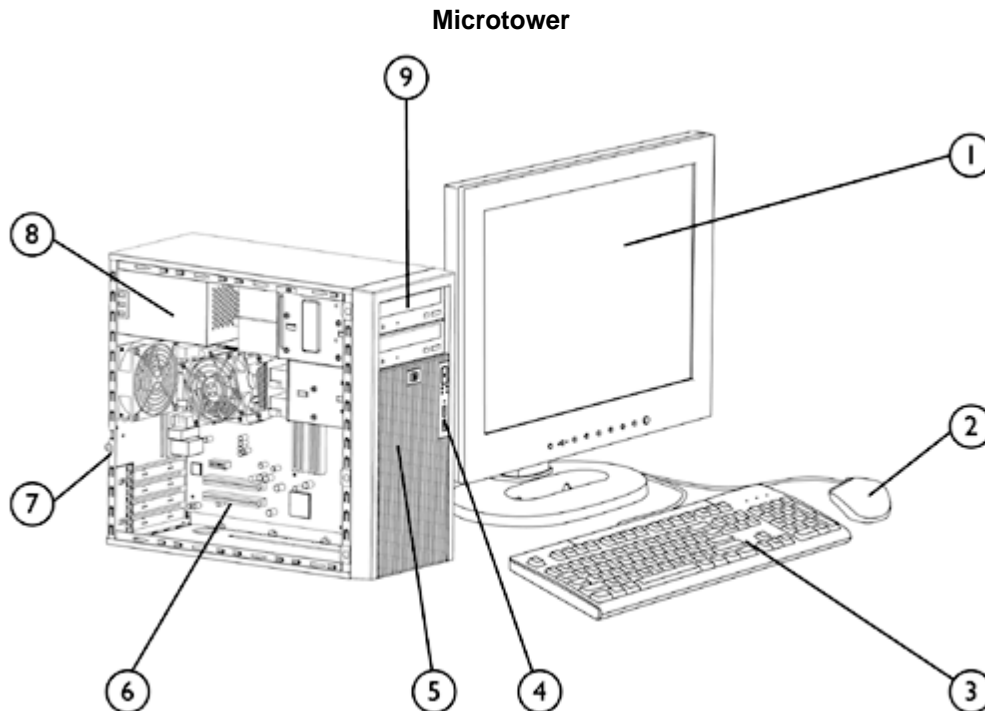


### Overview

**HP recommends  
Windows Vista™ Business**



1. Monitor (sold separately)

2. 2-Button Scroll Mouse

3. HP Standard Keyboard

4. 2 USB 2.0 ports

5. 2 internal 3.5" drive bays

6. 2 full-height PCI 2.3 slots, 1 PCI-E x1 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 or 3.5" floppy 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
- Intel 915GV Express chipset
- Intel Graphics Media Accelerator 900
- PCI Express I/O bus
- Integrated SATA/150 controller
- Integrated Ultra ATA/100 controller
- Integrated Intel 10/100 Network Connection
- Choice of hard drives and optical drives
- Single or dual channel DDR2 SDRAM system memory
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions & exclusions apply.

### 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 341 Processor  
(2.93-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 351 Processor  
(3.20-GHz, 256-KB L2 cache, 533-MHz FSB)

#### Intel Pentium 4 Processors:

Intel Pentium 4 506 Processor  
(2.66-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 4 531 Processor  
(3.0-GHz, 1-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 620 Processor  
(2.80-GHz, 2-MB L2 cache, 800-MHz FSB)

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

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

Intel Pentium 4 650 Processor  
(3.40-GHz, 2-MB 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. Not all processors are available in all regions or on all models.

### Available Technology and Features

<b>Operating Systems and Application Software</b>	Genuine Windows XP Home SP2 Genuine Windows XP Professional SP2 Free DOS Microsoft Office 2003 Basic (availability varies by region) Microsoft Office 2003 Small Business (availability varies by region) Microsoft Office 2003 Professional (availability varies by region) Microsoft Works 7.0 (availability varies by region) QuickBooks Simple Start Edition 2005 (availability varies by region) Roxio DigitalMedia Plus (by SONIC) Roxio CinePlayer Dantz Retrospect Express 7 Altiris Local Recovery (availability varies by region) Norton Antivirus 2005 with 60 day Live Update Subscription (availability varies by region) Sun Java Runtime Environment (availability varies by region) Google Toolbar
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<b>Hard Drives</b>	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) <b>NOTE:</b> The Serial ATA interfaces in the HP Compaq dx2100 Microtower support data transfer rates up to 1.5 Gb/s.
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<b>System Memory – Single Channel Configurations</b>	256-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 256-MB) 512-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 512-MB) 1-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 1-GB)
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<b>System Memory – Dual Channel Configurations</b>	512-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 256-MB) 1-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 512-MB) 2-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 1-GB) <b>NOTE:</b> For best performance, memory speeds and sizes should not be mixed. See memory section for more information.
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<b>Storage –</b> One or more of the following (see Storage section below)	<b>Diskette Drive</b> 1.44-MB Diskette Drive <b>Optical Drives</b> 48X CD-ROM drive 52X CD-ROM drive (available in APJ only) 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)
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### *Available Technology and Features*

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

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

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**Audio** Realtek ALC653 2-channel audio  
3D audio compliant with AC'97 Rev. 2.3  
Internal PC speaker

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**Communication** Integrated Intel PRO/100 Network Connection  
Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter  
Agere 56K PCI Modem

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**Graphics** Intel Graphics Media Accelerator 900

### System Details

#### Base Unit

- Micro ATX microtower chassis, including power supply and front bezel
- Four (4) drive bays and three expansion slots
- Microsoft operating system CD
- Active type heatsink
- 92 x 92 x 25 mm chassis fan
- System board with Intel 915GV Express chipset, integrated Intel PRO 10/100 Network Connection, integrated graphics and audio, 2 PCI slots, 1 PCI Express x1 slot, 4 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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<b>Slots</b>	PCI	Two (2) full-height PCI 2.3 slots on PCA One (1) full-height PCI Express x1 slot on PCA
	Memory Expansion	Four (4) DIMM slots

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<b>Bays</b>	Internal	Two (2) 3.50" half-height
	External	Two (2) 5.25" half-height

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<b>USB Support</b>	EHCI high-speed USB 2.0 controller Two (2) front ports; Four (4) rear ports
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<b>Interfaces (Legacy)</b>	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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<b>Weight &amp; Dimensions</b>	Chassis Dimensions (H x W x D)	14.37 x 6.89 x 16.43 in (36.5 x 17.5 x 41.73 cm)
	Packaged Dimensions (L x W x H)	21.91 x 19.72 x 15.84 in (55.65 x 50.09 x 40.23 cm)
	System Weight	21.67 lb (9.83 kg)
	Shipping Weight	29.39 lb (13.33 kg)

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### System Details

<b>Supported Technology &amp; Features</b>	Memory Type	<ul style="list-style-type: none"><li>• PC2-4200 DDR2 SDRAM (533-MHz) non-ECC</li><li>• Single or dual channel configurations</li><li>• 4 GB maximum system memory (Above 3-GB, all memory may not be available due to system resource requirements.)</li></ul>
	Hard Drive Interfaces Supported	<ul style="list-style-type: none"><li>• Serial ATA 1.5-Gb/s and 3.0-Gb/s hard drives are supported</li><li>• 915GV chipset limits throughput to 1.5 Gb/s</li></ul>

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<b>Intel Pentium 4 Processor with HT Technology</b>	Coprocessor	Integrated
	CPU Socket Type/Number	Socket T LGA775 socket
	CPU Package	LGA775
	Front Side Bus Speed	533/800-MHz
	Cache Memory	1-MB L2 Advanced Transfer Cache (500 Series) 2-MB L2 Advanced Transfer Cache (600 Series)

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

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<b>Chassis</b>	Front Panel	<ul style="list-style-type: none"><li>• Power button</li><li>• Power On LED</li><li>• HDD Activity LED</li></ul>
	Cooling Solutions Supported	<ul style="list-style-type: none"><li>• Power Supply Fan (variable speed)</li><li>• Aluminum active heatsink (variable speed)</li><li>• Chassis fan (variable speed)</li></ul>
	Slots Supported	Three (3) 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"><li>• Two (2) 5-1/4" external</li><li>• Two (2) 3-1/2" internal</li></ul>
	Internal Speaker	Standard
	Power Supply	250-watt ATX Power Supply – PFC/non-PFC with a 115v/230v line switch (varies by country/region)

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### 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 10.2 cm (4 in) 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      Operating: 10,000 ft (3048 m)  
(unpressurized)      Non-operating: 30,000 ft (9144 m)

**\*NOTE:** Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) 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

##### Socket LGA775 industry standard Micro ATX form factor

- |                          |  |
|--------------------------|--|
| Processor                | <ul style="list-style-type: none"><li>• Socket T; LGA775</li><li>• Support single Intel Pentium 4 or Celeron D</li></ul>   |
| PWM                      | <ul style="list-style-type: none"><li>• ON 3 phase power solution</li><li>• Meets Intel Mainstream FMB spec</li></ul>  |
| Chipset                  | <ul style="list-style-type: none"><li>• Intel 915GV Express</li><li>• Intel ICH6</li></ul>   |
| Super I/O                | <ul style="list-style-type: none"><li>• ITE IT8712</li></ul>   |
| Front Side Bus Frequency | <ul style="list-style-type: none"><li>• 533-/800-MHz</li></ul>   |
| Memory                   | <ul style="list-style-type: none"><li>• PC2-4200 DDR2 SDRAM</li><li>• 4 x DIMM slots</li><li>• Slot 1 is black (and is Channel A)</li><li>• Slot 2 is white (and is Channel A)</li><li>• Slot 3 is black (and is Channel B)</li><li>• Slot 4 is white (and is Channel B)</li><li>• Support for single or dual-channel configurations</li></ul> |
| Clock Generator          | <ul style="list-style-type: none"><li>• ICS ICS954119 /Cypress CY28439 / Silego SLG84480</li></ul>   |
| Integrated Graphics      | <ul style="list-style-type: none"><li>• Intel Graphics Media Accelerator (GMA) 900</li></ul>   |
| Audio                    | <ul style="list-style-type: none"><li>• Realtek ALC653 two channel audio 3D audio compliant with AC'97 rev. 2.3</li></ul>  |
| LAN                      | <ul style="list-style-type: none"><li>• Intel 82562EZ 10/100 LAN</li></ul>   |
| IDE                      | <ul style="list-style-type: none"><li>• Support all PIO modes</li><li>• 1 x IDE ports support up to 2 devices</li><li>• Support Ultra ATA 33/66/100</li></ul>  |

### System Details

SATA	<ul style="list-style-type: none"><li>• Two Serial ATA interfaces support data transfer rates up to 1.5 Gb/s</li></ul>
Expansion Slots	<ul style="list-style-type: none"><li>• 2 x PCI 2.3 slots</li><li>• 1 x PCI Express x1 slot</li></ul>
BIOS	<ul style="list-style-type: none"><li>• 4Mbit flash EEPROM</li><li>• SST BIOS, PnP1.0A, ACPI, SMBIOS 2.4, Boot Block, DMI</li></ul>
Manageability	<ul style="list-style-type: none"><li>• WfM 2.0, SMBus</li></ul>
Industrial Standard	<ul style="list-style-type: none"><li>• PCI 2.3 compliant</li><li>• USB 2.0</li></ul>
Rear Side I/O Ports	<ul style="list-style-type: none"><li>• 1 x PS/2 keyboard port</li><li>• 1 x PS/2 mouse port</li><li>• 4 x USB 2.0 ports</li><li>• 1 x RJ-45 10/100 port</li><li>• 1 x serial port</li><li>• 1 x parallel port</li><li>• 1 x DB 15 pin analog VGA port</li><li>• 3 x audio ports</li></ul>
On Board I/O Interfaces	<ul style="list-style-type: none"><li>• 1 x ATX power connector</li><li>• 1 x +12V power connector</li><li>• 1 x Floppy connector</li><li>• 1 x Front panel connector, Switch, LED (ON/Flash/OFF)</li><li>• 2 x Fan headers for CPU, chassis, with voltage/fan speed control</li><li>• 1 x ATAPI headers-CD IN</li><li>• 1 x header to support 2 USB 2.0 ports at front side</li></ul>
Board Size	<ul style="list-style-type: none"><li>• Micro-ATX, PCB Size: 9.6" X 9.0"</li><li>• 4-layer PCB with green color</li></ul>
Additional Features	<ul style="list-style-type: none"><li>• Bootable without keyboard, mouse or monitor</li><li>• Keyboard/mouse/USB wake up</li><li>• Support S1, S3, S4 and S5</li><li>• ACPI status</li><li>• Hardware monitor capability</li><li>• CPU fan speed control</li></ul>

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### Integrated Intel PRO/100 Network Connection

### System Details

#### Network Interface

#### Hardware Highlights

- 82562EZ Platform LAN Connect device
- IEEE 802.3 10BASE-T compliant physical layer interface
- IEEE 802.3u Auto-Negotiation and 100BASE-TX support
- Digital adaptive equalization control
- Link status interrupt capability
- XOR Tree mode support for board testing
- 3-port LED support (speed, link and activity)
- 10BASE-T auto-polarity correction
- Diagnostic loopback mode
- 1:1 transmit transformer ratio support
- Low power (300 mW) typical in active transmit mode
- Reduced power (less than 50 mW) in "unplugged mode"
- Automatic detection of "unplugged mode"
- 3.3V device
- Platform LAN connect interface support

#### Features

- 3-port LED support (speed, link, and activity)
- ACPI support
- Magic Packet filtering for Wake on LAN support
- Automatic detection of "unplugged mode"
- Low power (less than 300 mW in active transmit mode)
- Platform LAN connect interface support
- Low power 3.3 V device

#### 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

#### 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.

### System Details

<b>Ambient Air Temperature</b>	<b>Operating</b>	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.
	<b>Storage</b>	-22° to 140°F (-30° to 60°C) – Maximum rate of change: 410°F/Hr (210°C/Hr).
<b>Humidity</b>	<b>Operating</b>	10% to 90% relative humidity (Rh), 86°F (30°C) maximum wet bulb temperature, non-condensing
	<b>Storage</b>	10% to 95% relative humidity (Rh), 101.66°F (38.7°C) maximum wet bulb temperature, non-condensing
<b>Altitude</b>	<b>Operating</b>	0 to 8,000 feet (0 to 2438.4 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).
	<b>Non-Operating</b>	0 to 30,000 feet (0 to 9,144 meters) – Maximum allowable altitude change rate is 1200 ft/min (365.76 m/min).
<b>Shock</b>		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.
	<b>Non-Operating</b>	35G's (Half-sine Shock) 35G's (Trapezoidal Shock)
<b>Vibration</b>		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.
	<b>Operating</b>	Random vibration at 5Hz@0.00025G <sup>2</sup> /Hz, 10Hz@0.01G <sup>2</sup> /Hz, 100Hz@0.01G <sup>2</sup> /Hz, 300Hz@0.00001G <sup>2</sup> /Hz 5Hz to 300Hz, (0.25G's nominal).
	<b>Non-Operating</b>	Random vibration at 0.008G <sup>2</sup> /Hz, 10Hz to 500Hz, (2 Grms nominal).
<b>Acoustic Noise</b>		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).
	<b>IDLE</b> (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA
	<b>FIXED DISK</b> (Random write)	LWAd = 4.8 Bels, Desktop Average LpAm = 37dBA
	<b>CD-ROM</b> (Sequential Reads)	LWAd = 5.0 Bels, Deskside Average LpAm = 39dBA

### System Details

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#### Service and Support

On-site Warranty <sup>Note 1</sup>: One-year (1-1-1) limited warranty delivers one year of on-site, next business-day <sup>Note 2</sup> service for parts and labor and includes free telephone support <sup>Note 3</sup> 24 x 7. Global coverage <sup>Note 2</sup> 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 all countries. Additional configurable warranty options (sold separately) include: 90 days parts (90/0/0), three years parts and one year labor (3/1/1), or 3 years next business day, three years parts and three years labor (3/3/3).

**NOTE 1:** Terms and conditions may vary by country. 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, and is not available in certain countries. 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. Toll-free calling and 24 x 7 support may not be available in some countries.

### After-Market Options

<b>Communications</b>	<b>Wireless Network Interface Cards</b>	
	Wireless A+G PCI Adapter – Americas	EA118AA
	Wireless A+G PCI Adapter – WW except Americas	PZ928AA
	HP BT450 USB Bluetooth Wireless Printer and PC Adapter	IPQ639A
	<b>Network Interface Cards</b>	
	Broadcom NetXtreme Gigabit Ethernet PCIe x1 Adapter	EA833AA
	Intel PRO/1000 MT Gigabit Ethernet PCI Adapter	DC193A
	Intel PRO/1000 PT Gigabit Ethernet PCIe x1 Adapter	EH352AA
	<b>Modems</b>	
	Agere PCI Hi-Speed 56K International SoftModem	DC132D
<b>Hard Disk Drives</b>	250-GB SATA 3.0-Gb/s Hard Drive	PY278AA
	160-GB SATA 3.0-Gb/s Hard Drive	PY277AA
	80-GB SATA 3.0-Gb/s Hard Drive	PY276AA
<b>Removable Storage Devices</b>	<b>Diskette Drive</b>	
	1.44-MB Internal Diskette Drive for dx2100 (5.25" Bay)	AG111AA
	1.44-MB USB Diskette Drive – External	DC141B
	<b>USB Drive Key</b>	
	1-GB HP Drive Key II (USB 2.0)	AG382AA
	512-MB HP Drive Key II (USB 2.0)	ED516AA
	256-MB HP Drive Key II (USB 2.0)	PH657A
<b>Security</b>	HP Business PC Security Lock Kit	EV265AA
<b>Input Devices</b>	<b>Keyboards</b>	
	HP PS/2 Standard Keyboard	DT527A
	HP USB Standard Keyboard	DT528A
	<b>Mice</b>	
	HP PS/2 2-Button Scroll Mouse	DD440B
	HP USB 2-Button Scroll Mouse	DD441B
	HP USB 2-Button Optical Scroll Mouse	DC172B
<b>Memory</b>	1-GB PC2-4200 (DDR2-533) DIMM	PV557AA
	512-MB PC2-4200 (DDR2-533) DIMM	PV560AA
	256-MB PC2-4200 (DDR2-533) DIMM	PV558AA
<b>Audio</b>	HP Satellite Speakers	ZD929AA

### After-Market Options

<b>Optical Drives</b>	48X Max CD-ROM Drive	DC143B
	52X Max CD-ROM Drive (available in Asia Pacific and Japan only)	AG041AA
	48X/32X/48X CD-RW Drive	DL975B
	48X/32X Combo Drive CD-RW / DVD-ROM Drive	DL976B
	16X/48X DVD-ROM Drive	PR596A
	16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)	PR595A

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<b>Miscellaneous Accessories</b>	HP FireWire / IEEE 1394 PCI Card	PA997A
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### Monitors

#### CRTs

HP s7540 17" (16.0" vis) CRT Monitor	PF997AA#XXX
HP v7650 17" (16.0" vis) Flat-face CRT Monitor	PF996AA#XXX

#### TFTs

HP L1506 15" TFT Flat Panel Monitor – Analog only	PX848AA#XXX
HP L1706 17" TFT Flat Panel Monitor – Analog only	PX849AA#XXX
HP L1740 17" TFT Flat Panel Display – Analog/Digital	PL766AA#XXX
HP L1755 17" TFT Flat Panel Display – Analog/Digital	PL777AA#XXX
HP L1906 19" TFT Flat Panel Display – Analog only	PX850AA#XXX
HP L1940T 19" TFT Flat Panel Display – Analog/Digital	EM869AA#XXX
HP L1955 19" TFT Flat Panel Display – Analog/Digital	PD974AA#XXX
HP L2065 20" TFT Flat Panel Display – Analog/Digital	EF227A4#XXX
HP LP2465 24" TFT Widescreen Flat Panel Display – Analog/Digital	EF224A4#XXX

#### GSA Monitors

HP L717g 17" GSA Flat Panel Monitor	EE191AA#XXX
HP L919g 19" GSA Flat Panel Monitor	EE192AA#XXX

#### Options

HP Flat Panel Speaker Bar	EE418AA
HP CRT Monitor Multimedia Base	PM552AA

### Memory

#### 915GV Express chipset

#### DDR2 SYNCH DRAM NON-ECC MEMORY

The Intel 915GV Express chipset supports non-ECC DDR2 PC2-4200 (533-MHz) memory. 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.

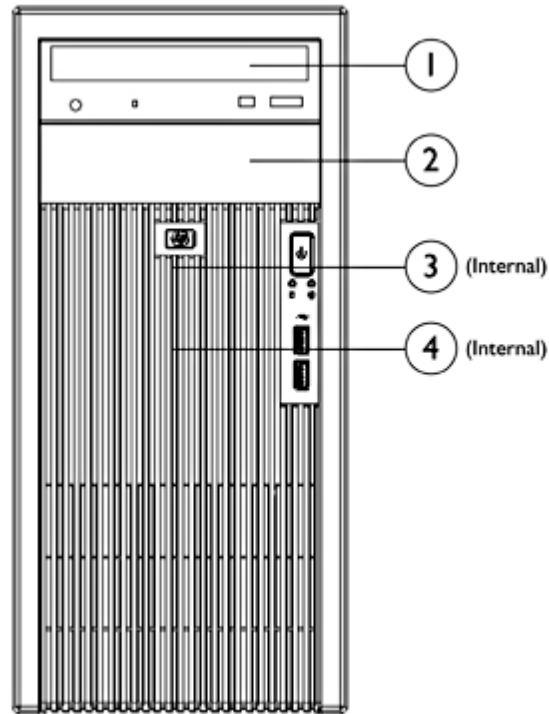
**HP recommends dual-channel symmetric configurations for maximum performance.** For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

#### MAXIMUM MEMORY

Supports up to 4-GB of DDR2 SYNCH DRAM. *Above 3-GB, all memory may not be available due to system resource requirements. Not all memory configurations possible are represented below.*

DIMM Size	Slot			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (black)	4 (white)
256-MB	256-MB			
512-MB	512-MB			
512-MB (dual-channel symmetric)	256-MB		256-MB	
1-GB	1-GB			
1-GB (dual-channel symmetric)	512-MB		512-MB	
1-GB (dual-channel symmetric)	256-MB	256-MB	512-MB	
2-GB (dual-channel symmetric)	1-GB		1-GB	
2-GB (dual-channel symmetric)	1-GB		512-MB	512-MB
4-GB maximum (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB

### Storage



### HP Compaq dx2100 Microtower Business PC

	Maximum Quantity Supported	Position Supported	Controller
<b>Drive Support</b>			
Diskette Drives	1	1, 2	ICH6
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	3,4	SATA

### *Technical Specifications - Audio*

**Integrated Realtek  
ALC653 Audio**

<b>Type</b>	Integrated
<b>AC '97 Stereo Codec</b>	Yes
<b>Sampling</b>	Supports 48 KHz
<b>Audio Jacks</b>	Mic-In Line-In Line-Out
<b>Power Support</b>	Digital: 3.3V Analog: 5V
<b>Other</b>	Meets performance requirements for audio on PC99/2001 systems High quality differential CD input

### Technical Specifications - Communications

<b>Agere 56K PCI Modem</b>	<b>Data Transmission</b>	56,000 Kbps maximum downstream data <b>NOTE:</b> 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	<b>Data Speeds</b>	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/ 12,000/9,600/7,200/4,800/2,400/1,200/300
	<b>Data Standards</b>	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	<b>Fax Speeds</b>	14,400/12,000/9,600/7,200/4,800/2,400/300 b/s
	<b>Fax Mode Capabilities</b>	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	<b>Error Correction and Data Compression</b>	V.44, 42bis, V.42 and MNP2-5
	<b>Power Management</b>	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
	<b>Upgradeability</b>	Driver upgradeable for future enhancements
	<b>Video</b>	ITU-T V.80 video ready interface
	<b>Other</b>	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	<b>Operating Temperature</b>	32° to 158° F (0° to 70° C)
	<b>Operating Humidity</b>	20% to 90%, non-condensing
	<b>Power</b>	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
	<b>Chipset</b>	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
	<b>Dimensions (L X H)</b>	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
	<b>Connection</b>	Single RJ-11 connector
	<b>Other Features</b>	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
	<b>Safety</b>	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
	<b>EMC</b>	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
	<b>Telecom</b>	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
	<b>Health</b>	Bare PCB material compliant to 94V-0 or better (marked as such)
	<b>Other</b>	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

### Technical Specifications - Communications

#### 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: Greece, #AKC: Hungary, #ABT: Israel, #ABZ: Italy, #ABH: Netherlands, #UUW: Nordic Region, #ACB: Russia, #ACQ: South Africa, #ACD: Switzerland, #AB8: Turkey, #ABU: UK, #ABG: Australia, New Zealand, #ACJ: India.

<b>Integrated Intel PRO/100 Network Connection</b>	<b>Manufacturer Interface Connector Expansion bus architecture Configuration</b>	<p>Intel</p> <p>Intel SingleDriver technology (10/100-Mbps support)</p> <p>RJ-45</p> <p>PCI 2.2</p> <p>Network transfer rate</p> <p>10BASE-T (Half-Duplex) 10 Mbps</p> <p>10BASE-T (Full-Duplex) 20 Mbps</p> <p>100BASE-TX (Half-Duplex) 100 Mbps</p> <p>100BASE-TX (Full-Duplex) 200 Mbps</p> <p>Data interface</p> <p>PCI, 32-bit bus mastering</p> <p>I/O address</p> <p>Integrated connectivity with Intel I/O Controller Hub (ICH2)-based platforms</p>
	<b>Software support</b>	<p>Instrumentation support for CIM/WBEM SNMP, DMI, PXE 2.0, Intel PROSet utility for installation and configuration, Alert on LAN Software Developer Kit and same code</p>
	<b>Remote wakeup</b>	<p>PME through PCI 2.2, no cable required</p>
	<b>Boot PROM support</b>	<p>Yes, Intel PRO/100 Boot Agent (PXE 2.0, RPL)</p>
	<b>Special features</b>	<p>Digital adaptive equalization control, link status interrupt capability, boundary scan support, 3-port LED support (speed, link, activity), 10BASE-T auto polarity correction, diagnostic loopback mode, 1:1 transmit transformer ratio support, automatic detection of unplugged mode, remote monitoring (alerting)</p>
	<b>Proactive alert technology</b>	<p>Alert on LAN (transmit functionality only)-requires Management Console software such as HP OpenView and Altiris, alert utilities for the management console, proxy client software, client configuration software</p>
	<b>F12 BIOS support</b>	<p>Yes</p>
	<b>Environmental requirements</b>	<p>Operating temperature 32° to 131° F (0° to 55° C)</p> <p>Operating humidity (non-condensing) 85% at 131° F (55° C)</p> <p>Altitude 10,000 feet (3,048 meters)</p> <p>Non-operating temperature -40° to 158° F (-40° to +70° C)</p> <p>Altitude 5,000 feet (15,240 meters)</p>
	<b>Power</b>	<p>300 mW typical in active transmit mode; reduced power in unplugged mode (&lt;50 mW); 3.3 V device</p>
	<b>Power management</b>	<p>ACPI 1.0</p>
	<b>Flash package</b>	<p>48-pin Shrink Small Outline Package (SSOP)</p>

### Technical Specifications - Communications

<b>Network management</b>	PCI 2.2
<b>LED indicators</b>	Three-port support (speed, link, and activity)
<b>Standards compliance</b>	IEEE 802.2, IEEE 802.3 and IEEE 802.3u, (100-Mbps ethernet), SCO UnixWare OpenDesktop and OpenServer, PC'99

<b>Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter</b>	<b>Connector</b>	RJ-45
	<b>Controller</b>	Broadcom 5751 PCI-Express LAN Controller
	<b>Memory</b>	Integrated 96Kb frame buffer memory
	<b>Data rates supported</b>	10/100/1000 Mbps
	<b>Compliance</b>	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	<b>Bus architecture</b>	PCI-E
	<b>Data path width</b>	Single channel, PCI-E
	<b>Data transfer mode</b>	Bus-master DMA
	<b>Hardware certifications</b>	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	<b>Power requirement</b>	3.1 watts @ +3.3V AUX supply with 5V tolerance
	<b>Boot ROM support</b>	Yes
	<b>Network transfer mode</b>	Full-duplex
		Half-duplex (not available for the 1000BASE-T transceiver)
	<b>Network transfer rate</b>	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
	<b>Environmental</b>	<b>Operating temperature</b> 32° to 131°F (0° to 55° C) <b>Operating humidity</b> 85% at 131° F (55° C)
	<b>Dimensions</b>	4.4 x 2.2 x 0.08 in (11.2 x 5.5 x 2 cm)
	<b>Management capabilities</b>	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility
<b>Alerting</b>	N/A	
<b>Kit contents</b>	Broadcom 5751, CD, Broadcom NetXtreme Gigabit Ethernet PCI-E Adapter, drivers, quick install guide, product warranty statement	

### Technical Specifications - Graphics

<b>Integrated Graphics Media Accelerator 900</b>	<b>3D/2D Controller</b>	Microsoft® DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.
	<b>VGA Controller</b>	Integrated
	<b>Bus Type</b>	PCI Express x1
	<b>RAMDAC</b>	Integrated, 400 MHz
	<b>Memory</b>	Graphics memory is shared with system memory. Graphics memory usage can vary from 8-128 MB depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics using Intel's Dynamic Video Memory Technology (DVMT) to balance the optimum amount of memory between graphics and other system use. Memory < 256 MB: 8 MB pre-allocated (for DOS) + 24 MB DVMT : max frame buffer of 32 MB 256 MB <= Memory < 512 MB: 8 MB pre-allocated + 56 MB DVMT: max frame buffer of 64 MB 512 MB <= Memory: 8 MB pre-allocated + 120 MB DVMT : max frame buffer of 128 MB
	<b>Controller Clock Speed</b>	333 MHz
	<b>Overlay Planes</b>	Single overlay support with 5x3 filtering
	<b>Maximum Color Depth</b>	32 bits/pixel
	<b>Maximum Vertical Refresh Rate</b>	85 Hz at up to 1920x1440, 75Hz at 2048x1536. Varies with mode and configuration. See table below.
	<b>Graphics/Video API Support</b>	Microsoft DirectX®9, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

Resolutions Supported <sup>1</sup>	Resolution	Maximum Refresh Rate (Hz)	
		Analog Monitor	Digital Monitor
	640 x 480	85	70
	800 x 600	85	70
	1024 x 768	85	70
	1152 x 864	85	70
	1280 x 768	60	70
	1280 x 960	85	70
	1280 x 1024	85	70
	1600 x 900	60	70
	1600 x 1200	85	60
	1920 x 1080	60	-
	1920 x 1200	60	-
	1920 x 1440	75	-
	2048 x 1536	75	-

<sup>1</sup> Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

**NOTE:** Other resolutions and refresh rates may be selectable but are not recommended.

### Technical Specifications - Input/Output Devices

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

### Technical Specifications - Input/Output Devices

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

### Technical Specifications - Hard Drives

#### Serial ATA Hard Drives 40 GB (7200 rpm)

<b>Capacity</b>	40,020,664,320 bytes	
<b>Height</b>	1 in (2.6 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA	
<b>Synchronous Transfer Rate (Maximum)</b>	1.5 Gb/s	
<b>Buffer</b>	2 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	1.0 ms
	<b>Average</b>	8.5 ms
	<b>Full-Stroke</b>	18.0 ms
<b>Rotational Speed</b>	7,200 rpm	
<b>Logical Blocks</b>	78,165,360	
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C)	

#### 80 GB\*

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

### Technical Specifications - Hard Drives

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

**NOTE:** Although this drive is rated for a 3.0-Gb/s transfer rate, the Serial ATA interfaces in the HP Compaq dx2100 Microtower support data transfer rates up to 1.5 Gb/s.

### Technical Specifications - Optical Storage

<b>48X CD-ROM Drive</b>	<b>Interface</b>	ATAPI		
	<b>Data Transfer Rate</b>	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	
	<b>Access Time (ms)</b>	Random: <125 ms	Full-stroke seek: <210 ms	
	<b>Data Buffer</b>	2MB		
	<b>Disk Formats Read</b>	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		
	<b>Disk Formats Written</b>	None		
	<b>Disk Capacity (CD)</b>	180MB, 540MB, 650 MB, and 700MB		
	<b>Block Size</b>	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		
	<b>Diameter</b>	12 cm; 8 cm		
	<b>Thickness</b>	1.2 mm		
	<b>Track Pitch</b>	1.6 µm		
	<b>Audio Output Level</b>	Line-out-0.7 V @ 47 Kohm	Headphone-0.6 V @ 32 ohm	
	<b>Startup Time</b>	<7 seconds (typical); < 30 seconds with multi-session		
	<b>Operating Conditions</b>	<b>Temperature</b>	41° to 122° F (5° to 50° C)	
		<b>Relative Humidity</b>	10% to 90%	
	<b>Dimensions (H x W x D, maximum)</b>	1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)		
	<b>Weight</b>	2.6 lb (1200 g)		
	<hr/>			
	<b>48X/32X/48X CD-RW Drive</b>	<b>Orientation</b>	Either horizontal or vertical	
		<b>Disc loading mechanism</b>	Half-height, tray load	
<b>Interface type</b>		ATAPI IDE		
<b>Dimensions-external (W x H x D)</b>		7.99 x 5.88 x 1.71 in (20.3 x 14.93 x 4.34 cm)		
<b>Weight</b>		2.6 lb (1.2 kg)		
<b>Disc diameter</b>		12 cm, 8 cm		
<b>Disc thickness</b>		1.2 mm		
<b>Track pitch</b>		1.6 µm		
<b>Disc center hole diameter</b>		15 mm		
<b>Reference scanning velocity</b>		1.2 m/s		
<b>Recording/playing time</b>		80 minutes with CD-R media		

### Technical Specifications - Optical Storage

<b>Read only disc parameters</b>	<b>Formats and modes supported</b>	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
	<b>Capacity</b>	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	<b>Block size</b>	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
<b>Writeable disc parameters</b>	<b>Disc type</b>	CD-R and CD-RW
	<b>Write methods</b>	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	<b>Format and modes supported</b>	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
	<b>Capacity</b>	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	<b>Block size</b>	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
<b>Access times (typical)</b>	<b>Random</b>	< 120 ms
	<b>Full stroke</b>	< 200 ms
<b>Data transfer rates</b>	<b>CD-RW write</b>	4800 KB/s (up to 32X)
	<b>CD-ROM, CD-R read</b>	7200 KB/s (up to 48X)
	<b>CD-RW read</b>	7200 KB/s (up to 32X)
	<b>CD-R write</b>	7200 KB/s (up to 48X)
<b>Data transfer modes</b>	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.	
<b>Cache buffer</b>	2 MB (minimum)	
<b>Start-up time (single)</b>	< 7 seconds typical	
<b>Start-up time (multi-session)</b>	< 30 seconds typical	
<b>Stop time</b>	< 4 seconds	

### Technical Specifications - Optical Storage

<b>Power</b>	<b>Source</b>	Four-pin, DC power receptacle
	<b>DC power requirement</b>	5 VDC 5%-100 mV ripple p-p 12 VDC 5%-200 mV ripple p-p
	<b>DC current</b>	5 VCD < 1A (typical) < 1600 mA (maximum) 12 VCD < 600 mA (typical) < 1.4A (maximum) Total Drive Power (Standby mode) < 2.5 watt
<b>Audio output level</b>	0.7 Vrms	
<b>Configuration jumper block</b>	Master, slave and cable select modes	
<b>Data interface connector</b>	50-pin IDE interface	
<b>Environmental</b> (all conditions, non-condensing)	<b>Temperature</b> (operating)	41° to 122° F (5° to 50° C)
	<b>Relative Humidity</b> (operating)	10% to 90%
	<b>Maximum Wet Bulb Temperature</b> (operating)	84° F (29° C)
<b>Certifications, requirements</b>	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, EN60950:2000, 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	

#### 16X/48X DVD-ROM Drive

<b>Height</b>	5.25-in, half-height
<b>Interface Type</b>	ATAPI
<b>Dimensions— External, Excluding Bezel (W x H)</b>	5.88 x 1.71 in (149.5 x 43.5 mm)
<b>Disc Diameter</b>	12 cm, 8 cm
<b>Disc Thickness</b>	1.2 mm
<b>Track Pitch</b>	1.6 µm (CD), 0.74 µm (DVD)
<b>Disc Center Hole Diameter</b>	15 mm
<b>Disc Formats</b>	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R, 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

<b>Disc Capacity</b>	<b>DVD-ROM</b>	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R), 8.5 GB (DVD+R DL)
	<b>CD-ROM</b>	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
<b>Block Size</b> (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	
<b>Access Times</b> (typical reads, including settling)	<b>DVD-ROM Single Layer</b>	120 ms (typical)
	<b>CD-ROM Mode 1</b>	90 ms (typical)
	<b>Full Stroke DVD</b>	240 ms (seek) (typical)
	<b>Full Stroke CD</b>	160 ms (seek) (typical)
<b>Maximum Data Transfer Rates</b>	<b>CD-ROM Read</b>	7200 KB/s (up to 48X)
	<b>DVD-ROM Read</b>	21,600 KB/s (16X) Max
<b>Data Transfer Modes</b>	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
<b>Power</b>	<b>Source</b>	Four-pin, DC power receptacle
	<b>DC Power Requirement</b>	5 VDC $\pm$ 5% – 100 mV ripple p-p 12 VDC $\pm$ 5% – 200 mV ripple p-p
	<b>DC Current</b>	5 VDC – <800 mA typical, < 1000 mA maximum 12 VDC – < 870 mA typical
<b>Audio Output Level</b>	0.7 Vrms (typical)	
<b>Configuration Jumper Block</b>	Master, slave, and cable select modes	
<b>Data Interface Connector</b>	40-pin, shrouded and keyed, flat ribbon	
<b>Environmental</b> (all conditions non-condensing)	<b>Temperature</b> (operating)	41° to 122° F (5° to 50° C)
	<b>Relative Humidity</b> (operating)	10% to 85%
	<b>Maximum Wet Bulb Temperature</b> (operating)	86° F (30° C)
<b>Certifications, Approvals</b>	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	

#### 48X Combo CD-RW/ DVD-ROM

<b>Form Factor</b>	5.25-inch, half-height, tray-load
<b>Orientation</b>	Either horizontal or vertical
<b>Interface type</b>	ATAPI
<b>Dimensions</b> (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)
<b>Disc diameter</b>	12 cm, 8 cm
<b>Disc thickness</b>	0.05 in (1.2 mm)

### Technical Specifications - Optical Storage

<b>Track pitch</b>	1.6 um (CD), 0.74 um (DVD)	
<b>Disc center hole diameter</b>	0.6 in (15 mm)	
<b>Reference scanning velocity</b>	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)	
<b>Read only disc parameters</b>	<b>Formats and modes supported</b>	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
	<b>Capacity</b>	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)
	<b>Block size</b>	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
<b>Writeable disc parameters</b>	<b>Disc type</b>	CD-R and CD-RW
	<b>Write methods</b>	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	<b>Format and modes supported</b>	CD-ROM; CD-ROM XA; CD digital audio, video CD; CD-Bridge
	<b>Capacity</b>	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm)
	<b>Block size</b>	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
<b>Access times</b> (typical reads, including settling)	<b>Random DVD</b>	< 140 ms (typical)
	<b>Random CD</b>	< 125 ms, (typical)
	<b>Full stroke DVD</b>	< 250 ms (seek)
	<b>Full stroke CD</b>	< 210 ms (seek)
<b>Data transfer rates</b>	<b>CD-R write</b>	7200 KB/s (up to 48X)
	<b>CD-RW write</b>	4800 KB/s (up to 32X)
	<b>CD-ROM, CD-R, CD-RW read</b>	7200 KB/s (up to 48X)
	<b>DVD ROM read</b>	21,632 KB/s (16X ) Max
<b>Data transfer modes</b>	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)	
	<b>Cache buffer</b>	2 MB (minimum)
	<b>Startup time (single)</b>	< 7 seconds (typical)
	<b>Startup time (multi-session)</b>	< 30 seconds (typical)
	<b>Stop time</b>	< 4 seconds

### Technical Specifications - Optical Storage

<b>Power</b>	<b>Source</b>	Four-pin, DC power receptacle
	<b>DC power requirement</b>	5 VDC $\pm$ 5%-100 mV ripple p-p 12 VDC $\pm$ 5%-200 mV ripple p-p
	<b>DC current</b>	5 VDC (< 1000 mA typical, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)
	<b>Total drive power (standby mode)</b>	< 2.5 Watt
<b>Audio output level</b>		0.7 Vrms (typical)
<b>Configuration jumper block</b>		Cable select (default), master and slave modes
<b>Data interface connector</b>		40-pin, shrouded and keyed, flat ribbon
<b>Environmental (all conditions non-condensing)</b>	<b>Temperature (operating)</b>	41° to 122° F (5° to 50° C)
	<b>Relative humidity (operating)</b>	10% to 90%
	<b>Maximum wet bulb temperature (operating)</b>	86° F (30° C)
<b>Certifications, requirements</b>		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

#### 16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)

		5.25-inch, half-height, tray-load
<b>Orientation</b>		Either horizontal or vertical
<b>Interface type</b>		ATAPI/EIDE
<b>Disc recording capacity</b>		8.5 GB DL or 4.7 GB standard
<b>Dimensions (W x H x D)</b>		5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)
<b>Weight (max)</b>		2.6 lb (1.2 kg)
<b>Write speed</b>	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
<b>Read speed</b>	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

<b>Access time</b> (typical reads, including settling)	<b>Random</b>	DVD: < 130 ms (typical), CD: < 120 ms (typical)
	<b>Full Stroke</b>	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	<b>Startup Time</b>	Single-session: < 15 seconds (typical), Multi-session: < 30 seconds (typical)
	<b>Stop Time</b>	< 4 seconds
	<b>Cache Buffer</b>	2 MB (minimum)
	<b>Data Transfer Modes</b>	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
	<b>Power</b>	<b>Source</b>
<b>DC Power Requirement</b>		5 VDC $\pm$ 5%-100 mV ripple p-p 12 VDC $\pm$ 5%-200 mV ripple p-p
<b>DC Current</b>		5 VDC (< 1000 mA typical, 1600 mA maximum) 12 VDC (< 600 mA typical, 1400 mA maximum)
<b>Total Drive Power</b> (standby mode)		< 2.5 Watt
<b>Audio output</b>		<b>Line-Out</b> 0.7 VRMS <b>Signal-to-Noise Ratio</b> 74 dB <b>Channel Separation</b> 65 dB
<b>Environmental conditions</b> (operating - non-condensing)	<b>Temperature</b>	41° to 122° F (5° to 50° C)
	<b>Relative humidity</b>	10% to 90%
	<b>Maximum wet bulb temperature</b>	86° F (30° C)
<b>Regulatory approvals</b>	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

<b>1.44-MB Diskette Drive</b>	<b>Size</b>	3.5 in (8.89 cm)
	<b>LED Indicators</b> (front panel)	Green
	<b>Read/Write Capacity per Diskette</b> (high/low)	1.44 MB/720 KB
	<b>Drive Height</b>	One-third
	<b>Drive Rotation</b>	300 rpm
	<b>Transfer Rate</b> (high/low)	500/250 KB/s
	<b>Bytes/Sector</b>	512
	<b>Sectors/Track</b> (high/low)	18/9
	<b>Tracks/Side</b> (high/low)	80/80
	<b>Access Times</b>	Track-to-Track (high/low) 3/6 ms Average (high/low) 94/173 ms Settling Time 15 ms Latency Average 100 ms
	<b>Cylinders</b> (high/low)	80/80
	<b>Read/Write Heads</b>	Two

### 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	256-MB DDR2 Synch Dram PC2-4200 (533-MHz)
Hard Drive	40-GB SATA 1.5-Gb/s (7200 rpm)
Optical Drive	16X/48X DVD-ROM
Network	Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter

#### Ultra-Slim Desktop, Small Form Factor, Convertible Minitower

#### Energy Consumption

	115VDC	230VDC	100VDC
Normal Operation	63 W	62 W	62 W
Sleep	2.9 W	2.8 W	2.7 W
Off	1.7 W	1.8 W	1.6 W

#### Heat Dissipation\*

	115VDC	230VDC	100VDC
Normal Operation	216 BTU/hr	212 BTU/hr	212 BTU/hr
Sleep	10 BTU/hr	10 BTU/hr	10 BTU/hr
Off	6 BTU/hr	7 BTU/hr	6 BTU/hr

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

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

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

	Sound Power (LWad, bels)	Deskside Sound Pressure (LpAm, decibels)
Idle	3.47	25.8
Fixed Disk (random writes)	4.06	34.1
Optical Drive (sequential reads)	4.59	39.8

### 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
- 2 empty standard PCI slots
- 1 empty standard PCI-EX1 slot
- 4 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 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](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:  
[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](http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html)

ISO 14001 certificates:

[http://www.hp.com/hpinfo/globalcitizenship/  
environment/operations/envmanagement.html](http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html)

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