frequency is clocked at 630 MHz.

Storage – One or more of the following (see Storage section below)	Diskette Drive
	1.44-MB Diskette Drive
	Media Reader
	HP 16-in-1 Media Reader and additional USB 2.0 port
	Optical Drives
	48X CD-ROM drive
	48X/32X/48X CD-RW drive
16X/48X DVD-ROM drive	
48X/32X Combo CD-RW/DVD-ROM Drive	
16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)	

Keyboard – One of the following	HP PS/2 Standard Keyboard
	HP USB Standard Keyboard

Mouse – One of the following	PS/2 2-Button Scroll Mouse
	PS/2 2-Button Optical Scroll Mouse
	USB 2-Button Optical Scroll Mouse

Audio	Realtek ALC861 High Definition audio codec
	3D audio compliant with AC'97 Rev. 2.3 and HD Audio compatible
	Internal PC speaker

Communication	Intel PRO/1000 GT Gigabit PCI Adapter (full height)
	Integrated Realtek 8100C Fast Ethernet Network Connection
	Agere 56K PCI Modem

Available Technology and Features

Graphics	Integrated ATI graphics processor derived from the Radeon X300 ATI X300 PCI Express x16 Graphics Controller ATI RADEON X1300 256MB DDR PCIe Graphics Controller
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Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height)
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System Details

Base Unit	<ul style="list-style-type: none"> • Micro ATX microtower chassis, including power supply and front bezel • Five (5) drive bays and four expansion slots • Microsoft operating system CD • Active type heatsink • 92 x 92 x 25 mm chassis fan • System board with ATI Radeon Xpress 200 chipset, integrated Realtek 8100C Fast Ethernet 10/100 Network Connection, integrated graphics and audio, 2 PCI slots, 1 PCI Express x1 slot, 1 PCI Express x16 slot, 2 DDR2 DIMM memory slots • (1) Parallel ATA data cable; 3-headed; supports two IDE drives • (1) Serial ATA data cable • Product documentation on CD • HP system restore CD • Power cord
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Slots	PCI	Two (2) full-height PCI 2.3 slots on PCA One (1) full-height PCI Express x1 slot on PCA One (1) full-height PCI Express x16 slot on PCA (for graphic cards)
	Memory Expansion	Two (2) DIMM slots (2 GB maximum memory support)

Bays	Internal	Two (2) 3.50"
	External	Two (2) 5.25" One (1) 3.50"

USB Support	EHCI high-speed USB 2.0 controller Two (2) front ports; Four (4) rear ports, Two (2) internal ports on motherboard
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Interfaces (Legacy)	One (1) parallel port One (1) serial port One (1) PS/2 keyboard port One (1) PS/2 mouse port One (1) analog VGA video port One (1) line in; one (1) line out; one (1) mic in One (1) RJ45 network port
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Weight & Dimensions	Chassis Dimensions (H x W x D)	13.90 x 6.89 x 16.38 in (353 x 175 x 416 mm)
	Packaged Dimensions (L x W x H)	22.25 x 19.63 x 16.31 in (565.15 x 498.5 x 414.3 mm)
	System Weight	21.16 lb (9.6 kg)
	Shipping Weight	30.86 lb (14.0 kg)

System Details

Technology & Features	Memory Type	<ul style="list-style-type: none">• PC2-5300 DDR2 SDRAM (667-MHz) non-ECC• 2 GB maximum system memory
	Hard Drive Interfaces Supported	<p>NOTE: The HP Compaq dx2200 Microtower memory frequency is clocked at 630 MHz.</p> <ul style="list-style-type: none">• Serial ATA 1.5-Gb/s and 3.0-Gb/s hard drives are supported• ATI Radeon Xpress 200 chipset limits throughput to 1.5 Gb/s

Intel Pentium 4 Processor with HT Technology	Coprocessor	Integrated
	CPU Socket Type/Number	Socket T LGA775 socket
	CPU Package	LGA775
	Front Side Bus Speed	800-MHz
	Cache Memory	1-MB L2 Advanced Transfer Cache (500 Series) 2-MB L2 Advanced Transfer Cache (600 Series)

Intel Celeron D Processor	Coprocessor	Integrated
	CPU Socket Type	Socket T LGA775 socket
	CPU Package	LGA 775
	Front Side Bus Speed	533-MHz
	Cache Memory	256-KB L2 Advanced Transfer Cache

Chassis	Front Panel	<ul style="list-style-type: none">• Power button• Power On LED• HDD Activity LED
	Cooling Solutions Supported	<ul style="list-style-type: none">• Power Supply Fan (variable speed)• Aluminum active heatsink (variable speed)• Chassis fan (variable speed)
	Slots Supported	Four (4) full-height expansion slots
	Front I/O	Two (2) USB 2.0 ports
	Rear I/O	Standard Micro ATX I/O connectors, including four (4) USB 2.0 ports
	Drive Bays	<ul style="list-style-type: none">• Two (2) 5-1/4" external• One (1) 3-1/2" external• Two (2) 3-1/2" internal
	Internal Speaker	Standard
	Power Supply	250-watt ATX Power Supply – PFC/non-PFC with a 115v/230v line switch (varies by country/region)

System Details

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 4 in (10.2 cm) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range

- Operating: 50° to 95° F (10° to 35° C)
- Non-operating: -22° to 140° F (-30° to 60° C)

Relative Humidity

- Operating: 10% to 90% (non-condensing at ambient)
- Non-operating: 5% to 95% (non-condensing at ambient)

Maximum Altitude (unpressurized)

- Operating: 10,000 ft (3048 m)
- Non-operating: 30,000 ft (9000 m)

NOTE: Operating temperature is de-rated 1.0 deg C per 1000 ft (300 m) to 10,000 ft (3000 m) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

System Board

Processor

- Socket T; LGA775 industry standard Micro ATX form factor
- Support single Intel Pentium 4 or Celeron D

PWM

- Intersil 6566 VRM 10.1

Chipset

- ATI RC410 (Northbridge), ATI SB450 (Southbridge)

Super I/O

- W83627EHG

Front Side Bus Frequency

- 533/800 MHz

Memory

- DDR2 SDRAM
- 2 x DIMM slots

NOTE: The HP Compaq dx2200 Microtower memory frequency is clocked at 630 MHz.

Clock Generator

- RTM865

Integrated Graphics

- Built-in ATI graphics processor derived from the Radeon X300 provided by the ATI Radeon Xpress 200 chipset

Audio

- Realtek ALC861 HD Audio compatible codec with two channel audio 3D audio compliant with AC'97 rev. 2.3

LOM

- Realtek 8100c Fast Ethernet 10/100

IDE

- Support all PIO modes
- 1 x IDE ports support up to 2 devices
- Support Ultra ATA 33/66/100

Serial

- Two Serial ATA interfaces support data transfer rates up to 1.5 Gb/s

Expansion Slots

- 2 x PCI 2.3 slots
- 1 x PCI Express x1 slot
- 1 x PCI Express x16 slot

BIOS

- LPC EEPROM

System Details

Industrial Standard	<ul style="list-style-type: none">• PCI 2.3 compliant• USB 2.0
Rear Side I/O Ports	<ul style="list-style-type: none">• 1 x PS/2 keyboard port• 1 x PS/2 mouse port• 4 x USB 2.0 ports• 1 x RJ-45 10/100 port• 1 x serial port• 1 x parallel port• 1 x DB 15 pin analog VGA port• 3 x audio ports
On Board I/O Interfaces	<ul style="list-style-type: none">• 1 x ATX power connector• 1 x +12V power connector• 1 x Floppy connector• 1 x Front panel connector, Switch, LED (ON/Flash/OFF)• 2 x Fan headers for CPU, chassis, with voltage/fan speed control• 1 x ATAPI headers-CD IN• 1 x header to support 2 USB 2.0 ports at front side• 1 x header to support USB media reader
Board Size	<ul style="list-style-type: none">• Micro-ATX, PCB Size: 9.6 x 9.0 in (24.38 x 22.86 cm)• 4-layer PCB with green color
Additional Features	<ul style="list-style-type: none">• Bootable without keyboard, mouse or monitor• Keyboard/mouse/USB wake up• Support S1, S3, S4 and S5• ACPI status• Hardware monitor capability• CPU fan speed control

Network Interface

Hardware Highlights Features

Integrated Realtek 8100C Fast Ethernet Network Controller

- PCI interfaces
- 10-Mbps and 100-Mbps operation

Hardware Highlights Features

Intel PRO/1000 GT Gigabit PCI Adapter

- PCI interfaces
- 10-Mbps, 100-Mbps and 1000-Mbps operation

Wireless

Wireless A+G PCI Card (full height bracket)

Power Supply

- ATX Power Supply – Passive PFC/non-PFC with a 115v/230v line switch
- Passive Power Factor Correction (PFC) – with line switch set to 230V – No PFC in 115V line switch position
- 90 to 140VAC, or 180 to 264VAC operating voltage range
- 100 to 127VAC, or 200 to 240VAC rated voltage range
- 50–60 Hz rated line frequency
- 47–63 Hz operating line frequency range
- 250 watt maximum rated power
- 80-mm power supply fan – variable speed for optimum acoustics

System Details

Power Conservation 'Energy Saver'

- Energy Star compliant
- APM 1.2 support
- Screen blanking
- Hard drive 'Idle' mode
- System Idle mode
- Blue Angel compliant (<5w in S5 – power off)
- ~2 watt power consumption in ES mode – suspend to RAM (S3) (instantly available PC)
- Processor/Cache memory power-down (S3)

System Environmental Specs

- Values are subject to change without notification and are for reference only.
- Performance of system, options, and ancillary equipment will vary depending on the system configuration.
- Levels presented do not account for non-HP/Compaq installed hardware.

Ambient Air Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude de-rating of 1.0°C per every 1000 ft (300 m) above sea level to a maximum of 8000 ft (2500 m), no direct sustained sunlight. Maximum rate of change is 77°F/Hr (25°C/Hr). The upper limit may be limited by the type and number of options installed.
	Storage	-22° to 140°F (-30° to 60°C) – Maximum rate of change: 410°F/Hr (210°C/Hr).
Humidity	Operating	10% to 90% relative humidity (Rh), 86°F (30°C) maximum wet bulb temperature, non-condensing
	Storage	10% to 95% relative humidity (Rh), 101.66°F (38.7°C) maximum wet bulb temperature, non-condensing
Altitude	Operating	0 to 10,000 feet (0 to 3048 meters) – This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1,000 ft/min (304.8 m/min).
	Non-Operating	0 to 30,000 feet (0 to 9,144 meters) – Maximum allowable altitude change rate is 1200 ft/min (365.76 m/min).
Shock		Listed are the levels of shock the product can withstand with NO damage being incurred. The values represent peak input acceleration during an 2~3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.
	Non-Operating	35G's (Half-sine Shock) 35G's (Trapezoidal Shock)
Vibration		Listed are the levels of vibration the product can withstand with NO damage being incurred. The values represent a flat random vibration input acceleration profile across the given frequency range.
	Operating	Random vibration at 5Hz@0.00025G ² /Hz, 10Hz@0.01G ² /Hz, 100Hz@0.01G ² /Hz, 300Hz@0.00001G ² /Hz 5Hz to 300Hz, (0.25G's nominal).
	Non-Operating	Random vibration at 0.008G ² /Hz, 10Hz to 500Hz, (2 Grms nominal).

System Details

Acoustic Noise

Listed are the declared A-WEIGHTED SOUND POWER LEVELS (LWAd) and declared average desktop seated operator position A-WEIGHTED SOUND PRESSURE LEVELS (LpAm) when the product is operating in a 73.4°F (23°C) ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

IDLE (Fixed disk drive spinning) LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA

FIXED DISK (Random write) LWAd = 4.8 Bels, Desktop Average LpAm = 37dBA

CD-ROM (Sequential Reads) LWAd = 5.0 Bels, Deskside Average LpAm = 39dBA

Service and Support

On-site Warranty ^{Note 1}: One-year (1-1-1) limited warranty delivers one year of on-site, next business-day ^{Note 2} service for parts and labor and includes free telephone support ^{Note 3} 24 x 7. 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. One-year onsite and labor are not available in all countries.

NOTE 1: Certain restrictions and exclusions apply.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP-qualified hardware and software.

After-Market Options

Communications	NICs	
	Intel PRO/1000 GT Gigabit PCI Adapter (full height)	AG393AA
	Wireless LAN	
	HP Wireless A+G PCI Card	EA118AA
	Modems	
	Agere 2006 PCI High-Speed 56K International SoftModem	EK694AA
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Hard Disk Drives	HP 250-GB SATA 3.0-Gb/s Hard Drive	PY278AA
	HP 160-GB SATA 3.0-Gb/s Hard Drive	PY277AA
	HP 80-GB SATA 3.0-Gb/s Hard Drive	PY276AA
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Removable Storage Devices	Diskette Drive	
	HP 1.44-MB Internal Diskette Drive	AG295AA
	HP 1.44-MB USB Diskette Drive – External	DC141B
	16-in-1 Media Reader	EM718AA
	USB Drive Key	
	HP 1-GB Drive Key II Flash Drive	AG382AA
	HP 512-MB Drive Key II Flash Drive	ED516AA
	Removable StorCase	
	StorCase Removable Hard Drive Enclosure	EA332AA
Spare Carrier for StorCase Removable Hard Drive Enclosure (EA332AA)	RA697AA	
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Input Devices	Keyboards	
	HP PS/2 Standard Keyboard	DT527A#ABA
	HP USB Standard Keyboard	DT528A#ABA
	Mice	
	HP PS/2 2-Button Scroll Mouse	DD440B
	HP PS/2 2-Button Optical Scroll Mouse	EY703AA
	HP USB 2-Button Optical Scroll Mouse	DC172B
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Memory	HP 1-GB PC2-5300 (DDR2-667 MHz) DIMM	PX976AA
	HP 512-MB PC2-5300 (DDR2-667 MHz) DIMM	PX975AA
	HP 256-MB PC2-5300 (DDR2-667 MHz) DIMM	PX974AA
	NOTE: The HP Compaq dx2200 Microtower memory frequency is clocked at 630 MHz.	
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Audio	HP Satellite Speakers	ZD929AA#ABA
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Graphics	ATI Radeon X300 SE 128MB DDR PCIE DVI w/TV	DY596A
	ATI RADEON X1300 256MB DDR PCIE DVI w/TV	AG392AA

After-Market Options

Optical Drives	HP 48X Max CD-ROM Drive	DC143B
	HP 48X/32X/48X CD-RW Drive	DL975B
	HP 48X CD-RW/DVD-ROM Combo Drive	DL976B
	HP 16X/48X DVD-ROM Drive	PR596A
	HP 16X DVD+/-RW LightScribe Drive	PR595A
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Miscellaneous	HP FireWire / IEEE 1394 PCI Card	PA997A
	Belkin 7-outlet Surge Protector	AG290AA#ABA
	USB to Serial Adapter, 3ft	EM449AA
	USB Gold Series A/B Device Cable	AH121AA
	Cat5e Patch Cable	AH122AA
	Firewire (1394) Cable	AH123AA
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Chassis Enhancements	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)	DC177B
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Monitors	CRTs	
	HP s7540 17" (16.0" vis) CRT Monitor	PF997AA#ABA
	HP v7650 17" (16.0" vis) Flat-face CRT Monitor	PF996AA#ABA
	TFTs	
	HP L1506 15" TFT Flat Panel Monitor – Analog only	PX848AA#ABA
	HP L1706 17" TFT Flat Panel Monitor – Analog only	PX849AA#ABA
	HP L1740 17" TFT Flat Panel Display – Analog/Digital	PL766AA#ABA
	HP L1755 17" TFT Flat Panel Display – Analog/Digital	PL777AA#ABA
	HP L1906 19" TFT Flat Panel Display – Analog only	PX850AA#ABA
	HP L1940T 19" TFT Flat Panel Display – Analog/Digital	EM869AA#ABA
	HP L1955 19" TFT Flat Panel Display – Analog/Digital	PD974AA#ABA
	HP L2065 20" TFT Flat Panel Display – Analog/Digital	EF227A4#ABA
	HP LP2465 24" TFT Widescreen Flat Panel Display – Analog/Digital	EF224A4#ABA
	HP L5006tm 15" Touch Screen Flat Panel Display	RB146AA#ABA
	GSA Monitors	
	HP L717g 17" GSA Flat Panel Monitor	EE191AA#ABA
	HP L919g 19" GSA Flat Panel Monitor	EE192AA#ABA
	Options	
	HP Flat Panel Speaker Bar	EE418AA
	HP CRT Monitor Multimedia Base	PM552AA

Memory

DDR SYNCH DRAM NON-ECC MEMORY

The ATI Radeon Xpress 200 chipset supports non-ECC DDR2 memory up to PC2-5300 (667-MHz). Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations.

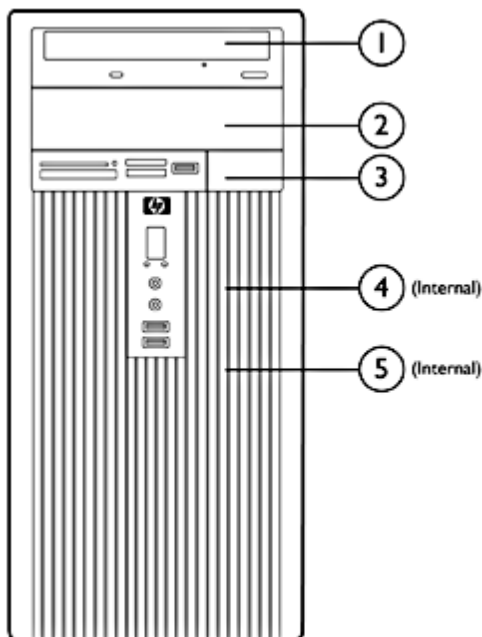
NOTE: The HP Compaq dx2200 Microtower maximum memory frequency is clocked at 630 MHz.

MAXIMUM MEMORY

Supports up to 2-GB of DDR2 SYNCH DRAM. Not all memory configurations possible are represented below.

DIMM Size	Slot 1	Slot 2
256-MB	256-MB	
512-MB	512-MB	
512-MB	256-MB	256-MB
1-GB	1-GB	
1-GB	512-MB	512-MB
2-GB	1-GB	1-GB

Storage



HP Compaq dx2200 Microtower Business PC

Drive Support	Maximum Quantity Supported	Position Supported	Controller
Diskette Drives	1	3	SIO
Media Reader	1	3	Internal USB 2.0 port
CD-ROM Drives	2	1, 2	IDE ATAPI
DVD-ROM Drives	2	1, 2	IDE ATAPI
CD-RW/Combo Drives	2	1, 2	IDE ATAPI
DVD+/-RW Drives	2	1, 2	IDE ATAPI
3.5" Serial ATA Hard Drives	2	4,5	SATA

Technical Specifications - Audio

Integrated Realtek ALC861 Audio	Type	Integrated
	HD Audio compatible codec	Yes
	Sampling	Supports 48/96 KHz
	Audio Jacks	Mic-In Line-In Line-Out / Headphone Out
	Power Support	Digital: 3.3V Analog: 5V
	Other	Meets performance requirements for audio on PC99/2001 systems High quality differential CD input

Technical Specifications - Communications

Intel PRO/1000 GT Gigabit PCI NIC	Connector	RJ-45	
	Controller	Intel 82541PI Gigabit Controller	
	Memory	Integrated 64KB configurable transmit receive buffer memory	
	Data rates supported	10/100/1000 Mbps	
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control	
	Bus architecture	PCI 2.3	
	Data path width	32-bit, 33/66 MHz bus interface	
	Data transfer mode	Bus-master DMA	
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union	
	Power requirement	(800mA) 4watts @ +5VDC	
	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 (full-duplex)	2000 Mbps (actual rate limited by PCI Bus)
	Environmental	Operating temperature	32° to 131°F (0° to 55° C)
		Operating humidity	85% at 131° F (55° C)
	Dimensions	6.4 x 4.8 x 0.8 in (16.3 x 12.1 x 1.9 cm)	
Operating system driver support	Microsoft Windows NT 4.0, Microsoft Windows 98, SE, Me, Microsoft 2000, Microsoft XP, Linux 2.2, Linux 2.4		
Management capabilities	ACPI, WOL and DMI 2.0, S5 WOL, WMI, PXE 2.0, RPL		

HP Wireless A+G PCI	Dimensions	4.99 x 2.54 x 0.71 in (126.8 x 64.4 x 18.0 mm)	
	Weight	0.268 lb (65 g)	
	Controller	Atheros AR5414X chipset	
	system interface	PCI Spec 2.2	
	Network standard	IEEE 802.11a/b/g	
	Frequency band	5.1500 to 5.8500 GHz	
		2.4000 to 2.4835 GHz	
		2.4465 to 2.4835 GHz (Europe, Middle East, Asia and Asia Pacific – excluding Japan)	
		2.4000 to 2.4697 GHz (Japan)	
	Operating temperature	32° to 140° F (0° to 60° C), operating	
	Storage temperature	-4° to 176° F (-20° to 80° C), non-operating	
	Humidity	10% to 85% non-condensing	
	Operating voltage	5V ± 5%	
	Power consumption	Tx/Rx peak 560/250mA @ 3.3V (max.)	
Output power (approximately)	15 dBm ±2dB		
Receive sensitivity	-90dBm at 11 Mbps (typical)		

Technical Specifications - Communications

Data transfer rate	Standard rates of 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 48, 54 and Super AG Mode108-Mbps	
Spreading	DSSS (Direct Sequence Spread Spectrum)	
Security	64(40h) bit, 128(104h) bit, WPA, IEEE802.1X, AES-OCB, AES-CCM, Microsoft PEAP,TKIP, WEP	
Antenna	External 5dBi antenna	
Throughput	108 Mbps (only with Belkin 54G or above router that supports 108 Mbps speed)	200 ft (60.96 m) – Indoor
	54 Mbps	200 ft (60.96 m) – Indoor
	11 Mbps	200 ft (60.96 m) – Indoor
Certifications	Wi-Fi certified	
Certifications for use by country	North America: United States, Canada Europe: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom Australia New Zealand	
OS support	Microsoft Windows XP Professional and Home Microsoft Windows 2000	

Agere 56K PCI Modem	Data Transmission	56,000 Kbps maximum downstream data 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
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/300 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

Technical Specifications - Communications

Operating System Support	Microsoft Windows XP
OS Driver Support	Microsoft Windows XP
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 in (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

Technical Specifications - Graphics

ATI built-in graphics processor provided by the Radeon Xpress 200 chipset	3D Graphics	<ul style="list-style-type: none"> • Full DirectX 9.0 Support (Vertex Shader v2.0 and Pixel Shader v2.0) • Supports resolutions up to 2048 x 1536 @ 32 bpp • SMARTSHADER™ 2.0 allows for complex, movie-like 3D effects • SMOOTHVISION™ 2.1 improves image quality through anti-aliasing using multi-sampling algorithm with support for 2, 4 and 6 samples
	Bus Type	PCI Express™ x16 for optional graphics upgrade
	Memory	HYPERMEMORY™ technology offers optional dedicated Local Frame Buffer configuration for a 32-bit or 64-bit interface and up to 128MB of memory. UMA mode operation uses from 32MB up to 256MB of shared system memory.
	Operating Systems	Microsoft Windows XP

ATI RADEON X1300 PCIe Graphics Card (256 MB)	Bus type	PCI Express (x16 lanes)	
	Maximum vertical refresh rate	85 Hz	
	Display support	Integrated 400 MHz RAMDAC	
	Display max resolution	2048 x 1536	
	Board display options	DVI-I + TV DVI-I supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVI-I connector) DVI-I supports analog CRT or flat panel (with VGA connector and DVI-I to VGA dongle) TV connector is a 4-pin mini-DIN S-video connector	
Board configuration	Specification	Description	
	Graphics Chip	RV515	
	Core clock	450 MHz	
	Memory clock	250 MHz	
	Frame buffer	256 MB DDR2	
Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish		
Operating systems support	Windows 2000, Windows XP, Linux x86 and x86_64 distributions using XFree86 or X.Org*.		
	*Linux drivers are available from ATI's website and may be available in a Linux distribution. Refer to the Open Source and Linux from HP website (http://www.hp.com/wwsolutions/linux/products/clients/) for support information.		
Core power	25 W (Max board power)		
Option kit contents	<ul style="list-style-type: none"> • ATI RADEON X1300 PCIe graphics card with full height bracket attached • Low profile bracket • DVI-to-VGA Adapter • Software CD with graphics drivers • Warranty documentation 		

Technical Specifications - Graphics

Compliance standards

EMC Emissions:

- a) FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home & Office Use
- b) CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment
- c) Canadian Standard ICES-003 is equivalent to CISPR22
- d) Taiwanese Standard BSMI
- e) Japanese VCCI
- f) Australian C-Tick

EMC Immunity:

CISPR 24:1997/EN 55024:1998 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement.

Safety:

UL 60950 (USA) & EN 60950 (EU): Safety of Information Technology Equipment, Including Electrical Business Equipment. All boards meet UL PCB flammability requirements.

Technical Specifications - Input/Output Devices

HP 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 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 kg) minimum
	Electrical	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	MicrosoftPC 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
		Cable length	6 ft (1.8 m)
		Microsoft PC 99 – 2001	Mechanically compliant
		Acoustics	43-dBA maximum sound pressure level
	Environmental	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 Workstation 3	
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications - Input/Output Devices

HP 2-Button Scroll Mouse (PS/2 or USB)	Scroll Wheel	8 mm		
	Maximum Rotation Speed	30 mm/s		
	Switch Type	Light force micro-switch		
	Switch Life	1 million operations		
	Mechanical Life	Minimum 200,000 revolutions		
	Environmental	Operating Temperature	50° to 122° F (10° to 50° C)	
		Non-operating Temperature	-22° to 140° F (-30° to 60° C)	
		Operating Humidity	10% to 90% (non condensing at ambient)	
		Non-operating Humidity	20% to 80% (non condensing at ambient)	
		Operating Shock	40 g, 6 surfaces	
		Non-operating Shock	80 g, 6 surfaces	
		Operating Vibration	2 g peak acceleration	
		Non-operating Vibration	4 g peak acceleration	
		Electrical	Operating Voltage	+ 5VDC ± 10%
			Power Consumption	15mA
	System Consumption		PS/2 mini-din connector	
	ESD		CE level 4, 15 kV air discharge	
EMI-RFI	Conforms to FCC rules for a Class B computing device			
Mechanical	PC98	Functionally compliant		
	Resolution	400 ± 20% DPI		
	Tracking Speed	10 in/s maximum		
	Acceleration	100 in/s		
	Switch Actuation	85 g nominal peak force		
	Switch Life	1,000,000 operations (using Hasco modified tester)		
Regulatory Approvals	Cable Length	2 m		
	PC98-99	Mechanically compliant		
	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BCIQ, C-Tick			

Technical Specifications - Hard Drives

Serial ATA Hard Drives (7200 rpm)	40 GB	Capacity	40,020,664,320 bytes			
		Height	1 in (2.6 cm)			
		Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)			
		Interface	Serial ATA			
		Synchronous Transfer Rate (Maximum)	1.5 Gb/s			
		Buffer	2 MB			
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms		
			Average	8.5 ms		
			Full-Stroke	18 ms		
		Rotational Speed	7,200 rpm			
		Logical Blocks	78,165,360			
		Operating Temperature	32° to 140° F (0° to 60° C)			
		80 GB*	80 GB*	Capacity	80,026,361,856 bytes	
				Height	1 in (2.6 cm)	
Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)					
Interface	Serial ATA					
Synchronous Transfer Rate (Maximum)	1.5 Gb/s					
Buffer	8 MB					
Seek Time (typical reads, includes controller overhead, including settling)	Single Track			1.0 ms		
	Average			8.5 ms		
	Full-Stroke			18 ms		
Rotational Speed	7,200 rpm					
Logical Blocks	156,301,488					
Operating Temperature	32° to 140° F (0° to 60° C)					

Technical Specifications - Hard Drives

160 GB*	Capacity	160,041,885,696 bytes	
	Height	1 in (2.6 cm)	
	Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA	
	Synchronous Transfer Rate (Maximum)	1.5 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
		Average	8.5 ms
		Full-Stroke	18 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C)	
	250 GB*	Capacity	250,059,350,016 bytes
Height		1 in (2.6 cm)	
Width		Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
Interface		Serial ATA	
Synchronous Transfer Rate (Maximum)		1.5 Gb/s	
Buffer		8 MB	
Seek Time (typical reads, includes controller overhead, including settling)		Single Track	0.8 ms
		Average	<9.0 ms
		Full-Stroke	=17 ms
Rotational Speed		7,200 rpm	
Logical Blocks		488,397,168	
Operating Temperature		41° to 131° F (5° to 55° C)	

NOTE: Although this drive is rated for a 3.0-Gb/s transfer rate, the Serial ATA interfaces in the HP Compaq dx2200 Microtower support data transfer rates up to 1.5 Gb/s.

Technical Specifications - Optical Storage

48X CD-ROM Drive	Interface	ATAPI	
	Data Transfer Rate	Variable (Audio CD) – 1,800 to 3,600 KB/s (24X) Max	Variable (CD-ROM, CD-R) – 2,400 to 7,200 KB/s (48x) Max
	Access Time (ms)	Random: < 125 ms	Full-stroke seek: < 210 ms
	Data Buffer	2MB	
	Disk Formats Read	CD-ROM Mode 1, CD-ROM XA (Mode 2, Form 1 and 2), CD Digital Audio, CD-EXTRA, CD-I (Mode 2, Form 1 and 2) and CD-I Ready, CD-Text, CD-Bridge, Photo CD (Single and Multi Session), Video CD, CD-R and CD-RW Multi-Session	
	Disk Formats Written	None	
	Disk Capacity (CD)	180 MB, 540 MB, 650 MB, and 70 OMB	
	Block Size	Mode 1-2,048, 2,352 bytes Mode 2-1, 2,048, 2,328, 2,336, 2,340, 2,353 bytes Mode 2-2, 2,328, 2,336, 2,340, 2,352 bytes CD-DA-2,352, 2,368 bytes	
	Diameter	12 cm; 8 cm	
	Thickness	1.2 mm	
	Track Pitch	1.6 μ m	
	Audio Output Level	Line-out – 0.7 V @ 47 Kohm	Headphone – 0.6 V @ 32 ohm
	Startup Time	< 7 seconds (typical); < 30 seconds with multi-session	
	Operating Conditions	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
	Dimensions (H x W x D, maximum)	1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)	
	Weight	2.6 lb (1200 g)	
	Operating Systems Supported	Microsoft Windows XP Professional	

48X/32X/48X CD-RW Drive	Orientation	Either horizontal or vertical
	Disc loading mechanism	Half-height, tray load
	Interface type	ATAPI IDE
	Dimensions-external (W x H x D)	7.99 x 5.88 x 1.71 in (20.3 x 14.93 x 4.34 cm)
	Weight	2.6 lb (1.2 kg)
	Disc diameter	12 cm, 8 cm
	Disc thickness	1.2 mm
	Track pitch	1.6 μ m
	Disc center hole diameter	15 mm
	Reference scanning velocity	1.2 m/s
	Recording/playing time	80 minutes with CD-R media

Technical Specifications - Optical Storage

Read only disc parameters	Formats and modes supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2 (forms 1 and 2); CD digital audio; CD Extra; CD-I-Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD
	Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	Block size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 and 2,368 bytes
Writeable disc parameters	Disc type	CD-R and CD-RW
	Write methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and modes supported	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD
	Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	Block size	Mode 1-2,048 bytes; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,352 bytes; CD-DA ---2,352 bytes
Access times (typical)	Random	< 120 ms
	Full stroke	< 200 ms
Data transfer rates	CD-RW write	4800 KB/s (up to 32X)
	CD-ROM, CD-R read	7200 KB/s (up to 48X)
	CD-RW read	7200 KB/s (up to 32X)
	CD-R write	7200 KB/s (up to 48X)
Data transfer modes	ATA PIO mode 4 (16.7MB/s); ATA multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s); ATA UltraDMA mode 1 (24 MB/s); ATA UltraDMA mode 2 (33 MB/s) – default.	
Cache buffer	2 MB (minimum)	
Start-up time (single)	< 7 seconds typical	
Start-up time (multi-session)	< 30 seconds typical	
Stop time	< 4 seconds	

Technical Specifications - Optical Storage

Power	Source	Four-pin, 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 VCD < 1A (typical) < 1600 mA (maximum) 12 VCD < 600 mA (typical) < 1.4A (maximum) Total Drive Power (Standby mode) < 2.5 watt
Audio output level	0.7 Vrms	
Configuration jumper block	Master, slave and cable select modes	
Data interface connector	50-pin IDE interface	
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)	84° F (29° C)
Certifications, requirements	ACA AS/NZS 3548, ANSI C63.4-1992, CB Test Certificate for IEC 950, CE Mark, CFR 47 part 15, CNS 13438, CSA C22.2 No. 60950, DHHS/FDA - 1040, EN60825, EN55022:1998, EN55024, EN60 950:2000, ICES-003 class B, IEC 61000 4-2 - 4-11, Nordic EN60 950, TUV or VDE EN60 950, UL 60950, C.I.S.P.R. Publication 22 Class B, BSMI, Microsoft P2001, Microsoft Logo for Windows 98, 2000 and XP	
Operating systems supported	Microsoft Windows XP	

16X/48X DVD-ROM Drive Height	5.25-in, half-height
Interface Type	ATAPI
Dimensions – External, Excluding Bezel (W x H)	5.88 x 1.71 in (149.5 x 43.5 mm)
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm
Track Pitch	1.6 μm (CD), 0.74 μm (DVD)
Disc Center Hole Diameter	15 mm
Disc Formats	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R, DVD+R DL ; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW

Technical Specifications - Optical Storage

Disc Capacity	DVD-ROM	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7 GB (DVD+R), 8.5 GB (DVD+R DL)
	CD-ROM	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
Block Size (bytes)	DVD-ROM – 2048; CD-ROM Mode 0 – 2352; CD-ROM Mode 1 – 2352, 2340, 2336, 2048; CD-ROM Mode 2 – 2352, 2340, 2336, 2048	
Access Times (typical reads, including settling)	DVD-ROM Single Layer	120 ms (typical)
	CD-ROM Mode 1	90 ms (typical)
	Full Stroke DVD	240 ms (seek) (typical)
	Full Stroke CD	160 ms (seek) (typical)
Maximum Data Transfer Rates	CD-ROM Read	7200 KB/s (up to 48X)
	DVD-ROM Read	21,600 KB/s (16X) Max
Data Transfer Modes	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
Power	Source	Four-pin, 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 – <800 mA typical, < 1000 mA maximum	
	12 VDC – < 870 mA typical	
Audio Output Level	0.7 Vrms (typical)	
Configuration Jumper Block	Master, slave, and cable select modes	
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon	
Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 85%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)
Certifications, Approvals	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	
Operating systems supported	Microsoft Windows XP	

48X Combo CD-RW/DVD-ROM

Form Factor	5.25-inch, half-height, tray-load
Orientation	Either horizontal or vertical
Interface type	ATAPI
Dimensions (W x H x D)	5.77 x 1.71 x 7.36 in (14.66 x 4.34 x 18.69 cm) (external, excluding bezel)
Disc diameter	12 cm, 8 cm
Disc thickness	0.05 in (1.2 mm)

Technical Specifications - Optical Storage

Track pitch	1.6 um (CD), 0.74 um (DVD)	
Disc center hole diameter	0.6 in (15 mm)	
Reference scanning velocity	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)	
Read only disc parameters	Formats and modes supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2; CD-Bridge; CD digital audio; CD Extra; Photo CD (single and multi-session); video CD; DVD (single- and double-layer); DVD-R; DVD-RW; DVD-RW Multi-Border; DVD+R; DVD+R Multi-Session , and DVD+RW
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm); 4.7 GB (DVD-5); 8.54 GB (DVD-9); 9.4 GB (DVD-10)
	Block size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 bytes; DVD-2,048 bytes
	Writeable disc parameters	
	Disc type	CD-R and CD-RW
	Write methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and modes supported	CD-ROM; CD-ROM XA; CD digital audio, video CD; CD-Bridge
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm)
	Block size	CD-DA-2,352 bytes; mode 0- 2,336 and 2,352 bytes; mode 1-2,048 and 2,352 bytes; mode 2- 2,336 and 2,352; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,324 and 2,352 bytes
Access times (typical reads, including settling)	Random DVD	< 140 ms (typical)
	Random CD	< 125 ms, (typical)
	Full stroke DVD	< 250 ms (seek)
	Full stroke CD	< 210 ms (seek)
Data transfer rates	CD-R write	7200 KB/s (up to 48X)
	CD-RW write	4800 KB/s (up to 32X)
	CD-ROM, CD-R, CD-RW read	7200 KB/s (up to 48X)
	DVD ROM read	21,632 KB/s (16X) Max
Data transfer modes	ATA PIO mode 4); ATA Multi-word DMA mode 2; ATA UltraDMA mode 0; ATA UltraDMA mode 1, mode 2; ATA UltraDMA Mode 3 (default)	
	Cache buffer	2 MB (minimum)
	Startup time (single)	< 7 seconds (typical)
	Startup time (multi-session)	< 30 seconds (typical)
	Stop time	< 4 seconds

Technical Specifications - Optical Storage

Power	Source	Four-pin, 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
Audio output level		0.7 Vrms (typical)
Configuration jumper block		Cable select (default), master and slave modes
Data interface connector		40-pin, shrouded and keyed, flat ribbon
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)
Certifications, requirements		MPC-3 compliant, multi-read requirements, ACA AS/NZS 3548, ANSI C63.4-1992, ATAPI Spec SFF-8020, ATA Spec X3T9.2, CB Bulletin No. 92A, CSA C22.2 No. 950-1995, C.I.S.P.R. Pub 22, EMKO-TSE 207/94, TUV or VDE EN60 950, EN60825-1, Microsoft ®PC2001 certification, Microsoft Logo for Windows XP, 2000
Operating systems supported		Microsoft Windows XP Professional, Windows XP Home

16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)	Form Factor	5.25-inch, half-height, tray-load
	Orientation	Either horizontal or vertical
	Interface type	ATAPI/EIDE
	Disc recording 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 4X DVD+R DL Up to 2.4X DVD-R Up to 8X DVD-RW Up to 4X CD-R Up to 40X CD-RW Up to 24X
	Read speed	DVD+R/-R/+RW/-RW/+R DL Up to 8X DVD-ROM Up to 16X CD-ROM, CD-R Up to 40X CD-RW Up to 32X

Technical Specifications - Optical Storage

Access time (typical reads, including settling)	Random	DVD: < 130 ms (typical), CD: < 120 ms (typical)
	Full Stroke	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	Startup Time	Single-session: < 15 seconds (typical), Multi-session: < 30 seconds (typical)
	Stop Time	< 4 seconds
	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
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	
Audio output	Line-Out	0.7 VRMS
	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative humidity	10% to 90%
	Maximum wet bulb temperature	86° F (30° C)
System configuration	Intel Pentium III Processor or later with 128 MB of memory (required); 256 MB recommended 2-D or 3-D graphics cards on primary disk drive for operating system and application software; second disk drive for audio and video data	
Operating systems support	Microsoft Windows XP Professional, Windows XP Home	
Regulatory approvals	MPC-3 compliant, multi-read requirements, ATA Spec X3T9.2, ATAPI Spec T13.1153D, ANSI C63.4-1992, UL 1950, ACA AS/NZS 3548, CB Bulletin No. 96A, CSA C22.2 No. 950-1995, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, EMKO-TSE 07/94, TUV EN60950, EN60825-1, MIC, BSMI-CNS 13438, CE, Microsoft PC2001 certification, Microsoft Logo for Windows XP and 2000.	

Technical Specifications - Removable Storage

HP 1.44-MB Diskette Drive	Size	3.5 in (8.89 cm)											
	LED Indicators (front panel)	Green											
	Read/Write Capacity per Diskette (high/low)	1.44 MB/720 KB											
	Drive Height	One-third											
	Drive Rotation	300 rpm											
	Transfer Rate (high/low)	500/250 KB/s											
	Bytes/Sector	512											
	Sectors/Track (high/low)	18/9											
	Tracks/Side (high/low)	80/80											
	Access Times	Track-to-Track (high/low)	3/6 ms										
		Average (high/low)	94/173 ms										
		Settling Time	15 ms										
	Cylinders (high/low)	80/80											
Read/Write Heads		Two											
<hr/>													
HP 16-in-1 Media Card Reader	USB interface	USB 2.0 High-speed device via PCI card or pass-through via internal USB port of system board											
	Advance protocol support	<ul style="list-style-type: none"> • Supports hardware ECC (Error Correction Code) function • Supports hardware CRC (Cyclic Redundancy Check) function • Supports MS 4-bit parallel transfer mode • Supports MS-PRO 4-bit parallel transfer mode • Supports SD 4-bit parallel transfer mode • Supports high-speed 50 MHz SD 4-bit card (version 1.1) • Support high-speed 52 MHz MMC 8-bit card (version 4.x) 											
	Supported media types	<ul style="list-style-type: none"> • Supports CompactFlash Card Type I (CF I), CompactFlash Card Type II (CF II), MicroDrive (MD) • Supports 3.3V SmartMedia Card (SM), SmartMedia ROM (SM ROM), xD-Picture Card (xD) • Supports Secure Digital Card (SD), Secure Digital ROM Card (SD ROM), miniSD, MultiMediaCard (MMC), Secure MultiMediaCard (Secure MMC), ROM Type MultiMediaCard (MMC ROM), Reduced Size MultiMediaCard (RS MMC), MultiMediaCard 4.0 (MMC Plus), Reduced Size MultiMediaCard 4.0 (MMC Mobile) • Support Memory Stick (MS), Memory Stick ROM (MS ROM), MagicGate Memory Stick (MG), Memory Stick Select, Memory Stick Duo (MS Duo), Memory Stick PRO (MS-PRO), Memory Stick PRO Duo (MS PRO Duo) 											
	Mechanical	<table border="0"> <tr> <td>Length (3.5")</td> <td>124.7 cm</td> </tr> <tr> <td>Width (3.5")</td> <td>101.6 cm</td> </tr> <tr> <td>Height (3.5")</td> <td>25.4 cm</td> </tr> <tr> <td>Length (5.25")</td> <td>171.6 cm</td> </tr> <tr> <td>Width (5.25")</td> <td>148.9 cm</td> </tr> <tr> <td>Height (5.25")</td> <td>42.7 cm</td> </tr> </table>	Length (3.5")	124.7 cm	Width (3.5")	101.6 cm	Height (3.5")	25.4 cm	Length (5.25")	171.6 cm	Width (5.25")	148.9 cm	Height (5.25")
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Height (5.25")	42.7 cm												

Technical Specifications - Removable Storage

Environmental	Operational environmental extremes	Test Parameters/Conditions - Power applied, unit operating on system $\pm 5\%$ nominal supply voltage. 10°C 10% R.H. = 24 hours 10°C 90% R.H. = 24 hours 20°C 90% R.H. = 24 hours 30°C 90% R.H. = 24 hours 40°C 90% R.H. = 24 hours 50°C 90% R.H. = 24 hours 50°C 10% R.H. = 24 hours
	Storage environmental extremes	Test Parameters/Conditions 60°C @ 80% R.H. for 96 hours -30°C @ 20% R.H. for 48 hours No power applied Delta °C < 1.0°C/min Delta % R.H. < 1.5% R.H./min
Operating system support	Microsoft Windows 2000 (Service Pack 3 or greater), Windows XP Home, Windows XP Professional	
Approvals	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0, Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

Technical Specifications - Environmental Data

Environmental Data

Eco-Label Certifications & 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:

- US Energy Star
- Blue Angel
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- IT ECO declaration

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model included:

Processor	Intel Pentium 4 630 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)
Memory	1-GB DDR2 Synch Dram PC2-5300 (667-MHz)
Hard Drive	160-GB SATA (7200 rpm)
Optical Drive	48X Combo CD-RW/DVD-ROM
Other Storage	HP 16-in-1 Media Reader and additional USB 2.0 port
Communications	Integrated Realtek 8100C Fast Ethernet Network Connection, Agere 56K PCI Modem

Ultra-Slim Desktop, Small Form Factor, Convertible Minitower

Energy Consumption

	115VDC	230VDC	100VDC
Normal Operation	83.7 W	83.0 W	84.5 W
Sleep	2.81 W	3.33 W	2.53 W
Off	1.44 W	1.96 W	1.25 W

Heat Dissipation*

	115VDC	230VDC	100VDC
Normal Operation	286 BTU/hr	283 BTU/hr	289 BTU/hr
Sleep	10 BTU/hr	11 BTU/hr	9 BTU/hr
Off	5 BTU/hr	7 BTU/hr	4 BTU/hr

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

	Sound Power (L_{Wad} , bels)	Deskside Sound Pressure (L_{pAm} , decibels)
Idle	4.07	31.1
Fixed Disk (random writes)	4.12	32.3
Optical Drive (sequential reads)	5.21	45.6

Technical Specifications - Environmental Data

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 15 months after the end of production. Upgradeability features contained in the product include:

- 6 USB ports
- 2 external 5.25" drive bays
- 2 internal 3.5" drive bays
- 1 external 3.5" drive bay
- 2 empty standard PCI slots
- 1 empty standard PCI-EX1 slot
- 1 empty standard PCI-EX 16 slot
- 2 memory slots
- 1 Serial port
- 1 Parallel port

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

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

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 75% recycled materials (by wt.)

This product is 75% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Corrugated Paper 1840 g
- Internal:
 - LDPE Foam 280 g
 - LDPE Bag 50 g

Technical Specifications - Environmental Data

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.

Technical Specifications - Environmental Data

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>

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